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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 3, 1994



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update

Accession by Kenya

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Kenya deposited its instruments of accession to the Patent Cooperation Treaty (PCT) on March 8, 1994. Kenya will become the 68th Contracting State of the PCT on June 8, 1994. Consequently, nationals and residents of Kenya are entitled to file international applications under the PCT on and before June 8, 1994, and from the same date it is possible to file international applications designating and electing Kenya (country code: KE).

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Listing of PCT Member Countries

	Country	Instrument		Deposit of Instrument		Entry into Force[1]
(1)	Central African Republic[2]	Accession	15	September 1971	24	January 1978
(2)	Senegal[2]	Ratification	08	March 1972	24	January 1978
(3)	Madagascar	Ratification	27	March 1972	24	January 1978
(4)	Malawi	Accession	16	May 1972	24	January 1978
(5)	Cameroon	Accession	15	March 1973	24	January 1978
(6)	Chad[2]	Accession	12	February 1974	24	January 1978
(7)	Togo[2]	Ratification	28	January 1975	24	January 1978
(8)	Gabon[2]	Accession	06	March 1975	24	January 1978
(9)	United States of America	Ratification	26	November 1975	24	January 1978
(10)	Germany[3]	Ratification	19	July 1976	24	January 1978
(11)	Congo[2]	Accession	08	August 1977	24	January 1978
(12)	Switzerland[3]	Ratification	14	September 1977	24	January 1978
(13)	United Kingdom[3]	Ratification	24	October 1977	24	January 1978
(14)	France[3]	Ratification	25	November 1977	25	February 1978
(15)	Russian Federation	Ratification	29	December 1977	29	March 1978
(16)	Brazil	Ratification	09	January 1978	09	April 1978
(17)	Luxembourg[3]	Ratification	31	January 1978	30	April 1978
(18)	Sweden[3]	Ratification	17	February 1978	17	May 1978
(19)	Japan	Ratification	01	July 1978	01	October 1978
(20)	Denmark[3]	Ratification	01	September 1978	01	December 1978
(21)	Austria[3]	Ratification	23	January 1979	23	April 1979
(22)	Monaco[3]	Ratification	22	March 1979	22	June 1979
(23)	Netherlands[3]	Ratification	10	April 1979	10	July 1979
(24)	Romania	Ratification	23	April 1979	23	July 1979
(25)	Norway	Ratification	01	October 1979	01	January 1980
(26)	Liechtenstein[3]	Accession	19	December 1979	19	March 1980
(27)	Australia	Accession	31	December 1979	31	March 1980
(28)	Hungary	Ratification	27	March 1980	27	June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08	April 1980	08	July 1980
(30)	Finland	Ratification	01	July 1980	01	October 1980
(31)	Belgium[3]	Ratification	14	September 1981	14	December 1981
(32)	Sri Lanka	Accession	26	November 1981	26	February 1982
(33)	Mauritania[2]	Accession	13	January 1983	13	April 1983
(34)	Sudan	Accession	16	January 1984	16	April 1984
(35)	Bulgaria	Accession	21	February 1984	21	May 1984
(36)	Republic of Korea (South Korea)	Accession	10	May 1984	10	August 1984
(37)	Mali[2]	Accession	19	July 1984	19	October 1984
(38)	Barbados	Accession	12	December 1984	12	March 1985
(39)	Italy[3]	Ratification	28	December 1984	28	March 1985
(40)	Benin[2]	Accession	26	November 1986	26	February 1987
(41)	Burkina Faso[2]	Accession	21	December 1988	21	March 1989
(42)	Spain[3]	Accession	16	August 1989	16	November1989
(43)	Canada	Ratification	02	October 1989	02	January 1990
(44)	Greece[3]	Accession	09	July 1990	09	October 1990.
(45)	Poland	Accession	25	September 1990	25	December 1990
(46)	Cote d'Ivoire[2]	Ratification	31	January 1991	30	April 1991
(47)	Guinea[2]	Accession	27	February 1991	27	May 1991
(48)	Mongolia	Accession	27	February 1991	27	May 1991
(49)	Czech Republic	Declaration[4]	18	December 1992	01	January 1993
(50)	Ireland[3]	Ratification	01	May 1992	01	August 1992
(51)	Portugal[3]	Accession	24	August 1992	24	November 1992
(52)	New Zealand	Accession	01	September 1992	01	December 1992
(53)	Ukraine	Declaration[4]	21	September 1992	25	December 1991
(54)	Viet Nam	Accession	10	December 1992	10	March 1993
(55)	Slovakia Republic	Declaration[4]	30	December 1992	01	January 1993
(56)	Niger[2]	Accession	21	December 1992	21	March 1993
(57)	Kazakhstan	Declaration[4]	16	February 1993	25	December 1991
(58)	Belarus	Declaration[4]	14	April 1993	25	December 1991
(59)	Latvia	Accession	07	June 1993	07	September 1993
(60)	Uzebekistan	Declaration[4]	18	August 1993	25	December 1991
(61)	China	Accession	01	October 1993	01	January 1994
(62)	Slovenia	Accession	01	December 1993	01	March 1994
(63)	Trinidad and Tobago	Accession	10	December 1993	10	March 1994(64)
(64)	Georgia	Declaration[4]	18	January 1994	25	December 1991
(65	Kyrgyzstan	Declaration[4]	14	February 1994	25	December 1991
(66)	Republic of Moldvola	Declaration[4]	14	February 1994	25	December 1991
(67)	Tajikistan	Declaration[4]	14	February 1994	25	December 1991
(68)	Kenya	Accession	08	March 1994	08	June 1994

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.

[4]Declaration of continued application.

April 10, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignments to Panel for A Decision Without a Hearing as of March 31, 1994.

Chemical Discipline -	June 23, 1992
Mechanical Discipline -	September 2, 1993
Electrical Discipline -	April 6, 1993

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of March 31, 1994.

Chemical -	September 16, 1991 *
Mechanical -	January 11, 1988 *
Electrical -	January 12, 1993

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of March, 1994.

Affirmed	155
Affirmed-in-Part	39
Reversed	101
Total Decided	295

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 30, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,010,589 through 5,012,524
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 28, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,660,223 through 4,662,004
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 26, 1983 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utility Patents 4,380,833 through 4,381,566
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$465.00
By other than a small entity	$930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$935.00
By other than a small entity	$1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f))	$1,410.00
By other than a small entity	$2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months ; seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable	$620.00
(2) unintentional	$1,500.00

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Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 20, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 32,668	06/927,549	05/17/88
(4,570,805)	(06/663,388)	(02/18/86)
Re 33,844	07/267,709	03/10/92
(4,571,057)	(06/493,007)	(02/18/86)
Re 34,432	07/841,433	11/02/93
(4,901,720)	(07/224,301)	(02/20/90)
Re 34,460	07/835,377	11/30/93
(4,901,994)	(07/216,701)	(02/20/90)
Re 34,486	07/772,389	12/21/93
(4,902,779)	(06/842,515)	(02/20/90)
4,316,858	06/248,102	02/23/82
4,316,859	06/248,103	02/23/82
4,316,876	06/231,840	02/23/82
4,316,915	06/238,312	02/23/82
4,316,963	06/232,162	02/23/82
4,316,995	06/231,776	02/23/82
4,317,016	06/217,442	02/23/82
4,217,111	06/226,524	02/23/82
4,570,269	06/675,814	02/18/86
4,570,270	06/637,714	02/18/86
4,570,272	06/636,406	02/18/86
4,570,276	06/737,693	02/18/86
4,570,278	06/631,625	02/18/86
4,570,285	06/559,924	02/18/86
4,570,292	06/561,229	02/18/86
4,570,294	06/499,181	02/18/86
4,570,295	06/494,663	02/18/86
4,570,298	06/679,027	02/18/86
4,570,300	06/583,317	02/18/86
4,570,301	06/665,909	02/18/86
4,570,302	06/660,955	02/18/86
4,570,303	06/630,711	02/18/86
4,570,310	06/639,981	02/18/86
4,570,311	06/446,335	02/18/86
4,570,315	06/472,532	02/18/86
4,570,316	06/691,866	02/18/86
4,570,317	06/692,459	02/18/86
4,570,321	06/665,713	02/18/86
4,570,322	06/562,172	02/18/86
4,570,323	06/456,016	02/18/86
4,570,324	06/661,981	02/18/86
4,570,329	06/641,075	02/18/86
4,570,333	06/639,883	02/18/86
4,570,334	06/591,586	02/18/86
4,570,336	06/667,741	02/18/86
4,570,343	06/726,237	02/18/86
4,570,348	06/653,432	02/18/86
4,570,349	06/585,910	02/18/86
4,570,350	06/665,007	02/18/86
4,570,353	06/687,602	02/18/86
4,570,356	06/572,528	02/18/86
4,570,357	06/606,359	02/18/86
4,570,371	06/658,660	02/18/86
4,570,375	06/463,927	02/18/86
4,570,378	06/629,508	02/18/86
4,570,385	06/507,766	02/18/86
4,570,389	06/575,084	02/18/86
4,570,392	06/674,245	02/18/86
4,570,399	06/615,228	02/18/86
4,570,402	06/496,966	02/18/86
4,570,405	06/431,757	02/18/86
4,570,410	06/638,956	02/18/86
4,570,411	06/654,360	02/18/86
4,570,413	06/611,336	02/18/86
4,570,414	06/421,616	02/18/86
4,570,418	06/401,944	02/18/86
4,570,419	06/550,928	02/18/86
4,570,424	06/678,180	02/18/86
4,570,425	06/639,589	02/18/86
4,570,426	06/636,608	02/18/86
4,570,428	06/602,667	02/18/86
4,570,430	06/631,075	02/18/86
4,570,431	06/582,084	02/18/86
4,570,434	06/619,136	02/18/86
4,570,435	06/647,237	02/18/86
4,570,436	06/430,783	02/18/86
4,570,442	06/692,722	02/18/86
4,570,451	06/598,929	02/18/86
4,570,454	06/676,081	02/18/86
4,570,456	06/670,098	02/18/86
4,570,457	06/689,372	02/18/86
4,570,458	06/648,755	02/18/86
4,570,461	06/625,113	02/18/86
4,570,463	06/562,729	02/18/86
4,570,469	06/484,976	02/18/86
4,570,470	06/609,793	02/18/86
4,570,471	06/532,919	02/18/86
4,570,473	06/583,053	02/18/86
4,570,476	06/594,757	02/18/86
4,570,479	06/576,955	02/18/86
4,570,481	06/648,685	02/18/86
4,570,485	06/472,717	02/18/86
4,570,488	06/618,232	02/18/86
4,570,491	06/647,167	02/18/86
4,570,492	06/655,744	02/18/86
4,570,494	06/599,110	02/18/86
4,570,496	06/538,149	02/18/86
4,570,500	06/448,892	02/18/86
4,570,503	06/651,017	02/18/86
4,570,504	06/536,244	02/18/86
4,570,509	06/503,969	02/18/86
4,570,510	06/554,252	02/18/86
4,570,512	06/679,421	02/18/86
4,570,513	06/576,255	02/18/86
4,570,514	06/557,600	02/18/86
4,570,517	06/647,163	02/18/86
4,570,519	06/645,676	02/18/86
4,570,521	06/595,294	02/18/86
4,570,526	06/673,530	02/18/86
4,570,531	06/578,711	02/18/86
4,570,532	06/625,773	02/18/86
4,570,535	06/662,456	02/18/86
4,570,538	06/505,221	02/18/86
4,570,541	06/630,387	02/18/86
4,570,543	06/508,678	02/18/86
4,570,546	06/609,096	02/18/86
4,570,547	06/583,845	02/18/86
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4,901,662	07/241,888	02/20/90
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4,901,670	07/234,722	02/20/90
4,901,671	07/182,359	02/20/90
4,901,672	07/179,045	02/20/90
4,901,682	07/251,897	02/20/90
4,901,683	07/405,581	02/20/90
4,901,691	07/202,250	02/20/90
4,901,693	07/373,150	02/20/90
4,901,700	06/638,449	02/20/90
4,901,723	07/277,713	02/20/90
4,901,724	07/168,839	02/20/90
4,901,727	07/190,549	02/20/90
4,901,728	07/345,662	02/20/90
4,901,730	07/294,819	02/20/90
4,901,737	07/037,609	02/20/90
4,901,739	07/201,550	02/20/90
4,901,740	06/561,224	02/20/90
4,901,745	07/378,643	02/20/90
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4,901,757	07/299,419	02/20/90
4,901,759	07/196,695	02/20/90
4,901,760	07/166,536	02/20/90
4,901,765	07/264,861	02/20/90
4,901,769	07/345,978	02/20/90
4,901,776	07/256,507	02/20/90
4,901,779	07/207,175	02/20/90
4,901,781	07/238,321	02/20/90
4,901,797	07/372,396	02/20/90
4,901,801	07/161,043	02/20/90
4,901,805	07/230,991	02/20/90
4,901,813	07/225,766	02/20/90
4,901,814	07/213,301	02/20/90
4,901,817	07/371,632	02/20/90
4,901,818	07/297,517	02/20/90
4,901,823	07/269,897	02/20/90
4,901,824	06/680,466	02/20/90
4,901,825	06/889,215	02/20/90
4,901,837	07/174,488	02/20/90
4,901,838	07/108,853	02/20/90
4,901,840	07/351,305	02/20/90
4,901,842	07/195,076	02/20/90
4,901,846	07/398,624	02/20/90
4,901,850	07/340,089	02/20/90
4,901,851	07/330,169	02/20/90
4,901,857	07/261,332	02/20/90
4,901,859	07/214,685	02/20/90
4,901,864	07/232,733	02/20/90
4,901,867	07/223,347	02/20/90
4,901,869	07/236,742	02/20/90
4,901,870	07/270,367	02/20/90
4,901,877	07/376,845	02/20/90
4,901,879	07/194,808	02/20/90
4,901,890	07/345,445	02/20/90
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4,901,901	07/309,489	02/20/90
4,901,905	07/249,960	02/20/90
4,901,906	07/270,278	02/20/90
4,901,907	07/159,195	02/20/90
4,901,909	07/372,287	02/20/90
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4,901,916	07/295,066	02/20/90
4,901,917	07/328,652	02/20/90
4,901,919	07/134,962	02/20/90
4,901,937	07/208,753	02/20/90
4,901,939	06/893,917	02/20/90
4,901,941	07/321,162	02/20/90
4,901,956	06/895,905	02/20/90

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4,901,961	07/112,551	02/20/90
4,901,966	07/273,567	02/20/90
4,901,968	07/310,692	02/20/90
4,901,970	07/302,930	02/20/90
4,901,976	07/398,965	02/20/90
4,901,982	07/266,295	02/20/90
4,901,983	07/193,453	02/20/90
4,901,984	07/162,389	02/20/90
4,901,988	06/811,257	02/20/90
4,901,989	07/274,291	02/20/90
4,901,992	06/880,474	02/20/90
4,902,000	07/310,887	02/20/90
4,902,002	07/264,064	02/20/90
4,902,003	06/778,665	02/20/90
4,902,006	07/196,671	02/20/90
4,902,007	07/243,439	02/20/90
4,902,010	07/272,227	02/20/90
4,902,011	07/220,436	02/20/90
4,902,013	07/268,062	02/20/90
4,902,015	07/200,550	02/20/90
4,902,018	07/331,270	02/20/90
4,902,021	07/336,914	02/20/90
4,902,026	07/310,932	02/20/90
4,902,027	07/222,025	02/20/90
4,902,029	07/231,350	02/20/90
4,902,030	07/207,587	02/20/90
4,902,038	07/236,609	02/20/90
4,902,039	07/094,451	02/20/90
4,902,042	07/145,765	02/20/90
4,902,054	07/325,369	02/20/90
4,902,056	07/095,648	02/20/90
4,902,059	07/246,553	02/20/90
4,902,062	07/297,680	02/20/90
4,902,066	07/114,077	02/20/90
4,902,069	07/375,391	02/20/90
4,902,071	07/336,332	02/20/90
4,902,077	06/624,623	02/20/90
4,902,081	07/053,033	02/20/90
4,902,084	07/225,744	02/20/90
4,902,089	07/255,913	02/20/90
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4,902,095	07/132,308	02/20/90
4,902,100	06/869,519	02/20/90
4,902,105	07/180,605	02/20/90
4,902,106	07/175,296	02/20/90
4,902,112	06/853,200	02/20/90
4,902,117	07/240,544	02/20/90
4,902,128	06/903,877	02/20/90
4,902,129	07/240,501	02/20/90
4,902,130	07/205,840	02/20/90
4,902,136	07/261,489	02/20/90
4,902,155	07/222,560	02/20/90
4,902,159	07/002,901	02/20/90
4,902,163	07/165,871	02/20/90
4,902,168	07/249,633	02/20/90
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4,902,218	07/288,451	02/20/90
4,902,222	07/243,899	02/20/90
4,902,229	06/819,493	02/20/90
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4,902,233	07/123,555	02/20/90
4,902,235	07/221,709	02/20/90
4,902,238	07/296,526	02/20/90
4,902,241	06/693,225	02/20/90
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4,902,253	07/076,164	02/20/90
4,902,256	07/271,292	02/20/90
4,902,259	07/158,467	02/20/90
4,902,260	07/291,102	02/20/90
4,902,261	07/310,892	02/20/90
4,902,262	07/078,877	02/20/90
4,902,265	07/239,511	02/20/90
4,902,268	07/337,947	02/20/90
4,902,271	07/307,465	02/20/90
4,902,275	07/096,267	02/20/90
4,902,283	07/258,686	02/20/90
4,902,298	07/290,442	02/20/90
4,902,301	07/186,043	02/20/90
4,902,302	07/063,257	02/20/90
4,902,303	07/269,325	02/20/90
4,902,315	07/358,276	02/20/90
4,902,322	07/287,837	02/20/90
4,902,331	07/214,958	02/20/90
4,902,332	07/234,651	02/20/90
4,902,335	07/209,170	02/20/90
4,902,337	07/092,193	02/20/90
4,902,338	07/328,820	02/20/90
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4,902,343	06/421,088	02/20/90
4,902,351	06/652,397	02/20/90
4,902,354	07/205,898	02/20/90
4,902,355	07/238,050	02/20/90
4,902,360	07/266,226	02/20/90
4,902,364	07/227,217	02/20/90
4,902,368	07/218,787	02/20/90
4,902,369	07/210,260	02/20/90
4,902,373	07/280,022	02/20/90
4,902,378	07/187,028	02/20/90
4,902,384	07/202,094	02/20/90
4,902,392	07/139,545	02/20/90
4,902,393	06/644,466	02/20/90
4,902,397	07/209,941	02/20/90
4,902,398	07/186,590	02/20/90
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4,902,404	07/215,093	02/20/90
4,902,408	07/224,972	02/20/90
4,902,409	07/145,603	02/20/90
4,902,411	07/262,434	02/20/90
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4,902,414	07/339,936	02/20/90
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4,902,417	07/206,560	02/20/90
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4,902,425	07/136,657	02/20/90
4,902,433	07/093,129	02/20/90
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4,902,468	07/110,985	02/20/90
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4,902,504	07/213,686	02/20/90
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4,902,511	07/384,393	02/20/90
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4,902,536	07/079,166	02/20/90
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4,902,541	07/272,512	02/20/90
4,902,543	07/163,309	02/20/90
4,902,550	07/330,597	02/20/90
4,902,552	07/267,345	02/20/90
4,902,560	07/200,889	02/20/90
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4,902,574	07/108,238	02/20/90
4,902,579	07/242,095	02/20/90
4,902,586	07/399,674	02/20/90
4,902,588	07/202,265	02/20/90
4,902,591	07/186,255	02/20/90
4,902,606	07/227,473	02/20/90
4,902,615	07/032,007	02/20/90
4,902,626	07/056,275	02/20/90

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4,902,656	07/249,199	02/20/90
4,902,660	07/303,888	02/20/90
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4,902,667	07/236,659	02/20/90
4,902,668	07/236,658	02/20/90
4,902,672	07/371,294	02/20/90
4,902,675	06/848,670	02/20/90
4,902,696	07/105,850	02/20/90
4,902,709	07/231,322	02/20/90
4,902,712	06/861,331	02/20/90
4,902,715	07/223,199	02/20/90
4,902,716	06/682,896	02/20/90
4,902,717	06/913,672	02/20/90
4,902,730	07/232,013	02/20/90
4,902,754	07/253,692	02/20/90
4,902,756	07/253,693	02/20/90
4,902,763	07/199,566	02/20/90
4,902,768	07/176,221	02/20/90
4,902,773	07/128,903	02/20/90
4,902,777	07/176,217	02/20/90
4,902,780	07/385,956	02/20/90
4,902,787	07/184,382	02/20/90
4,902,791	07/181,760	02/20/90
4,902,799	07/060,393	02/20/90
4,902,808	07/271,127	02/20/90
4,902,813	07/280,852	02/20/90
4,902,814	07/069,443	02/20/90
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4,902,870	07/330,854	02/20/90
4,902,873	07/153;271	02/20/90
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4,902,881	07/205,237	02/20/90
4,902,884	07/178,014	02/20/90
4,902,890	07/241,503	02/20/90
4,902,893	07/388,763	02/20/90
4,902,920	07/249,283	02/20/90
4,902,933	07/246,605	02/20/90
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4,902,939	07/177,855	02/20/90
4,902,940	07/279,387	02/20/90
4,902,942	07/200,881	02/20/90
4,902,945	07/156,472	02/20/90
4,902,961	07/035,838	02/20/90
4,902,966	07/265,949	02/20/90
4,902,969	07/057,255	02/20/90
4,902,976	07/211,441	02/20/90
4,902,980	07/274,740	02/20/90
4,902,985	07/160,546	02/20/90
4,902,990	07/249,136	02/20/90
4,903,003	07/139,901	02/20/90
4,903,004	06/927,110	02/20/90
4,903,008	07/214,005	02/20/90
4,903,013	07/139,809	02/20/90
4,903,017	07/325,662	02/20/90
4,903,020	07/254,117	02/20/90
4,903,021	07/267,662	02/20/90
4,903,029	07/169,930	02/20/90
4,903,038	07/286,573	02/20/90
4,903,047	07/307,860	02/20/90
4,903,052	07/231,678	02/20/90
4,903,054	07/248,878	02/20/90
4,903,070	07/300,841	02/20/90
4,903,071	07/167,199	02/20/90
4,903,088	07/209,446	02/20/90
4,903,097	06/831,881	02/20/90
4,903,111	07/265.275	02/20/90
4,903,133	07/257,518	02/20/90
4,903,154	07/339,902	02/20/90
4,903,165	07/334,954	02/20/90
4,903,174	07/349,036	02/20/90
4,903,176	07/369,614	02/20/90
4,903,178	07/305,061	02/20/90
4,903,179	07/397,251	02/20/90
4,903,186	07/355,580	02/20/90
4,903,200	07/323,072	02/20/90
4,903,204	07/126,793	02/20/90
4,903,207	07/181,587	02/20/90
4,903,216	07/179,711	02/20/90
4,903,243	07/228,723	02/20/90
4,903,246	07/244,420	02/20/90
4,903,248	07/256,974	02/20/90
4,903,263	07/252,539	02/20/90
4,903,272	07/266,216	02/20/90
4,903,279	07/102,731	02/20/90
4,903,282	07/294,965	02/20/90
4,903,284	07/123,697	02/20/90
4,903,285	07/314,750	02/20/90
4,903,288	07/163,080	02/20/90
4,903,298	07/225,065	02/20/90
4,903,304	07/262,183	02/20/90
4,903,305	07/328,738	02/20/90
4,903,306	07/102,559	02/20/90
4,903,311	07/189,403	02/20/90
4,903,314	07/200,600	02/20/90
4,903,315	07/355,889	02/20/90
4,903,343	07/299,304	02/20/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,431,787	06/265,539	02/14/84	05/20/81	03/04/94
4,462,913	06/319,530	07/31/84	11/09/81	03/04/94
4,478,434	06/434,188	10/23/84	10/14/82	02/28/94
4,517,977	06/287,745	05/21/85	07/24/81	02/04/94
4,252,273	06/508,141	06/25/85	06/27/83	09/21/93
4,533,050	06/579,166	08/06/85	02/10/84	02/28/94
4,537,408	06/598,948	08/27/85	04/11/84	02/10/94
4,538,188	06/452,287	08/27/85	12/22/82	11/15/93
4,538,547	06/592,942	09/03/85	03/23/84	03/04/94
4,543,054	06/614,098	09/24/85	05/25/84	02/14/94
4,544,711	06/621,315	10/01/85	06/15/84	02/22/94
4,545,534	06/521,138	10/08/85	08/08/83	03/04/94

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Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,712,165	06/903,599	12/08/87	09/05/86	03/03/94
4,733,737	06/770,729	03/29/88	08/29/85	02/22/94
4,822,239	07/194,088	04/18/89	05/13/88	03/04/94
4,833,542	07/073,661	05/23/89	07/15/87	02/28/94
4,835,428	07/250,640	05/30/89	09/29/88	02/28/94
4,837,454	07/125,282	06/06/89	11/25/87	02/28/94
4,837,673	07/262,265	06/06/89	10/20/88	02/28/94
4,837,773	07/267,629	06/06/89	10/31/88	02/28/94
4,840,159	07/161,051	06/20/89	02/26/88	02/28/94
4,841,290	07/101,032	06/20/89	09/25/87	02/28/94
4,846,797	07/142,126	07/11/89	01/11/88	02/23/94
4,866,774	07/266,467	09/12/89	11/02/88	02/22/94
4,867,273	07/292,485	09/19/89	12/29/88	02/22/94
4,871,688	07/189,412	10/03/89	05/02/88	02/14/94
4,876,879	07/329,181	10/31/89	03/27/89	03/03/94
4,893,084	07/196,164	01/09/90	05/19/88	02/23/94

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,934,962, Re. S.N. 08/188,764, Jan. 31, 1994, Cl. 439/651, PLUG-IN ELECTRICAL OUTLET, Lionel T.V. Luu, et. al., Owner of Record: *Pacomex Industries, Inc., Indianapolis, Ind.*, Attorney or Agent: John T. Callahan, Ex. Gp.: 3202

4,966,713, Re. S.N. 08/173,458, Dec. 23, 1993, Cl. 210/705, PROCESS FOR THE TREATMENT OF WASTE FROM FOOD PROCESSING PLANTS, Daniel W. Keys, et. al., Owner of Record: *FMC Corp., Philadelphia, Pa.*, Attorney or Agent: Anthony L. Cupoli, Ex. Gp.: 1308

5,063,279, Re. S.N. 08/148,677, Nov. 4, 1993, Cl. 219/86.51, METHODS AND APPARATUS FOR FUSING ARMATURE AND STATOR WIRES, Alexander Rossi, Owner of Record: *Qxis U.S.A., Inc., Peabody, Mass.*, Attorney or Agent: Nicola A. Pisano, Ex. Gp.: 2106

5,087,975, Re. S.N. 08/194,301, Feb. 9, 1994, Cl. 348/135, VSB HDTV TRANSMISSION SYSTEM WITH REDUCED NTSC CO-CHANNEL INTERFERENCE, Richard W. Citta, et. al., Owner of Record: *Zenith Electronics Corp., Glenview, Ill.*, Attorney or Agent: Jack Kail, Ex. Gp.: 2615

5,115,959, Re. S.N. 08/184,670, Jan. 21, 1994, Cl. 228/4.1, SOLDERING MACHINE FOR ROPE CHAIN, Eitan Weinberg, et. al., Owner of Record: *AR-Gov., Inc., Fairlawn, N.J.*, Attorney or Agent: Max Moskowitz, Ex. Gp.: 3205

5,223,090, Re. S.N. 08/141,181, Oct. 21, 1993, Cl. 162/9, A METHOD FOR FIBER LOADING A CHEMICAL COMPOUND, John H. Klungness, et. al., Owner of Record: *The United States of America, As Represented by the Secretary of Agriculture, Washington, D.C.*, Attorney or Agent: James R. McBride, Ex. Gp.: 1303

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 335,133, Reexam. No. 90/003,345, Feb. 28, 1994, Cl. D16/102, SUNGLASSES FRAME, Diana S. Langley, Owner of Record: *Inventor, Dioptics Medical Products, San Luis Obispo, Calif.*, Attorney or Agent: Poms, Smith, Lande & Rose, Los Angeles, Calif., Ex. Gp.: 2092, Requester: Owner

4,640,933, Reexam. No. 90/003,340, Feb. 18, 1994, Cl. 521/094, EXPANDABLE POLYOLEFIN COMPOSITIONS AND PREPARATION PROCESS UTILIZING ISOBUTANE BLOWING AGENT, Chung P. Park, Owner of Record: *The Dow Chemical Co., Midland, Mich.*, Attorney or Agent: Richard G. Waterman, The Dow Chemical Co., Midland, Mich., Ex. Gp.: 1503, Requester: Owner

5,074,991, Reexam. No. 90/003,346, Feb. 28, 1994, Cl. 208/236, SUPPRESSION OF THE EVOLUTION OF HYDROGEN SULFIDE GASSES, Jerry T. Weers, Owner of Record: *Petrolite Corp., St. Louis, Mo.*, Attorney or Agent: Jeffrey S. Boone and/or Kenneth Solomon, Rogers, Howell & Haferkamp, St. Louis, Mo., Ex. Gp.: 1106, Requester: David L. Mossman, Rosenblatt & Associates, Houston; Tex.

5,144,195, Reexam. No. 90/003,342, Feb. 22, 1994, Cl. 315/094, CIRCUIT FOR DRIVING AT LEAST ONE GAS DISCHARGE LAMP, John G. Konopka, et. al., Owner of Record: *Motorola Lighting, Inc., Buffalo Grove, Ind.*, Attorney or Agent: Peter D. Hudson, Schaumburg, Ill., Ex. Gp.: 2502, Requester: Warren A. Sklar, Renner, Otto, Boisselle & Sklar, Cleveland, Ohio

5,148,802, Reexam. No. 90/003,348, Mar. 2, 1994, Cl. 128/204.18, METHOD AND APPARATUS FOR MAINTAINING AIRWAY PATENCY TO TREAT SLEEP APNEA AND OTHER DISORDERS, Mark H. Sanders, et. al., Owner of Record: *Respironics, Inc., Monroeville, Pa.*, Attorney or Agent: J. Stewart Brams, Pittsburgh, Pa., Ex. Gp.: 3307, Requester: Puritan-Bennett Corp., Overland Park, Kans.

5,177,948, Reexam. No. 90/003,347, Mar. 1, 1994, Cl. 057/249, YARN AND GLOVE, Nathaniel H. Kolmes, et. al., Owner of Record: *Nathaniel H. Kolmes, Hickory, N.C., Harold F. Plemmons, Millers Creek, N.C.*, Attorney or Agent: Howard A. McCord, Greensboro, N.C., Ex. Gp.: 2400, Requester: World Fibers Co., Concord, N.C.

5,185,995, Reexam. No. 90/003,341, Feb. 22, 1994, Cl. 059/080, ROPE CHAIN WITH NOVEL LINK, Giuseppe Dal Monte, Owner of Record: *Ore America, Inc., Burbank, Calif.*, Attorney or Agent: Drucker & Sommers, Beverly Hills, Calif., Ex. Gp.: 3201, Requester: Samson Helfgott, Helfgott & Karas, New York, N.Y.

5,269,748, Reexam. No. 90/003,343, Feb. 24, 1994, Cl. 602/027, THERAPEUTIC LEG AND FOOT DEVICE, Robert Lonardo, Owner of Record: *Restorative Care of America, Inc., Clearwater, Fla.*, Attorney or Agent: Donald H. Zarley, Zarley, McKie, Thomte, Voorhees & Sease, Des Moines, Ia., Ex. Gp.: 3302, Requester: Select Medical Products, Inc., Pinellas Park, Fla.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED MARCH 14, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
91,949	71/056,476	06/10/1913
91,951	71/059,978	06/10/1913
91,952	71/059,982	06/10/1913
91,959	71/064,201	06/10/1913
91,971	71/067,917	06/10/1913
91,974	71/057,574	06/10/1913
91,990	71/066,832	06/10/1913
92,008	71/067,524	06/10/1913
92,021	71/065,470	06/10/1913
92,024	71/049,483	06/10/1913
303,654	71/331,449	06/06/1933
303,655	71/331,448	06/06/1933
303,682	71/334,027	06/06/1933
303,683	71/334,010	06/06/1933
303,709	71/329,347	06/06/1933
303,710	71/328,787	06/06/1933
303,715	71/326,820	06/06/1933
303,723	71/333,928	06/06/1933
303,766	71/333,368	06/06/1933
303,786	71/334,194	06/06/1933
303,791	71/334,197	06/06/1933
303,796	71/334,304	06/06/1933
303,802	71/335,407	06/06/1933
444,774	71/472,499	06/09/1953
575,360	71/556,475	06/09/1953
575,364	71/571,389	06/09/1953
575,365	71/571,911	06/09/1953
575,366	71/576,153	06/09/1953
575,367	71/576,155	06/09/1953
575,368	71/576,156	06/09/1953
575,374	71/586,775	06/09/1953
575,375	71/587,093	06/09/1953
575,377	71/591,518	06/09/1953
575,382	71/597,558	06/09/1953
575,383	71/597,822	06/09/1953
575,388	71/604,517	06/09/1953
575,395	71/608,680	06/09/1953
575,402	71/610,033	06/09/1953
575,414	71/612,783	06/09/1953
575,415	71/613,199	06/09/1953
575,428	71/615,367	06/09/1953
575,437	71/617,453	06/09/1953
575,440	71/618,102	06/09/1953
575,441	71/618,298	06/09/1953
575,444	71/618,920	06/09/1953
575,451	71/620,206	06/09/1953
575,464	71/621,186	06/09/1953
575,466	71/621,468	06/09/1953
575,469	71/622,027	06/09/1953
575,472	71/622,274	06/09/1953
575,482	71/622,816	06/09/1953
575,498	71/624,029	06/09/1953
575,500	71/624,088	06/09/1953
575,506	71/624,880	06/09/1953
575,511	71/625,676	06/09/1953
575,516	71/626,302	06/09/1953
575,517	71/626,307	06/09/1953
575,531	71/628,146	06/09/1953
575,532	71/628,388	06/09/1953
575,535	71/628,659	06/09/1953
575,542	71/629,057	06/09/1953
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575,576	71/631,761	06/09/1953
575,577	71/631,767	06/09/1953
575,587	71/632,212	06/09/1953
575,595	71/632,695	06/09/1953
575,597	71/632,817	06/09/1953
575,600	71/632,908	06/09/1953
575,601	71/632,932	06/09/1953
575,602	71/633,159	06/09/1953
575,603	71/633,204	06/09/1953
575,606	71/633,304	06/09/1953
575,611	71/633,468	06/09/1953
575,625	71/634,178	06/09/1953
575,636	71/634,526	06/09/1953
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575,641	71/634,663	06/09/1953
575,642	71/634,724	06/09/1953
575,644	71/634,754	06/09/1953
575,671	71/636,318	06/09/1953
575,674	71/636,806	06/09/1953
575,675	71/636,813	06/09/1953
575,681	71/637,618	06/09/1953
575,682	71/637,769	06/09/1953
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960,183	72/405,869	06/05/1973
960,186	72/422,393	06/05/1973
960,188	72/424,855	06/05/1973
960,193	72/418,468	06/05/1973
960,194	72/370,484	06/05/1973
960,198	72/418,574	06/05/1973
960,199	72/345,218	06/05/1973
960,200	72/369,384	06/05/1973
960,209	72/426,264	06/05/1973
960,210	72/426,292	06/05/1973
960,212	72/426,469	06/05/1973
960,214	72/426,876	06/05/1973
960,216	72/427,239	06/05/1973
960,218	72/427,640	06/05/1973
960,219	72/427,663	06/05/1973
960,221	72/427,799	06/05/1973
960,223	72/427,801	06/05/1973
960,225	72/427,991	06/05/1973
960,227	72/426,688	06/05/1973
960,228	72/357,233	06/05/1973
960,235	72/410,718	06/05/1973
960,238	72/411,095	06/05/1973
960,239	72/412,065	06/05/1973
960,241	72/421,741	06/05/1973
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960,272	72/415,891	06/05/1973
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960,307	72/412,883	06/05/1973
960,312	72/407,943	06/05/1973
960,314	72/412,975	06/05/1973
960,315	72/413,078	06/05/1973
960,324	72/420,659	06/05/1973
960,326	72/421,600	06/05/1973
960,329	72/423,806	06/05/1973
960,338	72/429,411	06/05/1973
960,339	72/429,492	06/05/1973
960,340	72/429,546	06/05/1973
960,347	72/400,150	06/05/1973
960,348	72/403,896	06/05/1973
960,349	72/404,084	06/05/1973
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960,370	72/397,945	06/05/1973
960,372	72/402,615	06/05/1973
960,373	72/403,801	06/05/1973
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960,401	72/431,957	06/05/1973
960,402	72/420,029	06/05/1973
960,404	72/430,674	06/05/1973
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960,406	72/420,224	06/05/1973
960,407	72/341,890	06/05/1973
960,409	72/409,905	06/05/1973
960,420	72/432,630	06/05/1973
960,421	72/434,919	06/05/1973
960,425	72/406,705	06/05/1973
960,426	72/408,727	06/05/1973
960,428	72/434,917	06/05/1973
960,431	72/396,481	06/05/1973
960,434	72/404,011	06/05/1973
960,437	72/406,667	06/05/1973
960,441	72/414,707	06/05/1973
960,443	72/417,086	06/05/1973
960,447	72/418,676	06/05/1973
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960,457	72/414,299	06/05/1973
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960,462	72/421,890	06/05/1973
960,463	72/422,033	06/05/1973
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960,484	72/423,241	06/05/1973
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960,490	72/424,567	06/05/1973
960,492	72/418,330	06/05/1973
960,493	72/409,644	06/05/1973
960,495	72/417,933	06/05/1973
960,497	72/418,946	06/05/1973
960,498	72/419,412	06/05/1973
960,499	72/420,374	06/05/1973
960,500	72/422,445	06/05/1973
960,501	72/424,306	06/05/1973
960,502	72/424,308	06/05/1973
960,503	72/424,310	06/05/1973
960,504	72/424,700	06/05/1973
960,505	72/419,555	06/05/1973
960,509	72/392,677	06/05/1973
960,517	72/319,357	06/05/1973
960,520	72/401,520	06/05/1973
960,526	72/410,025	06/05/1973
960,532	72/412,962	06/05/1973
960,534	72/414,646	06/05/1973
960,537	72/417,618	06/05/1973
960,538	72/418,516	06/05/1973
960,543	72/421,417	06/05/1973
960,544	72/422,044	06/05/1973
960,545	72/422,134	06/05/1973
960,547	72/423,559	06/05/1973
960,548	72/423,700	06/05/1973
960,550	72/424,107	06/05/1973
960,552	72/424,670	06/05/1973
960,558	72/426,226	06/05/1973
960,559	72/426,938	06/05/1973
960,561	72/427,279	06/05/1973
960,565	72/409,784	06/05/1973
960,567	72/417,613	06/05/1973
960,570	72/370,230	06/05/1973
960,572	72/413,846	06/05/1973
960,573	72/413,847	06/05/1973
960,574	72/415,414	06/05/1973
960,575	72/425,771	06/05/1973
960,576	72/426,677	06/05/1973
960,579	72/420,833	06/05/1973
960,581	72/421,270	06/05/1973
960,583	72/320,665	06/05/1973
960,585	72/387,318	06/05/1973
960,592	72/398,936	06/05/1973
960,598	72/406,436	06/05/1973
960,599	72/406,438	06/05/1973
960,602	72/413,945	06/05/1973
960,604	72/415,063	06/05/1973
960,605	72/422,156	06/05/1973
960,606	72/422,617	06/05/1973
960,607	72/422,623	06/05/1973
960,609	72/422,817	06/05/1973
960,612	72/425,454	06/05/1973
960,616	72/414,543	06/05/1973
960,617	72/415,202	06/05/1973
960,618	72/417,385	06/05/1973
960,623	72/375,206	06/05/1973
960,629	72/418,268	06/05/1973
960,635	72/399,422	06/05/1973
960,637	72/414,604	06/05/1973
960,638	72/415,865	06/05/1973
960,642	72/425,387	06/05/1973
960,644	72/421,224	06/05/1973
960,645	72/365,045	06/05/1973
960,648	72/414,226	06/05/1973
960,652	72/395,361	06/05/1973
960,654	72/411,004	06/05/1973
960,656	72/416,231	06/05/1973
960,657	72/421,387	06/05/1973
960,664	72/398,889	06/05/1973
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961,794	72/403,963	06/19/1973

Errata

"All reference to Patent No. B1 4,428,583 (2165th) to Hugh B. Feagle of Alabama for `AIRBORNE TARGET GENERATING AN EXHAUST PLUME SIMULATING THAT OF A JET POWERED AIRCRAFT´ appearing in the *Official Gazette* of Dec. 28, 1993 should be deleted since no patent was granted."

"All reference to Patent No. 5,287,336 to Kiyonobu Endo, et. al., of Japan for `OPTICAL PICKUP USING SPLIT BEAMS IMPINGING ON DIFFERENT PHOTO-DETECTOR AREAS´ appearing in the *Official Gazette* of Feb. 15, 1994 should be deleted since no patent was granted."

"All refernce to Patent No. 5,299,248 to Norbert J. Pelc Of Calif., for `REDUCED FIELD-OF-VIEW SYSTEM FOR IMAGING COMPACT EMBEDDED STRUCTURES´ appearing in the *Official Gazette* of Mar. 29, 1994 should be deleted since no patent was granted."

Register of Government Interest in Patents

As outlined in 37 CFR 7.1, Federal departments, executive agencies, including Government-owned or Government-controlled corporations, are required to forward promptly to the Office for recording all licenses, assignments, or other interests of the Government in or under patents or applications for patents.

Documents forwarded for recording in the Government Register must meet the requirements outlined in 37 CFR 3.21 through 3.28. Each document must be accompanied by a cover sheet as required by 37 CFR 3.31.

The Office does not receive appropriated funds for its recordation functions. Accordingly, documents to be recorded in the Government Register must be accompanied by the appropriate fee as set in 37 CFR 1.21(h). Payment may be in the form of a check made payable to the Commissioner of Patents and Trademarks or by authorization to charge a deposit account.

For information on the Government Register and how to submit documents to be recorded, please contact Audrey C. Britt, Manager, Assignment Division, at (703) 308-9706. Information on establishing/maintaining deposit accounts may be obtained from Barbara Fridie, Office of Finance, at (703) 308-0903.

April. 5, 1994

THERESA A. BRELSFORD
Assistant Commissioner
for Public Services and Administration

Nonregistrability of Misleading Geographic Indications--Amendment of the Trademark Act by the North American Free Trade Agreement Implementation Act

Article 1712 of the North American Free Trade Agreement (NAFTA) requires the United States, Canada and Mexico to prohibit the use or Trademark registration of geographical indications in connection with goods that do not originate in the indicated territory, region or locality, if the public would be misled as to the geographical origin of the goods.[1]

President Clinton signed the "North American Free Trade Agreement Implementation Act," Public Law 103-182, 107 Stat. 2057, on Dec. 8, 1993. The legislation. amending Sections 2(e), 2(f) and 23(a) of the Trademark Act, applies to applications filed on or after Dec. 8, 1993, and took effect on Jan. 1, 1994. The Act, entitled "An Act to provide for the registration and protection of trademarks in commerce, to carry out the provisions of certain international conventions, and for other purposes," approved July 5, 1946, commonly referred to as the Trademark Act of 1946, has been amended as indicated. Amendments are shown in italics:

I. Subsection 2(e) (15 U.S.C. 1052(e)):

"(e) Consists of a mark which (1) when used on or in connection with the goods of the applicant is merely descriptive or deceptively misdescriptive of them, (2) when used on or in connection with the goods of the applicant is primarily geographically descriptive of them, except as indications of regional origin may be registrable under section 4, (3) when used on or in connection with the goods of the applicant is primarily geographically deceptively misdescriptive of them, or (4) is primarily merely a surname."

II. Subsection (f) (15 U.S.C. 1052(f)):

"(f) Except as expressly excluded in paragraphs (a), (b), (c), *(d), and (e)(3)* of this section, nothing herein shall prevent the registration of a mark used by the applicant which has become distinctive of the applicant's goods in commerce. The Commissioner may accept as prima facie evidence that the mark has become distinctive, as used on or in connection with the applicant's goods in commerce, proof of substantially exclusive and continuous use thereof as a mark by the applicant in commerce for the five years before the date on which the claim of distinctiveness is made. *Nothing in this section shall prevent the registration of a mark which, when used on or in connection with the goods of the goods of the applicant, is primarily geographically deceptively misdescriptive of them, and which became distinctive of the applicant's goods in commerce before the date of the enactment of the North American Free Trade Agreement Implementation Act."*

III. Section 23(a)(15 U.S.C 1091(a)):

"(a) In addition to the principle register, the Commissioner shall keep a continuation of the register provided in paragraph (b) of section 1 of the Act of March 19, 1920, entitled "An Act to give effect to certain provisions of the convention for the protection of trademarks and commercial names, made and signed in the city of Buenos Aires, in the Argentine Republic, August 20, 1910, and for other purposes", to be called the supplemental register. All marks capable of distinguishing applicant's goods or services and not register herein provided, except those declared to be unregistrable under subsections (a), (b), (c), *(d), and (e)(3)* of section 2 of this Act, which are in lawful use in commerce by the owner thereof, on or in connection with any goods or services may be registered on the supplemental register upon the payment of the prescribed fee and compliance with the provisions of subsections (a) and (e) of section 1 so far as they are applicable. *Nothing in this section shall prevent the registration on the supplemental register of a mark, capable of distinguishing the applicant's goods or services and not registrable on the principal register under this Act, that is declared to be unregistrable under section 2(e)(3), if such mark has been in lawful use in commerce by the owner thereof, on or in connection with any goods or services, since before the date of the enactment of the North American Free Trade Agreement Implementation Act."*

A mark which is unregistrable on the Principal Register under 2(e)(3) of the Trademark Act, as amended, on the ground that it is primarily geographically deceptively misdescriptive of the goods or services, may be registered under 2(f) only if it became distinctive of the goods or services in commerce before December 8, 1993. Similarly, such a mark, capable of distinguishing the applicant's goods or services, may be registered on the Supplemental Register only if it has been in lawful use in commerce by the owner since before December 8, 1993. A mark that is unregistrable under 2 (e)(3) because it contains matter which is primarily geographically deceptively misdescriptive of the goods or services will not be rendered registrable by a disclaimer of the geographically deceptively misdescriptive component. Matter which is primarily geographically deceptively misdescriptive may be omitted or deleted from the drawing in appropriate cases.

[1] The Article also prohibits any use constituting unfair competition within the meaning of Article 10bis (Unfair Competition) of the Paris Convention.

April 1, 1994

ROBERT ANDERSON
Acting Assistant Commissioner
for Trademarks

Notice of Examination for Registration Wednesday, November 2, 1994

Pursuant to the provisions of 37 CFR §§ 10.5, 10.6 and 10.7, an examination for persons seeking registration before the U.S. Patent Trademark Office as patent attorneys and agents will be held on *Wednesday, November 2, 1994*. The deadline for filing applications along with the *$300.00* examination fee and all necessary showings required by 37 CFR § 10.7(a) and (b) is *August 1, 1994*.

With the exception of those persons who actively served four years or more in the patent examining corps of the U.S. Patent and Trademark Office for whom the examination may be waived, all persons who wish to become recognized to practice before the U.S. Patent and Trademark Office in patent cases must, pursuant to the above noted rules, pass the examination. Note that passing the examination does not qualify one for recognition for practice before the U.S. Patent and Trademark Office in trademark cases. Such recognition is governed by 37 CFR § 10.14 which does not require the passing of an examination.

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There is no limit on the number of times the registration examination may be taken. The examination consists of two parts, a morning section and an afternoon section. To pass the examination, an applicant must pass both sections. An applicant who passes one section of the examination, but who fails the other section, will not be required to retake the section passed, *provided* the applicant takes and passes the section failed in one of the next three examinations regularly scheduled by the U.S. Patent and Trademark Office. If the applicant does not pass the section failed in one of the next three examinations scheduled, the applicant must retake both sections of the examination. No extensions of time will be granted except in extraordinary circumstances, e.g., an accident or hospitalization just prior to the examination which prevented the applicant from taking the examination.

Application forms may be obtained from the Office of Enrollment and Discipline, Suite 4B30, 2900 Crystal Drive, South Tower, Arlington, Va., by mail addressed to U.S. Patent and Trademark Office, Box OED, Washington, D.C., 20231 or by calling (703) 308-9618.

April 8, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The March 1, 1994 *Official Gazette* listed names of the persons who successfully passed the Oct. 13, 1993 registration examination. However, the names of the following persons were inadvertently omitted from the list. These persons passed the examination and have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR § 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before June 17, 1994.

Kappos, John C., 2901 S. Sepulveda Blvd., #232, Los Angeles, Calif., 90064
Kavounas, Gregory T., 10159 Pinewood Ave., #102, Tujunga, Calif., 91042
Kegel, Thomas Michael, 723 N. 79th St., Wauwatosa, Wis., 53213
Keller, Bradley Allen, 320 Triangle Ave., Dayton, Ohio 45419
Kenny, John Robert, 132 E. 45th St., #6F, New York, N.Y., 10017
Khosla, Pankaj, 458 Canton Rd., Akron, Ohio 44312
Kilponen, Ronald Robert, 65 Plymouth Rd., Pellingham, Mass., 02019
Kinsella, N. Stephan, 4848 Pin Oak Pk., #703, Houston, Tex., 77081
Kleinberg, Hershel Alan, 2917F Woodley St., Arlington, Va., 22206
Knoll, Randall L., 10255 Juno Ave. North, Stillwater, Minn., 55082
Knops, Peter Charles, 6318 N. Rosebury, #1W, Clayton, Mo., 63105

April 8, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Castle Watchers, Inc., Lake Oswego, Oreg., Reg. No. 930,991, for the mark "CASTLE WATCHERS", Canc. No. 20,475.

Simplan Systems, Inc., Chapel Hill, N.C., Reg. No. 1,206,710 for the mark "SIMPLAN", Canc. No. 20,165.

Christina L. Sullivan d.b.a. Bombshell, Los Angeles, Calif., Reg. No. 1,558,113 for the mark "BOMBSHELL", Canc. No. 22,000.

Royale Airlines. Inc., Shreveport, La., Reg. No. 1,444,494, for the mark "ROYALE", Canc. No. 21,241.

Apollo Motor Homes, Inc., Downey Calif., Reg. No. 982,474, for the mark "RING OF STEEL MEANS RING OF SAFETY AND DESIGN", Canc. No. 21,458.

National Associates of Unknown Players, Santa Monica, Calif., Reg. No. 1,433,844, for the mark "PLAYER'S WORLD", Canc. No. 21,502.

Air Time Share, Inc., New York, N.Y., Reg. No. 1,646,303, for the mark "FARE-SHARE", Canc. No. 21,681.

Philbeck, Inc., d.b.a Shananigans, Cincinnati, Ohio, Reg. No. 1,722,348, for the mark "SHANANIGANS AND DESIGN", Canc. No. 21,687.

The Exchange Club Fair of Charleston, Inc., Charleston, S.C., Reg. No. 1,089,883, for the mark "THE BATTLE OF THE BANDS", Canc. No. 21,909.

JEAN BROWN
Administrator of the
Trademark Trial and
Appeal Board
For ROBERT M. ANDERSON
Acting Assistant Commissioner
for Trademarks

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner
for Patents

Certificate of Correction Issue For May 3, 1994

Re. 34,299
Re. 34,414
D. 308,623
D. 329,912
D. 331,886
D. 335,313
D. 340,497
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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

March 14-18, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
3-14	EX	74/179,111	Tom Togs of Carolina, Inc.	2(d)	Refusal Reversed		"MERLINS CLOSET" [seasonal sleepwear for infants and toddlers having a Halloween theme]	"MERLIN" [footwear]	No
3-14	EX	73/789,838	Pep Boys Manny, Moe & Jack	Section 6 disclaimer requirement (of words "AUTOMOTIVE SUPERCENTER")	Refusal Affirmed (only as to requirement for disclaimer of "AUTOMOTIVE"		"AMERICA'S AUTOMOTIVE SUPERCENTER (and design) [retail automotive store services]		No
3-14	CANC	19,281	Amodeo v. Optimist Club of Western Lehigh, Inc.	2(d)	Petition to Cancel Granted	"BE SMART! DON'T START! DON'T TAKE DRUGS!" (and heart design)[various goods and services for use in the field of drug abuse prevention]	"BE SMART! DON'T START DRUGS" (and owl design) [conducting classes and seminars on preventive drug awareness]		No
3-14	OPP	85,199	Coleman Co. v. Igloo Products Corp.	2(e)(1)	Opposition Dismissed		"PICNIC BASKET" [portable ice chests for food and beverages		No
3-15	EX	74/183,872	Moran Foods, Inc.	2(d)	Refusal Affirmed		"IN A JIFFY"[non-frozen microwaveable packaged prepared meat-based entrees]	"JIFFY'S (in stylized lettering) [frozen dinners,etc.]	No
3-15	EX	74/205,697	SDS Enterprises, Inc.	2(d)	Refusal Affirmed		"STEEL SHIELD" [preparation for enhancing and protecting appearance of the exterior painted surfaces of motor vehicles]	"STEELSHIELD" [rust proofing compound]	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
3-17	EX	74/177,140	Charles Hill Silks Ltd.	2(d)	Refusal Reversed		"CHARLES HILL" [men's shirts, ties and cravats]	"MEADOW MOUNTAIN DESIGNS DESK JEWELRY BY CHARLES HILL" (in stylized lettering) [paperweights]	No
3-17	EX	74/178,345	Verifone, Inc.	2(e)(1)	Refusal Affirmed		"THE TRANSACTION AUTOMATION COMPANY" [computers, computer programs for use in transaction processing and financial applications, etc.]		No
3-17	EX	74/135,059	Michael J. Macsas et. al.	2(d)	Refusal Affirmed		"HAMBURGER KING--FAMOUS FOR HAMBURGERS SINCE 1927" (and design) [resturant services]	"BURGER KING" (and design) [resturant services] et al.	No
3-18	EX	74/198,873	Supreme Oil Co.	2(d)	Refusal Affirmed		"SCHOOL DAYS" [edible oils, mayonnaise, salad dressings, and mustards sold to the institutional trade]	"SCHOOL DAY" [peanut butter]	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
3-17	CANC	20,530	Halibrand Engineering Inc. v. Lehal	ownership (whether, in view of an existing contract, respondent has a right to use the registered mark)	Petition to Cancel Denied		"NATIONAL HALIBRAND" (in stylized lettering) (and checkered flag design) [fully assembled drive train, differential and rear axle assembly for use in motor vehicles and parts therefor]		No
3-17	EX	74/124,611	Kraft General Foods, Inc.	2(e)(1)	Refusal Affirmed		"QUICK LUNCH" [packaged meals or side dishes composed primarily of pasta]		No
3-17	EX	73/801,901	Lockman Foundation	whether the matter asserted for registration identifies a single literary work or a series of such works	Refusal Reversed		"AMPLIFIED" [Bibles, New Testaments, and separate portions thereof, separate portions of the Old Testament, and concordances to the Bible]		No
3-17	EX	74/191,269	Nabisco, Inc.	2(d)	Refusal Affirmed		"MEGA 10 PAK" [bubble gum]	"MEGABUBBLE" [bubble gum and candy]	No
3-17	EX	74/176,322	Mamiye Brothers, Inc.	2(e)(1)	Refusal Reversed		"BABY BASICS" [children's clothing, namely, shirts, pants, jackets, overalls and sweaters]		No
3-17	EX	74/182,849	William D. Myers	2(e)(1)	Refusal Affirmed		"BIOPATENT DEVELOPMENT" [medical product development services]		No
3-17	EX	74/162,296	Lady In Red, Ltd.	2(d)	Refusal Affirmed		"RED HEAT" [cologne]	"HEAT" (in stylized lettering) [perfume and cologne]	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

The following special departments should be used only for their specified purpose. Address mail as follows:

Commissioner of Patents and Trademarks
Box _____
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Va. 22215
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents except: trademark registrations and assignments.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — JOHN DOLL, Acting Director	308-0661	5/17/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	3/11/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	7/26/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	5/24/93
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	7/28/93
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SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	10/05/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	4/13/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS* GROUP 2400 — CARLTON CROYLE, Director	308-0771	4/18/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/25/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	9/23/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	7/21/92
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HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	4/26/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	4/05/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	5/13/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	11/20/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	6/03/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during April 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,015,294 to 4,020,506 inclusive
Plant Patents ..... 4,032 to 4,045

TRADEMARK OPERATION

Bruce Lehman, Commissioner
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Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of April 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/12/93	12/10/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/22/93	02/14/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/06/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/93	01/18/94
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/28/93	12/10/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/93	01/18/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments- Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	01/03/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering- Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/22/93	02/22/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/12/93	12/29/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/15/93	03/03/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/10/94	02/22/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/29/93	01/25/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/17/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	11/15/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

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REEXAMINATIONS

MAY 3, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,116,728 (2284th)

TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES

Joseph J. Becker; Fred E. Luborsky; Israel S. Jacobs, and Richard O. McCary, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Reexamination Request No. 90/002,931, Jan. 8, 1993.
Reexamination Certificate for Patent No. 4,116,728, issued Sep. 26, 1978, Ser. No. 719,914, Sep. 2, 1976.
Int. Cl.[5] C21D *1/04*
U.S. Cl. 148—108

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

New claims **11–17** are added and determined to be patentable.

11. A method for processing magnetic amorphous alloys to control the shape of the hysteresis loop of said alloys, said method comprising the steps of:

heating an amorphous magnetic alloy to a temperature above its Curie temperature sufficient to achieve stress relief but less than that required to initiate crystallization; and then

controllably cooling said alloy through its Curie temperature and in the presence of a magnetic field to produce a dc remanence ratio Mr/Ms of approximately 0.9, the rate of cooling being between approximately 0.1° C. per minute and approximately 100° C. per minute whereby magnetic amorphous alloys are usable in a greater variety of magnetic circuit applications.

B1 4,177,136 (2285th)

HYDROTREATING PROCESS UTILIZING ELEMENTAL SULFUR FOR PRESULFIDING THE CATALYST

Daniel R. Herrington, Chesterland, and Albert P. Schwerko, Solon, both of Ohio, Division of Ser. No. 866,208, Jan. 3, 1978, assignors to The Standard Oil Company, Cleveland, Ohio

Reexamination Request No. 90/002,798, Jul. 24, 1992.
Reexamination Certificate for Patent No. 4,177,136, issued Dec. 4, 1979, Ser. No. 905,322, May 12, 1978.
Int. Cl.[5] C10G *45/04*
U.S. Cl. 208—215

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are cancelled.

[1. In a process of hydrotreating a hydrocarbon feed stock, which contains compounds with carbon-sulfur bonds, carbon-nitrogen bonds, and carbon-oxygen bonds, by contacting the hydrocarbon feed stock with hydrogen at an elevated temperature and with a hydrotreating catalyst to remove sulfur, nitrogen and oxygen from the hydrocarbon feed stock the improvement comprising using as at least part of a sulfided catalyst, a supported metal oxide catalyst, wherein said supported metal oxide cotalyst is presulfided by the step of:

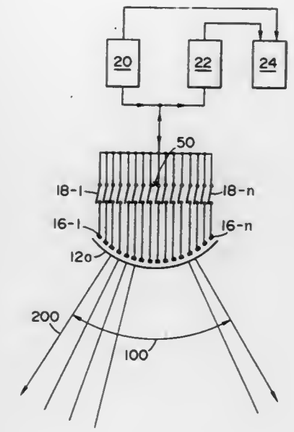
contacting said supported metal oxide catalyst with elemental sulfur in the absence of hydrogen in such a manner that said elemental sulfur is at least partially incorporated in the pores of said catalyst.]

B1 4,344,327 (2286th)

ELECTRONIC SCANNING ULTRASONIC DIAGNOSTIC SYSTEM

Yoshihiro Yoshikawa; Takao Katabami; Katsumi Fujinaga, and Yoshiaki Kobayashi, all of Mitaka, Japan, assignors to Aloka Co. Ltd., Tokyo, Japan

Reexamination Request No. 90/002,313, Apr. 2, 1991.
Reexamination Certificate for Patent No. 4,344,327, issued Aug. 17, 1982, Ser. No. 219,578, Dec. 23, 1980.
Claims priority, application Japan, Dec. 28, 1979, 54-170408; Dec. 28, 1979, 54-170409
Int. Cl.[5] G01N *29/04;* A61B *8/14*
U.S. Cl. 73—626



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–3**, dependent on an amended claim, are determined to be patentable.

1. An electronic scanning ultrasonic diagnostic system comprising:

a probe [havng] *having* ultrasonic beam emitting surface which is pressed to contact the surface of a body to be examined and in which plural ultrasonic wave transducers are convexly arranged at equal distances, said probe emitting desired sector scanning ultrasonic beams into the body without intermediate medium material; and

means for energizing to drive selected ultrasonic wave [trasducers] *transducers* out of said plural ultrasonic wave transducers according to [the] *a* predetermined *transmitting and receiving timing* program [at every timing of transmitting and receiving waves] *to emit a basic ultrasonic beam directed toward the direction of a center normal line of an arc formed by said selected ultrasonic wave transducers and at least one supplemental beam having a different beam directivity to said basic ultrasonic beam.*

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B1 4,378,313 (2287th)
REACTIVE YELLOW DYE HAVING BOTH MONOCHLOROTRIAZINYL AND VINYLSULFONE TYPE REACTIVE GROUPS
Yutaka Kayane, Moriguchi; Masaki Sunami, Toyonaka, and Yasuo Tezuka, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Reexamination Request No. 90/002,996, Mar. 10, 1993.
Reexamination Certificate for Patent No. 4,378,313, issued Mar. 29, 1983, Ser. No. 153,633, May 27, 1980.
Claims priority, application Japan, Jun. 1, 1979, 54-69127; Jul. 11, 1979, 54-88502; Dec. 20, 1979, 54-166705; Dec. 20, 1979, 54-166706
Int. Cl.[5] C09B *62/08, 62/51;* **D06P** *1/382, 3/66*
U.S. Cl. 534—638

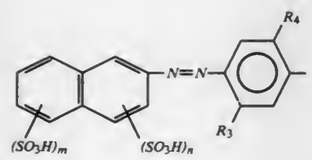
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

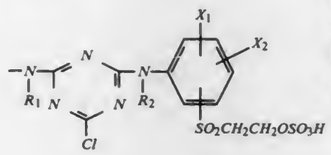
The patentability of claims 3 to 5 is confirmed.

Claims 1 and 2 are cancelled.

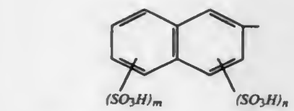
New claim 6 is added and determined to be patentable.

6. A compound of the formula, in the form of free acid,

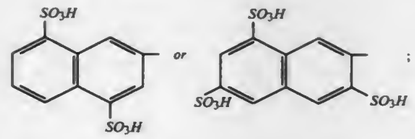




wherein
R_1, and X_1 and X_2 are hydrogen;
R_2 is hydrogen;
the residue of the formula,



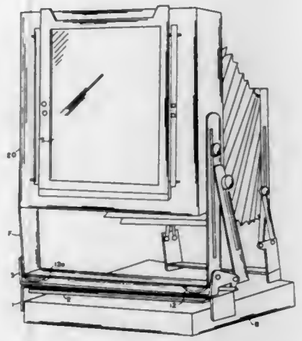
is



;

R_3 is methyl, acetylamino or ureido; and
R_2 is hydrogen or methoxy;
provided that R_4 is methoxy when R_3 is methyl.

B1 4,602,860 (2288th)
CAMERA FOCUSING MEANS
Morris Hoffman, 19 Grand Ave., Farmingdale, N.Y. 11735
Reexamination Request No. 90/002,731, May 22, 1992.
Reexamination Certificate for Patent No. 4,602,860, issued Jul. 29, 1986, Ser. No. 686,448, Feb. 6, 1985.
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—160



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–3 are determined to be patentable as amended.

New claims 4–7 are added and determined to be patentable.

1. In a camera of the folding or flat bed type having a base, a moveable frame, a box member *located in said frame, a ground glass viewing screen supported in said box member,* [and] the camera being focused by looking at the ground glass viewing screen [supported on the frame] which is *selectively* moveable for focusing, [the viewing screen being mounted in the box member]:

means mounted on the moveable frame for raising and *lowering the viewing screen while simultoneously constraining the pivoting of said viewing screen relative to the frame and* means mounted on the base for tilting [the] said viewing screen[,] *and* the tilting means being pivoted on the base, *having a fixed pivot axis* at the bottom of the frame *extending trasnversely of said base,* the tilting and raising means being separate and independent, whereby when the viewing screen is raised, the amount of tilt of the viewing screen remains constant, *and when the viewing screen is tilted the height of the viewing screen is unaffected,* and means to lock the viewing screen in position after focusing.

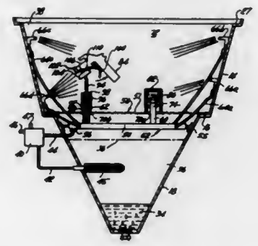
B1 4,615,806 (2289th)
REMOVAL OF IODIDE COMPOUNDS FROM NON-AQUEOUS ORGANIC MEDIA
Charles B. Hilton, Corpus Christi, Tex., assignor to American Hoechst Corporation
Reexamination Request No. 90/003,078, Jun. 1, 1993.
Reexamination Certificate for Patent No. 4,615,806, issued Oct. 7, 1986, Ser. No. 708,992, Mar. 7, 1985.
Int. Cl.[5] B01D *15/04*
U.S. Cl. 210—690

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

1. A method for removing iodide compounds from a non-aqueous organic medium comprising contacting the medium containing said iodide compounds with an ion exchange resin characterized in that the resin is a macroreticulated strong-acid cation exchanged resin which is stable in the organic medium and has at least one percent of its active sites converted to the silver or mercury form.

B1 4,793,369 (2290th)
SPRAY GUN AND ASSOCIATE PARTS WASHER AND RECYCLER
Richard A. Robb, West Bloomfield, Mich.; Michael J. Grubb, London, Canada; John J. Grubb, Calgary, Canada, and James T. Asanger, Carstairs, Canada, assignors to Herkules Equipment Corporation, Walled Lake, Mich. and A.B.T. Equipment and Manufacturing Ltd., Calgary, Canada
Reexamination Request No. 90/002,656, Mar. 2, 1992.
Reexamination Certificate for Patent No. 4,793,369, issued Dec. 27, 1988, Ser. No. 904,097, Sep. 5, 1986.
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—170



As a result of reexamination, it has been determined that:

The patentability of claims 1–16 is confirmed.

16. A paint removal system for cleaning paint from a object comprising:

a housing divided so that a portion thereof forms a work chamber;

fluid means including at least a first outlet adapted to receive pressurized cleaning agent;

said first outlet including means for supporting a spray gun and for directing cleaning agent to flow through spray gun including a passage adapted to receive an inlet tube of a spray gun wherein said passage comprises a stepped passage;

means for recirculating cleaning agent from a reservoir to said fluid means including means for positively pressurizing said cleaning agent supplied to said fluid means.

B1 4,884,331 (2291st)
METHOD OF MANUFACTURING HEAT SINK APPARATUS
Howard G. Hinshaw, Dallas, Tex., assignor to Thermolloy, Inc., Dallas, Tex. continuation of Ser. No. 42,706, Apr. 27, 1987, abandoned.
Reexamination Request No. 90/003,012, Apr. 5, 1993.
Reexamination Certificate for Patent No. 4,884,331, issued Dec. 5, 1989, Ser. No. 262,695, Oct. 26, 1988.
Int. Cl.[5] B23P *13/04*
U.S. Cl. 29—558

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

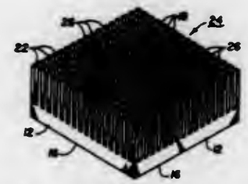
Claim 1 is cancelled.

Claim 2 is determined to be patentable as amended.

Claims 3 and 4, dependent on an amended claim, are determined to be patentable.

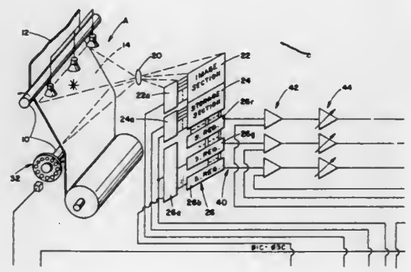
New claims 5–12 are added and determined to be patentable.

2. The method [set forth in claim 1 further including the step] of *making a unitory heat sink metal body for use in removal of heat from a heat generating electronic device package comprising the steps of forming a first predetermined number of*



deep parallel grooves having a first predetermined width and depth in a first surface of a metol body of heat conducting material along a first dimension thereof to produce a predetermined number of thin parallel fins of predetermined height and width unsupported and separated only by said deep grooves wherein the width of said fins is no greater than the width of said deep grooves; and, while said fins are unsupported and separated only by said deep grooves, gang sawing a second predetermined number of parallel grooves, gang sawing a second predetermined number of parallel grooves having a second predetermined depth and a second predetermined width across and through said predetermined number of parallel fins to form pins.

B1 4,922,337 (2292nd)
TIME DELAY AND INTEGRATION OF IMAGES USING A FRAME TRANSFER CCD SENSOR
Robert P. Hunt, Palo Alto, and David L. Gilblom, Los Altos, Both of Calif., assignors to Picker International, Inc., Highland Hts., Ohio
Reexamination Request No. 90/003,128, Jul. 15, 1993.
Reexamination Certificate for Patent No. 4,922,337, issued Sep. 26, 1988, Ser. No. 249,385, May 1, 1990.
Continuation-in-part of Ser. No. 186,446, Apr. 26, 1988
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—88



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 7–19 are confirmed.

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Claim 1 is determined to be patentable as amended.

Claims 2–6 dependent on an amended claim, are determined to be patentable.

New claims 20–23 are added and determined to be patentable.

1. A method of quality control comprising the steps of:

a) [moving] *conveying* an object to be examined through an examination region *on a continuous conveying means;*

b) monitoring the movement of the object;

c) illuminating the object as the object moves through the examination region;

d) shifting lines of data values indicative of portions of the object along a sensor array in coordination with the monitored object movement;

e) integrating the data values indicative of the same portion of the object as the lines of data values are shifted along the sensor array;

f) reading the integrated data values from the sensor array to produce an image output representing a continuous view of the object; and,

g) determining at least one characteristic of the object from the image output.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED MAY 3, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1305
REFORMULATED GASOLINES AND METHODS OF PRODUCING REFORMULATED GASOLINES

Daniel J. Townsend, 5 Butternut, Irvine, Calif. 92715; Jack S. Segal, 8841 Seaspray Dr., Huntington Beach, Calif. 92646, and Larry A. Rapp, 22655 Hidden Hills Rd., Yorba Linda, Calif. 92687

Filed Jul. 9, 1992, Ser. No. 910,936
Int. Cl.[5] C10L *5/00*
U.S. Cl. 44—449 **23 Claims**

1. A method of reformulating a gasoline to form a reformulated gasoline, having as compared to the gasoline, a reduction, upon burning and exhausting from a vehicle, of both hydrocarbon mass and reactivity of vehicle exhaust emissions and simultaneously a reduction of vehicle exhaust emissions of toxics, carbon monoxide and nitrogen oxides, wherein said gasoline comprises a concentration of aromatic compounds, olefinic compounds, and sulfur or sulfur-containing compounds and may be characterized by a 90 percent distillation temperature, said method comprising:

a. reducing said concentration of aromatic compounds;

b. reducing said concentration of olefinic compounds;

c. reducing said concentration of sulfur or sulfur-containing compounds;

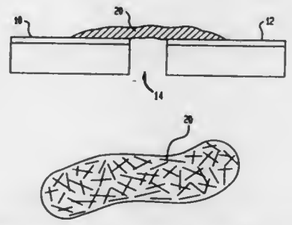
d. reducing said 90 percent distillation temperature; and

e. adding an oxygenate.

H1306
METHOD OF USING AN IMPROVED SOLDER TO BRIDGE A NONMETALLIC GAP BETWEEN METALLIC SURFACES, SAID IMPROVED SOLDER, AND AN IMPROVED SOLDER CONNECTION TO BRIDGE A NONMETALLIC GAP BETWEEN METALLIC SURFACES

William C. Drach, Trenton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1993, Ser. No. 6,573
Int. Cl.[5] B23K *35/22, 35/36*
U.S. Cl. 228—262.2 **24 Claims**



1. An improved solder comprising solder imbedded with metallic fibers.

H1307
METHOD FOR CONTINUITY LOGGING

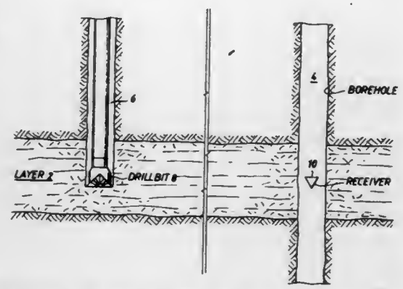
Christine E. Krohn, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 11, 1991, Ser. No. 806,078
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—57 **17 Claims**

1. A method for determining the continuity of a preselected subsurface formation penetrated by a first borehole, comprising:

locating at least one detector at a depth adjacent said preselected subsurface formation in said first borehole,

drilling a second borehole in the earth adjacent said first borehole,



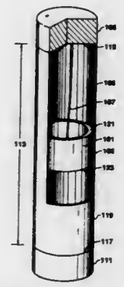
detecting with said at least one detector acoustic energy generated by said drilling of said second borehole, and

determining the continuity of said preselected formation between said first and second boreholes from said detected acoustic energy.

H1308
NARROW BAND ACOUSTIC SOURCE

Graham A. Winbow, Houston, and Sen T. Chen, Sugarland, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Sep. 23, 1992, Ser. No. 950,119
Int. Cl.[5] H04R *15/00*
U.S. Cl. 367—157 **16 Claims**



1. An acoustic source comprising:

a. a tubular member having a first end and a second end and a length L as measured between the first end and the second end;

b. a tubularly shaped piezoelectric element having a generally cylindrical outer surface, said tubularly shaped piezoelectric element being located within the tubular member such that the generally cylindrical outer surface of the tubularly shaped piezoelectric element is in contact with an inner surface of the tubular member along an entire circumference of the generally cylindrical outer surface of

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the tubularly shaped piezoelectric element and said tubularly shaped piezoelectric element is securely fastened to the inner surface of the tubular member, said tubularly shaped piezoelectric element having a length l which is in the range of 0.05 L to 0.5 L;

c. a means for electrically exciting the piezoelectric element operatively associated with said piezoelectric element;

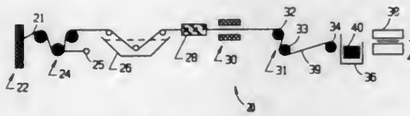
d. a first end mass fastened rigidly to the first end of the tubular member; and

e. a second end mass fastened rigidly to a second end of the tubular member.

H1309
PHOSPHAZENE POLYMER CONTAINING COMPOSITES AND METHOD FOR MAKING PHOSPHAZENE POLYMER CONTAINING COMPOSITES

Charles A. Allen; Alan E. Grey, both of Idaho Falls, Id.; Robert R. McCaffrey, Milford, Mass.; Brenda M. Simpson, and Mark L. Stone, both of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 30, 1990, Ser. No. 559,234
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—224 **7 Claims**



1. A composite material comprising:

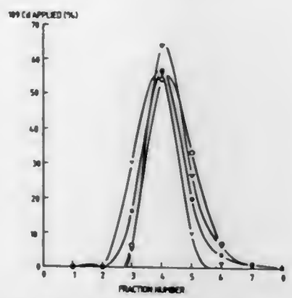
a single constituent fibrous reinforcing material; and

a phosphazene compound; said phosphazene compound coating said single constituent fibrous reinforcing material to form the composite material whereby to impart predetermined thermal, physical and chemical resistance to the composite material.

H1310
PROCESS FOR MEASURING LOW CADMIUM LEVELS IN BLOOD AND OTHER BIOLOGICAL SPECIMENS

David P. Peterson, Orland Park; Edmund Huff, A, Lemont, and Maryka H. Bhattacharyya, Naperville, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1991, Ser. No. 647,074
Int. Cl.[5] G01N *33/20*
U.S. Cl. 436—74 **9 Claims**



1. A process for measuring half microgram levels of cadmium in biological fluids containing at least one alkali metal contaminant, comprising

the steps of forming an aqueous solution of cadmium and the contaminant from a sample of the fluid converting the cadmium to anionic cadmium chloride selectively removing cadmium apart from a substantial portion of the contaminant from the aqueous solution on an anion exchange resin, resolubilizing cadmium from the resin to form a second solution, and analyzing for cadmium in the second solution, the process being carried out in an essentially cadmium-free environment.

H1311
METHANOL SYNTHESIS PROCESS

Tadasi Nakamura; Kinya Tsuji, and Yoriko Obata, all of c/o Mitsubishi Gas Chemical Company, Inc. Niigata Research Laboratory 182, Shinwari, Tayuhama, Niigata-shi Niigata-ken, Japan

Continuation of Ser. No. 787,671, Nov. 4, 1991, abandoned, which is a division of Ser. No. 698,364, May 9, 1991, Pat. No. 5,089,452, which is a continuation-in-part of Ser. No. 607,842, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 448,066, Dec. 8, 1989, abandoned. This application Dec. 30, 1992, Ser. No. 999,569
Claims priority, application Japan, Feb. 9, 1989, 1-28774
Int. Cl.[5] C07C *27/06*
U.S. Cl. 518—713 **26 Claims**

1. A methanol synthesis process comprising reacting a methanol synthesis gas composition comprising H_2 and at least one of CO and CO_2 in the presence of a methanol synthesis catalyst, wherein the methanol synthesis catalyst comprises 50 to 70 atomic % copper, 20 to 45 atomic % zinc, 3 to 12 atomic % aluminum and 0.5 to 3 atomic % boron and is a catalyst produced by drying and sintering a catalyst precursor, said catalyst precursor is produced from a copper compound, a zinc compound, an aluminum compound and a boron compound, by

(a) precipitating from an aqueous reaction mixture comprising a copper sulfate which is recovered from a copper etching waste solution mother liquor, the copper sulfate comprising up to 10% by weight of said mother liquor, with a precipitant, said precipitant being in an amount of 1-fold to 2-fold equivalent of the copper sulfate, said precipitating being carried out in the presence of the boron compound, the boron compound being a water soluble boron compound, and mixing therewith the zinc compound, without separation, to form a precipitate in said reaction mixture,

(b) filtering said reaction mixture from step (a) to form a cake,

(c) washing said cake from step (b) with an aqueous alkali solution in a concentration of 0.01 to 0.5 weight % and then washing with water,

(d) adding said aluminum compound to said washed cake of step (c),

(e) kneading the resulting mixture form step (d) and

(f) drying the resulting kneaded mixture from step (e).

H1312
METHOD FOR THE PREPARATION OF GYK-DTPA

Daniel J. Coughlin, Robbinsville, and Richard Wood, Rocky Hill, both of N.J., assignors to Cytogen Corporation, Princeton, N.J.

Filed May 28, 1992, Ser. No. 890,519
Int. Cl.[5] A61K *37/02*
U.S. Cl. 530—331 **2 Claims**

1. A method for preparing a tripeptide-chelator comprising:

(a) reacting a N-ε-carbobenzyloxy lysine with benzyl alcohol in a solution of p-toluenesulfonic acid in toluene to form a carboxy protected N-ε-carbobenzyloxy lysine;

(b) reacting a tyrosine residue having a Boc-protecting group with said carboxy protect N-ε-carbobenzyloxy lysine in the presence of a suitable coupling agent selected from the group consisting of 1-ethyl-3(3-dimethylamino propyl)-carbodiimide, benzotriazol-1-yloxytris (dimethylamino)phosphonium hexafluorophosphate and dicyclohexylcarbodiimide to form a Boc-tyrosine (N-ε-CBZ) lysine ester dipeptide having a Boc protected amine terminus and a carboxy terminus protected as an ester;

(c) removing said Boc protecting group from said Boc protected amine terminus by treatment with an acid effective to form an acid salt of said dipeptide, said acid being in a suitable solvent selected from the group of toluene, ethylacetate, methanol, ethanol, isopropyl alcohol, dioxane, dimethoxyethane, dimethylformanide, methylene chloride and tetrahydrofuran;

(d) reacting a glycine residue having a Boc-protecting group with said acid salt of the dipeptide in the presence of a suitable coupling agent selected from the group consisting of 1-ethyl-3(3-dimethylamino propyl)carbodiimide, benzotriazol-1-yloxytris (dimethylamino) phosphonium hexafluorophosphate and dicyclohexylcarbodiimide to form a tripeptide having a Boc-protected amine terminus and a protected carboxy terminus;

(e) reacting said tripeptide with a hydrogen gas in the presence of a suitable catalyst selected from the group consisting of pallidum on carbon, platinum on carbon and platinum oxide in a solvent selected from the group consisting of methanol and ethanol to remove protecting groups from both the lysine side chain and the carboxy terminus to form a partially deprotected tripeptide;

(f) reacting said partially deprotected tripeptide with DTPA-disuccinimdyl ester to form a Boc-protected GYK-DTPA; and

(g) reacting asid Boc-protected GYK-DTPA with an acid to remove said Box protecting group from said Boc protected amine terminus to form GYK-DTPA in the acid salt form.

H1313
PROCESS OF MAKING POLY(GLYCIDYL AZIDE) PRODUCT AND COMPOUNDS USEFUL THEREIN

Kim L. Johnson, Cottage Grove, and Thomas P. Klun, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 30, 1991, Ser. No. 752,376
Int. Cl.[5] C07F *1/00*
U.S. Cl. 552—11 **9 Claims**

1. A method of making a product comprising poly(glycidyl azide) polymer the method comprising the steps of:

(A) Preparing a mixture comprising:

(1) alkali metal and/or alkaline earth metal azides;

(2) an effective amount of a quaternary amine compound which compound is selected from the group consisting of compounds having the following representative formulas:

$$(R^1)_a(R^2)_{(4-a)}N^{(+)}X^{(-)}, \quad \text{(I)}$$

$$(R^3)_2NC_5H_4N^{(+)}R^1X^{(-)}, \quad \text{(II)}$$

$$(R^3)_2NC_5H_4R^6R^7C_5H_4N^{(+)}R^7X^{(-)} \quad \text{(III)}$$

$$[(R^2)_3N^{(+)}]_2R^8X^{(-)}{}_2 \quad \text{(IV)}$$

$$[(R^3)_2NC_5H_4N^{+}]_2R^8X^{(-)}{}_2 \quad \text{(V)}$$

and blends of compounds having the representative formula (I), (II), (III), (IV) and (V), wherein:

(a) R^1 can be the same or different and selected from: $\{[R^5(OR^6)_b]_{(2-c)}(R^5)_cN[C(R^7)_2]_d\}_eC(R^7)_{(3-e)}CH2—$, or $\{R^5(OR^6)_bO[C(R^7)_{12}]_d\}_eC(R^7)_{(3-e)}CH_2—$, or $\{R^5(OR^6)_bQ[C(R^7)_2]_d\}_eC(R^7)_{(3-e)}CH_2—$, wherein

R^5 groups can be the same or different and are selected from hydrogen or a C_1 to C_{10}, alkyl group,

R^6 groups can be the same and different and are divalent organic groups,

R^7 groups can be the same or different and are selected from hydrogen and C_1 to C_{10} alkyl groups

Q is selected from alkylene, arylene and combinations thereof, and may be substituted with aryl or alkyl groups, oxygen, nitrogen, carbonyl, urylene, carbamato and imino groups, and combinations thereof,

(b) R^2 groups are the same or different and are selected from C_1 to C_{10} alkyl groups, and

(c) R^3 groups can be the same or different and are selected from C_1 to C_8 alkyl groups containing oxygen or nitrogen hetero atoms, provided that such hetero atoms are attached only to carbon atoms, and the two R^6 groups together with adjacent nitrogen atom shown in formula (II) can form a heterocyclic ring containing 3 to 7 atoms,

(d) R^4 groups can be the same or different and are selected from —CH=, —CR^2= and —N=.

(e) R^8 groups are defined as $—CH_2[C(R^7)_2]_{(d+1)}(OR^6)_bQ[C(R^7)_2]_{(d+1)}CH_2—$

(f) a is a number from 1 to 3,

(g) b is a number from 1 to 50,

(h) c is a number from 0 to 1,

(i) d is a number from 1 to 15,

(j) e is a number from 1 to 3,

(k) f is a number from 0 to 50,

(l) X is a suitable anion.

(B) reacting the mixture prepared in step (A) with polyepichlorohydrin polymer to produce a reaction product, and

(C) recovering from the reaction product a product comprising poly(glycidyl azide) polymer.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,595

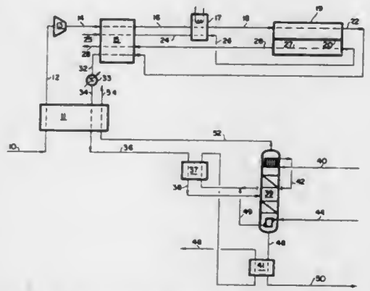
PROCESS FOR REMOVING OXYGEN AND NITROGEN FROM CRUDE ARGON

Michael S. K. Chen, Zionsville, and Philip J. Cook, Schnecksville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Original No. 5,035,726, dated Jul. 30, 1991, Ser. No. 528,997, May 24, 1990. Application for reissue Mar. 6, 1992, Ser. No. 847,968

Int. Cl.[5] **B01D** *53/22, 71/02*

U.S. Cl. 95—54 **21 Claims**



15. A process for removing oxygen and nitrogen from a crude argon stream comprising the steps of:

(a) compressing the crude argon stream to about 30 to 90 psig to form a compressed crude argon stream;

(b) heating the compressed crude argon stream to a temperature of about 450° to about 800° C. to form a compressed heated crude argon stream;

(c) separating the compressed heated argon stream into an oxygen permeate stream and an oxygen-depleted argon stream by contacting the compressed heated argon stream with a solid electrolyte membrane selective to the permeation of oxygen;

(d) cooling the oxygen-depleted argon stream by indirect heat exchange with the compressed crude argon stream to form a cooled oxygen-depleted argon stream;

(e) distilling nitrogen from the cooled oxygen-depleted argon stream to form a purified argon stream and a nitrogen-rich waste stream; and

(f) recovering the purified argon stream.

Re. 34,596

VALVE DRIVING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Shunji Masuda, and Eiji Nakai, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

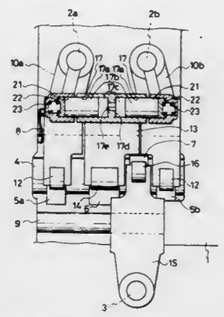
Original No. 4,765,289, dated Aug. 23, 1988, Ser. No. 105,730, Oct. 7, 1987. Application for reissue Aug. 22, 1990, Ser. No. 570,917

Claims priority, application Japan, Sep. 16, 1986, 61-246084

Int. Cl.[5] **F01L** *1/34*

U.S. Cl. 123—90.16 **12 Claims**

10. A valve driving system for an internal combustion engine in which two valves are provided for one or both of an intake port and an exhaust port in each cylinder, said valve driving system comprising cam shaft means formed with two types of cams of different shapes, one of which consists of a pair of low speed cams located on portions of said cam shaft means and the other of which consists of a high speed cam located substantially centrally between said low speed cams, a pair of first rocker arm means driven by said low speed cams respectively each having a portion engaged with one of said valves, second rocker arm means driven by said high speed cam and located between said first rocker arm means, a pair of oil pressure chamber means formed in said second rocker arm means, a pair of plunger means each being provided in one of said oil pressure chamber means, two bores each being formed for engaging with one of said plunger means, one of said two bores formed in each of said first rocker arm means, an oil passage formed in said second rocker arm means communicated in common with said pair of oil pressure chamber means and control means for controlling oil pressure fed to said oil passage in accordance with engine operating condition.



Re. 34,597

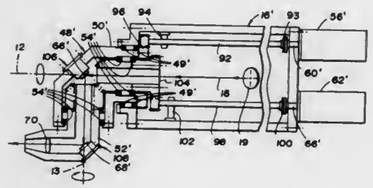
ROBOT-LASER SYSTEM

Hadi A. Akeel, Rochester Hills, Mich., assignor to GMFANUC Robotics Corporation, Auburn Hills, Mich.

Original No. 4,650,952, dated Mar. 17, 1987, Ser. No. 684,248, Dec. 20, 1984. Continuation of Ser. No. 221,515, Jul. 19, 1988, abandoned. Application for reissue Feb. 27, 1992, Ser. No. 842,795

Int. Cl.[5] **B23K** *26/00*

U.S. Cl. 219—121.78 **10 Claims**



1. A robot-laser system for providing a laser beam at a desired location, the system comprising:

a laser beam source for generating a laser beam;

a robot having at least three degrees of freedom and including a base and a *single motorized* robot arm *having a motor mounted on said arm* supported on said base, the robot arm having first and second elongated arm parts, the second arm part projecting from the first arm part, the robot arm having a wrist mechanism located at the distal end of the second arm part, said arm parts and said wrist mechanism being hollow and fluidly interconnected to define a laser beam path therewithin extending through said first arm part, along the entire projecting length of said second arm

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part and through said wrist mechanism, said arm parts and said wrist mechanism being adpated to direct the laser beam therewithin; [and]

at least one mirror for reflecting the laser beam, a single mirror being mounted to and supported by said arm therewithin at a position of fluid interconnection between the arm parts to move therewith and reflect the laser beam wherein a first one of said degrees of freedom comprises a linear movement of said first arm part along an axis coincident with said laser beam path, a second one of said degrees of freedom comprises a linear movement of said second arm part along a second axis coincident with said laser beam path through the second arm part and a third one of said degrees of freedom comprises a rotary movement of one of said arm parts about said laser beam path; *and*

first and second drive means for linearly driving the first and second arm parts, respectively, and third drive means for rotatably driving the one of said arm parts about said laser beam path.

Re. 34,598

HIGHLY PURE TITANIUM

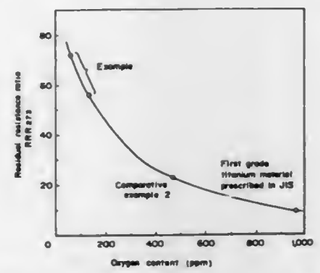
Kazumi Shimotori, Kawasaki; Yoshiharu Ochi, Ichihara; Hideo Ishihara; Takenori Umeki, both of Yokohama, and Takashi Ishigami, Chigasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Original No. 4,891,066, dated Jan. 2, 1990, Ser. No. 219,799, Jul. 15, 1988. Division of Ser. No. 51,772, May 20, 1987, Pat. No. 4,793,854. Application for reissue Jan. 2, 1992, Ser. No. 815,762

Claims priority, application Japan, May 30, 1986, 61-123463

Int. Cl.[5] C22C *14/00*

U.S. Cl. 257—770 **80 Claims**



1. A highly pure titanium comprising not more than 200 ppm of oxygen; not more than 30 ppm each of elements consisting of iron, nickel and chromium, and not more than 0.1 ppm each of elements consisting of sodium and potassium, wherein said highly pure titanium has a residual resistance ratio RRR_{273} of 45 or more.

Re. 34,599

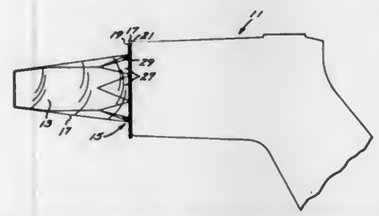
DISPOSABLE PROBE COVER ASSEMBLY FOR MEDICAL THERMOMETER

Edward D. Suszynski, Vista, and Richard P. Meyst, Valley Center, both of Calif., assignors to Diatek Incorporated, San Diego, Calif.

Original No. 4,911,559, dated Mar. 27, 1990, Ser. No. 265,525, Nov. 1, 1988. Application for reissue Mar. 25, 1992, Ser. No. 856,718

Int. Cl.[5] G01K *1/08*

U.S. Cl. 374—158 **24 Claims**



16. A disposable probe cover assembly for an elongated probe of a medical thermometer having a remote end adapted for insertion into a body cavity and an opposite base end, comprising:

a base layer having an opening defined therethrough the opening sized sufficiently larger than the remote end of the probe so as to fit easily thereover and sufficiently smaller than at least a portion of the base end of the probe so as to engage the probe and be retained at its base end in a fixed position; and

a stretchable plastic film extending across the opening defined through the base layer, the film being affixed to the base layer around the periphery of the opening, and the film further being substantially flat prior to use in covering the probe,

wherein the probe cover assembly is configured to fit on the elongated probe by inserting the probe's remote end through the opening in the base layer to initially stretch the plastic film evenly over the probe's remote end and by then sliding the base layer along the probe to further stretch the plastic film until the base layer is retained at the base end of the

PLANT PATENTS

GRANTED MAY 3, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,706

HYBRID TEA ROSE PLANT NAMED 'JACTOU'

Jack E. Christensen, Ontario, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 16, 1993, Ser. No. 17,829

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous upright habit of growth, dark green, disease-resistant foliage, flowers of a pleasant fragrance and deep, stable yellow color, and broad, thick petals.

8,707

APPLE TREE NAMED 'BELLE COX'

Robert Knottenbelt, and Meta Knottenbelt, both of Poukawa Orchards, RD11, Hastings, New Zealand

Filed Aug. 28, 1992, Ser. No. 936,820

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. A new and distinct variety of apple tree which is a mutation of the Bledisloe Cox's Orange Pippin variety, substantially as shown and described characterised by its striped red over-colour.

8,708

STRAWBERRY PLANT CALLED 'CAMAROSA'

Victor Voth, Santa Ana; Douglas V. Shaw, and Royce S. Bringhurst, both of Davis, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,742

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant illustrated and described and having the characteristics above enumerated.

8,709

GERBERA PLANT: TERKITOS

Johannes M. Stravers, Kudelstaart, Netherlands, assignor to Terra Nigra B.V., Iepenlaan, Netherlands

Filed Sep. 9, 1992, Ser. No. 942,281

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of *Gerbera jamesonni* plant named 'Terkitos', as illustrated and described, distinguished by its double flower type and a specific intense lilac-purple color of the ray florets, a green disc floret, the outermost florets of which show white stigmas and the middle flowers of which show yellow anthers, purple perianth lobe color and 100 mm overall flower diameter.

8,710

SOLIDAGO PLANT NAMED YELLOW SUBMARINE

G. B. H. Bartels, Hornweg 53, 1432, GD Aalsmeer, and Cees van Diepen, Venhuizen, both of Netherlands, assignors to G. B. H. Bartels, Aalsmeer, Netherlands

Filed Jul. 6, 1993, Ser. No. 86,145

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of solidago plant named Yellow Submarine, as illustrated and described.

8,711

CHRYSANTHEMUM PLANT NAMED RED CUMBIA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 1, 1993, Ser. No. 43,490

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.5 **1 Claim**

1. A new and distinct Chrysanthemum plant named Red Cumbia, as described and illustrated.

8,712

GERANIUM PLANT NAMED FISBLURI

Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Jul. 21, 1993, Ser. No. 94,328

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fisbluri, as illustrated and described.

8,713

ANTHURIUM PLANT NAMED TAFFY

Ann E. Lamb, and Robert D. Hartman, both of Lake Placid, Fla., assignors to Twyford International, Inc., Santa Paula, Calif.

Filed May 21, 1993, Ser. No. 64,695

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named Taffy, as illustrated and described.

8,714

PLANT OF THE CACTACEAE PLANT FAMILY NAMED 'ASHLEY'

Barnell L. Cobia, P.O. Box 771369, Winter Garden, Fla. 34777-1369

Filed Mar. 22, 1993, Ser. No. 35,325

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.5 **1 Claim**

1. A new and distinct plant variety of the Cactaceae family as shown and described and which is mainly distinguished from its antecedents and known related varieties by growth characteristics that are similar to those of the 'Scarlet O'Hara' variety but as modified by the combination of the following characteristics:

1. Flowers which, in comparison to the 'Scarlet O'Hara' variety, have (a) a tube laminating tepal series with generally shorter length dimensions and generally smaller width dimensions, (b) a tube forming tepal series with generally smaller width dimensions, (c) tube laminating and tube forming tepal series that are generally dominated by hues of orange, reddish orange, red and pink, whereas the tepals of the 'Scarlet O'Hara' variety are generally dominated by hues of red, purplish red, and pink.

8,715

GUZMANIA PLANT NAMED GUINN

Herbert H. Hill, Jr., Lithia, Fla., assignor to Twyford International, Inc., Santa Paula, Calif.

Filed Feb. 10, 1993, Ser. No. 17,669

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.8 **1 Claim**

1. A plant of a new and distinct cultivar of Guzmania plant named Guinn, as illustrated and described.

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(c) a third step of causing said first step to increment addresses on the basis of the result of address incrementing in said second step; and

(d) a fourth step of retrieving stored operand data and operating data in units of a byte at locations in memory designated by addresses produced in said first step, and for performing arithmetic or logic operations using the retrieved stored operand data and operating data.

PLANT PATENTS

GRANTED JUNE 7, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,765

ROSE PLANT AUSLEVEL

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Mar. 29, 1993, Ser. No. 39,946

Claims priority, application United Kingdom, Dec. 4, 1991, 51397

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of Rosa hybrida rose plant of the shrub class, substantially as herein shown and described, being characterized particularly as to novelty by the unique combination of its white, slightly creamy flowers; bushy growth and large number of petals.

8,766

MINIATURE ROSE PLANT NAMED 'JACMINNO'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Apr. 2, 1993, Ser. No. 42,498

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its dwarf, upright, well-branched and vigorous habit of growth; bright red flower color; ease of propagation by both softwood and hardwood cuttings; and bright, glossy, green, disease-resistant foliage.

8,767

HYBRID TEA ROSE PLANT NAMED 'JACFRUIT'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Apr. 2, 1993, Ser. No. 42,496

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its distinctive, old-fashioned flower form; very strong, citrus flower fragrance; upright, vigorous growth habit; and seven leaflet leaves.

8,768

PETUNIA PLANT NAMED REVOLUTION WHITE

Hiroshi Hirabayashi, Yachiyo, and Ushio Sakazaki, Ibaraki, both of Japan, assignors to Keisei Rose Nurseries, Inc., Tokyo and Suntory Limited, Osaka, both of Japan

Filed Nov. 13, 1992, Ser. No. 976,458

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct variety of petunia plant, substantially as herein illustrated and described, characterized particularly as to novelty by (A) being a decumbent habit plant having long stems, (B) an abundant branching and a great profusion of blooms, the whole bush remaining in bloom for a considerable period of time, (C) flowers that are single and large, the petals having a yellowish white color with vivid yellow green lines radiating from pale greenish yellow color bottom throat portion, and (d) a high resistance to rain, heat, cold, and disease.

8,769

CHRYSANTHEMUM NAMED ORANGE REAGAN

Martinus Van Der Jagt, CJ Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Filed Oct. 22, 1991, Ser. No. 780,237

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant named Orange Reagan, as described and illustrated.

8,770

CHRYSANTHEMUM PLANT 'RAGE'

Peter S. Hesse, Nipomo, Calif., assignor to Clearwater Nursery, Inc., Nipoma, Calif.

Filed May 5, 1993, Ser. No. 57,961

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.5 **1 Claim**

1. A new and distinct Chrysanthemum plant substantially as herein described and shown, characterized by its bright red color and excellent upright spreading habit.

8,771

POINSETTIA PLANT "490 JINGLE BELLS"

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed May 4, 1993, Ser. No. 57,962

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.1 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its intense dark green foliage, bicolored red and pink bracts, and resistance to epinasty.

8,772

POINSETTIA PLANT "490 WHITE"

Peter Jacobsen, Skibby, Denmark, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 21, 1993, Ser. No. 95,104

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.2 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its intense dark green foliage, white bracts, self branching, early flowering and good leaf and bract retention in the consumer environment.

8,773

POINSETTIA PLANT "559"

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed May 7, 1993, Ser. No. 59,615

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its unusually smooth, large rich red flower bracts, dark green foliage, and self-branching characteristics.

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8,774
LILY PLANT LILIUM CORAL FASHION
Judith F. McRae, Boring, Oreg., assignor to Mt. Hood Lilies, Inc., Sandy, Oreg.
Filed Jul. 30, 1993, Ser. No. 100,706
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of *Lilium longiflorum*-/Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance, its versatility both as a garden plant and as a cut-flower/pot plant produced from pre-cooled bulbs forced under glass out of season; and in particular by its unique fragrant coral red "open bell" flowers, a combination unique among hybrid lilies suited to forcing and to mass commercial cultivation.

8,775
LILY PLANT LILIUM 'ORANGE FLASH'
Judith F. McRae, Boring, Oreg., assignor to Mt. Hood Lilies, Inc., Sandy, Oreg.
Filed Jul. 30, 1993, Ser. No. 100,900
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower produced from pre-cooled bulbs forced under glass out of season; and in particular by the unique color pattern of its orange flowers with their broad white area extending along the midrib of each tepal, a combination unique among Asiatic hybrid lilies suited to forcing and to mass commercial cultivation.

8,776
FICUS MACLELLANDII PLANT NAMED FICUS AMSTEL KING
Hubertus T. van Diemen, Aalsmeer, Netherlands, assignor to Kwekerij De Amstel, B.V., Aalsmeer, Netherlands
Filed Feb. 23, 1993, Ser. No. 21,358
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—88.9 1 Claim

1. A new and distinct cultivar of *Ficus maclellandii* named Ficus 'Amstel King', substantially as illustrated and described.

PATENTS

GRANTED JUN. 7, 1994

ERRATA

For CLASS	See PATENT NO.
053-399	5,317,851
062-077	5,317,903
062-087	5,317,904
062-100	5,317,905
062-127	5,317,906
062-176	5,317,907
477-120	5,317,937
073-701	5,317,948
100-053	5,317,963
601-002	5,318,014
607-119	5,318,041
135-016	5,318,055
135-022	5,318,067
135-066	5,318,068
477-169	5,318,159
209-524	5,318,172
209-580	5,318,173
211-045	5,318,174
211-086	5,318,175
211-087	5,318,176
222-001	5,318,197
222-105	5,318,198
222-146	5,318,199
227-178	5,318,221
395-166	5,318,309
273-371	5,318,319
285-024	5,318,332
292-336	5,318,333
418-055	5,318,424
418-055	5,318,425
452-106	5,318,428
414-326	5,318,444
464-175	5,318,480
600-014	5,318,561
607-107	5,318,568
607-121	5,318,572
029-623	5,318,600

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ERRATA—CONTINUED

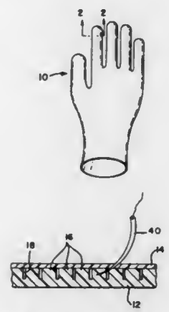
065-325	5,318,620
117-008	5,318,661
505-125	5,318,745
424-601	5,318,858
524-549	5,318,990
548-194	5,319,086
528-328	5,319,145
219-121	5,319,183
310-328	5,319,257
345-141	5,319,358
345-190	5,319,395
348-181	5,319,446
348-708	5,319,447
348-645	5,319,448
348-223	5,319,449
348-692	5,319,450
348-282	5,319,451
348-006	5,319,452
346-006	5,319,453
348-005	5,319,454
348-007	5,319,455
348-699	5,319,456
348-387	5,319,457
348-384	5,319,458
348-189	5,319,459
348-715	5,319,460
348-294	5,319,461
348-347	5,319,462
346-108	5,319,537

PATENTS

GRANTED JUNE 7, 1994

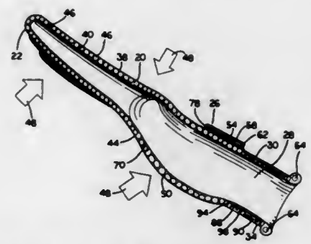
GENERAL AND MECHANICAL

5,317,759
SURGICAL GLOVE
William S. Pierce, 1201 Saradana Rd., Harrisburg, Pa. 17112
Continuation of Ser. No. 676,557, Mar. 28, 1991. This application Jan. 25, 1993, Ser. No. 8,826
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.7 **21 Claims**



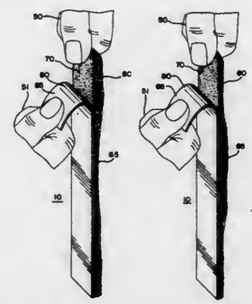
1. A barrier surgical glove including inner and outer glove layers each formed from flexible puncture resistant material with the outer glove layer overlying the inner glove layer, and a plurality of closely spaced independent pillars located in the interface between the layers, said pillars being integral with one layer and extending toward and contacting the other layer, each pillar having a circumferential sidewall extending completely around the pillar, the sidewalls of adjacent pillars being free of each other to permit relative movement of adjacent pillars during transmission of tactile forces through the thickness of the glove.

5,317,760
SEAL INDICATOR SURGICAL GLOVE OR BODY COVERING
Paul S. Best, 408 Whitney Ave., New Haven, Conn. 06511
Filed May 29, 1992, Ser. No. 890,220
Int. Cl.[5] A41D *13/10;* **A61F** *6/04*
U.S. Cl. 2—161.7 **16 Claims**



1. A septic barrier covering consisting of:
a first layer of flexible material, said first layer being resistant to passage of water, air and microbes through said first layer,
a second layer of flexible material, said second layer being resistant to passage of water, air and microbes through said second layer,
means for spacing, supported between said first and second layers for spacing said second layer from said first layer,
said first and second layers having space between them resulting from said means for spacing,
said first and second layers being hermetically sealed for maintaining reduced atmospheric pressure in said space between said first and second layers, and
outside said space (**70, 156**) between said first and second layers, said covering including;
a hollow expandable patch (**26, 132, 158, 262**) on said first layer,
compressible means (**54, 158, 250**) mounted in said hollow expandable patch for indicating an increase in reduced atmospheric pressure between said first and second layers, in passageway communication with said space between said first and second layers.

5,317,761
SELF-ADHERING ABSORBENT DISPOSABLE PADS FOR HEADWEAR
Bradley Piche, 65 Harris Ave., Clarendon Hills, Ill. 60514
Filed Apr. 13, 1992, Ser. No. 867,350
Int. Cl.[5] A42C *5/02*
U.S. Cl. 2—181 **11 Claims**


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5,317,762

AUTOMATIC TOILET CLEANER DEVICE

Bertram Horst; Bernhard Bongers, both of Duesseldorf; Erich Tnerk; Volker Weiss, both of Langenfeld, and Ronald Menke, Mettmann, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

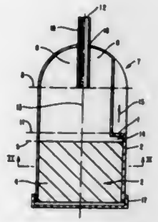
PCT No. PCT/EP89/01144, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO90/04069, PCT Pub. Date Apr. 19, 1990

PCT Filed Sep. 29, 1989, Ser. No. 671,736

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1988, 3834262

Int. Cl.[5] E03D *9/03*

U.S. Cl. 4—222.1 **20 Claims**



1. An automatic toilet cleaner for placement in a water tank of a toilet, comprising a container with a lateral opening, said container accommodating a solid toilet cleanser which dissolves in water to form an active-substance concentrate, said container having a vertical longitudinal axis, said container accommodating the solid toilet cleanser in a closed lower part, the lateral opening of the container being situated above a region maximally occupied by the toilet cleanser, and being adapted both as an exit for the active-substance concentrate during emptying of the water tank, and as an entrance for pure water when the water refills the water tank, an upper part of said container, opposite the lower part accommodating the toilet cleanser, includes a float to enable the automatic cleaner as a whole to float freely in such a way that the active-substance exit of the lateral opening always remains below the water level of the filled water tank, and in that the lateral opening is safeguarded against outflow of the active-substance concentrate when the water tank is full.

5,317,763

APPARATUS FOR LOW NOISE FLUSHING A VACUUM TOILET, ESPECIALLY IN AN AIRCRAFT

Helge Frank, and Christian Sparr, both of Hamburg, Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

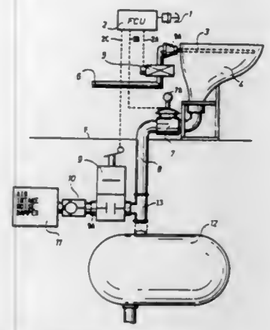
Filed Jan. 25, 1993, Ser. No. 8,676

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4201986

Int. Cl.[5] E03D *9/14*

U.S. Cl. 4—434 **10 Claims**

1. An apparatus for flushing a vacuum toilet, especially in an aircraft, comprising a toilet bowl installed on a floor in said aircraft, a waste collecting container, a conduit connecting said toilet bowl to said waste collecting container, a suction valve in said conduit near said toilet bowl, a flush water valve connecting to said toilet bowl, means for energizing said suction valve and said flush water for predetermined lengths of time, a by-ass flow valve (9) for supplying waste transporting air into said conduit downstream of said suction valve as viewed in the flow direction from said toilet bowl to said waste collection container, a coupling connecting said by-pass flow valve to said conduit, and means connecting said by-pass flow valve for a fixed length of time, wherein said energizing means comprise a control unit including a timer for first energizing said suction valve (7) for a first length of time of about one second and then energizing said by-pass flow valve (9) for a second length of time of about three seconds, said apparatus further comprising an air intake connected to said by-pass flow valve, said air intake comprising noise damping features for damping noise caused by air flowing through said air intake and a one-way



flow device (10) connected in a pipe between said air intake and said by-pass flow valve, said one-way flow device permitting air flow from said air intake to said by-pass flow valve and preventing fluid flow from said by-pass flow valve to said air intake.

5,317,764

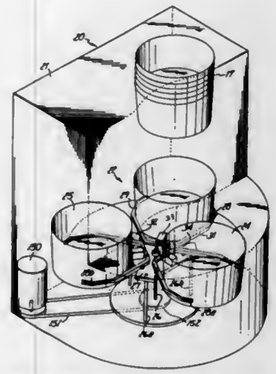
WASTE COLLECTION AND DISPOSAL DEVICE

Joel A. Barker, 8311 Windbreak Trail, Lake Elmo, Minn. 55042, and Paul H. Nahurski, 1954 Berkeley Ave., Saint Paul, Minn. 55105

Continuation of Ser. No. 395,754, Aug. 18, 1989, abandoned. This application Jun. 4, 1991, Ser. No. 711,257

Int. Cl.[5] A47K *11/02*

U.S. Cl. 4—449 **7 Claims**



1. A process for handling human fecal matter, said process comprising depositing the fecal matter in a container, and sealing an upper portion of the container wherein the container is sealed by moving the container upwardly to nest with a preceding container and developing a seal between the preceding container and the container.

5,317,765

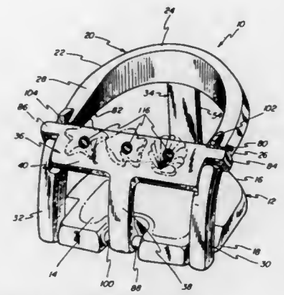
COLLAPSIBLE INFANT BATH RING

Roy E. Knoedler, Boulder; T. Brent Freese, Westminster, and Patrick M. Bertsch, Thornton, all of Colo., assignors to Gerry Baby Products Company, Denver, Colo.

Filed Sep. 8, 1992, Ser. No. 941,742

Int. Cl.[5] A47K *3/024*

U.S. Cl. 4—572.1 **16 Claims**



1. A collapsible bath ring comprising:

a base portion defining an upper support surface for supporting a person seated on said bath ring;

a ring portion having a back portion for supporting the back of a person seated on said base portion;

attachment means connecting said ring portion to said base portion wherein said ring portion is adapted to pivot about said attachment means toward said base portion for collapsing said bath ring into a compact storage portion; and

support means extending between said base portion and said ring portion to engage and support said ring portion at a location above said support surface in a support position of said support means.

5,317,766

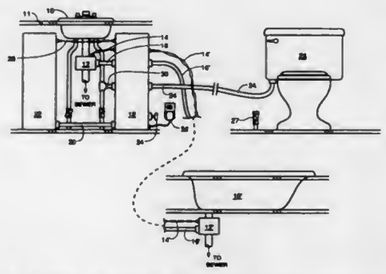
GRAY WATER RECYCLE SYSTEM

John R. McDonald, 171 Provident Dr., Boise, Id. 83706; Michael P. Henry, 1820 NW. 30th #2, Lincoln City, Oreg. 97367, and Ronald J. Steele, Boise, Id., assignors to John R. McDonald; Edward K. Rembert and Michael P. Henry, all of Boise, Id.

Division of Ser. No. 820,476, Jan. 14, 1992, Pat. No. 5,243,719. This application Jnn. 21, 1993, Ser. No. 78,828

Int. Cl.[5] A47K *4/00*; E03C *1/12*

U.S. Cl. 4—665 **10 Claims**



1. A modular and portable gray water reclaim system that is retrofittable into a host system containing at least a host water supply, a sink having a drain outlet, a tub or shower having a drain outlet, a toilet, and a sewer, the gray water reclaim system comprising:

first and second drain fixture modules, a system control module, and a storage tank module;

said first drain fixture module interconnectable with the host system sink drain outlet and the host system sewer and said system control module;

said second drain fixture module interconnectable with the host system tub or shower drain outlet and the host system sewer and said system control module;

said system control module interconnectable with said first and second drain fixture modules, with said storage tank module, with the host system water supply, and with the host system toilet;

said storage tank module interconnectable with said system control module;

so that said system control module can receive gray water from said first and second drain fixture modules and deliver it to said storage tank module when said storage tank module is not full, and so that said system control module can receive gray water from said storage tank module and deliver it to the host system toilet when said storage tank module is not empty, and so that said system control module can receive water from the host system water supply and deliver it to the host system toilet when said storage tank module is empty;

said system control module and said storage tank module being of such size and shape as to fit under the host system sink, said first drain fixture module being configured to act as host system sink P-trap, and said second drain fixture module being configured to act as a host system tub or shower P-trap;

modularity, in that the gray water reclaim system comprises said interconnectable modules;

retrofittability with a minimum of trauma to the host system, in that the gray water reclaim system taps into the host system by substituting the first and second drain fixture modules for the host system sink P-trap and the host system tub or shower P-trap, and in that said system control module and said storage tank module fit under the host system sink;

portability from the host system to another host system, in that each of said modules of the gray water reclaim system may be removed from the host system and retrofitted afresh with a minimum of trauma into another host system.

5,317,767

SUDDEN INFANT DEATH SYNDROME PREVENTION APPARATUS AND METHOD

Thomas S. Hargest, 14 Lockwood Blvd., Apt. 10J., Charleston, S.C. 29401, and William M. Hargest, 8470 Doar Rd., Awendaw, S.C. 29429

Filed Jun. 16, 1992, Ser. No. 899,462

Int. Cl.[5] A47C *21/04*; A47D *7/00*

U.S. Cl. 5—469 **27 Claims**

1. Sudden infant death syndrome prevention apparatus, comprising:

a generally rectangular crib mattress comprised of predetermined innately air permeable reticulated foam;

a fitted relatively open weave fabric covering received about and surrounding at least the top and sides of said crib mattress, and having at least one tube opening formed therein;

an air tube having opposing first and second ends, said tube residing at least partially in said crib mattress and passing through said fabric covering tube opening, so that a first end of said air tube is received at a predetermined location inside of said crib mattress and a second end of said air tube is situated outside of said crib mattress; and

an air pump operatively interconnected with said air tube second end and continuously pumping fresh oxygenated air into said air tube such that the fresh oxygenated air emerges from said air tube first end and is forced in both vertical and horizontal directions throughout and from

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said air permeable reticulated foam crib mattress at a predetermined limited air flow rate generally less than about one cubic foot per minute, to flush out and prevent any accumulation of exhaled carbon dioxide from an



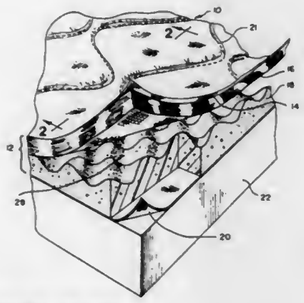
infant received in a prone position on said crib mattress without causing a cooling effect on such infant, and while any regurgitated fluids from the infant are drained through the fabric covering.

5,317,768

SPRING MATTRESS WITH A TOP PORTION CONTAINING FOAM AND FIBERS

Alvin R. Klancnik, Park Ridge, Ill., assignor to Serta, Inc., Des Plaines, Ill.

Filed Sep. 8, 1992, Ser. No. 941,975
Int. Cl.[5] A47C *27/05, 27/12, 27/22*
U.S. Cl. 5—475 **1 Claim**



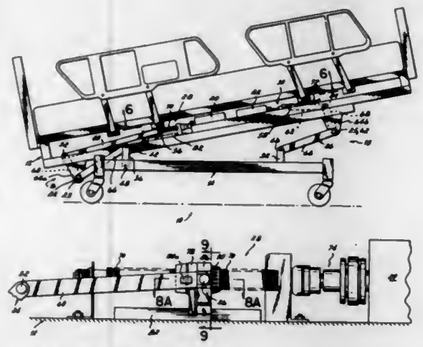
1. A mattress comprising:
a cover material;
a fiber layer subtending at least a portion of said cover material;
a convoluted foam layer positioned under said fiber layer and having a top side and a bottom side, said top side having a plurality of peaks and said bottom side being substantially flat;
a backing layer beneath said flat bottom side of said foam layer;
said cover material, said fiber layer, said convoluted foam layer and said backing layer being secured together by stitching;
said peaks of said foam layer being completely or partially compressed when a weight is applied to the mattress and said fiber layer being forced into said valleys between partially compressed peaks;
said peaks of said foam layer returning to their original position when the weight is removed, thereby returning said fiber layer to its original position overlapping said peaks and forcing air movement through said fiber layer to keep it dry;
a spring unit subtending said backing layer; and
said cover material enveloping said fiber layer, said convoluted foam layer, said backing layer and said spring unit to form a mattress.

5,317,769

HOSPITAL BED

Matthew W. Weismiller; David J. Pleiman, both of Batesville, and Kenneth L. Kramer, St. Paul, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Nov. 10, 1992, Ser. No. 974,256
Int. Cl.[5] A61G *7/00*
U.S. Cl. 5—610 **12 Claims**



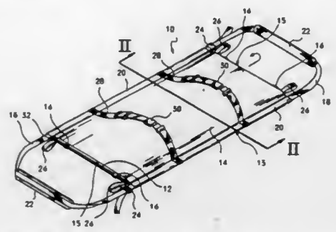
12. A hospital bed comprising:
a base having first and second ends;
a bed support frame having first and second ends;
first and second actuators mounted on said bed support frame; and
first and second mechanical drives, each of said mechanical drives operatively connected between one of said actuators and said base and including:
a drive screw connected to one of said actuators,
a lift nut rotatably mounted on said drive screw, said lift nut translating along said drive screw in response to rotation of said drive screw,
an output block slidably mounted on said lift nut whereby rotation of said actuator in first and second directions translates both said lift nut and said output block in respective first and second directions thereby generally raising and lowering one end of said bed support frame,
a linkage having one end pivotally connected to said output block and another end pivotally connected to said base, and
a switch connected to said drive mechanism for detecting a relative motion between said lift nut and said output block in response to an obstacle obstructing said one end of said bed support frame from lowering, said switch being operable upon activation of said switch to interrupt operation of an actuator lowering said one end of said bed support frame.

5,317,770

EMERGENCY STRETCHER AND TEMPORARY BED

Kazutoshi Sakurai, Nagano, Japan, assignor to Cappy Sakurai U.S.A., Inc., Knoxville, Tenn.

Filed Oct. 30, 1992, Ser. No. 969,781
Claims priority, application Japan, Nov. 11, 1991, 3-100648[U]
Int. Cl.[5] A61G *1/00*
U.S. Cl. 5—625 **9 Claims**



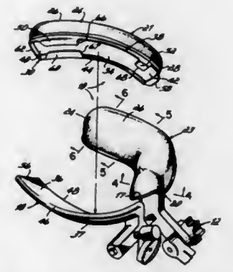
1. A stretcher, for use in the transportation of an individual, comprising:
a mattress section having a rectangular shape, said mattress section being made of a material, which is capable of absorbing air, said mattress section being capable of spreading by absorbing air and being wound from a longitudinal end when air is discharged;
a cover section for accommodating said mattress section, said cover section having a rectangular shape, having spaced apart parallel longitudinal edges and spaced apart parallel longitudinal ends;
belt holder channels being provided only on both longitudinal edges of said cover section; and
a single belt being run through all said belt holders, said belt being formed in a loop, said belt including stretcher support portions at either longitudinal end of said stretcher, said support sections being spaced apart from said longitudinal ends and extending from said belt holder on one longitudinal edge of said cover section to the belt h older on the other longitudinal edge of said cover section.

5,317,771

HEADREST COVER

William J. Cook, Cincinnati, Ohio, assignor to Ohio Medical Instrument Company, Cincinnati, Ohio

Filed Apr. 5, 1993, Ser. No. 43,015
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—637 **13 Claims**



1. A headrest cover of the type for use with a frame member of a headrest, the frame member having an upper surface for supporting a head and a lower surface, the frame member further having inside and outside edges approximately parallel to a longitudinal axis of the frame, and the frame member including an upper end proximate an upper area of the head and a distal end, the headrest cover comprising:
a pad having an upper pad surface for receiving the head and a lower pad surface; and
a connector having
an upper connector surface connected to said lower pad surface,
a lower surface adapted to contact the upper surface of the frame,
first and second lateral edges approximately parallel to a longitudinal axis of said connector,
first and second ends approximately transverse to said longitudinal axis of said connector and extending between said first and second lateral edges, said second end of said connector adapted to be proximate the upper end of the frame member,
a first clip located on said first lateral edge of said connector proximate said first end, said first clip adapted to extend from said first lateral edge around the outside edge of the frame member and over the lower surface of the frame member, and
a second flexibly resilient clip located on said first lateral edge of said connector proximate said second end, said second clip adapted to extend from said first lateral edge around the outside edge of the frame member and over the lower surface of the frame member
a third clip located on said second lateral edge of said connector proximate said first end, said third clip adapted to extend from said second lateral edge around the inside edge of the frame member and over the lower surface of the frame member; and
a first stop member extending from said second end of said connector and adapted to extend along an edge of the upper end of the frame member, thereby securing the headrest cover from motion in a direction toward the distal end of the frame member.

11. A connector for connecting a headrest cover to a frame member of a headrest, the frame member having upper and distal ends and an upper surface for supporting a head and a lower surface, the frame member further having inside and outside longitudinal edges and the headrest cover having a pad with an upper pad surface generally configured to receive the head and a lower pad surface, the connector comprising:
first and second ends;
an upper connector surface between said first and second ends and adapted to be connected to the lower pad surface;
a lower connector surface opposite said upper connector surface and adapted to contact the upper surface of the frame member;
first and second lateral edges partially bounding said lower connector surface;
a first clip located proximate said first end and adapted to extend from said first lateral edge around the outside longitudinal edge and over the lower surface of the frame member; and
a second flexibly resilient clip located proximate said second end of the connector and adapted to extend from said first lateral edge around the outside longitudinal edge and over the lower surface of the frame member;
a third clip located opposite said first clip at said first end of the connector and adapted to extend from said second lateral edge around the inside longitudinal edge and over the lower surface of the frame member; and
a stop member located on said second end of the connector and adapted to extend along an edge of the upper end of the frame member.

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greater number of blades, turning at a greater speed and eliminating the finer impurities, essentially by a suction effect.

5,307,541

CLAMPING DEVICE

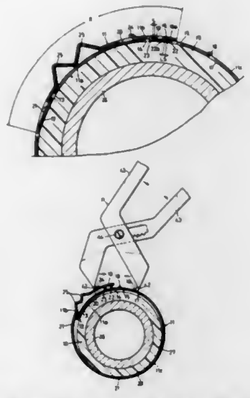
Kenji Nagano, Ibaragi, Japan, assignor to Kobushiki Kaisha Kenlock, Ibaragi, Japan

Filed Jul. 15, 1993, Ser. No. 91,903

Claims priority, application Japan, Apr. 23, 1993, 5-026905; Apr. 23, 1993, 5-026906

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—20 R **3 Claims**



1. A clamping device including a clamp band (**11, 110**) of metal strip material (M) cut to a fixed length (L), said clamp band (**11, 110**) being wound in a circular ring for three-dimensionalization such that an inner overlap portion (**11***a*, **110***a*) terminating in one roll-bent end and an outer overlap portion (**11***b*, **110***b*) terminating in the other end overlap each other by a fixed amount (X), the bore diameter of said clamp band (**11, 110**) being artificially forcibly contracted, thereby fixing a part to be fixed (**10**), such as a fluid conveying hose, dustproof bellows, axial boot or the like made of plastic material, such as rubber or synthetic resin, on the connecting circumferential surface of a desired mating device (**26**), said clamping device being characterized in that:

one cut end of the inner overlap portion (**11***a*, **110***a*) alone is notched to form a nose (**12, 120**) of fixed width (W1) smaller than the fixed width (W) of the metal strip material (M),

the inner overlap portion (**11***a*, **110***a*) is formed with a prop key receiving hole (**14, 140**) and a fixed tooth receiving hole (**15, 150**), distributed in the order mentioned from the nose (**12, 120**) toward an intermediate portion (**11***c*, **110***c*) where the clamp band (**11, 110**) does not overlap, and a first operating tool receiving hole (**17, 170**) is formed in said intermediate region (**11***c*, **110***c*) adjacent said fixed tooth receiving hole (**15, 150**),

the opening edge of said first operating tool receiving hole (**17, 170**) on the side adjacent said fixed tooth receiving hole (**15, 150**) is outwardly bulged to form a second convex channel wall (**18, 180**) for operating tool support,

the opening edge of said fixed tooth receiving hole (**15, 150**) on the side adjacent the prop key receiving hole (**14, 140**) is outwardly bulged to form a first convex channel wall (**16, 160**), and a portion of the middle of said first convex channel wall (**16, 160**) forms a seizing tooth (**16***a*, **160***a*) bulged toward said fixed tooth receiving hole (**15, 150**),

the outer overlap portion (**11***b*, **110***b*) is formed with a hole (**19, 190**) for receiving the first convex channel wall (**16, 160**), a second operating tool receiving hole (**20, 200**) juxtaposed with said first operating tool receiving hole (**17, 170**, and a hole (**21, 210**) for receiving the nose (**12, 120**),

the opening edge of said first convex channel wall receiving hole (**19, 190**) adjacent the other cut end is oppositely or inwardly bulged to form a concave channel wall (**22, 220**) opposed to said first convex channel wall (**16, 160**), a portion of the middle of said concave channel wall (**22, 220**) being bulged inwardly toward said first convex channel wall receiving hole (**19, 190**) to form a fixed tooth (**22***b*, **220***b*) adapted to be seized by said seizing tooth (**16***a*, **160***a*),

the opening edge of the first convex channel wall receiving hole (**19, 190**) on the side opposed to said fixed tooth (**22***b*, **220***b*) is bent to form a prop key (**23, 230**) adapted to be received in the prop key receiving hole (**14, 140**) through the first convex channel wall receiving hole (**19, 190,**

the opening edge of the second operating tool receiving hole (**20, 200**) on the other cut end side is outwardly bulged to form a third convex channel wall (**24, 240**) opposed to said second convex channel wall (**18, 180**) for operating tool support,

the clamp band (**11, 110**) is formed with elastic humps (**25, 250**) outwardly bulged between said second operating tool receiving hole (**20, 200**) and said nose receiving hole (**21, 210**) or between said first convex channel wall receiving hole (**19, 190**) and said nose receiving hole (**21, 210**) for storing the spring force acting circumferentially of the clamp band (**11, 110**),

the arrangement being such that the active teeth (**42**) of a close type operating tool (P) are respectively engaged with the second convex channel wall (**18, 180**) of the first operating tool receiving hole (**17, 170**) in said inner overlap portion (**11***a*, **110***a*) and the third convex channel wall (**24, 240**) of the second operating tool receiving hole (**20, 200**) in said outer overlap portion (**11***b*, **110***b*) and the operating tool (P) is manipulated to close its pair of active teeth (**24**) to forcibly deform the bore diameter of said clamp band (**11, 110**), whereupon the seizing tooth (**16***a*, **160***a*) of the inner overlap portion (**11***a*, **110***a*) and the fixed tooth (**22***b*, **220***b*) of the outer overlap portion (**11***b*, **110***b*) seize each other,

and as soon as a force acts to cause disengagement between the fixed tooth (**22***b*, **110***b*) and the seizing tooth (**16***a*, **160***a*), the prop key (**23, 230**) of the outer overlap portion (**11***a*, **110***a*) engages the opening edge of the prop key receiving hole (**14, 140**) in the inner overlap portion (**11***a*, **110***a*).

5,307,542

BUCKLE FOR ADJUSTABLY SECURING A BELT OR THE LIKE

Ryuichi Murai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

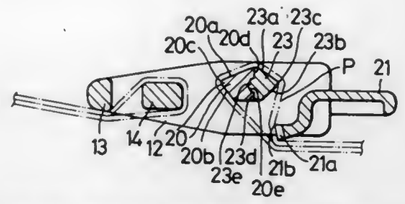
Filed Apr. 30, 1993, Ser. No. 54,238

Claims priority, application Japan, Apr. 30, 1992, 4-28868[U]; Apr. 30, 1992, 4-28870[U]; May 29, 1992, 4-138195; May 29, 1992, 4-138916

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—200 **8 Claims**

1. A buckle for adjustably securing a belt or the like which comprises a generally frame-like body defined by side flange portions interconnect by a plurality of bars extending in parallel spaced relation transversely of said body, an end transverse bar connected to one end of said flange portions for securing one end of the belt a first anchoring bar having a first anchoring portion directed towards said one end of said body and a second anchoring bar having a second anchoring portion, said first and second anchoring bars being held in spaced partially superimposed relation to each other with said second anchoring portion of said second anchoring bar extending into the region of said first anchoring bar beyond a vertical axial line passing in contact with said first anchoring portion of said first anchoring bar perpendicularly to the longitudinal plane of said



body, thereby establishing a substantially cross-sectional "Z"-like path for wrapping the belt therearound at the opposite end of the buckle.

5,307,543

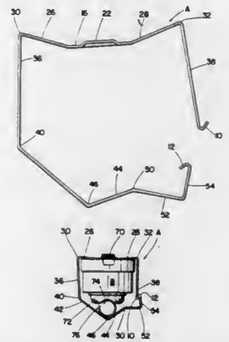
CLIP FOR ATTACHING THERMOSTATS TO PIPES

James M. Krillenberger, Bellville, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jan. 19, 1993, Ser. No. 5,801

Int. Cl.[5] A44B *21/00*; **F16L** *3/00*

U.S. Cl. 24—543 **9 Claims**



1. A one-piece spring clip having a substantially flat top central portion, a pair of opposite arms extending outwardly and upwardly from said top central portion, a pair of legs extending downwardly and outwardly from said arms, one of said legs having a first leg terminal end portion, the other of said legs being inwardly bent generally opposite from said leg terminal end portion to define a downwardly inclined first wall portion that intersects an upwardly inclined second wall portion at a generally V-shaped intersection, said second wall portion being connected with an upwardly extending leg having a second leg terminal end portion located adjacent said first leg terminal end portion, said first and second leg terminal end portions having cooperating means thereon for releasably connecting same, said clip being resiliently deformable to move said first and second leg terminal end portions toward one another to interengage said cooperating means.

5,307,544

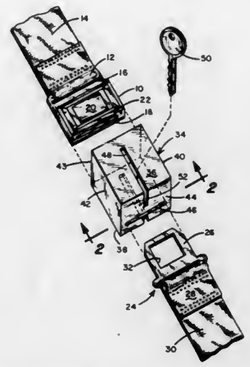
SEAT BELT BUCKLE GUARD

Craig D. Quarberg, 6908 Candlewood Cir., Brooklyn Park, Minn. 55445, and Patrick J. McNaughton, Brooklyn Park, Minn., assignors to Craig D. Quarberg, Brooklyn Prk, Minn.

Continuation-in-part of Ser. No. 817,393, Jan. 6, 1992, abandoned. This application Jun. 30, 1992, Ser. No. 906,335

Int. Cl.[5] A44B *11/26*

U.S. Cl. 24—633 **10 Claims**



1. An article of manufacture comprising a hollow rectangular box-like enclosure having a top wall, a bottom wall, two side walls and only one end wall, said top wall having an opening formed through the thickness dimension thereof midway between said two side walls, said one end wall including a transversely extending narrow slot formed through the thickness dimension thereof and extending perpendicular to said two side walls, said opening in said top wall being an elongated narrow slot extending inward from said one end wall and with a further slot in said one end wall extending perpendicular to said transversely extending slot and intersecting said slot formed through said top wall.

5,307,545

CORRUGATED CARDBOARD COFFIN

Dennis J. Stoltz, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 3, 1992, Ser. No. 923,463

Int. Cl.[5] A61G *17/00*

U.S. Cl. 27—4 **7 Claims**

1. A corrugated paper casket comprising: a lower body receiving portion having an outer section and an inner liner section, the outer section comprising:

(a) a rectangular central portion that forms the bottom of the casket;

(b) opposed sides and opposed end walls foldably joined to the central portion along respective sides and ends of the central portion;

(c) a pair of outer edge panels of approximately the same length as that of the side walls;

(d) a pair of intermediate panels foldably interconnecting the side walls and a respective one of the edge panels along the opposed longitudinal edges of the intermediate panels;

(e) a pair of outer border sections of approximately the same length as the end walls;

(f) a pair of medial panels foldably interconnecting the end walls and a respective one of the outer border sections along the opposed longitudinal edges of the medial panels;

(g) a locking tab laterally projecting along a fold line from the free side of each of the outer border sections;

(h) a corner section formed at an intersection of each end of the end walls and the side walls, each corner section

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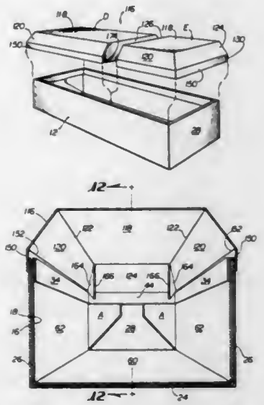
comprising a pair of generally triangular-shaped portions, the hypotenuse of each portion forming a common fold line that extends at a 45° angle from the intersection, each triangular-shaped portion foldably joined to an end of the end wall and the side wall and the corner sections having a rectangular opening therethrough with the diagonal of the opening coaxial with the common fold line; and

the inner liner section comprising:

(i) a main portion which is of the same dimensions as the central portion of the body receiving portion; and

(j) a pair of side portions foldably joined to corresponding sides of the main portion, each of the side portions having the same dimensions as each of the side walls of the body receiving portion, the main portion and side portions overlying in abutting engagement the central portion and the side walls, respectively,

with the outer edge panels being folded 180° to overlap at least a portion of the respective side portion, the joined-together side portions and side walls being folded inwardly 90°, the end walls being folded inwardly 90°, the triangular-shaped portions being folded inwardly about their fold lines the rest in juxtaposed position against the end walls, the locking tabs being folded inwardly to be received within the apertures formed by a pair of openings in adjacent folded triangular-shaped portions, and the



intermediate and medial panels thereby becoming the top surfaces of the erected lower body receiving portion and further comprising a first lid for telescoping engagement with the lower body portion, the first lid comprising:

(k) a rectangular-shaped central section which forms the top of the lid;

(l) a pair of trapezoidal side elements foldably joined along respective first sides thereof to opposed sides of the central section;

(m) a first trapezoidal end section foldably joined about a side thereof to a first end of the central portion;

(n) an end panel foldably connected to the first end section about an opposite side of the first end section;

(o) a first end flap;

(p) an intermediate panel foldably joining along respective sides thereof the end panel and the first end flap;

(q) a second trapezoidal end section foldably joined to the central portion about the second end opposite the first end, the width of the second end section being the sum of the widths of the first end section and the end panel;

(r) a second end flap;

(s) an intermediate portion foldably joining along respective sides thereof the second end section and the second end flap, the second end section having a pair of opposed openings in the end thereof adjacent the intermediate portion;

(t) a pair of equal-dimensioned, right-triangular flaps formed at the intersection of the ends of the first end section and a first end of each of the side elements and joined to each other along a common cut line, the hypotenuse of each flap being coincident with a fold line connecting the flap to a respective side element or the first end section;

(u) a pair of unequal-dimensioned, triangular-shaped web sections formed at the intersection of the ends of the second section and the second end of each of the side elements opposite the first end thereof, and joined to each along a common cut line;

(v) a pair of side flaps foldably joined to the side elements along the sides opposite to the first sides of the side elements;

(w) a pair of side panels extending from and foldably joined to the first end of each of the side flaps adjacent the first end section;

(x) a pair of side extensions extending from and joined to the second end of each of the side flaps along a fold line, the side extensions having an opening formed in their bottom edges adjacent the respective fold lines;

the right triangular flaps and the web sections being separated along respective cut lines thereof and folded inwardly, the first end section being bent inwardly 45° to the central section, the side panels being folded inwardly to overly the end panel which is folded 90° to the first end section, the second end section being bent 90° to the central portion and the side extensions being folded inwardly to overly the second end section with the openings in the side extensions overlying the openings in the second end section, the side elements being folded 45° to the central section and the side flaps being folded 90° to the side elements, the first end flap being folded inwardly 180° to overly the side panels and the second end flap being folded inwardly 180° to overly the side extensions,

whereby the top edges of the sides of the body receiving portion engage the openings thereby formed in the bottom of the second end section when the lid is telescopically received on the body receiving portion so that the bottom edges of the side flaps, the second end section and the end panel are below the top edges of the body receiving portion.

5,307,546

APPARATUS FOR FEEDING A FIBER BATT TO A NEEDLE LOOM

Johann P. Dilo, Eberbach, Fed. Rep. of Germany, assignor to Oskar Dilo Maschinenfabrik KG, Eberbach, Fed. Rep. of Germany

Filed Aug. 4, 1992, Ser. No. 925,510

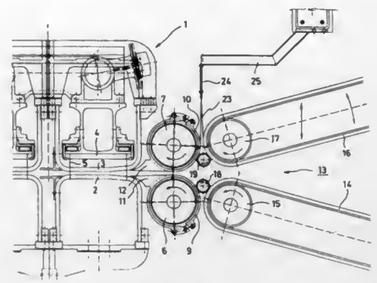
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128734

Int. Cl.[5] D04H *18/00*

U.S. Cl. 28—107 **20 Claims**

1. Apparatus for feeding a fiber batt in a transport direction to a needle loom, comprising a pre-compression means including an outlet end and a batt support means, an endless continuously rotating pre-compression conveyor band arranged above the batt support means, a reversing roller for moving the conveyor band in the transport direction of the fiber batt at the outlet end of the precompression means, a lower supply roller and an upper supply roller mounted above the lower supply roller, said supply rollers forming a nip and being located between the pre-compression means and an intake of a needle loom, with the upper supply roller being proximal to said reversing roller, so that a gusset gap of approximately triangular cross-section is formed between the pre-compression band guided around the reversing roller and the upper supply roller, a transmission roller of low surface friction in said gusset gap, the circumference of said transmission roller being proximal to the surfaces of the pre-compression conveyor band and the

upper supply roller, a plurality of bearing means distributed along said transmission roller to suspend said transmission



roller to avoid sagging thereof, and means for driving said transmission roller in a direction in which the upper reversing roller and the upper supply roller are driven.

5,307,547

PROCESS AND DEVICE FOR HYDRODYNAMIC DRAWING OF A POLYMER THREAD

Felix Graf, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

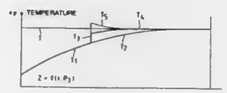
Filed Jul. 25, 1991, Ser. No. 735,833

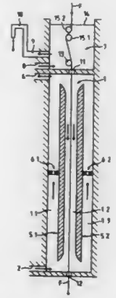
Claims priority, application Switzerland, Jul. 27, 1990, 02499/90

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] D01D *5/14*

U.S. Cl. 28—246 **21 Claims**





1. A process for hydrodynamic drawing of a polymer thread, said process comprising the steps of

forming a bath of heated liquid;

moving a polymer thread under tension through said bath in heat exchange relation therewith;

heating the thread in said bath to a temperature of the second order transition point of the thread; and

braking the thread in said bath by means of the braking force between the thread and the liquid to increase the tension in the thread to a drawing tension sufficient to effect drawing of the thread while in said bath.

5,307,548

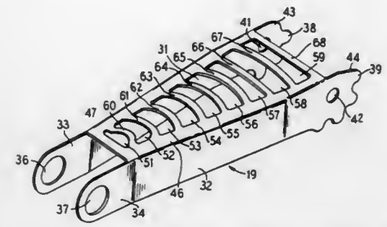
A METHOD OF FORMING TAPERED CHANNELS FOR SCISSORS JACK

Darryl L. Engel, LaOtto, Ind., assignor to Universal Tool & Stamping Company, Inc., Butler, Ind.

Filed Mar. 31, 1993, Ser. No. 40,994

Int. Cl.[5] B21D *31/04*

U.S. Cl. 29—6.1 **4 Claims**



1. A method of forming a tapered channel for scissors jacks, comprising the steps of cutting from a rectangular blank a channel form which has first and second sides and a center portion, forming a plurality of adjacent openings in said center portion which are separated by curved strap portions, clamping said first and second sides and pulling said first and second sides apart so as to form said center portion into a tapered form, and bending said first and second sides so that they are at right angles to said center portion.

5,307,549

APPARATUS AND METHOD FOR SYNCHRONIZED CONTROL OF MACHINE TOOLS

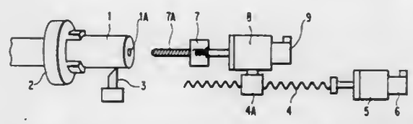
Seisuke Tsutsumi, and Nobuyuki Ito, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 929,124

Claims priority, application Japan, Aug. 16, 1991, 3-205992

Int. Cl.[5] B23B *47/00*; **B23G** *3/00*; **G05B** *19/24*

U.S. Cl. 29—27 C **7 Claims**



1. A control apparatus for a machine tool including threading means for threading a workpiece held by a spindle rotating at a spindle velocity, comprising:

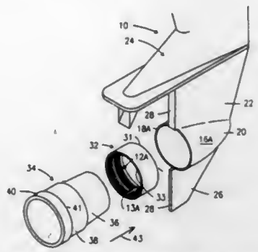
spindle rotation detecting means for detecting at least one of the rotational velocity and rotational position of said spindle and outputting a rotational value signal;

positioning pattern creating means for creating a positioning pattern for said threading means in accordance with pre-entered parameters defining the advance and retraction velocities and threading depth of said threading means; and

threading controlling means responsive to said rotational value signal for operating said threading means for threading said workpiece by synchronizing said threading means with said spindle according to said positioning pattern created by said positioning pattern creating means.

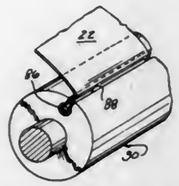
VOL 1162 ISS 1 MY 3 1994 UMI

5,307,550
APPARATUS FOR REPAIRING LOWER UNITS
Normand A. Brunet, 108 Aleta Dr., Belleair Beach, Fla. 34635
Filed Jun. 7, 1993, Ser. No. 73,191
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—272 **3 Claims**



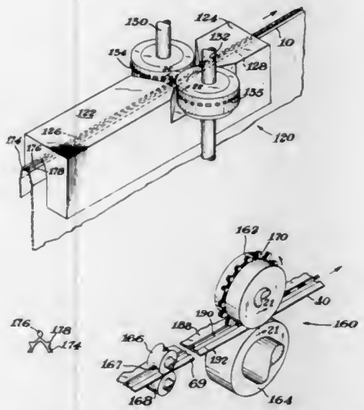
1. A combination of parts for repairing a motorboat lower unit having worn screw threads, comprising:
cutting means for removing a predetermined length of a cylindrical trailing end of a lower unit housing, said lower unit housing tapering downwardly from said cylindrical trailing end to a closed leading end and said cylindrical trailing end having a plurality of circular cavitation grooves and worn screw threads formed therein;
a cylindrical replacement part having a predetermined length and having a plurality of circular cavitation grooves and screw threads preformed therein, said predetermined length of said cylindrical replacement part being equal to the predetermined length of said cylindrical trailing end of said lower unit housing that is removed;
an alignment tool for aligning said cylindrical replacement part relative to said lower unit housing;
attachment means for securing said cylindrical replacement part to said lower unit housing; and
said alignment tool having a leading end that tapers downwardly so that it is ensleevable within said lower unit housing, a uniform diameter central part having a length substantially equal to the predetermined length of said cylindrical replacement part so that it is ensleevable within said cylindrical replacement part, and a trailing part having a diameter greater than a diameter of said uniform diameter central part so that it abuts a trailing edge of said cylindrical replacement part and retains it against movement when said attachment means is used to attach said replacement part to said lower unit housing.

5,307,551
METHOD OF INSTALLING A FILTER BELT ON A FILTER HOUSING MOUNTED ROLLER
Jack R. Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48322
Division of Ser. No. 766,182, Sep. 27, 1991, Pat. No. 5,209,841. This application Feb. 3, 1993, Ser. No. 12,898
Int. Cl.[5] B23P *11/00*; B65H *75/28*; F16B *3/04*
U.S. Cl. 29—434 **1 Claim**



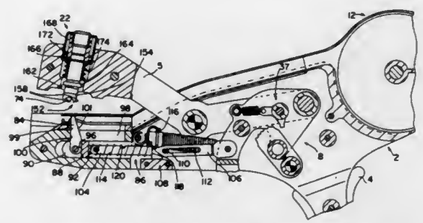
1. A method of attaching a filter belt to each of a pair of wind up rollers disposed on either side of a filter housing, said rollers each formed with a lengthwise slot extending completely across each of said rollers, each slot shaped to define a reduced width at the surface of each roller, said filter housing including side members closely positioned on either side of at least one of said rollers to endwise limit access thereto, the method comprising the steps of:
sewing an elongated freely flexible element into a pocket at each end of said filter belt;
sizing said flexible element and pocket so as to be able to be inserted into a respective slot from the end of a respective roller and retained therein by said reduced width thereof; and
fully inserting each pocket and sewn in freely flexible element lengthwise into a slot of a respective roller from the end thereof while bending said freely flexible element around said filter housing side members and into said slot, to secure each end of said filter belt to a respective roller.

5,307,552
METHOD OF MAKING A ZIPPER FOR RECLOSABLE THERMOPLASTIC BAG
Brian C. Dais; Jose Porchia, both of Midland; John O. McCree, Saginaw; Raymond R. Rydman, Coleman, and Bertha R. Vaughn, Midland, all of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.
Division of Ser. No. 531,951, Jun. 1, 1990, Pat. No. 5,070,584, which is a continuation-in-part of Ser. No. 491,389, Mar. 9, 1990, abandoned. This application Sep. 17, 1991, Ser. No. 761,125
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—453 **2 Claims**



1. A process for making a longitudinally extending zipper for a thermoplastic reclosable bag, comprising:
a) providing a longitudinally extending first zipper profile having a longitudinally extending head interlockable with a longitudinally extending opposing second zipper profile;
b) deforming the head by contacting the upper lateral portions of the head in a vertically downward motion with the front portions of a generally U-shaped tooth to form indentations therein intermittently along its length, the head comprising generally bulbous first segments and generally clover-shaped second segments alternating along its length such that, upon interlocking the profiles, the indentations within the head are substantially free of interdigitation, and such that the zipper imparts a vibratory or bumpy feel perceptible to the touch; and
c) providing the second zipper profile.

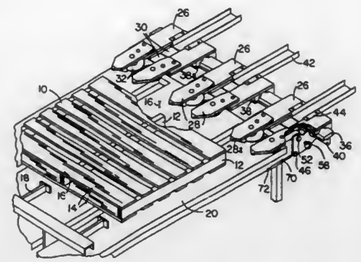
5,307,553
CRIMPING TOOL
Hans Frohlich, Wangen im Allgau, Fed. Rep. of Germany, assignor to Zoller & Frohlich GmbH, Wangen im Allgau, Fed. Rep. of Germany
PCT No. PCT/EP91/00532, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO91/14300, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 16, 1991, Ser. No. 781,181
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1990, 4008515
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—566.2 **54 Claims**



1. A crimping tool for compressing an electrical component onto a conductor to form a crimp connection comprising:
anvil means formed by two compression jaws which are relatively movable toward one another for applying compression to the electrical component disposed between the jaws and relatively movable away from one another for removal of the crimp connection from between the jaws;
a stationary working arm being connected to one of the jaws, the stationary working arm having an extending counter-holder;
a movable working arm being connected to the other of the two jaws, the movable working arm having an extending handle which can be swivelled toward the counter-holder;
transmission means connected to the handle for swivelling the handle and causing the jaws to move toward one another for applying compression force to the electrical component and at the end of the same swivel to cause the jaws to move away from one another for removal of the crimp connection; and
feed means, responsive to the swivelling of the handle, for delivery of the electrical component to the anvil.

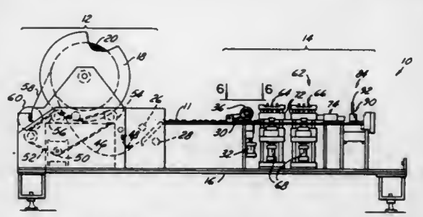
5,307,554
PALLET DISMANTLING MACHINE AND CUTTER HEAD ASSEMBLY THEREFOR
John L. Johnson, 934 NE. 77th Ave., Portland, Oreg. 97213, and Paul E. Herzig, Hillsboro, Oreg., assignors to John L. Johnson, Portland, Oreg.
Filed Dec. 2, 1992, Ser. No. 984,874
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—564.3 **18 Claims**

1. A pallet dismantling machine for pallets of the type having deck boards nailed to longitudinally aligned spacing members, said machine comprising:
a frame having forward and rearward ends,
a cutter head assembly,
a cross member on said cutter head assembly,
cutter head means projecting forwardly from said cross member,
laterally extending pivot means supporting said cutter head means on said frame,
the center of gravity of said cutter head assembly being substantially at said pivot means to provide a balanced structure,



and resilient means acting between said frame and said cutter head means urging the latter rotatably down to an operational position for dismantling pallets.

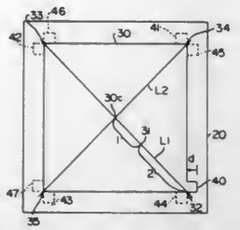
5,307,555
PART PITCH INDEPENDENT ELECTRICAL COMPONENT FEEDER
Scott T. Eder, Norristown, Pa.; Gerald M. Lepley, Delaware, and Glenn J. Kahle, Plain City, both of Ohio, assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 12, 1993, Ser. No. 16,934
Int. Cl.[5] B23P *23/00*; B21F *45/00*; H05K *13/00*
U.S. Cl. 29—566.3 **12 Claims**



1. Apparatus for forming the leads of electrical components contained on a tape, the apparatus comprising:
a sensor for detecting the presence of an electrical component contained on the tape;
means for singulating a segment of tape having at least one electrical component from the remainder of the tape after the sensor detects the presence of an electrical component;
a lead forming station adapted to accept the segment of tape and to form the leads of the electrical component contained on the segment into a desired configuration;
the tape being stored in a reel prior to delivery to the sensor, the tape having a section extending from the reel to the sensor;
a motor drivingly connected to the reel to maintain slack in the section generally constant; and
means for detecting slack in the section, the means for detecting slack in the section comprising a paddle engaged with the section and movable as the slack in the section varies, the paddle activating the motor upon moving to a predetermined position.

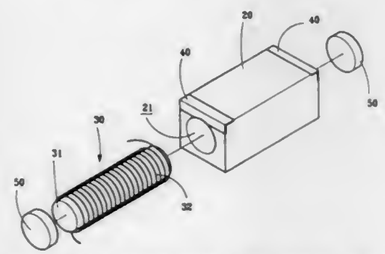
VOL 1162 ISS 1 MAY 3 1994 UMI

5,307,556
METHOD OF MANUFACTURING A MICRO-STRIP ANTENNA
Takashi Kido, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 910,831
Int. Cl.[5] H01P *11/00*
U.S. Cl. 29—600 **2 Claims**



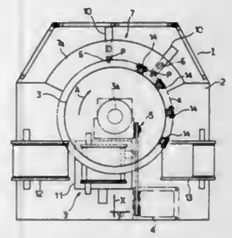
1. A method of manufacturing a micro-strip antenna characterized in that a projecting portion projected from an edge of a radiating conductor is formed substantially at a point where an extension line, that extends from a line which connects the center of gravity of a radiating conductor and a feeding point, intersects an edge of said radiating conductor, or at a point where a line, that crosses said extension line perpendicularly at said center of gravity, intersects an edge of said radiating conductor, and a center frequency of said micro-strip antenna is adjusted upwardly by cutting said projecting portion a specific amount.

5,307,557
METHOD OF MANUFACTURING A CHIP INDUCTOR WITH CERAMIC ENCLOSURE
Iseng Te-Hsueh, Hsin-Chu Hsien, Taiwan, assignor to Chilisin Electronics Corporation, Taiwan
Filed Apr. 14, 1992, Ser. No. 868,540
Int. Cl.[5] H01F *41/02*
U.S. Cl. 29—605 **8 Claims**



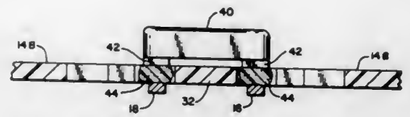
1. A method for manufacturing a chip inductor with a ceramic shield, wherein said chip inductor, has a core made of magnetic material with an electrically conductive wire wound thereon, comprising:
providing a ceramic body with a central bore formed therein;
forming external terminals on said ceramic body, each of said external terminals being made of a plurality of layers of different metals and/or alloys thereof;
disposing said magnetic core, along with the electrically conductive wire, into the central bore of said ceramic body;
soldering said electrically conductive wire to said external terminals; and
sealing said bore of the ceramic body with a plurality of insulating fillers, wherein said magnetic core and the electrically conductive wire are enclosed inside the central bore.

5,307,558
PARTS MOUNTING APPARATUS
Takatomo Izume, Urawa; Koji Taira, Fuchu; Hiroshi Hohrai, Kuwana; Etuo Minamihama, Yokkaichi; Yasuharu Ujiie, and Hisao Suzuki, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba and Japana Tobacco Inc., both of Kanagawa, Japan
Filed Sep. 23, 1992, Ser. No. 949,437
Claims priority, application Japan, Sep. 25, 1991, 3-245909
Int. Cl.[5] B23P *21/00, 19/04*
U.S. Cl. 29—712 **6 Claims**



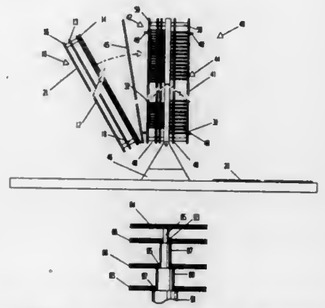
1. A parts mounting apparatus comprising:
a) a rotating carrier;
b) a feed station provided around the rotating carrier for feeding parts to be mounted;
c) a mounting station provided around the rotating carrier so as to be spaced from the feed station, the mounting station being fed with members on which the parts at the fed station are to be mounted;
d) a mounting head provided on the rotating carrier for performing a cycloid movement in synchronism with rotation of the rotating carrier, the cycloid movement having a plurality of bottom dead points;
e) a suction nozzle provided on the mounting head, the nozzle being switched between first and second pressure states, the nozzle sucking the part at the feed station in the first pressure state when one of the bottom dead points of the cycloid movement of the mounting head is reached, the nozzle releasing sucking of the part over the member at the mounting station in the second pressure state when the other or another one of the bottom dead points is reached, thereby mounting the part on the member at the mounting station;
f) valve means for switching the nozzle between the first and second pressure states;
g) position detecting means for detecting a rotational position of the rotating carrier;
h) speed detecting means for detecting a rotational speed of the rotating carrier;
i) part sucking and mounting timing calculating means for calculating timings of sucking and mounting of the part from data of results of detection by both of the position and the speed detecting means; and
j) valve control means for controlling the valve means for switching the valve means between the first and second pressure sates prior to each of the part sucking and mounting timings calculated by the part sucking and mounting timing calculating means, based on the part sucking and mounting timings and a period of time required for the switching of the valve means.

5,307,559
METHOD OF PROVIDING A CAPACITOR WITHIN A SEMICONDUCTOR DEVICE PACKAGE
Jon Long, Livermore, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Division of Ser. No. 454,751, Dec. 19, 1989, Pat. No. 5,200,642.
This application Nov. 20, 1992, Ser. No. 979,304
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **18 Claims**



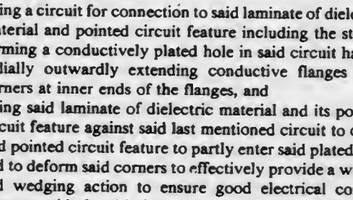
1. A method of providing a capacitor within a semiconductor device package, comprising:
providing an upper plastic film layer above conductive leads, a portion of the plastic film layer forming a plastic film pad stop a pair of the leads;
disposing a capacitor atop the plastic film pad, on an opposite side of the plastic film pad from the leads; and
connecting the capacitor through the plastic film pad to the pair of leads.

5,307,560
AUTOMATED TEST PIN LOADING METHOD
Allen Aksu, 1044 Santiago Dr., Newport Beach, Calif. 92660
Filed Jul. 30, 1992, Ser. No. 922,569
Int. Cl.[5] H05K *13/04*; G01R *1/073*
U.S. Cl. 29—842 **15 Claims**



1. A method for preparation of a probe head useful in automated testing of printed circuit boards and comprising an assembly of probes received in aligned holes of a plurality of spaced apart probe head plates at selected test point positions therein, said method comprising:
a. storing a multitude of said probes in a probe storage unit at on-grid probe locations in a fully populated grid distribution of said probes at uniform and preselected probe-to-probe spacings;
b. preparing a selector mask with a plurality of through holes at preselected locations which coincide sufficiently with said on-grid probe locations in said probe storage unit to permit probes at said preselected locations to pass through said mask, and placing said selector mask in a dispensing station against said probe storage unit;
c. placing a probe cassette beside said mask at said dispensing station and transferring probes at said preselected locations from said dispensing station to said probe cassette; and
d. transferring said probe cassette to an aligned position against a closely-spaced, stacked array of said probe head plates; and
e. transferring said probes from said probe cassette to said stacked array of said plates.

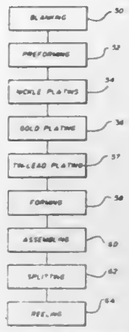
5,307,561
METHOD FOR MAKING 3-D ELECTRICAL CIRCUITRY
Haim Feigenbaum, Irvine; William R. Crumly, Anaheim, and Christopher M. Schreiber, Newport Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angles, Calif.
Division of Ser. No. 750,842, Aug. 26, 1991. This application Nov. 27, 1992, Ser. No. 991,735
Int. Cl.[5] H05K *3/02*
U.S. Cl. 29—846 **5 Claims**



1. A method of forming three-dimensional electrical circuitry having conductive components and at least one pointed projecting feature projecting from said components comprising:
forming an electrically conductive mandrel having a working surface,
forming a pattern of electrically non-conductive material of said mandrel, said material having a non-conductive material surface that divides said mandrel working surface into an electrically conductive pattern,
forming a depression in said mandrel working surface having a configuration that tapers from a broad area at said surface to a smaller area below said surface to define a pointed mandrel feature,
electroforming a pattern of conductors and a pointed circuit feature on the conductive pattern of said working surface and in said pointed mandrel feature,
laminating a dielectric material upon said mandrel, upon said pattern of conductors and upon said pointed circuit feature to position said dielectric material over said conductors and circuit feature, whereby said conductors are bonded to said dielectric material and whereby said pointed circuit feature projects from said conductors,
separating said dielectric material with said electroformed conductors and pointed projecting circuit feature from said mandrel substrate and its non-conductive material to provide a laminate of dielectric material having conductors thereon and a pointed circuit feature projecting from said conductors,
forming a circuit for connection to said laminate of dielectric material and pointed circuit feature including the step of forming a conductively plated hole in said circuit having radially outwardly extending conductive flanges with corners at inner ends of the flanges, and
pressing said laminate of dielectric material and its pointed circuit feature against said last mentioned circuit to cause said pointed circuit feature to partly enter said plated hole and to deform said corners to effectively provide a wiping and wedging action to ensure good electrical contact between said plated hole and said pointed circuit feature.

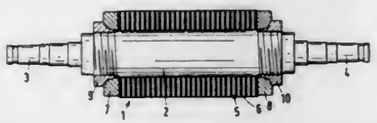
VOL 1162 ISS 1 MY 3 1994 UMI

5,307,562
METHOD FOR MAKING CONTACT
Keith R. Denlinger, Lancaster, and John M. Myer, Millersville, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Nov. 6, 1992, Ser. No. 972,657
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—882 **15 Claims**



1. A continuous process for manufacturing contact assemblies, comprising:
providing a blank strip of indefinite length;
piercing said strip to provide a plurality of apertures therein;
profiling a contact body shape at least along an edge portion of said blank strip to form precursors of said contact bodies;
forming said precursors into a predetermined configuration;
plating a portion of said contact body precursors to provide a high conductivity portion thereon; and
assembling said contact body precursors with a coaxially disposed contact sleeve,
wherein the piercing, profiling, forming, plating and assembling are performed along a single manufacturing line.

5,307,563
METHOD OF MAKING ROLLS WITH ELASTIC COVERS
Peter Svenka, Grefrath, Fed. Rep. of Germany, assignor to Sulzer Papertec Krefeld GmbH, Krefeld and Ferd. Jagenberg & Söhne GmbH & Co. KG, Altenkirchen, both of Fed. Rep. of Germany
Filed Jun. 15, 1993, Ser. No. 76,985
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4219989
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—895.213 **14 Claims**



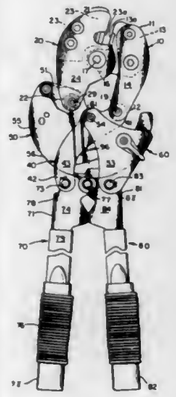
1. A method of making a roll having an elongated core and an elastic cover including a plurality of discs containing a fibrous material and a plastic substance which is hardenable within a time span exceeding 48 hours, comprising the steps of placing the discs of the cover next to each other around the core; and subjecting the thus obtained cover to a compressive stress in the longitudinal direction of the core, including starting the application of said compressive stress with a delay following the placing step such that the hardening of said plastic substance begins prior to said subjecting step and is terminated within an interval of more than 48 hours following the start of the processing step.

5,307,564
SAFETY RAZOR
Frederic D. Schoenberg, 628 Ocean Ave., Sea Bright, N.J. 07760
Filed Dec. 1, 1992, Ser. No. 983,674
Int. Cl.[5] B26B *21/00, 21/10, 21/14*
U.S. Cl. 30—50 **6 Claims**



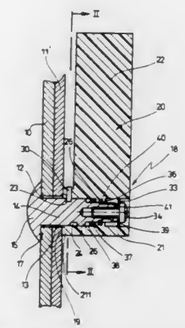
1. A razor having oppositely acting shaving heads comprising: a handle having first and second opposite sides, a first blade attached to said handle and extending from said handle over said first side so that the cutting edge of said first blade is directed for use in a first direction at an angle with respect to said handle, a second blade attached to said handle extending from said handle over the second of said sides so that the cutting edge of said second blade is directed in a second direction which is substantially parallel to said handle and which is substantially opposite to said first direction.

5,307,565
HAND TOOL WITH RATCHET ACTION JAMS
Robert S. Erbrick, Danboro, and Joseph E. Erbrick, Jr., Chalfont, both of Pa., assignors to Electroline Corp., Danboro, Pa.
Continuation-in-part of Ser. No. 864,162, Apr. 2, 1992, Pat. No. 5,195,353, which is a continuation of Ser. No. 718,057, Jun. 20, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 987,527
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—251 **19 Claims**



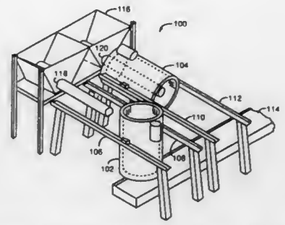
1. A hand tool comprising:
a first jaw having first and second ends;
a second jaw having first and second ends, the first and second jaws being pivotally coupled between the first and second ends;
a first link having a first end pivotally coupled with the second end of the first jaw;
a second link having a first end pivotally coupled with the second end of the second jaw;
a first handle having a first end pivotally coupled with the second end of the first link;
a second handle pivotally coupled with the first handle; and
a third link having a first end pivotally coupled in common with the first and second links on a link pivot and a second end pivotally coupled with the second handle.

5,307,566
ARRESTING DEVICE
David Matzo, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 21, 1992, Ser. No. 994,146
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142282
Int. Cl.[5] F16B *35/00*
U.S. Cl. 30—371 **17 Claims**



1. An arresting device for force-transmitting fixing of two relatively movable parts, comprising a pin having a radially extending pressing surface for pressing against one of the parts; a clamping element having a pressing surface for pressing against another of the parts and arranged on said pin so that by a relative turning of said clamping element and said pin said pressing surfaces are moved toward one another for producing a clamping and moved away from one another for releasing the clamping, said clamping element being formed as a hand lever having a clamping sleeve and a lever arm extending from said clamping sleeve, said clamping sleeve being turnably arranged on said pin and having a clamping collar extending over said lever arm and provided with a ring-shaped end surface forming said pressing surface of said clamping element, said pin having an outer peripheral surface provided with at least one depressed cam path having a path starting portion at a free pin end and a path ending portion facing said pressing surface of said pin, said cam path having a pitch which starting from said path starting portion reduces in a peripheral direction toward and to said path ending portion; and a guiding pin extending radially in said clamping sleeve and engaging in said at least one cam path.

5,307,567
HORIZONTALLY-SPINNING AND HORIZONTAL LOADING CENTRIFUGE AND METHOD FOR DE-WATERING BULK MATERIALS IN LARGE VOLUMES
John L. Schnake, Morgan Hill, and Gordon D. Frye, San Jose, both of Calif., assignors to Controls Systems & Mechanics International, Los Gatos, Calif.
Filed Mar. 9, 1993, Ser. No. 28,297
Int. Cl.[5] F26B *5/08*
U.S. Cl. 34—319 **23 Claims**



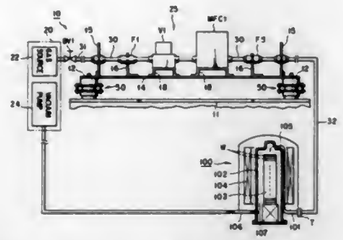
21. A method for removing liquids that have coated or infiltrated the material of a solid product, the method comprising the steps of:
spinning a cylindrical sieve on a horizontal axis at a "loading" speed of rotation that is just sufficient to press said product against the inside walls of said sieve by centrifugal force and maintain contact within said sieve through each full rotation;
transporting said solid product to a plurality of points inside said rotating sieve such that said product drops by gravity to a spiral track of points on the inside surface of said rotating sieve such that said product is uniformly deposited;
accelerating the spinning of said cylindrical sieve to a "drying" speed of rotation that is just sufficient to centrifugally force said liquid to migrate out of said product through the walls of said sieve;
pivoting said rotating cylindrical sieve such that its axis of rotation is approximately vertical while maintaining said drying speed of rotation of said sieve; and
decelerating the spinning of said cylindrical sieve to an "unloading" speed of rotation that is slow enough to permit said product to drop vertically out of said sieve by force of gravity.

5,307,568
GAS SUPPLY SYSTEM
Takenobu Matsuo; Tsuyoshi Wakabayashi, Kofu, and Shjui Moriya, Yamanashi, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan
Filed Sep. 9, 1992, Ser. No. 942,501
Claims priority, application Japan, Sep. 9, 1991, 3-258576; Sep. 9, 1991, 3-258577; Sep. 9, 1991, 3-258578; Sep. 11, 1991, 3-259743
Int. Cl.[5] F26B *13/30*
U.S. Cl. 34—92 **10 Claims**

1. A gas supply system comprising:
a gas source for supplying a process gas to a reduced-pressure vessel;
a piping unit including a metallic pipe arranged between said gas source and said reduced-pressure vessel through which said process gas circulates; and
a conduit, at least a part of which is composed of a metal,

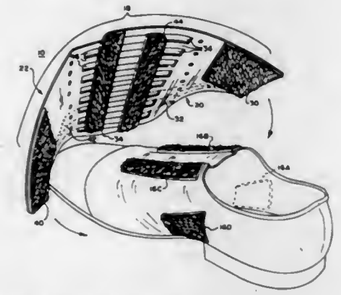
VOL 1162 ISS 1 MY 3 1994 UMI

arranged between said piping unit and said reduced-pressure vessel, wherein a part of said conduit which is com-



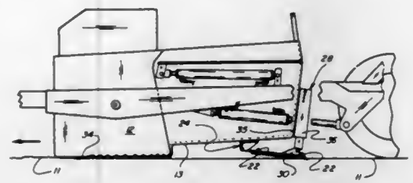
posed of a metal comprises an austenitic stainless steel containing 6% or more of molybdenum by weight.

5,307,569
FOOT SUPPORT
Jerald R. Melcher, 9812 Emmett St., Omaha, Nebr. 68134
Continuation-in-part of Ser. No. 110,456, Oct. 19, 1987, Pat. No. 5,074,059. This application Dec. 17, 1991, Ser. No. 809,648
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] A43B *11/00*
U.S. Cl. 36—58.5 **8 Claims**



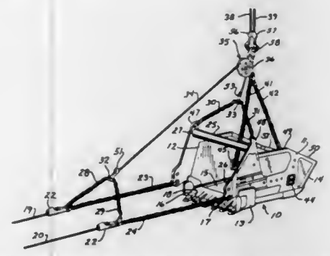
1. A kit of articles comprising:
adjustable means for applying tension to a foot between a location near the underside of a medial longitudinal arch of the foot and a location near a sole of the foot at an angle in the range of between 20 degrees to a sole of a shoe and 80 degrees to the sole of the shoe wherein tension is directed over the medial arch of the foot and downwardly to a bottom of the medial arch of the foot to hold a heel of the foot within one-half inch of an inner surface of the heel of the shoe and to hold the sole of the foot within one-half inch of an inner surface of the sole of the shoe as the foot is moved;
said adjustable means including a flat flexible member;
said flat flexible member having at least one fastening means on one end, whereby it may be fastened at a location to apply said tension;
an adhesive member;
said adhesive member being adapted to fasten shoe mounting portions to the shoe, whereby said kit may be utilized to form a shoe suitable for use with a foot support whereby as the foot is articulated, the foot is kept aligned and prevented from over supination and over pronation.

5,307,570
DAMPING DEVICE FOR DIRT SCRAPERS
Dennis Brown, Rte. 2, Box 2171, Dexter, Mo. 63841
Filed Apr. 20, 1993, Ser. No. 50,539
Int. Cl.[5] E02F *3/64*
U.S. Cl. 37—439 **10 Claims**



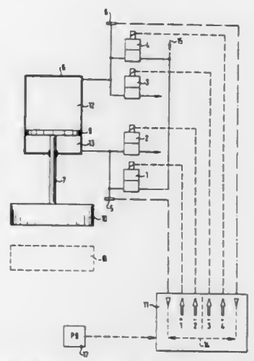
1. A damping device adapted for use on dirt buckets comprising:
a skid shoe hingedly attachable to said bucket by a front hinge at the front end of said skid shoe,
said skid shoe having a wear plate rigidly attached on the bottom side of said skid shoe,
said skid shoe being hingedly attachable back of said front hinge to a spring loaded leg by a rear hinge, said spring loaded leg being removably connected to an outer sleeve,
said outer sleeve being rigidly attachable to said dirt bucket and essentially completely encasing said spring-loaded leg.

5,307,571
HIGH PRODUCTION SYSTEM BUCKET
Donald J. Behlendorf, Franklin; Frederick J. Keip, Franksville, both of Wis., and Robert L. Benson, Underwood, N. Dak., assignors to Bucyrus Erie Company, South Milwaukee, Wis.
Continuation of Ser. No. 750,776, Aug. 22, 1991, abandoned, which is a continuation of Ser. No. 541,002, Jun. 20, 1990, abandoned, which is a continuation of Ser. No. 370,416, Jun. 22, 1989, Pat. No. 4,944,102. This application Oct. 28, 1992, Ser. No. 967,944
The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.
Int. Cl.[5] E02F *3/46*
U.S. Cl. 37—396 **5 Claims**



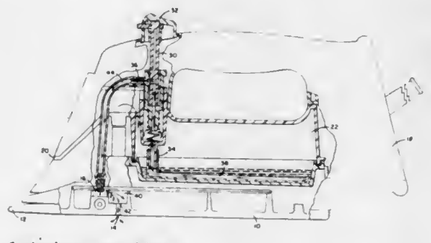
1. A high production excavating bucket system comprising:
a bucket having side walls, a rear wall and a floor having a forward lip with excavating teeth extending therefrom; and
drag and dump lines connected to a forward portion of said bucket and hoist lines connected to the inside of rearward portions of said side walls, said drag and dump lines constructed and arranged to provide a forward dumping of said bucket;
side walls having upper wall edges extending downwardly toward said rear wall defining open area means with the rear wall to provide an open back area of the rear of said bucket, said open area constructed and arranged with respect to an upper edge portion of said rear wall to afford a complete forward dumping of said bucket before engagement with said hoist lines.

5,307,572
IRONING MACHINE WITH A DIFFERENTIAL-PRESSURE REGULATING DEVICE
Harald Engel, Birkenweg 24, A-2380 Perchtoldsdorf, Austria
Filed Apr. 2, 1992, Ser. No. 862,484
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110761
Int. Cl.[5] D06F *71/10*
U.S. Cl. 38—43 **12 Claims**



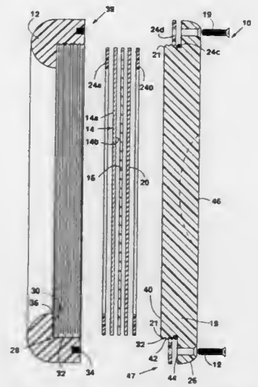
1. An ironing machine comprising a computer-assisted control device, upper and lower shaping boards, each having an ironing surface on mutually facing sides, at least one of the shaping boards being vertically movable and having a dead weight, and a differential-pressure regulating device, wherein, during application of ironing pressure to an article, the regulating device, under control of the control device, differentially adjusts the ironing pressure accounting for the dead weight of the at least one shaping board.

5,307,573
STEAM BURST IRON WITH PUMP INLET TUBE WITHIN INCLINED RESERVOIR FLOOR
Edwin Watkins, Highland Park, N.J., assignor to The Singer Company N.V., Curacao, Netherlands
Filed Oct. 22, 1992, Ser. No. 964,689
Int. Cl.[5] D06F *75/14, 75/20*
U.S. Cl. 38—77.8 **1 Claim**



1. An iron comprising:
a flat horizontal longitudinally extending sole plate with a pointed front end and provided with a plurality of steam ports;
a hollow longitudinally extending body having a top disposed handle and disposed above and secured to the sole plate, a portion of the body which is secured to the plate being congruent therewith, the front end of the body being disposed above the plate and containing a water inlet port;
a water reservoir disposed and extending longitudinally in the body, the reservoir having a front end connected to the inlet port and having an opposite rear end, the reservoir having a floor which extends longitudinally between the front and rear ends and inclines smoothly and continuously from the front end to the rear end, the floor containing a longitudinally extending recess which inclines smoothly and continuously from the front end to the rear end;
a manually operated steam burst pump having an actuating button disposed in the handle, the pump having an inlet and an outlet and extending downwardly in the body;
means connecting the outlet of the pump to the steam ports in the sole plate; and
an elongated hollow pump extension tube having opposite open ends, one tube end being secured to the pump inlet, the tube being disposed in the recess with the other tube end being disposed adjacent the rear end of the reservoir.

5,307,574
CHILDREN'S WATERPROOF, SAFETY PICTURE FRAME
Howard C. Huff, Jr., 1502 Stag Pt., San Antonio, Tex. 78248
Continuation of Ser. No. 580,950, Sep. 11, 1990, Pat. No. 5,125,175. This application Jun. 29, 1992, Ser. No. 905,684
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152 **7 Claims**



1. A waterproof picture frame for enclosing a picture, the picture frame comprising:
a front subframe having an outer surface and an inner surface, said outer surface and said inner surface being substantially smooth such that said picture frame is safe for handling by a child;
a rear subframe having an outer surface and an inner surface dimensioned to and capable of receiving the front subframe such that said outer surface of said front subframe and said outer surface of said rear subframe join in smooth, flush relation, said outer surface of said rear subframe and said inner surface of said rear subframe being substantially smooth such that said picture frame is safe for handling by a child;
a shatter-proof transparent sheet for viewing the picture therethrough, the sheet having a front face and a rear face,

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and capable of receiving the picture against the rear face thereof;

attachment means for releasably attaching said front subframe and said rear subframe; and

sealant means for substantially preventing water or moisture, under normal atmospheric conditions, from reaching the picture, said sealant means is continuous and said sealant means including a first sealant means for sealing the inner surface of said front subframe to the front face of said transparent sheet and a second sealant means for sealing the inner surface of said front subframe to the inner surface of said rear subframe.

5,307,575

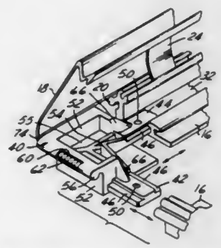
FRAME CORNER ASSEMBLY

Bengt Ivansson, Ursviken; Martin Eriksson, Skellefteå, and Jan Öhlund, Skelleftehamn, all of Sweden, assignors to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Nov. 3, 1992, Ser. No. 970,612

Int. Cl.[5] G09C *1/12*

U.S. Cl. 40—156 **13 Claims**



1. A corner frame member for a poster frame made of a plurality of frame sections, said corner frame member comprising:

a body portion;

a pair of connection members extending from said body portion for mating with said frame sections;

a wall member on said body portion;

rail hinge means on said wall member for mating with a channel hinge means on a mating frame section;

gap means on said rail means; and

insert member positioned in said gap means for forming an interference fit with said channel hinge means and preventing relative longitudinal sliding of said frame section relative to said body portion.

5,307,576

ATTACHABLE INFORMATION BOOKLET

James A. Machen, Plymouth, Minn., assignor to Jamco International, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 393,529, Aug. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 51,522, Oct. 20, 1987, Pat. No. 4,856,214. This application Feb. 7, 1992, Ser. No. 833,631

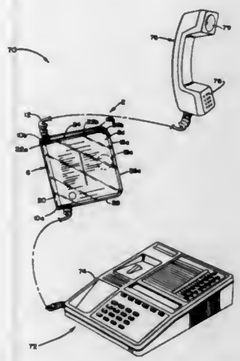
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.

Int. Cl.[5] G09F *3/20*

U.S. Cl. 40—316 **15 Claims**

1. An attachable information booklet in combination with an elongated coiled telephone cord, said combination attachable informational booklet and elongated coiled telephone cord comprising engaging means for encircling and engaging the elongated coiled telephone cord within the booklet in a non-slip friction fit such that the coiled telephone cord is not noticeably deformed when so engaged and such that there is enough friction between the booklet and the coiled telephone cord to hold the booklet in place around the coiled telephone cord such that a resistance to slippage exists between the booklet and the telephone cord, said booklet further comprising:

(a) a plurality of information providing segments, each segment being a generally flat, flexible member having front and rear faces and including means for providing transcribed information to a user thereof via each of said faces, each of said plurality of segments being foldably connected to at least another of said segments such that said booklet can be folded so that at least two of said faces can oppose one another, each of said plurality of segments including a pocket, wherein each pocket can receive an information card which is removable therefrom, and wherein said booklet includes an informational card in each of said pockets, each of said informational cards including printed information; and



(b) coupling means for coupling two opposing faces together, wherein said coupling means can couple the booklet together around the elongated member thereby attaching said booklet thereto and such that the opposing faces are coupled together, wherein said coupling means include opposing first and second fastener portions, said first and second fastener portions being attached to respective opposing faces when said first and second fastener portions are coupled together; and wherein the information providing segments of each of the proposing faces are generally flat, flexible members having sufficient rigidity to permit them to be deformed around the coiled telephone cord at the same time that they resist further deformation and exhibit sufficient resilience such that they cooperate to resist slippage of the informational booklet along the coiled telephone cord.

5,307,577

ROOF SUPPORTED DISPLAY

John M. Werling, Las Vegas, Nev., assignor to Roy N. Brown and Charles A. Codding, both of Oklahoma City, Okla.

Continuation of Ser. No. 31,079, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 731,165, Jul. 15, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 76,306

Int. Cl.[5] G09F *11/18*

U.S. Cl. 40—514 **6 Claims**

1. A method for displaying a house number indicia on a roof of a house structure, comprising the steps of:

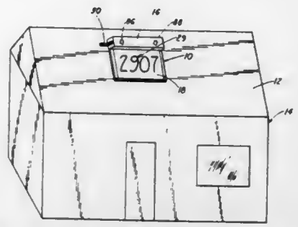
providing a display comprising:

a case having a panel opening and encompassing a component space;

a flexible panel having a first end, a second end, a first side, a second side, an upper surface and a lower surface, the house number indicia being disposed on the upper surface of the panel, the panel being extendible through the panel opening in the case; and

means connected to the panel for moving the panel to a storage position wherein the panel substantially is disposed in the component space of the case and for moving the panel from the storage position to a display position wherein the panel extends a distance from the case such that the house number indicia are visible;

connecting the display to the roof;



moving the panel to the storage position in one mode of operation so that the house number indicia are hidden from sight; and

moving the panel to the display position in one other mode of operation so that the house number indicia are visible from a position above the roof of the house structure.

5,307,578

NETTING FOR FENCES FOR SPORTING ACTIVITIES HAVING INDICIA BEARING SIDES AND METHOD THEREFOR

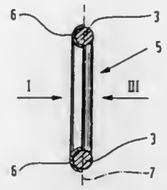
Hans G. E. Fichtenau, Stuttgart, Fed. Rep. of Germany, assignor to Michael H. Alt, Stuttgart and Lothar Hackmann, Gerlingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 74,428, Jul. 9, 1987, abandoned. This application Jul. 26, 1991, Ser. No. 737,895

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1985, 3539856

Int. Cl.[5] G09F *7/00*

U.S. Cl. 40—584 **9 Claims**



1. A netting comprised of intersecting strands of material, the strands being disposed in an open relationship to one another and fixed to each other at their intersecting points t form a lattice having an open mesh pattern with first and second sides at least one of said sides of said lattice being coated with a colored substance comprising phosphorescent matter and having a color different from said netting, said colored substance being applied to said strands and said intersecting points of said lattice to coat said strands and said intersecting points up to one-half of their periphery along a plane through the midpoint thereof only, said colored substance adapted to convey information and having a consistency which is visible to a viewer from only one side of said lattice and not visible through the strands from the uncoated side.

5,307,579

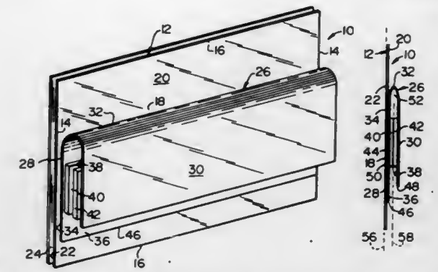
ELECTROSTATIC AND MAGNETIC HOLDER

Theodore H. Clayton, Tipton, and Douglas F. Smith, Tecumseh, both of Mich., assignors to Static-Mag Inc., Tecumseh, Mich.

Filed Sep. 11, 1992, Ser. No. 944,093

Int. Cl.[5] G09F *7/04*

U.S. Cl. 40—600 **10 Claims**



1. An electrostatically supported article holder comprising, in combination, a base formed of a flexible electrostatically chargeable material having lateral sides, end edges and a central region intermediate said lateral sides, an article clip mounted on said base intermediate said lateral sides including a backing portion formed of electrostatically chargeable material engageable with said base said clip is selectively mounted upon said bas by electrostatic attraction, a front flag portion opposite said backing portion and means biasing said backing portion and said front portion toward each other to grip an article therebetween, said base permitting said article clip to be supported upon an electrostatically attractable surface.

5,307,580

DISPLAY SIGN

Kenneth R. Farmer, 2397 Church Rd., Smyrna, Ga. 30080

Filed Aug. 10, 1992, Ser. No. 926,652

Int. Cl.[5] G09F *15/00*

U.S. Cl. 40—606 **18 Claims**



1. A display sign comprising:

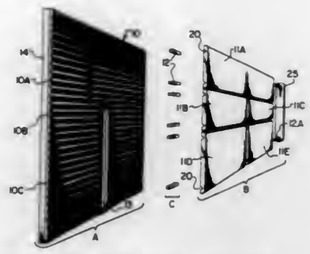
sign panel constructed of corrugated sheet material having channels extending therethrough;

a one-piece post member having two leg members adapted to extend completely through a pair of said channels, said post member comprising an end portion integrally formed with said two leg members; and

a base member having a pair of passages each adapted to receive and retain a portion of a respective leg member.

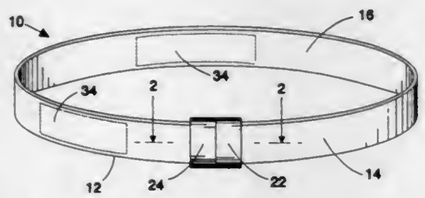
VOL 1162 ISS 1 MY 3 1994 UMI

5,307,581
INFORMATION DISPLAY DEVICE
Teodor Kalmykow, Scarborough, Canada, assignor to AS&G Lettering Systems Inc., Scarborough, Canada
Filed Sep. 16, 1992, Ser. No. 945,420
Int. Cl.[5] G09F *7/10*
U.S. Cl. 40—611 **22 Claims**



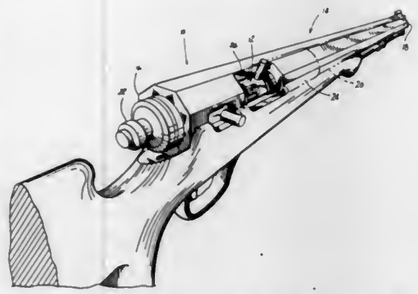
1. An information display device comprising:
(a) a base plate securable to a support surface;
(b) a face plate having an outer exposed surface on which information can be displayed, said base plate and face plate having opposing faces disposed in face-to-face relation and wherein each of said opposing faces have spaced apart parallel grooves; and
(c) spline elements of selected cross-sectional configuration and of selected length interposed between said base plate and said face plate, said spline elements projecting into the grooves on the respective plates and in press-fit relation therewith removably joining said plates together, each of said grooves, in cross-section, have a throat entry into the groove which is narrower than the groove and wherein each said spline, in cross-section, has spaced apart enlargements, said spaced apart enlargements being forceable through the throat of opposed grooves respectively in said face plate and said base plate and thereby providing said press-fit relation.

5,307,582
ADJUSTABLE BAND
James A. Quintel, 1635 N. Irwin, Hanford, Calif. 93230
Filed Dec. 31, 1992, Ser. No. 999,744
Int. Cl.[5] A44B *11/00*
U.S. Cl. 40—633 **2 Claims**



1. An adjustable band, comprising:
a planar strip of flexible magnetized material having a first side and a second side opposite to said first side and a first end and a second end opposite to said first end;
said planar strip folded onto itself forming a ring shape having a circumference wherein said first side is in contact with and overlaps said second side resulting in the creation of a magnetic force, said sides being attracted to each other by said magnetic force of said magnetized material;
a first guide fabricated from a flexible magnetized material coupled to said strip substantially at said first end and said second end passing therethrough with said first side and said second side in planar contact, said first guide allowing said first side and said second side to move with respect to each other along said circumference;
a second guide fabricated from a flexible magnetized material coupled to said strip substantially at said second end, and slidably holding said first end with said first side and said second side in planar contact, said second guide allowing said first side and said second side to move with respect to each other along said circumference; and
said first guide and said second guide acting as stops to mechanically prevent said first end and said second end from disengaging;
whereby, said band maintains a set circumference through the magnetic force of said magnetized material and the circumference of said band may be increased or decreased by changing the positions of said first and second guides.

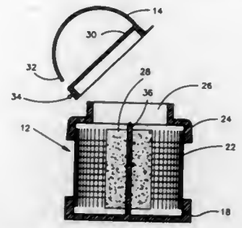
5,307,583
MUZZLE LOADING WEAPON IGNITION SYSTEM
Gary Mahn, 9470 Oriole Dr., Coopersville, Mich. 49404, and Gary Bowman, 871 Dolphin, SW., Wyoming, Mich. 49509
Filed Sep. 29, 1992, Ser. No. 954,502
Int. Cl.[5] F41A *17/00*
U.S. Cl. 42—51 **26 Claims**



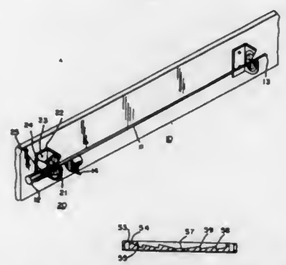
23. In a muzzle loading firearm having a barrel bore, a firing pin, and an ignition mechanism, the improvement in the ignition mechanism comprising:
a body having first and second opposing ends and at least one wall partially defining a receiving chamber, said at least one wall extending between the first and second ends and having a loading slot;
the first end having a spark port and the second end having a firing port, the spark port being in communication with the barrel bore and the firing port being disposed to communicate with the firing pin; and
a cover mounted to the body in a position to selectively cover the loading slot.

5,307,584
DEER SCENT DISPENSER AND METHOD
Robert Jarvis, Rt. 2 Box 4, Gerald, Mo. 63037
Continuation-in-part of Ser. No. 944,042, Sep. 11, 1992. This application Jul. 28, 1993, Ser. No. 98,520
Int. Cl.[5] A01M *31/00*
U.S. Cl. 43—1 **9 Claims**

1. A deer scent dispenser for use in the field to attract deer, said dispenser comprising a container having a bottom reservoir receiving a liquid deer scent, said reservoir being defined by a bottom wall and a solid peripheral side wall portion extending vertically a sufficient distance to retain said liquid deer scent, vertical side wall means having openings providing for passage of deer scent therethrough, a cap fitting on the top of said side wall means and adapted to be opened and closed over a top opening in said container, said top opening providing for filling the bottom reservoir of said container with said liquid deer scent, a porous wick material extending from the bottom reservoir portion of said container to said side wall means, a bail member having opposite ends connected to upper and opposite side portions of the container, said bail being of a size to be fitted over a small branch to support the container, said wick material being in a body shape spaced from interior side walls of said screen and a vertical spindle connected to said bottom wall fitting through said body to retain said body against movement within said container.



5,307,585
FISHING ROD HOLDER
David M. Thompson, 802 Mantoloking Rd., Brick Town, N.J. 08723
Filed Oct. 19, 1992, Ser. No. 962,848
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **7 Claims**



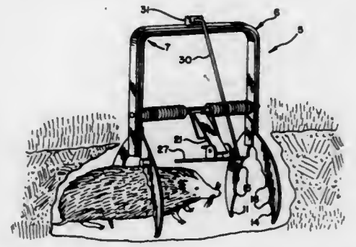
1. A fishing pole holder comprising at least two brackets mounted on a relatively flat surface, the spacing between the outermost of said brackets being less than the length of said fishing pole; each of said brackets having a flange portion; means for mounting said flange portions on said relatively flat surface; each of said flange portions supporting a bracket portion extending at right angles away from said flat surface; each of said bracket portions having a central opening; each of said central openings supporting a diaphragm of a resilient material with a centrally-located hole and radial cuts from said centrally-located hole to the edges of said central openings; said radial cuts defining wedge-shaped sections; the thickness of each of said wedge-shaped sections increasing and having a series of lateral ridges and hollows spaced between said hole and said edges of said central opening, said hollows varying thickness making said resilient material of said wedge-shaped sections more flexible, even to said edges of said central openings; said ridges, of increasing thickness, gripping the adjacent portions of said fishing pole; and openings in the upper quadrants of said brackets and of said diaphragms of resilient material to permit the lateral introduction of any portions of said fishing pole, to be seated at the centers of said diaphragms.

5,307,586
FISHHOOK REMOVER
Vincent Palmer, 12701 Cambridge La., Leawood, Kans. 66209
Filed Mar. 9, 1993, Ser. No. 28,427
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—53.5 **11 Claims**



1. A fishhook remover comprising:
a. an elongated tubular housing having a proximal end and a distal end and an elongated tapered slot along a bottom side of said elongated tubular housing with a wider portion end of said elongated tapered slot located at said distal end of said elongated tubular housing and a parallel-edged slot in said elongated tubular housing located on a top side of said elongated tubular housing and superposed along a portion of said elongated tubular housing;
b. a fishhook engaging V-shaped flange at said distal end; and
c. a plunger having a fishhook grabber at a distal end seated for reciprocal movement within said housing.

5,307,587
MOLE TRAP
Robert E. Zeiger, Rte. 1, Box 490, and Larry Tarvin, R.R. #2, Box 298, both of Havana, Ill. 62644
Filed Apr. 26, 1993, Ser. No. 52,646
Int. Cl.[5] A01M *23/26*
U.S. Cl. 43—88 **9 Claims**

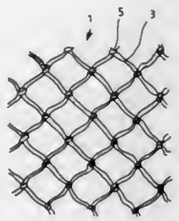


1. An animal trap comprising inner and outer, interfitting U-shaped members with the distal ends of the legs of each member being in the form of one-half of an animal gripping jaw-with its opposing mating jaw half being on the distal end of the cooperating leg of a second U-shaped member, a shaft extending between the legs of said U-shaped members and fixedly attached adjacent its opposite ends to the legs of one U-shaped member with the legs of the other U-shaped member being pivotally mounted on said shaft, a trigger supporting lever fixedly projecting from said shaft intermediate its opposite ends, at least one coil spring surrounding said shaft with at least one end thereof projecting into driving engagement with a leg of said pivotally mounted U-shaped member and with the opposite end thereof projecting into driving relationship with said lever whereby the torque exerted by said spring urges said jaws to close together in animal gripping relationship, a trigger pivotally mounted intermediate its ends on the distal end of

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said lever with one end of-the trigger in the form of an animal engageable pan and the opposite end having an aperture or a hook formation thereon, a trip rod pivotally mounted at its proximal end on the bight of said U-shaped member having its legs fixedly attached to said shaft, the distal end of said trip rod being releaseably engageable in said aperture or with said hook formation whereby when said trip is in its set condition the bights of said U-shaped members are held together and said jaws are held open against the torque exerted by said spring, and whereby said trap is sprung when an animal lifts said pan and thereby rotates said trigger so as to disengage said trip rod from said aperture or hook formation.

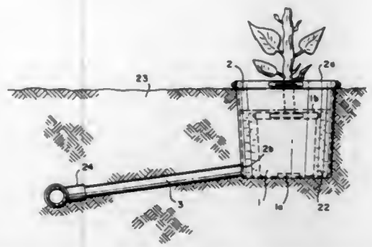
5,307,588
METHOD OF AND DEVICE FOR ESTABLISHING A VEGETABLE COVER ON AT LEAST PARTIALLY DENUDED LAND
Martin Ullmann, Tellenweg 1, CH-9030 Abtwil, Switzerland
Filed Mar. 10, 1992, Ser. No. 848,874
Claims priority, application Switzerland, Mar. 12, 1991, 00728/91-9
Int. Cl.[5] A01C *1/04*
U.S. Cl. 47—56 **18 Claims**



1. A netting assembly comprising:
(a) a plurality of seedlings;
(b) a plurality of cords being connected together by knots, at least some of said cords including a plurality of strands, said plurality of strands forming an enclosure, said seedlings being housed within said enclosure to thereby protect said seedlings; and
(c) means for reinforcing an area to be covered by said netting assembly, said reinforcing means including distributing, throughout the netting assembly, an anchoring force of a plurality of developing roots, germinating from said seedlings, which penetrate said covered area.

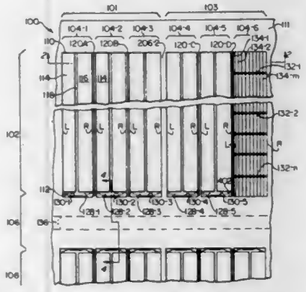
5,307,589
EBB AND FLOOD IRRIGATION SYSTEM
Robert W. Rigsby, North Fort Myers, Fla., assignor to Pursley/Rigsby, Inc., Bradenton, Fla.
Filed Jun. 2, 1992, Ser. No. 892,240
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—59 **11 Claims**

1. An ebb and flood irrigation system comprising, at least one protective container having an open top and closed bottom wall, a plant growing receptacle placed in said container and supported on the closed bottom wall thereof, the container having a greater height and width than the receptacle, whereby the top edge of the container extends a substantial distance above the top edge of the receptacle and a water reservoir is provided by the space between the side walls of the receptacle and container, a drain opening in said receptacle, a pipe having one end connected to the side wall of the container adjacent the bottom wall thereof, means connected to the



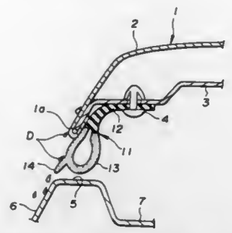
opposite end of said pipe for supplying irrigating water to the container and draining the water therefrom.

5,307,590
VEE BOTTOM PLANT FLAT BED SYSTEM
Robert M. Brown, Hollister, Calif.; Mike Samilian, Temple Terrace, Fla., and James D. Brannon, San Luis Obispo, Calif., assignors to Speedling, Incorporated, Sun City, Fla.
Filed Mar. 16, 1992, Ser. No. 851,876
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—62 **19 Claims**



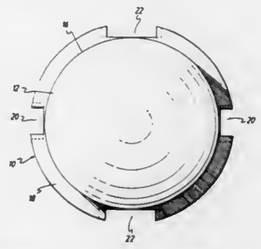
2. A soaking bed for a plant production system, said soaking bed comprising:
raise wall means defining first and second lengthwise extending side walls;
floor slab mean positioned between said first and second side wall means and having an upper surface sloped in a lateral direction including lower edge means extending horizontally in a longitudinal direction;
drain means extending horizontally in a longitudinal direction from and substantially below said lower edge means for effecting drainage of said soaking bed;
the floor slab means comprising two slab components extending horizontally in a longitudinal direction and having upper surfaces sloped downwardly toward each other in a lateral direction to form a shallow "vee" shape having an apex; and
the drain means including (i) a pipe section positioned below said apex and (ii) a vertical slot section, the vertical slot section extending generally from the apex of the "vee" to the pipe section and being oriented horizontally in the longitudinal direction.

5,307,591
WEATHER STRIP
Takahiro Usuta, and Hiroshi Urume, both of Chiba, Japan, assignors to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan
Filed Oct. 25, 1991, Ser. No. 783,568
Claims priority, application Japan, Oct. 29, 1990, 2-291386
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—476.1 **16 Claims**



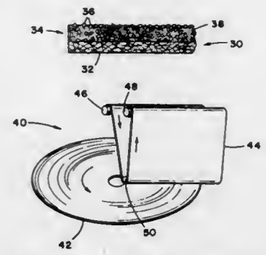
1. A weather strip for providing a seal between a movable door and the body of an automotive vehicle, said weather strip comprising:
a hollow seal portion having a coplanar surface with an exposed surface of the door extending downwardly therefrom for sealing a gap formed between the movable door and a seal plane of the automotive vehicle body when said door is in a closed position; and
a drain lip portion extending from said hollow seal portion toward said seal plane of the vehicle body, said drain lip portion including guide means for directing water away from the gap and the seal plane extending along the coplanar surface of said hollow portion toward the downward and outward direction relative to the perpendicular direction of the vehicle body thereby preventing water from entering the vehicle when the door is opened and wherein the guide means rests on a surface of the vehicle body adjacent the seal plane when the door is in the closed position.

5,307,592
LENS SURFACE FORMER AND POLISHING TOOL
Stephen J. Wylde, 22 Bath Road, Emsworth, Hampshire, England P010 7EP
Filed Mar. 10, 1992, Ser. No. 848,871
Claims priority, application United Kingdom, May 24, 1991, 9111349
Int. Cl.[5] B24B *13/06, 1/00;* B24D *17/00*
U.S. Cl. 51—101 LG **12 Claims**



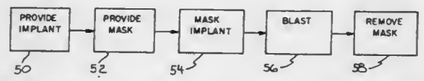
1. A lens surface former and polishing tool comprising a generally circular block of material formed symmetrically about a rotational axis of the tool, lens-generating or lens-forming surfaces on two opposite-facing sides of the block, at least one flange or ledge formed on the block and projecting radially outwards with respect to the rotational axis of the tool to act as securing means for securing the block on a lens-generating machine or a lens-polishing machine, and location grooves formed in the flange or ledge on the block, and
wherein at least one of the grooves is of a different width from the other grooves so as to permit the grooves to cooperate with holding lugs of unequal width for axis location on a lens-polishing machine.

5,307,593
METHOD OF TEXTURING RIGID MEMORY DISKS USING AN ABRASIVE ARTICLE
James A. Lucker, Alameda, Calif.; Darlene N. Strecker, and Kathleen A. Wagle, both of Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 31, 1992, Ser. No. 938,416
Int. Cl.[5] B24B *29/00*
U.S. Cl. 51—281 SF **18 Claims**



1. A method of texturing a thin-film metal coated substrate of a magnetic recording media before application of a magnetic coating to said substrate, said method comprising the steps of:
a) providing a rigid substrate having a metal coating on a surface of said rigid substrate;
b) providing a porous abrasive article in frictional contact with said metal coating, said porous abrasive article comprising an abrasive composite bonded to a porous backing, said abrasive composite further comprising a plurality of abrasive particles distributed in a binder; and
c) abrading said metal coating with said porous abrasive article to form scratches in said metal coating.

5,307,594
METHOD FOR FORMING TEXTURED SURFACES ON AN ORTHOPAEDIC IMPLANT
Clarence M. Panchison, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.
Filed Dec. 14, 1992, Ser. No. 990,320
Int. Cl.[5] B24C *1/04*
U.S. Cl. 51—310 **2 Claims**



1. A method of providing a textured outer surface on an orthopaedic implant, the method comprising the steps of:
a) providing an orthopaedic implant having an outer surface;
b) providing a mask having a plurality of openings formed therein in a predetermined pattern;
c) placing said mask on said implant such that portions of the outer surface of said implant are exposed by said openings in said mask, applying heat to the mask sufficient to cause said mask to shrink into a tight fit with said implant;
d) subjecting said implant with said mask placed thereon to

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blasting by an erosive media, wherein media contacting the mask is prevented from contact with the implant and media passing through said openings in the mask contacting said portions of the implant; and

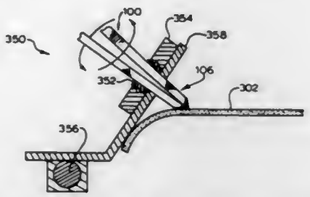
e) removing said mask from said implant.

5,307,595

METHOD OF SHARPENING TWEEZERS

Kenneth J. Coleman, 6217 Lou St., Crystal Lake, Ill. 60014

Division of Ser. No. 871,475, Apr. 21, 1992, Pat. No. 5,263,754.
This application May 7, 1993, Ser. No. 58,948
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—328 **1 Claim**



1. A method of sharpening tweezers to have a barbed tip, wherein said method comprises:

a) securing a rounded end of a first arm and a second arm to a spacer means to form said tweezers;

b) abutting an opposing end of said first arm to an opposing end of said second arm to form abutted ends;

c) inserting said abutted ends into a rotatable sleeve mounted in a sleeve housing;

d) applying said abutted ends to an endless moving belt; and

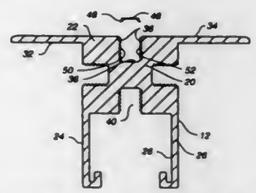
e) rotating said abutted ends on said endless moving belt to sharpen said abutted ends of said tweezers and form said barbed tip.

5,307,596

WALL ASSEMBLY SUPPORT APPARATUS

Douglas F. Bockmiller, 5601 Balmoral Dr., Oakland, Calif. 94619

Continuation of Ser. No. 846,608, Mar. 15, 1992, abandoned.
This application Jul. 22, 1993, Ser. No. 94,868
Int. Cl.[5] E04B *2/88, 2/78*
U.S. Cl. 52—36.5 **3 Claims**



1. Support apparatus including a framing member for supporting adjacent wall panels of a wall assembly having outer surfaces and for supporting a structural member projecting outwardly from said framing member and from the outer surfaces of said adjacent wall panels, said framing member comprising, in combination:

an elongated body having a front body panel having a planar outer front body panel surface and a pair of elongated legs opposed to one another and having elongated distal ends spaced from said front body panel, curved back toward said front body panel, and defining an elongated channel; and

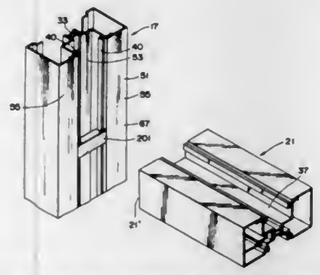
a pair of elongated wall panel support flanges integrally connected to said elongated body, contiguous with said front body panel and extending from opposite sides of said front body panel along substantially the full length of said elongated body, said elongated wall panel support flanges each having a planar outer flange surface and a planar inner flange surface, said planar inner flange surfaces being co-planar and for engaging and being in partial registry with the outer surfaces of adjacent wall panels, said planar outer flange surfaces being co-planar with one another and with the planar outer front body panel surface, said elongated body defining an elongated opening in said planar outer front body panel surface between said elongated wall panel support flanges and spaced from said elongated wall panel support flanges and further defining an elongated recess in at least partial registry with said elongated opening and communicating with said elongated opening, said elongated recess being defined by space, grooved, elongated recess side walls formed by said elongated body and extending inwardly into said elongated body from said elongated opening and said planar outer front body panel surface away from said front body panel, the grooves of said spaced, grooved, elongated recess side walls located closely adjacent to said planar outer front body panel surface, said elongated opening and said elongated recess extending along the length of said elongated body and for receiving and accommodating mechanical fasteners at any desired location along the length of said elongated body, whereby said structural member may be attached to said framing member at any desired preselected location along the length of said elongated body by at least one mechanical fastener engaging grooves of said spaced, grooved, elongated recess side walls and whereby said structural member may be secured in tight engagement with said planar outer front body panel surface and in close proximity to wall panel outer surfaces engaged with said planar inner flange surfaces by said at least one mechanical fastener, said elongated body defining a second elongated recess spaced from and in substantial alignment with said first elongated recess for receiving at least one mechanical fastener, said second elongated recess being located between said leg distal ends and said elongated wall panel support flanges closely adjacent to said first elongated recess and opening to said channel defining by said pair of elongated legs and said front body panel and defined by spaced, grooved, elongated recess side walls extending inwardly from said channel into said elongated body and spaced a substantial distance inwardly of said elongated legs.

5,307,597

WATER DEFLECTOR

Shinji Tanikawa, and Masayoshi Ishikawa, both of Marietta, Ga., assignors to YKK Corporation, Lyndhurst, N.J.

Filed Nov. 13, 1992, Ser. No. 976,459
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—97 **8 Claims**



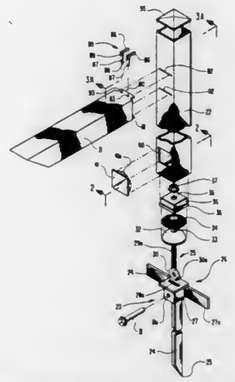
1. An improved wall framing including a vertical frame member having a glazing pocket formed along a side surface of the vertical frame member so as to define a pair of opposed marginal faces therealong, and a hollow horizontal frame member including a glazing pocket formed along a surface of the horizontal frame member, one end of the hollow horizontal frame member joined to a portion of the vertical frame member with the respective glazing pockets of the vertical frame member and the horizontal frame member aligned with each other, wherein the improvement comprises: a water deflector having a rear side and fitted into the vertical frame member glazing pocket at said portion of the vertical frame member so the rear side of the water deflector fully extends between and is coplanar with the pair of opposed marginal faces, so that the water deflector and the opposed marginal faces engagingly seal the one end of the hollow horizontal frame member.

5,307,598

POST SYSTEM

Ronald R. West, 545 E. 200 North, Provo, Utah 84606

Filed Mar. 24, 1992, Ser. No. 856,639
Int. Cl.[5] E04C *3/32*
U.S. Cl. 52—155 **3 Claims**



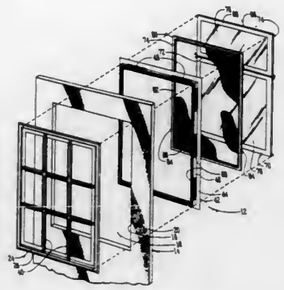
1. A post system comprising, a ground stake that includes a straight section of a rigid material and includes on a bottom end thereof, a means for mounting said ground stake to a ground surface, said ground stake straight section having a top, above ground surface whereto a collar is secured thereacross and said collar incorporates a slot formed therethrough sized for passing a head end of a single eyebolt connector into said collar interior; a single eyebolt connector having a threaded end with means for connecting said threaded end to an adjustable mounting means said eyebolt connector having an eyelet head end that extends from a base end of said adjustable mounting means that is arranged for receiving a post fitted thereto; bolt means for fitting into said collar for maintaining said eyebolt connector eyelet head end in said collar and passing through said eyebolt connector for prohibiting turning thereof with said base end of said adjustable mounting means and a top surface of said collar clamped tightly together across their opposing surfaces and a straight post that includes means for coupling an end of said straight post onto, to extend axially upwardly from, said adjustable mounting means.

5,307,599

WINDOW GRILL ASSEMBLY AND METHOD FOR ASSEMBLING SAME

Walter B. Herbst, Evanston, and James F. Caruso, Chicago, both of Ill., assignors to Emco Specialties, Inc., Des Moines, Iowa

Filed Oct. 7, 1992, Ser. No. 957,161
Int. Cl.[5] E06B *1/30;* E04C *2/38*
U.S. Cl. 52—207 **11 Claims**



1. A Window grill assembly comprising:

a window frame having a window perimetric edge defining a window opening, said window frame having first and second opposite faces spaced apart from one another to define a window frame thickness;

a grill frame having a first perimetric grill flange forming a first grill flange surface and in facing engagement with said first face of said window frame adjacent said window perimetric edge, said grill frame having a second grill flange extending within said window opening between said first and second opposite faces of said window frame;

a retaining frame having a first perimetric retaining frame flange forming a first retaining flange surface in facing engagement with said second face of said window frame adjacent said window perimetric edge, said retaining frame having a second retaining flange extending within said window opening between said first and second opposite faces of said window frame;

first alignment means on said grill frame;

second alignment means on said retainer frame; and

one of said first and second alignment means comprising an alignment rib and the other of said first and second alignment means comprising an alignment groove, said alignment rib being matingly fitted within said alignment groove such that said first and second alignment means cooperate with one another to align said retaining frame in registered alignment with said grill.

5,307,600

SLIM WALL SYSTEM

Laurence J. Simon, Jr., Campbell, and Timothy M. Hogan, Fremont, both of Calif., assignors to Unistrut International Corp., Ann Arbor, Mich.

Filed Jun. 4, 1992, Ser. No. 894,499
Int. Cl.[5] E04H *1/00;* E04B *1/343*
U.S. Cl. 52—241 **12 Claims**

1. A polygonal elongated framing member for supporting at least one wall panel having an edge portion comprising:

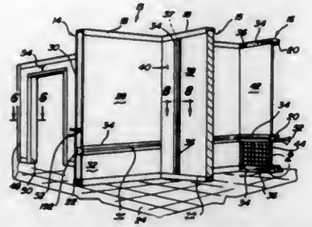
an open face defining an open channel with edges extending substantially along the entire length of said framing member for receiving a mounting means;

a closed face opposite said open face having an outer surface;

at least one fence extending perpendicularly outwardly from said outer surface of said closed face, said fence and said

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outer surface of said closed face defining an intersection and a sill for receiving an edge portion of a wall panel;
a notch formed within said sill at the intersection of said fence and said outer surface of said closed face, said notch



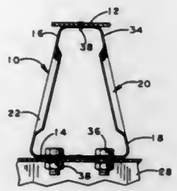
allowing selective separation of said fence from said outer surface of said closed face; and
wherein said open face is defined by a pair of projections extending laterally inwardly from the edges of said channel.

5,307,601

BEAM MEMBER FOR USE IN CONCRETE FORMING APPARATUS

Robert G. McCracken, 4301 NE. 14th St., Des Moines, Iowa 50316

Filed Feb. 6, 1992, Ser. No. 832,018
Int. Cl.[5] E04C *3/16*
U.S. Cl. 52—364 **14 Claims**



1. A concrete form supported beam member formed of a single sheet of material into a trapezoidal transverse cross-section comprising:
(a) a bottom section in supported engagement with the concrete form;
(b) a top section in supporting engagement with a sheeting material, said top section being located between said bottom section and said said sheeting material, said top section coextensive in length to said bottom section and of a width less than said bottom section;
(c) a pair of web sections of uniform width coextensive in length to said stop section and said bottom section and interconnecting said top section and said bottom section along corresponding adjacent edges thereof to form the beam member having the trapezoidal transverse cross section.

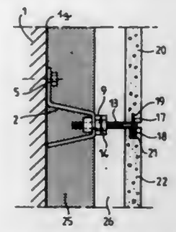
5,307,602

SETTABLE FITTING ALLOWING THE FIXATION OF FACADE LINING OUTER PANEL BOARDS

Richard Lebraut, 40 rue des Cormiers, 78400 Chatou, Yvelines, France

Filed Oct. 17, 1991, Ser. No. 777,929
Int. Cl.[5] E04B *1/38, 2/30*
U.S. Cl. 52—698 **7 Claims**

1. A device for vertically aligning facade panel boards in superposed substantially coplanar relation to one another and for holding the aligned boards in position at a desired distance from a vertical wall, comprising a substantially U-shaped member having a pair of legs that are interconnected to one another by an intervening leg, means for attaching said member to a wall surface with said pair of legs adapted to extend horizontally away from said wall and with said intervening leg adapted to extend generally parallel to and spaced outwardly from said wall surface, said intervening leg having a circular aperture therein, an internally threaded retaining element rotatably mounted in said aperture, an elongated externally threaded rod in threaded engagement with the internal threads of said retaining element, said rod extending in a generally horizontal direction when said device is attached to a wall, adjustment means for selectively rotating said threaded retaining element to



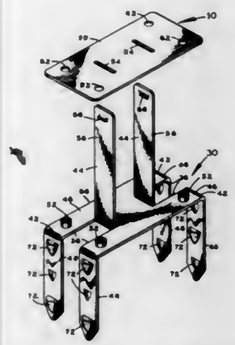
move said elongated rod in nonrotational translation between said pair of legs, a pin at a remote end of said rod, said pin being oriented in a direction generally parallel to said wall surface when said device is attached to a wall and having portions that extend above and below said remote end of said rod, said portions of said pin being adapted respectively to engage recesses in a pair of facade panel boards that are to be vertically aligned with one another at positions relative to said wall surface determined by rotation of said threaded retaining element, and means for thereafter locking said retaining element against rotation to maintain said rod and pin at adjusted fixed positions relative to said wall surface.

5,307,603

ANCHOR DEVICE

Daniel J. Chiodo, 2260 W. 77th St., Hialeah, Fla. 33016

Filed Nov. 5, 1992, Ser. No. 972,363
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—698 **6 Claims**



1. An anchoring apparatus for securing a truss bottom beam across the top of a wall, comprising:
a first plate comprising an axis extending through two plate end sections, each said end section being divided by cuts substantially parallel to said axis into middle strip portions and two outer strip portions,

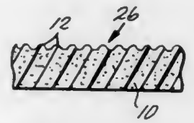
said middle strip portions being bent upward substantially perpendicular to said first plate for receiving between them said truss bottom beam,
a second plate having openings for receiving said middle strip portions and extending over and holding said truss bottom beam between said middle strip portions,
means for fastening said second plate to said first plate comprising a port in said second plate, a nut attached to said first plate, and a bolt extending through said port and into said nut.

5,307,604

SYNTHETIC SHAKE SHINGLE

Joseph A. Tasso, Orange, Calif., assignor to Lewis Akmakjian, Burbank, Calif.

Division of Ser. No. 568,967, Aug. 17, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 941,980
Int. Cl.[5] B29C *51/00*
U.S. Cl. 52—745.19 **10 Claims**



1. A method for making a synthetic fire resistant and flame retardant shake shingle suitable for roofing construction including the steps of mixing a water-extended polyester resin with water to form a viscous emulsion, adding chopped fiberglass pieces and a separate particulate fire retardant material different from the fiberglass to the polyester-water emulsion and mixing in a high shear mixer to uniformly disperse the fiberglass pieces and the fire retardant material throughout the emulsion, injecting a catalyst into the polyester-water emulsion to form a curable resin consisting essentially of the polyester resin-water emulsion with the uniformly dispersed chopped fiberglass pieces and particulate fire retardant material, immediately pouring the resulting curable resin into a mold having the shape of a shingle to harden the mixture to form a molded shingle, and thereafter removing the shingle from the mold to provide a roofing shingle in which essentially the entire cross section of the shingle is formed of the polyester resin which has been molded to the shingle shape and dried to form a semi-rigid, cellular lightweight structure containing the filler of fiberglass pieces and fire retardant material substantially uniformly dispersed throughout the entire cross-section of the polyester resinous structure.

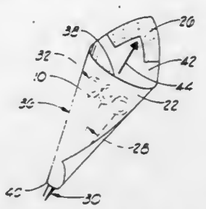
5,307,605

METHOD AND APPARATUS FOR PROVIDING A WRAPPER FOR A FLORAL GROUPING HAVING A FLAP FOR CLOSING THE UPPER END OR THE LOWER END OF THE WRAPPER

William F. Straeter, Breese, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jul. 30, 1992, Ser. No. 923,117
Int. Cl.[5] B65B *11/02, 11/48, 51/04, 25/02*
U.S. Cl. 53—397 **56 Claims**

1. A method for wrapping a floral grouping comprising:
providing a sheet of material having an upper surface and a lower surface with a closure bonding material on at least one of the upper and the lower surfaces thereof and with a flap bonding material on at least one of the upper and the lower surfaces thereof;
providing a floral grouping having a stem end and a bloom end;
disposing the floral grouping on the upper surface of the sheet of material;
wrapping the sheet of material about the floral grouping and disposing the closure bonding material adjacent a portion of the sheet of material whereby the closure bonding material bondingly engages and bondingly connects to the adjacent portion of the sheet of material for cooperating to secure the sheet of material wrapped about the floral grouping providing a wrapper for the floral grouping with an open upper end and an open lower end, the sheet of



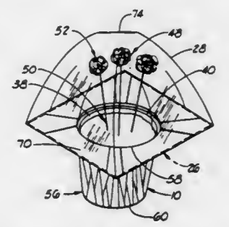
material being sized and the floral grouping being positioned on the sheet of material whereby a portion of the sheet of material extends beyond the open upper end to form a flap with the flap bonding material being on the flap; and
folding the flap over the open upper end of the wrapper and securing the flap end of the flap to the wrapper by way of the flap bonding material for cooperating to secure the flap in a position extending over the open upper end of the wrapper to substantial prevent the floral grouping from shifting in the wrapper and extending out from the open upper end of the wrapper.

5,307,606

COVERING FOR FLOWER POT AND FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jan. 6, 1993, Ser. No. 1,001
Int. Cl.[5] B65B *25/02, 43/08, 5/02, 47/00*
U.S. Cl. 53—410 **10 Claims**



1. A method for providing a covering for use with a pot having a floral grouping disposed therein, the pot having a top and a bottom and an outer and a peripheral surface, and the floral grouping having a stem end and a bloom end with the

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floral grouping extending a distance upwardly from the top of the pot terminating with the bloom end, the method comprising:

providing a sheet of material having an upper surface, a lower surface and an outer peripheral surface, a sheet extension being connected to the outer peripheral surface of the sheet of material and the sheet extension extending a distance from the outer peripheral surface of the sheet of material;

forming the sheet of material into a pot cover having a top, a closed bottom and a cover opening extending through the top a distance toward the bottom of the pot cover providing a pot receiving space shaped and adapted to receive the pot, the pot cover having a plurality of overlapping folds and the sheet extension extending a distance from the top of the pot cover;

placing the pot in the pot cover with the upper end of the pot being disposed in the upper end of the pot cover and the floral grouping extending a distance upwardly from the upper end of the pot cover; and

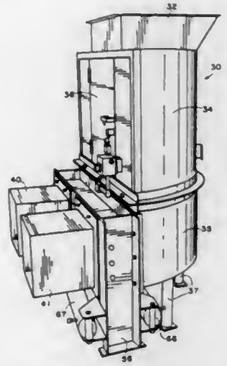
forming the sheet extension about the floral grouping with the sheet extension covering a substantial portion of the floral grouping including the bloom end of the floral grouping.

5,307,607

APPARATUS FOR COMPACTING TRASH OR THE LIKE

Frank Tondo, 19 Grey Ave., Allendale, N.J. 07401

Filed Oct. 13, 1992, Ser. No. 959,916
Int. Cl.[5] B65B *1/24*
U.S. Cl. 53—438 **39 Claims**



36. A trash compacting method, comprising the steps of:

providing a chamber having a chamber inlet and first and second chamber outlets and a ram in the chamber;

feeding through the chamber inlet a first quantity of trash into the chamber;

pivoting the ram in a first direction and thereby pushing in a compacting motion the first quantity of trash out the first chamber outlet and compacted into a first container;

after said first quantity feeding step, feeding through the chamber inlet a second quantity of trash into the chamber; and

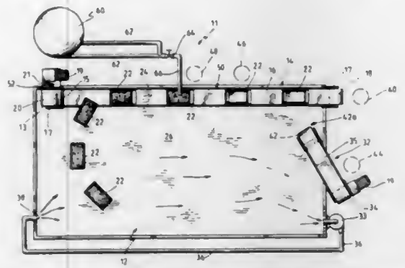
after said first direction pivoting step, pivoting the ram in a second direction and thereby pushing in a compacting motion the second quantity of trash out the second chamber outlet and compacted into a second container.

5,307,608

METHOD AND APPARATUS FOR PACKAGING ASPHALT

Raun S. Muir, Woods Cross, Utah, and Charles S. Rogers, Fredonia, Ariz., assignors to Petro Source Refining Partners, Houston, Tex.

Continuation-in-part of Ser. No. 682,192, Apr. 8, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,192
Int. Cl.[5] B65B *63/08, 61/24*
U.S. Cl. 53—440 **12 Claims**



1. A method of packaging asphalt, comprising the steps of:

filling a floatable mold with hot molten asphalt;

transporting said mold along an elongated conveying surface toward a pool containing water, said mold being transported downward at an angle with respect to the surface of the water;

floating said mold in said water;

cooling said asphalt in said mold; and

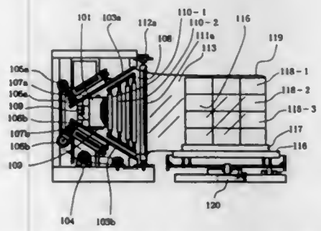
removing said mold from the water.

5,307,609

APPARATUS FOR WRAPPING AND METHOD THEREFOR

Akihide Kurata; Katsuaki Wakahara, both of Fujisawa; Kazuhiko Kurihara; Hiroshi Yazawa, both of Tokyo; Toshikazu Oishi, Kawaguchi; Shuichi Murakami, Tokyo; Yukio Matsumura, Kawaguchi, and Yoichi Mazawa, Yono, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Inst., Ltd., both of Tokyo, Japan

PCT No. PCT/JP91/00717, § 371 Date Jan. 21, 1992, § 102(e) Date Jan. 21, 1992, PCT Pub. No. WO91/18792, PCT Pub. Date Dec. 12, 1991
PCT Filed May 28, 1991, Ser. No. 820,639
Claims priority, application Japan, May 28, 1990, 2-135242; May 28, 1990, 2-135243
Int. Cl.[5] B65B *11/04*
U.S. Cl. 53—556 **18 Claims**



1. A wrapping apparatus for stretching a band-like member and winding the stretched band-like member around at least one article having a predetermined height, comprising:

means for supplying a band-like member which will elastically shrink when it is stretched, said band-like member having two widthwise opposite ends and initial lateral width;

lateral stretch means for stretching said band-like member at least twice as long as said initial lateral width thereof whereby a band-like member is obtained stretched in the lateral direction, said lateral strength means being provided with running means moving at a predetermined speed for running said stretched band-like member whereby said stretched band-like member is spread like an unfolded fan and gripping means for gripping regions respectively near said widthwise opposite ends of said stretched band-like member in such a manner that said regions of said stretched band-like member are detachable from said running means;

a longitudinal post-stretch mechanism for longitudinally stretching said stretched band-like member after the stretched band-like member is laterally stretched by said lateral stretch means:

a turntable on which said at least one article is placed, said turntable being rotatable around an axis approximately parallel to said lateral direction of said lateral stretch means; and

means for winding said stretched band-like member around said at least one article by rotating the turntable with respect to the stretched band-like member at a speed higher than said pre-determined speed of said lateral stretch means, said winding means operating with tension and comprising means for regulating said winding tension of the stretched band-like member around the article, wherein said running means comprises a first running portion and a second running portion and said running means comprises a first rotary disc having a peripheral portion constituting said first running portion and a second rotary disc having a peripheral surface constituting said second running portion, and

said gripping means comprises a first gripping member for detachably fixing the region of one of said opposite widthwise ends of said stretched band-like member to said first running portion, and a second gripping member for fixing the region of the other of said opposite widthwise ends of said stretched band-like member so that it is detachable from said second running portion,

guide means for guiding said stretched band-like member gripped by said gripping means wherein said guide means comprises rotatable guide turn rolls, said first and second rotary discs have a periphery, said guide turn rolls are arranged such that each roll substantially touches internally to the periphery of the cylinder-like shape formed by the first and second rotary discs, for guiding the band-like member so that the difference in running length of the band-like member is reduced in the widthwise direction.

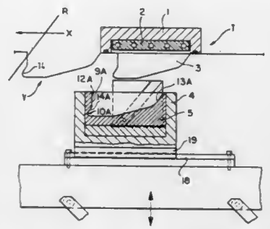
5,307,610

APPARATUS FOR THE MANUFACTURE OF A PACKAGE

Hans-Juergen Schneider, Bad Laasphe; Bruno Bretz, and Klaus Meyer, both of Breidenbach-Wiesenbach, all of Fed. Rep. of Germany, assignors to Kraemer & Grebe GmbH & Co. KG Meschinenfabrik, Biedenkopf-Wallau, Fed. Rep. of Germany

Filed Oct. 6, 1992, Ser. No. 957,354
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 9113290
Int. Cl.[5] B65B *47/04, 47/02, 51/14*
U.S. Cl. 53—559 **14 Claims**

1. In an apparatus for manufacturing a package in a deep-drawing station positioned along a packaging line wherein the apparatus receives a web of foil extending in a transporting direction for performing a deep-drawing operation thereon prior to advancing the web of foil in the transporting direction, the apparatus including a frame and a mold secured to the frame, the mold having a stationary upper part with a contoured die projecting downwardly therefrom, a moveable lower part positioned below said upper part which is moveable upwardly during the deep-drawing operation and is moveable downwardly during an opening of the mold, the lower part including an upwardly facing matrix disposed therein and having an opposingly contoured surface for receiving the contoured die, the opposingly contoured surface of the matrix including first and second sidewalls extending transverse to and spaced-apart in the transporting direction, the first sidewall having a transition surface oriented along a first axis extending other than perpendicular to a plane of the web of foil extending in the transporting direciton and forming an undercut region in the matrix, and the second sidewall extending



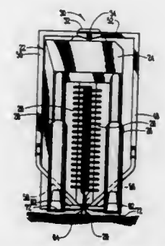
parallel to the transition surface, the apparatus further including a lifting means for facilitating a movement of the lower part in a direction along the first axis during the deep-drawing operation, the improvement wherein the lifting means includes at least one first guide means secured to the lower part and oriented in the transporting direction, and at least on second guide means relatively moveably coupled to and supporting said at least one first guide means, and a lifting device limited to movement substantially along a second axis extending perpendicular to the plane of the web of foil, said at least one second guide means being mounted on said lifting device and moveable therewith.

5,307,611

VEHICLE STEERING CONTROL SYSTEM

Wendell D. Vardeman; Raymond D. Vardeman, and Wendell K. Vardeman, all of Slaton, Tex., assignors to Orthman Manufacturing, Inc., Lexington, Nebr.

Filed Sep. 18, 1992, Ser. No. 947,342
Int. Cl.[5] A01D *75/14*
U.S. Cl. 56—10.2 **8 Claims**



1. A steering probe for facilitating the steering of a vehicle along a path corresponding to an elongated row of upstanding objects extending upwardly from the ground, said vehicle comprising a vehicle frame having front and rear ends, ground engaging wheels supporting said frame, steering mechanism for steering said wheels, and steering control means for controlling said steering mechanism, said probe comprising:

a yoke having spaced apart yoke arms, each having a pair of upper and lower ends, a yoke connection member connecting said upper ends of said yoke arms, said lower ends of said yoke arms being spaced apart from one another so

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as to be capable of being positioned on opposite sides of said row of upstanding objects;

pivot means for pivotally mounting said yoke to said vehicle for pivotal movement about a horizontal axis extending in the same general direction as said path of said vehicle, said horizontal axis being positioned above said lower ends of said yoke arms;

sensor means for sensing the rotational position of said yoke about said horizontal axis relative to said vehicle and for creating a data signal corresponding to said rotational position of said yoke;

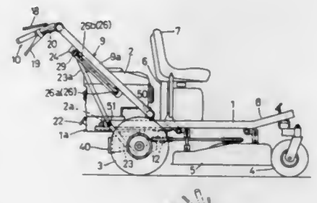
connecting means for connecting said sensor means to said steering control means for carrying said data signal to said steering control means.

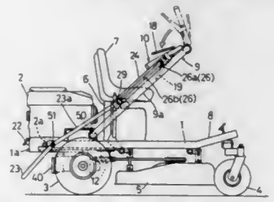
5,307,612

LAWN MOWER HAVING A STEERING HANDLE SWITCHABLE BETWEEN A WALKING MODE AND A RIDING MODE

Yoshio Tomiyama, and Junichi Kitamura, both of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 31,250
Claims priority, application Japan, May 28, 1992, 4-136465
Int. Cl.[5] A01D *34/68, 34/82*
U.S. Cl. 56—11.1 **7 Claims**





1. A lawn mower for use in a walking mode and a riding mode, comprising:

a chassis frame;

an engine mounted on a rearward position of said chassis frame;

at least one front wheel;

driven rear wheel means;

transmission means for transmitting drive from said engine to said rear wheel means, said transmission means including change speed means for changing speed of said rear wheel means;

a grass cutting unit suspended from said chassis frame;

a driver's seat mounted on said chassis frame; and

control means for controlling said change speed means, and switchable between a first position for the walking mode, and a second position for the riding mode, said control means including:

a cross pin mounted on said chassis frame;

a handle post pivotable about said cross pin between said first position and said second position, said handle post including a vertical post portion extending laterally of the lawn mower, and a horizontal post portion curved from said vertical post portion to extend transversely of the lawn mower; and

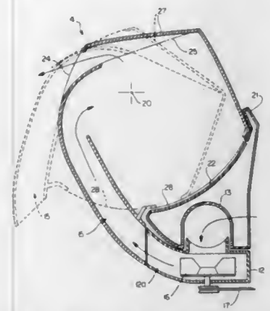
control lever means provided on said horizontal post portion.

5,307,613

DEVICE FOR TAKING UP AND FOR STORING GRASS OR SIMILAR PRODUCTS AND VEHICLE FITTED WITH SUCH A DEVICE

Marc Delery, Trevoux, France, assignor to Creations Delery, France

Filed Jan. 14, 1993, Ser. No. 4,600
Int. Cl.[5] A01D *34/70*
U.S. Cl. 56—202 **6 Claims**



1. A device for taking up and temporarily storing loose material from the ground for use with a tractor type vehicle, the device including:

a head member for taking up loose material from the ground, said head member being positioned on the vehicle so that the clearance between the head and the ground allows the head to pass over the ground material;

enclosure means for temporarily storing and transporting the material collected from the ground;

first pipe means for transferring the material from said head member to said enclosure means;

second pipe means formed within said enclosure means for directing and projecting the flow of material into the upper part thereof during the take-up operation; and

turbine means for creating suction in said head member and said first pipe means, said turbine means being mounted horizontally underneath said enclosure means between said first and second pipe means so that said first pipe means opens axially above said turbine means.

5,307,614

COMPOSITE CRIMPED YARN AND WOVEN FABRIC

Keitaro Nabeshima, Osaka; Minoru Wakabayashi, and Toshiaki Miura, both of Aichi, all of Japan, assignors to Toray Industries, Inc., Tokyo and Toray Textiles, Inc., Osaka, both of Japan

Filed Sep. 24, 1992, Ser. No. 951,998
Claims priority, application Japan, Sep. 26, 1991, 3-246393; Mar. 2, 1992, 4-044946
Int. Cl.[5] D02G *3/04*
U.S. Cl. 57—207 **11 Claims**

1. A composite crimped yarn comprising: at least two kinds of multifilament yarns, one of them being comprised of a crimped conjugate multifilament yarn comprising two kinds of polyester polymers different from each other in the heat shrinkability and positioned as a major component of the inner layer of said composite crimped yarn, the other of them being comprised of a crimped multifilament yarn of a single synthetic polymer having a yarn length 5 to 35% larger than that of said crimped conjugate multifilament yarn and positioned as a major component in the outer layer of said composite crimped yarn, part of said crimped multifilament yarn being migrated to said crimped conjugate multifilament yarn disposed in the inner layer and part of said crimped conjugate multifilament yarn being migrated to said crimped multifilament yarn disposed in the outer layer, said composite crimped yarn exhibit-



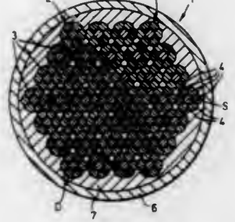
ing a crimped rigidity of 18 to 50% and a textured rigidity of 8 to 25% in such a state that a twist coefficient, α, defined by the equation, $\alpha = t\sqrt{D}$ wherein T is the number of twists (turns/meter) and D is the total fineness (denier) is 6,700 to 20,200.

5,307,615

FLEXIBLE TENSION MEMBER

John M. Walton, and Yeung C. Tong, both of Doncaster, England, assignors to Bridon Plc, South Yorkshire, England

Filed Dec. 26, 1991, Ser. No. 813,608
Claims priority, application United Kingdom, Jan. 3, 1991, 9100041
Int. Cl.[5] D02G *3/36*
U.S. Cl. 57—214 **19 Claims**



1. A flexible tension member comprising a helical bundle comprising a plurality of substantially identical strands, said bundle comprising an outer layer having a plurality of strands, and an inner core having a plurality of strands, each of said strands in said inner core being in contact with six adjacent strands, said bundle having a lay length of at least 30 times a diameter of said bundle, each of said strands comprising wires extending helically around an axis thereof, substantially all of said strands having a helical lay direction opposite to the helical lay direction of said bundle.

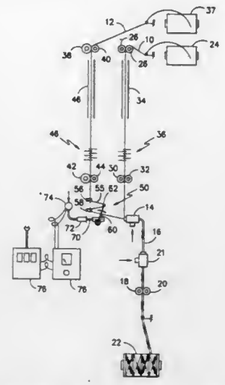
5,307,616

METHOD TO MANUFACTURE A SLUB YARN

Andre' M. Golneau, Spartanburg, and William F. Southerlin, Travelers Rest, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 12, 1991, Ser. No. 743,681
Int. Cl.[5] D02G *3/36*
U.S. Cl. 57—284 **3 Claims**

1. A method of making a slub yarn having a first yarn and a second yarn comprising the steps of: feeding a first yarn at a first predetermined rate to an air texturing jet, simultaneously feeding a second yarn to the air texturing jet at a second predetermined rate, supplying air at a pressure above 100 psi to the air texturing jet to form a composite yarn, withdrawing the composite yarn from the air texturing jet at a third predetermined rate which is lower than the first or second predetermined rate, periodically reducing the second predetermined rate by increasing the yarn path of the second yarn and allowing the increased yarn path to suddenly return to the original yarn path to form slubs in the composite yarn in the air texturing jet and passing the slubbed yarn through an air commingling jet being supplied air at a pressure substantially lower than the air being supplied to the air texturing jet, to commingle the yarn between the formed slubs to prevent strip back during later processing.

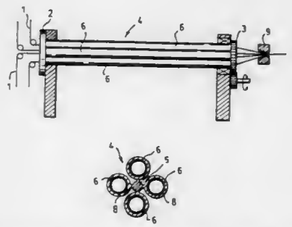


5,307,617

REVERSE STRANDING APPARATUS WITH TWISTABLE PERIPHERAL TUBES ATTACHED TO A CENTRAL ELEMENT

Raimo Karhu, Helsinki, Finland, assignor to Nokia-Maillefer Holding S.A., Ecublens, Switzerland

Filed Aug. 17, 1992, Ser. No. 929,913
Claims priority, application Finland, Aug. 28, 1991, 914066
Int. Cl.[5] H01B *13/02*
U.S. Cl. 57—293 **9 Claims**



1. A reverse stranding apparatus for the reverse stranding of conductors for the manufacture of cables comprising:

a stationary divider means disposed at an upstream end of the reverse stranding apparatus for receiving the conductors to be stranded;

a twisting means rotatable in different directions and disposed at a downstream end of the reverse stranding apparatus for receiving the conductors;

an elongated central element rotatable recurrently about a longitudinal axis in opposite rotational directions; and

elongated, discrete, circumferentially spaced, peripheral tubes twistable recurrently in opposite directions and peripherally surrounding said central element, said central element and said peripheral tubes being disposed between said divider means and said twisting means, the conduc-

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tors to be stranded being adapted to pass through at least said peripheral tubes;

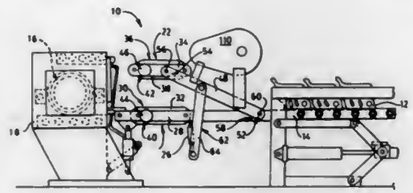
each of said peripheral tubes being integrally connected substantially throughout its entire length to said central element by a substantially radially extending part interconnecting said central element and said peripheral tube with each tube being detached from circumferentially adjacent tubes.

5,307,618

INDEXING APPARATUS FOR A TRACK PRESS

Richard E. Livesay, Peoria, Ill., and Owen R. Thompson, Louisville, Ky., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 18, 1993, Ser. No. 33,725
Int. Cl.[5] B21L *21/00*
U.S. Cl. 59—7 **13 Claims**



1. An indexing apparatus for moving a track chain assembly off of and onto a support structure and for positioning the track chain assembly into and out of a work area of a track press, comprising;

a first lower indexing portion having a lower frame structure and first rotatable means for moving said track chain assembly, said first rotatable means being mounted within said lower frame structure;

a second upper indexing portion having an upper frame structure and second rotatable means for moving said track chain assembly, said second rotatable means being mounted within said upper frame structure;

first and second power means for driving said first and second rotatable means respectively;

a first fluid cylinder connected to said first lower indexing portion and adapted to move said first lower indexing portion between a first lower position and a second upper position; and

a second fluid cylinder connected to said second upper indexing portion and adapted to move said second upper indexing portion toward said first lower indexing portion.

5,307,619

AUTOMATIC NOX CONTROL FOR A GAS TURBINE

William L. McCarty, West Chester, Pa., and Achim A. Von Seelen, Winter Park, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

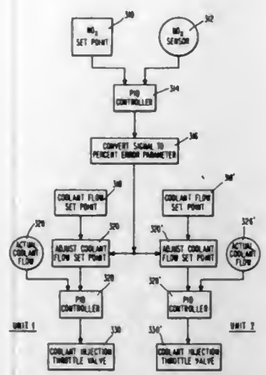
Filed Sep. 15, 1992, Ser. No. 945,080
Int. Cl.[5] F02C *3/30*
U.S. Cl. 60—39.05 **14 Claims**

1. A gas turbine power plant having at least one gas turbine, said at least one gas turbine having at least one combustor, said power plant further having a system for controlling the flow of coolant injected into said at least one combustor and for measuring the amount of coolant flow, comprising:

sensing means for measuring the amount of NOx emissions produced by said at least one gas turbine;

first controller means for generating a first signal indicative of the percent error between an NOx emissions set point and said measured amount of NOx emissions;

second controller means for generating a second signal indicative of the percent error between an adjusted coolant flow set point and said measured amount of coolant flow, said second controller means being responsive to said first signal to adjust said coolant flow set point; and



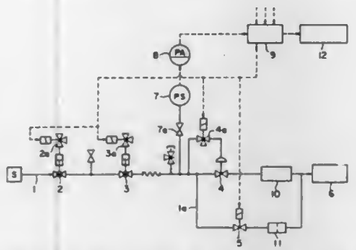
injecting means for injecting said flow of coolant into said combustor, said injecting means responsive to said second signal.

5,307,620

FUEL GAS BURNING CONTROL METHOD

Sumio Hamahira, Kobe, and Yoshikazu Maki, Munakata, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 7, 1992, Ser. No. 864,799
Claims priority, application Japan, Apr. 9, 1991, 3-32234[U]
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.06 **4 Claims**



1. A method of safely controlling the burning of a fuel gas in a combustion means in response to a pressure change in a fuel gas sealed in a main fuel gas passage between a fuel gas supply source and the combustion means, said method comprising the steps of:

sealing a fuel gas in the main fuel gas passage before supplying the fuel gas to the combustion means prior to the start of the operation of the combustion means, wherein said sealing is carried out by the steps of:

closing a main shut-off valve incorporated in said main fuel gas passage and a primary shut-off valve incorporated in a branch fuel gas passage, said branch fuel gas passage being connected at one end to said main fuel gas passage at a portion upstream of said main shut-off valve and connected at another end to an inlet portion of said combustion means;

opening safety shut-off valves incorporated in series in said main fuel gas passage;

supplying the fuel gas into said main fuel gas passage; and

closing said safety shut-off valves, thereby sealing the fuel gas in said main fuel gas passage and said branch fuel gas passage;

detecting a pressure change in the fuel gas sealed in the main fuel gas passage;

controlling the supply of the fuel gas to the combustion means in response to a signal representing the detected pressure change; and

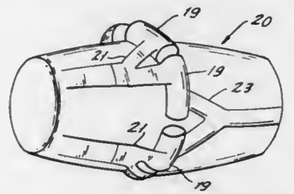
interrupting the start of the operation of the combustion means when a pressure change in the sealed fuel gas is detected prior to the start of the operation of the combustion means.

5,307,621

ASYMMETRIC WHIRL COMBUSTION

Irvin Glassman, 160 Longview Dr., Princeton, N.J. 08540; Richard Yetter, 2106 Yardley Rd., Yardley, and Joseph A. Sivo, 162 Walton Dr., Morrisville, both of Pa. 19067

Continuation of Ser. No. 783,272, Oct. 28, 1991, abandoned.
This application Aug. 23, 1993, Ser. No. 110,497
Int. Cl.[5] F23R *3/58*
U.S. Cl. 60—39.06 **6 Claims**



1. A method of combustion in which, separately, fuel without air, and combustion air without fuel, are introduced into a combustion chamber having a generally cylindrical outer surface and a central longitudinal axis, and in which the combustion air is introduced into said chamber generally tangentially to said cylindrical outer surface, and the fuel is introduced into the chamber along an axis generally parallel to said central longitudinal axis, and in which the fuel introduction is asymmetrically disposed relative to said central longitudinal axis, and said air and fuel impact upon their separate introduction into the chamber.

5,307,622

COUNTERROTATING TURBINE SUPPORT ASSEMBLY

John J. Ciokajlo, Henderson, Nev., and Ambrose A. Hauser, Wyoming, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 2, 1993, Ser. No. 100,877
Int. Cl.[5] F02K *3/072*
U.S. Cl. 60—39.162 **10 Claims**

1. A counterrotating turbine support assembly comprising:

an annular outer casing;

an annular outer rotor disposed radially inwardly of said outer casing and having a plurality of axially spaced apart rows of radially inwardly extending outer blades rotatable therewith;

an annular inner rotor disposed radially inwardly of said outer rotor and having a plurality of axially spaced apart rows of radially outwardly extending inner blades axially interdigitated with said outer blades;

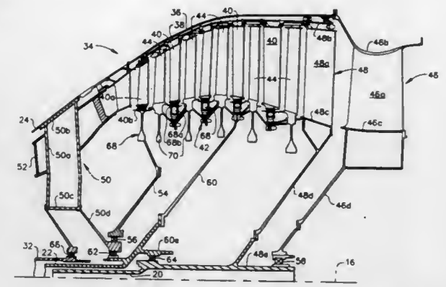
an annular rear frame disposed axially aft of said outer and inner rotors and fixedly joined to said outer casing;

an annular mid-frame disposed axially forwardly of said outer and inner rotors and fixedly joined to said outer casing;

an annular forward support shaft fixedly joined at a radially outer end thereof to a forward end of said outer rotor, and rotatably supported by a forward bearing at a radially inner end thereof, said forward bearing being supported by said mid-frame;

an annular aft support shaft fixedly joined at a radially outer end thereof to an aft end of said outer rotor, and rotatably supported by an aft bearing at a radially inner end thereof, said aft bearing being supported by said rear frame; and

an annular intermediate support shaft fixedly joined at a



radially outer end thereof to said inner rotor, and rotatably supported by an intermediate bearing at a radially inner end thereof, said intermediate bearing being supported by said mid-frame;

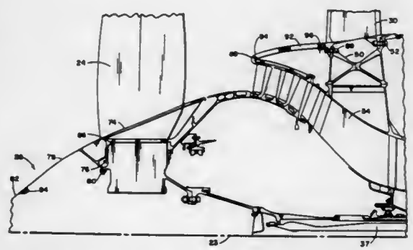
wherein said forward support shaft and said forward bearing cooperate with said aft support shaft and said aft bearing to enhance control of an in-plane rocking motion of said outer rotor.

5,307,623

APPARATUS AND METHOD FOR THE DIASSEMBLY OF AN ULTRA HIGH BYPASS ENGINE

Eugene J. Antuna, Springdale, and Donald F. Keck, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 994,184, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 708,263, May 28, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 129,874
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.1 **4 Claims**



1. A detachable turbofan engine assembly connectable to an aircraft through a pylon, said assembly having an outer engine portion and an inner engine portion, said outer engine portion including a plurality of outlet guide vanes, a fan casing supported on said outlet guide vanes and an air inlet for directing air into said fan casing, said inner engine portion including a plurality of fan blades operatively coupled to a core engine including a booster stage, a combustor stage and a turbine stage, said assembly comprising:

a hinged thrust reverser operable for accessing said inner engine portion;

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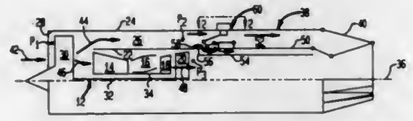
a hinged fan cowling operable for accessing said outer engine portion;
a thrust link and forward and aft mounts for connecting said inner engine portion to the pylon attached to the aircraft;
a spinner assembly forming a generally pointed, aerodynamically shaped member having a gradually increasing diameter from forward to aft of the fan blades, a maximum diameter of the spinner assembly occurring immediately forward of the booster stage;
an inner engine liner forming a continuation of the spinner assembly and having a maximum diameter generally concurrent with a first nozzle blade of the booster stage, the inner engine liner having an aerodynamically smooth decreasing diameter from said first nozzle blade to the combustor stage;
a booster casing enclosing the booster stage and having a decreasing diameter from the first nozzle blade to about a last booster stage blade;
an outer core engine housing having a forward edge coupled to a forward edge of said booster casing, said outer housing increasing in diameter from said forward edge to about an aft edge of said fan cowling;
a plurality of fan outlet guide vane support members coupled between said booster casing and said outer core engine housing, said support members being positioned aft of at least some of said booster stage and circumferentially spaced about said booster casing, said booster casing forward of said support members having a larger diameter than at said support members;
means for releasably connecting each of said outlet guide vanes to a radially outer end of a corresponding one of said support members at a radial location defining a circumferential coupling joint having a diameter greater than a forward end of said booster stage; and
fan blade removing means for removing the fan blades from the core engine and thereafter axially separating the core engine from said outer engine portion such that the booster stage of said core engine passes through the outlet guide vanes when said core engine is separated from said outer engine portion, said booster stage being an integral part of said core engine.

5,307,624

VARIABLE AREA BYPASS VALVE ASSEMBLY

Michael Even-Nur, Cincinnati; Carl J. Hoffmann, Jr., West Chester, and Robert H. Kraimer, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 4, 1990, Ser. No. 504,380
Int. Cl.[5] F62K *3/02*
U.S. Cl. 60—226.3 **20 Claims**



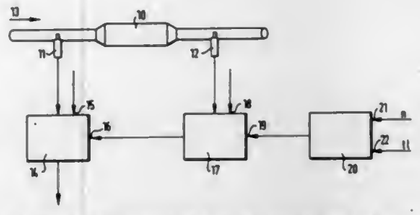
1. A bypass valve assembly for a gas turbine engine comprising:
an annular outer casing;
an annular outer liner spaced radially inwardly from said outer casing to define a bypass channel for channeling bypass air, said outer liner including a plurality of circumferentially spaced slots for channeling said bypass air from said bypass channel to inside said outer liner;
an annular valve body slidably disposed around said outer liner and positionable from a closed position, substantially blocking flow of said bypass air from said bypass channel into said slots, to an open position uncovering said slots for allowing unobstructed flow of said bypass air into said slots; and
means for positioning said valve body between said closed and open positions by rotating and translating said valve body over said outer liner, wherein said positioning means comprises:
three fixed length swing links and three adjustable length swing links circumferentially spaced from each other around said outer liner, each swing link having a first end pivotally connected to said valve body, and a second end pivotally connected to at least one of said outer casing and said outer liner, said swing links being sized and positioned for uniformly translating said valve body without tilting, said adjustable length swing links being adjusted in length to extend to a plane of said valve body defined by said three fixed length swing links; and
means for rotating said valve body so that said swing links translate said valve body for positioning said valve body between said closed and open positions.

5,307,625

METHOD AND ARRANGEMENT FOR MONITORING A LAMBDA PROBE IN AN INTERNAL COMBUSTION ENGINE

Erich Junginger, Stuttgart; Claus-Peter Pflieger, Asperg; Lothar Raff, Remseck, and Eberhard Schnaibel, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 30, 1992, Ser. No. 921,770
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1991, 4125154
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **7 Claims**



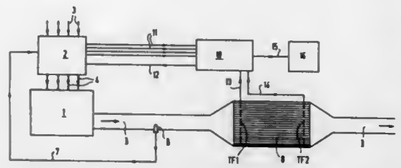
1. A method for monitoring first and second lambda probes in the context of a two-probe closed-loop control, the first and second lambda probes being arranged forward and rearward of a catalytic converter, respectively, the method comprising the steps of:
utilizing the signal of the first probe arranged forward of the catalytic converter to serve for lambda control;
utilizing the signal of the second probe rearward of the catalytic converter to influence the lambda controller by means of an actuating variable;
utilizing the degree of the influence to monitor said first probe;
comparing the signal of said second probe to a threshold value;
integrating the comparison signal; and,
utilizing the integrated signal for influencing the lambda controller.

5,307,626

METHOD AND APPARATUS FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE, USING THE CURRENT TEMPERATURE OF A DOWNSTREAM CATALYTIC CONVERTER

Wolfgang Maus; Helmut Swars, both of Bergisch Gladbach, and Rolf Brück, Overath, all of Fed. Rep. of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,726
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1990, 4008779; Feb. 7, 1991, 4103747
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—274 **37 Claims**



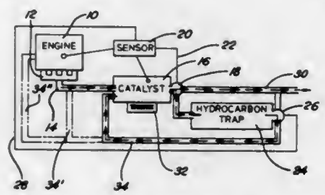
1. A method for controlling an internal combustion engine having an engine control for processing a number of measured values received over measurement lines, converting the measured values into control data for operating the engine and carrying the control data over engine feed lines to the engine, which comprises:
directly measuring a temperature of walls of a catalytic converter, the walls carrying a catalyst substance and being disposed inside a jacket housing downstream of the engine, supplying a value of the temperature of the walls to the engine control over at least one data line, processing the value of the temperature of the walls in the engine control along with other measured values and using the processed value to control the engine.

5,307,627

METHOD AND APPARATUS FOR OXIDIZING HYDROCARBONS FROM EXHAUST GASES

Louis R. Christensen, Canton; Matthew J. Gladd, Dearborn, and Harendra S. Gandhi, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,601
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **20 Claims**



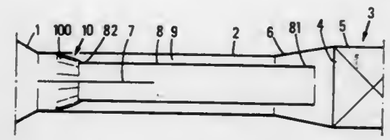
1. A method for oxidizing hydrocarbons contained in gases exhausted from an internal combustion engine, which comprises:
providing a catalyst;
passing the gases through a hydrocarbon trap and adsorbing hydrocarbons from the gases when the temperature of the catalyst is below a light-off temperature for hydrocarbons;
preventing the gases from passing through the hydrocarbon trap after the catalyst is heated to the light-off temperature for hydrocarbons and allowing the gases to pass through the catalyst;
diverting a portion of the gases exiting the catalyst only when the engine speed is at steady state so that oxidation of hydrocarbons by the catalyst is at substantially a peak efficiency and using the portion of diverted gases to desorb and flush adsorbed hydrocarbons from the hydrocarbon trap back through the catalyst; and
discontinuing the diversion of gases through the hydrocarbon trap after adsorbed hydrocarbons have been desorbed from the hydrocarbon trap.

5,307,628

EXHAUST LINE ALLOWING A FASTER TRIGGERING OF THE CATALYST

Michel Castagne, Palaiseau, France, assignor to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Filed Jun. 18, 1992, Ser. No. 900,271
Claims priority, application France, Jun. 18, 1991, 91 07560
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—284 **7 Claims**



1. A device for improving the working of a catalyst placed in the exhaust manifold of an internal-combustion engine, said exhaust manifold comprising a tube connected to one side of a collector collecting the exhaust gases coming from the engine and opening at the other end thereof onto an inlet cone of said catalyst, said device comprising:
an inner pipe located inside said tube, said inner pipe being arranged coaxially with said tube and having a restricted section with respect to said tube, a small thickness and a first end opening in proximity of said catalyst, and
means for selectively closing an intertube space delimited between said inner pipe and said tube, as a function of the temperature of the exhaust gases led towards said catalyst so that the exhaust gases warm up a central portion of the catalyst when the selective closing means closes the intertube space.

5,307,629

VARIABLE PITCH STATOR WITH PASSIVE CONTROL

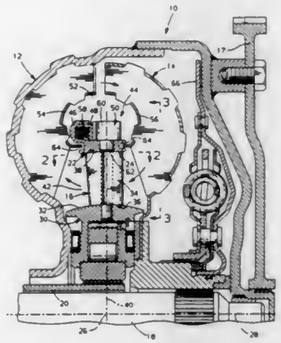
Robert R. By, New Baltimore; John C. Forsgren, and Gelsino J. Volpe, both of Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 947,613, Sep. 21, 1992, Pat. No. 5,263,319. This application Nov. 2, 1992, Ser. No. 973,899
Int. Cl.[5] F16D *33/02*
U.S. Cl. 60—342 **12 Claims**

1. A three element fluid torque converter, being disposed between an engine and a transmission, comprising:
a bladed impeller, being rotatively fixed to the engine;
a bladed turbine, being rotatively fixed to a transmission input element; and
a stator, being rotatively fixed to a stationary shaft when subjected to torque in a first direction, rotating freely about the stationary shaft when subjected to torque in a second direction, being disposed in a flow path from the turbine to the impeller, the stator comprising:
a stator core, having a concave spherical core surface, the core surface having a center disposed on a torque converter axis;
a stator shell, having a convex spherical shell surface, radially disposed within the core surface, the shell surface having a center common with the core surface center;
a plurality of stator blades, being distributed around the torque converter axis between the core surface and the

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shell surface, the blades having a first edge surface proximate to and complementary to the shell surface, the blades having a second edge surface proximate to and complementary to the core surface, the blades being rotatable between an open position and a closed position about an axis of rotation passing through the center of the stator shell and core, rotation of the blades to the closed position resulting in an annular area between the shell and the core being approximately 75% to 90% blocked, the blades having a closed position inlet angle between the torque converter axis and a line from the center of rotation of the blade to a tip of the blade, the closed position inlet angle being between 30 degrees and 70 degrees, the closed position inlet angle for a particular stator varying inversely with the number of stator blades, the closed position inlet angle selected being sufficiently large to diminish a flow of fluid from the turbine to the impeller, thereby reducing torque converter torque transmitting capacity in the closed position over the torque transmitting capacity of the torque converter with the blades in the open position, consequently producing low creep torque, while producing appreciably less driveline noise and vibration than a stator with rotatable vanes blocking near 100% of the annular area between the shell and the core in the closed position; and



means for rotating the stator blades between the open position and the closed position, biasing the blades toward the closed position, with fluid exiting the turbine overcoming the bias, thereby rotating the blades to the open position.

5,307,630

SYSTEM PRESSURE COMPENSATED VARIABLE DISPLACEMENT HYDRAULIC MOTOR

John D. Tysver, Rockford; Bruce A. Krandel, Cherry Valley, and Wesley A. Burandt, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 16, 1991, Ser. No. 808,422

Int. Cl.[5] F16D *31/02*

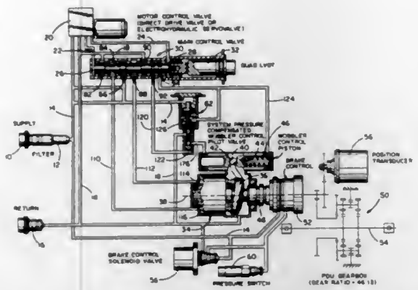
U.S. Cl. 60—451 **19 Claims**

1. In a hydraulic drive system, the combination of:

a variable displacement hydraulic motor on a rotary output having a displacement controlling wobbler and adapted to be connected to a load that can alternatively be an opposing load or an aiding load;

a double acting hydraulic actuator connected to said wobbler for setting the displacement of said motor; and

means defining a control valve connected to said motor and to said actuator and having a single spool for a) controlling the speed and direction of rotation of said output; and



b) controlling a control pressure for said actuator to change the setting of the displacement of said motor.

5,307,631

HYDRAULIC CONTROL APPARATUS FOR HYDRAULIC CONSTRUCTION MACHINE

Akira Tatsumi, Kashiwa; Seiji Tamura, Ibaraki; Mitsuo Kihara, Ibaraki; Kazuhiro Ichimura, Ibaraki; Hiroshi Onoue, Ibaraki, and Shigetaka Nakamura, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

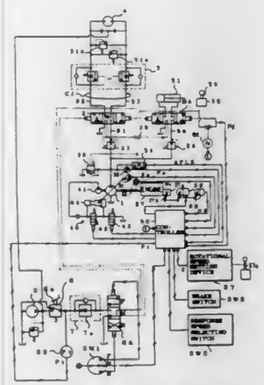
PCT No. PCT/JP92/00075, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO92/13144, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 28, 1992, Ser. No. 927,408

Claims priority, application Japan, Jan. 28, 1991, 3-26912; Jul. 24, 1991, 3-184802

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—452 **25 Claims**



1. A hydraulic control apparatus for a hydraulic construction machine including:

a variable displacement hydraulic pump which is driven by a prime mover;

a first hydraulic actuator which is driven by delivery oil from said hydraulic pump;

a first control valve which is provided between said hydraulic pump and said first hydraulic actuator and serves to control pressured oil to be supplied to said first hydraulic actuator;

first determination means for determining a first target displacement to keep a delivery pressure of said hydraulic pump to a value higher than a load pressure of the first hydraulic actuator by a predetermined target value;

second determination means for determining a second target displacement by which an input torque is limited on the basis of said delivery pressure of said hydraulic pump; and

displacement control means for controlling said displacement of said hydraulic pump such that said displacement is equal to at least one of said first and second target displacements,

said hydraulic control apparatus further including instructing means for issuing instructions that an oil flow rate of said variable displacement hydraulic pump becomes a predetermined minimum value, and limiting means for imposing limitation in response to said instructions on a signal indicating said first target displacement which is determined and output by said first determination means, so that the minimum oil flow rate becomes larger than that before limitation is imposed at least when said hydraulic pump is driven with a light load.

5,307,632

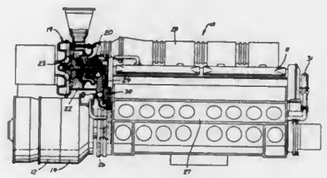
ENGINE AND METHOD FOR TURBO BOOSTED OPERATION OF A MECHANICALLY ASSISTED TURBOCHARGER IN A TWO CYCLE ENGINE

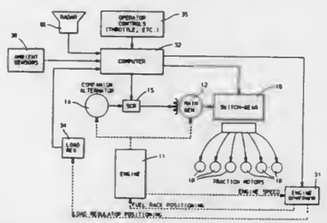
Paul Gottemoller, Palos Park, and Monique M. Yeager, Countryside, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1993, Ser. No. 25,027

Int. Cl.[5] F02B *33/44*

U.S. Cl. 60—608 **17 Claims**





1. A method of operating a two cycle engine having a scavenging and charging turbocharger driven by exhaust gas energy supplemented by mechanical means which maintain a minimum ratio of turbocharger/engine speed when exhaust energy is below a level sufficient for exhaust sustained turbocharger operation, the method comprising the steps of

temporarily increasing engine speed to raise turbocharger speed to a level adequate for initiation of exhaust sustained turbocharger operation,

providing fuel adequate to deliver exhaust energy sufficient to initiate and maintain exhaust sustained turbocharger operation, and

reducing engine speed to a lower level while maintaining fuel delivery adequate to continue exhaust sustained turbocharger operation at the reduced speed.

5,307,633

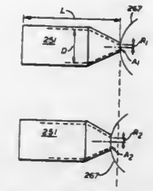
LOW CARBON PARTICLE PRODUCING GAS TURBINE COMBUSTOR

Michael Koerner, Harbor City; Scott Goldberg, Westminster, and Naaman Midyette, Torrance, all of Calif., assignors to Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Apr. 30, 1992, Ser. No. 876,343

Int. Cl.[5] F02C *3/14*

U.S. Cl. 60—727 **12 Claims**



1. A combustion system for a gas turbine engine that employs an aviation fuel supply and an oxidizer supply, said combustion system comprising;

a combustor operable to burn a fuel rich mixture of aviation fuel and oxidizer,

a combustion chamber within said combustor, and

a reaction limiting means for preventing the combustion process within said combustion chamber from proceeding towards completion by limiting at least one combuster reaction rate parameter of a set of combustor reaction rate parameters sufficiently such that a clean combustion gas is produced having substantially less carbon particles than for a combustor effective for allowing its combustion reaction to essentially proceed to completion, said set of parameters comprising the duration of the reaction process and the speed of the reaction process.

5,307,634

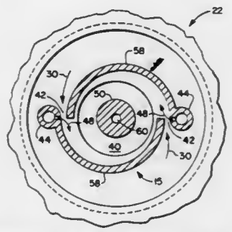
PREMIX GAS NOZZLE

Aaron S. Hu, Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 26, 1992, Ser. No. 841,942

Int. Cl.[5] F02C *1/00*

U.S. Cl. 60—737 **8 Claims**



1. A low NOx burner for a gas turbine engine, comprising:

a substantially cylindrical burner chamber having an axis and an axially extending chamber wall, and having an upstream end and an outlet end;

at least one longitudinally extending slot in the wall of said cylindrical chamber, said slot having a slot wall tangential to said chamber wall;

supply means for supplying air through said slot;

a gas distribution manifold located adjacent said slot and having a plurality of axially spaced openings for delivering gas into the airflow as it passes into said slot;

a conical body located in said chamber on the axis of said chamber with the base of said conical body at the up-

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stream end of said chamber and the apex of said conical body toward the outlet end of said chamber; and

a gas pilot tube having a discharge opening through said conical body at the apex end.

5,307,635

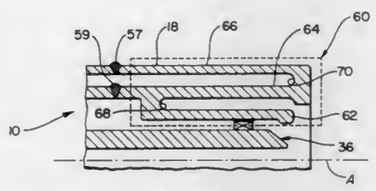
FUEL NOZZLE WITH COMBINED RADIAL AND AXIAL BELLOWS

Charles Graves; Todd Neill, both of Jupiter, Fla.; Raman Ras, Oakwood, England; Kiran Patwari, Highland Heights; Robert T. Mains, Euclid, both of Ohio, and Curtis H. Scheuerman, Newbury, Ohio, assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1992, Ser. No. 968,627

Int. Cl.[5] F02C *7/22*

U.S. Cl. 60—740 **7 Claims**



1. A fuel nozzle for a gas turbine engine including a generally cylindrical housing defining an axial central passage,

First fuel delivery means including an axially extending tubular member having ends and having a first nozzle on one end and being disposed along the axis of said central passage defining a first passageway for delivering primary fuel.

Second fuel delivery means including another tubular member having ends concentrically disposed relative to said axially extending tubular member including a second nozzle on one end defining a second passageway for delivering secondary fuel,

said housing including a cylindrically shaped wall encapsulating said first passageway and said second passageway and defining with said other tubular member an annular evacuated chamber,

an axial bellows attached to one end of said other tubular member remote from said second nozzle, and

a radial bellows attached to said other tubular member adjacent said second nozzle,

said first nozzle includes a complimentary tubular member defining an orifice for discharging primary fuel, and said second nozzle also includes another complementary tubular member defining another orifice for discharging secondary fuel and bonding means for joining said tubular member to said complementary tubular member and said other tubular member to said other complementary tubular member whereby said radial bellows relieves the thermal stress on said bonding means occasioned when said primary and/or secondary fuel flows through said orifice and/or said other orifice,

said radial bellows includes a first annular wall concentrically disposed relative to said primary and secondary fuel passageways and a second annular wall concentrically disposed relative to said first annular wall and a convolute interconnecting said first annular wall and said second annular wall at one end and defining an open ended annular cavity for receiving ambient air therein,

5,307,636

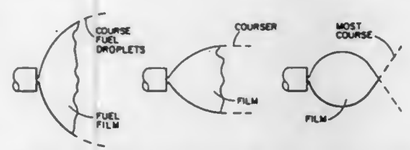
STAGED, COAXIAL, MULTIPLE POINT FUEL INJECTION IN A HOT GAS GENERATOR HAVING A SUFFICIENTLY WIDE CONE ANGLE

Jack R. Shekleton, San Diego, and Robert W. Smith, Lakeside, both of Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 470,081, Jan. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 272,409, Nov. 17, 1988, Pat. No. 4,974,415, which is a continuation-in-part of Ser. No. 123,303, Nov. 20, 1987, Pat. No. 4,899,538. This application Jan. 10, 1992, Ser. No. 820,033

Int. Cl.[5] F02G *1/00*

U.S. Cl. 60—742 **11 Claims**



1. A hot gas generator for providing hot gasses to a turbine wheel to drive the same comprising:

a vessel with an interior wall and having a narrow inlet end, an opposite, narrow outlet end, and an intermediate relatively wide, combustion chamber interconnecting said inlet end and said outlet end and centered on a longitudinal axis;

an oxidant inlet port at said inlet end; and

a dual fuel injector disposed generally centrally within said oxidant port and extending a major way across said chamber generally on the longitudinal axis thereof, said fuel injection having a first fuel discharge port at said inlet end for directing a cone-like spray of fuel in a cone-like spray toward said combustion chamber and second fuel discharge port in said combustion chamber near and upstream of said outlet end for directing fuel toward said outlet and in a cone angle that is sufficiently wide that a large angle exists between the path of gases flowing to said outlet end and said fuel spray.

5,307,637

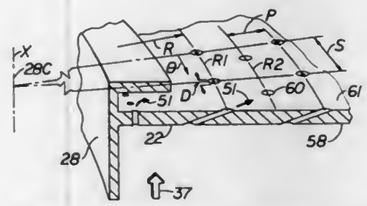
ANGLED MULTI-HOLE FILM COOLED SINGLE WALL COMBUSTOR DOME PLATE

Richard W. Stickles, Loveland; Howard L. Foltz, West Chester; Keith K. Taylor; George E. Cook, both of Cincinnati; Thomas MacLean, Loveland, and Willard J. Dodds, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 9, 1992, Ser. No. 910,911

Int. Cl.[5] F23R *3/04*

U.S. Cl. 60—756 **9 Claims**



1. An annular gas turbine combustor dome comprising:

an annular combustor dome consisting of a single wall combustor dome plate disposed directly in a gas turbine engine flowpath and having a hot surface and a cold surface,

a plurality of air/fuel nozzle inlet apertures disposed through said plate,

and at least one continuous pattern of small, closely spaced, and sharply angled multi-hole film cooling holes angled in a downstream cooling flow direction from said cold surface to said hot surface, and

said film cooling holes having a hole diameter, a downstream slant angle, and spaced at least sufficiently close enough together to effect a cooling film on said hot surface of said plate during combustor operation.

5,307,638

PROCESS TO RECOVER SOLVENTS FROM WASTE GASES

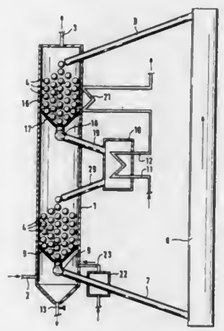
Friedhelm Herzog, Krefeld; Thomas Kutz, Viersen; Franz R. Schlömer, Dormagen; Heinz J. Schmidt, Josef Steins, and Martin Schulte-Rewinkel, Willich, all of Fed. Rep. of Germany, assignors to Messer Griesheim, GmbH, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 961,154

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134293

Int. Cl.[5] F25J *5/00, 1/00;* F28D *15/00*

U.S. Cl. 62—12 **17 Claims**



1. A device for recovering solvents from waste gas comprising a reservoir having an upper end and a lower end, a tube system external of said reservoir communicating with said upper end and said lower end of said reservoir to form a closed circuit path of flow, shaped objects consisting of spheres being conveyed in said reservoir in a direction from said upper end to said lower end of said reservoir, a perforated plate in said reservoir collecting said spheres at a location between said upper end and said lower end to form a packing, a transfer lock mounted to said perforated plate for controllably discharging and controlling movement of said spheres from said plate and into said tube system whereby said spheres are continuously conveyed through said closed circuit path, including a heat exchanger in said tube system externally of said reservoir, said spheres passing through said heat exchanger for cooling said spheres externally of said reservoir, a waste gas inlet communicating with said reservoir at said lower end of said reservoir below said plate for feeding the waste gas through said reservoir in a direction countercurrent to said path of flow of said spheres and through said plate whereby said spheres cool the waste gas to freeze out solvents contained in the waste gas so that the solvents solidify and fall downwardly into the lower end of said reservoir where frozen solvent is contacted by warmed waste gas to melt the solvent and with the waste gas continuing to flow upwardly in said reservoir, said lower end of said reservoir having a drain below said waste gas inlet for removing the melted solvents from said lower end of said reservoir, and a waste gas outlet at said upper end of said reservoir for removing cold purified waste gas from said reservoir.

5,307,639

TRANSFER LINE FOR CRYOGENIC FLUID

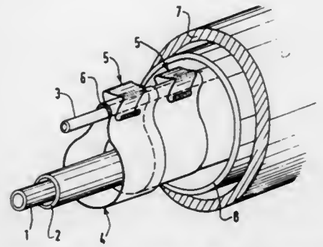
Jean-Claude Boissin, Saint Ismier, France, assignor to L'Air Liquid Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sep. 21, 1992, Ser. No. 947,381

Claims priority, application France, Sep. 20, 1991, 91 11596

Int. Cl.[5] F17C *13/00;* F16L *9/18*

U.S. Cl. 62—50.7 **12 Claims**



1. A transfer line for cryogenic fluid, comprising a first conduit for cryogenic fluid, a second conduit for a cooling fluid, a shield made of a thin metal strip loosely wrapped around the first and second conduits, and a plurality of connecting means for locally connecting the shield to the second conduit.

5,307,640

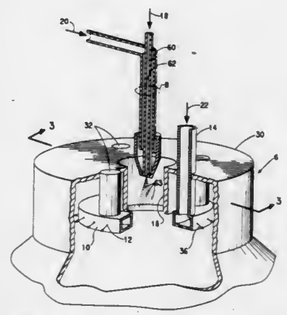
APPARATUS AND METHOD FOR PRODUCING FROZEN PARTICLES OF A LIQUID

Abdel A. Fawzy, New Castle, and Alferd J. Forestell, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 25, 1993, Ser. No. 28,380

Int. Cl.[5] F17C *7/04*

U.S. Cl. 62—52.1 **27 Claims**



14. An apparatus for producing frozen particles of a liquid product which comprises:

(a) a housing with a vertically disposed upper cylinder having an upper diameter and a vertically disposed lower cylinder having a lower diameter larger than the upper diameter, the upper and lower cylinders connected by a truncated conical section;

(b) a liquid product nozzle for introducing droplets of the liquid product into the housing in a downward direction; and

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(c) a plurality of cryogenic liquid nozzles disposed in the housing about the liquid nozzle for introducing a cryogenic liquid into the housing, the nozzles being positioned to direct the cryogenic liquid radially away from the liquid product droplets, the cryogenic liquid impinging on the housing,

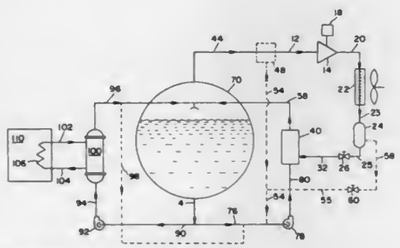
whereby the cryogenic liquid introduced into the housing forms cryogenic liquid droplets and gaseous cryogen thereby freezing the liquid product droplets to produce frozen particles.

5,307,641

METHOD AND APPARATUS FOR PRODUCING ICE BY DIRECT CONTACT OF A NON-HYDRATE PRODUCING REFRIGERANT WITH WATER

Richard J. Kooy, Western Springs, Ill., assignor to Chicago Bridge & Iron Technical Services Company, Oak Brook, Ill.

Filed Jan. 6, 1993, Ser. No. 973
Int. Cl.[5] F25D *3/00*
U.S. Cl. 62—59 **13 Claims**



1. A method comprising:

feeding a liquefied refrigerant selected from the group consisting of:

1,1,1,2,3,3,3-heptafluoropropane
1,1,1,2,2,3,3-heptafluoropropane
1,1,1,2,2,3-hexafluoropropane
1,1,1,3,3,3-hexafluoropropane
Octafluoropropane

into direct contact with a volume of aqueous liquid in an enclosed ice making vessel to convert part of the aqueous liquid to ice crystals, without the formation of a water. refrigerant hydrate, by vaporizing the refrigerant by heat exchange with the aqueous liquid.

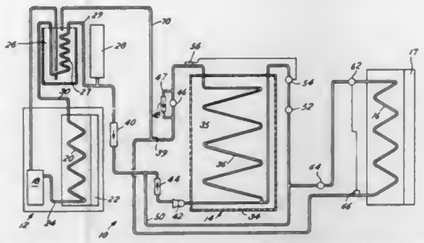
5,307,642

REFRIGERANT MANAGEMENT CONTROL AND METHOD FOR A THERMAL ENERGY STORAGE SYSTEM

William J. Dean, Grapevine, Tex., assignor to Lennox Industries Inc., Dallas, Tex.

Filed Jan. 21, 1993, Ser. No. 7,234
Int. Cl.[5] F25D *3/00*
U.S. Cl. 62—59 **17 Claims**

1. A thermal energy storage system comprising a condensing unit, an ice module and an evaporator, liquid line means connecting said condensing unit to said ice module and to said evaporator and suction line means connecting said evaporator and said ice module to said condensing unit, first thermal expansion means for controlling the flow of refrigerant to said ice module, second thermal expansion means for controlling the flow of refrigerant to said evaporator, liquid line valve means for selectively blocking flow of refrigerant from the condensing unit to the second thermal expansion means, ice making valve means for selectively blocking flow of refrigerant from the condensing unit to the first thermal expansion means, liquid line check valve means in the liquid line means for permitting refrigerant flow from the condensing unit toward the ice module and evaporator, but preventing flow in the opposite direction, suction line valve means between the ice module and the condensing unit for opening and closing the suction line means, and for permitting flow of refrigerant from the ice module to the condensing unit, but preventing flow in the opposite direction, a liquid pump means in the liquid line means between the condensing unit and the ice module, a liquid pump check valve means in the liquid line means between the liquid line check valve means and the liquid pump



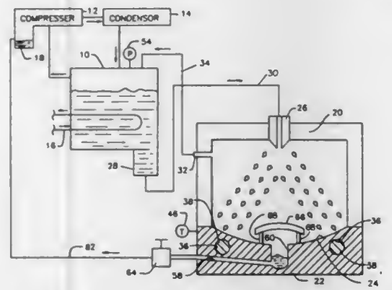
for preventing reverse flow through the liquid pump means, a liquid receiver communicating with the liquid line means between the condensing unit and the liquid line check valve means, and an accumulator disposed in the suction line means and receiving therein a portion of the liquid line means, the liquid line means including a first line connecting the condensing unit to the ice module, with said liquid line check valve means, said liquid pump check valve means and said liquid pump being disposed in said first line.

5,307,643

METHOD AND APPARATUS FOR CONTROLLING REFRIGERANT GAS IN A LOW PRESSURE REFRIGERATION SYSTEM

Howard L. Beckerman, Middletown, N.J., assignor to Mechanical Ingenuity Corp., Shrewsbury, N.J.

Filed Apr. 21, 1993, Ser. No. 50,894
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—77 **20 Claims**



1. A method for controlling the pressure of refrigerant gas in the refrigerant vessel of a low pressure refrigeration system, the refrigerant vessel holding both liquid and gas refrigerant, the method comprising the steps of:

removing liquid refrigerant from said vessel;

vaporizing the removed liquid refrigerant; and

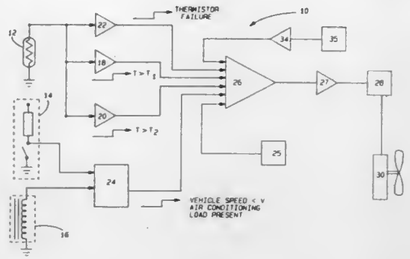
returning the vaporized refrigerant to said vessel.

5,307,644

METHOD AND ELECTRONIC DEVICE FOR CONTROLLING ENGINE FAN

James M. Cummins, Dearborn; John I. Snoke, Royal Oak, and Gene R. Burnham, Lincoln Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 857,900, Mar. 26, 1992, abandoned. This application Oct. 28, 1992, Ser. No. 968,083
Int. Cl.[5] B60H *3/04*
U.S. Cl. 62—133 **20 Claims**



1. In a motor vehicle having an engine, a coolant system, and a fan, an analogue electronic fan control circuit comprising:

heat sensing means for detecting the temperature of said coolant and generating a coolant temperature signal proportional thereto;

threshold temperature signal generating means in electrical contact with said heat sensing means for receiving the coolant temperature signal and generating a threshold temperature signal when the coolant temperature exceeds a selected temperature;

speed sensing means for detecting the motor vehicle road speed and generating a speed signal proportional thereto;

load sensing means for detecting the presence of selected engine loads and generating a corresponding load signal;

override signal generating means in electrical contact with said load sensing means and said speed sensing means for receiving said speed and load signals and generating an override signal when the vehicle speed is less than a selected speed and selected engine loads are present; and

control signal generating means in electrical contact with said threshold temperature signal generating means and said override signal generating means for receiving and distinguishing input signals, including said threshold temperature signal and said override signal and generating a control signal in response to at least one of said input signals operative to engage and drive the fan at a constant speed, such that the required engine cooling is achieved.

5,307,645

AIR CONDITIONING SYSTEM FOR A RECREATIONAL VEHICLE

Bobby L. Pannell, P.O. Box 116968, Carrollton, Tex. 75007

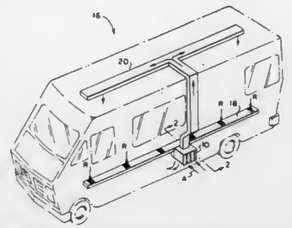
Continuation-in-part of Ser. No. 724,832, Jul. 2, 1991, Pat. No. 5,205,130. This application Apr. 23, 1993, Ser. No. 52,946
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] B60H *3/04*
U.S. Cl. 62—244 **9 Claims**

1. An air conditioning system for installation in a recreational vehicle comprising:

a housing defined by a top wall, a ventilated bottom wall, a first and a second end wall, an inner side wall, and an outer side wall, the inner side wall being formed in part by an evaporator unit having a first support frame peripherally disposed thereabout, the outer side wall being formed in part by a condenser unit having a second support frame peripherally disposed thereabout, the bottom wall being formed in part by a screen having a third frame peripherally disposed thereabout, a central member spanning between the first and the second end walls, and an inner and an outer side wall flange;

a refrigeration stage disposed along the central member and coupled between the evaporator unit and the condenser unit;

a condenser fan disposed along the central member, for



drawing atmospheric air through the side wall and passing the air through the condenser unit for discharge through the bottom wall;

a fan housing disposed adjacent and abutting the evaporator unit and forming an airflow passage therebetween; and,

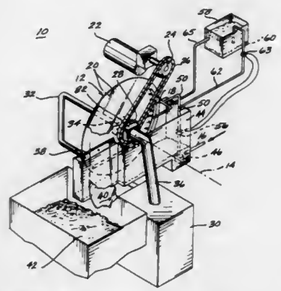
an evaporator fan, disposed within the fan housing, for drawing return air through the evaporator unit and discharging the air out through a discharge port formed in a top section of the fan housing extending through the top wall.

5,307,646

FLAKE ICE MACHINE

Robert R. Niblock, Seattle, Wash., assignor to North Star Ice Equipment Corporation, Seattle, Wash.

Filed Jun. 25, 1991, Ser. No. 720,227
Int. Cl.[5] F25C *1/14, 1/00*; A23G *9/00*
U.S. Cl. 62—345 **16 Claims**



1. An apparatus for freezing a liquid material to produce substantially solid flakes of material, comprising:

a cooling member defining a cooling surface and a plurality of internal refrigerant flow passages, each passage defining an inlet and an outlet;

liquid introduction means for introducing liquid material onto a portion of the cooling surface;

a refrigerant supply system for supplying an excess of evaporative liquid refrigerant to the inlets of the passages so that a portion of the liquid refrigerant evaporates within each passage to freeze the liquid material introduced onto the cooling surface, and a remaining portion of the liquid refrigerant flows from the outlet of each passage in the liquid state;

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a low pressure receiver for receiving evaporated and liquid refrigerant flowing from the outlets of the passages, the liquid refrigerant received within the low pressure receiver thermally communicating with, and thereby cooling, a high pressure inlet stream of liquid refrigerant being supplied to the inlets of the passages;

an oil lubricated compressor for drawing evaporated refrigerant from the low pressure receiver and compressing such evaporated refrigerant;

oil reclaiming means for reclaiming lubricating oil lost to the refrigerant while being compressed by the compressor, the oil reclaiming means drawing a mixture of oil and liquid refrigerant from the low pressure receiver through an oil return line in thermal communication with the high pressure inlet stream of refrigerant to evaporate the liquid refrigerant in the mixture of oil and liquid refrigerant sufficiently to force the oil in the mixture back to the compressor by a percolating action;

removal means for removing the frozen material from the cooling surface; and

means for mounting the cooling member, liquid introduction means and removal means to rotate the cooling member relative to the liquid introduction means and removal means, so that the cooling surface is cyclically exposed to the liquid introduction means and then the removal means.

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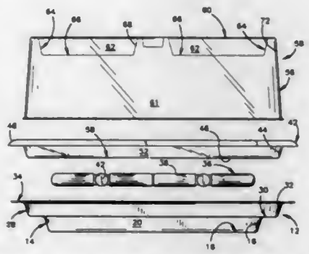
FOOD SERVING REFRIGERANT DEVICE

Ralph K. McClure, 6589 Leffingwell Rd., Canfield, Ohio 44406

Filed Apr. 9, 1992, Ser. No. 865,955

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—371 **15 Claims**



1. A food service device for the refrigeration of food comprising:

a) a base having interior and exterior surfaces, said base inner surface defining a refrigerant cavity and a tray support section, said tray support section being adjacent and above said refrigerant cavity, said inner surface also having a refrigerant positioning portion centrally disposed within the refrigerant cavity and defining an aperture in the exterior base surface;

b) refrigerant means removably disposed within said refrigerant cavity about and in interlocking relationship with said refrigerant positioning portion;

c) a tray having a central recess portion and a perimetral portion surrounding said recess portion, said tray being configured to interfit with said base in nested relationship; and

d) a lid configured to interfit with said tray when placed in stacked relationship, said lid including side walls and a roof, said roof defining a recess section disposed in spaced relationship with said side walls, said recess section including a handle, said handle being disposed axially above the refrigerant positioning portion of said base when the base, tray and lid are disposed in stacked relationship.

5,307,648

CONTROL ARRANGEMENT COMPRISING SYNCHRONEOUS SIGNAL FOR KNITTING MACHINE GUIDE BARS

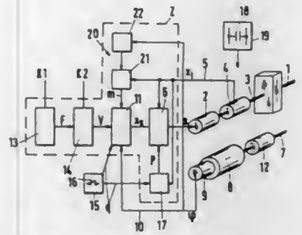
Jurgen Forkert, Rodgau, and Friedrich Gille, Obertshausen, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed May 10, 1993, Ser. No. 60,310

Claims priority, application Fed. Rep. of Germany, May 13, 1992, 4215798

Int. Cl.[5] D04B *23/00*; G06F *15/46*

U.S. Cl. 66—207 **15 Claims**



1. A warp knitting machine comprising:

at least one guide bar, said guide bar being axially reciprocatable;

an electric setting motor coupled to said guide bar for reciprocating it;

a position signal transmitter coupled to said guide bar for providing bar position signals signifying varying positions of said guide bar, said position signal transmitter being an absolute transmitter for uniquely assigning said bar position signals based on different positions of said guide bar;

a main means having a main shaft and an electrical main motor for continually rotating said main shaft;

a synchronizing signal transmitter coupled to said main means for providing synchronizing signals signifying varying angular positions of said main shaft, said synchronizing signal transmitter being an absolute rotational angle transmitter for uniquely assigning said synchronizing signals based on different angular positions of said main shaft;

a schedule transmitter coupled to said synchronizing signal transmitter for generating in response to said synchronizing signals, position target values following at least one predetermined displacement schedule defined by a continual displacement function, said schedule transmitter being operable to definitively and singularly assign said position target values from each of the synchronizing signals in accordance with said continual displacement function; and

a position control means coupled to said setting motor and said schedule transmitter and being responsive to said position target values for controlling said setting motor.

5,307,649

WASHING MACHINE WITH A BUBBLE GENERATOR

Moo-Seang Lim, Seoul; Seung-Ki Min, Inchon; Soon-Chur Se, Inchoo; Hae-Sang You, Inchon, and Jang-Sub Han, Seoul, all of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 785,546, Oct. 31, 1991. This application Apr. 27, 1993, Ser. No. 52,995

Claims priority, application Rep. of Korea, Jan. 12, 1991, 91-409; Aug. 14, 1991, 91-14066

Int. Cl.[5] D06F *33/02*

U.S. Cl. 68—12.05 **9 Claims**

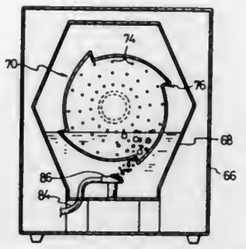
1. A washing machine which comprises:

a stationary tube capable of containing a level of washing fluid;

a rotary drum rotatably and horizontally mounted on said stationary tube with a portion thereof submerged under the washing fluid, said drum having a plurality of throughholes distributed to allow the washing fluid to flow into or out of said drum;

means for causing said drum to rotate in a forward or reverse direction; and

means for supplying predetermined amount of air bubbles into said drum on a batchwise manner at such a time



interval as to allow said amount of air bubbles supplied in given batch to be substantially collapsed before a next supply thereof commences, wherein said bubble supply means includes an air pump for producing a volume of pressurized air, a bubble generator associated with said air pump for converting the pressurized air into said air bubbles, and means for controlling the operation of said air pump so that no air bubbles may be supplied until said amount of air bubbles supplied in a preceding batch is substantially collapsed.

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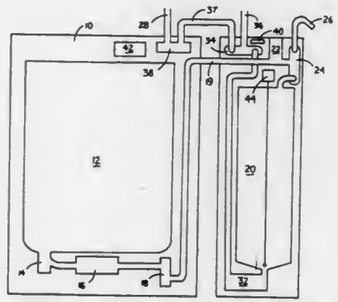
WASHING MACHINE RINSE WATER RECYCLING APPARATUS

John C. Mertz, Mansfield, Ohio, assignor to Future Water, Inc., Mansfield, Ohio

Filed Aug. 26, 1992, Ser. No. 935,850

Int. Cl.[5] D06F *33/02, 39/02, 39/08, 39/10*

U.S. Cl. 68—12.12 **20 Claims**



1. An apparatus for recycling the rinse water for use with a washing machine that has a wash cycle and a rinse cycle and a timing system comprising;

a. a reservoir; and,

b. a means for directing water from the rinse cycle to the reservoir and directing water from the wash cycle to a drain, comprising;

(1). a first valve with one inlet and two outlets, and said valve inlet is attached to a line that drains the washing machine's wash and rinse cycle and one of the outlets of said valve directs water from the washing machine into the reservoir and the other outlet of said valve directs water into the drain; and,

(2). a first timing system hooked to the washing machine's timing system that when signaled by the washing machine's timing system that there is drainage of the rinse cycle, said first timing system will signal said first valve to close the outlet directing water to the drain and open the outlet directing water to the reservoir so the water from the washing machine can flow into the reservoir and when the washing machine's timing system signals the first timing system that water other than from the rinse cycle is being drained, said first timing means will signal the first valve to close the outlet directing water to the reservoir and open the outlet directing water to the drain; and,

c. a means for directing water from the reservoir into the washing machine.

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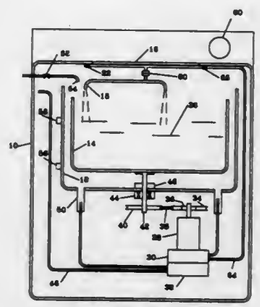
WASHING MACHINE

William Felzer, 2925 Rivera St., San Francisco, Calif. 94116

Filed May 19, 1993, Ser. No. 64,720

Int. Cl.[5] D06F *17/04, 23/04*

U.S. Cl. 68—23.5 **2 Claims**



1. A washing machine apparatus comprising:

(a) a tub,

(b) a basket containing fabrics to be cleaned, said basket being disposed within said tub for draining a liquid from said basket into said tub,

(c) a motor,

(d) a pumping means connected to one end of said motor for recirculating said liquid between said basket and said tub, for draining said tub of said liquid upon reversing rotation of said pumping means,

(e) a recirculating liquid conduit having two directly opposite ends and a third end, one of the said two directly opposite ends connected to the said pumping means for transferring said liquid from said pumping means to said recirculating liquid conduit,

(f) two conduit swivels having each a pivoting end and a non pivoting end, said non pivoting end of one of said two conduit swivels connected to other end of said two directly opposite ends of said recirculating liquid conduit for transfer of said liquid through said recirculating liquid conduit to said non pivoting end of one of said two conduit swivels,

(g) a conduit having two opposite ends and a third end, said two opposite ends of said conduit connected to said pivoting ends of said two conduit swivels for support of said conduit, for transfer of said liquid through one of said two conduit swivels, for pivoting said conduit from a predetermined horizontal position of said conduit to a predetermined vertical position of said conduit for placement and removal of said fabrics from said basket,

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(h) a cover mounted on said conduit for supporting said conduit in a predetermined horizontal position when said cover is in a closed predetermined horizontal position,
(i) a nozzle swivel having a nonrotating end, said nonrotating end connected to said third end of said conduit for support of said nozzle swivel and for transferring said liquid through said conduit to said nonrotating end of said nozzle swivel,
(j) a rotating end of said nozzle swivel connected to said nonrotating end of said nozzle swivel for rotation of said rotating end of said nozzle swivel and for transfer of said liquid through said nonrotating end to said rotating end of said nozzle swivel,
(k) a plurality of nozzles connected to said rotating end of said nozzle swivel for transfer of said liquid through said rotating end of said nozzle swivel to said plurality of nozzles, for rotation of said plurality of nozzles, for discharge of said liquid from said plurality of nozzles in circular paths into said basket, said plurality of nozzles mounted above and outside of said basket,
(l) two check valves having inlet ends connected to said tub for draining said liquid from said tub and for preventing said liquid from entering said tub through said two check valves,
(m) an outlet end of one of said two check valves connected to said third end of said recirculating liquid conduit for transferring said liquid from said tub to said pumping means upon reverse operation of said pumping means,
(n) a drain liquid conduit having two opposite ends and a third end, one of said two opposite ends connected to said pumping means for tranferring said liquid in said drain liquid conduit to said pumping means,
(o) an outlet end of other one of said two check valves connected to other one of said two opposite ends of said drain liquid conduit, for tranferring said liquid through said outlet end of other one of said two check valves into said drain liquid conduit,
(p) a third end of said drain liquid conduit having a predetermined vertical height above said two check valves, for preventing gravity draining of said liquid from said tub into atmosphere, for discharging said liquid upon reverse operation of said pumping means,
(q) an over running clutch means connected to other end of said motor for transmitting rotational energy when said motor operates in reverse rotation,
(r) a belt connected to said over running clutch means for transmitting rotational energy from said over running clutch to said belt,
(s) a pulley connected to said belt for transmitting rotational energy from said belt to said pulley,
(t) a shaft connected at one end to said pulley for transmitting rotational energy from said pulley to said shaft, and
(u) other end of said shaft connected to said basket for transmitting rotation of said shaft to said basket for spin drying of said fabrics in said basket.

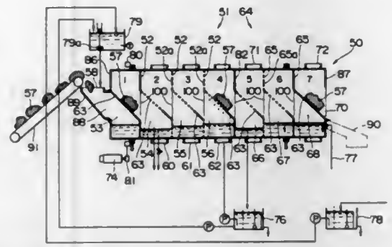
5,307,652

CONTINUOUS WASHING MACHINE

Haruo Hagiwara; Hiroyuki Asaoka; Toshio Hattori, and Akira Maeda, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 981,001
Claims priority, application Japan, Nov. 28, 1991, 3-314922; Dec. 2, 1991, 3-317732; Dec. 5, 1991, 3-321749; Dec. 5, 1991, 3-321750; Dec. 6, 1991, 3-322892; Jan. 13, 1992, 4-004053
Int. Cl.[5] D06F *31/00*
U.S. Cl. 68—27 **2 Claims**

1. A continuous washing machine comprising a drum rotatable about an axis and having an inner peripheral surface, a charge port for introducing wash thereto and a discharge port for discharging the wash, partition plates positioned between the charge port and the discharge port, the plates having centrally positioned openings and dividing the interior of said drum into a plurality of vessels, and a scoop means for scooping up wash through the drum while it rotates and sequentially transferring wash through the openings of said plates from the charge port to the discharge port, said scoop means comprising a scoop-up portion which is a flat plate positioned parallel to the axis of rotation of the drum and having an edge portion



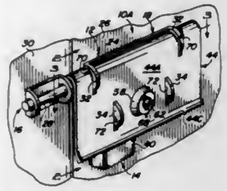
extending to the inner peripheral surface of the drum, a transfer portion connected to another edge of said scoop-up portion and an edge connected to the next vessel, one edge of said scoop-up portion forming a bent portion at right angles to the inner peripheral surface of said drum.

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SLIDEBOLT AND PADLOCK SECURITY SHIELD DEVICES

Richard W. Davis, 4412 Switch Willo, Anstin, Tex. 76727

Filed Aug. 3, 1992, Ser. No. 924,313
Int. Cl.[5] E05B *67/38*
U.S. Cl. 70—56 **24 Claims**



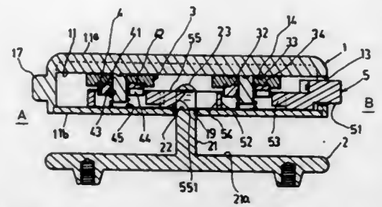
1. A slidebolt and padlock security shield device, comprising:
(a) a front cover mountable to a slidebolt latch for movement between a covered position in which said front cover overlies and shields a shackle of a padlock coupled to a latch portion of the slidebolt latch and an uncovered position in which said front cover is displaced from the latch portion of the slidebolt latch, said front cover having a front portion and an arcuate upper edge portion removably mountable over a shaft portion of the slidebolt latch; and
(b) means connected solely to said front portion of said front cover and disposed at a rear side thereof in spaced relation from said arcuate upper edge portion thereof and adjacent to the padlock shackle for attaching said front cover to the slidebolt latch when the padlock shackle is coupled to the slidebolt latch so as to prevent movement of said front cover relative to the slidebolt latch from said covered to uncovered position and thereby exposure of the shackle of the padlock.

5,307,654

COMBINATION LOCK FOR SIMULTANEOUSLY UNLOCKING AND UNCOVERING A CONTAINER

Chong-Kuan Ling, c/o Sinox Co., Ltd. P.O. Box 96-156, Taipei, Taiwan

Filed Jan. 19, 1993, Ser. No. 5,347
Int. Cl.[5] E05B *65/52*
U.S. Cl. 70—71 **6 Claims**



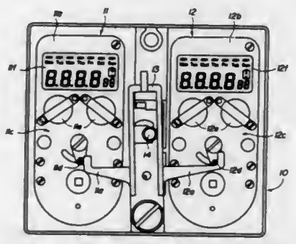
1. A combination lock comprising: a lock body mounted on a container cover movably secured to a container for storing materials and objects therein, having a plurality of dials and sleeves rotatably mounted in said lock body; a control means slidably held in said lock body and operatively unlocking the combination lock by driving said dials and said sleeves to an openable combination as predetermined in said dials and said sleeves; and a locking means secured on said container at a position on said container to be projectively positioned beneath said lock body on said container cover when said cover is closed on said container, and engageable with said control means in said lock body, said control means having a movable handle portion protruding outwardly beyond said lock body, and said lock body having a fixed handle portion protruding sidewardly opposite to said movable handle portion, said movable handle portion and said fixed handle portion being manually held for opening the cover from the container, whereby upon sliding of said control means for disengaging said control means from said locking means for unlocking said control means from said locking means for unlocking said lock body from said locking means, said lock body secured with said container cover can be lifted for conveniently opening the cover from the container.

5,307,655

TIMED TRIGGERING CONTROL DEVICE FOR A MECHANISM

Jean-Henri Boltz, Neuchatel; Jean-Luc Monnier, La-Chaux-de-Fonds, and Pierre-André Sermet, Marin, all of Switzerland, assignors to Ciposa Microtechniques S.A., Switzerland

PCT No. PCT/CH91/00111, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/18168, PCT Pub. Date Nov. 28, 1991
PCT Filed May 10, 1991, Ser. No. 807,867
Claims priority, application France, May 14, 1990, 90 06149
Int. Cl.[5] E05B *43/00*
U.S. Cl. 70—271 **16 Claims**



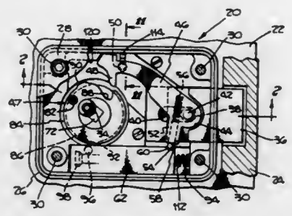
1. A timed triggering device for a mechanism for unlocking a lock of a safe, the mechanism comprising a sliding bolt located in a channel for locking and unlocking the safe and at least one movable locking pin being engagable with the sliding bolt to prevent displacement thereof in the channel, the timed triggering device controlling movement of the movable locking pin and comprising at least one control module which includes:
a mechanical actuating device being coupled with the locking pin and having a spring mechanism for actuating the at least one movable locking pin and releasing the sliding bolt,
arming means for mechanically arming the mechanical actuating device by storing potential energy in the spring mechanism,
programmable electronic timing means for controlling a timed duration during which the timed triggering device prevents displacement of the sliding bolt, and
a release device, being controlled by the programmable electronic timing means, for releasing the stored potential energy of the spring mechanism at a preselected time to disengage the at least one movable locking pin from the sliding bolt.

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HIGH SECURITY ELECTRONIC DIAL COMBINATION LOCK

Klaus W. Gartner, Palos Verdes Estates; Larry I. Cutter, Torrance, and Peter J. Phillips, Lake Arrowhead, all of Calif., assignors to La Gard, Inc., Torrance, Calif.

Filed Dec. 17, 1990, Ser. No. 629,119
Int. Cl.[5] E05B *47/00*
U.S. Cl. 70—277 **43 Claims**



1. In an electronically operated lock having a bolt operating lever manipulated by engagement with a dial operated cam when a predetermined combination has been entered via said dial, the improvement comprising the provision of:
lever retaining means for normally holding said lever out of engagement with said cam during rotation of said dial until after said combination has been entered;
lever operating means for positively driving said lever toward said cam in response to continued dial rotation after said combination has been entered, whereby said lock is unlocked by rotation of said dial after entry of said combination and said lever is positively manipulated by dial rotation to engage said dial operated cam only after entry of said combination;
said lock includes a solenoid electronically actuated by entry of the predetermined combination and said lever retaining means includes a lever movement blocking element; and
said lever operating means includes a detent operable by said solenoid to a detented position and associated with said blocking element and a detent engaging member on said cam whereby operation of said solenoid by entry of said combination moves said detent to said detented position wherein rotation of said dial operated cam drives said member against said detent to move said lever into engagement with said cam.

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PERMUTATION LOCK, IN PARTICULAR FOR TRUNKS PIECES OF FURNITURE OR THE LIKE

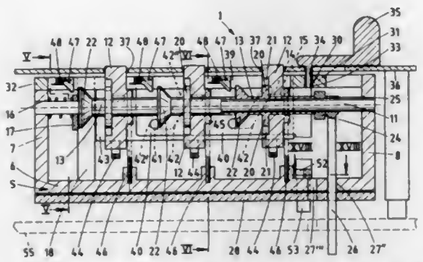
Helmut Klein, Heidekamp, and Jürgen Sersch, Haseneleverstrasse, both of Fed. Rep. of Germany, assignors to S. Franzen Söhne (GmbH & Co.), Solingen, Fed. Rep. of Germany

Filed May 6, 1992, Ser. No. 880,178

Claims priority, application Fed. Rep. of Germany, May 25, 1991, 9106464[U]; Apr. 10, 1992, 9204996[U]

Int. Cl.[5] E05B *37/02*

U.S. Cl. 70—312 30 Claims



1. A permutation lock, particularly for an enclosure comprising:

a plurality of number of disks which can be brought by rotation into a combination opening position;

a rotation axle, a plurality of spring tongues, a plurality of blocking sleeves, a window slide, an operating handle, and a plurality of cams with cam curves provided for corresponding ones of the number disks;

wherein said disks are arranged on said rotation axle and are engaged by respective ones of said spring tongues;

said blocking sleeves are operatively coupled to corresponding ones of said disks and have flats formed of flat surfaces, said window slide being located opposite the flat surfaces and having bars which are displaceable via movement in a direction parallel to said rotation axle, said handle serving to displace said slide only upon the occurrence of the combination opening position of the disks of the lock;

the cam curves of the respective number disks, as a result of action upon the cam curves by displacement of the operating handle then turn the number disks into a set of given basic positions, which differ from the positions of the respective disks in said combination opening position; and

bars at the center of the window slide are developed as flap bridges and are spring-urged into blocking position, the center bars moving beyond the flat surfaces of said sleeves against spring load upon displacement of the window slide.

5,307,658

KEY CYLINDER DEVICE

Sadao Kokubu; Hisashi Aoki, and Yoshiyuki Mizuno, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jul. 31, 1992, Ser. No. 922,381

Claims priority, application Japan, Aug. 2, 1991, 3-217951; Dec. 17, 1991, 3-353593

Int. Cl.[5] E05B *17/22*

U.S. Cl. 70—427 5 Claims

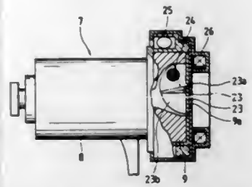
1. A key cylinder device comprising:

a rotor having a key inserting inlet;

a casing in which said rotor is rotatably fitted;

a shutter mounted by said rotor for swinging movement between open and closed positions, said shutter blocking said key inserting inlet in said closed position and being swung to said open position in response to a key being inserted into said key inserting inlet, said shutter being made of magnetic material;

a permanent magnet installed on said rotor in such a manner that said permanent magnet is located near said shutter; and



magnetism detecting means for receiving a magnetic force of said permanent magnet, said magnetism detecting means being mounted by said casing, wherein

said shutter interrupts said magnetic force of said permanent magnet on said magnetism detecting means, while in said open position.

5,307,659

PLATE BENDING MACHINE

Franco Sartorio, Torino, Italy, assignor to Amada Company, Limited, Japan

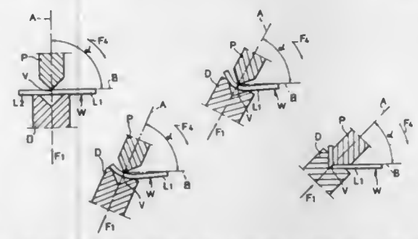
Continuation of Ser. No. 573,782, Aug. 28, 1990, Pat. No. 5,099,670, which is a continuation of Ser. No. 351,212, May 15, 1989, Pat. No. 4,991,422. This application Feb. 3, 1992, Ser. No. 829,881

Claims priority, application Italy, May 16, 1988, 67451 A/88

The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

Int. Cl.[5] B21D *5/02*

U.S. Cl. 72—7 8 Claims



1. A plate bending machine for bending a workpiece having a planar portion comprising:

a base;

a V-sectioned punch and a V-sectioned die provided on the base to oppose and cooperate with each other, the apex of the V-sectioned punch having an edge defining a bending axis;

means for relatively moving the punch and die linearly toward and away from each other for effecting engagement of the workpiece along the bending axis;

a first support means for supporting the punch and the die, the first support means being rotatable about an axis coincident with the bending axis;

a workpiece support means for supporting the workpiece between the punch and the die with the planar portion of the workpiece arranged substantially vertically, the workpiece support means including a pair of jaws for gripping an end section of the workpiece; and

means for controlling the rotation of said first support means in accordance with a predetermined program of variation of the angle of rotation with time, said program including experimentally determined deformation behavior of the workpiece so that during bending, the end section of the workpiece gripped by the pair of jaws remains substantially stationary in an initial workpiece plane.

5,307,660

NEW WATER BASED LUBRICANT COMPOSITION FOR COLD IMPACT EXTRUSION OF SPARK PLUG BODIES OR OTHER METAL PARTS AND PROCESS

Edmond J. Stoutenburg, Fort Gratiot, Mich., assignor to Acheson Industries, Inc., Port Huron, Mich.

Filed Aug. 6, 1992, Ser. No. 926,769

Int. Cl.[5] B21B *45/02*; C10M *157/02*

U.S. Cl. 72—42 4 Claims

1. A process of cold forming metal parts, comprising the steps of:

(1) preheating the metal parts to a temperature between about 125° F. and about 170° F. by hot water immersion,

(2) coating said metal parts with a water based lubricant coating composition comprised of:

(a) about 3% to about 25% by weight of an alkaline soluble thermoplastic acrylic resin binder,

(b) about 3% to about 20% by weight of polytetrafluoroethylene particulate powder material,

(c) about 0.1% to about 12% by weight of an alkaline solubilizing agent to maintain the pH of the composition within the range of about 8 to about 11,

(d) zero to about 6% by weight of a thickening agent,

(e) zero to about 2% by weight of a defoaming agent,

(f) the balance water,

(3) air drying said metal parts,

(4) forming the coated metal parts in a cold forming machine to make the formed metal parts,

(5) subjecting the metal parts to a caustic wash and water rinse to remove the residual resin and polytetrafluoroethylene lubricant.

5,307,661

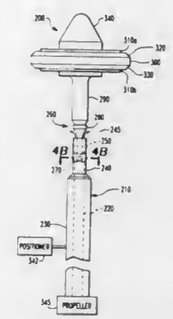
SYSTEM AND METHOD FOR SHOT PEENING REACTOR VESSEL PENETRATIONS

David J. Fink, Greentree, and Bruce W. Bevilacqua, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1993, Ser. No. 54,492

Int. Cl.[5] B24C *3/16*

U.S. Cl. 72—53 12 Claims



1. A system for shot peening a first tube external to and concentric with a second tube, the system comprising:

a) cutting means for cutting a slot through the second tube;

b) a shot peening device cooperating with said cutting means for shot peening the first tube;

c) positioning means attached to said shot peening device for positioning said shot peening device inside the second tube adjacent the slot in the second tube; and

d) propelling means attached to and cooperating with said shot peening device for propelling shot peening balls through the slot in the second tube for shot peening the first tube.

5,307,662

ROLL THREADING APPARATUS FOR THREADING END BLANK FOR METAL DRUM CONTAINER

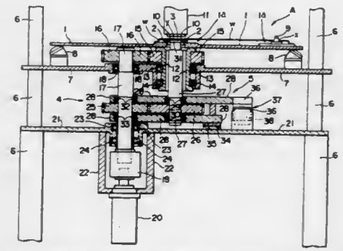
Toshio Tsuzuki, Kanagawa, Japan, assignor to Tannan Co., Ltd., Kanagawa, Japan

Filed Dec. 11, 1992, Ser. No. 989,373

Claims priority, application Japan, Dec. 11, 1991, 3-327430

Int. Cl.[5] B21H *3/08*

U.S. Cl. 72—91 5 Claims



1. A roll threading apparatus for threading a substantially circularly shaped end blank for use on a metal drum container, said end blank having a tubular flange integrally formed therein such that an axis of the tubular flange is disposed at a position displaced from a center of said end blank, comprising:

a turntable for supporting said end blank, said turntable being rotatable about an axis of the tubular flange such that said circularly shaped end blank is rotated eccentrically on said turntable;

an annular threading roll die mounted on said turntable and rotatable with said turntable about the axis of said tubular flange, said annular threading roll die receiving therein the flange of the end blank such that a full outer circumferential surface of the tubular flange is held against an inner circumferential surface of the annular threading roll die, said annular threading roll die having a first threading surface on the full inner circumferential surface thereof for threading the tubular flange;

a threading roll disposed for insertion into the tubular flange of the end blank supported on said turntable in spaced relationship to an inner circumferential surface of the tubular flange, said threading roll being rotatable and movable toward the inner circumferential surface of the tubular flange, said threading roll having a second threading surface on a full outer circumference thereof which is complementary to said first threading surface;

rotating means for rotating said annular threading roll die through said turntable and said threading roll in synchronism with each other in the same direction; and

pressing means for moving said threading roll toward said annular threading roll die to press said threading roll against the inner circumferential surface of said tubular flange while said annular threading roll die and said threading roll are being rotated by said rotating means;

the arrangement being such that while said first and second threading surfaces are being rotated, the first and second threading surfaces are pressed against the tubular flange to thread the tubular flange.

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5,307,663

MULTIPLE OUTLET FINISHING MILL

Terence M. Shore, Princeton, and Joseph R. Lawendowski, Southbridge, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Jan. 12, 1993, Ser. No. 3,130
Int. Cl.[5] B21B *1/18, 39/18*
U.S. Cl. 72—228 6 Claims



1. In a singled strand rolling mill wherein a product is rolled in a finishing mill in a twist-free manner through a succession of finishing stands before proceeding to a laying head, the improvement comprising:

said finishing stands being divided into at least first and second groups arranged respectively along first and second paths with said laying head lying on said second path;

first diverting means for alternatively directing the product exiting from said first group either to said second path for continued rolling in said second group prior to being directed to said laying head or along a third path bypassing said second group and leading directly to said laying head; and

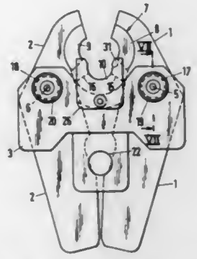
second diverting means for alternatively directing product being delivered to said finishing mill either to said first path for introduction into said first group, or to said second path for introduction into said second group.

5,307,664

JOINTING CLAMP FOR PRESSING PIPE CONNECTIONS

Karl-Georg Homm, Marl-Polsum, Fed. Rep. of Germany, assignor to Hewing GmbH, Ochtrup, Fed. Rep. of Germany

Filed Feb. 4, 1992, Ser. No. 830,815
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1991, 9103264[U]
Int. Cl.[5] B21D *39/04*
U.S. Cl. 72—401 3 Claims



1. A jointing clamp for pressing pipe connections, each pipe connection including a pipe having an outer periphery, a supporting sleeve and a pressing sleeve having a terminating end, said jointing clamp comprising:

connecting plate means including:

two spaced connecting plates, each of said connecting plate having an outer side, and

guide plates mounted on said outer sides of said two spaced connecting plates, each of said guide plates having a forked construction with two spaced legs, and a form recess disposed between the spaced legs of each said guide plate, one of said form recesses having a configuration which fits a part of the supporting sleeve of the pipe connection, and the other form recess fits on an outer periphery of said pipe and engages said terminating end of said pressing sleeve as a stop for said pressing sleeve;

first and second pressure clamps pivotably mounted on said connecting plate means for pivotal movement about parallel pivot axes in opposite directions between open and closed positions, said first and second pressure clamps being disposed between said two spaced connecting plates;

a first and second form insert carried respectively on said first and second pressure clamps, and a third form insert on said connecting plate means, said first and second form inserts along with said third form insert being in a clamping position operable to press the pipe connection when said first and second pressure clamps are in said closed position, said first and second form inserts being pivotably displaced from said clamping position to a non-clamping position when said first and second pressure clamps are in said open position, said third form insert being disposed in a stationary position on said connecting plate means when said third form insert is in said clamping position and when in said non-clamping position, said third form insert being at least partially disposed between said two spaced connecting plates;

affixing means for connecting a clamp driving device to said connecting plate means, with the clamp driving device being operable to drive said first and second pressure clamps from said open to said closed position; and

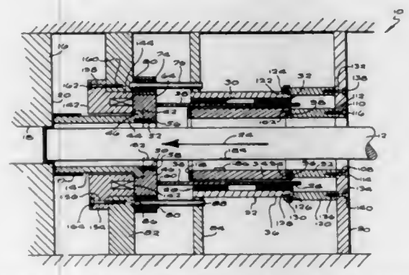
first and second pivot means for pivotably mounting said first and second pressure clamps, respectively, on said connecting plate means, an imaginary line passing through the pivot axes of said first and second pivot means delineating an upper and lower portion of the jointing clamp, said third form insert having one end juxtaposed to said first form insert and another end juxtaposed to said second form insert, each of said first and second ends defining respective first and second parting planes, said parting planes having an imaginary extension extending to said lower portion of said jointing clamps to underlie the respective pivot axes.

5,307,665

ELECTROMAGNETIC RE-DRAW SLEEVE ACTUATOR

Keith O. Stuart, Cypress, Calif., assignor to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 730,634, Jul. 16, 1991. This application Jul. 10, 1992, Ser. No. 908,453
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] B21D *24/10*
U.S. Cl. 72—347 18 Claims



1. In a can forming apparatus in which a cylindrical re-draw sleeve holds a can material preform against an ironing die while a ram pushes said preform through an opening in said die to form a can body, an improvement comprising:

a linear electromagnetic actuator having an actuator core mounted to said apparatus and a coil element moveable between a first position and a second position, said actuator core having an inner core member, an outer core member and a field coil, said field coil being intermediate said inner core member and said outer core member, said outer core member having a first end region and a second end region, said first end region and said second end region each extending inwardly toward said coil element, said field coil being disposed intermediate said first end region and said second end region, said field coil developing magnetic flux in said core in response to an electrical current therein said re-draw sleeve being mounted to said coil element and further being in a retracted position to allow placement of said can material preform against said ironing die when said coil element is in said first position and in an extended position to hold said can material preform against said ironing die when said coil element is in said second position; and

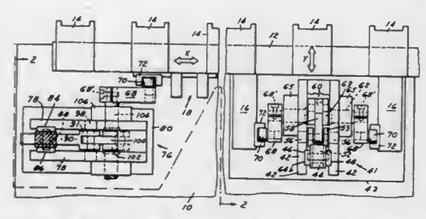
a timing and control circuit to activate said actuator to place said coil element in said second position when said ram is in a retracted position and to return said coil element to said first position when said ram is in an extended position.

5,307,666

TRANSFER SYSTEM

Sabatino A. Bianchi, Bloomfield Hills, Mich., assignor to Livernois Automation Company, Dearborn, Mich.

Filed Dec. 21, 1992, Ser. No. 994,365
Int. Cl.[5] B21D *43/05*
U.S. Cl. 72—405 27 Claims



1. A drive for a transfer device having a reciprocating ram, the transfer device being driven by the ram and having a support, a carriage mounted on the support for movement along a path, work engaging fingers mounted on the carriage for movement in a path transverse to the path of movement of the carriage, such that as the ram reciprocates, the carriage and work engaging fingers transfer workpieces between successive stations, wherein the drive comprising

a base,

a housing supported on said base,

a plurality of interconnecting links within said housing operably connected to the ram,

cam means on one of said housing and one of said links,

cam follower means on the other of said housing and one of said links, and

an output shaft driven by said links and operably connected to one of the carriage and the work engaging fingers,

said plurality of links comprising

a first link connected to said ram means at one end and having follower means at the other end,

a second link having a slot for receiving said follower means, said cam follower means comprising a first cam roller on said second link, and

a third link connected at one end to said second link and to a crankshaft connected to said output shaft at the other end,

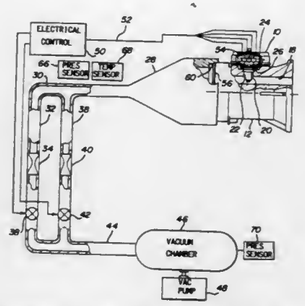
such that as the ram reciprocates, the links pivot with respect to each other inside said housing causing said cam follower means to move along said cam means to rotate said output shaft 180°, such that the acceleration and deceleration of the transfer device is achieved.

5,307,667

RESPONSE TIME TEST APPARATUS FOR A MASS AIR FLOW SENSOR

Richard W. Caron, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 13, 1992, Ser. No. 913,127
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 19 Claims



1. A response time test apparatus for a mass air flow sensor mounted on a sensor manifold comprising:

a connector member having a first end connectable to said sensor manifold and a second end;

a vacuum chamber;

a primary manifold connected between said second end of said connector and said vacuum chamber, said primary manifold having a first branch and a second branch;

a first sonic nozzle having a firs air flow rate under sonic air flow conditions disposed in said first branch;

a first valve disposed in said first branch, said first valve having an open state allowing air to flow through said first sonic nozzle and a closed state preventing air flow through said first sonic nozzle;

a second sonic nozzle having a second air flow rate under sonic air flow conditions disposed in said second branch;

a second valve disposed in said second branch, said second valve having an open state allowing air to flow through said second sonic nozzle and a closed state preventing said air flow through said second sonic nozzle;

an electrical control connected to said first and second valves and said mass air flow sensor, said electrical control having means for activating said first and second valves to produce a step change in the mass air flow rate through said primary manifold and said sensor manifold from said first air flow rate to said second air flow rate, means for energizing said mass air flow sensor to generate a mass air flow signal having a value corresponding to the mass air flow rate of the air passing through said sensor manifold and means for recording a time required for said mass air flow signal to change from a first value to a second value in response to said step change in said mass air flow rate.

5,307,668

GAS DENSITY METER AND METHOD

William H. Vander Heyden, Mequon, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.

Filed Oct. 5, 1992, Ser. No. 956,143
Int. Cl.[5] G01N *9/32*
U.S. Cl. 73—30.02 14 Claims

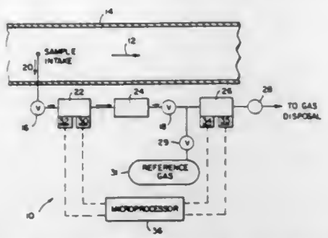
1. A volume corrector comprising:

means for tapping sample gas from a pipeline through which pipeline gas flows at a flowing temperature and pressure in contrast to a base temperature and pressure;

a first chamber of fixed volume for receiving sample gas tapped from the pipeline, the sample gas being maintained

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at substantially the same temperature as the pipeline gas flowing temperature when contained in the first chamber;
a first pressure sensor for measuring the pressure of the sample gas in the first chamber;
a first temperature sensor for measuring the pipeline gas flowing temperature which is substantially the same as the temperature of the sample gas in the first chamber;
a first valve for controlling the flow of sample gas to the first chamber;
a flow restrictor located downstream of the first chamber

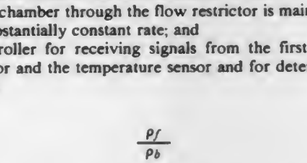


through which sample gas flowing from the first chamber flows;
a pressure regulator located downstream of the first chamber and upstream of the flow restrictor for reducing the pressure of sample gas flowing from the first chamber before it flows to the flow restrictor so that flow from the first chamber through the flow restrictor is maintained at a substantially constant rate; and
a controller for receiving signals from the first pressure sensor and the temperature sensor and for determining a ratio

$$\frac{Pf}{Pb}$$

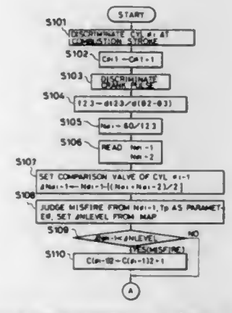
of a density of the pipeline gas at the flowing temperature and pressure compared to a density of the pipeline gas at the base temperature and pressure.

5,307,669
METHOD FOR TESTING A WATERPROOF CASING
Etsuro Nishio, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 945,213, Sep. 15, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,545
Claims priority, application Japan, Sep. 17, 1991, 3-262636
Int. Cl.[5] G01M *3/26, 3/32*
U.S. Cl. 73—46 **6 Claims**



1. A method for testing a waterproof casing having a flexible waterproofing member, comprising the steps of:
bringing said flexible waterproofing member into contact with an air pressure reduction casing to define a closed chamber;
reducing the internal air pressure of the closed chamber to a first negative air pressure sufficient to deform and bring the flexible waterproofing member into a sealing contact with the air pressure reducing casing regardless of any defect in said flexible waterproofing member; and,
seeking to detect a change in internal air pressure of the closed chamber, whereby a defective portion of said waterproof casing other than a defect in said flexible waterproofing member can be detected in accordance with the change of internal air pressure.

5,307,670
MISFIRE DISCRIMINATING METHOD FOR AN ENGINE
Ryuichiro Imai, and Izuru Kawahira, both of Musashino, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1991, Ser. No. 779,190
Claims priority, application Japan, Nov. 1, 1990, 2-298662; Feb. 20, 1991, 3-026284
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **26 Claims**

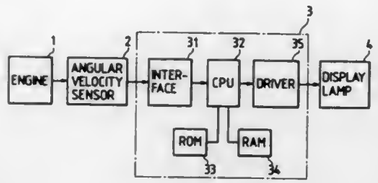


1. A method for discriminating a misfire occurrence of an engine comprising:
detecting a plurality of engine speeds, each engine speed being detected in a period after the combustion in each cylinder of the engine;
deriving a first engine speed relating to a first cylinder, a second engine speed relating to a second cylinder and a third engine speed relating to a third cylinder, said second cylinder preceding said first cylinder and said third cylinder preceding said second cylinder with respect to an ignition sequence of all cylinders;
averaging said first engine speed and said third engine speed to create an averaged value;
taking a difference between said averaged value and said second engine speed;
setting a misfire judgment level as a function of an engine parameter representing an operation state of said engine;
comparing said difference with said misfire judgment level; and
judging a misfire occurrence in said second cylinder when said difference is larger than the said misfire judgement level.

5,307,671
METHOD FOR DETECTING MISFIRES IN GASOLINE INTERNAL COMBUSTION ENGINE
Yoshiaki Akase, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 28, 1992, Ser. No. 842,962
Claims priority, application Japan, Mar. 4, 1991, 3-37057; Mar. 4, 1991, 3-37067
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **8 Claims**

1. A method of detecting misfires in a gasoline internal combustion engine that operates under various operating conditions, comprising the steps of:

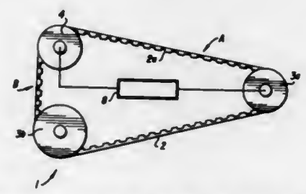
varying a threshold value, used for determining occurrences of misfires in the engine, in accordance with the operating conditions of the engine; and
detecting misfires in the engine by comparing an angular velocity of rotation of the engine with the threshold value; wherein the threshold value is calculated according to the following equation:



$$C=(A/2+B/2)/2$$

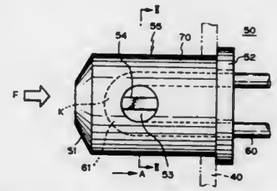
wherein A represents a normal variation in angular velocity of the engine operating normally, B represents a variation in angular velocity of the engine when misfiring, and C represents the threshold value.

5,307,672
METHOD AND APPARATUS TO CHECK THE STATE OF WEAR IN A COVERING FABRIC OF A DRIVING BELT
Vincenzo Macchiarulo, Pescara, and Giovanni Foia, Vasto, both of Italy, assignors to Pirelli Transmissioni Industriali S.p.A., Chieti, Italy
Filed Jul. 31, 1992, Ser. No. 922,516
Claims priority, application Italy, Aug. 1, 1991, MI91A002147
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **14 Claims**



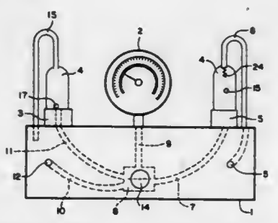
1. A method for checking the state of wear of covering fabric in a driving belt, in which said driving belt, provided with a covering fabric treated with electrically conductive charges acting in contact relationship with at least a first pulley and a second pulley which are electrically insulated from each other and the setting in rotation of which brings about the operation of the belt, said method comprising the following steps:
applying a predetermined electric voltage between the first and second pulleys;
measuring ma electric resistance value offered by at least two branches (A, B) of said belt, kept taut between the first and second pulleys;
comparing the detected electric resistance value (Rx) with a previously input electric resistance value corresponding to a given state of wear of the covering fabric of the belt;
signalling a state of danger when the detected electric resistance value (Rx) overcomes said previously input value, characterized in that it further comprises the following steps:
a) stopping the belt operation before said step of applying electric voltage is activated;
b) waiting for the elapsing of a previously input time, starting from the moment at which the belt operation is stopped;
c) enabling the danger signalling upon expiration of the preset waiting time, said signalling being kept disabled when the time elapsing between the belt motion stopping and the activation of the electric voltage applying step is lower that the value of said preset waiting time, as well as during the belt operation.

5,307,673
WEAR-DETECTION PROBE FOR A BRAKE LINING MATERIAL
Katsuya Ito, and Fumiyoshi Tanigawa, both of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Dec. 7, 1992, Ser. No. 987,457
Claims priority, application Japan, Dec. 13, 1991, 3-110020[U]
Int. Cl.[5] G01L *5/28;* **B60Q** *1/00*
U.S. Cl. 73—129 **2 Claims**



1. A wear detection probe for a brake lining material, comprising:
a housing composed of a molded resin material;
an insulated electrical wire including a U-turned portion, said U-turned portion being imbedded within the molded resin material of said housing;
a hole disposed in said housing, a circumference of said hole being located within an area bounded by an inner periphery of said U-turned portion; and
a reinforcement bridge integral with said housing composed of the same molded resin material as said housing, and bridging said hole,
such that when said wear detection probe is embedded within a brake lining, said U-turned portion of said insulated electrical wire is supported by said reinforcement bridge, and is severed by contact with a rotor when a residual thickness of the brake lining is worn to a predetermined value.

5,307,674
AUTOMATIC EQUIPMENT FOR PNEUMATIC CALIBRATION
José E. Forti, 01215 - Al. Glete, 485 - Sao Paulo, Brazil
Filed Sep. 24, 1991, Ser. No. 765,055
Claims priority, application Brazil, Nov. 13, 1990, 90 07052
Int. Cl.[5] G01F *25/00;* **G01L** *17/00*
U.S. Cl. 73—146.3 **6 Claims**



1. A pneumatic calibration device comprising:

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a body having an air inlet port and an air outlet port;
a pressure gauge extending from said body;
means for adjusting pressure disposed within said body, said pressure adjusting means communicating with said pressure gauge, said air inlet and outlet ports being pneumatically coupled to said pressure adjusting means so as to regulate inflation of an inflatable member; and
indicating means for indicating one of filling and emptying the inflatable member, said indicating means being pneumatically coupled to said pressure adjusting means,
said indicating means including first and second indicating members, said first indicating member being coupled to said outlet port and indicates that the inflatable member is being inflated, said second indicating member being coupled to the air inlet port, said second indicating member including means for venting air to the atmosphere and provides an indication that the inflatable member is being emptied.

5,307,675

LUMINESCENT PRESSURE SENSITIVE COMPOSITION

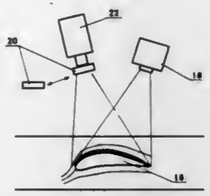
Vladimir Mosharov, Zhukovsky; Mikhael Kuzmin, Moscow; Anatolii Orlov, Orlov; Vladimir Radchenko, Zhukovsky; Nikita Sadovskii, and Igor Troyanovsky, both of Moscow, all of U.S.S.R., assignors to Aliteco AG, Zug, Switzerland

Filed Mar. 24, 1992, Ser. No. 856,284

Claims priority, application European Pat. Off., Mar. 2, 1992, 92103543.2

Int. Cl.[5] G01M *9/00*

U.S. Cl. 73—147 **7 Claims**



7. A sensor comprising a pulsed or flashed light source, a luminescence detector, an active luminophore applied to a surface and exhibiting a first luminescence when subjected to light emitted by the light source and which is dependent on air pressure, a reference luminophore applied to the surface and exhibiting a second luminescence when subjected to light emitted by the light source, the second luminescence having a dependency on air pressure which is different from that of the first luminescence, the reference luminophore having a spectral region of excitation which does not overlap a spectral region of emission of the active luminophore, the detector being adapted to use a leading or a trailing edge of a pulse signal emitted by the light source to control the time when the luminescence of the active luminophore is detected and the time when the luminescence of the reference luminophore is detected.

5,307,676

CONTROLLABLE GEAR TESTING SYSTEM

Yevsey Gutman, Minneapolis, Minn., assignor to GEI Systems, Inc., Minneapolis, Minn.

Filed Aug. 12, 1992, Ser. No. 929,151

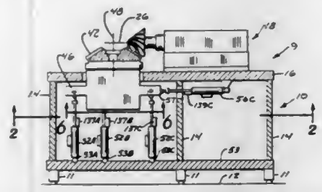
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] G01M *13/02;* **B23Q** *3/04, 3/06, 1/04*

U.S. Cl. 73—162 **31 Claims**

1. An apparatus for testing and adjusting a position of a first gear with respect to a second gear relative to three substantially orthogonal axes, the apparatus comprising:
a frame rotatably supporting the first gear;
a carriage rotatably supporting the second gear about a central axis of the second gear;
actuator means connected to the frame for supporting the carriage relative to the first gear, the actuator means moving the carriage so that the second gear is linearly displaced along the three substantially orthogonal axes and is rotationally displaced about at least one of the axes; and
sensing means to determine relative displacement of the second gear with respect to the first gear.

24. A method for testing the running of a gear set comprising a first gear and a second gear relative to three substantially orthogonal axes, the method comprising:



providing a frame for rotatably supporting the first gear, a carriage for rotatably supporting the second gear for rotation about a central axis of the second gear, actuator means connected to the frame for supporting the carriage relative to the first gear, and sensing means to determine relative displacement of the second gear with respect to the first gear;
adjusting the first gear relative to the frame to allow the first gear to rotatably mesh with the second gear; and
operating the actuator means as the gear set is rotated to displace the second gear linearly along the three substantially orthogonal axes and to displace the second gear rotationally about at least one of the orthogonal axes to adjust the gear mesh between the first gear and the second gear.

5,307,677

FLOW RATE METER

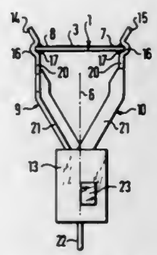
Hans Beyrich, Ludwigsburg, and Heinz Gneiss, Freiberg/Geisingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 26,659

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1992, 4207676

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.26 **2 Claims**



1. A flow rate meter, having at least one temperature-dependent resistor layer applied to a flat substrate, and disposed in a path of a flow medium, electrically conductive retaining bodies having a flat cross section, said electrically conductive retaining bodies are secured in an electrically insulating base body spaced from said flat substrate, each electrically conductive retaining body has a U-shaped retaining segment near their free ends which protrude from the base body, each retaining segment rests on a different face end of the substrate and protrude partway past the substrate and is electrically conductively connected to the at least one temperature-dependent resistor layer, each electrically conductive retaining body being adjoined by a connecting segment, the connecting segments extending parallel to one another, beginning at each connecting segment (**20**), the retaining bodies (**9, 10**) each have a securing segment (**21**) including two arms that extend at an angle relative to each other to form an angular cross section and each segment (**21**) is inclined toward each other in such a way with respect to the retaining body (**9, 10**) that the securing segments (**21**) protrude into the base body (**13**) extending immediately next to one another.

5,307,678

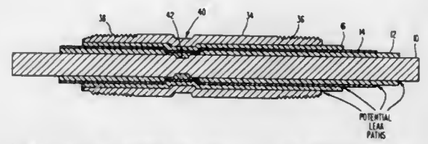
MATERIAL LEVEL PROBE HAVING CRIMP SEAL

Evan Cost, Philadelphia, Pa., assignor to Drexelbrook Engineering Co., Horsham, Pa.

Filed Jun. 7, 1993, Ser. No. 72,925

Int. Cl.[5] G01F *23/26;* **H01G** *5/28*

U.S. Cl. 73—304 C **30 Claims**



1. A probe for measuring the level of a material in a container, comprising:
a rod-shaped probe element having a central axis;
a tubular ground element coaxially surrounding and radially spaced from said probe element but having a length along said central axis which is shorter than a length of said probe element along said central axis whereby said probe element projects from one end of said ground element;
an insulating layer completely surrounding said probe element between said ground element and said probe element to insulate said ground element from said probe element;
a seal formed along said central axis of said probe element by substantially uniformly deforming said ground element and said insulating layer in a radially inward direction towards said probe element until all leakage paths among said probe element, said ground element and said insulating layer are substantially eliminated; and
means for mounting said probe within said container for measurement of the level of said material.

5,307,679

METHOD AND APPARATUS FOR EVALUATING THE DRYING PROPERTIES OF UN-DRIED WOOD

Robert J. Ross, Madison, Wis., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

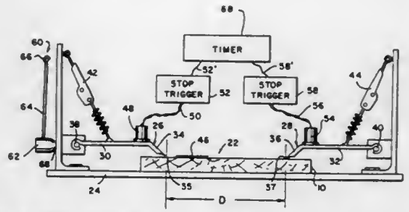
Filed Mar. 25, 1992, Ser. No. 857,146

Int. Cl.[5] G01H *5/00;* **G01N** *29/18, 29/20, 29/00*

U.S. Cl. 73—597 **10 Claims**

1. A method of evaluating the proclivity of un-dried wood of a wood type to degrade during drying, the un-dried wood having a grain orientation, comprising the steps of:
determining a distance between a first and second point in the un-dried wood;
generating an acoustic pulse at a first time coupled to the un-dried wood at the first point;
detecting the presence of the acoustic pulse at the second point at a second time;
employing the value of the distance and the difference between the first and second times to calculate the speed of the acoustic pulse;
comparing the speed of the acoustic pulse to a predetermined speed value indicating proclivity of the wood type to degrade upon drying; and
outputting a value indicating the proclivity of the un-dried wood to degrade upon drying.

7. An apparatus for evaluating the proclivity of un-dried wood of a wood type to degrade during drying, the un-dried wood having a grain orientation, comprising:
an acoustic pulse transmitting means for coupling an acoustic pulse into a first point in the un-dried wood at a first time;



an acoustic pulse receiving means for detecting the acoustic pulse at a second point in the un-dried wood at a predetermined distance from the first point at a second time;
a clock means communicating with the acoustic pulse transmitting means and the acoustic pulse receiving means for determining the relative speed of the acoustic pulse;
a comparator means for comparing the speed of the acoustic pulse with a speed threshold indicating the proclivity of the wood type to degrade upon drying; and
an output means for outputting a value indicating the proclivity of the un-dried wood to degrade upon drying.

5,307,680

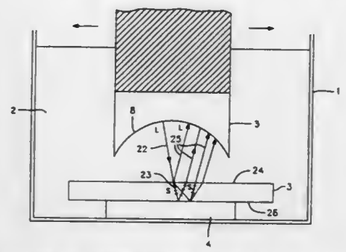
METHOD AND APPARATUS FOR VISUALIZATION OF INTERNAL STRESSES IN SOLID NON-TRANSPARENT MATERIALS BY ELASTOACOUSTIC TECHNIQUE

Ewa Drescher-Krasicka, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 21, 1992, Ser. No. 964,598

Int. Cl.[5] G01N *29/04, 3/08;* **G01H** *1/08*

U.S. Cl. 73—606 **20 Claims**



1. A process for visualization of internal stress in solid materials by acoustic microscope imaging comprising:
providing an coustic microscope having an acoustic lens comprising an ultrasonic transmitter and an ultrasonic receiver;
supporting a sample comprising a body of solid material to be examined;
supporting said acoustic lens in spaced relationship to said sample;

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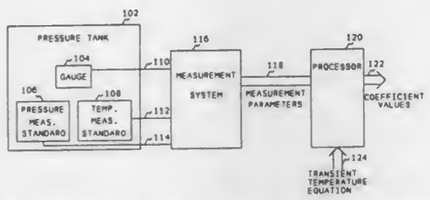
defocusing said lens by adjusting the focal point of said lens beneath the surface of said sample;
exciting said ultrasonic transmitter to produce transmitted ultrasonic waves;
directing said transmitted waves toward said body;
positioning said acoustic lens relatively to said sample for receiving acoustic waves reflected from said sample and produced by said transmitted waves; and
measuring the amplitude of said received waves to analyze distribution of internal stress in said sample.

5,307,681

TRANSIENT TEMPERATURE COMPENSATION FOR PRESSURE GAUGES USING DISCRETE TEMPERATURE HISTORY MEASUREMENTS FOR GAUGE CALIBRATION

Eric B. Phelps, Littleton; Gary R. Cook, Highlands Ranch, and Wayne O. Roszelle, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 5, 1992, Ser. No. 926,065
Int. Cl.[5] G01L *19/04*
U.S. Cl. 73—708 **8 Claims**



1. A method for thermally compensating the pressure value displayed by a pressure gauge, said method comprising the steps of:
(a) inputting, into a computer system, an equation which expresses a thermally compensated pressure value as a relation between a derivative of temperature and temperature comprising using

$$p_e(t) = \sum_{i=0}^{n} a_i \frac{dT}{dt}(t-i) + \sum_{j=0}^{m} b_j T(t-j)$$

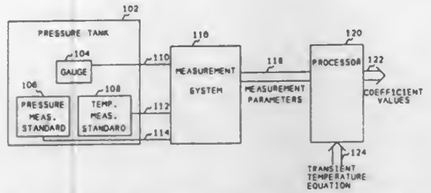
as said equation wherein p_e represents pressure error, T represents temperature, t represents time, each a_i is a function of temperature and each b_j is a function of temperature;
(b) measuring the pressure of the surroundings of which a pressure value is desired with said pressure gauge;
(c) measuring the temperature of the immediate environment of said pressure gauge;
(d) inputting said temperature measurement and said pressure measurement into said computer system containing said equation;
(e) computing said pressure value using said temperature measurement, said pressure measurement and said equation;
(f) displaying said thermally compensated pressure value on a display device.

5,307,682

TRANSIENT TEMPERATURE COMPENSATION FOR PRESSURE GAUGES USING AN IMPULSE RESPONSE FOR GAUGE CALIBRATION

Eric B. Phelps, Littleton; Gary R. Cook, Highlands Ranch, and Wayne O. Roszelle, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 5, 1992, Ser. No. 926,096
Int. Cl.[5] G01L *19/04*
U.S. Cl. 73—708 **8 Claims**



1. A method for thermally compensating the pressure value of a pressure gauge, said method comprising the steps of:
(a) inputting, into a computer system, an equation which expresses a thermally compensated pressure value as a relation between a derivative of temperature and temperature comprising using

$$p_e(t) = \int_{-\infty}^{\infty} \left[r_1(t-\tau)\frac{dT}{dt}(t) + r_2(t-\tau)T(t) \right] d\tau$$

as said equation wherein p_e represents pressure error, T represents temperature, t represents time, r_t is the response function for the derivative of temperature, and r_2 is the response function for temperature;
(b) measuring the pressure of the surroundings of which a pressure value is desired with said pressure gauge;
(c) measuring the temperature of the immediate environment of said pressure gauge;
(d) inputting said temperature measurement and said pressure measurement into said computer system containing said equation;
(e) computing said thermally compensated pressure value using said pressure measurement, said temperature measurement, and said equation; and
(f) displaying said thermally compensated pressure value on a display device.

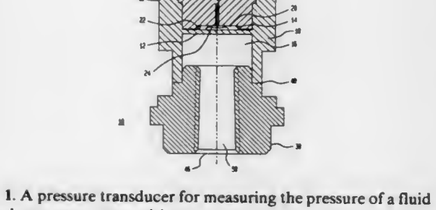
5,307,683

TRANSIENT TEMPERATURE COMPENSATION FOR PRESSURE GAUGES

Eric B. Phelps, Littleton; Gary R. Cook, Highlands Ranch, and Wayne O. Roszelle, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 5, 1992, Ser. No. 926,097
Int. Cl.[5] G01L *19/04*
U.S. Cl. 73—708 **20 Claims**

1. A method for thermally compensating the pressure value displayed by a pressure gauge, said method comprising the steps of:
(a) determining the coefficient values to a linear differential equation which expresses a thermally compensated pressure value as a relation between a derivative of temperature and a derivative of pressure error;
(b) measuring the pressure of the surroundings of which a pressure value is desired with said pressure gauge;
(c) measuring the temperature of the immediate environment of said pressure gauge;
(d) inputting said pressure measurement and said temperature measurement into a computer system containing said linear differential equation;
(e) computing a thermally compensated pressure value using



said pressure measurement, said temperature measurement, and said linear differential equation; and
(f) displaying said thermally compensated pressure value on a display device.

5,307,684

STOP MECHANISM FOR A DIAPHRAGM PRESSURE TRANSDUCER

Robert A. Moss, Holland, and Jack C. Kitchens, II, Kenmore, both of N.Y., assignors to Viatran Corporation, Grand Island, N.Y.

Filed Jun. 2, 1992, Ser. No. 893,193
Int. Cl.[5] G01L *9/02*
U.S. Cl. 73—716 **13 Claims**

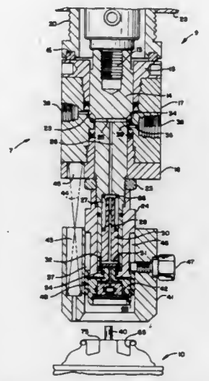
1. A pressure transducer for measuring the pressure of a fluid under pressure, comprising:
a housing having a cavity therein;
a diaphragm capable of displacement mounted within said cavity, dividing said cavity into a first and a second chamber, said first chamber adapted to receive said fluid, said second chamber containing a volume of liquid;
means for measuring the pressure of said fluid in relation to the displacement of the diaphragm;
sealing means for sealing said second chamber to contain said liquid; and
a volume of gas contained in said second chamber wherein said volume of gas dissolves into said liquid when said diaphragm is displaced a first distance, said liquid and said gas being of sufficient quantity to prevent said diaphragm from displacing beyond a second distance greater than said first distance.

5,307,685

PRESSURE TESTER AND METHOD OF TESTING THEREWITH

James A. Bloome, Blue Grass, and Lee M. White, Davenport, both of Iowa, assignors to BWI KartridgPak Co., Davenport, Iowa

Filed Apr. 24, 1992, Ser. No. 874,195
Int. Cl.[5] G01L *7/00*; G01M *3/04*
U.S. Cl. 73—756 **22 Claims**



1. Apparatus for testing the pressure levels within pressurized containers that have valves which are actuatable from the exterior to provide pressure transmitting connections through the valves into containers being tested, comprising,
a pressure charge isolator having a small volume chamber for receiving and isolating therein a small discrete volume charge of pressurized fluid, said isolator having inlet and outlet connections, first valve means operatively connected with said isolator for alternately connecting said inlet connection to and disconnecting said inlet connection from a source of pressurized fluid, second valve means operatively connected with said isolator for opening and closing said outlet connection, a pressure sensing port in communication with said chamber for sensing the pressure level therein, and adaptor means operatively connected with said second valve means and operatively engageable with the valve of a pressurized container being tested so as to form a sealed pressure transmitting connection between the interior of the pressurized container and said small volume chamber whereby the discrete isolated pressure charge within said small volume chamber when released equalizes to the pressure within the pressurized container and the equalized pressure may be sensed at said pressure sensing port.

5,307,686

DEVICE FOR MEASURING THE RATE OF FLOW OF A FLOWING FLUID

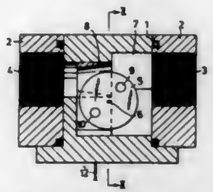
Anders Norén, Västra Valhallavägen 25B, Djursholm S-182 63, Sweden

Continuation of Ser. No. 689,842, May 23, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 76,171
Claims priority, application Sweden, Dec. 1, 1988, 8804353
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—861.87 **9 Claims**

1. A device for measuring the rate of flow of a fluid flowing in a closed and substantially unobstructed flow passage, said device comprising: a single rotor having the form of a circular planar plate, said plate being fully surrounded by the fluid, the speed of rotation of the rotor being directly dependent on the flow rate of the fluid in said flow passage, said rotor being

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carried symmetrically by a shaft which extends substantially at right angles to the longitudinal axis of the flow passage, said rotor shaft being located asymmetrically in relation to the median line of the flow passage in a cross-section through the flow passage and through the rotor shaft so that as the fluid



flows the rotor will obtain a resultant torque and begin to rotate, the rotor surfaces over which the fluid flows being configured so that torque-generating forces occur substantially only as a result of the friction of the fluid against said surfaces; and means for determining the rotational speed of the rotor.

5,307,687

ELECTROMAGNETIC FLOWMETER

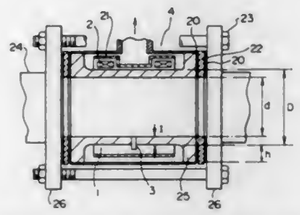
Masatsugu Arai; Akiomi Kohno; Kazuaki Yokoi; Yuuji Yoshitomi, all of Ibaraki; Yutaka Sakurai, and Tamio Ishihara, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,245

Claims priority, application Japan, May 30, 1991, 3-127065

Int. Cl.[5] G01F *1/58*

U.S. Cl. 73—861.12 **12 Claims**



1. An electromagnetic flowmeter for measuring the flow rate of a fluid, comprising: a measuring tube made of ceramics and defining a fluid passage therein for said fluid; electrodes having ends exposed to an interior of said measuring tube through holes which are formed in a wall of said measuring tube; means for generating a magnetic field disposed around said electrodes; and a case encasing said measuring tube, said electrodes and said magnetic field generating means; wherein a ratio t/R between a wall thickness t and a mean radius R of said measuring tube is determined to range from 0.1 to 0.2.

5,307,688

METHOD AND FLOWMETER FOR UNSTEADY FLUID FLOW STUDY

Paul J. Lefebvre, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 24, 1990, Ser. No. 632,872

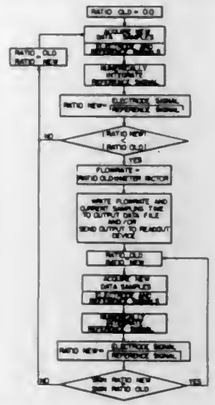
Int. Cl.[5] G01F *1/60*

U.S. Cl. 73—861.16 **6 Claims**

1. In the transient measurements of rate of flow of a fluid using an electromagnetic flowmeter including a flow tube with a pair of flanges along longitudinal ends thereof for insertion in a fluid flow pipe, a magnetic core and coil coupled together to form an electromagnet to generate a uniform magnetic flux density in a region around said flow tube and a magnetic flux meter to measure magnetic flux density at any point in time obtained as a reference signal, means for measuring e.m.f. given as an electrode signal resulting from an interaction between said electrically conducting fluid flowing in the fluid flow pipe and the magnetic flux density in said region, an improved method which includes;

measuring said reference signal as a measure of magnetic flux density;

measuring said electrode signal which is a measure of inter-



action between the magnetic flux density vector and the fluid flow velocity vector;

integrating said reference signal so as to synchronize said reference signal and said electrode signal;

taking a ratio of the absolute values of said reference and said electrode signals;

determining a peak value of the ratio of the absolute values of said reference and said electrode signals;

multiplying said peak value by a meter factor, a proportionality constant to obtain transient fluid flow velocity; and storing said transient fluid flow velocity value.

5,307,689

MASS FLOWMETER

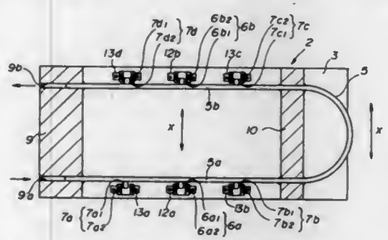
Shigeru Nishiyama, Kanagawa; Hiroaki Hasegawa; Yasuji Miyata, both of Yokohama, and Hiroshi Koido, Tokyo, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jan. 15, 1992, Ser. No. 821,461

Claims priority, application Japan, Jan. 18, 1991, 3-004679

Int. Cl.[5] G01F *1/86*

U.S. Cl. 73—861.38 **12 Claims**



1. A mass flowmeter for measuring a flux of a fluid comprising:

a sensor tube including a first tube part for receiving the fluid and a second tube part for outputting the fluid;

vibrating means for vibrating the first tube part at a first position and the second tube part at a second position in mutually opposite directions;

displacement detecting means for detecting a displacement of the first tube part on an upstream side and on a downstream side of the first position and a displacement of the second tube part on an upstream side and on a downstream side of the second position; and

measuring means for calculating the flux of the fluid based on a phase difference between a first sum of the displacements detected on the upstream side of the first position and on the upstream side of the second position and a second sum of the displacements detected on the downstream side of the first position and on the downstream side of the second position.

5,307,690

TEMPERATURE COMPENSATING DEVICE FOR TORQUE MEASURING APPARATUS

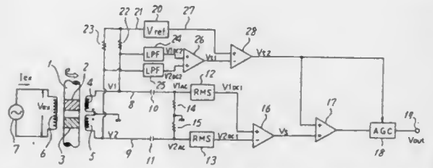
Akiyoshi Hanazawa, Yao, Japan, assignor to Kubota Corporation, Osaka, Japan

Filed Jul. 27, 1992, Ser. No. 919,953

Claims priority, application Japan, Jul. 29, 1991, 3-187960; Jul. 8, 1992, 4-180158

Int. Cl.[5] G01L *3/10*

U.S. Cl. 73—862.333 **11 Claims**



1. A temperature compensating device for a torque measuring apparatus of the magneto-strictive type including a magnetically anisotropic portion formed on the periphery of a torque transmission shaft, and sensing coil means provided in corresponding relation to the magnetically anisotropic portion for outputting an alternating current signal corresponding to the magnitude of a torque applied to the torque transmission shaft from the sensing coil means for measurement of the magnitude of the torque, said temperature compensating device comprising:

means for detecting the direct current resistance of said sensing coil means thereby to detect the temperature of said sensing coil means,

means for temperature-compensating the detecting characteristics of said torque measuring apparatus on the basis of a detection signal from said detecting means,

voltage division resistor means for applying a DC voltage to the sensing coil means

means for detecting the direct current component only of the terminal voltage of the sensing coil means thereby to find the DC resistance of the sensing coil means, and

means for deriving an alternating current component only out of an output signal from the sensing coil means thereby to provide a torque detection signal.

5,307,691

TORQUE TRANSDUCER

Katsuyuki Miyake, Shiga; Tomoyoshi Sawada, Tsuyama, and Mutsumi Sunahata, Sakai, all of Japan, assignors to Kubota Corporation, Osaka, Japan

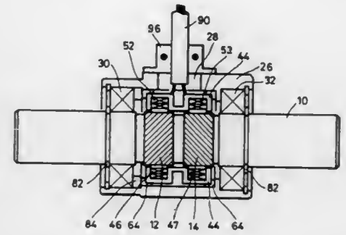
Continuation-in-part of Ser. No. 721,147, Jun. 26, 1991, Pat. No. 5,255,567. This application Sep. 25, 1992, Ser. No. 951,141

Claims priority, application Japan, Jun. 30, 1990, 2-69787; Jun. 30, 1990, 2-173159; Jun. 30, 1990, 2-173160; Jun. 30, 1990, 2-173161; Sep. 27, 1991, 3-276744

The portion of the term of this patent subsequent to Oct. 26, 2000, has been disclaimed.

Int. Cl.[5] G01L *3/02*

U.S. Cl. 73—862.333 **18 Claims**



1. A torque transducer comprising:

ferromagneto-stricting means provided for a rotational shaft and acting to change the magnetic permeability thereof in accordance with torque applied to said rotational shaft;

magnetic field supply means for supplying a magnetic field to said ferromagneto-stricting means;

sensing means for sensing a change in the magnetic permeability caused by the torque applied to said rotational shaft;

converting means for converting the detected change in the magnetic permeability into an electrical signal;

a fixed housing for rotatably supporting said rotational shaft with bearing means therebetween;

electromagnetic shielding means for surrounding and holding in place said magnetic field supply means and said sensing means in such a manner as to electrically shield them; and

a spacer interposed between said fixed housing and said electromagnetic shielding means for causing said electromagnetic shielding means to be held in said fixed housing.

5,307,692

WORKSTATION AT A PACKAGING MACHINE

Horst E. Kaplan, Oerlinghausen, Fed. Rep. of Germany, assignor to Klockner Hansel GmbH, Hanover, Fed. Rep. of Germany

Filed May 27, 1992, Ser. No. 889,443

Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117542

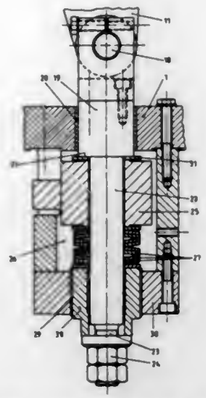
Int. Cl.[5] G01L *1/00*

U.S. Cl. 73—862.541 **22 Claims**

1. A workstation of a packaging machine, in particular a thermoforming station, in which a workpiece is sealed, comprising, a tool having an upper part and lower part disposed along a common axis, drive means for moving at least one of said parts with a stroke type movement toward and away from the other of said parts for driving at least one of said parts into working and open positions along said axis and for exerting a compressive force by said tool onto the workpiece, spring means disposed upon said tool for providing said compressive

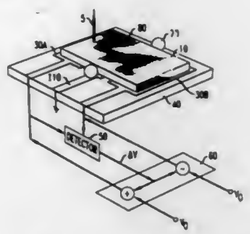
VOL 1162 ISS 1 MY 3 1994 UMI

force, means for adjusting the prestress and deflection path of said spring means, and means for measuring the compressive



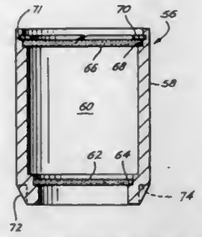
force on the workpiece and the prestress of said spring means when said lower part is in its open position.

5,307,693
FORCE-SENSING SYSTEM, INCLUDING A MAGNETICALLY MOUNTED ROCKING ELEMENT
Joseph E. Griffith, Berkeley Heights, and Gabriel L. Miller, Westfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 21, 1993, Ser. No. 7,304
Int. Cl.[5] G01L *1/16*
U.S. Cl. 73—862.68 **8 Claims**



1. A force-sensing system which comprises:
a) a base member having a principal surface at least a portion of which is substantially planar and electrically conductive;
b) a rocker element having a principal surface at least a portion of which is substantially planar and electrically conductive;
c) at least one pivot element for supporting the rocker element on the base member such that: said base-surface portion faces said rocker-surface portion, the rocker element can be tilted about at least one axis parallel to said base-surface portion; and at least one capacitance is defined between said base-surface portion and said rocker-surface portion; and
d) means for controlling the capacitance;
characterized in that
e) the pivot element comprises magnetic material; and
f) the force-sensing system further comprises means for providing a magnetic field adapted to hold the pivot element against the base principal surface.

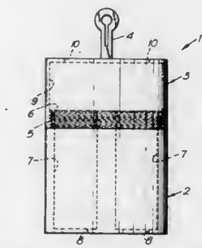
5,307,694
SAMPLE HOLDER FOR HYDROUS PYROLYSIS OPERATIONS
David G. Nolte; Helen K. Haskin, both of Houston, and Edwin L. Colling, Jr., Sugar Land, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Division of Ser. No. 740,744, Aug. 6, 1991, U.S. Pat. No. 5,180,556, which is a division of Ser. No. 455,112, Dec. 22, 1989, U.S. Pat. No. 5,082,787.
This application Filed May 18, 1992, Ser. No. 884,578
Int. Cl.[5] G01N *1/00*
U.S. Cl. 73—863.23 **2 Claims**



1. A sample holder to be received in a test chamber of a device for performing hydrous pyrolysis in order to determine the kinetic properties of hydrocarbon generation from a sample of hydrocarbon source material, said holder comprising:
a cylindrical member sample receiving means for holding the hydrocarbon sample and defining an axial sample receiving bore having oppositely directed first and second open ends, a first shoulder adjacent said first end, a second shoulder adjacent said second end, and an annular groove between said second shoulder and said second end, said sample receiving means further adapted to be received in a test chamber of a device for performing hydrous pyrolysis;
a first disc of fluid permeable material force-fitted into said first end of said member against said first shoulder;
a second like disc of fluid permeable material received in said second end of said member against said second shoulder;
said first and second discs formed from fritted stainless steel having pores approximately 0.5 microns in size;
split ring means received in said annular groove to secure said second disc in place against said second shoulder;
whereby water can enter the holder as the hydrous pyrolysis operation drives lower molecular weight hydrocarbons out of the sample and the sample holder.

5,307,695
WATER SAMPLING UNIT
David L. M. Sawchuk, Sarnia, Canada, assignor to Polysar Rubber Corporation, Sarnia, Canada
Filed May 27, 1992, Ser. No. 889,205
Claims priority, application Canada, Jun. 21, 1991, 2045281-1
Int. Cl.[5] G01N *1/10*
U.S. Cl. 73—864.51 **4 Claims**

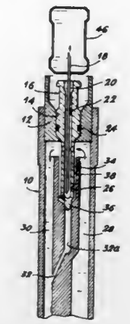
1. A sampling unit for collecting water samples for subsequent analysis, wherein said sampling unit comprises a metal containment unit and contained within said containment unit three volatiles analysis glass sample bottles, wherein said containment unit comprises a bottom component and a top component,
said bottom component comprising a circular cross section rod-like retaining means having a flat circular cross section base and a tubular shaped wall section having on the outside wall at its upper end a threaded portion,
and said top component comprising a circular cross section top means having a flat circular cross section top and a tubular shaped hollow wall section connected at its top end to said top means, said wall section having on the inside wall at its lower end a threaded portion for mating engagement with said threaded portion of said bottom component, said flat top having attached at a central point to the uppermost surface an attachment means in the form of an open or closed loop, wherein said bottom component has three circular cross section flow through apertures from the bottom surface of the circular cross section base to the uppermost surface of said bottom component which are spaced equidistant apart on a circular cross section and has three circular cross section sample bottle holding apertures to receive volatiles analysis glass sample bottles, said sample bottle holding apertures being from the uppermost surface of said bottom component to the bottom surface of said bottom component and being of sufficient diameter to receive said volatiles analysis glass sample bottles from the uppermost surface of said bottom component to a point about 0.1 to about 0.3 cm above the bottom surface of said top component and being of a lesser diameter of about one half to three quarters of the afore-



said diameter to the bottom surface of said component and being spaced equidistant apart on a circular cross section and being located about equidistant apart from said flow through apertures,
and wherein said flat top of said top component has three circular cross section flow in apertures being about the diameter of the sample bottle holding apertures in the bottom surface of said bottom component and being spaced equidistant apart on a circular cross section of essentially identical radius as said sample bottle holding apertures of said bottom component, and wherein the height of said wall section of said top component is such that when matingly engaged with the bottom component at the threaded portions, said volatiles analysis glass sample bottles are loosely retained in said sample bottle holding apertures such that the water to be sampled flows about and into said sample bottles and excess water flows out of said sampling unit.

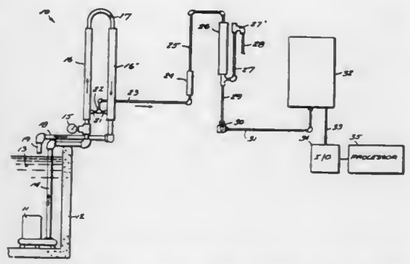
5,307,696
LIQUID SAMPLING HEAD HAVING A REMOVABLE NEEDLE BODY IMMERSED IN A CAVITY
Jean-Guy Allain; Jean-Louis Kermorgant, both of Equeurdreville, and Fernand Rivalain, La Glacerie, all of France, assignors to Cogema-Compagnie Generale Des Matieres Nucleires, France
Filed Mar. 19, 1992, Ser. No. 854,307
Claims priority, application France, Mar. 25, 1991, 9103574
Int. Cl.[5] G01N *1/10*
U.S. Cl. 73—864.74 **3 Claims**

1. A head for taking liquid samples, comprising a sampling tank having a receptacle, a cavity formed below the receptacle, a liquid intake tube and a liquid discharge tube each with openings at an upper end of said cavity, and a draining passage connecting the bottom of the cavity to one of said tubes, the sampling head further comprising a removable needle body carrying a sampling needle, said needle body being adapted to be received in said receptacle with a lower end of said needle body received in said cavity, wherein the needle body has an extension surrounding the needle, means for sealing the draining passage when the needle body is received in the receptacle,



and holes formed in the extension in order to link the cavity with a space defined around the needle within the extension.

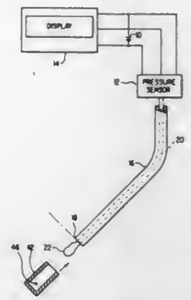
5,307,697
CONTINUOUS, AUTOMATED, MULTI-STREAM SAMPLE COLLECTION AND ANALYSIS
H. Forbes Davis, and Anthony J. Freed, Jr., both of Tallevast, Fla., assignors to Davis Water & Waste Industries, Inc., Tallevast, Fla.
Filed May 14, 1992, Ser. No. 883,032
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.81 **20 Claims**



1. A sample collection and analytical system for use with a sewage treatment facility, comprising:
(a) a submersible grinder pump;
(b) a continuous sample supply conduit operatively connected to said grinder pump;
(c) a continuous flow through filter assembly connected to said sample supply conduit;
(d) filtrate transfer means connected to said flow through filter assembly for removing filtrate on a continuous basis therefrom;
(e) a filtrate sample collection reservoir;
(f) valve means connected to said collection reservoir for allowing of preventing flow of fresh, representative filtrate said reservoir therethrough; and
(g) analyzing means for analyzing the filtrate flowing through said valve means.

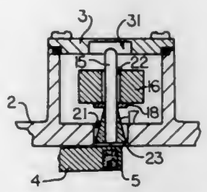
VOL 1162 ISS 1 MY 3 1994 UMI

5,307,698
VERTICAL MEASUREMENT SYSTEM
Thomas E. Endres, 25383 Carollton, Farmington Hills, Mich. 48335
Filed Dec. 22, 1992, Ser. No. 994,764
Int. Cl.[5] G01C *5/00*; E02F *3/28*
U.S. Cl. 73—865.2 6 Claims



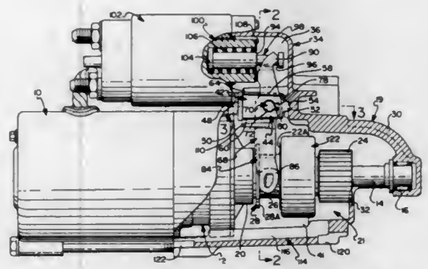
1. An improved device to measure vertical distances where direct measurements are not possible or convenient, with such measurements being continuously displayed without requiring the opening or closing of a valve, and such measurements made by a Vertical Measurement System comprising: a voltage source; an electronic pressure sensor; a flexible fluid filled column which is terminated at one end thereof at the electronic pressure sensor this being the higher position end and terminated at an opposite and lower position end thereof with a membrane containing the enclosed fluid but exerting no force on the fluid except for atmospheric pressure; and electronic circuitry capable of converting the output voltage from the electronic pressure sensor into a readable display representing the relative vertical position of the end of the fluid filled column which is terminated with the membrane.

5,307,699
SEISMIC INITIATOR FOR EARTHQUAKE SHUTOFF VALVES AND THE LIKE
Paul D. Engdahl, 3101 Fairview, Space 133, Santa Ana, Calif. 92704, and Roger P. Engdahl, Costa Mesa, Calif., assignors to Paul D. Engdahl, Costa Mesa, Calif.
Filed May 3, 1993, Ser. No. 55,868
Int. Cl.[5] F16K *17/36*
U.S. Cl. 74—2 9 Claims



1. A seismic initiating device for holding a movable first magnetic element in a first position and releasing it to a second position upon receiving a predetermined magnitude and duration of acceleration, comprising:
a pendulum having a mass and a connection therefrom to a second magnetic element, said second element being disposed in a rest position near said first element to hold it by magnetic attraction in said first position when said acceleration is absent;
inertial forces on said mass causing angular displacement of said pendulum, said displacement moving said second element away from said first element and reducing said attraction to release said first element to said second position,
said connection being constructed to permit a substantial initial displacement of said mass before said second element begins to move.

5,307,700
ELECTRIC ENGINE STARTER
James A. Spellman, Noblesville; Ross A. Gresley, and Norman E. Goodwin, Jr., both of Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 4, 1992, Ser. No. 985,711
Int. Cl.[5] F02N *15/06*
U.S. Cl. 74—7 A 6 Claims

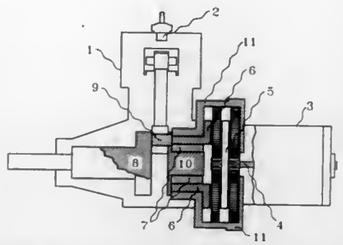


1. An engine starter comprising, a drive housing, said drive housing having a first housing portion defining a solenoid compartment and a second housing portion defining a starter drive compartment, a pair of spaced walls connecting said first and second housing portions, a shift lever retainer disposed between said spaced walls, a shift lever pivotally supported by said retainer, said shift lever having a first portion located in said solenoid compartment and a second portion located in said starter drive compartment, a solenoid attached to said first housing portion of said drive housing, said solenoid having a plunger that is connected to said first portion of said shift lever, a shaft located in said starter drive compartment, a starter drive supported by said shaft including a pinion gear, said second portion of said shift lever connected to said starter drive, said second housing portion of said drive housing having an opening that permits said pinion gear to be meshed with the ring gear of an engine, and means for impeding the passage of foreign material, such as water, from said starter drive compartment to said solenoid compartment, said last named means comprising at least one rib on said retainer, said rib projecting outwardly toward an internal surface of one of said pair of spaced walls.

5,307,701
STARTING SYSTEM FOR MODEL ENGINES
Paul T. Thonnard, 1833 Halstead Blvd. Apt. #207, Tallahassee, Fla. 32308, assignor to Paul Thonnard, Tallahassee, Fla.
Filed Jul. 7, 1992, Ser. No. 909,688
Int. Cl.[5] F02N *15/02*; F02P *19/02*
U.S. Cl. 74—7 E 25 Claims

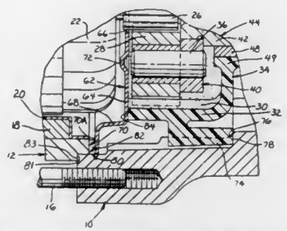
1. A starting system for an internal combustion engine, the engine having a crankshaft with a centerline and at least one crankpin, the system comprising:
a rotation and torque producing means;
a torque converting means driven by the rotation and torque producing means, the torque converting means having an input and an output;
a clutching means coupled to the output of the torque converting means, the clutching means rotating on an axis of the output of the torque converting means;

a coupling means received within the clutching means for engaging the clutching means with the crankshaft of the engine to transmit rotation and torque to the crankshaft to start the engine, the coupling means rotating on the axis of the clutching means; and



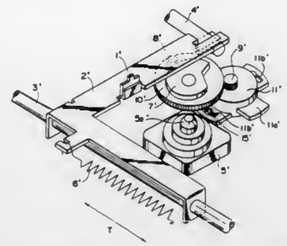
a housing member containing at least the clutching means, the housing member provided with an internal cylindrical support surface to rotationally support the clutching means.

5,307,702
ENGINE STARTER HAVING AN INTERNAL SHIELD
James A. Spellman, Noblesville; Norman E. Goodwin, Jr., and Ross A. Gresley, both of Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 8, 1993, Ser. No. 14,925
Int. Cl.[5] F02N *15/06*
U.S. Cl. 74—7 E 8 Claims



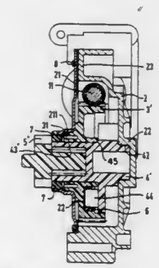
1. An electric engine starter comprising, an electric cranking motor having a frame, said cranking motor having an armature and an armature shaft connected to said armature, a drive housing secured to said frame, a pinion drive shaft disposed within said drive housing, a planetary gear mechanism connected between said armature shaft and said pinion drive shaft, said planetary gear mechanism having a ring gear that is supported by a ring gear support, said ring gear support carried by said drive housing, a shield disposed between said frame and said planetary gear mechanism, said shield having a radially and circumferentially extending wall portion which engages said ring gear support and having an outer imperforate annular flange that faces a surface of said frame, and a gasket disposed between and engaging said surface, and said annular flange, said annular flange being deflected to a position where it develops a spring force when said frame is secured to said drive housing, said spring force operative to force said gasket tightly against said frame and operative to maintain said shield tightly engaged with said ring gear support.

5,307,703
HEAD ADJUSTING DEVICE
Yuichi Kurosawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 24, 1991, Ser. No. 645,473
Claims priority, application Japan, Jan. 25, 1990, 2-13732
Int. Cl.[5] F16H *27/02, 53/06*
U.S. Cl. 74—89 8 Claims



1. A device for adjusting the position of an element which is arranged to be moveable in a predetermined direction, comprising:
driving means for generating a driving force;
a cam member, coupled to said driving means, and rotated by said driving force of said driving means;
a driven member which is fixed to said element and adapted to contact said cam member;
a support plate mounted for movement parallel to said predetermined direction, and to which at least said driving means and said cam member are attached; and
biasing means for providing a biasing force so that said driven member and said cam member contact each other, whereby said element is moved in said predetermined direction upon rotation of said cam member in contact with said driven member by means of said biasing force of said biasing means and wherein
movement of said support plate in said predetermined direction comprises means for adjusting a position of said element in said predetermined direction.

5,307,704
ADJUSTMENT DRIVE
Karlheinz Müller, Würzburg, and Peter Michel, Kleinrinderfeld, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Nov. 25, 1992, Ser. No. 981,347
Claims priority, application European Pat. Off., Nov. 27, 1991, 91120253.9
Int. Cl.[5] F16H *1/16, 55/14*; F16D *3/70*
U.S. Cl. 74—411 26 Claims



1. An adjustment drive comprising:
a gear housing;

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a gear housing lid, said gear housing lid adapted to close off said gear housing;

a gear wheel, said gear wheel being rotatably accommodated in said gear housing, and including a concentric bearing sleeve;

a driver, said driver including a power take-off element on its output side, being simultaneously structured as a drive shaft, and forming a drive connection between said gear wheel and said power take-off element; and

a damping element, said damping element being at least tangentially elastic, and being provided between said gear wheel and said driver thereby providing tangential stop damping,

wherein said gear wheel and said driver are formed as separate components and placed in reciprocal rotational drive, and

wherein said driver is rotatably mounted directly in said gear housing with a first bearing region, and indirectly in said gear housing lid via said concentric bearing sleeve of the gear wheel with a second bearing region.

5,307,705

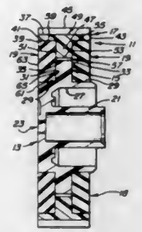
STRESS DISSIPATION GEAR AND METHOD OF MAKING SAME

Paul J. Fenelon, 13 Inverary, Nashville, Tenn. 37215

Filed Feb. 9, 1993, Ser. No. 15,332

Int. Cl.[5] F16H *55/14*; B29C *45/14*

U.S. Cl. 74—411 **17 Claims**



1. A gear comprising:

a central radial member having a central rotational axis therein with a pair of center side walls radially extending outward therefrom, said center side walls being bordered by an outside peripheral edge, said center side walls having a generally planar surface thereupon, said central radial member operable for being rotated about its central rotational axis by a power generating means;

a radial rim member having the same central rotational axis as said central radial member, said radial rim member having geared-teeth extending outwardly therefrom, said radial rim member further having an inside rim surface being radially planar in attitude, said inside rim surface being of greater diametral circumference than the diametral circumference of said outside peripheral edge of said central radial member; and

a resilient member being of radial disk-like shape with a pair of generally planar side faces thereof bordered by a top surface and a bottom surface, said resilient member being attached to said radial rim member and to a portion of said central radial member, said resilient member being clear of a small radial gap created between said outside peripheral edge of said central radial member and said radial rim member;

whereby, said resilient member couples said radial rim member to said central radial member thereby allowing the geared-tooth portion of said radial rim member to transmit power to a mating part proximate thereto, said resilient member dissipating stresses created between said central radial member and said radial rim member with said center side walls substantially preventing said resilient member from allowing said radial rim member to angularly torque in a direction normal to the rotational axis of said gear.

15. A method of manufacturing a stress dissipation gear having a hub with a web radially extending outward therefrom, an independent radial gear-toothed rim, and a resilient member for coupling said radial gear-toothed rim to said hub, said method comprising:

molding said hub, web and rim in a first station;

molding an elastomeric resin directly onto a portion of said hub, web and radial gear-toothed rim, whereby said resilient member is thereby formed and attached to a portion of said radial gear-toothed rim and to a portion of said hub.

5,307,706

SPEED CONTROL APPARATUS FOR BICYCLE HAVING A SOUND PRODUCING DEVICE

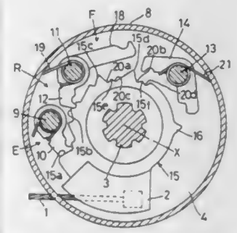
Masashi Nagano, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Mar. 30, 1992, Ser. No. 860,136

Claims priority, application Japan, Apr. 4, 1991, 3-071362

Int. Cl.[5] F16C *1/10*; G05G *11/00*

U.S. Cl. 74—502.2 **9 Claims**



1. A speed control apparatus for a bicycle for selecting a speed position from a plurality of speed positions based on a wire winding amount, said apparatus being arranged for use with a takeup wire, said apparatus comprising:

a fixed element;

a displaceable control member;

a takeup portion for winding the takeup wire, said takeup portion being pivotally supported by said fixed element, wherein said takeup portion rotates with said control member in a wire winding direction to select one of said plurality of speed positions;

a position setting mechanism disposed between said control member and said fixed element, said position setting mechanism including an engaging element and an engageable element, and wherein said engaging element moves between an engaging position to engage said engageable element and a retracted position away from said engageable element, and said takeup portion is retained in a selected speed position by said engaging element engaging said engageable element; and

sound producing means for amplifying a shock resulting from movement of said engaging element to said engaging position to produce a sound, wherein said sound producing means includes a resonant body for producing a sound by the shock, and a hammer provided on said engaging element for directly striking said resonant body.

5,307,707

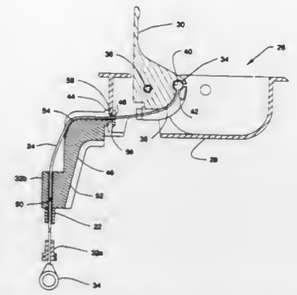
MANUAL CABLE-SHEATH CONTROL

David R. Roelle, 42 Champion Pines, Conroe, Tex. 77303

Filed Nov. 30, 1992, Ser. No. 983,037

Int. Cl.[5] F16C *1/10*

U.S. Cl. 74—502.6 **6 Claims**



1. A manual control comprising

a sheath having a central opening extending axially therethrough and having sheath housing connecting mean son each end thereof,

a cable extending through and beyond said sheath and said sheath housing connecting means and having cable connecting means on each end thereof, and

an actuator having a housing and actuating lever, and

means for pivotally mounting said actuating lever to said housing,

said actuator housing having means for receiving one of said sheath housing connecting men son said sheath,

said actuating lever having means of receiving the one of said cable connecting means extending beyond the sheath housing connecting means received by said actuator housing,

said sheath housing connecting means providing a passage therethrough for said cable and said cable passage having a bend within said sheath housing connecting means.

5,307,708

CAMSHAFT FOR CONTROLLING VALVES IN INTERNAL COMBUSTION ENGINES

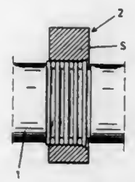
Lukas Matt, Förstentum Liechenstein, Fed. Rep. of Germany, assignor to Etablissement Supervis, Fürstentum, Liechtenstein

Filed Jul. 1, 1992, Ser. No. 907,253

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 4121951

Int. Cl.[5] F16H *53/02*; F01L *1/46*

U.S. Cl. 74—567 **5 Claims**



1. A cam shaft for controlling valves in internal combustion engines, said cam shaft comprising:

a shaft having a first diameter, and a predetermined axial region having a second diameter, which is greater than the first diameter, wherein the second diameter is defined by a plurality of beads, which are provided at least on a portion of a circumference of said shaft in said predetermined axial region thereof and which have a predetermined radial height determined by a height of a radial projection of said beads beyond the first diameter; and

at least one forged cam fixedly secured on said shaft in said predetermined axial region thereof and having a through-opening for receiving said shaft, wherein said through-opening has, at one end thereof, a widening cone-shaped portion defining a mouth of said through-opening and having an outer dimension which substantially corresponds to the radial height of said beads in a non-assembled condition of said shaft, wherein a ratio of an axial length of said cone-shaped portion to axial length of said through-opening is approximately 1:5, and wherein said cone-shaped portion has an opening angle of approximately 20°.

5,307,709

ARRANGEMENT PROVIDED ON A PRESS FOR ADJUSTING THE STROKES OF A WORKING SLIDE AND OF A COUNTER-OSCILLATING WEIGHT

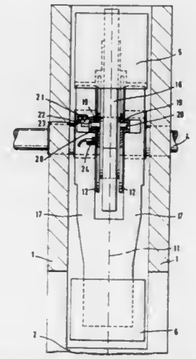
Alfred Bareis, Uhingen, and Reinhard Braun, Eislingen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Filed Oct. 1, 1992, Ser. No. 955,022

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132976

Int. Cl.[5] B30B *1/26*

U.S. Cl. 74—571 M **11 Claims**



1. An arrangement on a press comprising:

a working slide;

a counter-oscillating weight for balancing masses;

first and second eccentric/eccentric bush pairings of identical eccentricities arranged at a same central angle, on which working connecting rods are arranged which carry the working slide, and a third eccentric/eccentric bush pairing arranged between the first and second eccentric-/eccentric bush pairings, the eccentrics of the third eccentric/eccentric bush pairing being offset with respect to the eccentrics of the first and second eccentric/eccentric bush pairings by a central angle of 180°, each eccentric/eccentric bush pairing having an eccentric and an eccentric bush, with each eccentric bush of the first and second eccentric/eccentric bush pairings being provided with a radially extending disk which faces a transverse center plane and which has a radial slot that is open toward the transverse center plane;

an eccentric shaft for adjusting a stroke of the working slide and a stroke of the counter-oscillating weight by adjusting the resulting eccentricities of the first, second and third eccentric/eccentric bush pairings, wherein the three ec-

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centrics of the first, second and third eccentric/eccentric bush pairings are arranged directly next to one another on the eccentric shaft;

a mass balancing connecting rod which carries the counter-oscillating weight and is carried on the third eccentric/eccentric bush pairing;

wherein the bearing of the eccentric bushes on their respective eccentrics is an interference fit with cylindrical locating surfaces established therebetween, and which, for the feeding of pressure oil via at least one groove, can be detached in at least one locating surface, whereby the eccentric bushes are selectively detachable and fixable in the rotating direction on the eccentrics, the eccentric bushes being fixable on a part not rotating together with the eccentric shaft, and in this fixed state, when the eccentric bushes are detached from the eccentrics, the eccentric shaft is rotatable for adjusting the strokes;

wherein the eccentric bush of the third eccentric/eccentric bush pairing carries a pin which projects on both sides of the eccentric bush, is parallel to the eccentric shaft, and has projecting ends which constantly engage in the slots in the disks of the first and second eccentric bushes via sliding blocks; and

wherein at least one of the radial disks has a bore proximate to the outer circumference adapted to receive a locking pin arranged on the working connecting rod and which is controllably slidable parallel to the eccentric shaft between locking and unlocking positions to thereby lock and unlock the eccentric bushes from rotation.

5,307,710

TWO-MASS FLYWHEEL

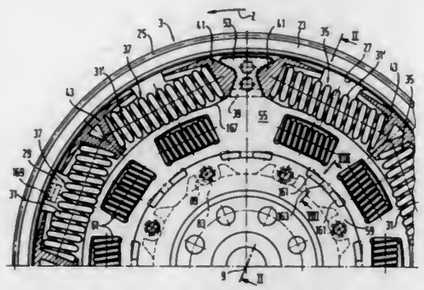
Reinhard Feldhaus, Ebenhausen; Bernhard Schierling, Kürnach; Andreas Förster, Schweinfurt, and Hilmar Goebel, Grafenrheinfeld, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 18, 1992, Ser. No. 931,932

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128868

Int. Cl.[5] F16D *3/66*; F16F *15/121*

U.S. Cl. 74—574 **42 Claims**



1. A two-mass flywheel to be disposed in the drive line of a motor vehicle driven by an internal combustion engine, comprising:

a first flywheel (3) adapted to be mounted on a crankshaft (1) of the internal combustion engine for rotation about the axis of rotation (9) of the crankshaft (1);

a second flywheel (7) mounted to rotate about said axis relative to the first flywheel (3) and serving as a carrier for a friction clutch (11) in the drive line;

torsional vibration damping means (13) for coupling the two flywheels (3, 7) to each other in a rotationally elastic manner, said torsional vibration damping means including a plurality of coil springs (31) disposed on a common mean diameter in a passage (29) in the first flywheel (3) and extending arcuately about the axis of rotation (9);

said plurality of coil springs (31) including at least one set (35, 37) of at least two individual coil springs (31) which are connected in series and are disposed in the passage (29) one after the other;

a sliding shoe (43), movable relative to the two flywheels (3,7), positioned between mutually facing ends of peripherally adjacent coil springs (31) of each set (35, 37) for guiding the mutually facing ends of the adjacent coil springs (31) in the passage (29);

the ends of the coil springs (31') of each set (35, 37) which are outermost in the peripheral direction are, for the transfer of force, guided on end shoes (41);

the end shoes (41) and the sliding shoes (43) guide the coil springs (31) at a radial distance from an inner wall surface (27) of the first flywheel (3) which radially outwardly defines the passage (29); and

the passage (29) is at least partially filled with a viscous material (49).

5,307,711

METHOD FOR SPEED STAGE SHIFTING FROM INDEFINITE DRIVING CONDITION

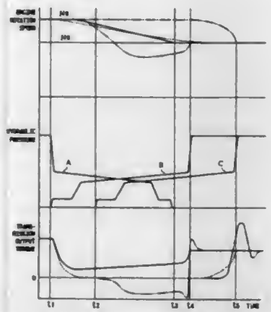
Hiromichi Kimura, Okazaki, and Kunihiro Iwatsuki, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 15, 1991, Ser. No. 775,547

Claims priority, application Japan, Oct. 17, 1990, 2-278517

Int. Cl.[5] F16H *61/02*

U.S. Cl. 74—857 **6 Claims**



1. A method of shifting speed stages of an automatic transmission in a vehicle powered by an engine, comprising the steps of:

detecting operation parameters related to speed stage shiftings of the transmission,

deciding a speed stage shift based upon the detected operation parameters,

judging if the vehicle is running in a condition indefinite between an engine driving condition and an inertially running condition, the indefinite condition being a condition in which an engine driving mode speed stage shift is inappropriate and in which an inertial running mode speed stage shift is also inappropriate,

modifying the output of the engine so as to be increased in response to a judgment that the vehicle is running in said indefinite condition, and

shifting the transmission according to the speed stage shift pattern in an engine driving mode.

5,307,712

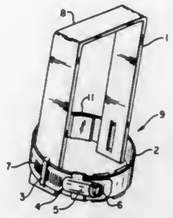
TOOL FOR INSTALLING AND REMOVING FILTERS

Jerry D. Pratt, 9333 Loma Vista Dr., Dallas, Tex. 75243

Filed Feb. 3, 1993, Ser. No. 12,577

Int. Cl.[5] B25B *13/52*

U.S. Cl. 81—64 **3 Claims**



1. An apparatus for installing and removing an oil filter canister located on an automobile engine or similar engine comprising:

a handle having opposing arms that are relatively flexible and formed to fit over ends of various size oil filter canisters;

said handle having a hand-grasping area at a bottom portion of said handle;

a gripping band of flexible material attached to an upper portion of said arms of said handle and positioned perpendicularly thereto; and

means attached to said gripping band for tightening and loosening said gripping band to urge said upper portions of said arms inwardly and outwardly, respectively, so that said apparatus may grip and release said canister.

5,307,713

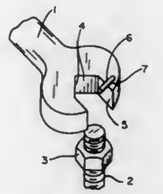
SELF-ALIGNING WRENCH

Kenneth L. White, Rte. 1, Box 80, Ferris, Tex. 75125

Filed Dec. 18, 1992, Ser. No. 993,373

Int. Cl.[5] B25B *13/58*

U.S. Cl. 81—180.1 **10 Claims**



1. In an end or spanner wrench, including a handle and a head, said head having a plurality of surfaces for mating with a determined size nut or bolt having an outer edge and an inner edge, the axis of the nut or bolt being centered relative to said plurality of mating surfaces and a wrench axis extending along the handle of the wrench and substantially through the nut or bolt axis; the improvement comprising at least one protrusion extending from a face of said wrench head only along substantially an axis line 90° to the wrench axis and partly over the outer edge of said nut or bolt when said nut or bolt is positioned within the plurality of surfaces.

5,307,714

DEVICE FOR HOLDING AND OPERATING A FACING HEAD

Werner Muendlein, Bietigheim-Bissingen, and Gerhard Stolz, Ingersheim, both of Fed. Rep. of Germany, assignors to Komet Praezisionswerkzeuge Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

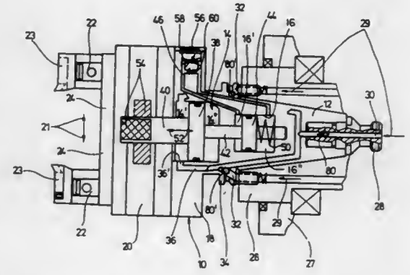
PCT No. PCT/EP90/01344, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO91/03340, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 16, 1990, Ser. No. 834,537

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930197

Int. Cl.[5] B23B *3/26*

U.S. Cl. 82—123 **23 Claims**



1. In a device for holding and operating a facing head including a supporting body releasably fixable to a machine spindle, a head element releasably fixable to the supporting body, at least one slide moveable in a machining direction and a return direction essentially transversely with respect to an axis of rotation of the head element and supporting a tool or a tool carrier thereon, an adjusting mechanism having an axially movable actuator rod and a gear means for converting an axial movement of the actuator rod into a transverse movement of the slide, and a coolant channel arranged in the supporting body and connected on an inlet side to a connecting opening of the machine spindle and terminated on an outlet side in the head element and having a pressure fluid contained therein, wherein the improvement comprises:

first and second chambers axially spaced from one another and coaxial with respect to the axis of rotation;

first and second pistons disposed within respective ones of said first and second chambers, said pistons being rigidly coupled together by a piston rod extending therebetween and being coupled to the actuator rod;

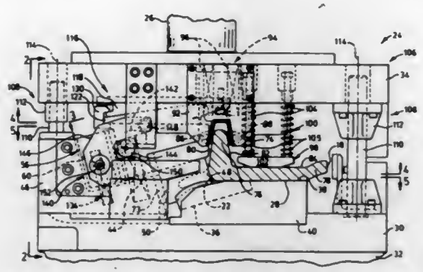
said first piston dividing said first chamber into first and second axially spaced cavities disposed on opposite sides of said first piston, said first cavity being remote from said second chamber and communicating with the outlet side of the coolant channel to receive the pressure fluid therefrom, the second cavity communicating with atmospheric air;

said second piston dividing said second chamber into third and fourth axially spaced cavities disposed on opposite sides of said second piston, said fourth cavity being remote from said first chamber and having a return spring axially disposed therein, said return spring acting against the force of the pressure fluid in said first cavity; and

a closed hydraulic circuit having first and second paths communicating with said third and fourth cavities, respectively, said hydraulic circuit including a check valve which is closed during movement of the slide in the machining direction and open in the return direction of the slide, and a flow-control valve connected in parallel with said check valve.

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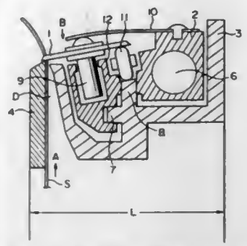
5,307,715
ANGLE PUNCHING DIE ARRANGEMENT
Danny R. Smock, Pekin, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Aug. 31, 1992, Ser. No. 938,093
Int. Cl.[5] B21D *28/32*
U.S. Cl. 83—386 **14 Claims**



9. A punching press having a die punching arrangement for punching an aperture in a flange of a track shoe at an acute angle "a" relative to a first side of the track shoe; comprising:
a die supporting base having a raised portion;
a guideway disposed in the raised portion;
a load flange being movably connected to the die supporting base and movable in first and second opposite directions relative to the die supporting base;
a first die having a supporting surface and being connected to the die supporting base, said track shoe first side being supported on the supporting surface of the first die;
a die carrier having a first guide member and being connected to the load flange, said first guide member being slidably disposed in the guideway and movably guided along a die carrier axis defined by the guideway in response to movement of the load flange in one of said first and second directions;
a second die connected to the carrier and movable with the carrier between a first position at which said second die is spaced from mating engagement with the first die and a second position spaced from said first position at which said second die is in mating engagement with said first die, said track shoe being engaged to be punched by the second die in response to movement of the second die toward the second position;
positioning means for engaging the track shoe and urging slidable movement of the track shoe to a predetermined location on the die supporting surface in response to movement of the load flange in the first direction toward the die supporting base, said positioning means being connected to the load flange; and
crank means for forcing movement of the die carrier from the second position toward the first position and from binding engagement with the track shoe in response to movement of the load flange in one of the first and second directions.

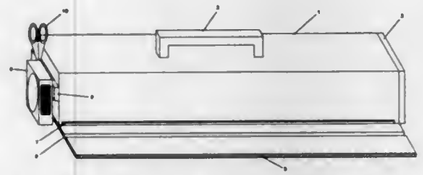
5,307,716
SHEET MATERIAL CUTTING DEVICE
Takamasa Onishi, and Zentaro Kamura, both of Gunma, Japan, assignors to Onishilite Industry Co., Ltd., Gunma and Sumitsu & Co., Ltd., Osaka, both of Japan
Filed Nov. 19, 1992, Ser. No. 978,735
Claims priority, application Japan, Nov. 29, 1991, 3-339402; Jul. 30, 1992, 4-222295
Int. Cl.[5] B26D *1/18, 1/20*
U.S. Cl. 83—488 **13 Claims**

1. A sheet material cutter comprising: a frame; a supporting member provided slidably to said frame; a rotary cutting blade supported on said supporting member; a fixed cutting blade arranged on the frame in contact with said rotary cutting blade; and a roller supported on said supporting member and arranged between said rotary cutting blade and the frame; wherein the circumferential surface of the roller is pressed onto both the rotary cutting blade and the frame, the rotary



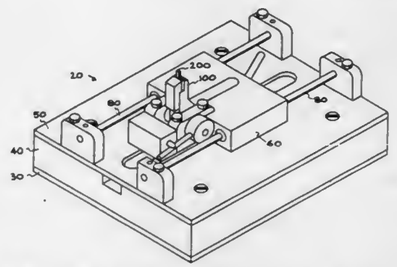
cutting blade and the roller are on different axes and the rotary cutting blade is pressed onto the fixed cutting blade so that the movement of the supporting member relative to the frame causes the roller to rotate, whereby a sheet material introduced between the rotary cutting blade and the fixed cutting blade is cut.

5,307,717
DISPENSING CARRIER AND CUTTING GUIDE FOR PLASTIC SHEETING
Paul Winston, 9401 E. Chenango, Englewood, Colo. 80111
Filed Sep. 21, 1992, Ser. No. 948,433
Int. Cl.[5] B26D *7/28*
U.S. Cl. 83—649 **2 Claims**



1. A combination carrier, dispenser and measuring appliance for use with plastic sheeting roll goods, comprising;
a rectangular bodied, hollow container, said hollow container providing a chamber to contain and dispense various sizes of plastic sheeting roll goods; and
an exit slot in a front face of the hollow container, said exit slot extending substantially the length of the container to permit the plastic sheeting roll goods to be dispensed therethrough; and
a carrying handle permanently affixed to an uppermost face of said container; and
a flat, base plate, permanently affixed to a lowermost face of the container, said base plate extending perpendicularly and outwardly in a flat plane from the front face of the container; and
a "V" shaped groove formed in an upper surface of said flat base plate, said groove being located parallel to and extending substantially the entire length of said rectangular, hollow container, and said groove being located downstream from the exit slot in a dispensing direction; and
a removable closure cap, securable to the hollow container at one end thereof, said closure cap having a central slot perforation for viewing inside the container; and
a cylindrical spacer, removably positioned inside said hollow container; and
a tape measure removably mounted to a permanent bracket attached to an end face of said hollow container opposite to the end at which the closure cap is secured; and
a cutting tool removably mounted to the permanent bracket.

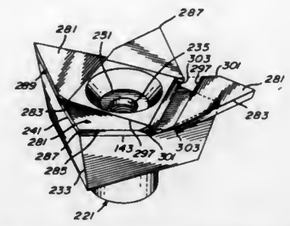
5,307,718
APPARATUS AND PROCESS FOR REMOVING A PREDETERMINED PORTION OF REFLECTIVE MATERIAL FROM MIRROR
Stephen J. Perry, San Leandro, and Lloyd L. Steinmetz, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 29, 1992, Ser. No. 968,569
Int. Cl.[5] B26D *3/06*
U.S. Cl. 83—875 **18 Claims**



1. A process for accurately removing a stripe of reflective material from a planar surface of a mirror, said apparatus comprising:
a) mounting a cutting blade in a cutting mechanism with a cutting edge of said cutting blade disposed transverse to the longitudinal length of said stripe to be cut in said reflective material on said planar surface of said mirror;
b) forming an included angle on an end of said cutting blade of from about 60° to about 80° by placing said cutting mechanism over a homing surface mounted a first distance from said blade;
c) mounting a mirror in a mirror holding mechanism
d) mounting said cutting mechanism over said mirror holding mechanism to space said blade from said mirror surface a second distance greater than said first distance, whereby said mirror surface will form an angle of less than about 15° with one side of the included angle of said blade;
e) moving said cutting blade over said mirror surface in a direction parallel to said planar surface of said mirror to cut said stripe in said reflective material on said planar surface of said mirror.

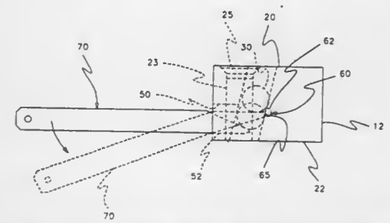
5,307,719
SAW TOOTH FOR CIRCULAR SAW
Charles D. MacLennan, Hudson Heights, Canada, assignor to Quadco Equipment Inc., Quebec, Canada
Continuation-in-part of Ser. No. 958,790, Oct. 9, 1992, Pat. No. 5,205,199. This application Apr. 26, 1993, Ser. No. 51,948
Int. Cl.[5] B27B *33/08*
U.S. Cl. 83—839 **4 Claims**

1. A saw tooth having a frusto-pyramidal shaped body with a mounting end and a cutting end, the cutting end being recessed inwardly, the body having a plurality of flat sides extending between the mounting end and the cutting end, each adjacent flat side forming a corner at the cutting end and a hardened insert at each corner providing a flat surface at each corner, sloping inwardly and providing two straight edges diverging from each corner towards adjacent corners, the edges from adjacent inserts terminate at respective insert ends at the intersection of two adjacent flat surfaces characterized in



that adjacent insert ends of the hardened inserts overlap at the intersection of the two adjacent surfaces.

5,307,720
PUNCH RETAINER WITH PUNCH RELEASE TOOL
David G. Meyer, Centerville, and Robert L. Shadowens, West Carrollton, both of Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio
Filed Sep. 3, 1993, Ser. No. 115,601
Int. Cl.[5] B26F *1/14*
U.S. Cl. 83—698.11 **4 Claims**



4. In an improved retainer assembly and tool for holding and releasing a shank of a punch, including a generally triangular retainer body having a bottom, three side walls, and a flat top mounting surface, a punch shank opening extending into the body through the bottom for receiving the shank of the punch, an elongated locking ball hole aligned on an axis which intersects an axis of the punch shank opening, a locking ball in the locking ball hole movable into locking position with a tear-drop shaped ball-receiving recess formed on the punch shank and a spring urging the ball into the locking position, in which said ball in its locking position engages said tear-drop recess at two angularly spaced contact positions on the shank of the punch and engages the retainer body at a third contact position, and in which said body has a pair of transversely positioned mounting holes, a dowel pin receiving bore located on a line with said shank opening and said ball hole, and a tertiary dowel pin bore located in laterally offset position with respect to said line adjacent one of said side walls, the improvement comprising:
a ball release access slot in said retainer body extending through the side wall remote from said tertiary bore into intersecting relation with said ball hole, said access slot having a longer axis aligned generally parallel with the axis of said shank opening through said body, said access slot terminating at said ball hole with a lower wall portion of the slot located between the ball center when said ball is in its said locking position, and said retainer bottom,
means in said retainer body forming a notch in a wall of said ball hole positioned in opposed relation to said access slot and accessible through said slot, said notch having a lower

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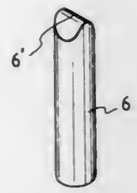
latching ledge extending in generally normal relation to an adjacent portion of the wall of said hole, and,

a ball release tool in the form of an elongated bar having an upper surface and a generally parallel lower surface and proportioned to fit within said access slot and having a nose on a terminal end in the form of a ball-lifting tapered surface extending generally from said terminal end in spaced relation to said lower surface, to said upper surface of said bar, said bar terminal end being undercut to form a latching surface proportioned to be received in resting relation on said notch ledge for retaining said tool hands free with said ball elevated by said tool to a released position out of engagement with the punch shank recess.

5,307,721
VIOLIN

Shoichi Ito, No. 8, 2-chome, Yotsuya, Shinjuku-ku, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 913,792
Claims priority, application Japan, Jan. 11, 1991, 3-313105; May 1, 1992, 4-137643
Int. Cl.[5] G10D *1/02*
U.S. Cl. 84—277 **9 Claims**

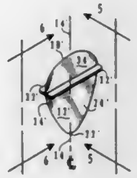


1. An improved violin, the improvement comprising a rod-shaped sound post wherein at least one end of said sound post is formed into a converged configuration having a substantially linear contact surface thereof with a belly or a back plate.

5,307,722
PICK FOR STRINGED MUSICAL INSTRUMENTS

Raul D. La Rosa, 6420 Wagon Loop, Greenstone Country, Placerville, Calif. 95667

Filed Jul. 15, 1992, Ser. No. 914,862
Int. Cl.[5] G10B *3/16*
U.S. Cl. 84—322 **12 Claims**

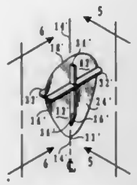


1. A unitary pick for plucking a stringed musical instrument comprising a flat blade having a longitudinal axis and a maximum width in a direction that is normal to said longitudinal axis, said blade being formed with a point at one end of the longitudinal axis that adapts said unitary pick for engaging strings of an instrument, said blade also being formed with wide, substantially flat surfaces on opposite sides of said blade extending along the longitudinal axis away from the pointed end of said blade, said unitary pick also having a substantially straight fin projecting outward from a first one of the wide, substantially flat surfaces of said blade, said fin extending across no more than the maximum width of said blade and being disposed at an angle that is not parallel to the longitudinal axis of said blade, said fin having a thickness parallel to the longitudinal axis which is no greater than a distance which said fin projects outward from the first substantially flat surface of said blade, said pick being adapted to be held within a musician's hand by contact with said fin and to be stabilized there by one of the flat surfaces of said blade.

5,307,723
PICK FOR STRINGED MUSICAL INSTRUMENTS

Raul De La Rosa, 6420 Wagon Loop Greenstone Country, Placerville, Calif. 95667

Continuation-in-part of Ser. No. 914,862, Jul. 15, 1992. This application Oct. 26, 1992, Ser. No. 966,732
Int. Cl.[5] G10D *3/16*
U.S. Cl. 84—322 **23 Claims**



1. A unitary pick for plucking a stringed musical instrument comprising:

a flat blade having a longitudinal axis and a maximum width, said blade being formed with a point at one end of the longitudinal axis that adapts said unitary pick for engaging strings of an instrument, said blade also having wide, substantially flat surfaces on opposite sides of said blade extending along the longitudinal axis away from the pointed end of said blade;

said unitary pick also including a substantially straight fin projecting outward a distance from a first one of the wide, substantially flat surfaces of said blade, said fin extending across no more than the maximum width of said blade and being disposed at a first angle that is not parallel to the longitudinal axis of said blade;

said unitary pick further including a substantially straight first rib projecting outward from one of the wide, substantially flat surfaces of said blade, said rib also projecting from said fin at a second angle that is not parallel to said fin;

said pick being adapted to be held within a musician's hand through contact with said fin and said rib, and to be stabilized there by said one of the flat surfaces of said blade.

5,307,724
EJECTOR SYSTEM AND USE OF THE SYSTEM IN LARGE CALIBER GUNS

Heinz-Günter Breuer, Duisburg, and Karl-Egon Janssen, Meerbusch, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,376
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133618
Int. Cl.[5] F41A *15/10*
U.S. Cl. 89—24 **5 Claims**

1. In a tubular cannon including a gun barrel and a breechblock wedge for closing a breech end of the gun barrel, an ejector system for the extraction of cartridge casings or cartridge bottoms from the cannon, comprising:

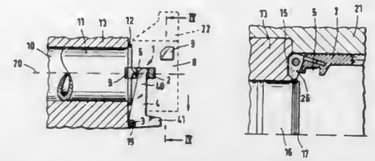
a breech ring disposed at the breech end of the gun barrel;

first and second ejectors having respective recesses;

means for mounting said ejectors adjacent the breech end of the gun barrel for linear displacement parallel to the longitudinal axis of the gun barrel, said means for mounting said ejectors comprising first and second longitudinally extending grooves which are formed in the breech ring and into which a respective one of said ejectors extends;

first and second ejector claws, each connected to a respective one of said ejectors for grasping a rear of a cartridge casing;

first and second ejector levers each having an L-shaped configuration comprised of first and second arms, each said first arm extending into a respective one of said recess to slidingly engage the respective said ejector in a displaceable manner, said ejector levers and the associated



said ejectors and ejector claws being symmetrically disposed relative to said longitudinal axis of the gun barrel;

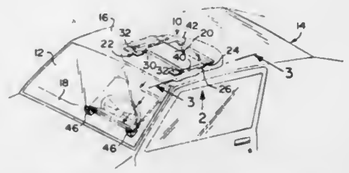
means for mounting said first and second ejector levers adjacent said breech end of said gun barrel for pivotal movement about an axis extending perpendicular to an axis parallel to said longitudinal axis of said gun barrel, so that pivoting of said levers causes said linear displacement of said ejectors; and

means for engaging the respective second arms of said ejector levers to initiate said pivotal movement of said levers during opening of said breechblock.

5,307,725
LAW ENFORCEMENT HIGH RISK VEHICLE WINDSHIELD PROTECTIVE DEVICE

Richard M. Desmond, 17 Dorchester Rd., Lake Ronkonkoma, N.Y. 11779, and William B. Kirchhoff, 112-47th St., Lindenhurst, N.Y. 11757

Filed May 24, 1993, Ser. No. 65,484
Int. Cl.[5] F41H *5/26*
U.S. Cl. 89—36.14 **5 Claims**



1. A law enforcement high risk vehicle windshield protective device, said vehicle having a roof and a dashboard, said device comprising:

a) a bullet resistant panel;

b) means for pivotally mounting said bullet resistant panel to the underside of said roof adjacent said windshield of said automobile;

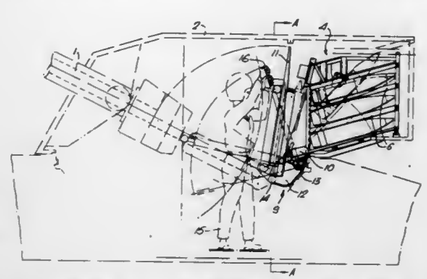
c) a bullet proof glass panel; and

d) a pair of tracks, each affixed to an opposite forward side edge of said bullet resistant panel to allow said glass panel to slide thereupon, so that in a first instance said high risk vehicle windshield protective device can be stored in a folded position against the underside of said roof when not in use and in a second instance said high risk vehicle windshield protective device can be pulled down with said glass panel extended from said bullet resistant panel behind said windshield in a useable position to protect an occupant of the automobile from being shot through said windshield.

5,307,726
AMMUNITION FEED APPARATUS

George J. Stubbs, Bexley Heath, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 7, 1982, Ser. No. 398,335
Claims priority, application United Kingdom, Jul. 9, 1981, 8121255
Int. Cl.[5] F41A *9/16*
U.S. Cl. 89—36.13 **9 Claims**



1. An ammunition feed apparatus for a turret-mounted gun having a barrel with an axial breech and including a magazine having at least one stack of two or more inclined plane-parallel racks each spaced away from its neighbour by a distance of approximately one calibre to define a compartment adapted to contain a single row of ammunition rounds lying with their cylindrical axes parallel with a lower end of the compartment, a plurality of escapement mechanisms disposed within each compartment and adapted to separate and control rolling of contained rounds towards the lower end, and a release mechanism located adjacent the lower end of each compartment; wherein the invention comprises that the magazine is attached to the turret rearwardly of the breech with the lower end of each compartment disposed adjacent and parallel to a substantially vertical plane containing the axis of the barrel, and includes a transfer means for collecting a round released from the lower end of any selected one of the compartments and for presenting that round in a ramming position at the breech, which transfer means is pivotally attached to the magazine intermediate the compartments and the breech so as to be angularly deflectable in the said vertical plane, the rounds being housed in use within the compartments with their based directed towards the breech.

5,307,727
NEUTRAL TO DRIVE SHIFT TIME CONTROL

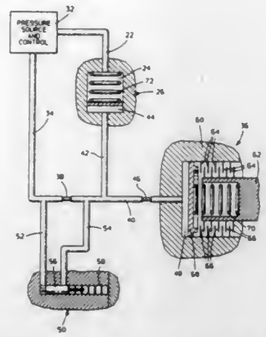
Todd R. Berger, Plymouth; Tsunlock A. Yu, Saline, and Scott B. Pollack, Livonia, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 19, 1992, Ser. No. 885,933
Int. Cl.[5] F15B *13/04;* **F16D** *31/02*
U.S. Cl. 91—29 **3 Claims**

1. A flow control in a hydraulic control system having an accumulator including a bias pressure chamber, a fluid operated piston, a source of fluid pressure having a range of values including a high value, said flow control comprising a first passage means in communication with said source, said accumulator downstream of said source and said piston downstream of said accumulator; a first flow restriction disposed in said first passage means intermediate said source and said accumulator; a second flow restriction means disposed in said first passage means intermediate said accumulator and said fluid operated piston; a second passage means connected with said first passage means at a first location upstream of said first flow restriction means and at a second location intermediate said first restriction and said second restriction; valve means

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operatively connected in said second passage for selectively preventing fluid flow in bypassing relation with said first flow restriction means when said sources of fluid pressure is at or below said high value and permitting fluid flow therethrough



when the source of fluid pressure is above said high value; a vehicle brake signal; and means for supplying a torque signal pressure to said bias pressure chamber and for increasing the torque signal pressure in the bias pressure chamber in response to the vehicle brake signal.

5,307,728

CONTROL ARRANGEMENT FOR REGULATING THE SPEED OF A PRESSURE CYLINDER

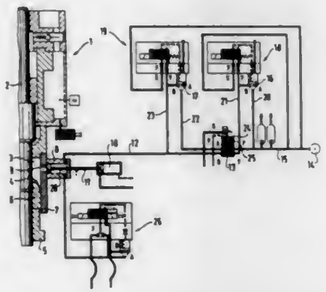
Siegfried Baur, Göppingen, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,705

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129367

Int. Cl.[5] F15B *13/04, 11/08*

U.S. Cl. 91—31 **3 Claims**



1. A control arrangement for regulating the speed of a pressure cylinder in a drawing apparatus of a drawing stage of a press, comprising:

a control valve in a delivery pipe leading to the pressure cylinder, the control valve being adjustable in its flow cross section, the control valve having at least first and second flow paths connected in parallel;

at least one controllable valve connected in series to the first flow path, for blocking or releasing of the first flow path, the thus controllable first flow path and the at least one controllable valve being connected in parallel to the second flow path.

5,307,729

DEVICE FOR STROKE END CUSHIONING AND SPEED REGULATING THE MOVEMENT OF A PISTON IN A FLUID PRESSURE CYLINDER

Staffan Hedlund, Bandhagen, Sweden, assignor to AB Rexroth Mecman, Stockholm, Sweden

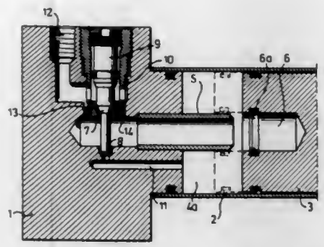
PCT No. PCT/SE91/00733, § 371 Date Aug. 5, 1993, §-102(e) Date Aug. 5, 1993, PCT Pub. No. WO92/08899, PCT Pub. Date May 29, 1992

PCT Filed Oct. 30, 1991, Ser. No. 39,452

Claims priority, application Sweden, Nov. 9, 1990, 9003578

Int. Cl.[5] F15B *15/22*

U.S. Cl. 91—394 **15 Claims**



1. Device for stroke end cushioning and speed regulating the movement of a piston (3) in a fluid pressure cylinder (1,2), comprising at least one pair of adjustable throttle means (7,8;23.24;33,34) for throttling of the flow of fluid out from the cylinder, a first throttle means (7;23;33) in said pair for regulating the piston speed being arranged to throttle the outflow of flow through an outlet channel (12;37), a second throttle means (8;24;34) in said pair for stroke end cushioning being arranged to throttle the outflow of fluid through a separate stroke end cushioning channel (11;22;32), and means (5,6a;21;31;64,65) for sealing the flow directly to the first throttle means from a cushioning chamber, being formed in a certain mutual position between the cylinder end wall and the piston, forcing the outflow from said cushioning chamber to pass through the stroke end cushioning channel, characterized in that both of the throttle means in said pair are jointly adjustable by one adjusting means (9;25,26;35) in such a way that the ratio between the flow areas of the second and the first throttle means is held within the range of 10–60%.

5,307,730

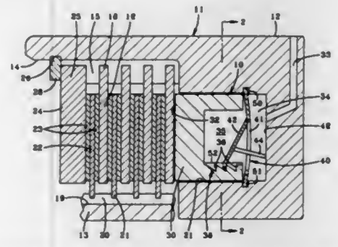
PISTON RETURN SPRING SYSTEM WITH SELF-ADJUSTING CLEARANCE FEATURE

Robert D. Erwin, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1992, Ser. No. 976,032

Int. Cl.[5] F01B *31/00;* **F16D** *55/22;* **F16F** *1/18*

U.S. Cl. 92—130 A **11 Claims**



1. A return spring operable with piston means for use in fluid operated friction torque transmission devices including relatively rotatable members carrying a plurality of torque plates, the piston means having an internal cavity, one of the members providing a fluid chamber in which the piston means is reciprocable, said fluid chamber having a base, the return spring comprising:

flexible base **41** means carried within recesses **50, 51** provided in the rotatable member;

spring tab **43** means extending from said flexible base means and engageable with a wall of the piston means; said tab means being movable with the piston means upon movement thereof in and out of said chamber in response to activation of the piston means; and

at least one leg means extending from said spring tab means away from said internal cavity and communicable with said chamber base, said leg means maintaining a fixed clearance between the face of the piston means and a torque plate within the rotatable member.

5,307,731

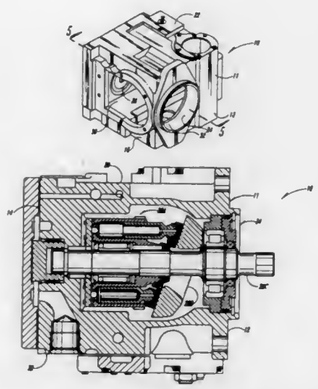
HOUSING SYSTEM FOR HYDRAULIC UNITS

Patric N. Chamberlain, Ankeny, and Jeffrey C. Hansell, Ames, both of Iowa, assignors to Sauer Inc., Ames, Iowa

Filed Nov. 19, 1992, Ser. No. 979,185

Int. Cl.[5] F01G *21/00*

U.S. Cl. 92—147 **2 Claims**



1. A unitary hydraulic housing, comprising,

a unitary hollow housing having opposing forward and rearward walls, opposing top and bottom wall portions, and opposing side wall portions;

a first opening in said forward wall,

a variable displacement hydraulic unit in said hollow housing and comprising a rotary block, swash plate and shaft;

said shaft being journeled in said first opening and extends outwardly from said unit through said first opening,

a second opening in one of said side walls, said second opening being of sufficient size to permit said rotary block and said swash plate to be inserted therethrough for installation within said hollow housing during assembly thereof.

5,307,732

PISTON ASSEMBLY HAVING A WRIST PIN BOLTED THEREIN

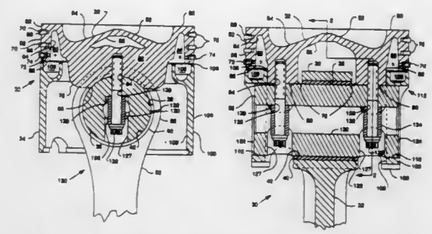
Willibald G. Berlinger, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/08887, § 371 Date Nov. 29, 1991, § 102(e) Date Nov. 29, 1991

PCT Filed Nov. 29, 1991, Ser. No. 829,029

Int. Cl.[5] F16J *1/14*

U.S. Cl. 92—190 **16 Claims**



1. A piston assembly (30), comprising:

a piston member (32) including a crown (52) having a top surface (54), a bottom surface (56), a tubular member (58) depending away from the top surface (54) and having an outer surface (62) defining a plurality of grooves (68,72) therein, a pair of leg members (76) being positioned radially inwardly of the tubular member (58) and being spaced therefrom forming a cavity (86) therebetween, extending from the bottom surface (56) and being spaced one from the other a preestablished distance, each of said leg members (76) having a mounting surface (80) thereon positioned at an end of the leg members (76) opposite the bottom surface (56) of the crown (52) and having a threaded bore (84) therein;

a wrist pin (36) including an outer surface (122) having at least a portion thereof in contacting relationship to the mounting surfaces (80) of the piston member (32) and an inner surface (120), said wrist pin (36) having a pair of bores (126) therethrough each of said pair of bores (126) having an enlarged end (127) passing between the outer surface (122) and the inner surface (120); and

means for fastening (130) the wrist pin (36) to the piston member (32), said means for fastening (130) being positioned in the bores (126).

11. An articulated piston assembly (30), comprising:

a piston member (32) including a crown (52) having a top surface (54), a bottom surface (56), a tubular member (58) depending away from the top surface (54) and having an outer surface (62) defining a plurality of grooves (68,72) therein, a pair of leg members (76) being positioned radially inwardly of the tubular member (58) and being spaced therefrom forming a cavity (86) therebetween, extending from the bottom surface (56) and being spaced one from the other a preestablished distance, each of said leg members (76) having a mounting surface (80) thereon positioned at an end of the leg members (76) opposite the bottom surface (56) of the crown (52) and having a threaded bore (84) therein;

a wrist pin (36) including an outer surface (122) having at least a portion thereof in contacting relationship to the mounting surfaces (80) of the piston member (32) and an inner surface (120), said wrist pin (36) having a pair of bores (126) therethrough;

a skirt (34) removably attached to the wrist pin (36) and being positioned in pivotal working relationship to the piston member (32) by the wrist pin (36);

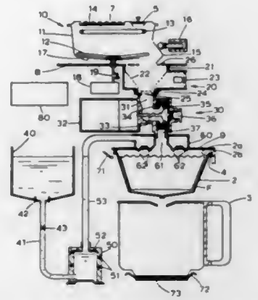
means for retaining the wrist pin (36) within the skirt (34); and

means for fastening (130) the wrist pin (36) to the piston

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member (32), said means for fastening being positioned in the bores (126).

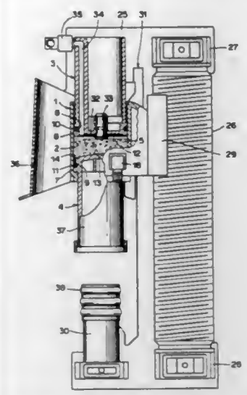
5,307,733
COFFEE MAKER
Kazuo Enomoto, 7-1-5 Sumiyoshi-miyacho, Higashinada, Kobe, Hyogo 658, Japan
Filed Dec. 7, 1992, Ser. No. 986,593
Claims priority, application Japan, Dec. 11, 1991, 3-351443
Int. Cl.[5] A47J *31/42*
U.S. Cl. 99—280 5 Claims



1. An automatic coffee maker comprising a roaster for roasting raw coffee beans, temporary holding and cooling means for temporarily holding and fan cooling the coffee beans roasted by said roaster, grinding means for grinding the beans received from said temporary holding and cooling means, water heating and supply means for heating and supplying water, brewing means for collecting the ground coffee beans ground by said grinding means and the water from said water heating and supply means and brewing the coffee, and micro-computer-equipped controller connected to said roaster means, to said temporary holding and cooling means, to said grinding means, to said water heating and supply means, and to said brewing means for controlling all of the steps from the roasting of raw coffee beans to the brewing of the coffee completely automatically, said grinding means being controlled to successively grind the coffee beans supplied to it and then supply the ground coffee to said brewing means, said controller means timing for the start of operation of said water heating and supply means with respect to the timing for the start of operation of said grinding means such that the timing for the start of the supply of hot water to the brewing means is substantially simultaneous with or slightly later than the timing for the start of the supply of the ground coffee to the brewing means.

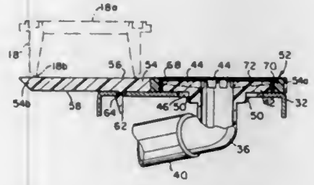
5,307,734
BREWING APPARATUS FOR A COFFEE MACHINE
André Lüssi; Hans Zurbuchen, both of Wabern, and Jürg von Gunten, Grossböchstetten, all of Switzerland, assignors to Sintra Holding AG, Switzerland
PCT No. PCT/CH92/00157, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO93/02607, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 28, 1992, Ser. No. 30,216
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—287 8 Claims

1. Brewing apparatus for a coffee machine, comprising a brewing cylinder (1) having a cylindrical bore (2), a pair of pistons (3, 4) mounted within and closing the cylindrical bore (2) to form a brewing chamber (5), the brewing cylinder (1) and the pistons (3, 4) being displaceable relative to one another along a brewing cylinder axis (16), and each of the pistons (3, 4) having on its outside surface (6, 7) a groove (8, 9) extending about the entire circumference with an inserted gasket (10, 11) for sealing the piston (3, 4) in relation to the cylindrical bore (2), characterized in that at least one of the pistons (4) has a reduced diameter between an end face (13) and its gasket (11)



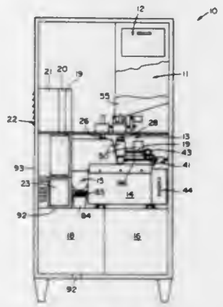
to provide an annular gap (14) between the piston (4) and the bore (2), whereby said gap (14) provides an annular passage for the feeding and/or discharge of liquid to and/or from the brewing chamber (5).

5,307,735
BEVERAGE BREWING DEVICE
John Layre, Warminister, Pa., assignor to Gross-Given Manufacturing Co., St. Paul, Minn.
Filed Nov. 5, 1992, Ser. No. 971,807
Int. Cl.[5] A47J *31/36*
U.S. Cl. 99—289 R 5 Claims



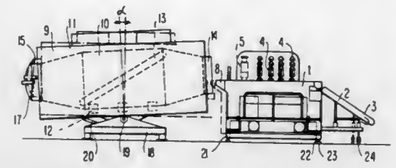
1. A beverage brewing device comprising:
supply means for dispensing heated water, said supply means having an outlet for allowing the heated water to flow therethrough;
a receptacle having a first open end and a second open end, said receptacle being movable between a brewing position for receiving a beverage material through the first open end and a retracted position for discharging the beverage material within said receptacle through the second open end, said first open end of said receptacle being in fluid communication with said outlet when said receptacle is in said brewing position;
a base plate positioned in facing relationship with said second end of said receptacle when said receptacle is in said brewing position, said base plate including an aperture extending therethrough, said aperture being in registry with said second end of said receptacle when said receptacle is in said brewing position;
an outlet conduit releasably secured to said base plate in alignment with said aperture for allowing brewed beverage to flow from said receptacle through said outlet conduit;
quick connect means interconnected between said outlet conduit and said base plate for quickly connecting and disconnecting said outlet conduit and said base plate, said quick connect means comprising one or more interlocking elements extending between said base plate and said outlet conduit, said interlocking elements comprise a plurality of notches in said base plate extending radially outwardly from said aperture and a corresponding plurality of fingers extending from said outlet conduit such that when said fingers and notches are aligned said conduit is readily disconnectable from said base plate and when said notches and fingers are unaligned, said outlet conduit is secured to said base plate; and
a filter assembly sealingly disposed between said outlet conduit and said second end of said receptacle when said receptacle is in said brewing position, said filter assembly including filter means for preventing the beverage material from passing through said second end of said receptacle and for allowing said brewed beverage to pass through said second end of said receptacle to said outlet conduit.

5,307,736
FOOD COOKING
Richard H. Sorensen, c/o Fry Factory Corporation, 900 E. John St., Ste. B, Banning, Calif. 92220
Filed Nov. 16, 1992, Ser. No. 977,135
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—330 38 Claims



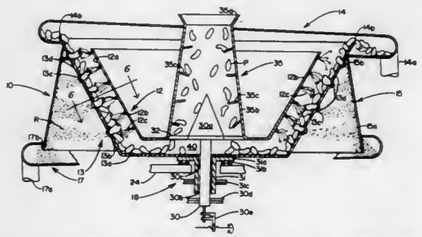
1. Apparatus for preparing, cooking, and dispensing a food product, comprising:
a rehydration chamber for combining a quantity of dehydrated food product and a quantity of heated rehydration liquid to produce a quantity of rehydrated food product, said quantity of rehydrated food product being sufficient to produce an individual portion of cooked food product,
a compression station for compressing said rehydrated food product to create a prepared mixture of homogenous consistency,
an extrusion station for extruding said prepared mixture into a cooking medium,
a cooker containing said cooking medium for cooking the extruded prepared mixture and producing an individual portion of cooked food product, and
a dispenser for dispensing said individual portion of cooked food product,
wherein said rehydration chamber, said compression station, said extrusion station, and said cooker are arranged so that said rehydration chamber can process a first individual portion of cooked food product while said compression station is simultaneously processing at least a second individual portion of cooked food product,
said extrusion station is simultaneously processing at least a third individual portion of cooked food product, and
said cooker is simultaneously processing at least a fourth individual portion of cooked food product.

5,307,737
MACHINE FOR TREATING RAW MEAT
Tsuyoshi Higashimoto, Ikoma, Japan, assignor to Higashimoto Kikai Co., Ltd., Nara, Japan
Filed Jun. 14, 1993, Ser. No. 76,917
Claims priority, application Japan, Jun. 15, 1992, 4-181697
Int. Cl.[5] A23C *9/00, 17/00;* A23L *1/31, 3/34*
U.S. Cl. 99—533 7 Claims



1. A machine for treating raw meat comprising:
an injecting apparatus including injecting needle means adapted to be thrust into the raw meat for injecting a pickle solution thereinto, and an outlet end from which the raw meat is discharged after injecting the pickle solution;
a plurality of massaging apparatuses each including a container adapted to be charged with the raw meat having the pickle solution injected thereinto for massaging, mixing and salting the same, and an inlet end adapted to receive the raw meat and direct the same into said container, said massaging apparatuses extending longitudinally of said injecting apparatus at a position downstream of said injecting apparatus, said massaging apparatuses being arranged side by side widthwise thereof;
guide means for supporting and guiding said injecting apparatus of said massaging apparatuses for movement in the direction in which said massaging apparatuses are arranged side by side; and
drive means for moving said injecting apparatus or said massaging apparatuses along said guide means to thereby align said outlet end of said injecting apparatus with said inlet end of selected one of said massaging apparatuses, whereby the raw meat can be discharged from said outlet end of said injecting apparatus and delivered onto said inlet end of the selected massaging apparatus to be directed into said container thereof.

5,307,738
FOOD PROCESSING MACHINE
John H. Amstad, 6807 W. 100th Ter., Overland Park, Kans. 66212-1634
Filed Jun. 25, 1993, Ser. No. 81,229
Int. Cl.[5] A23N *7/00;* A47J *17/14*
U.S. Cl. 99—625 19 Claims

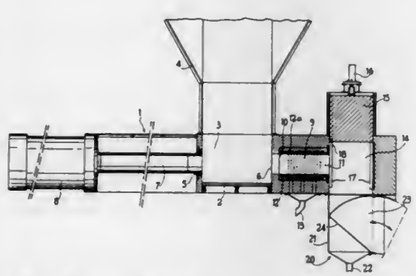


1. A food processing machine particularly arranged and designed to abrade, peel and otherwise treat the exterior surface of various food products, including:
a. a support framework;

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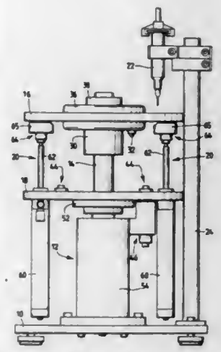
b. a pair of centrically arranged conical members rotatably provided on said framework and positioned in radially spaced relation from one another to provide a product treatment area therebetween.
c. means for selectively, rotatably driving said conical members;
d. means for introducing the food product to be treated into said product treatment area;
e. refuse passing apertures provided through the exterior of the outer conical member for passing removed particulates from said treatment area due to the horizontal component of the centrifugal force provided by rotation of said exterior conical member;
f. product surface contacting means carried on the exterior surface of the interior of said conical members extending into said treatment area for treating the exterior surface of the product to a desired condition;
g. exit means at the upper end of said treatment area for delivery of the treated product, the product advancing to said exit means due to the vertical component of the centrifugal force provided by rotation of said exterior conical member.

5,307,739
PRESS FOR TREATING HETEROGENEOUS WASTE PRODUCTS
Jacques Gourdol, Varces-Allieres-Risset, France, assignor to Neyrpic Framatome Mecanique, Courbevioie, France
Filed Jul. 24, 1991, Ser. No. 735,311
Claims priority, application France, Jul. 26, 1990, 90 09577
Int. Cl.[5] B30B *9/06*
U.S. Cl. 100—98 R **5 Claims**



1. Press for treating heterogeneous waste products comprising a solid phase and a liquid phase, said press comprising
(a) a frame;
(b) means defining a feed zone of receiving said waste products, said feed zone having a feed axis and being open adjacent to an upper end thereof and defining two opposed lateral openings, a compression piston movable between one of said openings of said feed zone and a position located beyond the other of said openings, said lateral openings having a section adapted to a corresponding section of said piston;
(c) a press chamber having a pressing axis and comprising an inlet opening and an outlet opening which are in opposed relation to each other and disposed coaxially relative to said feed axis of said feed zone, said chamber having a section equal to a section of said compression piston, means for recovering said liquid phase, said press chamber comprising calibrated passages connecting said press chamber with said liquid phase recovering means;
(d) a chamber for discharging said solid phase located downstream of said press chamber relative to a direction of flow of said waste products through said press chamber;
(e) an element having a shape complementary to a shape of said discharging chamber and movable transversely relative to said pressing axis of said press chamber between a first position for closing said outlet opening of said press chamber during compression of said waste products by means of said compression piston, and a second position for opening said outlet opening for extracting by means of said compression piston said solid phase from said press chamber; and
(f) means for separating leakages of said liquid phase from said solid phase in said solid phase discharging chamber.

5,307,740
MARKING APPARATUS FOR CONTACT LENS
Yasuyoshi Yamamoto; Chikai Kosaka, and Kazuya Miyamura, all of Gifu, Japan, assignors to Menicon Co., Ltd., Aichi, Japan
Filed May 7, 1993, Ser. No. 57,835
Claims priority, application Japan, May 8, 1992, 4-143499
Int. Cl.[5] B05D *1/32*
U.S. Cl. 101—44 **12 Claims**



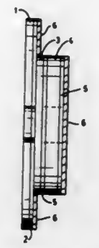
1. A marking apparatus for marking contact lenses with a desired mark, comprising:
a housing;
a main shaft rotatably disposed in said housing;
a screen support mounted on said main shaft so as to be rotated therewith, said screen support having a plurality of marking holes provided at equal intervals around a circumference thereof;
a screen stretched across said support and including patterns provided in correspondence with said marking holes, said patterns being associated with said desired mark;
a plurality of support members corresponding in number to said plurality of marking holes for respectively supporting said contact lenses;
means for respectively urging said support members, and attendantly said contact lenses, against said patterns of said screen with a predetermined urging force and for displacing said support members from said screen to allow said contact lenses to be mounted on or removed from said support members; and
applying means for applying a print solution to said screen in correspondence, with said patterns by successively rotating said main shaft by an angle corresponding to said interval.

5,307,741
IMPACT HAND STAMPING DEVICE
Emory J. Clark, Spokane, and Robert J. Warner, Veradale, both of Wash., assignors to Spring Line, Inc., Spokane, Wash.
Filed Jun. 15, 1993, Ser. No. 78,912
Int. Cl.[5] B41K *1/56*
U.S. Cl. 101—405 **26 Claims**



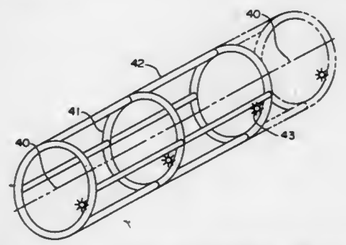
1. An impact hand stamping tool for imprinting a character on an imprint surface, comprising:
a supporting sleeve element having a front end and a rear end, a front opening at said front end, a rear opening at said rear end, and a longitudinal bore extending between said front and rear ends;
an imprint member having an elongated hand stamping element slidably supported in said supporting sleeve element;
said elongated hand stamping element having an imprint end, an imprint character mounted on said imprint end, an opposite anvil end, and a first anvil surface at said anvil end;
said elongated hand stamping element being slidably mounted in the longitudinal bore of the supporting sleeve element with the forward end projecting outward from the front opening and first anvil surface extending outward from the rear opening during operation;
said supporting sleeve element having a first finger gripping section intermediate the front end and the rear end for enabling a user to grip the hand stamping tool with one hand and place the imprint character against the imprint surface;
said supporting sleeve element having a first spring latching means formed therein intermediate the first finger gripping section and the rear end;
an elongated plunger member having a cylindrical forward end, a second anvil surface at said cylindrical forward end, a plunger head end, and a plunger body extending between said cylindrical forward end and said plunger head end;
said plunger body having a second finger gripping section intermediate the forward and head ends for enabling the user to grip the plunger member with a second hand;
said plunger body having a second spring latching means formed therein intermediate the second finger gripping section and the forward end; and
an elongated cylindrical tension coil spring having spring ends, and a central section surrounding the forward end of the plunger member and the rear end of the sleeve element that extends longitudinally between said spring ends; said spring ends being mounted respectively to said first and second spring latching means, in which the tension coil spring is expandable from a retracted condition to an expanded condition by the user gripping both of the finger gripping sections and pulling the members apart thus increasing the tension of the coil spring and thereafter releasing the plunger member to drive the anvil surface of the plunger member sharply against the anvil surface of the hand stamp element to rapidly imprint the character on the imprint surface.

5,307,742
EMI/RFI/ESD SHIELD FOR ELECTRO-MECHANICAL PRIMER FUSES
Peter M. Jones, Londonderry, N.H., assignor to Chomerics, Inc., Woburn, Mass.
Filed Sep. 17, 1992, Ser. No. 946,199
Int. Cl.[5] F42B *3/182*
U.S. Cl. 102—202.2 **17 Claims**



1. A shielding device for a primer fuse, said shielding device comprising:
a metal foil layer having an outer surface and an inner surface;
a conductive adhesive layer on said inner surface of said metal foil layer;
a dielectric film layer having a first surface facing said inner surface of said metal foil layer, and a second surface facing opposite said first surface;
non-conductive adhesive layers on said first and second surfaces of said dielectric layer; and
an interfacing layer between said non-conductive adhesive on said first surface of said dielectric layer and said conductive adhesive layer.

5,307,743
APPARATUS FOR DESLAGGING A CYCLONE FURNACE
Linza J. Jones, Alvarado, Tex., assignor to Halliburton Company, Houston, Tex.
Division of Ser. No. 707,711, May 30, 1991, Pat. No. 5,196,648.
This application Dec. 22, 1992, Ser. No. 995,094
Int. Cl.[5] F42B *1/02, 3/00;* **F23B** *7/00*
U.S. Cl. 102—307 **8 Claims**



1. An apparatus for removing accumulated slag from the interior surfaces of a combustion chamber, comprising:
(a) a plurality of flexible hollow tubes, each hollow tube positionable at a preselected position in a plane perpendicular to the longitudinal axis of the combustion chamber;
(b) explosive material inserted into each of the hollow tubes;
(c) spacer means positionable along the longitudinal axis of the combustion chamber between each of the hollow tubes; and
(d) detonating means connected to the explosive material.

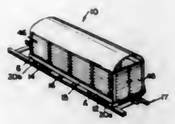
VOL 1162 ISS 1 MY 3 1994 UMI

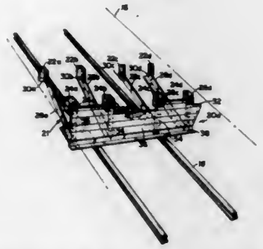
5,307,744

MAGNETIC SKIRT PRODUCT PROTECTION ASSEMBLY FOR TRANSPORTING ON RAILROAD CARS

Ronald R. Newman, Lenexa, Kans., and Roger D. Sims, Munster, Ind., assignors to Burlington Northern Railroad Company, Fort Worth, Tex.

Filed Sep. 17, 1992, Ser. No. 946,746
Int. Cl.[5] B03B 1/00
U.S. Cl. 105—355 37 Claims





1. A magnetic skirt assembly for use on a railroad car for collecting airborne metallic particles from a railroad bed, comprising:

(a) a supporting frame structure arranged and configured to be attached to an underside of a railroad car; and

(b) magnetic means, operatively connected to said supporting frame structure, for attracting and collecting airborne metallic particles from a railroad bed, said magnetic means being oriented on said supporting frame structure to attract the airborne metallic particles, wherein during travel of the railroad car on the railroad bed, said magnetic means attracts and collects metallic particles from the railroad bed which have become airborne, thereby protecting products transported on the railroad car from the airborne metallic particles.

5,307,745

REMOVABLE DAMPER FOR CHEMICAL RECOVERY FURNACE

Daniel R. Higgins, Tigard; Robert B. Hill, Beaverton, and Kenneth A. Pingel, Hillsboro, all of Oreg., assignors to Anthony-Ross Company, Beaverton, Oreg.

Filed Sep. 23, 1992, Ser. No. 949,223
Int. Cl.[5] F23L 5/00
U.S. Cl. 110—182.5 23 Claims

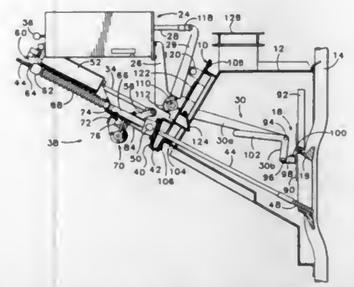
1. Apparatus for adjusting combustion air flow into a furnace from a windbox via an air port, said apparatus comprising:

a faceplate spaced from said air port at the forward side of said windbox,

a damper blade for controlling air flow, and

a cantilevered arm pivotally mounted to said faceplate,

wherein said cantilevered arm carries said damper blade, said arm including means for urging said damper blade toward said air port in slidable but unattached relation thereto for controllably positioning said damper blade in blocking relation to a portion of said air port in accordance with the pivotal attitude of said arm, said damper blade being movable with said arm in a direction away from said air port to enable selective insertion and removal of said damper blade with respect to said air port.

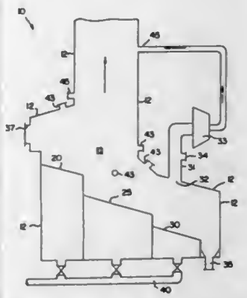


5,307,746

PROCESS AND APPARATUS FOR EMISSIONS REDUCTION FROM WASTE INCINERATION

Mark J. Khinkis, Morton Grove, and Hamid A. Abbasi, Darien, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Division of Ser. No. 703,812, May 21, 1991, Pat. No. 5,205,227, which is a continuation-in-part of Ser. No. 486,865, Feb. 28, 1990, Pat. No. 5,020,456. This application Feb. 24, 1993, Ser. No. 21,896
Int. Cl.[5] F23B 7/00
U.S. Cl. 110—245 12 Claims



1. A furnace for combustion of combustible material comprising:

a plurality of walls defining a combustion chamber;

a stoker grate comprising at least one drying grate portion, at least one combustion grate portion, and at least one burnout grate portion located in a lower portion of said combustion chamber;

ash pit means within said combustion chamber located downstream of said burnout grate portion for discharging ash from said combustion chamber;

combustible material inlet means located in at least one of said walls in a position such that the combustible material is introduced into said combustion chamber onto said drying grate portion;

combustible material advancement means for advancing the combustible material from said drying grate portion, to said combustion grate portion, to said burnout grate portion, and then into said ash pit means;

undergrate air supply means for supplying air to said stoker grate to form a primary combustion zone on and immediately above said stoker grate;

fuel/carrier fluid inlet means for introducing at least one of a fuel and a carrier fluid to create an oxygen deficient secondary combustion zone above said primary combustion zone; and

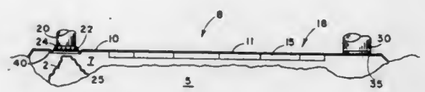
exhaust means for ejecting vitiated air from above said burnout grate portion and vitiated air injection means for injecting said vitiated air into said combustion chamber above said oxygen deficient secondary combustion zone within said combustion chamber.

5,307,747

HORIZONTAL FURNACE

Charles E. Mac Arthur, 5 High St., Box 355, Sangerville, Me. 04479

Filed Mar. 10, 1993, Ser. No. 29,180
Int. Cl.[5] F23B 7/00
U.S. Cl. 110—233 11 Claims



1. A horizontal furnace for burning solid fuel, the furnace comprising:

a horizontally extending, shallow, fireproof enclosure;

a fireproof top closing and sealing the enclosure, the top having a feed aperture therethrough and an exhaust aperture therethrough spaced away from the feed aperture;

a vertical feed chamber having an upper open end and a lower end, the feed chamber having a lip extending outwardly from the lower open end, the chamber being connected to the top at the lip of the chamber such that the chamber is positioned over the feed aperture for allowing the solid fuel and air to be fed into the enclosure through the chamber for burning;

means for passing air onto the enclosure through the lip of the chamber for at least some combustion for burning the solid fuel;

an exhaust stack positioned over the exhaust aperture for venting exhaust from the enclosure, the exhaust stack being sufficiently tall to establish a draft so that exhaust in the enclosure passes from the feed aperture, horizontally along the enclosure, and through the exhaust aperture; and

the top including a barrier fixed to an inner surface of the top and around the feed aperture, the barrier extending downwardly from the top into the enclosure.

5,307,748

CYCLONIC THERMAL TREATMENT AND STABILIZATION OF INDUSTRIAL WASTES

Mark J. Khinkis, Morton Grove, and Hamid A. Abbasi, Darien, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

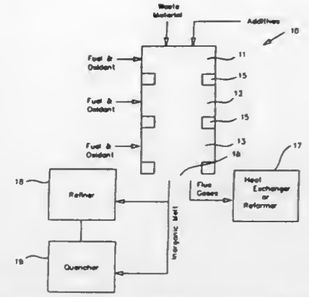
Filed Mar. 12, 1993, Ser. No. 31,244
Int. Cl.[5] F23G 5/00
U.S. Cl. 110—346 24 Claims

1. A process for thermal treatment and stabilization of waste material comprising:

introducing said waste material into an uppermost first combustion zone of a vertically oriented combustion chamber;

tangentially injecting a fuel and an oxidant into said first combustion zone, oxidizing at least a portion of an organic material in said waste material and melting at least a portion of an inorganic material in said waste material;

injecting a second portion of said fuel and said oxidant into a second combustion zone disposed immediately below and in communication with said first combustion zone, oxidizing any remaining portion of said organic material and melting any remaining inorganic material in said waste material; and



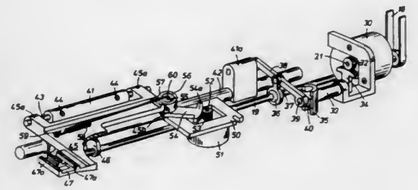
removing melted waste material from a bottom area of said combustion chamber.

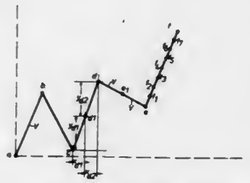
5,307,749

PROCESS FOR DETERMINING THE COORDINATE VALUES FOR SEWING PATTERNS

Claus Kaiser, Karlsruhe, Fed. Rep. of Germany, assignor to G. M. Pfaff Aktiengesellschaft, Kaiserslautern, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 966,943
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1991, 4135472
Int. Cl.[5] D05B 3/02, 21/00
U.S. Cl. 112—262.3 6 Claims





1. A process for determining coordinate values of needle touchdown points for forming sewing patterns with an electronically controlled sewing machine, which has a feed dog which extends through slots in a needle plate and is driven in both an X coordinate direction corresponding to a normal direction of feed and in a Y coordinate direction extending at right angles to the normal direction of feed, a drive for moving the needle in the Y coordinate direction, as well as a data processor and a least one memory for storing the coordinate values associated with touchdown points, the process comprising the steps of:

detecting a seam section which must be divided into needle touchdown points, which seam section is determined by two consecutive touchdown points of a needle and which seam section is greater in length than a maximum amount

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of feed of the feed dog in the X coordinate direction and/or greater than a sum of the maximum amount of lateral movement of the needle which is possible at a particular needle position and a maximum amount of feed of the feed dog in the Y coordinate direction;

dividing a seam section detected by determining coordinate values for a predeterminable number of intermediate, substantially equidistant touchdown points wherein a value of the distance in the Y coordinate direction between a touchdown point and an intermediate touchdown point or between two intermediate touchdown points is always determined by a constant percentage of lateral movement of the needle and by a constant percentage of said maximum movement of the feed dog in the Y coordinate direction;

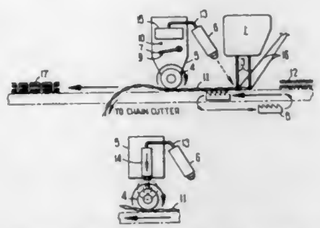
generating an electrical signal to drive said needle and said feed dog for forming a seam based on said coordinate values determined for each seam section detected.

5,307,750

METHOD AND APPARATUS FOR CHAINING IN SEWING MACHINE

Alan J. C. Glassman, 1005 Oakmond Rd., Clarks Summit, Pa. 18411; Richard Musko, 13 Park View Dr., Plains, Pa. 18705, and Joseph H. Hollander, 113 Abbey Dr., Clarks Summit, Pa. 18411

Filed Dec. 28, 1992, Ser. No. 997,545
Int. Cl.[5] D05B *19/00, 47/04, 27/14*
U.S. Cl. 112—121.11 **8 Claims**



1. In a sewing machine adapted to stitch successive fabric parts; tension controlling means for applying tension to a free thread chain; said tension controlling means including variable speed roller means for frictionally engaging said free thread chain and said fabric parts, drive means for operating said variable speed roller means; optical sensing means for detecting the presence or absence of said fabric parts; said drive means being responsive to the detection by said optical sensing means of said fabric parts to vary the speed of said roller means to a first speed coordinated with the speed of stitching of said fabric parts; and said drive means being further responsive to the detection by said optical sensing means of the absence of said fabric parts to vary the speed of said roller means to an increased speed for applying tension to said free thread chain to prevent tangling or breakage thereof.

5,307,751

DEVICE FOR RELEASEABLY CONNECTING ROPE ENDS IN TENSION

David Shell, 500 Rancho Dr., San Marcos, Calif. 92069

Filed Jul. 2, 1992, Ser. No. 909,104
Int. Cl.[5] B63B *21/04*
U.S. Cl. 114—218 **12 Claims**

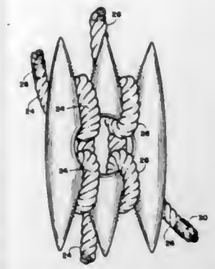
1. A device for releaseably connecting the ends of a rope in tension which comprises;

a generally planar cleat;

a single central aperture through said cleat said aperture sized to allow a rope of selected size to pass therethrough four times;

two trifurcated opposed ends extending away from said central aperture;

each opposed end comprising three closely spaced fingers sharply pointed at their distal ends having channels there-



between, with said channels narrowing toward said aperture;

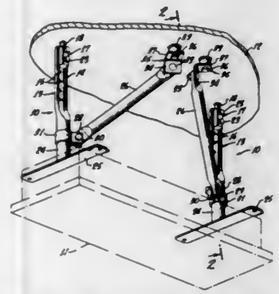
whereby ends of a rope may be wound through said aperture and wedged into said channels in a manner restraining the rope in tension.

5,307,752

SUSPENSION SYSTEM FOR SUPPORTING OBJECTS ON SHIPS

Frederick Perrault, 1727 Date Ave., Torrance, Calif. 90503, and Raymond E. Perrault, 3845 Crest Rd., Rancho Palos Verdes, Calif. 90274

Filed Mar. 29, 1993, Ser. No. 38,540
Int. Cl.[5] B63B *9/00*
U.S. Cl. 114—221 R **13 Claims**



1. In combination with a structure, an arrangement for suspending an object from said structure comprising

a weld stud welded to said structure,

an elongated support member,

one end portion of said support member engaging said weld stud,

the opposite end of said support member including means for connection to an object to be supported,

first fastener means connecting said one end portion of said support member to said weld stud,

a clamp member engaging said support member adjacent said opposite end and positionable in various locations along the length of said support member,

an elongated brace member of predetermined fixed length having one end engaging said clamp member and extending from said clamp member at an acute angle to said support member,

means for attaching the opposite end of said brace to said structure at a location remote from said weld stud, said last-mentioned means including means for permitting said

opposite end of said brace to rotate about two different axes, and

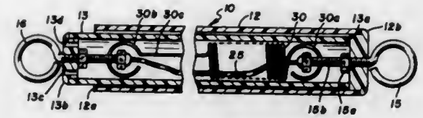
second fastener means for securing said clamp member to said support member so that it frictionally grips said support member and is in a fixed position relative thereto, and for securing said brace to said clamp member.

5,307,753

WATER MOTION CUSHIONING DEVICE

Paul W. Besonen, Sr., 902 Grant St., Anoka, Minn. 55303, and Jeffrey L. Besonen, 9830 Nicollet Ave. South, Bloomington, Minn. 55420

Filed Apr. 16, 1991, Ser. No. 685,730
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—230 **1 Claim**



1. A water motion cushioning device including:

a. a pair of concentric, longitudinally extending, tubular members having open ends directed toward one another and closed ends, one of said members being slideable within the other such member;

b. an extensible biasing member arranged within said tubular members, said biasing member having ends;

c. said biasing member including an extension spring portion and a longitudinal rod portion said spring portion and rod portion being arranged in series, the entire length of said spring and rod portion (thereof) being substantially equal to the length of said concentric members;

d. means for attaching the ends of said biasing member to respective ends of said tubular members to allow relative, restrained, longitudinal movement therebetween;

e. attachment means on each of said tubular members closed ends for attachment of the same to locate and position a water craft; and,

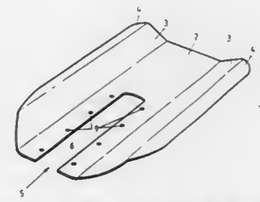
f. connection means between said closed ends of said tubular members preventing overextension of said biasing member and positively connecting said tubular members.

5,307,754

HYDROFOIL STABILIZER

Nicola Leonardis, 23 Mayfred Ave., Hope Valley, SA 5090, Australia

Filed Apr. 16, 1992, Ser. No. 869,795
Claims priority, application Australia, Apr. 19, 1991, PK5875
Int. Cl.[5] B63B *21/26*
U.S. Cl. 114—274 **11 Claims**



1. A stabilizer plate for a marine craft having a bottom disposed at least at one angle and employing a motor with an outboard leg including a propeller having a predetermined diameter and an existing cavitation plate connected thereto, the stabilizer plate comprising:

a substantially flat central portion including an attachment means to attach the central portion to the existing cavitation plate on the motor;

two substantially flat, longitudinally disposed upwardly sloping portions, one either side of the central portion, said central portion and said upwardly sloping portions extending rearwardly from the outboard leg beyond the extent of the propeller approximately the length of one diameter of said propeller beyond the propeller, each upwardly sloping portion having an inner edge nearer the central portion and an outer edge; and

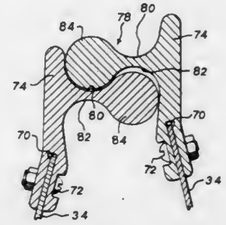
two peripheral portions, one for each upwardly sloping portion, attached to a respective outer edge of each of the upwardly sloping portions.

5,307,755

WORK VESSEL AND TRAILER

Anthony P. Lumpkin, 105 Yorkshire Pl., Gadsden, Ala. 35901

Filed May 13, 1992, Ser. No. 882,045
Int. Cl.[5] B63B *3/02*
U.S. Cl. 114—364 **34 Claims**



1. A vessel for surface operation wherein a plurality of like vessels may be secured to one another for forming an enlarged working platform, the vessel comprising:

a. a floating platform having a generally rectangular outer perimeter;

b. upstanding rim extending substantially about the perimeter for defining side walls having a common upwardly projecting edge; and

c. a gunwale secured to and extending substantially about the rim, the gunwale having an interlocking support surface, a guide member, a locking member, and a locking channel adapted for engaging and interlocking with a like gunwale on a second vessel, whereby the vessels may be interlocked with one another along any of the sides thereof.

5,307,756

ROTATING STRIKER BELL

Kyoji Ichimura; Motohisa Ishiwa, and Kazuharu Seki, all of 46-25 Angyo Oaza, Kawaguchi Saitama, Japan

Filed Jun. 10, 1993, Ser. No. 74,389
Claims priority, application Japan, Jun. 12, 1992, 4-047166[U]
Int. Cl.[5] B62J *3/00;* **G10K** *1/08*
U.S. Cl. 116—166 **17 Claims**

1. A bell for mounting on the handlebars of a bicycle or tricycle, comprising:

a ringer;

a mounting bracket secured to the handlebars;

said mounting bracket further comprising a top having a contact surface, and a support shaft projecting upward from the contact surface;

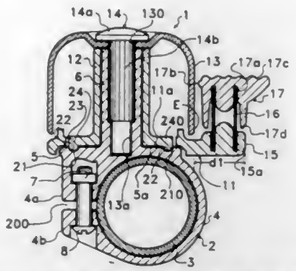
attachment means for attaching the ringer atop the support shaft;

a rotating base;

said rotating base further comprising a bottom contact surface slidingly engaged with the mounting bracket contact surface, a vertical sleeve rotatably mounted on said support shaft, securing means to hold the rotating base in

VOL 1162 ISS 1 MY 3 1994 UMI

position, and a distally projecting arm having striker lever means functioning to ring the ringer when depressed and released; and



said rotating base further comprising rotational adjustment to any one of a plurality of rotational positions 360° relative to the support shaft.

5,307,757

VENTILATED RACK AND ANIMAL CAGE SYSTEM

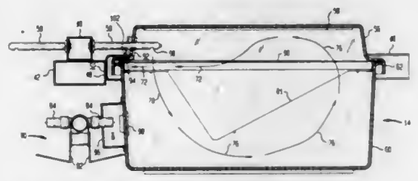
Michael A. Coiro, Sr., Jacobstown; Dale R. Murray, Burlington Township, Burlington County, and Philip A. Lastowski, Hamilton Square, all of N.J., assignors to Allentown Caging Equipment Co., Inc., Allentown, N.J.

Continuation-in-part of Ser. No. 806,146, Dec. 12, 1991, Pat. No. 5,148,766. This application May 20, 1992, Ser. No. 886,512

The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.

Int. Cl.[5] A01K *1/00*

U.S. Cl. 119—17 **9 Claims**



1. An animal cage system comprising:

at least one cage having a top section and a bottom section that supports said top section at a periphery;

a rack for supporting said cage; and,

an air supply means including an air input means for supplying air to said cage and an air removal means for removing air from the periphery of said cage; and

a spacer bracket located between said top and bottom sections of said cage for separating said top and bottom sections to allow air to be removed from said periphery to an exhaust port after said air has circulated through said cage.

5,307,758

PORTABLE PET HOUSE

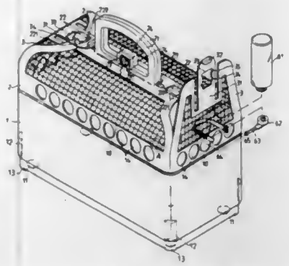
Ying-Kuan Ho, No. 22, Alley 18, Lane 75, An Ping Road, Tainan, Taiwan

Filed Aug. 11, 1993, Ser. No. 104,634

Int. Cl.[5] A01K *31/06*

U.S. Cl. 119—19 **4 Claims**

1. A portable pet house comprising a body including a pair of flaps and a pair of panels extended upward therefrom, said body including a hollow interior having four corners, a first rib formed in each of said corners, a shoulder formed in a lower portion of a peripheral portion thereof for engaging with said first ribs of another pet house, said flaps each including a handle and a pair of lock means provided in an upper portion thereof, a ring disposed in a first of said handles of said flaps, a latch disposed in a second of said handles for engaging with said ring, a lid engaged in said latch, a bolt engaged in said ring and said latch and engaged with said lid for coupling said ring and said latch together, said bolt including a tapered end having a slit formed therein for engaging with said lid, each of said lock means including a second rib formed in a lateral portion thereof and a cap formed in an upper portion thereof, each of said panels including an ear extended upward therefrom, a puncture formed in each of said ear for engaging with said lock means respectively, and at least one notch formed in said puncture for engaging with said second rib so as to secure said panels to said flaps.



5,307,759

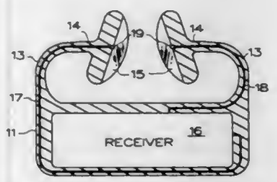
ELECTRONIC NOSECLIP FOR ANIMAL CONTROL

Andrew F. Rose, P.O. Box 1751, Cody, Wyo. 82414

Continuation-in-part of Ser. No. 726,353, Jul. 5, 1991, abandoned. This application Jun. 9, 1992, Ser. No. 895,879

Int. Cl.[5] A01K *3/00*; **G08B** *23/00*

U.S. Cl. 119—721 **9 Claims**



1. An animal range management system for controlling the location and movement of an animal relative to a range area, the system comprising:

a transmitter for transmitting a frequency signal over a predetermined area;

a nose-supported housing adapted to be attached to the nose of an animal located in the area;

a signal receiving means contained within said nose-supported housing for receiving the signal from the transmitter; and

a stimulus means attached to the nose-supported housing for applying a stimulus to the nose of the animal in response to the signal received by the receiving means.

5,307,760

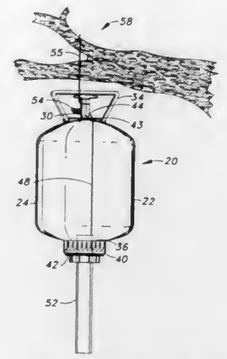
METHOD OF RECYCLING LIQUIFIED GAS TANKS AND ANIMAL FEEDER MADE THEREBY

Brad A. Madigan; Susan M. Madigan, both of Dane, and Charles A. Curwick, Beaver Dam, all of Wis., assignors to Bradigan Wildlife Feeds, Inc., Dane, Wis.

Filed May 13, 1992, Ser. No. 883,588

Int. Cl.[5] A01K *5/00*

U.S. Cl. 119—52.3 **23 Claims**



1. A method of recycling liquified gas tanks of the type having a cylindrical midportion, substantially conical top and bottom portions, a top valve having a valve shaft, and handles secured to the top portion, said method comprising:

cutting a discharge opening of predetermined size in the bottom portion of a liquified gas tank,

securing one end of a sleeve having a bore therethrough to said discharge opening, said bore being sized substantially the same as and aligned with said discharge opening,

cutting a hole in the top portion of the tank adjacent the valve shaft,

securing one end of a predetermined length of wire to one end of a rod, said rod having substantially the length of the tank,

disposing said rod inside the tank,

passing the other end of said length of wire through said hole in said top portion,

winding several revolutions of wire about the valve shaft, and

removably covering said sleeve with a closer cap.

4. An animal feeder, comprising:

a feed hopper having a vertical cylindrical sidewall, substantially conical top and bottom portions, and a bottom discharge opening of predetermined size; said discharge opening including a removable closure cap for closing said discharge opening and a closure cap-receiving sleeve adjacent said discharge opening having a bore extending therethrough, said bore being sized substantially the same as and in alignment with said discharge opening;

a rod extendably secured interiorly to said top portion of said hopper for extending axially through said discharge opening of said hopper when said closure cap is removed, said rod being of a relatively smaller dimension in width than the width of said discharge opening, permitting sideward movement of said rod when extended through said discharge opening, said rod having a length dimension substantially the same as the vertical length of said hopper, such that said rod can be entirely contained within said feed hopper when said feed hopper discharge opening is closed by said closure cap so that said feed hopper may be transported with feed to any location; and

a suspender secured exteriorly to said top conical portion of said hopper for suspending said hopper from a support arm.

5,307,761

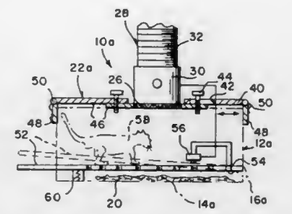
VENTED LITTER BOX FOR CATS

Edwin A. Berger, III, 199-14th St. NE Suite 2610, Atlanta, Ga. 30309, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Jun. 1, 1993, Ser. No. 69,212

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—165 **2 Claims**



1. A vented litter box for a cat which comprises;

a) an open top container having a bottom wall and upwardly extending side walls terminating at a top edge for holding litter therein;

b) a removable cover having an entrance port and an exhaust filter, said cover adapted to fit onto said top edge and extends over said container, so that said entrance port will allow access by said cat to said litter;

c) means connected over said exhaust filter for exhausting odorous air from said cover and thereby drawing the odorous air through said container from said litter therein; wherein said air exhausting means includes:

d) an exhaust fan coupled to said exhaust filter;

e) an elongated flexible hose extending from said exhaust fan to a remote location to carry the odorous air away from said litter in said container;

f) a vent plate having an aperture therethrough, said plate mounted within a window frame;

g) a vent unit extending through said aperture and connected to a distal end of said elongated flexible hose so that the odorous air can be exhausted therethrough; wherein said removable cover includes:

h) an adjustable section having a slot therethrough;

i) a set screw extending through said slot and into a stationary section of said removable cover, so as to retain said adjustable section thereto from moving; and

j) side flanges spring biased and hinged to said adjustable section and said stationary section, so as to hold said removable cover to said container.

5,307,762

HOOD FOR REPTILE TANK

Francis B. Englert, Clifton Park, N.Y., assignor to Village Wholesale, Inc., Latham, N.Y.

Filed Apr. 5, 1993, Ser. No. 42,569

Int. Cl.[5] A01K *63/06*

U.S. Cl. 119—266 **6 Claims**

1. A hood for closing an open top reptile tank that includes,

a top wall capable of resting upon side walls of an open top reptile tank for closing the tank,

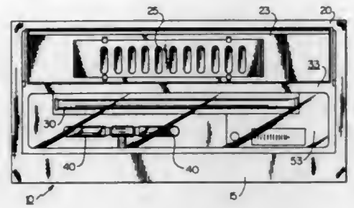
said top wall having a door means that moves between an open position whereby access is provided to said tank and a closed position whereby reptiles contained within said tank are prevented from escaping,

a transparent panel in said top wall for permitting light to enter said tank,

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a light housing removably connected to said top wall over said transparent panel,

a fluorescent light means mounted in said housing for providing simulated day light to said tank,



a low wattage incandescent light means mounted in the housing for providing heat to said tank, and

control means for turning the fluorescent light means on and off and thus providing a simulated lighted day period and an unlighted nocturnal rest period.

5,307,763

RESTRICTED AREA ALARM SYSTEM

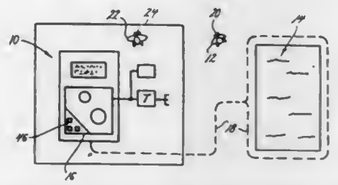
David L. Arthur, 12456D Sealane Dr., Florissant, Mo. 63033, and David S. Pohlman, 208 Carlyle Lake Dr., Creve Coeur, Mo. 63141

Continuation-in-part of Ser. No. 882,483, May 13, 1992, Pat. No. 5,207,179. This application May 3, 1993, Ser. No. 57,476

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] A01K *15/04*

U.S. Cl. 119—718 **27 Claims**



1. A restricted area alarm system, said restricted area having a boundary associated therewith, the system including:

means for emitting a voice encoded RF signal;

means connected to said emitting means for generating said voice encoded RF signal from a prerecorded spoken command and broadcasting same over said emitting means; and

a battery operated RF receiver adapted for attachment to a subject desired to be warned, said RF receiver having means for decoding said voice encoded RF signal and announcing said prerecorded command to said subject as said subject approaches within a predetermined distance to said boundary, thereby to encourage said subject to withdraw from said boundary.

5,307,764

PROTECTIVE PET COLLAR

Kelly A. Moy, 125 Galewood Cir., San Francisco, Calif. 94131

Filed Apr. 22, 1993, Ser. No. 52,019

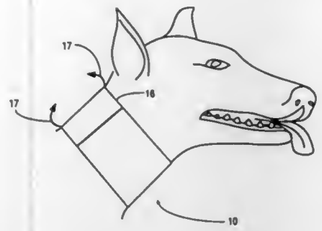
Int. Cl.[5] A01K *27/00*

U.S. Cl. 119—815 **9 Claims**

1. A protective collar for a household pet or other animal, said collar comprising:

a sheet of hard, flexible material; and

means for fastening said sheet so as to form a tubular shape around the neck of said animal;



said collar having a width such that, when said tubular shape is formed around the neck of said animal, said collar substantially prevents said animal from bending its neck so as to bite or lick an affected area on its body.

5,307,765

ROTARY FLUID BED USED TO GASIFY AND COMBUST OIL-IN WATER EMULSIONS

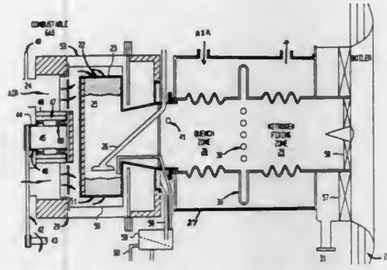
Michael J. Virr, 1222 Bronson Rd., Fairfield, Conn. 06430

Filed Dec. 9, 1992, Ser. No. 987,763

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] F22D *1/00*

U.S. Cl. 122—4 D **14 Claims**



1. A method of producing steam from the combustion of a oil-in-water emulsion in a rotary fluid bed gasifier comprising a rotatable drum having a circumferentially extending wall which is permeable to gases, a means for feeding a fluidizing gas through said wall into said drum, a bed of particles which, at least when said gasifier is in use, is supported on an internal face of said wall and is fluidized by said gas, an outlet means for receiving an oil-in-water emulsion from outside said gasifier and delivering said oil-in-water emulsion to said drum, a de-NO_x boiler having a quench zone and a nitrogen fixing zone, a means for introducing secondary air disposed between said quench zone and said nitrogen fixing zone, and a means for introducing tertiary air disposed between said de-NO_x boiler and a main boiler, comprising the steps of:

introducing said fluidizing gas and a combustible gas into said drum wherein said bed particles are fluidized;

igniting said combustible gas within said drum;

heating said bed particles to approximately 1000° F.;

introducing an oil-in-water emulsion to said drum;

removing said combustible gas;

controlling the temperature within said drum to between about 1600°–1800° F. by adjusting the flow rate of said fluidizing gas, the speed of said drum, and the rate of introduction of said oil-in-water emulsion; and

introducing said secondary air into said de-NO_x boiler and said tertiary air between said de-NO_x boiler and said main boiler.

5,307,766

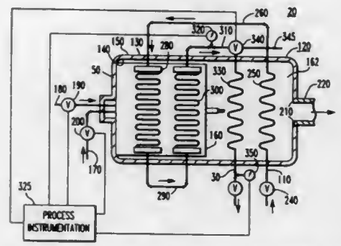
TEMPERATURE CONTROL OF STEAM FOR BOILERS

Ralph P. Pearce, Lower Burrell, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1993, Ser. No. 30,521

Int. Cl.[5] F22G *5/00*

U.S. Cl. 122—479.1 **5 Claims**



1. A once-through boiler for producing steam from a liquid comprising:

a) a boiler vessel having an interior portion, an inlet for introducing the liquid into said boiler vessel, and an outlet;

b) a first conduit attached to the inlet for passing the liquid through said boiler vessel and disposed in the interior of the vessel;

c) a heater positioned within said interior portion and operable to generate heat for evaporating the liquid in said first conduit;

d) a second conduit attached to said first conduit at one end of said second conduit and to the outlet at the other end of said second conduit; wherein said second conduit passes the steam generated in said first conduit, and said heater operable to heat the steam passing through said second conduit; wherein said second conduit attaches to said first conduit in the interior of said boiler vessel, passes externally to said boiler vessel, and thereafter passes into the interior of said boiler vessel where said second conduit connects to the outlet which passes the steam out of said boiler vessel;

f) a spray valve connected to said second conduit for controlling the temperature rise of the heater; and

g) a first thermocouple for measuring the steam temperature connected to the portion of said second conduit disposed externally to said boiler vessel; wherein said first thermocouple cooperates with said heater, and said heater generates more heat when said first thermocouple senses the temperature below a desired level, and said heater decreases its heat when said heater senses the temperature above a desired level.

5,307,767

INTERNAL COMBUSTION ENGINE AIR INTAKE SYSTEM

Berndt Schütz, Stuttgart, Fed. Rep. of Germany, assignor to Mercedes-Benz A.G., Stuttgart, Fed. Rep. of Germany

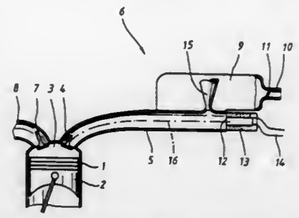
Filed May 13, 1993, Ser. No. 60,915

Claims priority, application Fed. Rep. of Germany, May 28, 1992, 4217630

Int. Cl.[5] F02B *27/00*

U.S. Cl. 123—52 MB **6 Claims**

1. An air intake system for an internal combustion engine having at least one cylinder with an intake pipe extending between the cylinder and an air collecting box for supplying intake air to said cylinder, a diaphragm structure arranged at the end of said intake pipe remote from said cylinder so as to be capable of vibrating essentially in the longitudinal direction of said intake pipe and being operable by an oscillation generator attached thereto for exciting the air in said intake pipe so as to provide for acoustic pressure oscillations in said intake pipe suitable to increase the cylinder air charge as a function of



engine operating parameters and a connecting passage for providing communication between said intake pipe and said air collecting box including means for suppressing said acoustic pressure oscillations to prevent their transmission to the air in said air collecting box.

5,307,768

CAMSHAFT ARRANGEMENT HAVING ANGULARLY MOVABLE CAMS

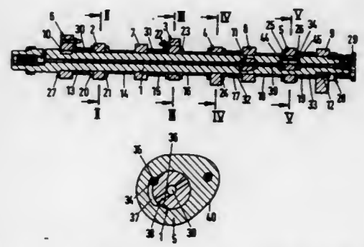
Alfred Beier, Braunschweig; Dietrich Distler, and Panagiotis Adamis, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Aug. 16, 1993, Ser. No. 106,543

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 4227128; Jul. 3, 1993, 4322246

Int. Cl.[5] F01L *1/04, 1/34*

U.S. Cl. 123—90.17 **10 Claims**



1. A camshaft arrangement preferably, for an internal combustion engine comprising a camshaft, at least one cam mounted thereon for angular motion relative to the camshaft over a predetermined angular range and having a through-hole traversed by the camshaft, and coupling means defining the angular range of motion of the cam and comprising a roller rotatably supported with respect to the camshaft and a recess in the cam adjacent to the through-hole and accommodating the roller with peripheral play and arranged to receive a damping fluid, and a pair of spacer sleeves having faces abutting the angularly movable cam, the cam and the spacer sleeves being assembled on the camshaft by sliding motion from one end of the camshaft, a pair of stops on the camshaft for retaining the cam and spacer sleeves in position so that the faces of the spacer sleeves abutting the angularly movable cam substantially seal the recess in the cam while permitting angular motion of the cam and leaving predetermined gaps for the damping fluid, the abutting faces of the spacer sleeves having openings to receive and support the ends of the roller projecting beyond the cam.

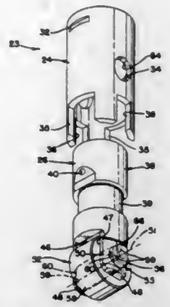
VOL 1162 ISS 1 MY 3 1994 UMI

5,307,769

LOW MASS ROLLER VALVE LIFTER ASSEMBLY

Richard P. Meagher, Fairport; Rick C. Wirth, Henrietta, both of N.Y., and Thomas Braun, Walker, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 7, 1993, Ser. No. 72,372
Int. Cl.[5] F01L 1/14
U.S. Cl. 123—90.5 25 Claims



1. A roller valve lifter assembly comprising a roller valve lifter and a sleeve reciprocably receiving the valve lifter,

the valve lifter including

a cylindrical body having first and second ends, said first end being slotted to form a pair of spaced legs having a pair of openings in said legs aligned on a transverse axis,

a roller having a central bore received between said legs with the bore aligned on the axis, and

a shaft received in the openings and extending through the bore to rotatably journal and support the roller between the legs, the shaft having opposite ends extending beyond the cylindrical body, and

the sleeve having a transverse slot open at one longitudinal end and receiving the shaft ends for reciprocation therein, the shaft ends being engageable with edges of the slot to prevent rotation of the lifter in the sleeve,

wherein the cylindrical body has an outer diameter smaller than a maximum dimension of the roller parallel with a body diameter but the sleeve has an outer diameter larger than said maximum dimension of the roller, the sleeve being slotted in a direction normal to the shaft axis to receive protruding portions of the roller.

5,307,770

PRIMING PUMP VALVE

Stephen D. Davis, Ann Arbor, and Willis E. Tupper, Pinckney, both of Mich., assignors to Davco Manufacturing Corporation, Saline and Dapco Industries, Dexter, both of Mich.

Division of Ser. No. 959,065, Oct. 9, 1992, Pat. No. 5,256,040.
This application Jul. 26, 1993, Ser. No. 97,160
Int. Cl.[5] F02N 17/00
U.S. Cl. 123—179.11 6 Claims

1. In a fuel system for a diesel engine of the type having a fuel tank and a fuel line connecting the fuel tank to the diesel engine, the improvement comprising:

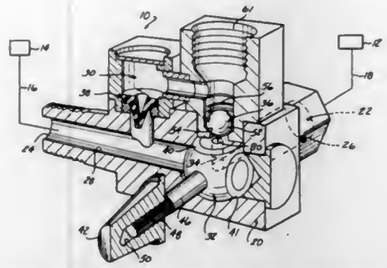
a housing having an operational flow path which forms a portion of said fuel line during a normal operation of said diesel engine;

means defining a priming flow path for providing a flow of fuel to said engine during a priming operation;

control valve means in said operational fluid flow path for selectively directing fuel flow to one of said operational and priming flow paths and closing communication to the other of said flow paths;

said priming flow path having its inlet at said valve control means and an outlet opening into said operational flow path downstream from said control valve means; and

pumping means carried by said housing and in communication with said fuel line via said control valve means for



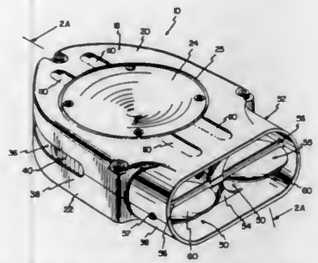
drawing fuel into said priming flow path and releasing said fuel into said operational flow path when said control valve means is connecting said fuel line to said priming flow path.

5,307,771

MOTORCYCLE AIR CLEANER

Alwin J. Stahel, II, St. Paul, Minn.; Thomas H. Rudd, Hudson, Wis., and Brian K. Stahel, New Brighton, Minn., assignors to KaryAkyn Holdings, Inc., Hudson, Wis.

Filed Feb. 28, 1992, Ser. No. 843,990
Int. Cl.[5] F02B 77/00
U.S. Cl. 123—198 E 26 Claims



1. An air intake assembly for delivering air to a carburetor of an internal combustion motorcycle engines, the assembly comprising:

a housing mountable on the carburetor and enclosing an air filter;

a first port formed in a wall of the housing to permit fluid communication between the housing and the carburetor, the first port being positioned between the air filter and the carburetor;

a second port formed in a wall of the housing to permit air to enter the housing, the second port being positioned relative to the air filter on a side opposite from the first port;

a valve assembly pivotably mounted within the second port; and

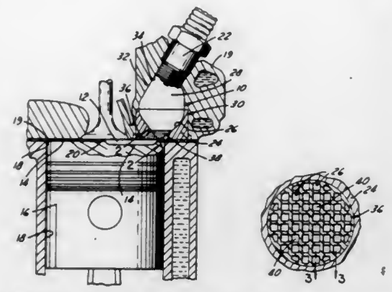
means for positioning the valve assembly to control a flow of air through the second port.

5,307,772

REDOX CATALYSIS OF NO_x IN INTERNAL COMBUSTION ENGINES

Vemulapalli D. N. Rao, Bloomfield Hills, and Harry A. Cikanek, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1992, Ser. No. 991,227
Int. Cl.[5] F02B 19/14
U.S. Cl. 123—272 16 Claims



1. An internal combustion engine having reduced nitrogen oxide emissions, comprising:

a piston and cylinder assembly, said piston and cylinder assembly having walls defining an enclosed variable displacement chamber which has a maximum volume when the piston is at bottom dead center and a minimum volume when the piston is at top dead center;

means for admitting air into the chamber;

a compact pot formed in a wall of the variable displacement chamber, and having a surface which partially defines a boundary of the chamber;

means for injecting fuel into the pot when the piston is near top dead center to cause ignition and combustion of the resulting air and fuel mixture;

a plurality of whisker-like protuberances extending outwardly from the surface of the compact pot; and

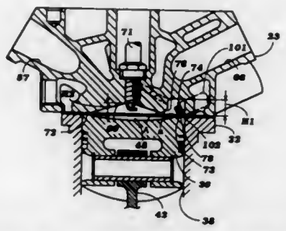
an effective amount of a catalyst applied to the surface of the pot and to the whisker-like protuberances for reducing nitrogen oxides formed in the combustion gases produced by the combustion.

5,307,773

SQUISH STRUCTURE FOR SPARK IGNITION ENGINE

Toshio Suzuki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 9, 1992, Ser. No. 959,160
Claims priority, application Japan, Oct. 11, 1991, 3-292097; Oct. 11, 1991, 3-292098
Int. Cl.[5] F02B 19/18
U.S. Cl. 123—293 16 Claims



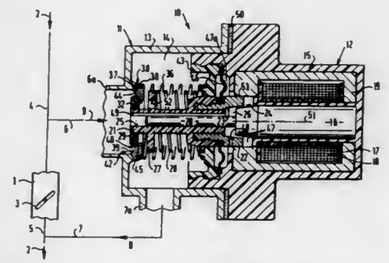
1. A combustion chamber for an internal combustion engine comprised of a pair of relatively movable components defining a combustion chamber, said combustion chamber, at minimum volume condition, being comprised of a main combustion chamber volume, a squish area of substantially lesser height than said main combustion chamber on at least one side of said main combustion chamber volume, a pre-chamber volume of greater height than said squish area and of a lesser cross section than said squish area, a flow passage extending from said main combustion chamber volume to said pre-chamber volume for flow therethrough, said squish area being spaced from said pre-chamber by said flow passage, said flow passage being substantially unrestricted until said relatively movable components approach their minimum volume condition for promoting the flow of mixture into said pre-chamber volume as minimum volume condition is approached and for delivering a burnt charge into said squish area after combustion occurs in said pre-chamber volume, the squish action of said squish area as said components approach their minimum volume condition promoting a flow of high velocity mixture from squish area into said main combustion chamber, and means for firing a charge in said pre-chamber volume.

5,307,774

DEVICE FOR GOVERNING THE IDLING RPM OF AN INTERNAL COMBUSTION ENGINE

Uwe Hammer, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1993, Ser. No. 72,014
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1992, 4231241
Int. Cl.[5] F02D 41/08; F02M 23/06; F16K 31/02
U.S. Cl. 123—339 6 Claims



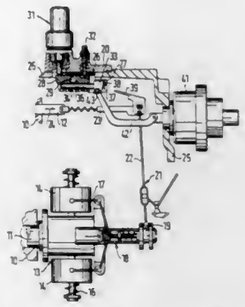
1. A device for governing an idling rpm of an internal combustion engine by means of controlling a quantity of operating fluid that flows in a flow line to the engine, having a regulating element and a driving element that has a drive housing that encloses a coil, said driving element is controllable depending on the rpm and into which an induction core protrudes that has an armature, said armature is connected to an adjusting element, an axle journal (20) that extends in an axial direction is embodied on a face end of an induction core (16) facing the regulating element (11) and protrudes into a bearing opening (25) of the adjusting element (21) and into an annular opening (26) of the armature (22).

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5,307,775
SPEED GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Siegfried Ruthardt, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00480, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO92/22739, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 977,424
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120352
Int. Cl.[5] F02D *31/00*
U.S. Cl. 123—366 **16 Claims**



1. A speed governor for internal combustion engines, comprising a fuel-quantity control member; a governor sleeve; a centrifugal advance device operated for regulating speed and producing a speed-dependent adjustment of said governor sleeve; a coupling provided between said governor sleeve and said fuel-quantity control member and enabling an optional change in a fuel injection quantity, said coupling including a control lever provided with a feeler; a base support provided with a full-load stop which can be sensed by said feeler of said control lever; and added support provided with an added stop and rotatably supported at said base support; a governor housing on which said base support is fixed; means for fixing said base support on said housing; two adjusting stops; an actuating member which swivels said added support between said adjusting stops and has a position depending on operating parameters of the internal combustion engine; an adapter unit longitudinally displacing said added support transversely to the swiveling direction.

5,307,776
RECOGNITION ALGORITHM FOR ELECTRONIC THROTTLE CONTROL

Lisa M. Unuvar, Flint, and Daniel A. Crawford, Burton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

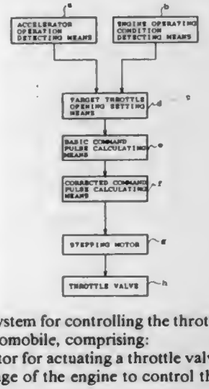
Filed Apr. 5, 1993, Ser. No. 43,046
Int. Cl.[5] F02D *11/10*
U.S. Cl. 123—399 **6 Claims**

1. A method for controlling an internal combustion engine air inlet valve position, comprising:
sensing release of an accelerator pedal;
sensing depression of a brake pedal; and
controlling the position of the air inlet valve according to a predetermined relationship between accelerator pedal position and air inlet valve position after sensing release of the accelerator pedal and depression of the brake pedal.

5,307,777
THROTTLE OPENING CONTROL SYSTEM FOR AUTOMOTIVE ENGINE

Kouji Sasajima, Tokyo, and Takamichi Shimada, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1993, Ser. No. 59,146
Claims priority, application Japan, May 12, 1992, 4-146667
Int. Cl.[5] F02D *11/10*
U.S. Cl. 123—399 **6 Claims**

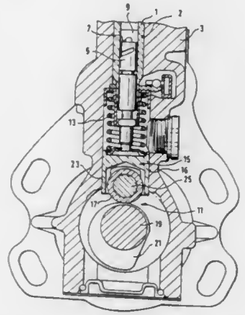


1. A control system for controlling the throttle opening of an engine of an automobile, comprising:
a stepping motor for actuating a throttle valve disposed in an intake passage of the engine to control the throttle opening;
accelerator operation detecting means for detecting the amount of operation of accelerator means operated on by the driver of the automobile;
engine operating condition detecting means for detecting an operating condition of said engine;
a controller for controlling said stepping motor based on detected values from said accelerator operation detecting means and said engine operating condition detecting means;
said controller comprising:
target throttle opening setting means for setting a target throttle opening for the engine based on the detected values from said accelerator operation detecting means and said engine operating condition detecting means;
basic command pulse calculating means for calculating, in each periodic calculation period used by the controller, command pulses to be applied to the stepping motor which are required to equalize an actual throttle opening with said target throttle opening;
corrected command pulse calculating means for calculating a pulse quiescent time interval from the completion of outputting of calculated command pulses which have been outputted from the start of a next calculation period, to the end of the calculation period, and correcting the command pulses such that if the calculated pulse quiescent time interval is of a value within a predetermined time range in which said stepping motor would lose steps, then the calculated pulse quiescent time interval is corrected into a value outside said predetermined time range; and
means for outputting the command pulses corrected by said corrected command pulse calculating means and determined in each calculation period at an initial stage of each calculation period to control said stepping motor for controlling the throttle opening.

5,307,778
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Karsten Hummel, Beilstein-Schmidhausen; Karl Rapp, and Hansjoerg Frey, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 60,623
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1992, 4227854
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—495 **3 Claims**

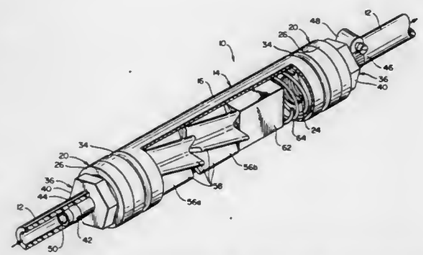


1. A fuel injection pump for internal combustion engines, having a cylinder bushing (1) inserted into a housing bore (2), in which a pump piston (5) is axially guided, said pump piston defines a pump work chamber (9) in the cylinder bushing (1) by means of a face end (7) and is moved axially back and forth by a cam drive (11) against a force of a restoring spring (13), a roller tappet (15) includes a roller (17) connected to the pump piston (5) via a roller pin (25) disposed crosswise to an axis of a cylinder-shaped housing of the roller tappet (15) in which said cylinder-shaped housing is embodied as a slide apron (23), the roller (17) rolls on the race of a cam (21) of a camshaft (19) driven by the internal combustion engine; the roller pin (25) is axially secured by means of a contact of its axial ends with an interior wall (29) of a part (16) of the housing bore (2) which guides the roller tappet (15), the roller pin (25) is guided in a bearing shell (27), open in a direction toward the cam drive (11), in the cylinder-shaped housing (23) of the roller tappet (15) and the axial ends of the roller pin (25) are embodied as flat surfaces extending vertically to the axis of the roller pin (25) which form transition areas (31) towards a circumferential surface, the transition areas (31) form a part of a generated enveloping curve that is adapted to a cylindrical contour of the interior wall area (29) that forms the roller tappet guide (16) and a radius of the generated enveloping curve has a center which is the same as a radius of the tappet guide (16), and in the area of transition (31), the rotation-symmetrical roller pin (25) has a common diameter with the exterior wall surface of the slide apron (23) of the roller tappet (15) and slides together with the slide apron in the roller tappet guide (16) of the housing bore (2).

5,307,779
APPARATUS FOR TREATING AND CONDITIONING FUEL FOR USE IN AN INTERNAL COMBUSTION ENGINE

Don W. Wood, #26 - 1450 Johnston Road, White Rock, British Columbia, Canada V4B 5E9 , and Mark H. Woodruffe, Noke Farm Cottage, Hoggs Cross Lane, Chipstead, Surrey, England

Filed Jan. 14, 1993, Ser. No. 6,784
Int. Cl.[5] F02M *27/00*
U.S. Cl. 123—538 **24 Claims**

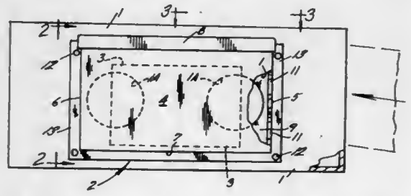


1. A device for conditioning a liquid fuel flowing therethrough, said device comprising:
a casing having a fuel inlet port and a fuel outlet port; and
at least one insert within said casing, said insert being configured to define at least one passage through which a stream of said fuel must pass in flowing through said device from said inlet port to said outlet port;
said insert comprising an amalgam containing a plurality of trace metal elements which pass into said fuel as said fuel flows through said passage and over a surface of said insert, said trace elements comprising tin, mercury, and lead.

5,307,780
HEATER FACILITATING COLD ENGINE STARTS

James L. Dodge, 375 "A" Owosso Dr., Eugene, Oreg. 97404

Filed Apr. 29, 1993, Ser. No. 53,473
Int. Cl.[5] F01N *5/02*
U.S. Cl. 123—556 **9 Claims**

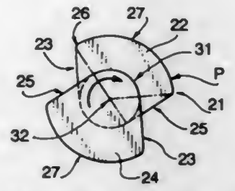


6. A heating device for attachment to an engine prior to starting of the engine, said device comprising,
a housing including a closure movably mounted on said housing,
means for attaching said housing to the engine, and

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a heat source packet in said housing, said heat source packet being removable from said housing in order to actuate the heat source packet.

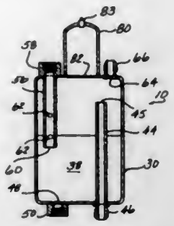
5,307,781
CAM SHAFT FOR FUEL INJECTION PUMP
Teruo Nakada; Yuichi Murata, and Naoyuki Soma, all of Fujisawa, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan
Filed Apr. 24, 1992, Ser. No. 874,234
Claims priority, application Japan, Apr. 30, 1991, 3-098999
Int. Cl.[5] F02M *37/04, 59/00*
U.S. Cl. 123—495 **7 Claims**



1. A cam shaft having at least two cams, each cam driving a plunger of fuel injection pump provided for each cylinder of an internal combustion engine, the cam shaft having a longitudinal direction, comprising:
- a first cam formed on the cam shaft and having a first cam profile of nearly fan shape for lifting a first plunger, the first cam profile having a first lift increment segment, a first lift decrement segment and a first maximum lift maintenance segment connecting the first lift increment and decrement segments; and
- a second cam formed on the shaft and having a second cam profile of nearly fan shape symmetrical with the first cam with respect to a center of the cam shaft for lifting a second plunger, the second cam being spaced from the first cam in the longitudinal direction of the cam shaft, the second cam profile having a second lift increment segment, a second lift decrement segment and a second maximum lift maintenance segment connecting the second lift increment and decrement segments, the first lift increment segment overlapping the second lift decrement segment as viewed in the longitudinal direction of the cam shaft such that torque produced by the first lift increment segment is counterbalanced by the second lift decrement segment, and the first lift decrement segment overlapping the second lift increment segment as viewed in the longitudinal direction of the cam shaft such that torque produced by the second lift increment segment is counterbalanced by the first lift decrement segment.

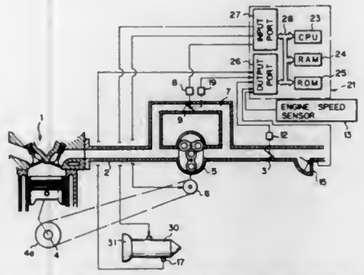
5,307,782
COMBINED PRESSURE WAVE SUPPRESSOR, AIR/VAPOR PURGE AND CHECK VALVE
Leland L. Davis, Saline, Mich., assignor to Davco Manufacturing Corporation, Saline, Mich.
Filed Mar. 16, 1992, Ser. No. 852,294
Int. Cl.[5] F02M *55/04*
U.S. Cl. 123—510 **22 Claims**

1. A fuel delivery system for an internal combustion engine, of the type having at least one fuel injector, said system comprising:
- a source of fuel;
- means for delivering said fuel under pressure to said injector;
- a return conduit from said injector for returning unused fuel from said injectors to said source of fuel; and
- a fuel pressure pulsation dampener valve disposed between said source of pressure and said injector such that fuel is delivered under pressure through said valve to said injector, said valve comprising:
- a housing having an interior chamber;
- an inlet tube extending into said chamber and having a port opening into said chamber at a predetermined level for communicating fuel from said source into said chamber; and



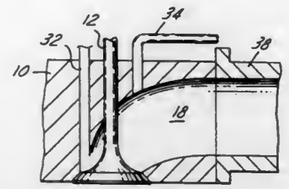
- an outlet tube extending into said chamber and having a plurality of ports opening into said chamber at a point below said predetermined level for communicating fuel in said chamber to said outlet tube for communication of said fuel to said injector and for dissipating pulsations generated downstream of said outlet tube ports and communicated to said chamber.

5,307,783
BOOST PRESSURE CONTROL SYSTEM FOR AN ENGINE
Koichi Satoya; Hidemi Ohnaka, both of Susono; Michio Furuhashi, Mishima, and Yasuhiro Ooi, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Feb. 16, 1993, Ser. No. 18,205
Claims priority, application Japan, Mar. 10, 1992, 4-051349
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—559.3 **4 Claims**



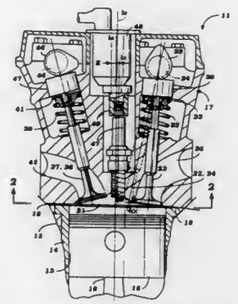
1. A boost pressure control system for a vehicle engine equipped with a torque converter including a lock-up clutch, said boost pressure control system comprising:
- an intake pressure boost means for boosting the intake pressure of the engine; and,
- a boost pressure control means for setting the boost pressure of the engine by controlling said intake pressure boost means so that said boost pressure is determined as a function of an engine load and,
- said function of the engine load is selected by said boost pressure control means from among a plurality of predetermined functions in accordance with whether said lock-up clutch of the torque converter is connected or disconnected.

5,307,784
INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE
Michael A. Choma, Dearborn Heights; William F. Stockhausen, Northville, and Timo A. Wiemero, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 5, 1993, Ser. No. 42,915
Int. Cl.[5] F02B *47/08*
U.S. Cl. 123—568 **23 Claims**



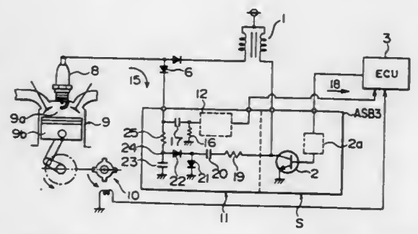
1. An induction system for a multicylinder reciprocating internal combustion engine having a crankcase and an intake manifold, with each of said cylinders comprising:
- a cylinder head having at least one intake poppet valve and at least one exhaust poppet valve, with each of said intake valves being situated within an intake port extending through the cylinder head;
- a crankcase ventilation system for conducting gases from the crankcase of the engine to the cylinder head; and
- means located within the cylinder head, and connected with said crankcase ventilation system, for introducing said crankcase gases directly into at least one of said intake ports.

5,307,785
IGNITION SYSTEM FOR MULTI-VALVE ENGINE
Masaaki Yoshikawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jan. 16, 1991, Ser. No. 642,015
Claims priority, application Japan, Jan. 17, 1990, 2-6331
Int. Cl.[5] E02P *11/00*
U.S. Cl. 123—635 **18 Claims**



1. An ignition system for a multi-valve engine comprised of a cylinder head forming a combustion chamber, a plurality of poppet valves supported for reciprocation within said cylinder head, said valves being positioned at not greater than acute angles to a plane containing the axis of an associated cylinder bore with more of the poppet valves lying on one side of said plane than on the other side of the plane, a spark plug supported within said cylinder head with a spark plug gap position substantially on the center of said combustion chamber, and a spark coil mounted to the terminal end of said spark plug for firing said spark plug, said spark coil having a longitudinal axis which longitudinal axis is offset to one side of said spark plug and in an area between at least two of said valves.

5,307,786
IGNITION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE
Shigemi Murata, and Masayuki Ikeuchi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 773,450, Oct. 9, 1991, Pat. No. 5,239,973.
This application Feb. 24, 1993, Ser. No. 21,588
Claims priority, application Japan, Oct. 12, 1990, 2-272107; Oct. 12, 1990, 2-272110
Int. Cl.[5] F02P *3/02*
U.S. Cl. 123—635 **2 Claims**



1. An ignition apparatus for an internal combustion engine, comprising:
- a) a plurality of ignition coils individually connected to an equal plurality of spark plugs which have electrodes present in combustion chambers of cylinders;
- b) a switch (S) having an equal plurality of switches (2) for individually controlling power supply to said ignition coils; and
- c) an ion current sensing unit connected to said spark plugs for sensing ion currents generated between the electrodes of said spark plugs during combustion of a mixture in the combustion chambers,
- d) wherein said ion current sensing unit is integrally formed with said switch unit to provide an integral assembly (ASB3), wherein said switch unit and said ion current sensing unit comprise a hybrid integrated circuit, and wherein the ion current sensing unit is electrically connected to primary windings of the ignition coils without a wiring harness.

5,307,787
COMPOUND BOW HAVING OFFSET CABLE ANCHOR
Brian W. LaBorde, and Allan F. Smith, both of Tucson, Ariz., assignors to Paul E. Shepley, Jr., Tucson, Ariz.
Filed Mar. 10, 1992, Ser. No. 848,836
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—25.6 **12 Claims**

1. In a compound archery bow having a handle, first and second limbs each having a first end connected to said handle and a pulley rotatable on an axle connected to a second end of each limb, a first cable for connecting the first limb to the pulley at the end of the second limb, a second cable for connecting the second limb to the pulley on the end of said first limb, and a bowstring interconnecting the pulleys, the improvement comprising:
- adjustable anchor means, attaching said first and second

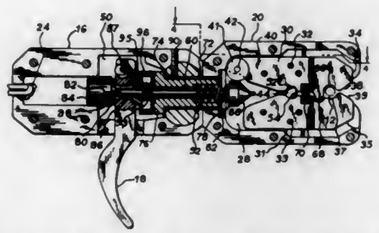
VOL 1162 ISS 1 MY 3 1994 UMI

cables to respective second ends of said first and second limbs, for translating the connection point of said cables in



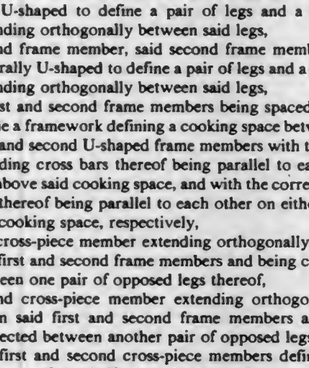
a direction parallel to the axle on the second end of each limb, thereby varying the net torque on said second ends.

5,307,788
TWIN JAW BOW STRING RELEASE
Paul L. Peck, Fond du Lac, Wis., assignor to Tru-Fire Corporation, Fond du Lac, Wis.
Filed Sep. 12, 1991, Ser. No. 758,779
Int. Cl.[5] F41B 5/00
U.S. Cl. 124—35.2 **9 Claims**



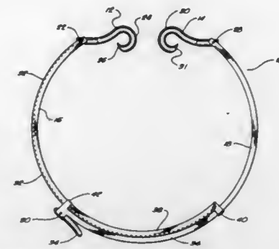
1. A bow string release of the type having a head including a sear mechanism adapted for receiving and holding a bow string adjacent the nock of an arrow and selectively movable between a closed, string retaining position and an open, string releasing position, a body attached to the head and including a trigger and latch mechanism for communicating the trigger with the sear mechanism and responsive to movement of the trigger to release the sear mechanism from the closed position to the open position, the improvement comprising:
   a. a pair of elongate sears movably mounted in the head and each having an inner end and an outer end, the outer end including a string receptive notch for engaging and retaining a bow string;
   b. an elongate latch pin axially movable between an extended position and a retracted position in response to movement of the trigger, the pin adapted for engaging said inner end of one of said sears when the pin is in the extended position, for locking the sear in a string retaining position, whereby the movement of the latch pin from the extended position to the retracted position permits the inner end of the sear to ride on the pin for pivoting the said one sear from the closed, string retaining position to the open, string releasing position; and
   c. a floating bearing between and in abutting engagement with both of said elongate sears and in substantial alignment with the pivot points thereof, whereby the other of said sears is maintained in the closed, string retaining position when said one sear is locked in the closed, string retaining position by said latch pin, and said other elongate sear is pivoted to the open, string releasing position when said latch pin is retracted.

5,307,789
MULTI-PURPOSE GAS HEATED COOKING APPARATUS
Liva M. Newby, 3807 Springbloom Dr., Portsmouth, Va. 23703
Filed Apr. 26, 1993, Ser. No. 51,837
Int. Cl.[5] F24C 1/16
U.S. Cl. 126—9 R **4 Claims**



1. A multi-purpose cooking apparatus comprising:
a first frame member, said first frame member being generally U-shaped to define a pair of legs and a cross-bar extending orthogonally between said legs,
a second frame member, said second frame member being generally U-shaped to define a pair of legs and a cross-bar extending orthogonally between said legs,
said first and second frame members being spaced apart to define a framework defining a cooking space between said first and second U-shaped frame members with the corresponding cross bars thereof being parallel to each other and above said cooking space, and with the corresponding legs thereof being parallel to each other on either side of said cooking space, respectively,
a first cross-piece member extending orthogonally between said first and second frame members and being connected between one pair of opposed legs thereof,
a second cross-piece member extending orthogonally between said first and second frame members and being connected between another pair of opposed legs thereof, said first and second cross-piece members defining support means for a shelf adapted to extend between said first and second frame members above said cooking space,
first and second spaced truss members positioned at an angle to said cross-bar of said first frame member so as to extend above said cooking space,
third and fourth spaced truss members positioned at an angle to said cross-bar of said second frame member so as to extend above said cooking space,
said first, second, third and fourth truss members being connected to a top bar extending parallel to said cross-bar of said first frame member and to said cross-bar of said second frame member such that said top bar is supported between said first and second frame members above said cross-bars thereof and said cooking space,
and hook means on said top bar to support a cooking utensil extending downwardly from said top bar within said framework and above said cooking space.

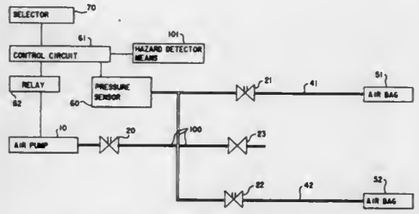
5,307,790
BRACELET RETRACTOR ASSEMBLY
Donny M. Byrne, Conroe, Tex., assignor to Surigcal Innovations I, L.P., Conroe, Tex.
Filed Sep. 11, 1992, Ser. No. 944,097
Int. Cl.[5] A61B 17/02
U.S. Cl. 128—20 **13 Claims**



1. A retractor instrument comprising:
a first tissue holding means for grasping an edge of a surgical incision;
a second tissue holding means for grasping another edge of the surgical incision;
a flexible steel elongated band extending from said first tissue holding means to said second tissue holding means, said band having a generally circular configuration, said first tissue holding means comprising a first rake member having a plurality of prongs extending therefrom, said first rake member being pivotally connected to an end of said band such that said first rake member longitudinally extends outwardly and generally parallel to the longitudinal axis of said band, said second tissue holding means comprising a second rake member having a plurality of prongs extending therefrom, said a second rake member being pivotally connected to another end of said band such that said second rake member longitudinally extends outwardly and generally parallel to the longitudinal axis of said band, each of said plurality of prongs of said first and second rake members having a sharp tissue-engaging end; and
adjustment means directly connected to said band, said adjustment means for acting on said band so as to vary a distance between said first and second tissue holding means.

5,307,791
AIR MASSAGING DEVICE WITH A PRECISE PRESSURE CONTROL
Masaharu Senoue, Yokkaichi, and Harubiko Naruse, Hikone, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 1, 1992, Ser. No. 890,828
Claims priority, application Japan, May 30, 1991, 3-127424; Aug. 27, 1991, 3-214067
Int. Cl.[5] A61H 1/00
U.S. Cl. 601—9 **27 Claims**

10. An Air massaging device, comprising:
a plurality of inflatable air bags adapted to be laid against a portion of the human body;
air pump means for generating a pressurized air;
a plurality of three-way distributor valves each connected between said air pump means and a respective one of said individual air bags, each of said distributor valves being constructed to switch between an open position of feeding the pressurized air from said air pump means to the respective air bag and a closed position of allowing the pressurized air to be discharged from the respective air bag to the atmosphere, in order to repeat inflation and deflation of the respective air bag;
a single pressure sensor disposed upstream of said distributor valves to monitor a pressure level developed on a downstream side of said air pump means;
selector means for entering a desired target pressure level to which said air bags are intended to be inflated; and
control means which includes:
(a) for at least one initial inflating cycle,
(1) means for activating said air pump means for a predetermined standard time period with a first of said distributor valves in the open position and the other of said distributor valves kept in the closed position for feeding the pressurized air to the air bag respective to said first of said distributor valves,
(2) means for maintaining the first of said distributor valves in said open position for a predetermined first open time interval after the elapse of said standard time period so as to keep the respective air bag inflated; and



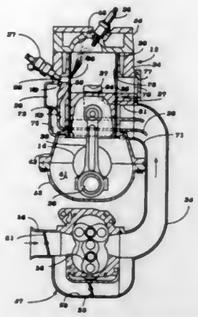
(3) means for reading a first pressure level monitored by said pressure sensor within said first open time interval; and
(b) for at least one subsequent inflating cycle,
(1) means for activating said air pump means for a varying inflation time period which is defined as a function of (a) the time period for activating said air pump means in the immediately previous inflating cycle, (b) said target pressure level, and (c) the pressure level read during the immediately previous inflating cycle;
(2) means for maintaining said first distributor valve in said open position for a second predetermined open time interval after the elapse of said varying inflation time period so as to keep the respective air bag inflated; and
(3) means for reading a second pressure level monitored by said pressure sensor within said second open time interval.

5,307,792
TWO CYCLE ENGINE PROVIDED WITH A SCAVENGING PUMP
Masanori Takahashi, and Masahiko Katoh, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 21, 1992, Ser. No. 871,902
Claims priority, application Japan, Apr. 22, 1991, 3-116594
Int. Cl.[5] F02B 75/02
U.S. Cl. 123—65 A **34 Claims**

1. A scavenge system for a two cycle internal combustion engine comprising a cylinder having a bore in which a piston reciprocates, a first scavenge port formed in said cylinder for admitting a charge into said bore, a second scavenge port formed in said cylinder for admitting a charge into said bore, a first scavenge manifold extending at least in part around said cylinder bore, a second scavenge manifold extending at least in part around said cylinder bore, a first scavenge riser passage extending from said first scavenge manifold to only said first

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scavenge port, a second riser scavenge passage extending from said second scavenge manifold to only said second scavenge



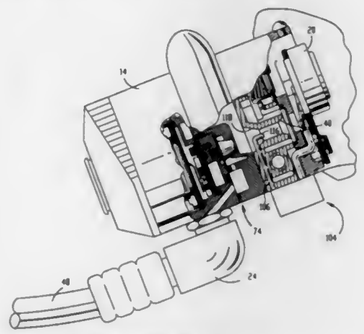
port, and a source of air communicating with said first and said second scavenge manifolds.

5,307,793

MICROPHONE SIGNAL ATTENUATING APPARATUS FOR OXYGEN MASKS

Gary A. Sinclair, Fountain Valley; Charles L. Vice, Orange, both of Calif.; Michael Brumley, Shawnee, and Tom McDonald, Overland Park, both of Kans., assignors to Puritan-Bennett Corporation, Overland Park, Kans.

Filed Jun. 29, 1992, Ser. No. 906,234
Int. Cl.[5] A62B *18/08*
U.S. Cl. 128—201.19 **8 Claims**



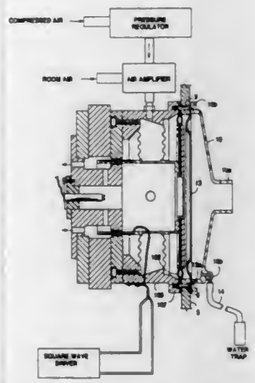
1. A breathing mask comprising:
a mask body configured for placement on a wearer's face and including structure defining an internal chamber in communication with the wearer's breathing passages;
means for delivering a breathable gas to said chamber and for exhausting gas therefrom;
a microphone coupled with said body for receiving sounds and for producing audio signals representative of said sounds, said microphone being subject to producing audio signals representative of sounds generated during inhalation by a wearer of the mask; and
attenuation means for attenuating the production of said audio signals representative of said sounds generating during inhalation;
said attenuation means including cover means for blocking the reception of sounds by said microphone, said cover means being shiftable between an open position allowing reception of sounds by said microphone and a closed position blocking reception sounds and biasing means for biasing said cover means toward said open position, there being means for shifting said cover means to said closed position during delivery of breathable gas to said chamber thereby attenuating the production of said audio signals representative of said sounds generated during inhalation.

5,307,794

OSCILLATING VENTILATOR APPARATUS AND METHOD AND PATIENT ISOLATION APPARATUS

L. Thomas Rauterkus, and Samuel B. Cowan, both of Yorba Linda, Calif., assignors to Sensormedics Corporation, Yorba Linda, Calif.

Filed Apr. 1, 1992, Ser. No. 857,604
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.18 **13 Claims**



6. A patient isolation apparatus for use with an oscillating ventilator having a diaphragmatically sealed piston mounted within a housing having an open end, comprising:
a patient isolation connection unit having a first opening with a peripheral rim wherein said peripheral rim of said first opening is abuttable to the periphery of said open end of s id ventilator housing, and having a second opening for connection with the airway of a patient;
a flexible, impermeable diaphragm having its periphery sealably attached to said peripheral rim of said first opening of said patient isolation connection unit; and
means for removably securing said patient isolation connection unit and attached diaphragm to said open end of said ventilator housing such that said diaphragm is disposed in adjacent relationship to the face of said diaphragmatically sealed piston face.

5,307,795

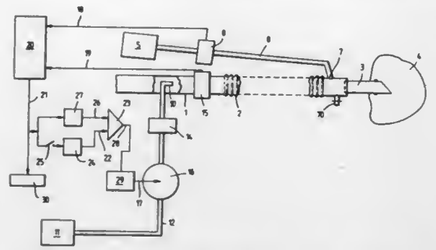
MEDICAL VENTILATORS

James G. Whitwam, London, and Mihir K. Chakrabarti, Greenford, both of England, assignors to Caduceus Limited, London, England

PCT No. PCT/GB90/00870, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO90/14852, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 5, 1990, Ser. No. 778,131
Claims priority, application United Kingdom, Jun. 7, 1989, 8913085
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.25 **10 Claims**

1. A method of operating a medical ventilator to generate a variable pressure in the airways of a patient, with respiratory fresh gas being continuously delivered during an expiration phase of each breathing cycle, comprising the steps of:

initially setting the pressure to obtain a desired value of the volume of gas ventilating the lungs of the patient, which value is to be controlled;
measuring the total volume of expired gas flowing in the ventilator away from the patient during the expiration phase;
measuring the volume of respiratory fresh gas delivered by the ventilator during the expiration phase;
subtracting the measured volume of respiratory fresh gas



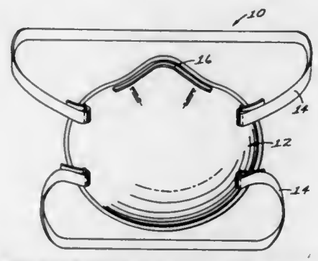
from the measured total volume of expired gas to calculate the volume of gas expelled from the lungs of the patient;
detecting in the calculated value of the volume of gas ventilating the lungs of the patient any change from the desired value; and
adjusting the pressure generated by the ventilator in response to the change in the value of the volume of gas ventilating the lungs of the patient so as to maintain the volume of gas ventilating the lungs of the patient at the desired value.

5,307,796

METHODS OF FORMING FIBROUS FILTRATION FACE MASKS

Joseph P. Kronzer, St. Paul; Roger J. Stumo, Coon Rapids, both of Minn.; James F. Dyrud, Stanton Township, St. Croix County, Wis., and Harvey J. Berg, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 20, 1990, Ser. No. 632,964
Int. Cl.[5] A62B *7/10*
U.S. Cl. 128—206.16 **24 Claims**



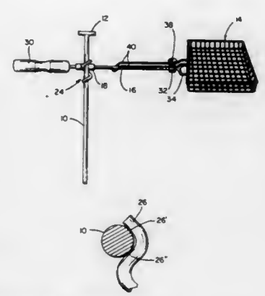
1. A method of forming a non-woven fibrous shaping layer for a face mask, which comprises:
(a) heating a non-woven web of fibrous material that contains at least about 40 wt. % thermally bonding fibers based on the weight of non-woven fibrous material, at least about 10 wt. % of the non-woven fibrous material being bicomponent fibers, to a temperature at which the thermally bonding fibers, including at least one component of the bicomponent fibers are softened; and then
(b) molding the heated non-woven web of fibrous material, while the thermally bonding fibers and the at least one component of the bicomponent fibers are still soft, in a mold having molding members that are at a temperature below the softening temperatures of the thermally bonding fibers including all components of the bicomponent fibers.

5,307,797

PORTABLE GRILL

Klaus Kleefeld, Mt. Tom Rd., RD 2; Box 554, Pawling, N.Y. 12564

Filed Nov. 19, 1991, Ser. No. 794,876
Int. Cl.[5] F24B *3/00*
U.S. Cl. 126—30 **1 Claim**



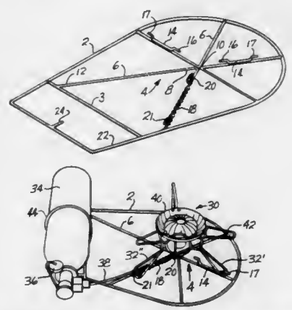
1. A portable grill comprising:
a post for vertical mounting;
a longitudinally-extending arm for generally horizontal disposition to support at a first end a cooking utensil over a source of heat and having a low heat conductivity handle at a second end;
a sleeve for slideably and rotatably receiving said arm; and,
hook means secured to said sleeve for mounting said arm on said post for swinging and vertical adjustment relative to said post, said hook means including an upper and lower hook having a radius of bend less than that of said post.

5,307,798

PAD FOR PORTABLE STOVE

Ben J. A. Overmars, Sr., 5323 Hyada Blvd. NE., Tacoma, Wash. 98422

Filed Jun. 7, 1993, Ser. No. 71,954
Int. Cl.[5] F24C *3/08*
U.S. Cl. 126—40 **12 Claims**



1. An essentially planar stove pad offering a stable support surface for a portable stove which comprises:
a frame:
an spider means enclosed within the frame, said spider means

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having a plurality of spaced apart legs, said legs having inner ends originating from a generally central location within the frame and outer ends attached to the frame;

at least one upstanding cleat attached to one of said legs to engage and provide a retaining means for a stove; and

a securing means associated with another of said legs, said securing means having at least one upturned end to engage a stove and force the stove against the at least one cleat in order to firmly hold the stove in position on the pad.

5,307,799

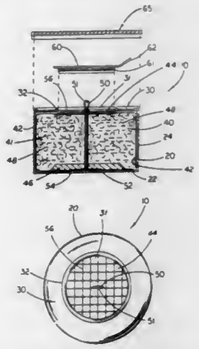
PORTABLE COOKING CANISTER

Leonard J. Scarnato, 12 Mabro Dr., Denville, N.J. 07834, and Benjamin Levinson, 7400 Radice Ct., #303, Lauderhill, Fla. 33319

Continuation-in-part of Ser. No. 836,124, Feb. 14, 1992, Pat. No. 5,193,521. This application Mar. 9, 1993, Ser. No. 28,300

Int. Cl.[5] F24C *5/04*

U.S. Cl. 126—45 **7 Claims**



1. A portable cooking canister comprising:

a container including a base, a side wall structure and a top wall in surrounding relation to an interior chamber, said top wall including a central opening therethrough communicating with and exposing said interior chamber,

fuel contained within said interior chamber and including an isoparaffin mixture and diethylene glycol,

fuel stabilizing means within said interior chamber for holding and regulating movement of the fuel contained therein so as to prevent spilling or leakage of said fuel through said opening, and including a fibrous material having a burn temperature above 675° F., said fibrous material disposed in filling relation throughout said interior chamber forming a plurality of pockets throughout and having an upper surface exposed at said opening, said diethylene glycol clinging to said fibrous material within said pockets to produce a stabilized gel-like mass,

ignitor means for igniting said fuel and including a cord extending upwardly from said fibrous material through said opening to an exposed portion thereof, and being structured and disposed to draw said isoparaffin mixture by capillary action from a bottom of said interior chamber to said exposed portion for initial igniting thereof and subsequent igniting of said diethylene glycol on said upper exposed surface of said fibrous material, and

means to maintain said fibrous material within said interior chamber.

5,307,800

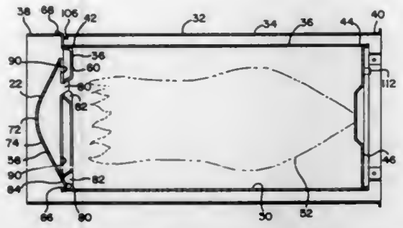
AFTERBURNER FOR A FUEL-BURNING HEATER AND METHOD OF CONSTRUCTION

Joseph B. Lee, Jr., Bowling Green, Ky., assignor to DESA International, Inc., Bowling Green, Ky.

Filed Jul. 21, 1992, Ser. No. 917,774

Int. Cl.[5] F24H *3/02;* **F23D** *14/12*

U.S. Cl. 126—110 B **33 Claims**



1. An afterburner for a fuel-burning heater having a combustion chamber within which fuel is burned and wherein the combustion chamber includes a discharge through which the products of combustion exit the combustion chamber, said afterburner comprising:

a ring portion generally perpendicular to the movement of combustion products and securable to the remainder of the heater for maintaining the afterburner adjacent the discharge of the combustion chamber and having a central opening;

a nose cone portion attached to first inner edge sections of the ring portion so as to be positioned substantially in registry with the central opening thereof and including peripheral edge sections;

the ring portion having second inner edge sections adjacent the central opening which are spaced longitudinally from the peripheral edge portions of the nose cone portion so that the spacings provided between the second inner edge sections and the peripheral edge portions of the nose cone portion provide passage ways through which products of combustion exit the combustion chamber; and

the ring portion and the nose cone portion are constructed as a unit out of a single piece of material.

28. A method of making an afterburner for the combustion chamber of a fuel-burning heater wherein the afterburner is to include a ring portion securable to the remainder of the heater and a nose cone portion and wherein the ring portion is to include a central opening and inner edge sections adjacent the central opening and the nose cone portion is to include peripheral edge portions which are spaced from the inner edge sections of the ring portion, the method including the steps of:

providing a blank of sheet metal;

forming the blank in a first press operation to shape the ring portion and the nose of the nose cone portion;

lancing the blank to sever the inner edge sections of the ring portion from the remainder of the blank along preselected paths so that the peripheral edge portions of the nose cone portion are disposed on the side of each preselected path opposite the corresponding inner edge section;

forming the blank in a second press operation so that the peripheral edge portions of the nose cone portion are moved in a direction having a component oriented substantially normal to the radial plane of the ring portion to space the peripheral edge portions of the nose cone portion from the inner edge sections.

5,307,801

ZERO CLEARANCE FIREPLACE

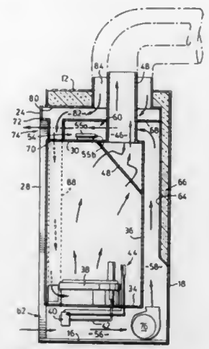
Wolfgang Schroeter, Midhurst, and Clifford Lilley, Anten Mills, both of Canada, assignors to Wolf Steel Ltd., Barrie, Canada

Filed Jul. 30, 1992, Ser. No. 921,774

Claims priority, application Canada, Jul. 8, 1992, 2073411

Int. Cl.[5] F23L *1/00*

U.S. Cl. 126—515 **18 Claims**



1. A fireplace comprising:

(a) a firebox having a front, a bottom panel, a top panel, two side panels, a rear panel and a flue;

(b) an outer casing spaced from and surrounding said firebox;

(c) combustion air feed means positioned at a point above said bottom of said firebox adapted for connection to first conduit means which is in communication with a source external to the room in which the fireplace is situated for supplying combustion air to said fireplace;

(d) combustion air entry port means located in at least one of said side panels near said bottom of said firebox for supplying combustion air to the interior of said firebox;

(e) first passage means positioned between said side panels of said firebox and said outer casing and connecting said combustion air feed means and said combustion air entry port means;

(f) connection means positioned on said flue and adapted for connecting said flue to second conduit means in communication with a source external to the room in which the fireplace is situated for exhausting the combustion gas from the fireplace; and,

(g) second passage means positioned between said outer casing and said firebox for circulation of air to be heated along said firebox;

wherein said combustion air travels along said sides of said firebox in said first passage means such that only said air to be heated travels along, and is adjacent to, said rear panel of said firebox.

5,307,802

HIGH EFFICIENCY STEAM GENERATOR

Edward A. Placek, 1769 Warren Rd., Vienna, Ohio 44473

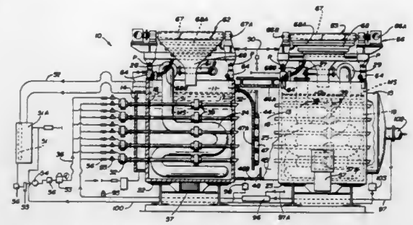
Filed Sep. 13, 1993, Ser. No. 119,660

Int. Cl.[5] F24J *2/44*

U.S. Cl. 126—600 **12 Claims**

1. A steam generator wherein super heated steam is produced by heat transfer between a fluid heating medium and the vaporization liquid comprising in combination;

a pair of spaced interconnected vaporization chambers, a transfer chamber therebetween, tube bundles positioned within each and extending from said vaporization chambers, said fluid heating medium within said vaporization chamber, means for heating said fluid heating medium including a solar lens configuration and heating tubes, means for supplying said vaporizationable liquid to said vaporization tube bundles for flash of vaporization therein, exhaust re-circulation means for said heating tubes including a power vent stack assembly, an exhaust scrubber in communication with said power vent stack,



means for capturing and re-circulating condensate produced from said steam generator, expansion fittings in said vaporization tube bundles within said fluid heating medium, means for atomizing said vaporizationable liquid being injected into said tube bundles, and means for heating said vaporizationable liquid.

5,307,803

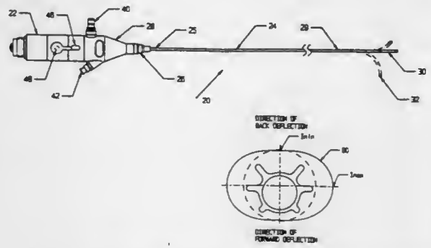
DEFLECTING ENDOSCOPE

David G. Matsuura, Escondido, and Curt Boyll, San Diego, both of Calif., assignors to Intramed Laboratories, San Diego, Calif.

Filed Mar. 4, 1992, Ser. No. 845,630

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **12 Claims**



1. A flexible shaft assembly for use in a medical endoscope, including:

an elongate flexible member having proximal and distal ends and a substantially continuous cross-section along its length, said flexible member comprising a peripheral wall defining a hollow lumen extending from said proximal end to said distal end;

a plurality of longitudinal fins, each projecting radially from said wall to a free end, said fins extending along the length of said member and being dimensioned to establish a nonuniform moment of inertia profile around said member defining at least one preferred bending plane; and

a pull wire extending from said member proximal end to said distal end for deflecting said member in said preferred bending plane.

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5,307,804
ENDOSCOPE HAVING A CAMERA COUPLED THERETO
Ludwig Bonnet, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany
Filed Jan. 24, 1992, Ser. No. 825,210
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1991, 4105326
Int. Cl.[5] A61B *1/06*
U.S. Cl. 126—7 **9 Claims**



2. An endoscope having a longitudinal axis and a proximal end with an objective of a camera releasably coupled thereto, wherein the objective is coupled to said proximal end so as to be capable of free rotation thereon about an axis of rotation, the center of gravity of those camera components which are connected to the endoscope being offset with respect to said axis of rotation such that gravity exclusively maintains the angular orientation of the objective by pendulum action when the endoscope is rotated about said longitudinal axis, the endoscope having two downwardly angled stabilizers located on a mounting of the objective for offsetting said center of gravity.

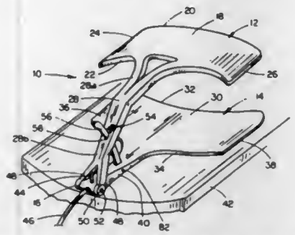
5,307,805
SURGICAL RETRACTOR ASSEMBLY
Donny M. Byrne, Conroe, Tex., assignor to Surgical Innovations I, L.P., Conroe, Tex.
Filed Jul. 10, 1992, Ser. No. 911,482
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **19 Claims**



1. A retractor instrument assembly comprising:
an elongated rod having a handle at one end;
a first blade extending outwardly from an end of said elongated rod opposite said handle, said first blade having a first lengthwise edge and a second lengthwise edge;
a second blade foldably connected by a resilient member to said first lengthwise edge of said first blade; and
a third blade foldably connected by another resilient member to a second lengthwise edge of said first blade, said second and third blades movable between a first position in flat planar alignment with said first blade to a second position forming a triangular cross-sectional configuration with said first blade.

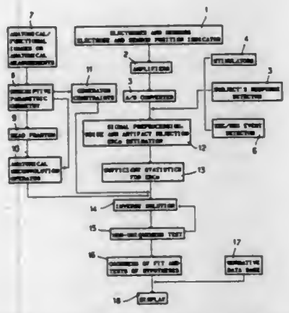
5,307,806
NMR PELVIC COIL
Randall W. Jones, Elkhorn, Nebr., assignor to Board of Regents of Univ. of Nebraska, Lincoln, Nebr.
Filed Aug. 10, 1993, Ser. No. 105,492
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.5 **5 Claims**

1. A pelvic coil, comprising:
an anterior housing supporting a plurality of NMR coils, having a forward edge, a rearward edge, opposing side edges, upper and lower surfaces, and a support arm projecting rearwardly from the rearward edge;
a posterior housing supporting a plurality of NMR coils having a forward edge, rearward edge, opposing side edges, upper and lower surfaces, and a rearwardly projecting base arm, pivotally connected at a rearward end of the base arm to a rearward end of the support arm, for pivotal movement of the anterior and posterior housings towards and away from one another;
said support arm including a forward, generally horizontal portion extending along a generally horizontal central axis of said anterior housing, and an angled portion sloped



downwardly from the forward portion to the pivotal connection with said base arm, such that a central axis through said posterior housing is substantially parallel to the anterior housing central axis when the anterior and posterior housings are pivoted to a working position; and
means on said base arm and support arm for selectively locking the pivotal position of said anterior housing relative to the posterior housing.

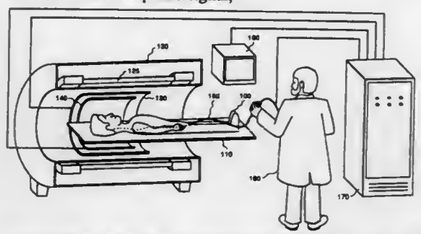
5,307,807
METHOD AND SYSTEM FOR THREE DIMENSIONAL TOMOGRAPHY OF ACTIVITY AND CONNECTIVITY OF BRAIN AND HEART ELECTROMAGNETIC WAVES GENERATORS
Pedro A. Valdès Sosa, La Lisa; Jorge J. Riera Diaz, Havana; Jorge B. Bayard, Havana; Rolando J. Biscay Lirio, Havana; Sara L. Gonzalez Andino; Rolando G. de Peralta Menéndez, both of La Lisa, and Roberto D. Pascual Marqui, Havana, all of Cuba, assignors to Centro de Neurociencias de Cuba, Cuba
Filed Mar. 11, 1992, Ser. No. 849,594
Claims priority, application Cuba, Mar. 15, 1991, 44/91
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653.1 **35 Claims**



1. A method for three dimensional tomography of activity and connectivity of brain electromagnetic waves generators, said method including the steps of:
a) positioning a set of electrodes and magnetic sensors to detect and record brain electromagnetic signals representing physiological activity in the form of an electroencephalogram (EEG) and a magnetoencephalogram (MEG), and measuring exact positions of the electrodes and sensors with respect to a reference coordinate system determined by certain anatomical landmarks of a head of an experimental subject;
b) amplifying the electromagnetic signals detected at each electrode and sensor by connecting an amplifier to each electrode and sensor;
c) obtaining on-line digital spatio-temporal signals, consisting of said EEG and MEG, by connecting analog-digital converters to each amplifier, and digitizing all data as it is gathered;
d) determining a parametric description for an anatomy of the experimental subject's head to obtain a descriptive parametric geometry;
e) using said descriptive parametric geometry for constructing a head phantom with volume conductor properties of the experimental subject's head;
f) performing EEG and MEG measurements on said head phantom due to known current dipoles located in a corresponding neural tissue volume, for determining a linear operator which transforms original EEG and MEG measurements into equivalent infinite homogeneous medium measurements (anatomical deconvolution);
g) using said descriptive parametric geometry for determining anatomical and functional constraints for localizations, orientations, activities, and connectivities of the brain electromagnetic waves generators (generator constraints);
h) digitally pre-processing the EEG and MEG for artifact and noise elimination, and for separation of EEG and MEG samples related to said fiducial markers, for obtaining event related components (ERCs);
i) statistically analyzing said ERCs for determining the most adequate numerical description of spatio-temporal properties in terms of sufficient statistics;
j) computing activities and connectivities of the ERCs generators, based on a static solution to an inverse electromagnetic problem, under said generator constraints, using sufficient statistics for the ERCs transformed to an infinite homogeneous medium by means of said anatomical deconvolution;
k) in case said generator constraints do not allow a unique solution to the inverse problem, decreasing a number of ERCs generators sufficiently to allow for proper identifiability of the inverse problem;
l) statistically evaluating a goodness of fit of the static solution, taking into account an existence of colored spatial and temporal noise, and including statistical hypotheses for testing an absence of activity and connectivity of the ERCs generators; and
m) visually displaying three dimensional and two dimensional images corresponding to the localizations, orientations, activities, and connectivities of the ERCs generators.

5,307,808
TRACKING SYSTEM AND PULSE SEQUENCES TO MONITOR THE POSITION OF A DEVICE USING MAGNETIC RESONANCE
Charles L. Dumoulin, Ballston Lake, N.Y.; Steven P. Souza, Williamstown, Mass., and Robert D. Darrow, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Apr. 1, 1992, Ser. No. 861,718
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **15 Claims**

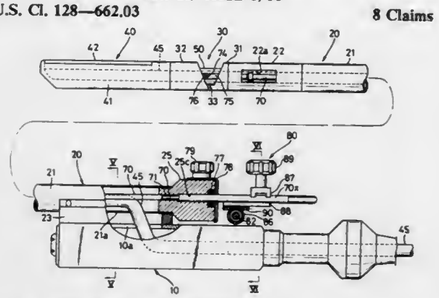
1. A real-time magnetic resonance (MR) tracking system comprising:
a) an invasive device adapted to be inserted into a subject;
b) static magnetic field means for applying a homogeneous magnetic field having substantially uniform amplitude over the subject;
c) radiofrequency (rf) transmitter means for transmitting rf energy of a selected duration, amplitude and frequency into the subject to cause nutation of a selected ensemble of spins in the subject;
d) gradient means adapted for varying the amplitude of the magnetic field in at least one spatial dimension over the subject over time causing the selected ensemble of spins to emit an MR response signal;
e) detection means attached to the invasive device adapted for detecting the MR response signal from the selected ensemble of spins within the subject;
f) calculation means responsive to the detection means adapted for calculating a location of the invasive from the detected MR response signal;



g) controller means coupled to the rf transmitter means, the detection means, the calculation means and the gradient means adapted for activating the rf transmitter means, the detection means, the calculation means and the gradient means according to a desired MR tracking sequence repeatedly for the purpose of tracking the invasive device in real-time; and
h) display means responsive to the calculation means adapted for displaying the location of the invasive to an operator.

5,307,809
Patent Not Issued For This Number

5,307,810
DIAGNOSIS DEVICE WITH FUNCTION FOR ANGLING TIP PROBE
Kunio Odanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan
Filed Nov. 19, 1992, Ser. No. 978,759
Claims priority, application Japan, Dec. 6, 1991, 3-348514
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.03 **8 Claims**

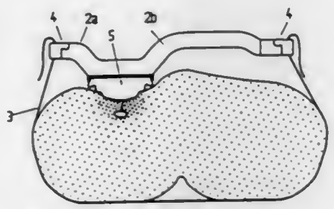


1. A diagnosis device comprising:
(a) a body;
(b) a hollow insertion portion extending from said body;
(c) an angle portion provided at a front end of said insertion portion, said angle portion comprising a pair of front and rear segments of a tubular shape which are pivotally connected together so that said front segment is rotatable relative to said rear segment about a rotation axis generally perpendicular to longitudinal axes of said pair of segments, said rear segment being connected to the front end of said insertion portions, and an outer periphery of at

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least said front segment of said angle portion being an exterior surface of said diagnosis device;
(d) a rigid probe mounted on a front end of said angle portion, said front segment being connected to a rear end portion of said probe;
(e) manipulation means mounted on said body;
(f) an operating member received in said insertion portion and extending along a length of said insertion portion, a rear end of said operating member being connected to said manipulation means, and a front end of said operating member being substantially connected to said front segment of said angle portion; and
(g) a soft protective tube received in said pair of segments at said angle portion, a portion of said operating member being disposed between said protective tube and said rear segment of said angle portion.

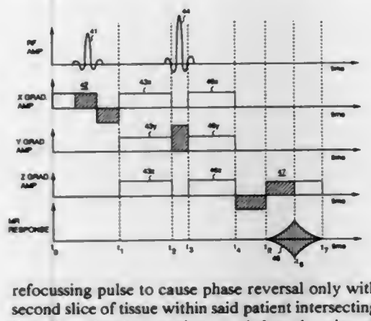
5,307,811
FEMORAL COMPRESSION DEVICE
Ulrich Sigwart, London, England, and Dan Akerfeldt, Uppsala, Sweden, assignors to Radi Medical Systems AB, Uppsala, Sweden
Filed Jun. 10, 1991, Ser. No. 712,413
Claims priority, application Sweden, Jun. 11, 1990, 9002077; Oct. 12, 1990, 9003271
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—677 **25 Claims**



1. Femoral compression device comprising:
(a) a pressurizing means for compressive bearing at a puncture site at a femoral artery of a patient, and for applying a pressure on the puncture site, having a transparent portion to permit viewing of the puncture site;
(b) a belt adapted to be fixed around the patient's body; and
(c) a base plate supporting the pressurizing means, including a top portion having a plurality of extensions, including first and second extensions extending in opposite directions, disposed at an elevated position in relation to the top portion of the base plate, and provided with locking means in the ends thereof for insertion of an end of the belt; a bottom portion connected to the pressurizing means; the base plate having a transparent portion to permit viewing of the puncture site.

5,307,812
HEAT SURGERY SYSTEM MONITORED BY REAL-TIME MAGNETIC RESONANCE PROFILING
Christopher J. Hardy, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 26, 1993, Ser. No. 38,204
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **7 Claims**

1. A magnetic resonance (MR) pulsed heat system for allowing an operator to selectively heat tissue within a patient comprising:
a) pulsed heat-producing means adapted for concentrating energy at an application point;
b) positioning means for positioning the application point of the pulsed heat-producing means in a specific tissue within the patient so as to create a heated region within the specified tissue;
c) operator responsive control means for enabling said operator to control the positioning means;
d) an MR imaging means comprising:
1. a radiofrequency (RF) transmitter for transmitting an RF sine(x)/x "sinc" selection pulse and a 180° RF sinc refocussing pulse into said patient;
2. a gradient means for
i. creating a slice selection magnetic field gradient along an "X" direction simultaneously with application of the RF sinc selection pulse to cause excitation of a first slice of tissue within said patient,
ii. applying a first set of diffusion gradients in the "X" direction, and in the "Y" and "Z" directions orthogonal to the "X" direction after selection of the first slice and before application of the 180° RF sinc refocussing pulse to cause a phase evolution of a plurality of nuclear spins in said patient;
iii. creating a second slice selection magnetic field gradient simultaneously with application of the 180° RF sinc

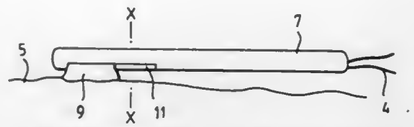


refocussing pulse to cause phase reversal only within a second slice of tissue within said patient intersecting the first slice, thereby creating a rod-shaped region of excited nuclear spins with reversed phase,
iv. applying a second set of diffusion gradients in the "X", "Y" and "Z" directions after application of the 180° RF since refocussing pulse to cause a second phase evolution of the nuclear spins, thereby encoding diffusion of the nuclear spins in the excitation region, and
v. applying a readout gradient to said rod-shaped excitation region along the length of the excitation region being the "Z" direction for which a temperature-sensitive profile desired;
3. receiver means for receiving an MR response signal from the rod-shaped excitation region; and
4. computation means for computing a temperature vs. position profile along the readout gradient from the MR response signal received from the receiver means, thereby creating real-time temperature-sensitive MR images of the heated region; and
e) display means for displaying the temperature-sensitive images to said operator.

5,307,813
IN VIVO IMAGING MICROSCOPIC INTERVAL REGIONS OF A PATIENT'S BODY
Ian R. Young, Nr. Marlborough, England, assignor to Picker International, Inc., Cleveland, Ohio
Filed Jul. 31, 1992, Ser. No. 922,235
Claims priority, application United Kingdom, Aug. 23, 1991, 9118229
Int. Cl.[5] A61B *5/055, 6/00*
U.S. Cl. 128—653.4 **15 Claims**

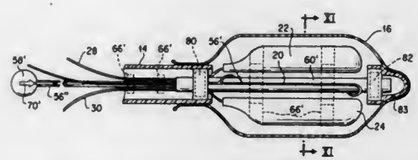
1. A method of in vivo imaging of a microscopic internal region of a patient's body comprising:

forming on a surface of said region a layer of material conforming to said surface, wherein said layer is formed so as



to have a local thickness, the profile of said layer being a replica of said surface; and
producing a image of said layer.

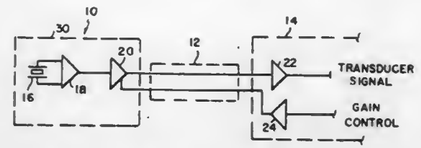
5,307,814
EXTERNALLY MOVEABLE INTRACAVITY PROBE FOR MRI IMAGING AND SPECTROSCOPY
Herbert Y. Kressel, Wynnesal; Edward J. Rhinehart, Monroeville; Mitchell Schnall, Lansdowne; Robert E. Lenkinski, Drexel Hill, all of Pa., and Yutaka Imai, Tokyo, Japan, assignors to Medrad, Inc., Pittsburgh and The Trustees of the University of Pennsylvania, Philadelphia, both of Pa.
Filed Sep. 17, 1991, Ser. No. 760,463
Int. Cl.[5] A61B *5/055;* **A61M** *25/10*
U.S. Cl. 128—653.5 **27 Claims**



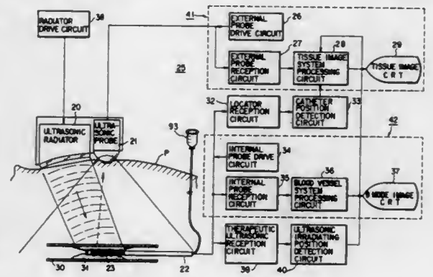
1. An insertable intracavity probe for use in magnetic resonance imaging with an interface network of a region of interest within a cavity of a patient comprising an elongate shaft having a proximal end and a distal end, a handle on the proximal end of the shaft, and a balloon structure on the distal end of the shaft, the balloon structure including an outer balloon, a pick-up coil in the outer balloon, the coil having an electrical lead extending through the shaft for connecting the coil to the interface network, first and second inflatable inner balloons within the outer balloon, the inner balloons being located on first and second sides of the coil, respectively, sandwiching the coil therebetween, and respective inflation tubes for inflating the inner balloons extending through the shaft.

5,307,815
ULTRASONIC TRANSDUCER WITH INTEGRATED VARIABLE GAIN AMPLIFIER
Ronald D. Gatzke, Lexington, and Michael P. Anthony, Chelmsford, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 4, 1992, Ser. No. 985,722
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 **19 Claims**

1. A transducer apparatus for use with an ultrasonic imaging system, the transducer apparatus comprising:
a cable having a first end for coupling to said ultrasonic imaging system, and a second end;
a transducer, located at the second end of said cable, for converting ultrasonic energy into electronic signals for transmission through said cable to said ultrasonic imaging system; and
a variable gain amplifier, located at the second end of said cable, having an input coupled to said transducer and an output coupled to the second end of said cable for amplifying said electronic signals at a gain determined by a gain control signal from said imaging system.



5,307,816
THROMBUS RESOLVING TREATMENT APPARATUS
Shinichi Hashimoto, Kawasaki; Shiroh Saitoh, Yokohama; Katsuhiko Fujimoto, Kawasaki, and Satoshi Aida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 21, 1992, Ser. No. 932,952
Claims priority, application Japan, Aug. 21, 1991, 3-209446; Sep. 13, 1991, 3-261387
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.03 **9 Claims**



1. A thrombus resolving treatment apparatus for resolving a thrombus by radiating a therapeutic ultrasonic wave on a thrombus portion located in a blood vessel of a patient's body in which a thrombus resolvent is injected, comprising:
an ultrasonic radiator for radiating a therapeutic ultrasonic wave on said thrombus portion;
an ultrasonic probe for obtaining tomographic image data of an interior of said patient's body;
a first ultrasonic imaging unit for visually displaying the tomographic image data supplied from said ultrasonic probe;
a catheter which is inserted into said blood vessel;
an ultrasonic transducer, mounted on said catheter, for obtaining tomographic image data of an interior of said blood vessel; and
a second ultrasonic imaging unit for visually displaying the tomographic image data supplied from said ultrasonic transducer;
said apparatus further comprising:
calculation means for calculating a value representing an effect of a thrombus resolving treatment on the basis of the tomographic image data supplied from said ultrasonic transducer;
identification means for identifying whether or not said value has reached a predetermined value; and
means for stopping radiation of the therapeutic ultrasonic wave by said ultrasonic radiator when the value calculated by said calculation means has reached said predetermined value.

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5,307,817

BIOTELEMETRY METHOD FOR THE TRANSMISSION OF BIOELECTRIC POTENTIAL DEFFERENCES, AND A DEVICE FOR THE TRANSMISSION OF ECG SIGNALS

Walter Guggenbuhl, Stäfa, and Fritz Grogg, Zürich, both of Switzerland, assignors to MEDESE AG, Zürich, Switzerland

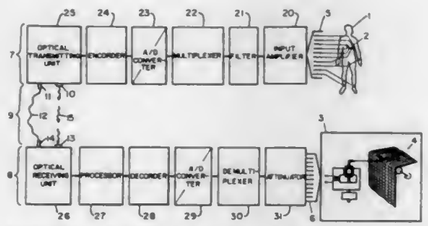
PCT No. PCT/CH90/00014, § 371 Date Oct. 25, 1990, § 102(e) Date Oct. 25, 1990, PCT Pub. No. WO90/08501, PCT Pub. Date Aug. 9, 1990

PCT Filed Jan. 23, 1990, Ser. No. 598,685

Claims priority, application Switzerland, Jan. 27, 1989, 255/89

Int. Cl.[5] A61B *5/0402*

U.S. Cl. 128—696 8 Claims



5. A device for the transmission of bioelectric potential differences occurring between more than two electrodes applied on a patient to an ECG device in an ECG system comprising at least ten ECG electrodes applied on a patient and an ECG device for twelve standard derivations, while two specific ECG electrodes are defined as first and second ECG reference electrodes and the remaining ECG electrodes as ECG signal electrodes, having a transmitting unit, a receiving unit, and at least one optical link in between, the transmitting unit including:

input protection circuits to which one assigned ECG electrode each can be connected,

means for computing the difference between signals from respective input protection circuits, one of said input protection circuits being assigned to an ECG signal electrode and a second one of said input protection circuits being assigned to the first ECG reference electrode so that each signal difference is assigned to an ECG signal electrode, the output of one of said input protection circuits assigned to the second ECG reference electrode is connected with a common ground lead to the means for computing,

a multiplexer for multiplexing the obtained signal differences,

at least one modulatable optotransmitter having a modulation input through which the output of the multiplexer is linked via the serial connection of an analog-to-digital converter, and an encoder, and the receiving unit including:

at least one optoreceiver having an output for the output of the modulation of a received light beam,

a demultiplexer having an input linked to the output of said at least one optoreceiver, said demultiplexer is connected in series to a decoder and a digital-to-analog converter, the outputs of the digital-to-analog converter, each of which the assigned to the signal difference formed in the transmitting unit, are connected to a corresponding input of the ECG device.

5,307,818

WIRELESS ELECTROCARDIOGRAPHIC AND MONITORING SYSTEM AND WIRELESS ELECTRODE ASSEMBLIES FOR SAME

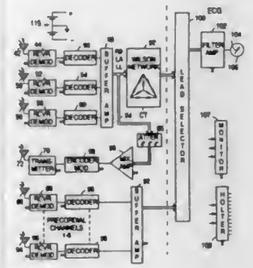
Jacob Segalowitz, 505 S. Beverly Dr., Ste. 1240, Beverly Hills, Calif. 90212

Continuation-in-part of Ser. No. 818,398, Jan. 2, 1992, abandoned, which is a continuation of Ser. No. 473,887, Feb. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 310,660, Feb. 15, 1989, Pat. No. 4,981,141. This application Jul. 7, 1992, Ser. No. 911,561

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] A61B *5/0408*

U.S. Cl. 128—696 72 Claims



1. A wireless electrocardiographic monitoring system, including:

right arm, left arm and left leg dipole electrodes for attachment to right arm, left arm and left leg limbs, respectively of a patient;

right arm heart signal transmitting means mounted on said right arm electrode for radiating a signal corresponding to the heart signal at said right arm electrode;

left arm heart signal transmitting means on said left arm electrode for radiating a signal corresponding to the heart signal at said left arm electrode;

left leg heart signal transmitting means on said left arm electrode for radiating a signal corresponding to the heart signal at said left arm electrode;

a plurality of signal receiving means, one each for receiving and detecting said radiated heart signals from said left arm, right arm and left leg electrodes, respectively, to individually produce a received left arm heart signal, a received right arm heart signal and a received left leg heart signal;

means for combining said individually received left arm, right arm and left leg heart signals to produce a reference potential;

a set of precordial dipole electrodes for attachment to the chest of a patient;

a set of precordial heart signal transmitting means mounted on each of said precordial dipole electrodes in said set, respectively for individually transmitting signals corresponding to the heart signal at respective ones of said precordial electrodes;

a set of precordial heart signal receiving and detecting means, each one associated with a different one of said precordial heart signal transmitting means for individually reproducing the heart signals appearing at each of said precordial electrodes in said set;

signal display means;

means for coupling said detected heart signals e aid right arm, left arm and left leg electrodes and from said precordial electrodes to said signal display means; and

means for providing operating power for all of the foregoing.

5,307,819

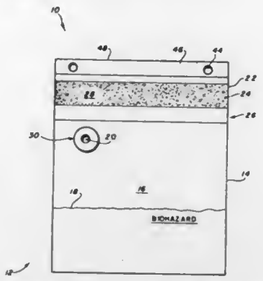
METHOD AND APPARATUS FOR CONTAINING ANATOMICAL MATERIAL PRODUCED BY A PATIENT

Marlane M. Trautmann, 224 McKinley Ave., Pittsburgh, Pa. 15202, and Ansel M. Schwartz, 5514 Claybourne St., Pittsburgh, Pa. 15232, assignors to Marlane M. Trautmann and Ansel M. Schwartz, Pittsburgh, Pa.

Filed Aug. 13, 1992, Ser. No. 929,732

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—767 11 Claims



1. An apparatus for containing anatomical material produced by a patient comprising:

a container having opposing sides and a first portion with a first cavity within which the anatomical material is to be held and an opening through which the anatomical material is provided to the first cavity, said container having a second portion with a second cavity disposed adjacent to the first cavity;

a removable mechanically separable seal separating the first cavity and the second cavity, said seal removable by pulling on the opposing sides of the container; and

an immobilizing material disposed in the second portion, which when the seal is pulled apart and no longer exists between the first cavity and second cavity mixes with the anatomical material and causes it to solidify or gel.

5,307,820

Patent Not Issued For This Number

5,307,821

TOBACCO RAW MATERIAL AND METHOD FOR ITS PRODUCTION

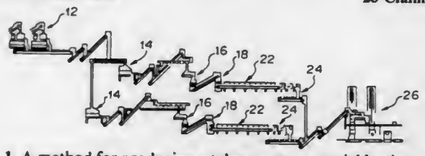
Katsutoshi Misuda, Yokohama; Hitoshi Kijimuta, Ebina; Kouichi Numata, Yokohama; Masaharu Tanaka, Yokohama; Yoshinori Katayama, Yokohama; Iku Tomari, Yokohama, and Toshiro Samejima, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd. and Japan Tobacco Inc., Tokyo, Japan

Filed Apr. 25, 1991, Ser. No. 691,497

Claims priority, application Japan, Apr. 27, 1990, 2-110409; Apr. 27, 1990, 2-110410; Jan. 23, 1991, 3-22887

Int. Cl.[5] A24B *15/10*

U.S. Cl. 131—290 23 Claims



1. A method for producing a tobacco raw material having at least a part of its surface coated with a layer of silica gel, which comprises adding a silica sol to said tobacco raw material and subjecting the silica gel to gelation.

5,307,822

EXPANDING AND DRYING TOBACCO

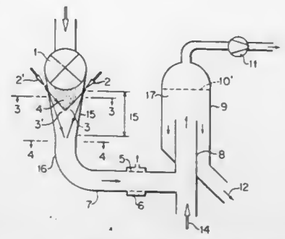
Laszlo Egri, Aeschengraben 16, CH-4061 Basel, Switzerland

Filed Dec. 4, 1992, Ser. No. 986,003

Claims priority, application Switzerland, Dec. 9, 1991, 3608/91

Int. Cl.[5] A24B *3/04*

U.S. Cl. 131—296 14 Claims



1. A process for expanding and drying moist tobacco by means of vapor or hot gas, said process comprising the steps of:

metering said moist tobacco into an interior space which is delimited by at least two flat jets, said flat jets for providing vapor or hot gas which effects expansion of said moist tobacco, said flat jets being directed towards one another at an acute angle;

consequently suddenly taking up and accelerating said expanded tobacco to be treated in a first transport channel in order to generate a flow velocity associated with said expanded tobacco,

substantially reducing said flow velocity at least by the removal of a portion of said vapor, and

subsequently supplying said expanded tobacco to a drying means.

5,307,823

ROD OF SMOKING MATERIAL AND CIGARETTES MADE THEREFROM

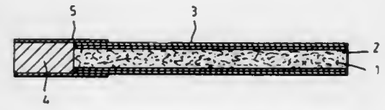
David H. Jones, Leigh-on-Sea, and Jerzy Kijowski, Billericay, both of England, assignors to Rothmans International Services Limited, United Kingdom

Filed Sep. 17, 1992, Ser. No. 945,876

Claims priority, application United Kingdom, Sep. 19, 1991, 9120060

Int. Cl.[5] A24D *1/02*

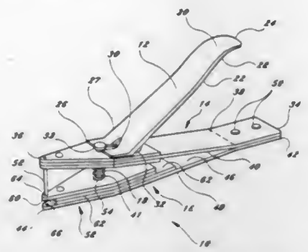
U.S. Cl. 131—331 11 Claims



1. A rod of smoking material having an inner wrapper of sidestream reducing paper and an outer overwrapping cigarette paper, said sidestream reducing paper having a basis weight in the range of 35 g/m^2 to 50 g/m^2, a porosity of between 5 and 20 coresta units, and has a filter content which includes 8% to 15% carbon, 6% to 11% magnesium hydroxide ($Mg(OH)_2$) and 15% to 20% calcium carbonate ($CaCO_3$).

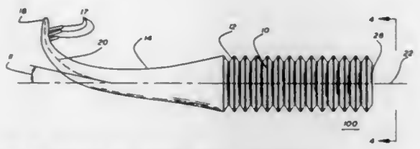
VOL 1162 ISS 1 MY 3 1994 UMI

5,307,824
NAIL PIERCER
Ronald Bannett, 4530 N. Hiatus Rd., Unit #109, Sunrise, Fla. 33351
Filed May 10, 1993, Ser. No. 60,023
Int. Cl.[5] A45D *29/18*
U.S. Cl. 132—75.5 **7 Claims**



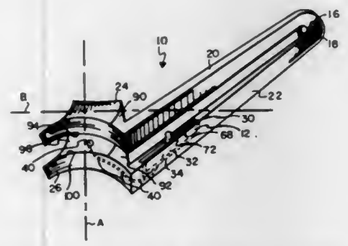
1. An apparatus for piercing a nail comprising:
an upper tine having a proximal and distal end, and an elongated planar and angled body portion disposed therebetween, defining a top and bottom surface, said upper tine further having an aperture defined normal therethrough adjacent said distal end;
a lower tine having a proximal and distal end, and an elongated planar and angled body portion disposed therebetween defining a top and bottom surface, said lower tine attached to said upper tine at said upper and lower tine proximal ends, said upper and lower tine forming a nail receiving chamber at said upper and lower tine distal ends, said lower tine having an aperture defined normal therethrough adjacent said lower tine distal end;
a piercing member rigidly secured to said bottom surface of said upper tine and extending perpendicularly outward therefrom;
means for positioning said nail within said nail receiving chamber, said means for positioning rigidly attached to said lower tine top surface; and
means for reciprocating said upper and lower tines between a first and second position attached to said upper and lower tines respectively.

5,307,825
HAIR GROOMING DEVICE
Solomon Smith, 511 Coachman Manor, Lindenwold, N.J. 08021
Filed Jan. 13, 1993, Ser. No. 3,747
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—200 **21 Claims**



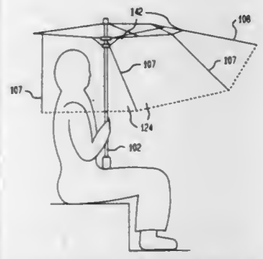
21. A method of grooming hair comprising:
providing a grooming device including a handle portion and an arcuate tapered parting member extending longitudinally from a first end of said handle portion, said handle portion including a reservoir cavity containing styling fluid; said device further including a lumen extending from said reservoir cavity along a longitudinal axis of said parting member and exiting near the end portion of said parting member, said parting member having a plurality of teeth in which at least one tooth is in a plane separate from a plane through the parting member, said teeth extending from said end portion;
inserting said end portion of said parting member into the center region of a tangle, plat or braid, and guiding said end portion in a direction away from the base of the hair; and
applying said styling fluid to the hair through said lumen.

5,307,826
AUTOMATIC MASCARA DISPENSING EYELASH CURLER
Irina Iosilevich, Ft. Lauderdale, Fla., assignor to Ilya Iosilevich, Ft.
Filed Mar. 30, 1992, Ser. No. 860,149
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—218 **23 Claims**



1. An apparatus for applying fluid matter to eyelashes, comprising:
a member having an applicator surface for receiving fluid matter and transferring fluid matter onto an eyelash,
a vessel structurally connected to said member for containing said fluid matter,
a passageway extending from said vessel to said applicator surface,
a second member also having an applicator surface, said second member being attached to said first member in a hinged relationship so that said applicator surfaces meet when said first and second embers are pivoted together,
fluid pressure pump means for pumping said fluid matter from said vessel through said passageway to said applicator surfaces, said fluid pressure pump means being activated by pivoting said first and second members.

5,307,827
UMBRELLA
Joseph F. Haddad, and Joseph R. Haddad, both of 18 Powder Horn Way, Berkeley Heights, N.J. 07922
Filed Jul. 22, 1991, Ser. No. 734,223
Int. Cl.[5] A45B *11/00*
U.S. Cl. 135—20.1 **23 Claims**



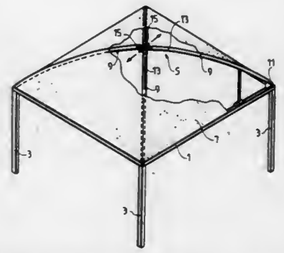
1. An improved umbrella of the type having a shaft, a canopy connected to the shaft and a plurality of ribs on which the canopy is supported, said canopy movable between a closed, middle and fully open position, said middle position having a portion of said canopy in an open position and a portion of said canopy in a folded position, said canopy having a plurality of sectors wherein the umbrella comprises:
at least one extension rib attached to said canopy, said extension rib radially extending from said shaft to an outer extension rib end, said extension rib is fully extended when the canopy is in said middle position and in said fully open position; and
at least one multi-position rib attached to said canopy, said multi-position rib being folded when the canopy is in said middle position and fully extended when the canopy is in said fully open position said multi-position rib having a shaft section and an outer rib section, said shaft section being attached to said shaft and said outer rib section being attached to the canopy; a multi position hinge positions between said shaft section and said outer rib section; in said middle position, said outer rib section is folded toward said shaft section; wherein in said middle position, a sector of said canopy is closed while other sectors of said canopy are extended.

5,307,828
SUPPORT FOOT ASSEMBLY
Donald J. Gardner, and Sue A. Gardner, both of 134 Kohler St., Tonawanda, N.Y. 14150
Filed Jun. 4, 1993, Ser. No. 72,163
Int. Cl.[5] A45B *9/04*
U.S. Cl. 135—82 **20 Claims**



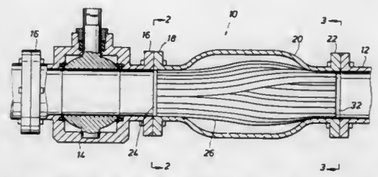
1. A support foot assembly which may be used with an elongated load bearing device such as a cane or crutch, which support foot assembly is capable of adhering to substantially all support surfaces without slipping, including ice, snow, wet floors, wood, and carpet; the support foot assembly comprising:
a mounting structure having a generally planar bottom surface and an upper surface;
securing means for securing an elongated load bearing device to the mounting structure; and
engaging means to engage a support surface, said engaging means including
a plurality of bristle tufts carried by the mounting structure and extending downwardly from the bottom surface, each tuft being formed of a plurality of relatively stiff bristles, and
a plurality of rubber-like fingers carried by the mounting structure and extending downwardly from the bottom surface, the rubber-like fingers being interspersed among the bristle tufts.

5,307,829
ROOF SUPPORT FOR TENT
Pietro Dalo, 10, rue Sault Brûlé 2830 Baillean Armenonville, and Jean Dalo, 1, rue Beaurepaire, 91410 Roinville-sur-Dourdan, both of France
Filed Sep. 17, 1992, Ser. No. 946,876
Claims priority, application France, Sep. 20, 1991, 91 11648
Int. Cl.[5] E04H *15/36*
U.S. Cl. 135—102 **20 Claims**



1. A device for tensioning a canvas (7) for a light shelter, the canvas being in the form of a tent on a structural support (5), comprising:
a frame (1) including anchoring means;
a plurality of inclined bars (9) each having a lower end (11) bearing on said anchoring means and an upper end (13);
supporting posts (3) for maintaining said frame (1) spaced from the ground;
at least two rigid linking element (15) for uniting at least two of said bars (9) at said upper ends (13) thereof; and
spacing means for connecting said rigid linking elements (15) to vary a distance (a) between two of said linking elements (15) separating them horizontally and for moving said upper ends (13), in such a way for generating an upward rotation of each said bar (9) around said lower end (11).

5,307,830
FLOW DISTRIBUTION METHOD AND APPARATUS REDUCING DOWNSTREAM TURBULENCE
Robert H. Welker, Washington, Tex., assignor to Welker Engineering Company, Sugarland, Tex.
Filed May 18, 1993, Ser. No. 63,873
Int. Cl.[5] F16K *47/02*
U.S. Cl. 137—1 **20 Claims**



1. A method of reducing turbulence in a pipeline downstream of a valve or turbulence creating device, the method comprising the steps of:
a) positioning a set of non-parallel, elongate small tubes in the pipeline wherein each of the tubes has an inlet end downstream of the valve or turbulence creating device and an outlet end;
b) locating the inlet ends of less than the set of tubes at a location downstream of the valve or other turbulence creating device so that such tubes intercept fluid flowing

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downstream of the valve or other device wherein such tubes intercept turbulent fluid flow in the region of maximum turbulence;

c) routing such tubes within the pipeline so that the relative cross sectional position of each tube within the pipeline changes between the inlet end and the outlet end; and

d) positioning the remainder of the set of tubes so that the inlet ends and outlet ends distribute the fluid flow across the cross sectional area of the pipeline downstream of the outlet ends of the tubes to provide a cumulative flow through the set of tubes sufficient to match pipeline flow capacity and wherein said tube outlet ends collectively provide fluid flow with reduced turbulence.

5,307,831

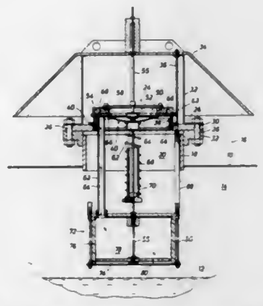
SAFETY RELIEF VALVE FOR PRESSURE VESSELS

Michael D. McNeely, Katy, Tex., assignor to Keystone International Holdings Corp., Houston, Tex.

Continuation-in-part of Ser. No. 906,559, Jun. 29, 1992, abandoned. This application Feb. 26, 1993, Ser. No. 23,554

Int. Cl.[5] F16K *17/196*

U.S. Cl. 137—14 **15 Claims**



13. A method of providing a fluid pressure relief system for a pressure vessel having a nozzle forming a vent and a main valve member seated on said nozzle; said method comprising the following steps:

providing a mechanical force of a predetermined amount against said main valve member to hold said main valve member in seated position against said nozzle under normal operating fluid pressures;

operably connecting a fluid pressure responsive member to said main valve member with one side of said fluid pressure responsive member in fluid communication with the interior of the pressure vessel;

providing a separate fluid chamber on an opposed side of said fluid pressure responsive member;

providing a fluid passage from said separate fluid chamber to an outlet closely adjacent said nozzle whereby upon unseating of said main valve member at a predetermined fluid pressure within said pressure vessel, fluid flows from said separate fluid chamber through said outlet to reduce the fluid pressure therein and thereby provides a fluid pressure differential acting against said fluid pressure responsive member to assist in opening of said main valve member;

providing a piston for said fluid pressure responsive member;

providing an operating rod secured at one end to said main valve member and secured at an opposite end to said piston thereby to effect simultaneous movement of said piston and main valve member; and

mounting a vacuum valve on said operating rod for relative movement to an open position upon the reaching of a predetermined low pressure within said pressure vessel.

5,307,832

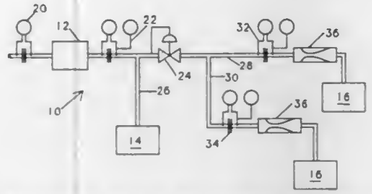
METHOD AND APPARATUS FOR AUTOMATICALLY TRANSFERRING AND MEASURING WET STEAM BETWEEN PRIORITY AND SECONDARY USERS

James R. Stoy, Missouri City; James L. G. Schrodt, Houston, both of Tex., and Stephen S. Wheeler, Bakersfield, Calif., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 966,633, Oct. 26, 1992. This application Sep. 3, 1993, Ser. No. 115,629

Int. Cl.[5] G05B *11/46*

U.S. Cl. 137—14 **1 Claim**



1. A method for automatically controlling the quantity and quality of wet steam delivered to a plurality of customers from a single steam source, said method comprising the steps of:

providing a demand customer;

providing at least one secondary customer;

providing means to generate wet steam;

providing conduit means connecting said steam generating means to said demand customer and to each said at least one secondary customer;

providing means to determine the quality and quantity of steam generated by said steam generating means;

providing pressure regulator means between said demand customer and each said at least one secondary customer configured to maintain constant discharge pressure to the demand customer;

providing steam flow measurement means to simultaneously measure mass flow rate and steam quality of two phase steam and connected between said pressure regulator means and each said at least one secondary customer:

allowing the demand customer to take as much steam as necessary to meet his requirements, said pressure regulator responding to pressure changes caused by said demand customer's usage; and

allocating the remaining steam output of said steam generator means to each said at least one secondary customer, whereby said demand customer can vary his usage between 0 and 100% of the output of said steam generator means.

5,307,833

METHOD AND APPARATUS FOR AUTOMATICALLY TRANSFERRING AND MEASURING WET STEAM BETWEEN PRIORITY AND SECONDARY USERS

James R. Stoy, Missouri City; James L. G. Schrodt, Houston, both of Tex., and Stephen S. Wheeler, Bakersfield, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,633

Int. Cl.[5] G05D *7/01*

U.S. Cl. 137—118 **5 Claims**

1. A system for automatically controlling the quantity of wet steam delivered to a plurality of customers from a single steam source, said system comprising:

steam generating means having an inlet connected to a feed water source and an outlet:

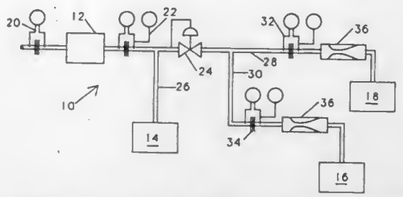
means connected to said steam generating outlet to measure the steam quality from said steam generating means;

a demand customer connected to said outlet of said steam generating means;

a plurality of secondary customers connected in parallel;

pressure regulator means connected between said demand customer and said secondary customers and configured to maintain constant discharge pressure to the demand customer; and

steam flow measurement means to simultaneously measure mass flow rate and steam quality of two phase steam and connected between said pressure regulator and each secondary customer to determine the quality and quantity of wet steam delivered to each respective secondary customer.



5,307,834

GAS FLOW CONTROL REGULATOR

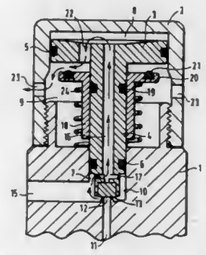
Andrew R. T. Tatarek-Gintowt, Aldershot, and Michael W. Harral, Camberley, both of England, assignors to Sabre Safety Limited, United Kingdom

Filed Aug. 2, 1993, Ser. No. 100,304

Claims priority, application United Kingdom, Aug. 5, 1992, 9216648

Int. Cl.[5] G05D *16/10*

U.S. Cl. 137—505.11 **1 Claim**



1. A gas flow control regulator comprising a regulator body, a piston including a piston head and a piston rod within the regulator body, the piston head and the piston rod both being in sealing engagement with portions of the regulator body to divide the interior of the regulator body into three chambers, a first chamber which is a sealed chamber between the piston head and one end of the regulator body, a second chamber between the piston head and the portion of the regulator body within which the piston rod is sealingly engaged and a third chamber beyond the piston rod, an aperture in the regulator body connecting the second chamber to atmosphere, a gas inlet communicating with the third chamber for passing gas at high pressure from a source thereof to the third chamber, the piston having a valve seat thereon for sealing against the gas inlet in the third chamber, a gas conduit within the piston rod connecting the third chamber to the first chamber, a gas outlet from the third chamber for passing low pressure gas from the regulator body to a user, a pressure relief valve member including a sleeve sealingly engaged with the piston rod within the second chamber and slidable relative to the piston rod, spring means within the second chamber and acting between the regulator body and the pressure relief member to urge the pressure relief member into contact with the piston head and, in normal operation of the regulator, to close an aperture in the piston head capable of connecting the first chamber to the second chamber, whereby the piston and the pressure relief member move as one in normal operation of the regulator, the pressure relief member being movable away from the piston head against the action of the spring means to vent excess pressure within the regulator body to atmosphere through the second chamber.

5,307,835

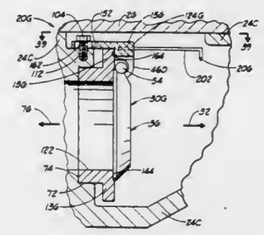
TOP-ENTRY CHECK VALVE WITH THREADED FASTENERS

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Continuation of Ser. No. 961,106, Oct. 14, 1992, abandoned, which is a division of Ser. No. 762,540, Sep. 18, 1991, Pat. No. 5,161,570. This application Aug. 17, 1993, Ser. No. 108,146

Int. Cl.[5] F16K *15/03*

U.S. Cl. 137—514 **13 Claims**



1. A top entry check valve, comprising:

a disc having at least one hinge pin extending along a tangent thereto;

a seat having an upstream end, a downstream end and a seating surface, the seating surface facing downstream and being shaped to mate with said disc;

a body having an upstream end, a downstream end, a valve chamber therein communicating with the upstream and downstream ends thereof, and an access opening in a side wall thereof communicating with the valve chamber of a size to accommodate the entry and removal of said disc and said seat therethrough, said body also having an annular shoulder therein facing downstream sized to engage the upstream end of said seat and prevent said seat from moving upstream;

a bonnet removably attached to said body over said access opening forming a wall of the valve chamber;

a cage-retainer having a pair of hinge pin supports receiving opposite end portions of the hinge pin of said disc; and

threaded fastener means for securing said cage-retainer to said body within the valve chamber;

wherein said cage-retainer engages the downstream end of said seat and prevents said seat from moving downstream.

5,307,836

VEHICLE MULTI-COMPARTMENT AIR-BRAKE RESERVOIR WITH INTERNAL CHECK VALVE

Bob Niceley, Columbus, Ind., assignor to Ventra Corporation, Columbus, Ind.

Filed Sep. 25, 1992, Ser. No. 951,465

Int. Cl.[5] B60T *11/34*

U.S. Cl. 137—576 **9 Claims**

1. A vehicle multi-compartment air-brake reservoir, comprising:

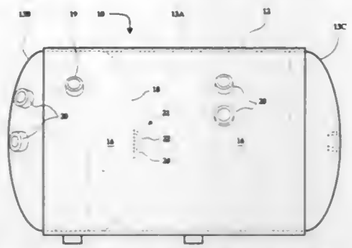
a housing;

a rigid interior baffle having an opening formed therein and disposed within the housing, the housing and the rigid interior baffle defining a supply chamber and a secondary chamber;

a vehicle brake system inlet and a vehicle brake system outlet formed in the supply chamber, and a vehicle brake system outlet formed in the secondary chamber; and

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a one-way valve means fixed to the interior baffle and covering the opening formed in the rigid interior baffle, the

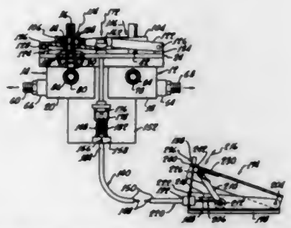


valve providing one-way fluid flow from the supply chamber to the secondary chamber.

5,307,837
WATER VALVE APPARATUS

Robert L. Woltz, 625 High Dr., Laguna Beach, Calif. 92651, and Christopher K. Wynkoop, 601 Rockford Rd., Corona del Mar, Calif. 92625

Continuation-in-part of Ser. No. 969,715, Oct. 27, 1992, Pat. No. 5,230,365. This application Jul. 23, 1993, Ser. No. 96,767
Int. Cl.[5] F16K *11/10, 31/08, 31/62*
U.S. Cl. 137—607 **18 Claims**

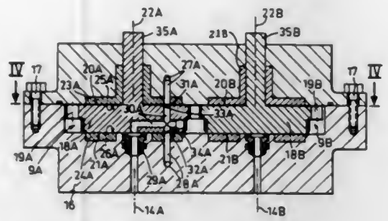


1. Water valve apparatus with distal control comprising:
valve means for controlling flow of water therethrough, said valve means including a movable actuator for starting and stopping the flow of water;
permanent magnet means, disposed proximate said actuator for magnetic engagement therewith, for moving the actuator between a first position stopping water flow through the valve means and a second position allowing water flow through the valve means;
movable means for altering the magnetic engagement between the permanent magnet means and said actuator;
cable means, having a distal end and a proximal end, for moving said movable means; said cable means proximal end being connected with said movable means; and
manually operable lever means, connected to the cable means distal end, for operating said cable means in a manner causing movement of the movable means and concomitant movement of the actuator means, as a result of magnetic engagement alteration, in order to start and stop water flow through the valve means.

5,307,838
ROTARY VALVE ASSEMBLY

Guy d'Agostino, Vitry sur Seine; Jean-Marie Brocard, Rubelles; Pierre G. J. Hebert, Libourne; Franck Liotte, Melun; Eric C. Lorne, Vaux le Penil; Claude Maillard, Vulaines sur Seine, and Alain Tiepel, Chailly en Biere, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A), Martial Valin, France

Filed Jan. 7, 1993, Ser. No. 1,744
Claims priority, application France, Jan. 8, 1992, 92 00104
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—625.11 **7 Claims**



1. A rotary valve assembly comprising:
a) a casing defining an interior chamber;
b) a rotary valve member operatively associated with the casing such that the valve member may rotate about an axis within the interior chamber, the rotary valve member having opposite sides and defining at least one fluid conduit, and at least two first fluid orifices, one first fluid orifice opening on each opposite side of the rotary valve member such that the at least two first fluid orifices are in fluid communication with the at least one fluid conduit;
c) inlet means defining a fluid inlet in fluid communication with the at least one fluid conduit wherein the inlet means comprises:
i) a first fluid inlet passage defined by the casing; and,
ii) an inlet sleeve member defining a second fluid inlet passage in fluid communication with the first inlet passage and the at least one fluid conduit wherein the second fluid inlet passage is generally coaxial with the axis of rotation of the rotary valve member;
d) at least two first fluid outlet passages defined by the casing, one first passage located on each opposite side of the rotary valve member; and
e) at least two seal members located in the casing, one member on each opposite side of the rotary valve member, the at least two seal members each defining a substantially planar surface which seals against the rotary valve member and each further defining a second fluid outlet passage having a second fluid orifice and located such that the second fluid outlet passages are each in fluid communication with one of the at least two first fluid outlet passages and the at least two fluid orifices during at least a portion of rotation of the rotary valve member, whereby the first fluid outlet passages are grouped in pairs, the two first fluid outlet passages of each pair being connected to each other and having the second fluid orifices located in a common radial plane passing through the axis of rotation of the rotary valve member.

5,307,839
BOTTLED GAS CART

Kenneth L. Loebker, and E. Larry Hicks, both of 1895-A Beaver Ruin Rd., Norcross, Ga. 30071

Filed Sep. 1, 1992, Ser. No. 937,690
Int. Cl.[5] A01G *25/09*
U.S. Cl. 137—899 **4 Claims**

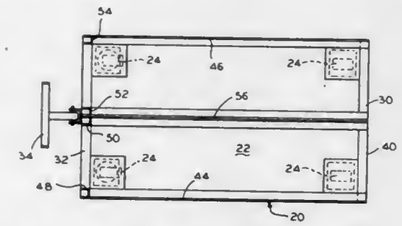
1. In a movable cart for supporting at least one pressurized gas cylinder, the combination comprising:

a housing having an interior compartment which is proportioned to receive and contain said gas cylinder, said housing having a lower end with means for journaling wheels thereto and wherein said housing has a front face and opposite side surfaces which extend upward from said lower end thereof,
means for selectively securing said gas cylinder at a fixed position within said housing,
means for delivering a flow of gas from said cylinder to a location outside of said housing,
first and second spaced apart wheels journaled to said lower end of said housing, said wheels being at locations which cause said housing to be raised from the underlying floor or the like and to be supported by said wheels when said housing is in a tilted orientation,
further including a downwardly extending leg disposed at said front face of said housing substantially midway between said side surfaces thereof, a first pivot coupling connecting an upper end of said leg to said housing, said first pivot coupling being oriented to enable pivoting of a lower end of said leg towards said front face of said housing and outward therefrom, a third wheel located substantially equidistant from said side surfaces of said housing and a swivel connector coupling said third wheel to a lower end of said leg,
further including a slider member engaged on said leg and being slidable therealong, a pair of arms each having an upper end pivoted to said slider member at opposite sides thereof and each having a lower end pivotably coupled to said housing which arms extend downward and away from said leg when said link is pivoted towards said front face of said housing.

5,307,840
INK TANK/PUMP SYSTEM

Gerald N. Shields, Lake Forest, and Kenneth R. Luedtke, Wilmette, both of Ill., assignors to Graymills Corporation, Chicago, Ill.

Filed Apr. 26, 1993, Ser. No. 53,104
Int. Cl.[5] A01G *25/09*
U.S. Cl. 137—899 **21 Claims**

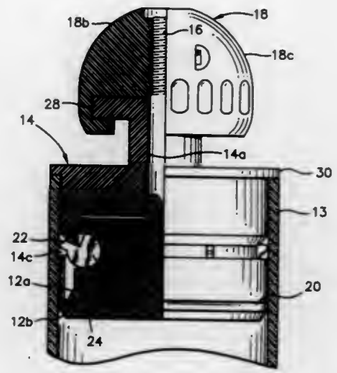


1. An ink tank/pump system, comprising:
a plurality of ink tanks each adapted to accommodate means for supplying a press with ink from said ink tank;
a transfer cart having a generally flat, horizontal surface for supporting at least one of said ink tanks thereon;
means associated with said transfer cart for moving said transfer cart from one point to another; and
a receiver cart having a generally flat, horizontal surface for supporting at least one of said ink tanks thereon;
said tank supporting surfaces of said transfer cart and said receiver cart being alignable, said transfer cart having a docking edge to be placed in abutment with a docking edge of said receiver cart to accommodate sliding movement of said ink tanks therebetween.

5,307,841
TEST PLUG FOR WASTE PIPE

Duane R. Condon, Ramona, Calif., assignor to Rectorseal Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 927,814, Aug. 10, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 46,616
Int. Cl.[5] F16L *55/16*
U.S. Cl. 138—90 **20 Claims**



11. A test plug for a pipe, comprising:
a generally cylindrical piston having a lower end which tapers in an inward direction moving in an upward direction, the tapered lower end having a maximum outer diameter that is slightly smaller than an inner diameter of a pipe;
a generally cylindrical holder having a central axially extending bore and a downwardly opening interior in which the piston is slidably received;
a rod having an upper threaded segment, an intermediate segment that extends through the bore of the cylindrical holder, and a lower end connected to an upper end of the piston;
a knob screwed over the upper threaded segment of the rod for pulling the rod upwardly through the bore upon rotation of the knob in a first direction, and for pushing the rod downwardly through the bore upon rotation of the knob in a second direction;
an elastomeric O-ring surrounding the tapered lower end of the piston and deformable in a radially outward direction into sealing engagement with an inner wall of the pipe by radially expanding the O-ring upon rotation the knob in the first direction to pull the piston upwardly into the interior of the cylindrical holder to thereby push the O-ring downwardly over the tapered lower end of the piston;
a plurality of gripping teeth pivotally mounted at circumferentially spaced locations about the cylindrical holder;
linkage means for pivoting the teeth in an outward direction to engage the inner wall of the pipe upon rotation of the knob in the first direction, the linkage means including a cam connected to a proximal end of each of the teeth, each of the cams being mounted in a complementary shaped cam receptacle formed in an outer wall of the piston; and
means rotatably coupling the knob and the cylindrical holder to substantially prevent any upward or downward movement of the knob relative to the cylindrical holder;
whereby high fluid pressure within the pipe acting against a circular face of the piston will not result in movement of the gripping teeth in the outward direction.

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5,307,842

FLEXIBLE CONDUIT WITH IMPROVED THERMAL PROTECTION COMPRISING CORK

Jean-Michel Lequeux, Le Vésinet, France, assignor to Coflexip, France

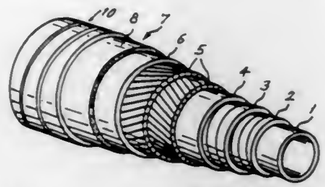
PCT No. PCT/FR91/01045, § 371 Date Ang. 20, 1992, § 102(e) Date Ang. 20, 1992, PCT Pub. No. WO92/11487, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 20, 1991, Ser. No. 920,452

Claims priority, application France, Dec. 21, 1990, 90 16086

Int. Cl.[5] F16L *9/14*

U.S. Cl. 138—149 18 Claims



1. A flexible pipe with improved thermal protection in which a fluid can flow under pressure and comprising at least one tightness sheath or tube of polymeric material and at least one reinforcement, further comprises a thermal protection consisting of a sheath of composite material comprising cork granules agglomerated with a binding material and a flexible metal tube which is disposed outside said sheath of composite material, wherein the average density of said composite material is between 500 and 800 kg/m^3 and the thermal conductivity of said composite material is less than 0.3 W/m. °C.

5,307,843

EXTRUSION OF TUBES OF FIBER-REINFORCED THERMOPLASTICS

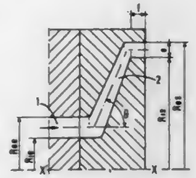
Jacques Jarrin, Rueil Malmaison; Emmanuel Vinciguerra, Nanterre; Gilles Ausias, Antibes; Michel Vincent, Ville Neuve Loubet, and Francois Dawans, Bougival, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Mar. 9, 1992, Ser. No. 847,737

Claims priority, application France, Mar. 7, 1991, 91 02894

Int. Cl.[5] F16L *11/08*

U.S. Cl. 138—174 23 Claims



1. In a process for the manufacture of tubes by extrusion of a thermoplastic material charged with discontinuous fibers through a drawplate comprising an annular diverging end section having an exit zone and entry zone and a substantially non-diverging annular straight section contiguous with the exit zone of the diverging end zone, thereby forming an annular flow space, said straight section having a channel width e and length 1, the improvement wherein said diverging end section has an annular area of its exit zone, A_s, of at least 1.2 times the size of the annular area of its entry zone, A_e, and a ratio between the length 1 of the inner edge of the annular straight section and the channel width e of the annular straight section of less than 5, wherein the extrusion of said thermoplastic material through said drawplate is effected in the presence of at least one lubricant consisting essentially of a liquid substance of low viscosity and incompatible with said thermoplastic material at temperatures employed during the extrusion operation, said lubricant being present at the surface of the outer wall and at the surface of the inner wall of said flow space and, wherein the angle θ formed by the axis of the flow path of the straight section with the axis of the flow path of the diverging end section is 60° to 90°.

16. Extruded tubes made having improved resistance to bursting of a thermoplastic material charged with discontinuous fibers having a mainly circumferential orientation through the entire thickness of the tube produced according to claim 1.

23. Apparatus comprising a drawplate, having a diverging element and a straight section contiguous therewith creating an annular flow space having an internal and external wall, which can be fitted on an extruder drawplate wherein for the purpose of directing a lubricant towards the external wall of said flow space, said drawplate has at the junction of the drawplate and extruder drawplate, a bore 3 communicating with a distribution channel 4 which has an opening 5 which opens out onto said external wall, and, for the purpose of directing said lubricant towards the internal wall of said flow space, has at the junction of the drawplate and extruder drawplate, an axial channel 6 communicating with distributing channel 7 which has an opening 8 out over said internal wall.

5,307,844

WEAVING MACHINE HAVING SEPARABLE PARTS WITH CONSTRAINED GUIDANCE UPON ASSEMBLY AND RE-ASSEMBLY

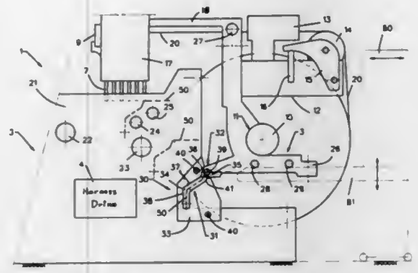
Marc Gruwez, Zwalm, Belgium, assignor to Picanol N.V., Belgium

Filed Feb. 24, 1993, Ser. No. 21,595

Claims priority, application Belgium, Feb. 27, 1992, 09200197

Int. Cl.[5] D03D *49/02*

U.S. Cl. 139—1 R 15 Claims



1. In a weaving machine, comprising a stationary first machine-frame part containing at least means for winding up a woven material and a second machine-frame part removable from the first part and containing at least means including a bearing for supporting a warp beam when the second machine-frame part is re-assembled to the first machine-frame part, the improvement wherein the stationary and removable machine-frame parts include mutually engaging guide means including a first guide element fixed to said first machine-frame part and a second guide element fixed to the second machine-frame part for constraining movement of the removable part to a predetermined path upon engagement between said guide elements during re-assembly with or removal from the stationary part.

5,307,845

SPLIT LOOM INCLUDING A SELVAGE-FORMER MOUNTED IN A REMOVABLE LOOM PART

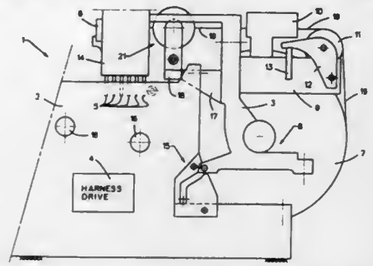
Serge Vanrobaeys, Ieper; Kurt Slosse, Boezinge, and Patrick Glorie, Ieper, all of Belgium, assignors to Picanol N.V., Belgium

Filed Apr. 2, 1993, Ser. No. 41,465

Claims priority, application Belgium, Apr. 15, 1992, 09200340

Int. Cl.[5] D03D *49/02, 47/40*

U.S. Cl. 139—1 R 7 Claims



1. In a split loom which includes a stationary loom part, and a removable loom part containing a warp-beam bearing, the improvement comprising a selvage-former mounted in the removable loom part, means including a first shaft extending in a loom width direction for driving said selvage-former to form a selvage, means for affixing the shaft to the removable loom part, and means including a separable clutch for separably connecting the shaft to a second shaft mounted in the stationary loom part when the removable loom part is assembled to the stationary loom part.

5,307,846

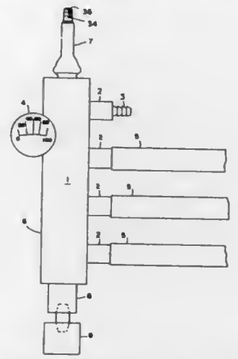
TIRE PRESSURE EQUALIZER

Robert Heinemann, 147 Elm St., Dover, N.J. 07801

Filed Mar. 24, 1993, Ser. No. 36,410

Int. Cl.[5] B60C *29/02*

U.S. Cl. 141—1 2 Claims



1. An apparatus for direct and simple use by a motorist, enabling all four tires of an individual vehicle to be brought to the same desired pressure, without damaging the tires or the apparatus by accidental over-inflation, the apparatus comprising:

a central air reservoir consisting of a hollow rectangular container on which are located seven outlets;

four tubular outlets, which are located on one longitudinal side of that hollow rectangular container, wherein all four tubular outlets have serrated ends to permit them to be tightly attached to four hoses;

an air pressure gauge, measuring between fifty and one hundred psi, calibrated to within one percent of capacity and located on the longitudinal side directly opposite the side where the four outlets are located;

a conventional tire air-valve located on one end of that hollow rectangular container;

a safety air pressure-relief valve located on the other end of the container, wherein the safety air pressure-relief valve is set to activate at thirty-five psi and a whistle is connected to said safety air pressure-relief valve that excaping air will pass through the whistle and make noise if the safety air pressure-relief valve has been tripped;

four hoses, one two feet, one ten feet, another ten feet and one eighteen feet in length, attached to the four tubular outlets in any order;

a folding stick which, when extended, is used to project two of the hoses underneath the individual vehicle to its far side in order to minimize the length of the hoses needed;

four connectors, each consisting of a cylindrical body, a handle, pivotally connected to the body, a sliding piston below the handle within the cylindrical body of each connector with a centrally located, short, small-diameter rod at its forward end, rubber tubing confined within the body of the connector and located below the piston and so confined that it is unable to move up, down or outward, and where the tubing supports the piston, the inner diameter of the tubing being such that it fits loosely around the threaded portion of a tire air-valve when the connector is placed over it;

the sliding piston within the cylindrical body of the connector, pressed down when the handle of the connector is pivoted, thereby locking in the ninety degree-degree position, forcing the rubber tube to expand curving inward, so as to be pressed around the threaded portion of the tire air-valve and forming an air-tight fit with it, while the movement of that piston also moves the short, small-diameter rod located on its end forward, causing that short, small-diameter rod to depress the stem of the tire air-valve and thereby opening the tire air-valve;

a shut-off valve, located next to the connector, composed of a cylinder with two tubes centrally attached on either side of the cylinder and open to the interior of the cylinder and used to attach the cylinder to the hose on one side and to clamp the connector to the shut-off valve on the other tube, including a rigid clamp to keep the connector in a preferred orientation;

a spring-loaded piston moving between an upper and lower position within said cylinder, wherein the piston includes an enlarged portion at its upper and lower end, said piston is keyed in position within the cylinder so as to stay in one orientation and where the piston has a cylindrically-shaped hole through it, said hole having an orientation parallel with the two tubes and where, in the upper position, the cylindrically-shaped hole is located near the top of the cylinder and confined by the interior wall of the cylinder;

a spring disposed which keeps the piston within the cylinder in the upper position, causing the cylindrically-shaped hole within the piston to be contained within the confines of the walls of the cylinder and therefore the valve to be in a closed position as long as the spring is extended;

the connector and the spring-loaded piston of the shut-off valve, so situated in relationship to one another that the handle of the connector, when pivoted and retained in a ninety-degree position, also depresses the spring-loaded piston of the shut-off valve causing the piston to move inside the cylinder to said lower position;

the cylindrically-shaped hole within the piston, moved as a result of the movement of the piston, aligned with the openings of the tubes, causing a passage to be defined through the shut-off valve;

said four connectors, attached to threaded portion of tire

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air-valves on all four tires on the individual vehicles in the manner described;

the air-pressure gauge located on one side of the hollow rectangular container, used for taking pressure readings to determine whether the desired air pressure for the tires has been obtained;

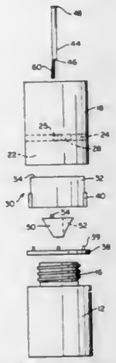
the tire air-valve located on one end of the hollow rectangular container, whose valve stem is depressed in order to remove air if the pressure is excessive or to which the air-pump is attached in order to increase the pressure level within the tires.

5,307,847

APPLICATOR FOR FLUID PRODUCTS

Stanford Pavenick, 141 E. 56 St. Apt. 2K, New York, N.Y. 10022-2722, and Donald Garofalow, 16 Highland Rd., Montvale, N.J. 07645

Filed Sep. 24, 1992, Ser. No. 950,481
Int. Cl.[5] A45D *40/26*
U.S. Cl. 141—20.5 **20 Claims**



1. An applicator for a fluid product, comprising

a bottle defining a reservoir for said fluid product and having an open end,

a cap for enclosing said open end of said bottle, said cap defining an enclosed chamber,

dispensing means for dispensing said fluid product onto a surface, said dispensing means including a stem connected at one end in fluid communication with said chamber and having a dispensing tip disposed at a free end,

outlet means extending through said stem for defining an outlet passage between said chamber and said dispensing tip,

passage means remote from said stem for defining a passageway between said chamber and said reservoir, and

valve means disposed in said cap for controlling the flow of said fluid product through said passageway.

5,307,848

NON-AERATING TANK FILLING NOZZLE WITH AUTOMATIC SHUTOFF

Robert W. Murray, 125 Marina View, Rockford, Minn. 55373

Filed Sep. 4, 1992, Ser. No. 941,188
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—44 **22 Claims**

1. A non-aerating fluid dispensing nozzle comprising:

a discharge nozzle having a proximal end and a distal end, said distal end of said nozzle insertable into a tank receiving a fluid;

a valve housing having an inlet passage and a flow control passage, said inlet passage connected by said flow control passage with said proximal end of said nozzle;

a main valve operative to control the flow of fluid through said flow control passage;

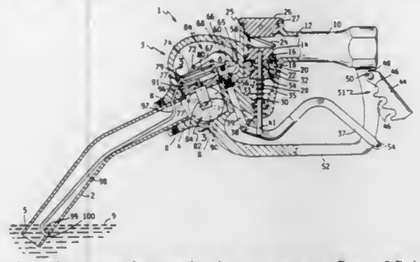
a main operating lever operatively associated with said main valve and shiftable between valve opening and closing positions to thereby open and close said flow control passage;

means for controlling and containing vapors formed in the receiving tank comprising;

a chamber disposed within said housing;

a gas passage means having an end connected to said chamber and having a second end connected to an intake aperture disposed near said distal end of said discharge nozzle; and

pumping means in fluid flow communication with said chamber for pumping gases from the fluid receiving tank into said chamber through said gas passage means during fluid flow through said nozzle, wherein said pumping means comprises:



impeller means for rotation in response to a flow of fluid through said non-aerating fluid dispensing nozzle, said impeller means disposed within said housing in the path of fluid flow;

piston means for reciprocal movement in response to rotation of said impeller means, said piston means extending into said chamber;

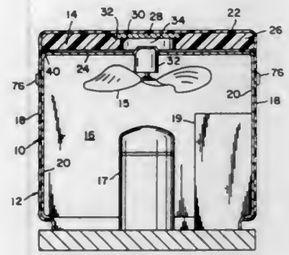
linkage means for connecting said piston means to said impeller means, whereby the reciprocal movement of said piston means pumps gases between the tank and the chamber through said gas passage means as fluid is dispensed through the nozzle.

5,307,849

AIR CONDITIONER COVER

Dennis R. Nelson, 842 Houseman Ave., NW., Grand Rapids, Mich. 49503

Filed Jul. 8, 1992, Ser. No. 910,682
Int. Cl.[5] B65D *85/68*
U.S. Cl. 150—165 **10 Claims**



1. An air conditioner cover comprising:

a flexible shroud;

a protective panel retained within the shroud and adapted to overlie the top of an air conditioner unit, said protective panel formed with a downwardly opening recess;

a first rigid panel overlying at least said downwardly opening recess; and

a second rigid panel overlying said first rigid panel and said protective panel.

5,307,850

PNEUMATIC TIRE CONTAINING SYNDIOTACTIC 1,2-POLYBUTADIENE

Adel F. Halasa, Bath; Wen-Liang Hsu, Copley, both of Ohio, and Richard M. Scriver, Madison, Conn., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 473,133, Jan. 30, 1990, abandoned, which is a continuation of Ser. No. 243,967, Sep. 14, 1988, abandoned. This application May 6, 1991, Ser. No. 695,859
Int. Cl.[5] B60C *1/00, 11/00, 9/18*
U.S. Cl. 152—209 R **13 Claims**

2. A pneumatic tire comprised of a toroidal shaped fabric-reinforced rubber carcass and an outer circumferential rubber tread, two spaced substantially inextensible beads and two sidewalls extending radially from and connecting said tread to said beads, said tire characterized by having a circumferential fabric reinforced rubber belt positioned between said tread and supporting carcass and an undertread gum layer positioned between said tread and said belt where the undertread gum layer is comprised of (A) from about 25 to about 75 weight percent of a highly dispersed blend of syndiotactic 1,2-polybutadiene in synthetic polyisoprene, wherein said highly dispersed blend contains from about 5 weight percent to about 40 weight percent syndiotactic-1,2-polybutadiene, and wherein said highly dispersed blend was made by inverse phase polymerization, (B) from about 25 to about 75 weight percent natural rubber, and (C) from 0 to about 40 weight percent polydiene rubbers other than natural rubber.

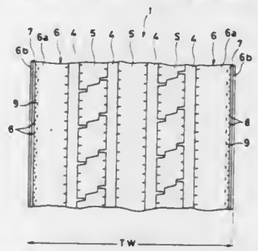
5,307,851

HEAVY LOAD PNEUMATIC RADIAL TIRE

Nobuhiro Yamashita, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 838,660
Claims priority, application Japan, Apr. 8, 1991, 3-075135
Int. Cl.[5] B60C *11/12*
U.S. Cl. 152—209 R **8 Claims**

1. A heavy load pneumatic radial tire which includes at least one carcass layer in a radial direction and a reinforcing belt comprising at least two layers of metal cords around the outer periphery of said carcass in a tread portion, and in which a plurality of ribs partitioned by a plurality of main grooves extending in a tire circumferential direction are formed in a main grounding region of the tread surface and a narrow groove having a groove width of 1.5 to 5 mm and a groove depth of 60 to 120% of the depth of said main groove are disposed in a shoulder end zone of said ribs positioned at the shoulder in the tire circumferential direction, characterized in that a large number of primary kerfs extending from said narrow groove towards the tread center are intermittently disposed in the tire circumferential direction, and a large number of secondary kerfs extending in the tire circumferential direction are intermittently disposed within the shoulder ribs at the positions closer to the tread center than said primary kerfs in the tire circumferential direction, the length in the tire radial direction of each said primary kerf being at least three times the length in the tire circumferential direction thereof and, the length in the tire circumferential direction of each said secondary kerf being at least three times the length in the tire radial direction thereof.

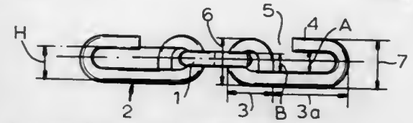


5,307,852

CHAIN LINK FOR THE ANTISKID DEVICE OF A VEHICLE WHEEL

Werner Preusker, Sauldorf, Fed. Rep. of Germany, assignor to Confon AG, Rheineck, Switzerland

Filed Jan. 15, 1993, Ser. No. 5,001
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1992, 9201340
Int. Cl.[5] B60C *27/06*
U.S. Cl. 152—243 **3 Claims**



1. A vehicle wheel chain comprising:

a closed connecting link; and

a pair of spaced apart chain links interconnected with said connecting link, each of said chain links comprising:

a respective elongated shank formed with opposite ends and having a uniform thickness, said shank being formed with:

a respective generally U-shaped hook formed on one of said ends and having a proximal portion extending outwardly from the shank, said hook being formed with a remote portion extending from said proximal portion, said remote portion being formed with an inner edge facing said shank and spaced therefrom at a distance and with an outer edge turned away from said shank and lying in a plane, and

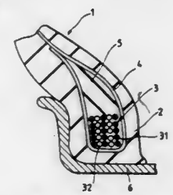
a closed eyelet formed on the other end and extending outwardly from said shank, said eyelet being formed with a curved portion having a respective outer edge with which the plane is tangential and an end portion remote from said other end and running inwardly from said curvature portion toward and abutting said shank, said eyelet receiving the connecting link and having an inner diameter which is equal to said distance but is slightly greater than said thickness, said eyelet thereby preventing said hook from bending inwardly toward said shank when the chain link is disposed between a vehicle wheel and a road.

5,307,853

TIRE BEAD

Takaaki Okuda, Fukushima, Japan, assignor to Sumitomo Rubber Iodustries, Ltd., Hyogo, Japan

Division of Ser. No. 791,058, Nov. 12, 1991. This application Jun. 8, 1992, Ser. No. 895,118
Claims priority, application Japan, Nov. 16, 1990, 2-308702; Nov. 16, 1990, 2-308703
Int. Cl.[5] B60C *15/04*
U.S. Cl. 152—540 **1 Claim**

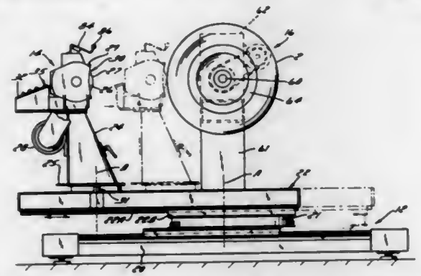


1. An annular tire bead comprising a plurality of steel wire cords and a plurality of aromatic polyamide wire cords, said steel wire cords being arranged parallel to one another to form a plurality of layers of said steel wire cords and said aromatic polyamide wire cords being arranged parallel to one another to

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form a plurality of layers of said aromatic polyamide wire cords, such that said layers of steel wire cords alternate with said layers of said aromatic polyamide wire cords to form said tire bead, such that layers formed by said aromatic polyamide wire cords are disposed at opposite ends of said matrix in either an axial direction or a radial direction of said tire bead.

5,307,854
TIRE BUFFING APPARATUS
Donaldee Brewer, Muscatine, Iowa, assignor to Bandag Licensing Corporation, Muscatine, Iowa
Continuation of Ser. No. 757,736, Sep. 11, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 21,726
Int. Cl.[5] B29D *30/68*
U.S. Cl. 157—13 **6 Claims**



1. A buffing apparatus for grinding the crown of a tire casing along a first radius and the shoulder of the casing along a second radius smaller than the first radius, the apparatus comprising:

means for mounting a tire casing and rotating said tire casing in a plane perpendicular to the casing axis;

an elongate, slide frame arranged in one position to lie along an axis which is in the plane defined by the rotating tire casing, the slide frame including a first slide component moveable toward and away from the mounting and rotating means;

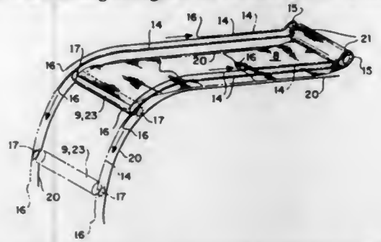
a pedestal mounted generally perpendicularly to the first slide component, the pedestal having a first axis which is perpendicular to the first slide component, and the pedestal being rotatable about the first axis;

a rasp mounted on the pedestal and having a surface arranged to contact the tire casing, the surface being spaced apart from the first axis so that the first axis is intermediate the surface and the mounting and rotating means for rotating the pedestal about the first axis during grinding of the shoulder along the second radius; and

rotating means for rotating the slide frame about a second axis spaced apart from the first axis during grinding of the crown along the first radius.

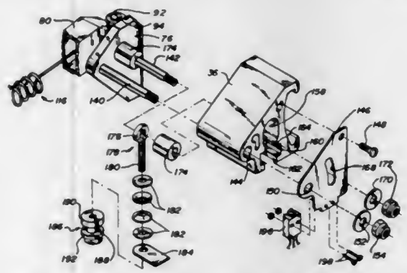
5,307,855
TAPE DRIVE EXTENDABLE AND RETRACTABLE AWNING ASSEMBLY
Olof Martensson, IV, Annapolis, Md., assignor to Awnings Unlimited, Inc., Jessup, Md.
Filed Oct. 2, 1992, Ser. No. 955,422
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—66 **13 Claims**

1. A tape drive extendable and retractable awning assembly comprising a pair of parallel, laterally spaced frames, a transversely extending drive shaft extending between said frames, a trailing edge of an awning being operatively connected to said drive shaft, a sprocket fixed to said drive shaft in proximity to each lateral edge of said awning, an apertured tape looped around each drive sprocket and forming a pair of leg portions extending outwardly therefrom and having fee end portions, guide means in the frames supporting said leg portions and said free end portions of each of said apertured looped tapes, said awning having a leading edge, one of the free end portions of each tape being operatively connected to the leading edge of said awning and being substantially adjacent to the leading edge of said awning throughout the extension and retraction of



said awning, and the leg portions of each pair having the free end portions operatively connected to said leading edge and being coextensive with said awning throughout the extension and retraction of said awning, whereby a commonly driven drive assembly for opposite lateral edges of the awning is provided which stays in synchronization for constant, even extension and retraction of the awning.

5,307,856
AUTOMATICALLY RETRACTABLE AWNING
Brent W. Murray, Longmont, Colo., assignor to Carefree/Scott Fetzer Company, Broomfield, Colo.
Filed Nov. 27, 1992, Ser. No. 982,512
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—70 **17 Claims**



1. An automatically retractable awning for mounting on a support surface, comprising in combination:

an awning sheet having a first edge operatively connected to the support surface and a second edge selectively moveable away from the support surface when the awning is extended;

a roll bar about which the awning sheet can be selectively wrapped, secured to one of said first and second edges of said awning sheet;

at least two extendable rafter arms having a first end operatively connected to said support surface and a second end operatively connected to said second edge of the awning sheet;

motor means operatively connected to the roll bar for at least selectively rolling the awning sheet about the roll bar; and

sensor means operatively interconnecting at least one of the rafter arms with the motor means and adapted to sense movement of the rafter arm to energize the motor means upon a predetermined movement of the rafter arm causing the awning sheet to be rolled about the roll bar.

5,307,857
BALANCING DEVICE FOR A RAISABLE-CURTAIN GOODS-HANDLING DOOR
Bernard Kraeutler, Dunieres, France, assignor to Nergeco (société anonyme), Dunieres, France
Filed Mar. 26, 1993, Ser. No. 37,398
Claims priority, application France, Mar. 27, 1992, 92 03706
Int. Cl.[5] E05F *11/00*
U.S. Cl. 160—190 **4 Claims**

1. A balancing apparatus for a raisable-curtain goods-handling door, said apparatus comprising:

a shaft for raising and lowering a curtain; and

a first drum operatively coupled to said shaft;

a first belt attached to said first drum so as to permit said first belt to be wound around said first drum in response to rotation of said shaft;

a second drum operatively coupled to said shaft;

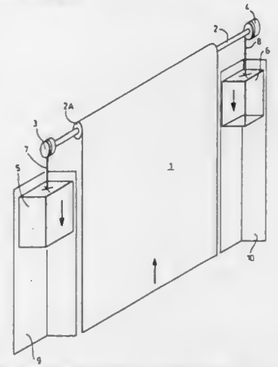
a second belt attached to said second drum so as to permit said second belt to be wound around said second drum in response to rotation of said shaft;

a first weight attached to the distal end of said first belt; and

a second weight attached to the distal end of said second belt;

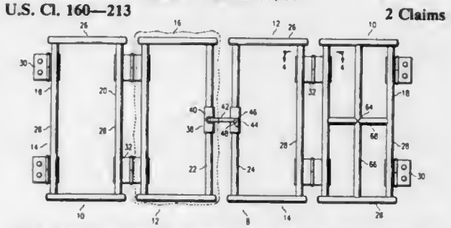
wherein said first belt has a length corresponding to a full stroke of said curtain,

wherein the length of said second belt is less the length of said first belt, and



wherein said second weight is attached to said second rum using said second belt so as to permit said second belt to wind in either direction on said second drum.

5,307,858
UNIVERSAL WINDOW SHUTTER SYSTEM
Jean A. Turner, 616 El Paso, Jacksonville, Tex. 75766
Filed Mar. 12, 1992, Ser. No. 849,924
Int. Cl.[5] E05D *15/00*
U.S. Cl. 160—213 **2 Claims**



1. A window shutter system comprised of components in modular form for user assembly of openable and closable multi-panel window shutter units to be installed as a covering for a window having a perimeter window frame, comprising:

single-hinged vertical components, each to be pivotally connected to a window frame, said single-hinged vertical components comprising:

a vertical elongate member having a longitudinal axis and first and second ends; and

window hinge means for the purpose of pivotally connecting said first vertical elongate member to a window frame, said window hinge means being symmetrically disposed on said first vertical elongate member between said first and second ends thereof and interconnected thereto such that said window hinge means extends outwardly from said first vertical elongate member;

double-hinged vertical components, each to form a common element between adjacent connected shutter panels of a shutter unit, said double-hinged vertical components comprising:

a pair of second vertical elongate members of equal length, each of said second vertical elongate members having a longitudinal axis and first and second ends, disposed in separated parallel relation with their respective ends in alignment; and

panel hinge means interconnected between said second vertical elongate members so as to form a pivotal connection therebetween, with said panel hinge means symmetrically disposed between said first and second ends of said second vertical elongate members;

single non-hinged vertical components, each including a third vertical elongate member with a longitudinal axis and first and second ends; horizontal components, to be interconnected in pairs between aligned first ends and between aligned second ends of any two of said first vertical elongate members, said second vertical elongate members, and said third vertical elongate members two vertical components of said single-hinged vertical components, said double-hinged vertical components, and said single non-hinged vertical components to form discrete shutter panel frames, said horizontal components including comprising:

a horizontal elongate member with a longitudinal axis and first and second ends, and

alignment means to align said horizontal components relative to said first, second and third vertical elongate members of said vertical components single-hinged vertical components, said doubled-hinged vertical components, and said single non-hinged vertical components;

interconnecting means for interconnecting said horizontal components to said first, second and third vertical elongate members of said vertical components single-hinged vertical components, said double-hinged vertical components, and said single non-hinged vertical components; and

each of said first, second and third vertical elongate members open at both first and second ends, wherein each of said horizontal elongate members of said horizontal components includes a first aperture extending through said member perpendicular to said longitudinal axis thereof and adjacent to said first end thereof, and a second aperture extending through said member perpendicular to said longitudinal axis thereof and adjacent to said second end thereof, and wherein said interconnecting means comprises:

a plurality of inserts, each having a longitudinal axis and first and second ends and each having a central aperture extending into the interior thereof from said second end thereof in coaxial alignment with the longitudinal axis of said insert, each of said inserts to be inserted into an open end of a said first, second and third vertical elongate members and retained therein with said second end of said insert adjacent to the associated end of said first, second and third vertical elongate members; and

a plurality of fastening pins, each to be inserted through an aperture of a horizontal component and into a central aperture of an insert retained in a first, second or third elongate member to form a secure connection between

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said horizontal component and said single-hinged vertical components, said double-hinged vertical component or said single non-hinged vertical components with which said first, second or third vertical elongate member is associated.

5,307,859
GOODS-HANDLING DOOR REDUCED SURFACE ABRASION

Bernard Kraeutler, Dunieres, France, assignor to Nergeco (société anonyme), Dunieres, France

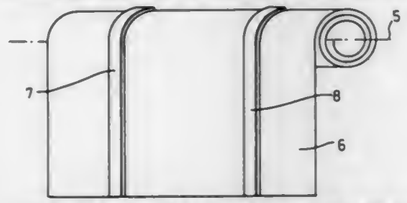
Filed Nov. 3, 1992, Ser. No. 970,780
Claims priority, application France, Nov. 5, 1991, 91 13611
Int. Cl.[5] A47G *5/02*
U.S. Cl. 160—264 **6 Claims**

1. A goods-handling door having a retractable curtain, the door comprising:

a flexible curtain that is rollable or foldable by means of a rotary winding shaft,

wherein said curtain includes on at least one face of said curtain at least one flexible strip extending perpendicularly to the shaft and

wherein said flexible strip provides excess thickness on the

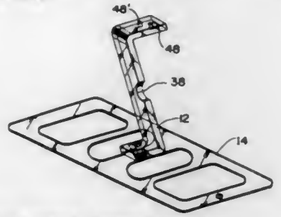


curtain to thereby define a separation strip such that when the curtain is rolled or folded, said strip rolls or folds onto itself, said flexible strip holds the layers of the curtain apart from one another when the curtain is in a retracted position.

5,307,860
DRAPERY SUPPORT SYSTEM

Gladys J. Wilkinson, and James G. Wilkinson, both of 4723 Blackrock, Baytown, Tex. 77521

Filed Apr. 30, 1993, Ser. No. 54,627
Int. Cl.[5] A47H *13/14*
U.S. Cl. 160—348 **18 Claims**



1. A drapery support system comprising:

a mounting bracket;

a drapery support, substantially planar in configuration, defining first and second openings therein of a first predetermined size and shape and further defining third and fourth openings therein of a second predetermined size and shape;

said drapery support defining first and second opposed edges and wherein said first and second openings are respectively positioned adjacent to said first and second opposed edges;

said third and fourth openings positioned adjacent to each other and between said first and second openings;

each of said first and second openings being larger in area than each of said third and fourth openings;

first means for removably and adjustably connecting said drapery support to said mounting bracket;

second means for attaching said mounting bracket to a vertical or horizontal surface, such as a wall or a window; and

wherein said first means include:

a first holed defined within said drapery support and positioned between said third and fourth openings;

a second hole defined within said mounting bracket for positioning in alignment with said first hole;

a bolt for removable positioning through said first and second holes;

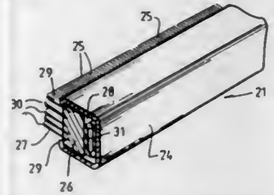
a first nut for fastening to said bolt and for tightening on said bolt to a position on said bolt with said first nut engaging said drapery support before said drapery support is attached to said mounting bracket; and

a second nut for fastening to said bolt and for tightening on said bolt to a position on said bolt with said second nut engaging said mounting bracket to hold said drapery support in position on said mounting bracket.

5,307,861
BRUSH

Lloyd W. Townsend, New South Wales, Australia, assignor to John Lysaght (Australia) Limited, South Wales, Australia and Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1992, Ser. No. 970,210
Claims priority, application Australia, Dec. 13, 1991, PK9995
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—428 **10 Claims**



1. A roll cleaning brush for application to a rotating roll comprising:

an elongate brush element holder formed with a longitudinally extending open-mouthed channel;

a plurality of brush elements, each brush element including a brush element base and tufts of brush bristles projecting from the base in a series of parallel rows extending longitudinally of the brush and spaced apart across the brush with the tufts of successive rows staggered with respect to one another longitudinally of the brush, the brush elements held captive within the channel of by the brush element holder in an array extending along the brush element holder so that the tufts of bristles project from a mouth of the channel but are movable toward and away from the open mouth of the channel and the tufts of bristles form a substantially continuous brush tip for application to a roll to be cleaned but so that the brush elements are independently movable transversely of the brush element holder to allow the brush tip to vary in shape substantially continuously throughout its length to conform during operation to the roll surface to be cleaned; and

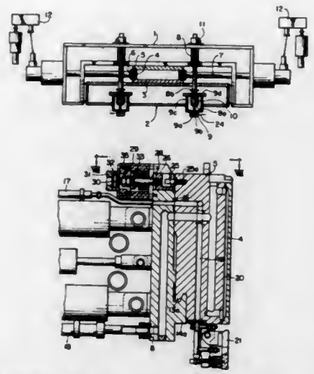
biasing means, acting continuously between the holder and the brush elements, to bias the brush elements toward positions in which the brush tip is substantially straight, said biasing means including an elongate resilient compressible element extending along a root of the channel between the brush element bases and the holder to bias the brush element bases toward the mouth of the channel.

7. A brush as claimed in claim 6, wherein the bristles of successive longitudinal rows of tufts are alternately coarse and fine.

5,307,862
ADJUSTABLE MOLD FOR CONTINUOUS CASTING OF ARTICLES OF DIFFERENT THICKNESSES

Yutaka Sakata, and Takashi Asari, both of Niihama, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 913,313, Jul. 15, 1992, abandoned. This application Feb. 5, 1993, Ser. No. 14,270
Claims priority, application Japan, Oct. 25, 1991, 3-095438
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—436 **7 Claims**



1. An adjustable mold for continuous casting of articles of different thickness, comprising a fixed longitudinal frame, a movable longitudinal frame which is movable in the lateral direction with respect to said fixed longitudinal frame, a pair of lateral frames which are held between said fixed longitudinal frame and said movable longitudinal frame and located opposite to each other, each said lateral frame consisting of a fixed lateral frame member and a variable lateral frame member detachably attached on said fixed lateral frame member in surface contact relation with the latter, a device for moving each said fixed lateral frame member in the longitudinal direction, a bracket provided on one of said fixed lateral frame member and said variable lateral frame member to project from a lower portion of its contact surface, a bracket receiving recess formed in a lower portion of the contact surface of the other of said fixed lateral frame member and said variable lateral frame member to receive said bracket in engagement therewith, a projecting block located at an upper portion of the contact surface of said variable lateral frame member and having a first coupling portion, a slide block provided on said fixed lateral frame member and having a second coupling portion to be coupled with said first coupling portion of said projecting block, a piston connected to an end of a tie rod, the other end of which is connected to said slide block, hydraulic driving apparatus for pressing and moving said slide block toward said variable lateral frame member, and a spring device for biasing said tie rod in such a direction that said slide block is urged away from said variable lateral frame member.

5,307,863
METHOD FOR CONTINUOUS CASTING OF SLAB

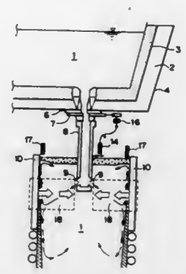
Jun Kubota; Akira Shirayama; Toshio Masaoka; Kazutaka Okimoto, and Takashi Mori, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 816,608, Dec. 31, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,958
Int. Cl.[5] B22D *27/02*
U.S. Cl. 164—466 **11 Claims**

1. A method for continuous casting of a slab, comprising the steps of:

feeding molten steel into a mold through exit ports of an immersion nozzle, the mold having a pair of wide sides and a pair of narrow sides, and the immersion nozzle being positioned at the center of the mold from the pair of narrow sides;

controlling a stream of the molten steel by means of an electromagnetic stirrer having a linearly shifting magnetic field, a direction of the linearly shifting magnetic field being toward the immersion nozzle, and distributions of magnetic fluxes of the linearly shifting magnetic field being symmetrical relative to a center line of the immersion nozzle;



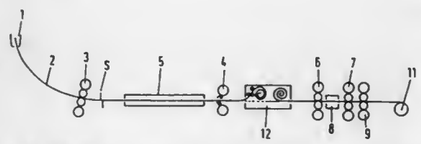
a first control step of controlling a frequency of a wave of the linearly shifting magnetic field to be higher than a threshold frequency, said wave having said threshold frequency having a period equal to the time during which the stream of the molten steel fed into the mold from the immersion nozzle passes through a field area to which the linearly shifting magnetic field is introduced, said field area having an upper limit and a lower limit; and

a second control step of controlling the frequency of the wave of the linearly shifting magnetic field to be low enough such that the magnetic fluxes of the linearly shifting magnetic field are of a density high enough to apply a braking force to the molten steel.

5,307,864
METHOD AND SYSTEM FOR CONTINUOUSLY PRODUCING FLAT STEEL PRODUCT BY THE CONTINUOUS CASTING METHOD

Giovanni Arvedi, Cremona; Giovanni Gosio, Rovato-BS, Italy; Ulrich Siegers, Berlin, Fed. Rep. of Germany; Klaus Brückner, Haan; Peter Meyer, Duisburg; Ernst Windhaus, Duisburg; Fritz-Peter Pleschiutschnigg, Duisburg, and Werner Rahmfeld, Mülheim am Ruhr, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 602,305, Jan. 24, 1991. This application Feb. 8, 1993, Ser. No. 15,300
Claims priority, application Italy, May 26, 1988, 20752 A/88; Fed. Rep. of Germany, Nov. 30, 1988, 3840812
Int. Cl.[5] B22D *11/14*; B21B *1/00*
U.S. Cl. 164—476 **13 Claims**



1. A method of continuously producing a flat steel product from flat stock produced by an arcuate continuous casting method, said flat stock having a starting bar and a horizontal direction of emergence, said method comprising the steps of:

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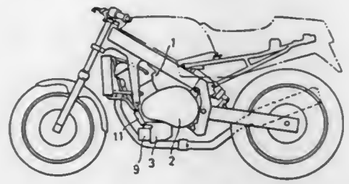
(a) first shaping the flat stock by reducing its thickness after solidification in a first shaping stage at temperatures exceeding about 1100° C. to produce unwound shaped flat stock;
(b) then inductively reheating the unwound flat stock without winding to a temperature of about 1100° C. with approximate temperature equalization of the entire cross-section of the flat stock;
(c) winding the inductively reheated flat stock after said inductive reheating; and
(d) unwinding and shaping the flat stock in at least one additional shaping stage, said additional shaping stage operating at a rolling speed which is depended upon a reduction in thickness of the flat stock.

5,307,865

ENGINE OIL COOLING SYSTEM

Takashi Inagaki; Tokuji Yoshimoto; Michio Okubo; Kouji Okazaki, and Tsugio Ikeda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 621,347, Dec. 3, 1990, abandoned, which is a division of Ser. No. 401,473, Aug. 29, 1989, Pat. No. 4,995,448, which is a continuation of Ser. No. 149,586, Jan. 28, 1988, abandoned. This application Oct. 9, 1992, Ser. No. 959,462
Claims priority, application Japan, Feb. 6, 1987, 62-024742; Mar. 13, 1987, 62-056701
Int. Cl.[5] F01P *11/08*; B62D *61/02*; B61D *27/00*
U.S. Cl. 165—41 **4 Claims**



1. An air and water cooled oil cooler system comprising:
a motorcycle having an engine including a crankcase and an oil pan;
an oil filter mounted on the lower front portion of the engine;
an air and water cooled oil cooler mounted on the front of the engine downstream along the oil flow path from said oil filter and in mutually spaced non-obstructing relation to said oil filter, whereby the flowing air drives against and cools both the oil filter and the oil cooler; and
a radiator, capable of supplying engine cooling water to said oil cooler for cooling oil, disposed adjacent to the front upper portion of the engine and in mutually spaced, non-obstructing relation to said oil cooler, whereby the flowing air drives against and cools both the radiator and the oil cooler.

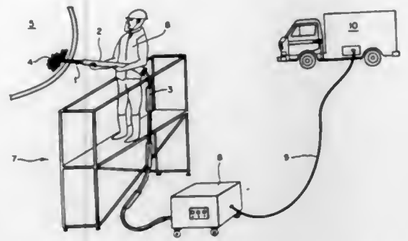
5,307,866

APPARATUS FOR CLEANING THE INSIDE OF PIPES IN A HEAT EXCHANGER

Bernd Weigel, Im Weingarten 3, 8744 Mellrichstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 852,139, Apr. 29, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 49,256
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1989, 3930493
Int. Cl.[5] F28G *1/16*
U.S. Cl. 165—95 **7 Claims**

1. Apparatus for cleaning the inside of pipes in a heat exchanger, comprising:
an aggregate including the provision of high-pressurized water and, at least, one hose leading from said aggregate for directing the high-pressurized water, said hose being wound around a reel or feeding device in said aggregate when in a non-operational mode;
an operating tube for at least partially containing said hose and being suitable for handling during operation by a user and for directing the high-pressurized water emitted from said hose;



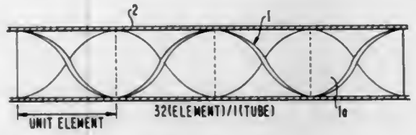
a flexible guide hose being located between said reel of said aggregate and said operating tube; and,
a mounting device for fixing said operating tube in all directions on a frontal side of at least one pipe of the heat exchanger.

5,307,867

HEAT EXCHANGER

Masayuki Yasuda; Katsubiro Kano, and Tsutomu Ueda, all of Nagoya, Japan, assignors to Noritake Co., Limited, Nagoya, Japan

Filed Aug. 10, 1992, Ser. No. 926,434
Int. Cl.[5] F28F *13/12*
U.S. Cl. 165—109.1 **9 Claims**



1. A heat exchanger tube, comprising
a spiral element extending longitudinally within a tube,
said spiral element comprising a plurality of unit elements connected together successively end-to-end with a connection angle of 0°, and
each of said unit elements having a twist angle of 180°, with the direction of the twist being reversed from one unit element to a neighboring unit element.

5,307,868

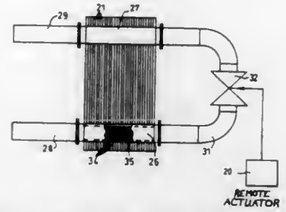
DEVICE FOR PREVENTING CHOKING IN PLATE HEAT EXCHANGERS

Jean Barbaud, Sainte Foy Les Lyon, France, assignor to Electricite de France-Service National, Paris, France

Filed Nov. 24, 1992, Ser. No. 981,853
Int. Cl.[5] F28F *19/00*
U.S. Cl. 165—119 **10 Claims**

1. A plate heat exchanger consisting of a stack of plates (1; 21) clamped against each other in a sealed manner with sealing joints being intercalated so as to create fluid flow channels between said plates, each plate comprising four holes (2-5) forming with the holes of other of said plates four manifolds (6:7,26,27) namely two inlet manifolds and two outlet manifolds, said manifolds having ends connected, on one side of the stack, to inlet or outlet pipework (8,9;28,29), so as to create two distinct fluid circuits, the joints enabling the channels to communicate with one or the other of said fluid flow circuits,

characterised in that at least one of the two inlet manifolds (26) is provided with a peripheral filtering cartridge (33) comprising a cylindrical mesh wall which is open at both ends thereof and which has a mesh size less than or equal to a distance



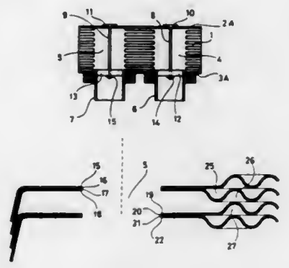
between two contiguous plates (21), and is joined, at an end thereof opposite to the inlet pipework (28), to a corresponding outlet pipework (29) by a by-pass (31) controlled by a normally closed valve (32) or to an emptying device (30).

5,307,869

PERMANENTLY JOINED PLATE HEAT EXCHANGER

Ralf Blomgren, Skanör, Sweden, assignor to Alfa-Laval Thermal AB, Lund, Sweden

PCT No. PCT/SE91/00048, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO91/13308, PCT Pub. Date Sep. 5, 1991
PCT Filed Jan. 23, 1991, Ser. No. 917,141
Claims priority, application Sweden, Feb. 1, 1991, 9000712
Int. Cl.[5] F28F *3/08*
U.S. Cl. 165—167 **8 Claims**



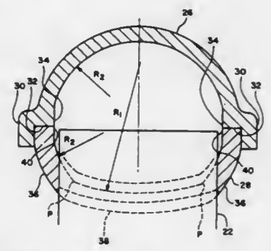
1. In a plate heat exchanger for the transfer of heat between a first fluid and a second fluid having
a stack of plate elements held together by holding members, each plate element comprising two superimposed heat transfer plates which form between themselves an interspace for throughflow of one of said fluids,
inlet and outlet means for said first fluid communicating with the interspace through every second one of said plate elements,
inlet and outlet means for said second fluid communicating with the interspaces through other said plate elements,
the heat transfer plates in each of said plate elements having surrounding edges and opposite heat transfer portions and port portions, respectively, said port portions having aligned throughflow openings,
each heat transfer plate having protuberances and depressions, formed by pressing, in its heat transfer portion,
the heat transfer plates in each of said plate elements being permanently joined together, as by brazing, both around their edges and at several places distributed over their heat transfer portions in a way such that pressure exerted on the heat transfer portions by fluid flowing between the heat transfer plates will be taken up by the heat transfer plates themselves, and
each heat transfer plate in each plate element nesting with an adjacent heat transfer plate of an adjacent plate element to facilitate heat transfer from one to the other of said plates of the two adjacent plate elements, but there being no seal between said nested plates around their periphery so that a hole formed during operation in one of said plates will allow fluid from one interspace to escape between said nested plates but will avoid fluid from one interspace entering an adjacent interspace, the improvement wherein;
(a) the edge portions of all the heat transfer plates are bent in the same direction across the planes of the plates so that they overlap each other,
(b) each heat transfer plate has at least four port portions with throughflow openings,
(c) the heat transfer plates in each plate element abut against each other and are permanently and fluid-sealingly connected with each other along a line surrounding the heat transfer portion of each transfer plate and at least two of its throughflow openings and, also, around each of the other two throughflow openings of each heat transfer plate,
(d) the adjacent plate elements abut against each other via the port portions of the respective heat transfer plates and are permanently and fluid-sealingly connected with each other around each of their throughflow openings, and
(e) the holding members extend through said throughflow openings of the heat transfer plates.

5,307,870

HEAT EXCHANGER

Sadayuki Kamiya, Kariya; Satoshi Matsuura, Takahama; Mitsugu Nakamura, Kariya; Norimasa Baba, Nagoya; Eiichi Torigoe, Kariya; Teruhiko Kameoka, Anjo; Ken Yamamoto, Obu; Michiyasu Yamamoto, Chiryu, and Ryouichi Sanada, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 8, 1992, Ser. No. 987,734
Claims priority, application Japan, Dec. 9, 1991, 3-324138; Mar. 24, 1992, 4-66122; May 13, 1992, 4-120504
Int. Cl.[5] F24F *09/02*
U.S. Cl. 165—173 **5 Claims**



1. A heat exchanger, comprising;
a pair of headers constituted by a longitudinal tank member which has a transverse cross-section having a predetermined curvature and a tube attachment member which is joined in the longitudinal direction opposing to the tank member; and
a tube communicating between the headers to allow a refrigerant flowing therethough,
the tank member being provided with
(a) a brazing material layer provided at least at a joining face with respect to the tube attachment member, and
(b) a plane portion formed at an inner peripheral face

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adjacent to the joining face with respect to the tube attachment member,

the tube attachment member being provided with

(a) a brazing material layer provided at least at a joining face with respect to the tank member,

(b) a plane portion formed at an inner peripheral face adjacent to the joining face with respect to the tank member,

(c) a first curvature portion which is formed in the vicinity of the joining face with respect to the tank member and has a predetermined curvature, and

(d) a second curvature portion which is formed at a central portion interposed between both sides by the first curvature portion and has a curvature larger than that of the curvature portion of the tank member, and

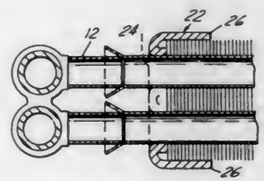
a connecting position between the first curvature portion and the second curvature portion of the tube attachment member being positioned inside of an attachment region of the tube to be attached to the tube attachment member.

5,307,871

TUBE SUPPORT MEMBER FOR A HEAT EXCHANGER

Ali Jalilevand, Plymouth, and Ramchandra L. Patel, Southgate, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 26, 1993, Ser. No. 67,654
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 **11 Claims**



1. A heat exchanger for an automotive vehicle, comprising:

a manifold assembly;

a plurality of tubular elements being connected to the manifold assembly and defining air paths between adjacent pairs of tubular elements;

a plurality of fin elements provided in said air paths; and

at least one support member disposed adjacent said manifold assembly, said support member having a generally planar base portion including a plurality of tube receiving apertures therein, each of said apertures including a curvilinear portion terminating in a discontinuous radius and forming a cylindrically extending ferrule portion of predetermined length thereby, said ferrule portion extending generally perpendicularly to the plane of said base portion and being configured to support a tubular element.

5,307,872

AUTOMATIC CHOKE

Jonathan C. Noyes, Pleasanton, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 8, 1993, Ser. No. 43,683
Int. Cl.[5] F21B *34/00*
U.S. Cl. 166—54 **9 Claims**

1. An automatic choke comprising:

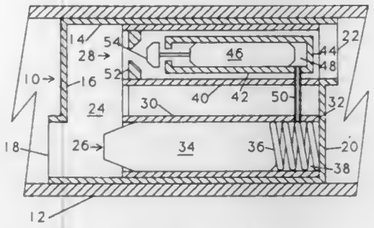
a housing defining a central chamber with an inlet opening on a first end and an outlet opening on an opposite second end;

a first piston cylinder assembly received in said chamber generally aligned with said inlet, the cylinder of said assembly having an open first end and a closed second end which with said piston defines a variable volume chamber,

spring means in said variable volume chamber biasing said piston towards said first end;

a second piston cylinder assembly generally aligned with said outlet, the cylinder of said assembly having a closed end which with said piston defines a variable volume chamber, and a valve member carried by said piston and extending from the other end of said cylinder;

cylinder means generally aligned with said outlet and having a valve seat in the end opposite said outlet, said second



piston-cylinder assembly mounted in said cylinder means so that said valve member interacts with said valve seat; and

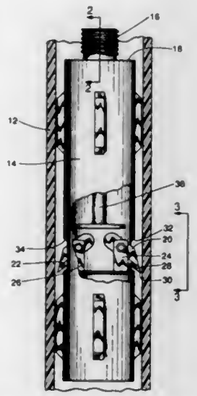
conduit means placing said variable volume chambers of said first and second piston-cylinder assemblies in fluid communication whereby movement of said first piston in response to pressure causes a counter movement of said second piston thereby controlling the positioning of said valve and flow through said choke.

5,307,873

WATER WELL LOCK

Robert H. Miller, 301 N. Main, Templeton, Calif. 93465

Filed Apr. 16, 1993, Ser. No. 49,032
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—206 **6 Claims**



1. A removable lock for installation in a water well having a plastic casing, comprising in combination:

a body fitting loosely within the plastic casing;

a blade;

first means connecting said blade to said body for pivotal motion about a generally horizontal axis;

said blade including a sharpened lower edge tapering radially outwardly to a point;

second means selectively contacting said blade for forcibly

pivoting the point of the blade outwardly beyond said body so as to penetrate into the plastic casing;

whereby, after such penetration, the application of a downward force to said body will cause the point of the blade to dig deeper into the plastic casing and will cause the sharpened lower edge of said blade to cut a slit in the plastic casing if the body is driven downward within the plastic casing, and

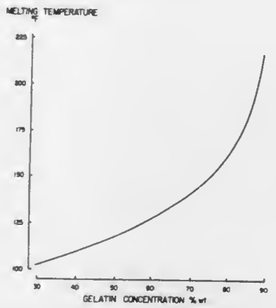
whereby, when said second means is not contacting said blade, upward movement of said body will free the point of the blade from the plastic casing permitting upward removal of the lock from the water well without harming the casing.

5,307,874

METHOD FOR TREATING FORMATIONS WITH GELATIN

Frank E. Lowther, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 2, 1992, Ser. No. 970,195
Int. Cl.[5] E21B *33/138*
U.S. Cl. 166—288 **11 Claims**



1. A method for treating a subterranean formation having zones of varying permeabilities to alter the flow profile therethrough, said method comprising:

injecting an aqueous solution of ungelled gelatin into the more permeable zones of said formation, said aqueous solution having a melting temperature above the temperature of said formation and having a temperature above its melting temperature during injection into the formation; and

allowing said aqueous gelatin solution to set to form a flow-blocking gel in said more permeable zones of said formation.

5,307,875

MATRIX ACIDIZING IN SANDSTONE FORMATIONS

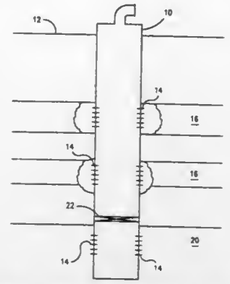
Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 22, 1992, Ser. No. 995,277
Int. Cl.[5] E21B *43/26, 43/27*
U.S. Cl. 166—282 **21 Claims**

1. A method for improved matrix acidizing in a sandstone formation comprising:

a) injecting a pad of viscous gel via a perforated wellbore into at least one high permeability interval or zone of the formation at a rate sufficient to cause a fracture therein to remain open so as to facilitate acid circulation around clay damage in the interval or zone while also cooling said zone; and

b) injecting thereafter a liquid acid into the formation at a rate sufficient to the enter said interval equally as the pad restrains the flow of acid in said interval or zone thereby prolonging the acid's contact time and reactivity thereby



removing clays which have damaged said interval and restoring the permeability thereof.

5,307,876

METHOD TO CEMENT A WELLBORE IN THE PRESENCE OF CARBON DIOXIDE

Kenneth M. Cowan, Sugar Land; James J. W. Nahm, and Arthur H. Hale, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,974
Int. Cl.[5] E21B *33/13, 41/02*
U.S. Cl. 166—293 **18 Claims**

1. A method to cement a portion of a wellbore in the presence of carbon dioxide comprising the steps of:

providing granulated water-quenched a blast furnace slag based cement slurry;

placing granulated water-quenched the blast furnace slag based slurry in the portion of the wellbore to be cemented in the presence of carbon dioxide; and

allowing the granulated water-quenched blast furnace slag based cement to harden.

5,307,877

WELLBORE SEALING WITH TWO-COMPONENT IONOMERIC SYSTEM

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

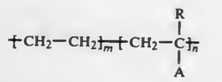
Filed Oct. 22, 1992, Ser. No. 964,993
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 166—295 **20 Claims**

1. A method for drilling and cementing a well, comprising:

combining constituents comprising water and a proton acceptor metal compound to produce a drilling fluid;

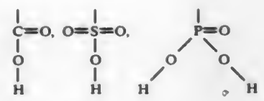
thereafter utilizing said drilling fluid in a well drilling operation to form a borehole, thus producing a used drilling fluid;

thereafter combining said used drilling fluid with 10 to 200 weight percent based on the weight of said metal compound, of a polymeric component selected from the group consisting of watersoluble polymers and water-dispersable polymers, said polymeric component being represented by the formula

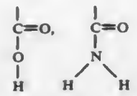


wherein A is

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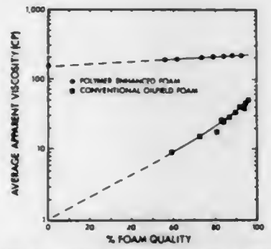


or a mixture of



wherein R is a hydrogen or 1–10 carbon atom alkyl radical to produce a cementitious slurry the ratio of m to n is between 0:1 and 100:1; and
utilizing said cementitious slurry in a cementing operation.

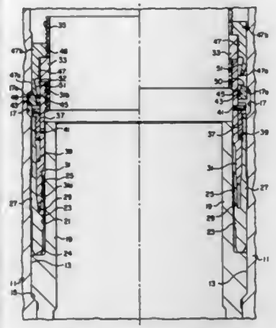
5,307,878
POLYMER ENHANCED FOAMS FOR REDUCING GAS CONING
Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Jan. 7, 1993, Ser. No. 1,484
Int. Cl.[5] E21B *43/32*
U.S. Cl. 166—305.1 **20 Claims**



1. A process for reducing gas coning into a liquid hydrocarbon production wellbore of a subterranean formation, wherein said wellbore penetrates a liquid hydrocarbon producing zone of said formation in fluid communication with an overlying gas cap, the process comprising:
placing a polymer enhanced foam in a gas flowpath between said gas cap and said wellbore, wherein said foam comprises a substantially uncrosslinked polymer, a surfactant, an aqueous solvent, and a foaming gas, and wherein said foam substantially blocks the flow of gas cap gas through said flowpath into said wellbore.

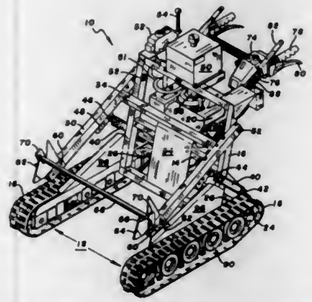
5,307,879
POSITIVE LOCKDOWN FOR METAL SEAL
Peter M. Kent, Greengates, Scotland, assignor to ABB Vetco Gray Inc., Houston, Tex.
Filed Jan. 26, 1993, Ser. No. 9,903
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—382 **10 Claims**

1. In a well assembly having a wellhead housing with an axial bore, a hanger secured to a string of conduit and supported in the bore, a seal located between the hanger and the bore, and an energizing ring which is moved from an upper position to a lower position to set the seal, an improved means for locking the seal to the wellhead housing, comprising in combination:
an annular recess formed in the bore of the wellhead housing;
a split lock ring carried by the energizing ring and being movable between a contracted position to an expanded position located in the recess; and
a wedge ring carried above the lock ring by the energizing ring for movement therewith, the wedge ring having a



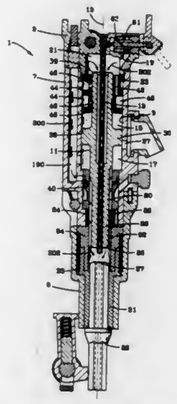
lower portion which has a tapered surface that engages the lock ring to push it to the expanded position when the energizing ring moves to the lower position, the lower portion having a thickness that is selected so as to allow the lower portion to deflect once the lock ring is in the expanded position to allow the energizing ring to continue downward movement if necessary to fully set the seal.

5,307,880
SOD ROLL-OUT MACHINE WITH ENDLESS TRACKS
Edward E. Woerner, 26250 Bruhn Rd., Elberta, Ala. 36530
Filed Mar. 12, 1993, Ser. No. 31,156
Int. Cl.[5] A01B *45/00*
U.S. Cl. 172—19 **8 Claims**



1. A sod laying machine for unrolling a sod roll upon the earth, comprising:
(a) a frame having a first and second opposing side;
(b) first and second driving means coupled to said first and second sides of said frame, respectively, for propelling said frame above the earth, said first and second driving means defining a clearance horizontally therebetween having a width greater than the width of the sod roll;
(c) steering means operatively coupled to said first and second driving means for steering said frame with respect to the earth;
(d) attachment means for receiving a roll of sod such that said roll of sod is rotatable about an axis thereof, said roll of sod being located within the clearance; and
(e) lifting means coupled to said frame for selectively elevating said attachment means above the earth, said lifting means adapted to receive said attachment means such that the roll of sod can be unrolled from within said clearance between said first and second driving means when said frame is propelled in either a forward or rearward direction.

5,307,881
FLUSHING SYSTEM FOR A PERCUSSIVE, FLUID-ACTIVATED APPARATUS
Robert R. Kimberlin, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 2, 1992, Ser. No. 955,616
Int. Cl.[5] B25D *17/22*
U.S. Cl. 173—62 **13 Claims**



1. A debris flushing system in a percussive, fluid-activated drilling apparatus, said apparatus having a backhead at a top end, a fronthead at a bottom end, a housing therebetween forming a central bore having therein a drive chamber and a return chamber for reciprocating a piston, said central bore having therein a front piston chamber for receiving and exhausting a flushing fluid, said flushing system comprising:
a. a first fluid inlet port in said backhead;
b. a first fluid flushing system in said apparatus for fluid communication between said inlet port, said drive chamber and said return chamber to reciprocate said piston, and for fluid communication with said front piston chamber;
c. a second fluid flushing system in said apparatus for fluid communication between said inlet port and a passageway having a portion positioned in said housing external to said central bore, said external portion bypassing said drive chamber and said return chamber, said passageway communicating with said central bore at a position between said return chamber and said front piston chamber and thereafter communicating with said front piston chamber; and
d. said first and second fluid flushing systems each including means for independently starting and stopping fluid flow therein, whereby said first and second fluid flushing systems are separate and independent from each other.

4. A debris flushing system in a percussive, fluid-activated drilling apparatus, said apparatus having a backhead at a top end, a front head at a bottom end, a housing therebetween forming a central bore having therein a drive chamber and a return chamber for reciprocating a piston, said central bore having therein a front piston chamber for receiving and exhausting a flushing fluid, said flushing system comprising:
a. a first fluid inlet port in said backhead;
b. first passageway means in said apparatus for fluid communication between said inlet port and said front piston chamber;
c. first seal actuator means for opening and closing said first passageway means;
d. first throttle means for opening and closing said first seal actuator means;
e. second passageway means in said apparatus for fluid communication between said inlet port and said front piston chamber;
f. second seal actuator means for opening and closing said second passageway means;
g. second throttle means for opening and closing said second seal actuator means;
h. said first passageway means further comprising:
(i), a first accumulator chamber within said central bore at said backhead, in fluid communication with said inlet port and said drive and return chambers, for receiving percussive fluid to activate said piston and
(ii), a bore through said piston in fluid communication between said first accumulator chamber and said front piston chamber, whereby a portion of percussive fluid in said first accumulator chamber flows to said front piston chamber;
i. said second passageway means further comprising:
(i), a second accumulator chamber in said backhead, said second accumulator chamber being external to said central bore, in fluid communication with said inlet port; and
(ii), housing passageway means in said housing in fluid communication with said second accumulator chamber and said front piston chamber, whereby a portion of percussive fluid in said inlet port can flow to said front piston chamber;
j. said firs seal actuator means further comprising:
(i), a first backhead bore in said backhead in fluid communication with said first inlet port;
(ii), a valve cartridge housing in fluid sealing contact in said first backhead bore;
(iii), valve cartridge passageway means through said valve cartridge housing, for fluid communication between said first inlet port and said first backhead bore; and
(iv), first valve stem means in said valve cartridge housing for opening and closing said valve cartridge passageway means, in response to said fires throttle means; and
k. said second seal actuator means further comprising:
(i). a second backhead bore through said backhead in fluid communication with said first inlet port;
(ii). a connecting passageway in said second backhead for fluid communication between said second backhead bore and said housing passageway means; and
(iii). second valve stem means slidable in said second backhead bore, for opening and closing said connecting passageway.

5,307,882
APPARATUS FOR FEEDING A DRILLING MACHINE IN EXTENSION ROD DRILLING
Markku Launiemi, Tampere, Finland, assignor to Tamrock Oy, Tampere, Finland
PCT No. PCT/FI91/00184, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/19885, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 965,369
Claims priority, application Finland, Jun. 15, 1990, 903026
Int. Cl.[5] E21C *5/11*
U.S. Cl. 173—152 **2 Claims**

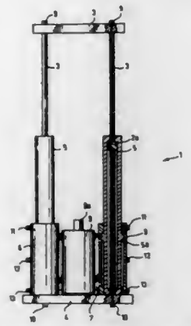
1. Drill pipe handling apparatus for use with a plurality of drilling pipes each having a thread length at an end thereof comprising:

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at least one feed cylinder and a piston therein having a two-sided piston rod and pressure fluid conduits for feeding pressure fluid into pressure fluid spaces in the at least one feed cylinder on opposite sides of said piston, the at least one feed cylinder being mounted in the handling apparatus such that the piston is longitudinally immovable with respect to the handling apparatus and the at least one feed cylinder is movable in a feed direction with respect to the piston;

a second piston immovable relative to the at feed least one feed cylinder;

a separate connecting cylinder displaceable in the longitudinal direction of the at least one feed cylinder with respect to the second piston and the at least one feed cylinder, said second piston and said connecting cylinder being arranged about the at least one feed cylinder;



pressure fluid conduits separate from the pressure fluid conduits of the at least one feed cylinder for feeding pressure fluid into pressure fluid spaces in the connecting cylinder on opposite sides of the second piston for displacing the connecting cylinder with respect to the at least one feed cylinder;

a drilling machine connected to the connecting cylinder;

the connecting cylinder having a stroke at least two times the thread length of the drill pipe, the connecting cylinder including an additional pressure fluid conduit positioned substantially medially of the length of stroke of the connecting cylinder relative to the at least one feed cylinder for stopping the movement of the connecting cylinder when the second piston reaches said additional pressure fluid conduit.

5,307,883

METHOD AND APPARATUS FOR CONTROLLING A RAMMING DEVICE

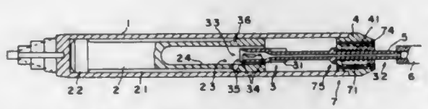
Dietmar Jenne, Strengelbach, Switzerland, assignor to Terra AG, Strengelbach, Switzerland

Division of Ser. No. 664,325, Mar. 4, 1991, Pat. No. 5,198,627. This application Nov. 9, 1992, Ser. No. 973,678

Claims priority, application Switzerland, Mar. 9, 1990, 00774/90-9

Int. Cl.[5] E21B *11/02*

U.S. Cl. 175—19 **1 Claim**



1. A method for reversing a compressed air-driven ramming device between forward running and rearward running operation, the ramming device comprising a ram housing, a piston movable forth and back inside said housing and a control device mechanically connected to a supply means for supplying compressed air to the control device which is rotatable between a first angular position and a second angular position corresponding to the forward running and the rearward running operation, respectively, of the ramming device, the two angular positions being axially identical, the method comprising the steps of:

(a) switching off the supply of compressed air to said control device so that said control device is held in position by a nominal detaining force;

(b) rotating said control device from one of said first and second positions to the other one of said first and second positions by rotating said supply means against said nominal detaining force, said control device being axially moved forth and back during its rotation from said one position to said other position; and

(c) switching on said supply of compressed air to said control deice, whereby operation of said machine is resumed, operating vibrations of said ramming device are damped by said compressed air, and said control device is reliably locked by said compressed air into said other one of said positions so as to prevent reversing of said ramming device during operation.

5,307,884

MULTI-LEVEL SAMPLING DEVICE

V. Dennis Millgard, Orchard Lake, Mich., assignor to Millgard Environmental Corporation, Livonia, Mich.

Filed Jan. 28, 1993, Ser. No. 10,077

Int. Cl.[5] E21B *49/02*

U.S. Cl. 175—20 **11 Claims**



1. Multi-level sampling device comprising elongate rigid member having multiple progressively spaced sampling compartments, each with means for holding an individual removable sample container, a removable sample container in each of said compartments, means for covering said containers during lowering of said member to a sampling level, and means for uncovering said containers to provide simultaneous access for material flow into each sample container at each respective level.

5,307,885

ATTITUDE AND DRILLING-DIRECTION CONTROL DEVICE

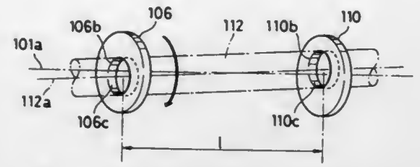
Shoji Kuwana, Ueda; Yoshihide Kiyosawa, Hotaka, and Akio Ikeda, Osaka, all of Japan, assignors to Harmonic Drive Systems Inc., Kanagawa and Sumitomo Metal Industries Ltd., Osaka, both of Japan

Filed Jul. 16, 1991, Ser. No. 730,622

Claims priority, application Japan, Jul. 18, 1990, 2-189883

Int. Cl.[5] E21B *44/00, 4/00;* E21D *10/00*

U.S. Cl. 175—26 **8 Claims**



1. A drilling-direction control device for a drilling system comprising a plurality of harmonic drive mechanisms of the hollow type and a plurality of rotational members connected one each to outputs of said harmonic drive mechanisms, each of said rotational members having an eccentric hollow portion which rotates eccentrically around a rotational axis of said harmonic drive mechanism, a rotational drill shaft being placed to extend through the hollow portions of said harmonic drive mechanisms and said eccentric hollow portions of said rotational members so that inner surfaces of said eccentric hollow portions are supportingly contacted with said rotational drill shaft, whereby portions of said rotational drill shaft, which are supported by said inner surfaces of said eccentric hollow portions, are deflected in a direction substantially perpendicular to an axis of said rotational drill shaft by rotating said rotational members relative to one another.

5,307,886

METHOD FOR CASING A HOLE DRILLED IN A FORMATION

Hans P. Hopper, Hill House, Whiterashes, Aberdeen, AB5 OQL, United Kingdom

Filed Apr. 27, 1992, Ser. No. 874,137

Claims priority, application United Kingdom, May 2, 1991, 9109543

Int. Cl.[5] E21B *7/28*

U.S. Cl. 175—53 **9 Claims**

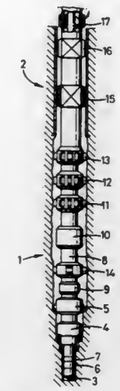
1. A method for casing a hole drilled in a formation, said hole having an enlarged section located below a previously cased section, said method comprising the steps of:

running new casing into said enlarged section, wherein said new casing is of slightly smaller diameter than casing present in the previously cased section;

pumping cement into an annulus formed between an outer surface of said new casing and said enlarged section of said formation;

providing means in said new casing to permit a circulation path for said cement between said annulus and an inner portion of said new casing;

securing said new casing in position within said hole;



hanging and packing off in the last casing string; and

latching and sealing the previously cased section to said last casing string.

5,307,887

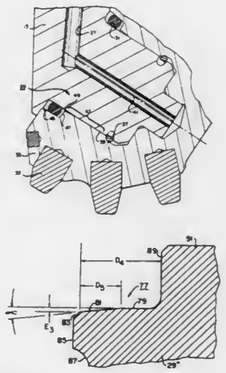
EARTH BORING BIT WITH IMPROVED THRUST BEARING

Michael F. Welsh, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 30, 1992, Ser. No. 922,308

Int. Cl.[5] E21B *10/22*

U.S. Cl. 175—371 **12 Claims**



1. An earth drilling bit which comprises:

a body;

a cantilevered bearing shaft extending inwardly and downwardly from the body, the bearing shaft having a bearing axis;

a cutter rotatably secured to the bearing shaft, with an open end to permit assembly over the cantilevered bearing shaft;

the bearing shaft having a first thrust bearing surface extend-

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ing radially outward and generally transversely to the bearing axis;

the cutter having a second thrust bearing surface to oppose and engage the first thrust bearing surface of the bearing shaft;

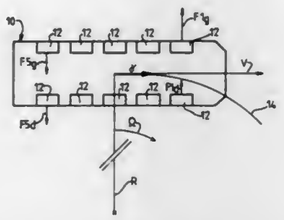
one of said thrust bearing surfaces having a gradually tapered outer region and a planar inner region configured to reduce peak stress and void abrupt changes in stress.

5,307,888

METHOD AND APPARATUS FOR CONTROLLING THE STEERING OF A VEHICLE THAT IS TRACKED OR THAT HAS NON-STEERABLE WHEELS

Emile Urvoy, Roussigny, France, assignor to Glat Industries, Versailles, France

Filed Nov. 19, 1992, Ser. No. 978,861
Int. Cl.[5] B62D *11/02*
U.S. Cl. 180—6.2 **14 Claims**



1. A method of controlling the steering of a vehicle that has propulsion means selected from either tracks or non-steerable driving wheels, and differential control means for applying differential control to the propulsion means, the method comprising the steps of producing a steering command signal for application to the control means on the basis of a steering instruction given by an operator of the vehicle, detecting an instantaneous angular velocity in yaw of the vehicle, amplifying with a determined gain a signal representative of the said velocity, said gain being variable and having a value of substantially zero when the steering behavior of the vehicle is naturally stable, which value increases rapidly when the steering behavior of the vehicle becomes unstable, comparing the amplified signal with the steering command signal for obtaining a difference, and transmitting the difference to the control means in order to automatically apply a steering correction on detecting a beginning of vehicle oversteer.

5,307,889

PORTABLE GOLF CART

William D. Bohannan, East 11122 Ferret, Spokane, Wash. 99206

Filed Jan. 4, 1993, Ser. No. 138
Int. Cl.[5] B62D *61/06, 51/04;* B62K *15/00*
U.S. Cl. 180—13 **11 Claims**

1. A portable self-powered golf cart capable of being disassembled for storage and transport, comprising:

a planar platform having a flat upper surface and longitudinally spaced transverse front and rear ends that extend between a pair of opposite sides;

at least one upstanding golf bag support releasably secured within a socked fixed to the platform at said front end;

a pair of freely rotatable wheels each located adjacent a respective side of the platform adjacent to said front end, the wheels being rotatably mounted about a common axis extending transversely across the platform on axles mounted to the platform;

at least one storage battery support on the upper surface of the platform in transverse alignment with the pair of wheels;

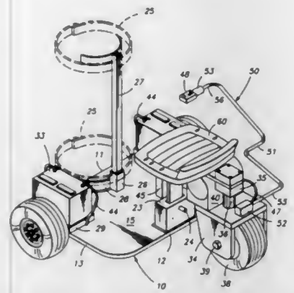
at least one electrical storage battery releasably fixed within the battery support;

an upright open socket located in a fixed center position at the rear end of the platform;

a rigid gooseneck frame extending upwardly and rearwardly from the platform in a transversely centered position across said rear end, the gooseneck frame including a lower end releasably secured within the socket and an elevated rear end;

a wheel support pivotally mounted to the elevated rear end of the gooseneck frame about an upright axis spaced rearwardly from the platform;

at least one powered wheel rotatably carried on the wheel support;



an electrical motor mounted on the wheel support, the motor being drivingly connected to the powered wheel;

a motor control means operably connected between the storage battery and the motor;

a steering assembly operatively connected to the wheel support, the steering assembly including an elongated handle having an inner end and an outer end, the outer end of the handle having a grip with manually operable controls leading to the motor control means and the inner end of the handle being pivotally mounted about a transverse axis on the wheel support by a releasably mounted hinged bracket; and

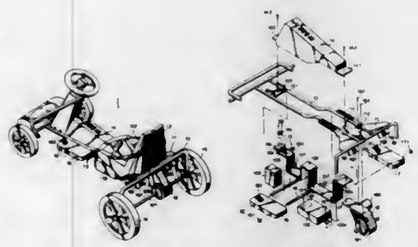
a forwardly-facing occupant seat releasably mounted to the gooseneck frame.

5,307,890

CHASSIS STRUCTURE FOR A REMOTE CONTROLLED CHILD DRIVEN ELECTRIC CAR

Kuo-Chang Huang, No. 68 Yau-Her Street, Taipei, Taiwan

Filed Oct. 19, 1992, Ser. No. 962,728
Int. Cl.[5] B60K *1/00;* B62D *21/02*
U.S. Cl. 180—65.1 **5 Claims**



1. An improved chassis structure for a child-driven electric car which can be remotely controlled, comprising: a car frame, a generally U-shaped seat member attached to the frame, an operating switch control box attached to the car frame, an arch base attached to the frame, a seat located on the frame, a base board attached to the frame, pedal shafts having pedals thereon attached to the arch base, a battery, remote controller, safety controller, and a motor, the battery, safety controller and motor all attached to the arch base, and a propulsion mechanism driven by the motor, wherein:

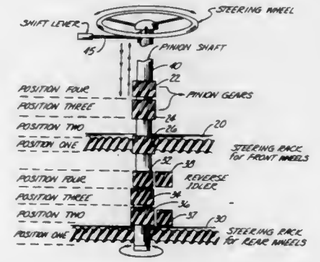
said base board is integrally formed and is welded under a rear portion of said car frame, said control box and arch base having extending plates extending from opposite forward and rear ends said forward extending plates being respectively secured on said U-shaped seat member disposed at a front portion of said car frame and the rear extending plates secured on said base board disposed at a rear portion of said car frame, and further comprising C-shaped clamping, members for holding said pedal shafts mounted on said arch base, wherein said propulsion mechanism is secured under said base board.

5,307,891

AUTOMOTIVE STEERING SYSTEM

David C. Shaw, and Judy Z. Shaw, 3312 E. Mandeville Pl., Orange, Calif. 92667

Filed Sep. 29, 1992, Ser. No. 953,083
Int. Cl.[5] B62D *1/20*
U.S. Cl. 180—79 **14 Claims**



1. An automotive steering system for a vehicle with steerable front wheels and steerable rear wheels, said steering system comprising:

a steering wheel operable by a vehicle user;

a first steering rack operably attached to the front wheels;

a second steering rack operably attached to the rear wheels;

means for providing specific choices of different steering modes through a shift lever, said shift lever being operable by a vehicle user and being selectively movable between a plurality of operating positions, wherein each operating position provides a specific steering mode; and

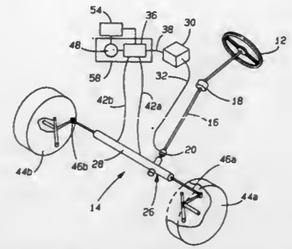
shaft means for carrying both a first drive means for controlling the turning of the front wheels and a second drive means for simultaneously controlling the turning of the rear wheels, said shaft means being operably attached to and controlled by both the steering wheel and the shift lever, the shaft means including a drive shaft rotated by the steering wheel and linearly displaced by the shift lever, the drive shaft being a pinion shaft carrying a first set of pinion gears disposed to selectively operably engage the first steering rack, and carrying a second set of pinion gears disposed to selectively operably engage the second steering rack, wherein the first set of pinion gears includes at lest two front pinion gears, and the second set of pinion gears includes at least two rear pinion gears and two reverse idler pinion gears interposed between two of the rear pinion gears and the second steering rack, and wherein the front pinion gears and rear pinion gears are spaced on the pinion shaft such that one of the first set of pinion gears and one of the second set of pinion gears operably simultaneously engage its respective first and second steering racks.

5,307,892

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

Edward H. Phillips, Rochester Hills, Mich., assignor to Techco Corporation, Troy, Mich.

Continuation of Ser. No. 562,473, Aug. 3, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 868,087
Int. Cl.[5] B62D *5/04, 5/06, 5/08*
U.S. Cl. 180—79.1 **69 Claims**



1. An electronically controlled power steering system for motor vehicles of the type used for steering dirigible wheels in response to an input torque applied to a steering wheel, comprising:

mechanical steering gear means coupled to said steering wheel for generating a mechanically derived steering force in response to said input torque;

a power cylinder coupled to said mechanical steering gear means for producing a hydraulically derived steering force for augmenting said mechanically derived steering force;

first transducer means for generating a first signal indicative of said input torque applied to said steering wheel;

control valve means in fluid communication with said power cylinder for generating a differential pressure applied to said power cylinder;

means for supplying fluid to said control valve means; and

signal processing means for generating an output signal in response to said first signal, said signal processing means operable to selectively actuate said control valve means in response to said output signal for selectively regulating said hydraulically derived steering force generated by said power cylinder said signal processing means being adapted to amplify and selectively manipulate said first signal such that said output signal is a function of said input torque applied to said steering wheel.

5,307,893

AIR CUSHION VEHICLE HAVING VOLUTE SIDE THRUSTERS

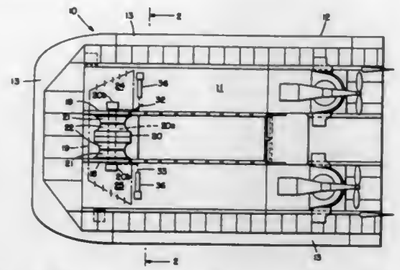
Gregory L Bender, Metairie, La.; James A. Gleason, Wayeland, Miss., and Joel Bruns, Matairie, La., assignors to Textron, Inc., Providence, R.I.

Filed Jan. 15, 1993, Ser. No. 5,238
Int. Cl.[5] B60V *1/14*
U.S. Cl. 180—117 **5 Claims**

1. An air cushion vehicle having a centerline and a center of gravity, said vehicle comprising a hull section having a deck, a peripheral air cushion seal means attached to said hull section and depending therefrom to form an enclosed air cushion compartment beneath the hull section, air volute means for inflating said air cushion seal means and for pressurizing said air cushion compartment, at least one of said air volute means comprising a volute housing located above the deck along the centerline of the vehicle, said volute housing having opposed portside and starboard side walls, air-inlet openings in said walls for admitting a flow of pressurizing air sucked in by air volute means therewithin, an air outlet opening through said hull section and a lower diffusion duct communicating be-

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tween the air outlet openings of said volute housing and said air cushion seal means for directing pressurizing air to said seal means and to the air cushion compartment beneath the hull section, the opposed portside and starboard side walls of the volute housing each having a normally-closed air-discharge vent, means for opening either or both of said vents to permit a portion of the flow of pressurizing air to be diverted and discharged from said volute housing as volute housing discharge air through said vents towards port or starboard direction, from a location above the center of gravity of said vehicle, to cause the vehicle to roll in a roll direction opposite to the direction of discharge whereby pressurized air can escape from beneath the air cushion seal means in the direction opposite the roll direction, said air escape and said volute housing discharge air imparting a complimentary thrust to the vehicle in the roll direction.



5,307,894

HYDRAULIC POWER STEERING SYSTEM FOR AUTOMOTIVE VEHICLES

Nabil Henein, Heidelberger, and Wilhelm Beer, Ruesselsheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Fed. Rep. of Germany

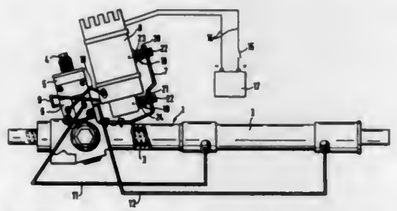
PCT No. PCT/EP92/00070, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO92/12887, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 15, 1992, Ser. No. 927,300

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102264

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—132 **2 Claims**



1. A hydraulic power steering system for use in automotive vehicles; comprising:

an integral pump and motor assembly including a hydraulic pump rigidly coupled to an electric motor;

a steering assembly hydraulically coupled to said hydraulic pump;

a pump holding means having first and second ends, said first end coupled to said steering assembly, and

a damping element attached to and between said integral assembly and said second end of said pump holding means for attaching the assemblies together, said damping element attached at a location along said integral assembly where a vibration node forms during operation of said integral assembly.

5,307,895

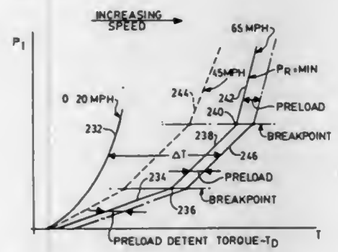
HYDRAULIC REACTION VARIABLE ASSIST POWER STEERING CONTROL HYDRAULIC "DETENT"

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 29, 1993, Ser. No. 37,825

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—143 **9 Claims**



1. A fluid pressure operated power steering gear mechanism for a vehicle comprising:

a fluid pressure source, a steering pressure movable part adapted to be connected to a steering linkage for a vehicle, a drive member connected to said pressure movable part, a driving shaft subjected to steering torque connected to said drive member;

a valve housing, a rotary steering valve means situated in said housing and partly defining pressure distribution and flow return passages extending between said pressure source and said pressure movable part for establishing steering pressure and steering pressure differential forces on said pressure movable part;

said steering valve means comprising an internal valve member and a surrounding sleeve valve member, said internal valve member and said sleeve valve member having registering valve lands, one of said valve members being connected to said driving shaft and the other being drivably connected to said drive member whereby relative rotary displacement of said valve members effects a change in the flow area through said steering valve means and a corresponding pressure differential change acting on said pressure movable part;

at least two pressure reaction pistons in said sleeve valve member, passage structure in said steering valve means for distributing steering pressure from said steering valve means to said pressure movable part and to said reaction pistons thereby establishing opposed steering torque reaction forces;

means for applying said reaction forces to one of said valve members whereby relative angular displacement of said valve members is resisted;

modulator valve means communicating with said passage structure for modifying said steering pressure to provide a change in reaction pressure and an increased rate of increase in steering pressure for a given steering torque change, and detent means for establishing a detent torque that resists relative angular displacement of said valve members as steering torque is applied to said driving shaft.

5,307,896

COLLISION DETECTION SENSOR

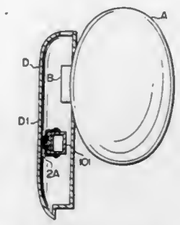
Masahiro Taguchi, Aichi; Motonori Tominaga, Okazaki, and Tosbiaki Matsuhashi, Gamagori, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nisbio, both of Japan

Filed Aug. 12, 1992, Ser. No. 928,475

Claims priority, application Japan, Aug. 13, 1991, 3-228461; Aug. 22, 1991, 3-235424

Int. Cl.[5] H01H *35/14*

U.S. Cl. 180—274 **4 Claims**



1. A collision detection sensor comprising:

a fixed member fixed in a vehicle door;

a low load operation mechanism in which a pair of detection parts are arranged in parallel formation on a surface of the pressure receiving side of said fixed member and a plurality of elastic members are arranged at a predetermined interval on a surface of a cover body covering said detection parts, and tip ends of said plurality of elastic members alternately face said pair of detection parts through said guiding holes provided at said cover body, and when a vehicle receives an impact force during a collision, more than one pair of said elastic members are elastically deformed and brought into contact with each of said pair of detection parts, whereby said detection parts are actuated; and

a high load operation mechanism that is constituted so that when said cover body receives an impact force exceeding a predetermined value, said cover body is deformed or moved and brought into contact with each of said pair of detection parts, whereby said detection parts are actuated.

5,307,897

SAFETY STANCHION FOR FALL PROTECTION SYSTEM

C. Rockwell Turner, Loveland; Steven P. Miller, Thornton, both of Colo.; Roger W. Gallagher, Scottsdale, Ark., and Barry A. Cole, Colchester, Conn., assignors to LPR Construction Company, Loveland, Colo.

Filed Nov. 19, 1992, Ser. No. 978,922

Int. Cl.[5] B21F *27/00*

U.S. Cl. 182—3 **19 Claims**

1. A safety stanchion for mounting to a structural I-beam or the like comprising:

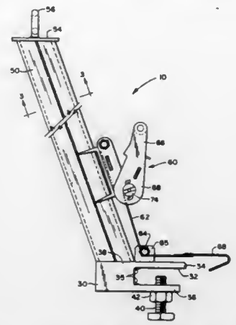
base means for forming a base having a platform and slot means for defining a lateral slot;

post means comprising a post extending from said platform at an oblique angle thereto;

cable mounting means for mounting a cable to said post means;

first lock means comprising at least one bolt mounted to said base means and variably positionably in said slot for locking said base means to a portion of said beam received in said slot; and

second lock means independent of said first lock means, said second lock means mounted to said post for locking said base means to a received beam by engaging a portion of said beam not received in said slot, said second lock means comprises a ratchet lock mechanism comprising a strap.



5,307,898

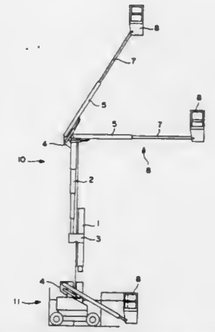
AERIAL WORK APPARATUS

Paul J. Purdy, 4490 Statler Rd., Chambersburg, Pa. 17201, and Matthew S. Purdy, 1701 N. 73rd Ter., Apt. #4, Kansas City, Kans. 66112

Filed Mar. 8, 1993, Ser. No. 28,941

Int. Cl.[5] B66F *11/04*

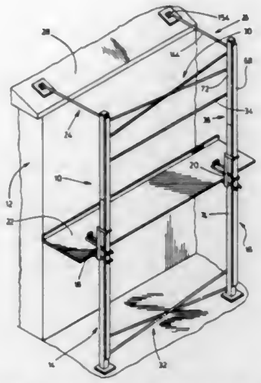
U.S. Cl. 182—63 **8 Claims**



1. A mast assembly for an aerial work platform, comprising a telescoping vertical main mast containing at least lower and upper sections so that there is an uppermost section and each section except the uppermost section has a next adjacent higher section, at lest one telescoping vertical auxiliary mast so that there is an uppermost auxiliary mast, each auxiliary mast containing at least lower and upper sections so that there is an uppermost section and each section except the uppermost section has a next adjacent higher section, the lower sections being of a smaller cross-section than the next adjacent higher sections and being capable of telescoping into the higher sections, the main mast and the auxiliary mast being attached via a connecting means having a bottom and at least tow side walls, which connecting means is attached to the upper section of the main mast and the lower section of the auxiliary mast fits into, and is secured by, the connecting means.

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5,307,899
PUMP JACK SCAFFOLD
Ronald Lubinski, 40 Centennial Heights Court, Meaford, Ontario, Canada N0H 1Y8
Filed Dec. 15, 1992, Ser. No. 991,349
Int. Cl.[5] E04G 1/20
U.S. Cl. 182—136 **4 Claims**



1. In a pump jack scaffold comprising a pair of uprights, a platform, a pair of jack mechanisms each secured to a different one of the uprights and supporting the platform; each of the uprights comprising an elongate extruded aluminum pole comprising a generally rectangular outer transverse cross-section, a pair of parallel side walls each having an outer surface, four corner portions, a hollow interior, and a longitudinal structure extruded with one of the pair of side walls and defining a longitudinal slot with a constricted mouth that opens into the outer surface of the one side wall and comprising friction material secured to the pole and covering the majority of the outer surface of the other of the pair of parallel side walls, the friction material being operatively engaged by the jack mechanism secured to the upright: the platform extending from one lateral side of the scaffold and the one of the pair of side walls of the pole of each upright faces to the one later side of the scaffold, the improvement in which the scaffold is adapted to be self-supporting on a generally horizontal surface on which the uprights are rested, each of the uprights being associated with a brace assembly that extends to the one lateral side, each of the brace assemblies comprising:

a first elongate brace with an upper end portion and a lower end portion, the lower end portion being engaged with the generally horizontal supporting surface;

a second elongate brace comprising a pair of opposing end portions;

a pivot joint connecting one of the end portions of the second brace to the first brace intermediate the upper and lower end portions of the first brace for pivoting about a predetermined horizontal axis;

first connection means for connecting the upper end portion of the first brace at a selectable vertical position to the upright associated with the brace assembly, the first connection means comprising a first fastener comprising an enlarged portion received in and shaped for displacement along the slot of the pole of the associated upright and comprising a portion extending outwardly through the constricted mouth of the slot of the pole of the associated upright, a first connector shaped to receive the outwardly-extending portion of the first fastener, a first complementary fastener cooperating with the outwardly-extending portion of the first fastener to releasably secure the first connector to the pole of the associated upright, and a first pivot joint connecting the upper end portion of the first brace to the first connector for pivoting about an axis substantially parallel to the predetermined horizontal axis; and,

second connection means for connecting the other of the end portions of the second brace at a selectable vertical position to the upright associated with the brace assembly, the second connection means comprising a second fastener comprising an enlarged portion received in and shaped for displacement along the slot of the pole of the associated upright and comprising a portion extending outwardly through the constricted mouth of the slot of the pole of the associated upright, a second connector shaped to receive the outwardly-extending portion of the other fastener, a second complementary fastener cooperating with the outwardly-extending portion of the second fastener to releasably secure the second connector to the pole of the associated upright, and a second pivot joint connecting the other end portion of the second brace to the second connector for pivoting about an axis substantially parallel to the predetermined horizontal axis.

5,307,900
LADDER LEG EXTENSION APPARATUS
Leonard R. Noga, 1406 E. 12th St., Glencoe, Minn. 55336
Filed Jul. 30, 1993, Ser. No. 99,469
Int. Cl.[5] E06C 7/44
U.S. Cl. 182—204 **1 Claim**



1. A ladder leg extension apparatus, comprising in combination with a ladder, wherein said ladder includes a first ladder leg and a second ladder leg, each of a predetermined length, and

at least said first ladder leg includes a lower distal end, and

a leg sleeve having sleeve bores arranged to telescopingly position the lower distal end relative to the leg sleeve, the leg sleeve including a leg sleeve floor, spaced leg sleeve side walls, and

a pivot head mounted relative to the floor, having a resilient bottom wall laminate spaced from the floor, and

a spring plate, the spring plate having a spring plate first end and a spring plate second end, the spring plate first end including an anchor lug, wherein the anchor lug is secured to one of said side walls, and

the spring plate second end including a lock pin fixedly and orthogonally mounted to the spring plate, wherein the lock pin is received through one of said sleeve bores, and

a further spring plate, with the further spring plate including a further spring plate first end having a further spring plate anchor lug secured to the leg sleeve, with the further spring plate having a further spring plate lock pin received through a further of said sleeve bores, and

a foot member includes a spherical connector member fixedly mounted to the foot member, and a semi-spherical housing mounted relative to the floor, wherein the spherical connector member is rotatably mounted within the semi-spherical housing, and

a threaded adjuster rod integrally mounted to the semi-spherical housing, with the threaded adjuster rod threadedly received through the floor to adjustably position the foot member relative to the floor, and

a spirit level mounted to one of said end walls, and

a junction sleeve receiving said ladder leg, wherein the junction sleeve includes a lower socket tube and an upper socket tube longitudinally aligned, with a partition wall positioned intermediate the lower socket tube and the upper socket tube, the upper socket tube having a first socket, the lower socket tube having a second socket, with the first socket receiving said ladder leg, and the second socket received within said leg sleeve, and the lower socket including a row of lower tube bores, wherein one of said lower tube bores is aligned with said sleeve bores.

5,307,901
INNER SPINDLE BEARING GREASER TOOL
Richard J. Stromberg, 27 Chandler St., Tomahawk, Wis. 54487
Filed Mar. 31, 1993, Ser. No. 40,606
Int. Cl.[5] F16C 1/24
U.S. Cl. 184—5.1 **6 Claims**

1. In combination, an inner spindle bearing greasing tool for the drive shaft of a front wheel driving axle of the type including a selectively engagable and disengagable drive connection assembly means between a splined outer end of the drive axle and an inner spline equipped hub journaled upon the exterior of a tubular spindle through which said axle is journaled, an inner bearing assembly disposed between the inner end of the axle and spindle, said spindle having a threaded outer extremity upon which adjusting and locking nuts for hub-to-spindle bearings are threaded inward of the outer extremity of said hub, the inner ends of the drive axle and spindle having seal means operatively associated therewith disposed inward of said inner bearing assembly, said tool including a thin walled, long reach sleeve closed at one end and having a grease fitting opening therethrough, the other end of said sleeve being insertable within said hub subsequent to removal of said drive connection assembly means and including internal thread means for threaded engagement over said threaded outer extremity of said tubular spindle.

5. The method of greasing the inner bearings journaling the inner drive shaft end of a drive axle form a tubular spindle of a front wheel dive system wherein a wheel support hub is journaled externally on said tubular spindle by hub bearings whose axial loading is adjusted by an adjusting nut and a lock nut threaded on said spindle outwardly of said hub bearings and the outer end of said hub and spindle are internally and externally splined, and removable, externally and internally splined and selectively engageable and disengagable drive connection assembly means is operatively associated with the internal splines of said hub and external splines of said spindle outwardly of said nut means, said method including removing said drive connection assembly means, providing a thin walled sleeve open and internally threaded at one end, threading said one end of sad sleeve over said spindle outwardly of said nut means in sealed engagement therewith, and forcing grease through said sleeve from the other end thereof.

5,307,902
GAS METER COUNTER UNIT WITH IMPROVED SHAFT LUBRICATION
Richard T. Herrmann, Pinehurst, and Albert B. Atkinson, Houston, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Mar. 24, 1993, Ser. No. 36,601
Int. Cl.[5] F16N 7/12
U.S. Cl. 184—64 **3 Claims**

1. In a gas meter having a housing containing a lubricant reservoir for lubrication of a gear train in a meter counter assembly, the improvement comprising a support plate mounted within said housing and being of a porous metal material having capillary passages formed therein for transmission of lubricant, said support plate including a portion thereof immersed in said reservoir, a bore spaced from said reservoir extending into said support plate and defining a bearing wall, a shaft in said gear train having a section telescoped into said bore and rotatably supported by said bearing wall, said capillary passages communicating between said reservoir and said bearing wall so that lubricant from said plate lubricates between said shaft and said wall and is replaced by lubricant migrating through said plate from said reservoir.

2. In a gas meter having a housing containing a lubricant reservoir for lubrication of a gear train in a meter counter assembly, the improvement comprising a support plate formed of a lubricant-impregnated powdered metal material and mounted within said housing, said plate having capillary passages integrally formed therewith, a bore defining a bearing wall through said support plate and spaced from said reservoir, a shaft in said gear train having a section telescoped into said bore and rotatably supported by said bearing wall, said capillary passages communicating with said bearing wall for wet-

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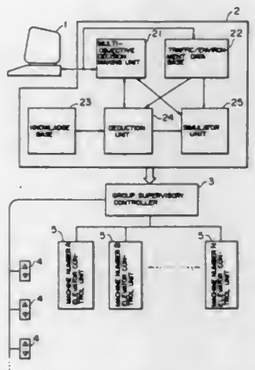
ting the surface thereof with lubricant from said material to lubricate between said shaft and said wall.

5,307,903

METHOD AND SYSTEM OF CONTROLLING ELEVATORS AND METHOD AND APPARATUS OF INPUTTING REQUESTS TO THE CONTROL SYSTEM

Yuzo Morita, Hitachi; Toshimitsu Tobita; Kiyoshi Nakamura, both of Katsuta; Atsuya Fujino, Hitachi; Soshiro Kuzunuki, Katsuta; Kotaro Hirasawa, Hitachi; Yoshio Sakai, Ibaraki; Kenji Yoneda; Takaaki Ueshima, both of Katsuta; Yuji Toda, Hitachi, and Hiromi Inaba, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1989, Ser. No. 301,973
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—124 **70 Claims**



1. An elevator control system for group supervisory control of a plurality of elevators serving a plurality of floors, comprising:

means for inputting from a user of said elevators a control target value desired by said user for each of at least two control target to be statistically attained as a result of executing group supervisory control of said elevators;

means for deciding which of a plurality of predetermined control methods is suited for attainment of said control targets based on information concerning said control targets; and

means for executing said group supervisory control according to said decided control method.

5,307,904

STOPPING OF ELEVATORS IN THE UP DIRECTION

Young S. Yoo, 76 Anvil Dr., Avon, Conn. 06001

Filed Sep. 8, 1992, Ser. No. 941,504
Int. Cl.[5] B66B *5/28*
U.S. Cl. 187—67 **9 Claims**

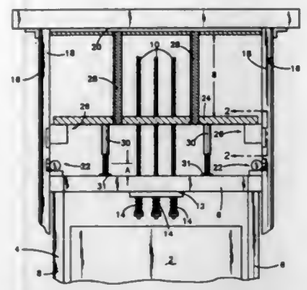
1. An elevator cab motion arrester assembly for stopping upward motion of an elevator cab assembly which occurs above the uppermost landing in an elevator hoistway, said arrester assembly comprising:

a) a stopping plate mounted in the hoistway above the uppermost landing thereof;

b) means for fixing said stopping plate against downward movement in said hoistway;

c) spring means mounted on said stopping plate and depending downwardly therefrom toward the elevator cab assembly, said spring means being operable to retard upward movement of the cab assembly above said uppermost landing; and

d) proportionally tightening frictionally operated wedging means operably connected to said stopping plate, said frictionally operated means being operable in conjunction



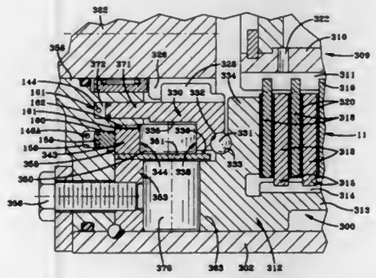
with said spring means to stop upward movement of said cab assembly.

5,307,905

BRAKE APPLY WITH IMPROVED REACTION

Arthur Hall, III, Cicero, Ind., and Donald F. Scherer, Redford, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1993, Ser. No. 23,261
Int. Cl.[5] F16D *55/26*; F15B *9/10*
U.S. Cl. 188—72.6 **1 Claim**



1. A brake apply control system comprising:

a mechanical brake apply portion including a reaction member, a mechanical input member and reaction means responsive to said mechanical input member to mechanically apply a brake force resulting in a mechanical input force on said reaction member and a feedback force on said mechanical input member;

a hydraulic brake apply portion for providing a hydraulic apply signal to a brake apply piston operatively connected with said mechanical input member and operable in response to the brake apply signal to cause a reduction in the mechanical input force on said reaction member and said feedback force;

a hydraulic balancing means responsive to the apply signal for imposing a balanced force on said reaction member substantially equal to the reduction thereon caused by said apply signal, and said reaction member imposing a feedback force on said mechanical input member in response to the balanced force;

said reaction means comprising;

a cam member disposed for axial movement in a fixed housing;

roller members operatively associated with said cam member for enforcing a reaction force on the mechanical input member; and,

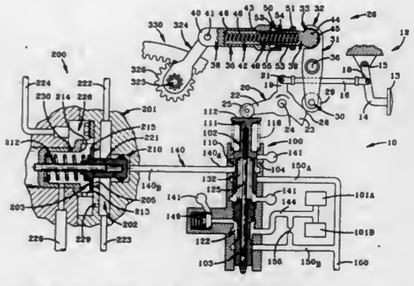
said hydraulic balancing means includes a plurality of hydraulically actuated piston means disposed adjacent to said cam member for imposing an axial force on said cam member in response to said hydraulic apply signal.

5,307,906

COMBINED MECHANICALLY/HYDRAULICALLY ACTUATED BRAKING SYSTEM WHICH PROVIDES TACTILE FEED-BACK

Fereydoon Jamzadeh, Indianapolis, and Arthur L. Grew, Jr., Plainfield, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1993, Ser. No. 13,512
Int. Cl.[5] F16D *65/14*
U.S. Cl. 188—106 F **12 Claims**



1. A braking system for a vehicle comprising:

a brake pedal mounted to be depressed in response to force applied thereto by a vehicle operator;

a mechanical brake actuating mechanism;

a hydraulic brake actuating mechanism;

means selectively to apply said mechanical brake actuating mechanism sequentially in advance of said hydraulic brake actuating mechanism in response to depression of said brake pedal;

link means incorporated in the means to apply said mechanical brake actuating mechanism in response to depression of said brake pedal;

said link means providing tactile feed-back to said brake pedal throughout the range of operation of said braking system;

means to apply said hydraulic brake actuating mechanism in response to continued depression of said brake pedal.

5,307,907

HYDRAULIC DAMPER

Michiya Nakamura; Kimihisa Kasajima, and Hiroshi Hoya, all of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Japan

Filed Jun. 10, 1992, Ser. No. 896,585
Claims priority, application Japan, Jun. 11, 1991, 3-043479[U]; Jun. 17, 1991, 3-045058[U]
Int. Cl.[5] F16F *9/50*
U.S. Cl. 188—282 **12 Claims**

1. A hydraulic damper, comprising:

a cylinder;

a hollow rod;

a piston secured on said hollow rod dividing said cylinder into first and second chambers containing damping fluid;

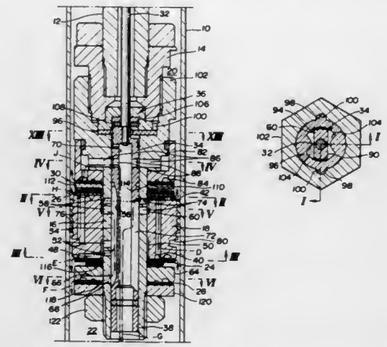
an extension phase damping valve for damping in the extension phase;

a contraction phase damping valve for damping in the contraction phase;

a contraction phase one-way passage way via which said second chamber is connectable with said first chamber in the contraction phase;

an extension phase one-way passage way via which the first chamber is connectable with the second chamber in the extension phase; and

a valve element rotatably disposed in said hollow rod and having a neutral position in which both of said contraction phase and extension phase one-way passage ways are open, said valve element being angularly displaceable in a first rotational direction from said neutral position to a first displaced position in which said extension phase one-way passage way is closed with said contraction phase one-way passage way left open, said valve element



being angularly displaceable in a second rotational direction, opposite to said first rotational direction, to a second displaced position in which said contraction phase one-way passage way is closed with said extension phase one-way passage way left open;

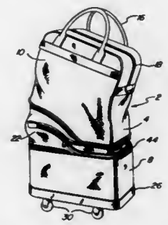
wherein said valve element is in the form of a hollow control rod rotatably mounted within the interior of said hollow rod, said hollow control rod having an axial end formed with a diametrical land received in a key opening of a positioning plate fixedly secured on said hollow rod, the diametrical land and key opening cooperating with each other to limit motion of said hollow control rod within a predetermined range.

5,307,908

EXPANDABLE TOTE BAG WITH WHEELS

Michael H. Shyr, and Godfrey Shyr, both of 623 Vineland Ave., La Puente, Calif. 91746

Filed Dec. 18, 1992, Ser. No. 992,565
Int. Cl.[5] A45C *5/14, 7/00*
U.S. Cl. 190—18 A **9 Claims**



1. An expandable luggage bag comprising:

a hollow base unit including a relatively rigid support assembly and a plurality of wheel assemblies mounted on the support assembly to enable operator transportation of the

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bag, the base unit including an integrally-molded shell member having a planar surface and a side flange;

a central unit including a flexible cover member extending across the hollow base unit, thereby defining a bottom surface, and extending around the central unit, thereby defining a peripheral side of the central unit, the flexible cover member including a first zipper assembly vertically displaced around the peripheral side, such that the first zipper assembly, when opened, enables an expansion of the flexible cover member, increasing a storage capacity of the central unit and, when closed, enables a retraction of the flexible cover member with the peripheral side of the central unit folding inward, decreasing the storage capacity of the central unit;

a storage unit connected to the central unit and integral with the flexible cover member, the flexible cover member having a closable opening extending across an upper portion of the storage unit;

means for pivoting the central unit and storage unit to one side of the base unit to expose an opening in the hollow base unit for storage purposes; and

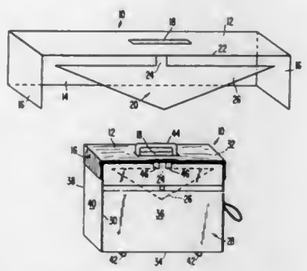
a retainer member mounted on the shell member and extending upward to the central unit to form a semirigid internal side wall to the base unit to maintain its shape for storage purposes.

5,307,909

DISPLAY DEVICE FOR LUGGAGE

Andrew J. Nitkin, Yardley, and Mary C. Sullivan, Doylestown, both of Pa., assignors to York Partners, L.P., Lambertville, N.J.

Filed Jan. 5, 1993, Ser. No. 623
Int. Cl.[5] A45C *3/08, 13/00, 13/40*
U.S. Cl. 190—26 **14 Claims**



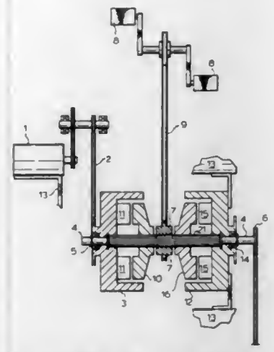
1. A display device for a luggage case having top and bottom walls, front and back walls, and side walls, the front wall having a lower portion flexibly attached to the bottom wall and having a zipper along side and top edges, the display device comprising a sleeve having a top wall adapted to overlap the top wall of the luggage case, a back wall adapted to overlap the back wall of the luggage case, and side walls adapted to overlap respective side walls of the luggage case, and retaining means depending from a front edge of the top wall of the sleeve, the retaining means including a stem having a top end connected to the top wall of the sleeve and a cross-bar connected to a bottom end of the stem, the cross bar having an upper edge that extends along and is spaced from the front edge of the top wall of the sleeve, the cross bar being adapted to be retained inside the case behind the front wall of the case.

5,307,910

MANUALLY OPERATED CLUTCH AND BRAKE

Kwan-Soon Im, 79 Fortieth Street, Etobicoke, Ontario, Canada M8W 3M8

Filed Mar. 12, 1993, Ser. No. 30,718
Int. Cl.[5] F16D *67/02, 21/02*
U.S. Cl. 192—13 R **12 Claims**



1. A torque transmission device comprising:

a shaft having a longitudinal axis, forward and rearward ends;

an input plate journalled to rotate, under motive force, about said axis at a position longitudinally fixed and forward relative to the shaft;

plate mounted for rotation with the shaft and reciprocating longitudinal motion on the shaft rearward of the input plate;

an actuating plate mounted on the shaft rearward of the forward clutch plate; and

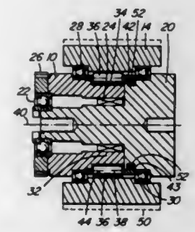
actuating means, interconnecting the shaft and actuating plate, for moving the actuating plate longitudinally relative to the shaft in response to a differential in rotational velocity between the shaft and actuating plate, whereby forward and rearward motion of the actuating plate respectively urges the forward clutch plate forwardly to engage the input plate and rearwardly to disengage the input plate.

5,307,911

TWO-WAY CLUTCH

Allen C. Robinson, Nanaimo, Canada, assignor to Inuktun Services Ltd., Nanaimo, Canada

Filed Aug. 10, 1993, Ser. No. 103,945
Int. Cl.[5] F16D *41/08*
U.S. Cl. 192—31 **5 Claims**



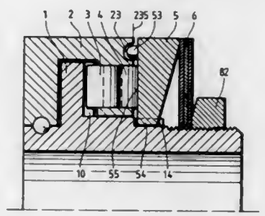
1. A clutch mechanism comprising a drive shaft, a plurality of axially extending substantially chord forming portions on said drive shaft each substantially forming a chord to an axis of rotation of said drive shaft, a driven shaft having a hollow portion defining a cylindrical inner surface concentric with said rotational axis of said drive shaft, said driven shaft being mounted for rotation on said rotational axis, said cylindrical inner surface encircling said drive shaft along an axial length of said drive shaft where said portions are located, a bearing means contained between each of said portions and said cylindrical inner surface, each of said bearing means having a circular outer periphery centered on and rotatable on a bearing axis substantially parallel to said rotational axis, said circular periphery having a diameter greater than a first spacing formed between its respective said portion and said cylindrical inner surface at radial extremities of said substantially chord formed by its respective said portion but less than a second spacing formed between its respective said chord forming portion and said cylindrical surface at a mid-point of its respective said chord forming portion between said radial extremities so that there is substantially no driving force provided between said drive shaft and said driven shaft when said bearing means are in a free wheeling position adjacent to said mid-point of their respective said cord forming portion, a cylindrical bearing cage concentric with said axis rotational axis, said bearing cage interconnecting all of said bearing means to maintain circumferential spacing between said bearing means about said rotational axis so that when one of said bearing axes is in free wheeling position with its bearing axis positioned circumferentially adjacent to said mid-point of said chord of its respective said portion all of said bearing axes are similarly positioned with respect to their respective said portions, an integral axial extension extending axially from said cage and encircling an annular portion of a fixed member, said integral axial extension having an inner cylindrical surface strip facing and encircling said annular portion, means for generating limited friction between said fixed member and said cage, said means for generating limited friction including an annular friction ring encircling and cooperating with said annular portion of said fixed member and having a circumferential surface bearing against said strip to frictionally retard rotational movement of said bearing cage relative to said fixed member.

5,307,912

SLIP CLUTCH

Sobhy L. Girguis, Magdalenenstrasse 19, 5210 Troisdorf 14, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,869
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130471; Jul. 9, 1992, 4222574
Int. Cl.[5] F16D *7/08*
U.S. Cl. 192—56 R **21 Claims**



21. A slip clutch comprising:

a first clutch element rotatable about a clutch axis and having a planar surface centered on the axis and formed with an axially backwardly open recess;

a second clutch element also rotatable about the axis and formed with an axially forwardly open window alignable with the recess;

a coupling body in the window axially forwardly engageable in the recess;

spring means bearing axially forwardly on the body and pressing the body axially forward toward the first element;

a pressure plate engaged axially by the spring means and having a face engaging the body;

axially extending interengaging formations on the pressure plate and on one of the clutch elements rotationally coupling the pressure plate and one clutch element together, the other clutch element having a face confronting the face of the pressure plate;

an axially projecting tooth on one of the faces; and

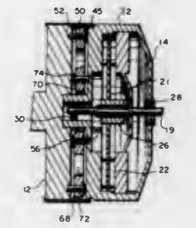
an axially open pocket on the other of the faces engageable over the tooth.

5,307,913

EXTERNAL DAMPER CLUTCH

Andrzej Szadkowski, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 813,703, Dec. 27, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,412
Int. Cl.[5] F16D *3/12, 3/62*
U.S. Cl. 192—70.17 **10 Claims**



1. A clutch-and-flywheel assembly rotatable about an axis comprising:

a flywheel;

a clutch including a clutch housing within which is disposed a driven disk, a pressure plate and a friction face, the driven disk being disposed between the friction face and the pressure plate;

a shaft on which the clutch housing is journalled, the shaft being fixed to the driven disk for rotation therewith while the pressure plate urges the disk into engagement with the friction face; and

a damper disposed between the flywheel and clutch assembly, the damper being comprised of a plurality of beam springs having first and second ends wherein the first ends are connected to the flywheel and the second ends are connected to the clutch housing, the first and second ends of each beam spring being angularly spaced less than one full 360° turn from one another when undeflected by an angle greater than 180°, wherein each beam spring extends circumferentially more than 180° and less than 360°, which angle is sufficient to provide a partially negative spring characteristic, whereby the beam springs deflect elastically from an unstressed state to provide for relative rotational motion between the flywheel and clutch housing.

5,307,914

METHOD AND MEANS FOR CONTROLLING TORQUE AMPLIFIER

Jerry E. Elijah, 209 Eighth St., Tipton, Iowa 52772

Filed Nov. 20, 1992, Ser. No. 979,308
Int. Cl.[5] F16D *25/00*
U.S. Cl. 192—87.13 **4 Claims**

1. A control system for a drive train comprising a direct drive clutch and a torque amplifier clutch each of which is biased to a disengaged position and each of which is movable

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to an engaged position in response to the introduction of fluid pressure thereto, said control system comprising:

a fluid pressure source;

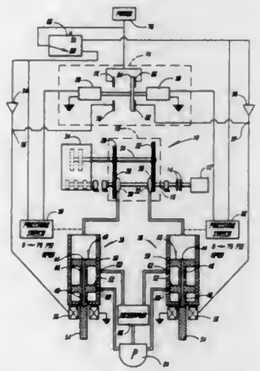
first valve means movable to an open position for introducing fluid pressure from said fluid pressure source to said direct drive clutch for causing said direct drive clutch to move to said engaged position, said first valve means being biased to a closed position for shutting off fluid pressure to said direct drive clutch;

second valve means movable to an open position for introducing fluid pressure from said fluid pressure source to said torque amplifier clutch for causing said torque amplifier clutch to move to said engaged position, said second valve means being biased to a closed position for cutting off fluid pressure from said torque amplifier clutch;

a valve control circuit connected to said first and second valve means for selectively moving said first and second valve means against said bias from said closed to said open positions;

said valve control circuit including master circuit means movable between a direct drive position for moving only said first valve means to said open position and a torque amplifier position for moving only said second valve means to said open position;

said valve control circuit including first delay circuit means



capable of maintaining said direct drive valve means in said open position after said master circuit means moves from said direct drive position to said torque amplifier position;

said valve control circuit including a second delay circuit means capable of maintaining said torque amplifier valve means in said open position after said master circuit means moves from said torque amplifier position to said direct drive position;

said first and second delay circuits including first and second pressure control means respectively;

said first and second pressure control means being connected to said direct drive clutch and said torque amplifier clutch respectively for sensing when the fluid pressure being delivered thereto exceeds a predetermined value;

said first pressure control means being responsive to the delivery of fluid pressure above said predetermined value to said direct drive clutch for causing said first delay circuit means to cease maintaining said torque amplifier valve means in said open position; and

said second pressure control means being responsive to the delivery of fluid pressure above said predetermined value to said torque amplifier clutch for causing said second delay means to cease maintaining said direct drive valve means in said open position;

relay means connected to said first and second delay circuit means and being movable from a first relay position for causing said first delay circuit means to maintain said first valve means in its said open position to a second relay position for causing said second delay circuit means to maintain said second valve means in its said open position;

an electrical power source;

said first pressure control means comprising a first pressure sensitive switch connected between said electrical power source and said relay means and movable between first and second switch positions for causing said relay means to move between said first and second relay positions;

said second pressure control means comprising a second pressure sensitive switch connected between said electrical power source and said relay means for causing said relay means to move between said first and second relay positions.

5,307,915

FLUID-ACTUABLE RELEASER FOR A FRICTION CLUTCH

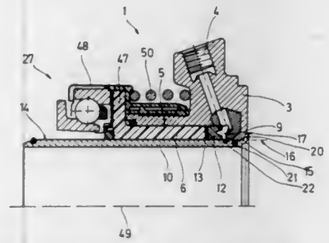
Wolfgang Grosspietsch; Herbert Voit, both of Schweinfurt; Gottfried Mader, Ebelsbach; Manfred Wehner, Schweinfurt, and Karl Müller, Poppenhausen, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 10, 1992, Ser. No. 942,930

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130525

Int. Cl.[5] F16D *23/14, 25/08*

U.S. Cl. 192—98 **14 Claims**



1. A fluid-actuable releaser for a friction clutch of a motor vehicle, comprising

a casing (3) with a first bore (5);

a sleeve (10) which is arranged in the first bore (5), which therewith delimits an annular cylindrical chamber, and which is fastened in a sealed manner on the casing (3); and

an annular piston (6; 7) which is movably guided in the annular cylindrical chamber on the first bore (5), which carries at one end a seal (12) delimiting a fluid pressure chamber (9) in the annular cylindrical chamber, and which carries, at another end remote from the fluid pressure chamber (9), a release bearing (27),

wherein the casing (3) has, on a side axially remote from the annular piston (6; 7), an annularly, radially inwardly extending rib (15) with a second bore (16) concentric to the first bore (5) and with two annular shoulders (17; 18) having axially oppositely directed faces originating at the second bore (16),

wherein the sleeve (10) penetrates radially guided by the rib (15) into the second bore (16) such that a cylindrical external face (14) of the sleeve (10) delimits the annular cylindrical chamber,

wherein the sleeve (10) is provided with radially outwardly projecting stop means (20, 22; 19) which axially fixes the sleeve (10) on the two shoulders (17; 18) of the rib (15), and

wherein the stop means (20, 22; 19) comprises a radially outwardly, plastically deformed portion of the sleeve (10), by which the sleeve (10) is axially fixed on at least on of the two shoulders (17; 18).

5,307,916

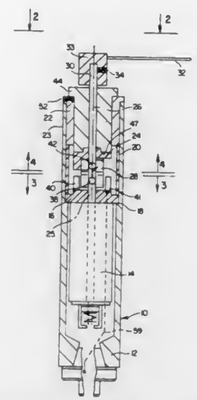
SENSING DEVICE

Dean L. Bentzien, Brookfield; Hermann Dohl, Richfield, and Armin Dohl, Germantown, all of Wis., assignors to Tooling & Productions Systems, Inc., Sussex, Wis.

Filed Mar. 1, 1993, Ser. No. 24,540

Int. Cl.[5] F16D *71/04*

U.S. Cl. 192—129 R **9 Claims**



1. A sensing device including a sensing head comprising a housing, a reversible motor mounted therein, a drive shaft rotatably driven by said motor and having a portion projecting from one end of said housing;

a movable electrical contact element carried by said drive shaft within said housing, at least one fixed electrical contact element carried by said housing for engagement by said movable contact element in response to rotation of said drive shaft in one direction;

a sensing needle attached to said projecting portion of said drive shaft and extending generally radially therefrom, said sensing needle being adapted to contact an object to be detected in response to rotation of said drive shaft in said one direction from a starting position; and

means for selectively setting the angular displacement of said starting position relative to said fixed contact element, said setting means comprising a stop movable with said drive shaft, a setting ring rotatably supported within said housing radially outwardly of said drive shaft and concentrically therewith, at least one abutment fixed to said setting ring in the path of rotary movement of said stop, manually operable adjusting means carried by said setting ring externally of said housing for rotatably positioning said setting ring and abutment relative to said fixed contact element, and locking means for fixing the position of said setting ring.

5,307,917

EXTENDIBLE CONVEYOR STRUCTURE

Kevin R. Hall, New South Wales, Australia, assignor to MECO Australia Pty Limited, New South Wales, Australia

Filed Nov. 13, 1992, Ser. No. 976,210

Claims priority, application Australia, Nov. 14, 1991, PK9494

Int. Cl.[5] B65G *21/14*

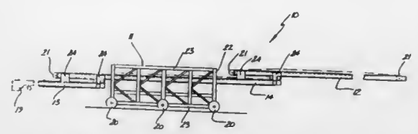
U.S. Cl. 198—313 **4 Claims**

1. An extendible conveyor structure comprising:

a main frame adapted to be supported upon a ground surface;

a first elongate conveyor belt support frame supported by the main frame;

a second elongate conveyor belt support frame movably mounted to and above the first conveyor belt support frame and adapted to transfer linearly between a retracted position upon the first conveyor belt support frame, and an extended position cantilevered from one end of the first conveyor belt support frame;



a third elongate conveyor belt support frame movably mounted to and below the first conveyor belt support frame and adapted to transfer linearly between a retracted position beneath the first conveyor belt support frame, and an extended position cantilevered from the other end of the first conveyor belt support frame; and

an endless conveyor belt spanning the first, second and third conveyor belt support frames, and adapted to be expanded or retracted as the second and third conveyor belt support frames transfer linearly.

5,307,918

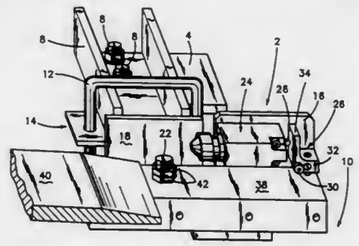
ESCALATOR COMBPLATE STOP SWITCH ASSEMBLY

James A. Rivera, Bristol, and Dat Nguyen, New Britain, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 15, 1992, Ser. No. 914,823

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—323 **18 Claims**



1. An escalator or moving walkway assembly comprising:

a) an exit landing;

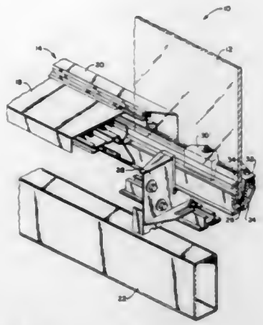
b) a plurality of interconnected steps powered by an electric motor and movable along a passenger-conveying path of travel terminating at said exit landing;

c) a combplate means disposed at said exit landing whereby said steps pass beneath said combplate, said combplate means forming a platform on which passengers alight from said steps, said combplate means being mounted for vertical movement relative to said steps in response to entrapment of foreign matter between said steps and said combplate means; and

d) spring means operably connected to said combplate means for vertically preloading said combplate means so as to lessen the effective weight of the latter.

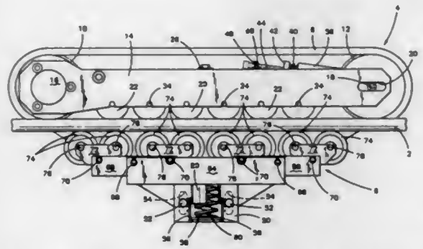
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5,307,919
BALUSTRADE PANEL HEIGHT FIXING DEVICE
Gerald Wente, Pohle, and Willy Adrian, Obernkirchen, both of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Apr. 26, 1993, Ser. No. 53,068
Int. Cl.[5] B66B *23/22*
U.S. Cl. 198—335 **7 Claims**



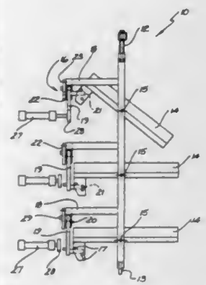
1. A balustrade assembly, comprising:
a balustrade panel;
a panel holder, having a length and a channel, for attaching said balustrade panel to a structure;
a clamp, for clamping said balustrade panel within said channel; and
means for adjusting the vertical position of said balustrade panel within said channel, independent of said clamp.

5,307,920
MOVING HANDRAIL DRIVE
Helmut J. W. Meyer, Bückeburg; Hermann W. Ahls, Obernkirchen, OT Veblen, and Klou. Blaseck, Burgdorf-Ehlershausen, all of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Sep. 14, 1993, Ser. No. 120,981
Int. Cl.[5] B66B *23/04*
U.S. Cl. 198—335 **7 Claims**



1. A drive assembly for moving a handrail on a passenger conveyor, said drive assembly comprising:
a) a drive belt engaging a first surface on the handrail and supplying a motive force to the handrail;
b) a powered pulley engaging one end of the drive belt, and a tension pulley assembly engaging an opposite end of the drive belt, said powered pulley being operable to drive the drive belt through an endless path of travel defined by the powered pulley and the tension pulley;
c) reaction means engaging a second surface on the handrail to bias the handrail against the drive belt;
d) tension adjustment means operable to adjust position of said tension pulley assembly relative to said powered pulley so as to adjust the degree of pretension of the drive belt; and
e) means associated with said tension adjustment means and operable to prevent movement of said tension pulley assembly toward said powered pulley when said drive belt is moving the handrail from said tension pulley assembly toward said powered pulley thereby preserving the degree of pretension applied to said drive belt.

5,307,921
TILT TRAY SORTER ACCESSORY
Desmond H. Richardson, Arana Hills, Australia, assignor to Australian Postal Corporation, Brisbane, Australia
PCT No. PCT/AU91/00581, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/11098, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 12, 1991, Ser. No. 859,692
Claims priority, application Australia, Dec. 17, 1990, PK3927
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—365 **8 Claims**

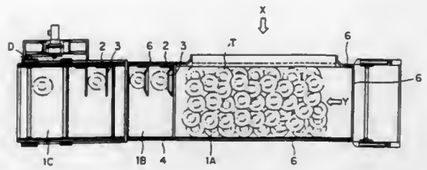


1. A sorting system comprising a loading station and at least one receiving station spaced from the loading station, a transport mechanism arranged between said loading station and said at least one receiving station, a pendant frame suspended from said transport mechanism and moving between said loading station and said at least one receiving station, two or more tilting trays mounted on said frame at different levels, one above the other, an independent tipping mechanism associated with each tray for tipping the tray and two or more actuating mechanisms at said at least one receiving station arranged at different levels corresponding to the levels at which said two or more trays are mounted on said frame, each actuating mechanism independently, selectively actuating the tipping mechanism of the tray mounted on the frame at the corresponding level.

5,307,922
RUBBER TIRE INDIVIDUAL SEPARATION TRANSPORT APPARATUS
Yasuhiro Ohta, Sakurai; Masaru Umemoto, Kashiwara, and Kenryo Kashiwagi, Yao, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan
Filed Mar. 31, 1993, Ser. No. 40,405
Claims priority, application Japan, Jan. 11, 1993, 5-17858; Jan. 11, 1993, 5-17859
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—443 **2 Claims**

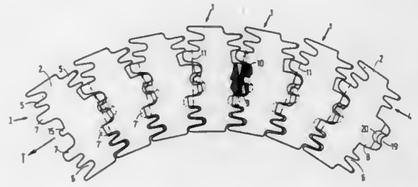
1. A rubber tire individual separation transport apparatus including a rubber tire individual conveyor surface section and a rubber tire sliding surface section separately formed on a conveyor surface consisting of a plurality of slats having a horizontal charge zone, a sharply inclined individual transport zone, and a horizontal discharge zone;

an upright plate mounted in contact with the peripheral surface of a rubber tire at one end part of each slat in said individual conveyor surface section;
a plurality of support plates each of such a size as to support only one rubber tire laid flat on said individual conveyor



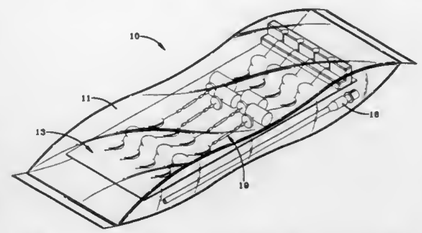
surface section, mounted at a larger pitch in the direction of transport than the maximum diameter of the rubber tire being conveyed; and
a stationary side wall erected along the side edge of the other end part of each slat of said sliding surface section.

5,307,923
CHAIN-LINK CONVEYOR
Poul E. Damkjaer, Vejle, Denmark, assignor to Maskinfabrikken Baeltix A/S, Vejle, Denmark
Filed Apr. 13, 1993, Ser. No. 45,188
Claims priority, application Denmark, Apr. 21, 1992, 523/92
Int. Cl.[5] B65G *17/06*
U.S. Cl. 198—852 **11 Claims**



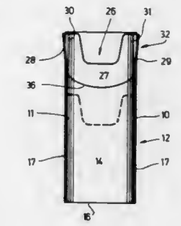
1. A chain link conveyor comprising a plurality of identical chain links each including eye parts at front and rear edges of adjacent links, as viewed in a direction of travel of the conveyor, transversely extending hinge pins inserted through the eye parts of adjacent links for enabling each pair of hinged links to be mutually swingable about both a normally horizontally-disposed axis of the respective hinge pins and, to a limited extent, about a normally vertical axis through a mid-point of a hinge assembly formed by the respective hinge pins and eye parts, wherein one of the front or rear edges of each chain link includes two eye parts for receiving one of the hinge pins and the other of the front or rear edges includes a single eye part with an opening for receiving the hinge pin of the adjacent link, said opening enabling the hinge pin to be moved only during the running of the conveyor, each chain link comprises a top plate arranged to support items to be transported by the conveyor, said top plate including a plurality of fingers separated by recesses, said fingers extending from both the front edge and rear edge of the respective chain links, as viewed in the direction of travel of the conveyor, and wherein said at least one finger positioned at the center line is placed between the two eye parts provided on said one edge of each chain link.

5,307,924
PACKAGING FOR T-SHAPED TENSION DEVICES
Edgar G. Manosalva, Columbus; Jeffrey R. Ross, Dublin, and Donald J. Goldhardt, Grove City, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Mar. 26, 1993, Ser. No. 38,751
Int. Cl.[5] A61B *17/06*; B65D *69/00*
U.S. Cl. 206—63.3 **15 Claims**



1. An assembly of a T-fastener and a device for loading a T-fastener into a needle, said T-fastener comprising a "T" head and a suture attached thereto, said device comprising a generally planar base and a housing attached thereto, said housing having a recess therein which contains the "T" head of the T-fastener, said recess having a longitudinal axis, a first end and a second end, the first end of said recess being open at a top surface of the housing and the second end of said recess being a solid surface of the housing, the longitudinal axis of the recess and the "T" head of the "T" fastener both being oriented generally vertically with respect to said base, said housing having a notch therein which communicates with said recess and is generally parallel to the longitudinal axis of said recess, the suture of said T-fastener extending through said notch and being secured to said generally planar base by means for securing.

5,307,925
HINGE-LID PACK, ESPECIALLY FOR CIGARETTES
Heinz Focke, and Helmut Granz, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany
Filed Mar. 20, 1992, Ser. No. 854,698
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109702
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—266 **9 Claims**

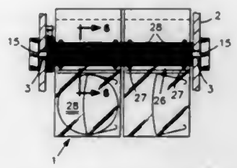


1. A hinge-lid pack made of cardboard, comprising a pack part (12) and a lid (13) which is pivotably attached thereto, and including a collar (26) with a collar front panel (27) and collar side panels (28, 29), which collar (26) is arranged inside the pack part (12) and partially projects upwardly therefrom, the collar (26) having an upper collar portion (32) that projects upwardly from the pack part (12) and that is surrounded by the lid (13) when the latter is in a closed position, characterized in that each of the collar side panels (28, 29) has in the upper

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collar portion (32) thereof an outwardly bowed integral deformation which projects from the pack part (12), and in that in the closed position lid side panels (23) abut the deformation with their inner side with an increased frictional contact, said outwardly bowed deformation defining in each of the collar side panels (28, 29) a convexity (38) which has a cross-sectionally curved contour.

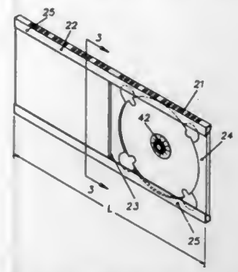
5,307,926
APPARATUS FOR STORING MEDIA
Greg Mee, 34933 Heatherview, Yucaipa, Calif. 92399
Filed Jul. 21, 1993, Ser. No. 95,922
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—311 **8 Claims**



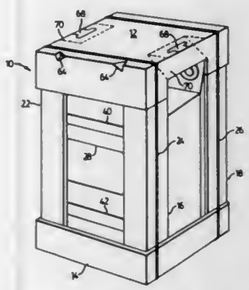
1. An apparatus for storing media comprising:
a pair of spaced apart, vertically oriented supports, each of the supports providing axle engagement means;
a horizontal mounting rod supported by a pair of integral end axles, one of the axles extending colinearly at each end of the rod for rotational engagement with the axle engagement means of one of the vertically oriented supports, the rod including a cylindrical surface between the end axles providing a plurality of parallel, longitudinal flutes therein;
a plurality of flexible bags for storing media, each of the bags including a peripheral edge and a pair of mounting holes positioned adjacent to the edge, the bags of a thickness such that the edge of at least one of the bags fits within one of the flutes;
a pair of mounting straps for encircling the cylindrical surface in annular coaxial juxtaposition, each of the straps engaging one of the mounting holes in each of the bags so that the bags are fastened in positions extending radially from the mounting rod;
whereby the media may be placed into the bags for radially positioned storage in rotational access as the mounting rod is turned on the supports.

5,307,927
COMPACT DISC PACKAGE AND A METHOD FOR MAKING SAME
Michael Curtis, Hickory Hills; Dean Henkel, Carolstream, and James Oppenheimer, Chicago, all of Ill., assignors to AGI Incorporated, New York, N.Y.
Filed Jan. 12, 1991, Ser. No. 758,662
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—312 **18 Claims**

1. A package for a compact disc comprising:
a rectangular sheet comprising at least a first and second section, each section being separated from adjacent sections by a strip having a width small relative to the width of the sections, each strip being bounded by fold lines;
a compact disc holder affixed to a section;
the width of at least one strip being predetermined so that when the first section bounding said strip is folded over the adjacent section, the surface of said strip is perpendicular to the surfaces of the sections; and
a J-shaped track comprising a longer and a shorter leg and an opening disposed along one side of the sheet, the opening in the track being slightly larger than the overall thickness of the section having the compact disc holder affixed thereto, the longer leg of the track being dimensioned so that it extends at least partially over the front of a compact disc mounted on the holder.



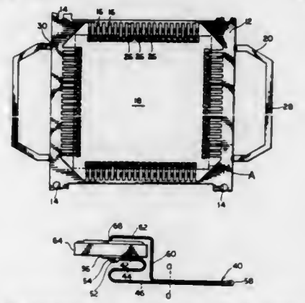
5,307,928
SIX PIECE APPLIANCE PACKAGE
Richard E. Bishop, Weston, Ontario, Canada, assignor to Domtar Inc., Montreal, Canada
Continuation of Ser. No. 817,716, Jan. 7, 1992, abandoned. This application Feb. 3, 1993, Ser. No. 13,672
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—320 **8 Claims**



1. A package for a generally rectangular appliance having four vertical corners, said package having separate components and comprising:
(1) a four-cornered, generally rectangular, separate bottom support;
(2) a separate, uniformly right-angled corner post vertically disposed at each corner of the bottom support and each corner post vertically extending generally along a corner of a rectangular appliance received between the corner posts and above the bottom support such that the corner posts bear against the appliance corners and wherein the corner posts extend above an uppermost surface of the appliance a distance sufficient that the weight of a similarly packaged appliance stacked on said package is substantially carried by the corner posts;
(3) a four-cornered, rectangular separate top cap disposed on the corner posts at the corners of the top cap;
(4) a first tensile strap extending across the top cap, over first and second of said corner posts and under said bottom support and a second tensile strap extending across the top cap, over third and fourth of said corner posts and under said bottom support such that the said tensile straps transfer a tensile stress induced therein directly to the corner posts; and
wherein said corner posts are made of fiber board sufficient to allow said stacking without substantial crushing of the corner posts and the tensile straps are made of a material sufficient to allow the package to be vertically lifted from near the top cap thereof without separating said components thereof, and wherein the package has open side walls between adjacent corner posts.

8. An appliance package comprising a separate top cap, a separate bottom support and four separate corner posts, a first tensile strap extending across said top cap, said bottom support and adjacent first and second of said corner posts and a second tensile strap extending across said top cap, said bottom support and adjacent the third and fourth of said corner posts, said top cap further comprising an upper surface and four skirt portions extending substantially vertically, at least one of said skirt portions comprising a folded reinforcing flap, said flap being folded to comprise a brace with said upper surface and said at least one skirt portion, said flap extending between two of said corner posts whereby said flap reinforces said top cap and limits deflection of said posts toward one another.

5,307,929
LEAD ARRANGEMENT FOR INTEGRATED CIRCUITS AND METHOD OF ASSEMBLY
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Continuation-in-part of Ser. No. 717,681, Jun. 19, 1991, Pat. No. 5,176,255. This application Sep. 16, 1992, Ser. No. 945,861
Int. Cl.[5] H01R *9/22*; B65D *73/02*
U.S. Cl. 206—331 **25 Claims**

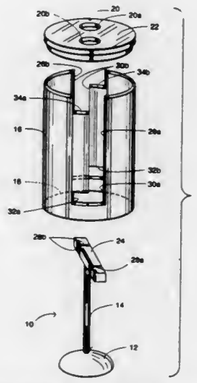


1. A lead arrangement for connecting one or more leads to a circuit substrate, comprising:
a supporting strip;
one or more conductive electrical leads, each having first and second ends, each of said leads having its first end joined integrally with said strip and extending transversely from one edge of said strip; and
means joined to said strip along the opposite edge of said strip for resiliently urging said substrate against and in contact with the second ends of said leads.

13. A method for simultaneously connecting a plurality of leads to a circuit substrate, comprising the steps of:
providing a strip of resilient conductive material having a plurality of leads extending therefrom from one edge, each of said leads being connected to said strip at a first end and having a free second end, said substrate having conductive areas at positions corresponding to said free second lead ends;
forming means on said strip extending outwardly of said strip from one edge thereof opposite said one edge for holding said substrate to said leads;
providing solder on either said second lead ends or said conductive areas;
positioning said substrate on said strop such that said conductive surfaces are juxtaposed respectively to said second ends with solder therebetween; and
thereafter engaging said retaining means to resiliently hold said substrate in said position.

22. A blank for a lead arrangement for a substrate having at least one conductive area, comprising
a strip of conductive resilient material,
at least one lead extending transversely from said strip, each said lead having a proximal end joined integrally to said strip and also having a distal end,
a retaining arm extending transversely from said strip oppositely to at least one of said leads, said arm having a proximal end integral with said strip and also having a distal end,
said arm being adapted to be bent to a position wherein said arm distal end is adjacent to said lead distal end with a gap therebetween sufficient to accommodate said substrate therein, so that the substrate's conductive area may be juxtaposed to a respective lead distal end.

5,307,930
TOOL ASSEMBLY
Marilyn M. Wilk, and Peter J. Wilk, both of 185 West End Ave., New York, N.Y. 10023
Filed Jul. 23, 1992, Ser. No. 917,596
Int. Cl.[5] E03D *9/00*; B65D *81/36*
U.S. Cl. 206—349 **13 Claims**



1. A household implement comprising:
a tool member including an operative element and a rod attached at one end to said operative element;
a hollow housing having an opening at one end and a hand grip at an opposite end, said housing includes a transversely oriented plate at said opposite end of said housing, said hand grip including a pair of parallel elongate slots in said plate;
mounting means for mounting said tool member to said housing for slidable motion between a retracted position inside said housing and an extended position wherein said operative element and a portion of said rod are outside of said housing; and
locking means on said housing for locking said tool member in said extended position.

11. A method for executing a household chore, comprising the steps of:
lifting up a housing by a handle provided at an upper end thereof;
extending, from an opening in a lower end of said housing, a tool member disposed inside said housing prior to said step of lifting;
rotating said tool member with respect to said housing, thereby locking said tool member in an extended position to said housing;

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manipulating said housing and said tool member via said handle to perform a task to which said tool member is adapted;

upon completion of said task, again rotating said tool member with respect to said housing, thereby unlocking said tool member from said housing;

retracting said tool member back into said housing; and

placing said housing upon a horizontal surface so that said opening is covered and said tool member is again contained inside said housing.

5,307,931

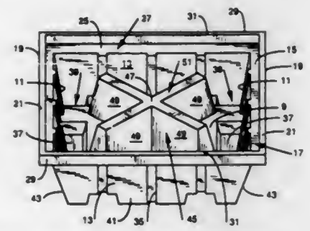
HAZARDOUS MATERIAL SPILL SKID

John G. Gillispie, and Donald J. Mitchell, both of Wellsburg, W. Va., assignors to Eagle Manufacturing Co., Wellsburg, W. Va.

Filed Jun. 3, 1993, Ser. No. 72,268

Int. Cl.[5] B65D *19/18*

U.S. Cl. 206—386 **19 Claims**



1. A hazardous material spill skid comprising:

a rectangular tray comprising a bottom wall, opposed side walls extending upwardly and outwardly from said bottom wall and opposed end walls extending upwardly and outwardly from said bottom wall, each said side wall and end wall terminating as a horizontally outwardly extending flange having an upper surface and a vertically upwardly extending rim;

a hollow center post extending upwardly from said bottom wall having a center portion and four arms, a said arm extending outwardly from the center of the bottom wall towards a corner connection between a said side wall and a said end wall, said center post having an upper surface in a horizontal plane substantially the same as a horizontal plane formed by said upper surface of said horizontally outwardly extending flanges;

a pair of interchangeable grate members, each said grate member resting on the horizontally outwardly extending flange of a said end wall, a portion of horizontally outwardly extending flanges of opposed side walls, and on two of said arms of the center post of said bottom wall, to provide a support surface for barrels placed on said grate member.

5,307,932

HEAVY DUTY ARTICLE CARRIER

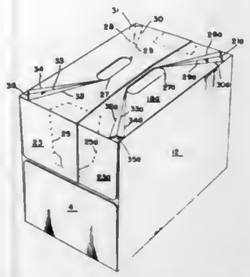
James T. Stout, Ellijay, and James B. Demaio, Marietta, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed May 21, 1993, Ser. No. 65,277

Int. Cl.[5] B65D *75/00*

U.S. Cl. 206—141 **11 Claims**

1. An article carrier comprising a bottom wall, side walls foldably joined along their bottom edges to side edges of said bottom wall, end walls foldably joined along their bottom edges to end edges of said bottom wall and foldably joined along their side edges to end edges of said side walls, a top wall having opposed side edges foldably joined to the top edges of said side walls respectively and having opposed end edges foldably joined respectively to the top edges of said end walls, a pair of finger receiving hand hole apertures formed in said top wall, and a plurality of diverging score lines formed in said top wall and extending from the region of each of said hand hole apertures toward each corner of said top wall, and a



diagonal weakened severance line formed in said top wall inwardly of and spaced from each corner for separating said score lines from the associated corner.

5,307,933

DEVICE FOR PACKAGING AND DISTRIBUTING STERILE OBJECTS

Jean-Daniel Guignet, Chemin du Genevrey, CH - 1603 Grandvaux, and Sohan Modak, 6, rue Curtat, CH - 1005 Lausanne, both of Switzerland

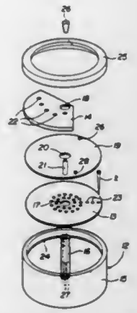
PCT No. PCT/CH91/00194, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO92/04255, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 9, 1991, Ser. No. 849,423

Claims priority, application France, Sep. 10, 1990, 90 11300

Int. Cl.[5] B65D *85/20;* **B01L** *9/06*

U.S. Cl. 206—443 **6 Claims**



1. A device, for packaging and distributing sterile objects, comprising a substantially cylindrical sterile case, a circular support member being located in said sterile case and being provided with holes in which the sterile objects are to be deposited, a movable selector being rotatable around a longitudinal central axis passing through a center of said support member and comprising at least one hole which can be brought to coincide with a desired sterile object when deposited in one of said holes of said support member, and means for forming a hermetic closure of said sterile case,

wherein said means for forming hermetic closure of said sterile case comprises at least one closing plate, rotatable around said central axis, with at least one opening provided in said at least one closing plate, said at least one opening is movable to coincide with said at least one hole of said selector to facilitate access to a desired sterile object.

5,307,934

BLISTER PACK

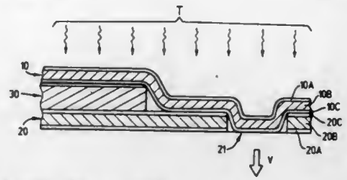
Hans Hagner, Pfahlberg 18, 7295 Dornstetten, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 990,884

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 9115696

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—471 **14 Claims**



1. In a blister pack for packaging an article and comprising a perforated lower plastic backing part and an upper, cut plastic cover part which at least partly surrounds and conforms closely to the article and is connected with the backing part so that the backing part and the cover part completely enclose the article, the backing part and the cover part each including at least a layer made of a single type of plastic and being heat sealed together in a defined area, the improvement wherein:

said backing part and said cover part each constitute a transparent hard foil, and

said backing part is provided with perforations of such a size that portions of said cover part engage in said perforations in a manner to plug said perforations in the area where said backing part and said cover part are heat sealed together.

5,307,935

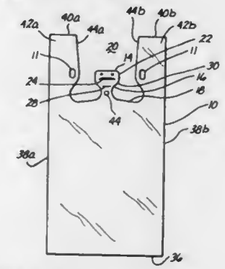
PACKS OF SELF OPENING PLASTIC BAGS AND METHOD OF FABRICATING THE SAME

Gary Kemanjian, 1305 Daveric Dr., Pasadena, Calif. 91107

Filed Aug. 23, 1993, Ser. No. 110,814

Int. Cl.[5] B65D *85/62*

U.S. Cl. 206—554 **3 Claims**



1. The combination of:

(A) A pack of coinciding pressed together T-shirt type plastic bags for dispensing from a rack on which the pack is mounted, each of said bags being formed of a pair of abutting polyethylene front and rear sheets of a rectangular configuration, said sheets being sealed to each other along their sides and bottom edges and having a pair of handles formed by a cut-out extending downwardly and inwardly of the side edges a predetermined distance from the central portion of the upper edges of the sheet, said handles being sealed across their upper edges, the central area of the lower edge defining the cut-out of each sheet also defining an upwardly projecting tab, said tab comprising an upper expanded portion connected to the lower edge of the cut-cut by a narrower neck portion; each of said handles being orificed at a predetermined point so that all of the orifices of the handles of the bags of the pack are in register, the expanded portion of the tabs of each sheet having an inner transverse slot, and the neck portion of each said tab being slit transversely between, but not extending to, the neck edges, the neck of the tab of the rear sheet of the first bag of the bag pack being lightly adhesively adhered to the neck of the forward sheet of the next ensuing bag in the pack at a point adjacent to, but below, the slits in the tab necks; and

(B) a rack on which to mount for seriatim disposition said pack of bags, said rack comprising a pair of parallel rods spaced from each other by the distance between said handle orifices of the bags, said rods being secured to project normally to a vertical plane and lying in a transverse horizontal plane; said rack further being provided with an element disposed equidistantly between said rods and extending upwardly at a height to pass through the slitting in the expanded portions of the tabs of the bags for retaining said tabs when the rods are passed through the orifices in the bag handle;

said pack of bags being mounted on said rack by passing the rods through the handle orifices, and the projecting element through the slits in the expanded portions of the tabs;

Whereby when each bag in the pack is pulled off the rods its tabs are restrained by the upwardly projecting element to detach at their necks at the ends of their transverse slits, and the neck of the tab of the rear sheet, by virtue of its slight adhesion to the neck of the tab of the front sheet of the next ensuing bag, initially pulls the bottom cut-out edge of the next ensuing bag to open the bag until, and, with the force developed by further pulling the first bag off the rack, said adhered necks then pull apart from each other at the point where they are lightly adhered, to result in the removal of the first bag into which articles may have been placed, and the presentation of the next ensuing bag in open condition to receive additional articles.

5,307,936

Patent Not Issued For This Number

5,307,937

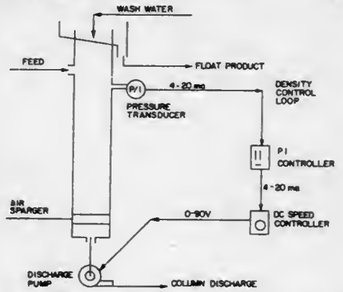
HIGH THROUGHPUT FLOTATION COLUMN PROCESS

Joel F. Hutwelker, Asheville, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Feb. 17, 1993, Ser. No. 19,153

Int. Cl.[5] B03B *13/00;* **B03D** *1/02, 1/24*

U.S. Cl. 209—164 **6 Claims**



1. A high efficiency process for the recovery of selected mineral particles from an ore utilizing a flotation column, the process comprising the steps of:

introducing a feed stream comprising a slurry of the ore into an upper portion of the flotation column wherein said mineral particles therein substantially range between

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about 20 mesh (840 microns) and about 325 mesh (44 microns) in size;

establishing and maintaining a net upward flow of water (negative bias) through a top portion of said flotation column between where the feed stream is introduced and the top of the flotation column, said net upward flow being maintained greater than zero but less than about 0.7 centimeters/second by introducing a selected flow of water at the top of said column and withdrawing a selected flow of pulp at the bottom of said column with substantially no water being added to the column below the location of the feed introduction;

establishing and maintaining an upwardly moving stream of diffuse air originating at a lower portion of said flotation column wherein said superficial air velocity is between about 0.5 and 2.0 centimeters/second;

establishing and maintaining the percent solids in said flotation column between about 35 and 50%;

establishing and maintaining column throughput of said slurry between about 1.8 and 4.0 tons/hour/square foot; and

recovering said selected mineral particles from the top of said flotation column.

5,307,938

TREATMENT OF IRON ORE TO INCREASE RECOVERY THROUGH THE USE OF LOW MOLECULAR WEIGHT POLYACRYLATE DISPERSANTS

Glenn Lillmars, 30190 Falcon Ave., Stacy, Minn. 55079

Filed Mar. 16, 1992, Ser. No. 851,626
Int. Cl.[5] B03B *1/04*; B03D *1/008, 1/02*
U.S. Cl. 209—167 **60 Claims**

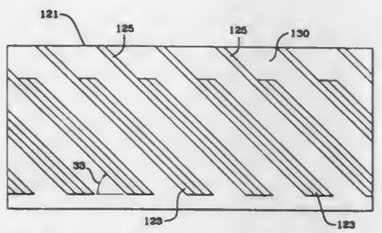
1. A process for treating an aqueous iron containing ore slurry comprising a source of iron oxide and gangue including the steps of contacting the iron containing ore slurry with an effective amount of a dispersant polymer or copolymer containing at least one acrylic functional group having a molecular weight of 1,000 to less than about 10,000, and grinding the dispersant and iron containing ore slurry to a desired particle size and thereafter adding a selective flocculant for the iron oxide to the ground ore slurry and subjecting the flocculant containing ground ore slurry having said dispersant and iron oxide therein to a settling or decanting separating step to cause the iron oxide to settle and the gangue is decanted and removed as overflow.

5,307,939

SCREENING APPARATUS FOR PAPERMAKING PULP

Douglas L. G. Young, and Oscar Luthi, both of Nashua, N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 13, 1992, Ser. No. 912,462
Int. Cl.[5] B07B *1/22*
U.S. Cl. 209—270 **10 Claims**



1. A hydrodynamic device for generating negative pressure excursions in a pulp slurry during fine screening, comprising:

at least one half-foil member disposed on a substantially cylindrical outer surface of a rotor, said rotor being mounted within and co-axial with a substantially cylindrical screen having a circumferentially continuous apertured zone to define an annular screening chamber between said rotor and said screen, said at least one half-foil member having a collective axial extent at least equal to that of said apertured zone and having a collective leading edge of said at least one half-foil member inclined at a spiral angle relative to the axis of said rotor; and

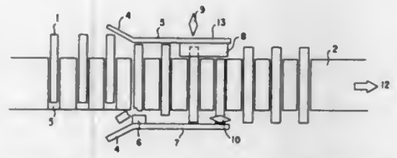
means for deflocculating the pulp slurry and for accelerating said pulp slurry to a desired circumferential velocity for screening, wherein the means for deflocculating and accelerating the pulp slurry comprises an extension on one or more of said at least one half-foil member, said extension projecting axially into a pulp entrance chamber in an upstream direction from said screening chamber and tapering from a maximum radial thickness of said half-foil at an upstream boundary of said screening chamber to a radially vanishing dimension near an upstream boundary of a pulp entrance chamber.

5,307,940

DEVICE FOR TRIMMING TOO LONG STICKS AND FOR ELIMINATING THOSE TOO SHORT

Yoshifumi Kanegae, Amagasaki, Japan, assignor to Ezaki Glico Kabushiki Kaisha, Osaka, Japan

Filed Apr. 3, 1992, Ser. No. 863,406
Claims priority, application Japan, Sep. 13, 1991, 3-262848
Int. Cl.[5] B07C *5/14*; B23D *21/00*
U.S. Cl. 209—517 **8 Claims**



1. Device for making the linear dimension of a plurality of sticks substantially uniform, comprising

conveyor means (**12**) having a plurality of grooves (**3**) therein disposed equidistant from each other and perpendicular to direction of travel of the conveyor means, said grooves having substantially the same depth and being of a cross-section suitable for holding said sticks;

first guide means (**4**) for urging said sticks placed in said grooves toward a substantially uniform distance from an edge of said conveyor means;

second guide means (**7,13**) disposed substantially parallel to said conveyor means and between which said sticks held in said grooves travel with said conveyor means;

trimming means (**6**) for trimming one end of said sticks which is greater in linear dimension than desired, as the conveyor means moves the sticks;

first moving means (**8,9**) for causing the sticks, after the trimming operation, to be moved against one of said second guide means, and

second moving means (**10,16,18,19,20,17**) for causing one end of said sticks held against said one of said second guide means, to be moved downward so that the stick is moved out of said groove holding said stick.

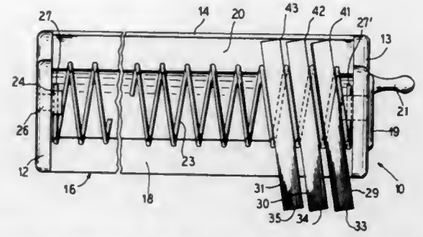
5,307,941

FILE FOLDER CONVEYOR

Burton L. Siegal, 7605 N. Tripp, Skokie, Ill. 60076

Filed Jul. 24, 1992, Ser. No. 918,842
Int. Cl.[5] B42F *17/00*
U.S. Cl. 211—11 **9 Claims**

1. A file folder conveyor comprising, a base member formed with an end, a spiral rotatably supported from said end and adapted to receive files, a front planar surface and a back planar surface formed on said base on front and back sides of said spiral and adapted to slidably and horizontally support files thereon, said front and back planar surfaces are in the same horizontal plane which horizontal plane is above the bottom edge of said spiral and below the top edge of said spiral, an upwardly extending file engaging back wall attached to said base member adjacent said back planar surface such that said



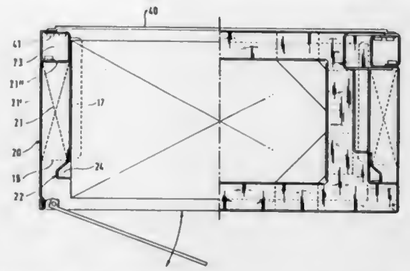
files rest on said front and back planar surfaces and engage said file engaging back wall and said files extend outwardly over said front planar surface away from said spiral so that said files can be moved horizontally away from said spiral, and means for driving said spiral so as to move files along said front and back planar surfaces.

5,307,942

ELECTRONIC, ESPECIALLY TELECOMMUNICATION EQUIPMENT RACK

Guy Quelfeter, Ploulec'h; René Femenia, Plouisy; Denis Le Jeune, Morlaix; Rémi Verdurand, Neuilly, and Claude Bertin, Paris, all of France, assignors to Alcatel Cit, Paris, France

Filed Nov. 25, 1992, Ser. No. 981,591
Claims priority, application France, Nov. 29, 1991, 91 14858
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—26 **10 Claims**



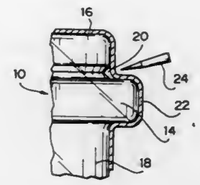
1. Electronic telecommunication equipment rack comprising two uprights for supporting said equipment, at least one of which has a shape constituting a hollow interior volume for passing connections along said equipment from an entry point at which said connections are fed into the rack, to an exit point at which they leave said interior volume and run transversely to their respective destination point on said equipment, said interior volume being open to provide access to said connections from an access side of said track from which an operator has access to said equipment, said rack defining said interior volume having a heightwise first opening accessible from said access side and whose height is sufficient to provide access to said connections on their path situated along said equipment and a depthwise second opening also accessible from said access side and adapted to contain said exit points.

5,307,943

BOTTLE WITH ANNULAR GROOVE IN ITS NECK AND CAP

Tsuguo Iidaka, 122-2, Hinatacho, Sukagawa-shi, Fukushima-ken, Japan

Filed Nov. 12, 1992, Ser. No. 974,898
Claims priority, application Japan, Dec. 2, 1991, 3-106464[U]; Feb. 6, 1992, 4-12403[U]
Int. Cl.[5] B65D *1/02*
U.S. Cl. 215—31 **9 Claims**



1. A wine bottle and cap combination including:

a top portion and a body portion, said top portion having a pouring spout to allow a liquid contained in the bottle to be poured out of the bottle, said top portion further having a circumferential flange and an annular groove, said flange dividing said top portion into a neck portion and a head portion; and

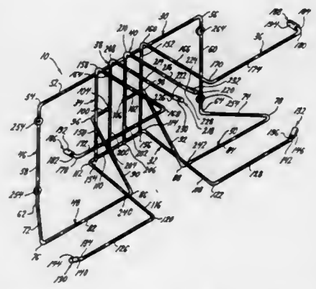
a cylindrical cap, having one end closed, fitted to and in intimate contact with said top portion, including said head portion and said flange so as to cover said pouring spout and bridging, without entering, said annular groove to define an annular cavity, in cooperation with said annular groove, said cylindrical cap forming an airtight seal with said flange and being of a material and a thickness allowing it to be readily manually cut through and linearly around its surface with a knife, whereby the knife can pierce through said cap and enter said annular cavity for cutting said cap.

5,307,944

SKI EQUIPMENT SUPPORT RACK

Michael H. Reedy, Edwardsville, Ill., assignor to Lee Rowan Company, St. Louis, Mo.

Filed Dec. 21, 1992, Ser. No. 994,202
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—70.5 **18 Claims**



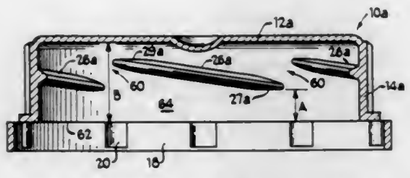
1. A ski equipment support rack for attaching to a wall, comprising:

first means for removably receiving two generally upright skis that have mutually adjacent bottom surfaces and for removably supporting the two skis such that a plane cut-

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ting between the adjacent bottom surfaces is spaced forwardly from the wall;
second means for engaging the skis to restrict the revolution thereof about the first means;
third means for attaching to the wall and for securely supporting the first and second means;
the first means includes a forward member and a rearward member that is horizontally spaced rearwardly from the forward member, the members defining a slot therebetween; and,
both the forward and the rearward members are segments of rod elements.

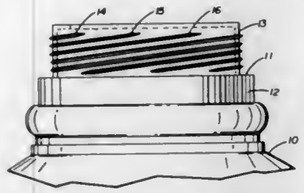
5,307,945
CLOSURE
Walter E. Hidding, 367 A Woodrock Rd., Barrington Hills, Ill. 60010; Douglas J. Hidding, 801 E. Lake Shore Dr., Barrington, Ill. 60010, and Robert D. Hidding, 925 Harper Dr., Algonquin, Ill. 60102
Continuation-in-part of Ser. No. 902,170, Jun. 26, 1992. This application Jul. 20, 1992, Ser. No. 916,815
Int. Cl.[5] B65D *41/04*
U.S. Cl. 215—329 **6 Claims**



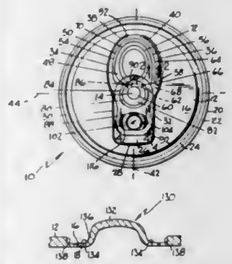
1. A cap comprising a generally flat cover portion, a skirt depending from the periphery of said cover, said skirt having a generally cylindrical shape with an inside surface and an outside surface, said cover forming a closed end of said skirt and said skirt having an open end opposite said closed end, thread means on said inside surface for holding said cap into engagement with a threaded neck of a container, said thread means comprising a plurality of thread segments, each of said segments extending along concentric helical paths at different locations on said inside surface of said skirt, and each of said segments having lower extremities at generally equal elevations on said skirt, and each of said segments having upper extremities at generally equal elevations on said skirt, said thread segments being generally disposed on approximately the upper half of said skirt, said inside surface of said skirt having an unthreaded section extending along generally the lower half of said inside surface, the sum of the circumferential extents of said thread segments being less than the circumference of said inside surface of said skirt, vertical unthreaded areas extending between said segments from the closed end to the open end of said skirt, said thread segments being four in number and each segment extending circumferentially on said inside surface of said skirt for about 85 degrees and each vertical unthreaded area having a circumferential extent of about 5 degrees.

5,307,946
NECK FINISH FOR A CONTAINER AND A MATCHING REGISTERING MULTIPLE THREAD PATTERN IN A FLEXIBLE CAP FOR ENGAGEMENT ON NECK SAID FINISH
Luca Molinaro, New Castle, Pa., assignor to Northern Engineering & Plastics, Corp., New Castle, Pa.
Filed Mar. 24, 1993, Ser. No. 36,277
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—329 **5 Claims**

1. A container having a neck surrounding an opening therein, said neck having a first portion of a known diameter, a plurality of vertical fastening configurations on the exterior of said first portion, a cylindrical neck portion of a lesser diameter than said known diameter, said cylindrical neck portion extending vertically above said first portion to said opening, seven circumferentially and vertically spaced continuous spiral thread configurations on said cylindrical neck portion, where said continuous spiral thread configurations each extend for more than a complete spiral circle, each of said spiral thread configurations having uppermost ends defining circumferentially spaced lead-in points so as to form multiple means for registering engagement with a flexible cap having a depending annular wall and seven circumferentially and vertically spaced continuous spiral thread configurations on the inner surface of said depending annular wall of said cap, each thread configuration having a first end and a second end, said second end circumferentially and axially spaced from said first end, and a tear skirt depending from said depending annular wall, means on said tear skirt engaging said plurality of vertical fastening configurations.



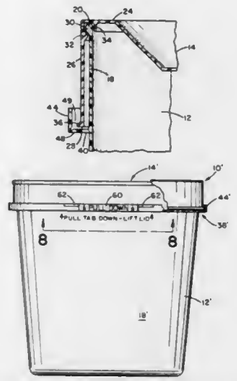
5,307,947
CONTAINER END MEMBER
Bruce A. Moen, Golden, and Harold Cook, Jr., Evergreen, both of Colo., assignors to Coors Brewing Company, Golden, Colo.
Continuation-in-part of Ser. No. 443,510, Nov. 30, 1989, Pat. No. 5,011,037. This application Apr. 19, 1991, Ser. No. 688,910
Int. Cl.[5] B65D *41/32*
U.S. Cl. 220—266 **20 Claims**



1. A container end member for sealed association with a container body member to provide a sealed container comprising:
a one piece end member having a peripheral wall portion and an integral central end wall portion;
at least one severable tab portion integral with said central end wall portion;
a hinge portion integral with said central end wall portion and having spaced apart ends;
at least one severable score line groove having a main body portion and integral end portions defining said spaced apart ends of said hinge portion and defining said at least one severable tab portion so that said at least one severable tab portion may be pushed generally axially inwardly into said container body member to form an opening in said central end wall portion;

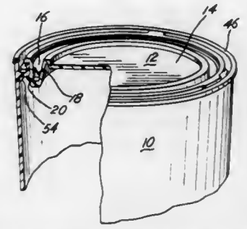
a recessed portion having an axial thickness less than the axial thickness of the remaining portions of said at least one severable tab portion and said central end wall portion and located between and integral with said central end wall portion and said severable tab portion;
said at least one severable score line groove being located in said recessed portion; and
at least a portion of said main body portion of said at least one severable score line groove extending, generally in a transverse direction in said recessed portion.

5,307,948
TAMPER-PROOF AND TAMPER-EVIDENT CONTAINER CLOSURE SYSTEM
Arthur H. Blackburn, Chagrin Falls; Imre J. Buza, Aurora; Terry L. Hartman, Solon; Jerry L. Knox, Garrettsville, all of Ohio; Lee McKinnon, Fort Wayne, Ind., and David R. Brown, Bramtton, Canada, assignors to Cardinal Packaging, Inc., Streetsboro, Ohio
Continuation-in-part of Ser. No. 480,772, Feb. 16, 1990, Pat. No. 5,052,574. This application Sep. 27, 1991, Ser. No. 767,115
Int. Cl.[5] B65D *17/34*
U.S. Cl. 220—269 **4 Claims**



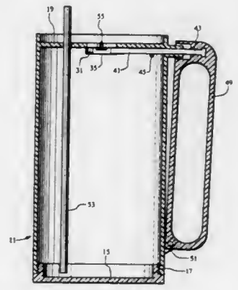
1. A tamper-proof and tamper-evident closure system for use with a plastic container body and lid of the type wherein the container body has an opening defined by a continuous side wall and the lid has a depending skirt terminating at a lower edge, the skirt overlapping the side wall adjacent the opening when the lid covers the opening, the closure system comprising:
a. means for shielding the lower edge of the skirt to inhibit removal of the lid from the container body, said means for shielding including a shield flange projecting outwardly from the side wall of the container body immediately adjacent the lower edge of the lid when the lid covers the opening of the container body, said shield flange barring access to a substantial portion of the lower edge, said shield flange including a cut-out section providing access to a minor portion of the lower edge of the lid to permit removal of the lid from the container body;
b. a tamper-evidencing band integrally extending from said shield flange and sufficiently surrounding the lower edge of the lid when the lid covers the opening of the container body to make removal of the lid difficult; and,
c. a tab portion defined between ends of said tamper-evidencing band, said tab portion frangibly connected and correspondingly aligned with the shield flange and the tamper-evidencing band and sufficiently covering the cut-out section of said shield flange to inhibit access to the minor portion of the lower edge of the lid, wherein said tab portion includes means for maintaining a hinged connection to the cut-out section upon breaking a frangible connection to the tamper-evidencing band.

5,307,949
TEAR-AWAY LID AND CONTAINER
John W. Von Holdt, Jr., 6801 N. Loron, Chicago, Ill. 60646
Filed Dec. 21, 1992, Ser. No. 994,355
Int. Cl.[5] B65D *41/46*
U.S. Cl. 220—276 **26 Claims**



1. A plastic lid having a periphery for removable attachment adjacent its periphery to a container, said lid comprising spaced inner and outer peripheral walls defining between them a substantially annular sealing seat for a lid retaining ring carried by the container, said outer, peripheral wall of the lid defining inwardly-positioned projection means to engage said retaining ring of the container to facilitate retention of the lid on said container; said outer, peripheral wall defining at least one circumferentially extending line of tearing weakness to permit separation of at least some of said inwardly-positioned projection means from the remainder of said lid, said lid outer peripheral wall defining at least one aperture or recess to provide access for pry member, to allow prying of said lid away from its retention on a bucket while causing said line of weakness to tear, permitting removal of said lid and at least partial separation of said projection means from the lid.

5,307,950
CONTAINER FOR LIQUIDS
Hongbiao Li, 401 S. Sherman #305, Richardson, Tex. 75083-1389
Continuation-in-part of Ser. No. 592,975, Oct. 2, 1990. This application Mar. 26, 1993, Ser. No. 37,325
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—714 **10 Claims**



1. A container for liquids, comprising:
an outer side;
a bottom connected to the outer side;
a top attached to the outer side and having an opening;
at least one stopper, movable between an open position, in which liquid can be poured out of the container through

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the opening, and a closed position, in which the at least one stopper prevents liquid from flowing through the opening;

a handle, having an upper end and a lower end;

a pivot pin for connecting the lower end of the handle to the side of the container; and

connection means for connecting the handle to the at least one stopper for moving the at least one stopper to the open position when the container is picked up by the handle, and for moving the at least one stopper to the closed position when the handle is released.

5,307,951

METAL UTENSIL

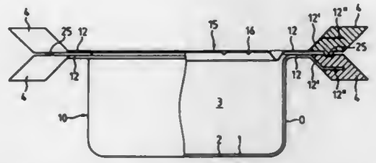
Jacques Kuhn, Rikon im Tösstal, Switzerland, assignor to Heinrich Kuhn Metallwarenfabrik AG, Rikon, Switzerland

Filed Mar. 30, 1992, Ser. No. 859,969

Claims priority, application Switzerland, Apr. 30, 1991, 01295/91

Int. Cl.[5] A47J *37/00*

U.S. Cl. 220—771 **5 Claims**



1. A metal utensil comprising a single unitary sheet of metal material deep-drawn into a vessel comprising

a first container part including a circular wall defining an interior volume and an outer surface, said wall having an edge defining an open top,

a continuous flange extending radially outwardly from said edge,

means comprising first and second continuations of said flange extending radially outwardly from opposite sides of said flange forming root portions of handles each having a manually graspable handle portion at an outer end thereof, each said root portion lying in the same plane as said flange and being elongated so that a user's hand grasping said handle portion is spaced from said outer surface,

a second container part having a central portion, a continuous second flange extending radially outwardly from said central portion and means comprising first and second continuations of said second flange extending radially outwardly from opposite sides of said second flange forming root portions of handles, each said root portion lying in the same plane as said flange and having a manually graspable handle portion at an outer end thereof by which said second container part can be manually grasped; and

means at each said handle portion forming positioning surfaces for positioning said second container part on said first container part so that when said second container part is placed on said first container part with said handles of said container parts aligned, said flanges are spaced apart and when said second container part is placed on said first container part with said handles of said parts separated by at least a predetermined angle, said flanges abut.

5,307,952

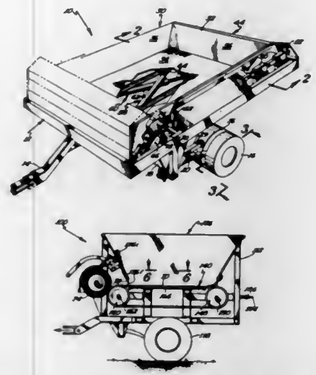
TOP DRESSER

Vernon J. Worrel, Mahtomedi, and Terry Bondeson, Woodbury, both of Minn., assignors to Turfco Mannfacturing Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 651,467, Feb. 6, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 948,664

Int. Cl.[5] A01C *19/00*

U.S. Cl. 222—1 **29 Claims**



1. A top dresser adapted to be pulled across the ground in a first direction comprising, in combination: a frame; means for movably supporting the frame upon the ground; a hopper mounted to the frame and having closed first and second sides, a closed bottom, and an open front; a discharge gate movable between the sides of the hopper in the first direction from a first, expanded position to a second, unloaded position adjacent to the open front of the hopper; a cylindrical dispensing drum rotatably mounted adjacent to the front of the hopper about an axis located below the closed bottom of the hopper; a metering gate movably mounted at the front of the hopper and movable relative to the dispensing drum to meter the amount of material passing between the metering gate and the dispensing drum, with the discharge gate moving the material in the hopper in the first direction towards the dispensing drum for dispensing thereby, with the movably supporting means being spaced from the dispensing drum in a direction opposite to the first direction, with the material being dispensed by the dispensing drum in front of the hopper and the movably supporting means as the top dresser is being pulled in the first direction.

5,307,953

SINGLE DOSE DISPENSER HAVING A PIERCING MEMBER

Philip M. Regan, Ware, Great Britain, assignor to Glaxo Group Limited, Middlesex, United Kingdom

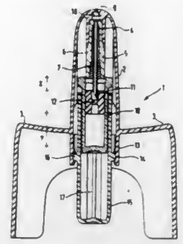
Filed Dec. 2, 1992, Ser. No. 984,913

Claims priority, application United Kingdom, Dec. 3, 1991, 9125699

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—82 **20 Claims**

11. A unit-dose dispenser for manual discharge of a single dose of a flowable substance in the form of a spray, comprising a casing which contains a nozzle and two shoulders, one on either side of the nozzle, the nozzle incorporating a piston member extending inwardly from an outlet opening, the piston member having at least one discharge channel, and a container of the substance to be discharged being operatively positioned with respect to the piston member and within the casing, wherein a seal is arranged across the container to seal in all the substance to be discharged, and wherein the piston member has a piercing member which extends towards the seal, whereby on pressing the container onto the piston member the seal is pierced to allow the contents of the container to be expelled along the discharge channel and out through the outlet opening in the form of a spray.



5,307,954

MULTI-COLOR FABRIC PAINT PRODUCT

James W. Gick, Cota de Caza; Edward J. Kalfayan, Clovis; James T. Nakahara, and Bradley C. Shelton, both of Fresno, all of Calif., assignors to Duncan Enterprises, Fresno and Gick Publishing Inc., Irvine, both of Calif.

Filed Nov. 19, 1991, Ser. No. 794,523

Int. Cl.[5] B65D *35/00*

U.S. Cl. 222—94 **7 Claims**

1. A device for applying fabric paint to the surface of fabric comprising a container having an outlet nozzle and a body wall which is movable inwardly to force contents of the container out of the nozzle, first and second quantities of fabric paint positioned in said container in a manner such that they are not mixed with each other, said second quantity having a different appearance than the first quantity, said paint quantities being positioned in said container in a manner such that when said movable wall is moved to force paint out of the nozzle, a continuous flow of both quantities of paint out said nozzle in a side-by-side single strand, but unmixed, relation provides a combined flow of striped appearance when applied to said fabric, said container includes a partition which divides the container into two compartments, said partition extending from the bottom to the top of the container and into the nozzle so that said two paint quantities are separated within the container and do not contact each other until flowing out of the nozzle, and said container has a cross-sectional shape wherein one dimension extending across the container through the center of the cross-section is longer than a dimension across said container which is perpendicular to the first dimension, and said partition is located such that said compartments are substantially on opposite sides of the shorter dimension.

5,307,955

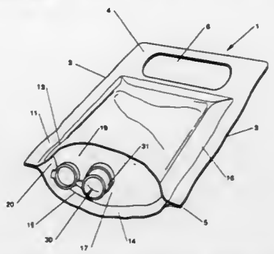
FLACCID BOTTOM DELIVERY PACKAGE HAVING A SELF-SEALING CLOSURE FOR DISPENSING LIQUID MATERIALS

Fleming Viegas, Mississauga, Canada, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 25, 1992, Ser. No. 904,222

Int. Cl.[5] B65D *35/08, 35/14, 35/16*

U.S. Cl. 222—107 **14 Claims**



1. A flaccid and lightweight bottom delivery package for storing and dispensing fluid products, said package comprising:

(a) a flaccid tubular container for housing said fluid product, said container having a closed top and an open bottom;

(b) a gusset panel sealingly secured to said bottom of said container and having a discharge orifice disposed therein, said gusset panel being secured to said container so as to define a flexible stand up base comprising said gusset panel and a portion of said tubular container below said gusset panel, said base allowing said package to stand alone on a flat surface;

(c) a self-sealing valve sealingly secured to said discharge orifice, said valve having a closed position so as to substantially prevent unwanted leakage of fluid when said package is not in use, said valve also having an open position for dispensing said fluid through said discharge orifice in response to manual squeezing forces being applied to said container, said valve being able to return to its closed position upon removal of said manual squeezing forces so as to substantially stop the dispensing of said product through said discharge orifice; and

(d) a means, adjacent the top end of said package, for hanging said package from a support.

5,307,956

FIVE GALLON NESTABLE PLASTIC SYRUP CONTAINER

Simon J. Richter, Marietta, Ga., and Frank G. Hohmann, Tenafly, N.J., assignors to The Coca-Cola Company, Atlanta, Ga.

The portion of the term of this patent subsequent to Nov. 12, 2010 has been disclaimed.

Continuation-in-part of Ser. No. 429,553, Oct. 31, 1989, Pat. No. 5,064,101. This application Nov. 8, 1991, Ser. No. 789,271

Int. Cl.[5] B67D *5/60*

U.S. Cl. 222—143 **16 Claims**

1. A disposable container for storing and dispensing liquid concentrate comprising:

a top end defining a first opening through which said container may be filled, a second opening through which concentrate may be withdrawn and a planar stacking surface;

vent means associated with said first opening for controlling the flow of air into the container as concentrate is withdrawn from said second opening;

a base end for supporting said container in an upright position;

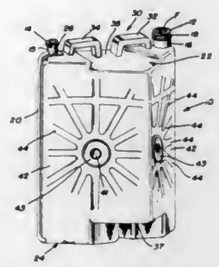
sidewalls connecting said base end to said top end, said sidewalls being concave toward an interior of said container;

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a reinforcing pattern formed in said sidewalls for further precluding distortion of said sidewalls;

a conduit extending along said sidewalls outboard of said container from the top end to the base end, said conduit joining said second opening at said top end of said container, said conduit being in liquid communication with the inside of said container at the base end thereof; and

valve actuator means within said second opening for use in operating a valve in a coupling connectable to said second opening;



wherein said base end of one container is nestable within the top end of another container for vertical stacking and storage of a plurality of containers, said base end including opposing base sections alternated with opposing recessed areas, and a channel connecting the opposing base sections to facilitate complete drainage of concentrate from the container when the container is in an upright orientation, and wherein said concave sidewalls are outwardly expandable when a container is filled with concentrate.

5,307,957

BEVERAGE DISPENSING VEHICLE WITH A PUMP

Ingmar Carlsson, Söder Mälarstrand 71, Stockholm, Sweden S-11725 , and Jan Åkerlind, Öregrundsgatan 7, Stockholm, Sweden S-11541

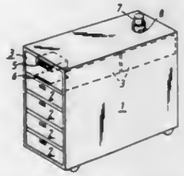
PCT No. PCT/SE91/00138, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/12758, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 22, 1991, Ser. No. 930,523

Claims priority, application Sweden, Feb. 26, 1990, 9000687

Int. Cl.[5] B67D *5/60*

U.S. Cl. 222—144.5 **4 Claims**



1. A hot beverage dispensing arrangement comprising a container having a substantially sealed interior and a substantially parallelepipedic configuration with thermally insulated walls, said container being insertable into a holder which can be provided beneath a counter surface and being drawable out from said holder to a determined, lockable position in which the container interior can be connected to a pump means mounted on an upper side of the container, said container further comprising a pouring spout mounted on the upper side of the container for selectively connecting the interior of said container to atmosphere.

5,307,958

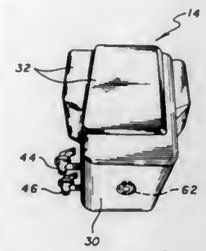
BOTTLED WATER STATION WITH REMOVABLE RESERVOIR

Bruce D. Burrows, Valencia, Calif., assignor to Ebtech, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 955,330, Oct. 1, 1992, Pat. No. 5,246,141, which is a continuation-in-part of Ser. No. 688,861, Apr. 22, 1991, Pat. No. 5,192,004. This application May 24, 1993, Ser. No. 64,923

Int. Cl.[5] B67D *5/62*

U.S. Cl. 222—146.1 **21 Claims**



1. A water station comprising:

a reservoir having a hollow interior for receiving and storing a supply of water;

a station housing having support means defining an upwardly open cavity for drop-in receiving and supporting said reservoir and for slide-fit removal thereof;

a chiller plate unit mounted within said station housing and defining a chilled surface for contacting said reservoir to chill water within said reservoir, when said reservoir is mounted within said station housing;

lock means for removably retaining said reservoir in seated contact with said chilled surface, said lock means comprising interengageable lock members mounted respectively on said reservoir and on said station housing and adapted for locking interengagement when said reservoir is installed into said station housing; and

faucet means for dispensing water from said reservoir.

5,307,959

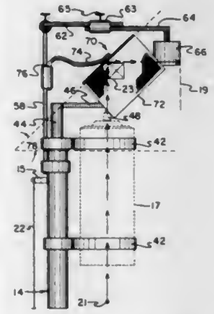
SPRAY CAN CONTROL APPARATUS

Robert J. Bedore, and Roma N. Bedore, both of 2016 Hill, Saginaw, Mich. 48602

Filed May 10, 1993, Ser. No. 59,066

Int. Cl.[5] B67D *5/64*

U.S. Cl. 222—174 **12 Claims**



1. A new and improved spray can control apparatus, comprising:

a handle assembly,

an extension assembly connected to said handle assembly,

a spray can holding assembly connected to said extension assembly, and

a spray control actuation assembly comprised of a hand-operated actuator assembly supported by said handle assembly, a flexible member connected to said hand-operated actuator assembly and extending along said extension assembly, and a can nozzle actuator assembly connected to said flexible member and supported by said extension assembly for actuating a can nozzle when said hand-operated actuator assembly is actuated,

wherein said handle assembly includes a first hand-held handle member connected to said extension assembly, at least one strut member attached to said first hand-held handle member and projecting therefrom, and a second hand-held handle member connected to said at least one strut member, said first hand-held handle member, said at least one strut member, and said second hand-held handle member defining a hand-resting area,

wherein said hand-operated actuator assembly includes a pivot connected to said handle assembly and an actuator member pivoted on said pivot, such that said actuator member is retained in said hand-resting area and is capable of being squeezed by fingers of a hand that grasps said second hand-held handle member,

further including:

a spacer assembly, connected to said extension assembly, for positioning a spray can a predetermined distance from a surface to be sprayed, said spacer assembly including means for adjusting the position thereof relative to said extension assembly to selectively vary said predetermined distance.

5,307,960

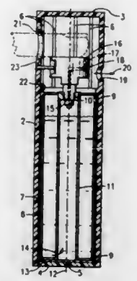
SAFETY AEROSOL DISPENSER

James P. Fay, Sr., Marlow, N.H., assignor to Omega Securitie, Inc., Marlow, N.H.

Filed Oct. 14, 1992, Ser. No. 960,918

Int. Cl.[5] B65D *83/14*

U.S. Cl. 222—183 **10 Claims**



1. A safety dispenser suitable for dispensing a jet of material, the active ingredient of which is capable of incapacitating an attacker, comprising:

a rugged unitary housing defining a trigger finger access opening and an opening through which said jet may issue, a container for housing said material for incapacitating an attacker under pressure, the container being captively housed within the housing and being closed by a manually operable valve which is spring biased into a closed position, a valve cap attached to the valve and carrying a nozzle for emission of a jet of the material upon operation of the valve cap by application of pressure by a trigger finger, of a user, extending through the finger opening, the orientation of the nozzle being restrained such that a jet when emitted will pass through the jet emitting opening;

wherein said housing is an elongate housing closed at both ends and defining a longitudinal axis, the container is an elongate container captively held within the housing with the valve structure extending along the axis for operation by a trigger finger extending through the finger opening said finger opening and jet emitting opening defined in a wall of the housing laterally of the axis.

5,307,961

DEVICE FOR POURING VISCOUS MIXTURES HAVING SOLID INGREDIENTS

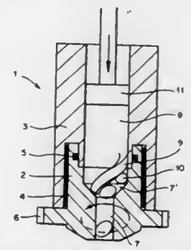
Gerhard Puderbach, Neuwied, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG, Neuwied, Fed. Rep. of Germany

Filed Apr. 6, 1992, Ser. No. 863,629

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112940

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—252 **3 Claims**



1. A device for pouring viscous mixtures having solid ingredients comprising:

a holder having a cylindrical inner surface defining a bore with a top end and a bottom end;

an exit die rotatably mounted below said holder having an intake bore through which the mixture passes under pressure, said bottom end of said bore being in communication with said intake bore;

a piston operatively fitted at said top end of said bore to exert pressure on the mixture, thereby forcing it through said bore and said exit die; and

a spirally shaped stripping element attached to said inner surface and having a free end extending downwardly into said intake bore, said stripping element lying close to said exit die, wherein said exit die rotates with respect to said spirally-shaped stripping element, so that the solid ingredients within the mixture are serially directed through said exit die.

5,307,962

CONTAINER MOUNTED PUMP WITH IMPROVED CHECK VALVE STRUCTURE

Hui-Yu Lin, No. 85, Long Ho St., Taipei, Taiwan

Filed May 3, 1993, Ser. No. 56,666

Int. Cl.[5] B65D *88/54*

U.S. Cl. 222—321 **4 Claims**

1. A pumping-head structure comprising a nozzle head, a piston, a first spring member, a liquid accumulator, a delivery tube, a fastening ring and a container cap;

said nozzle head comprising a nozzle tube, an axial portion, an outlet and a pipe, said pipe being in said axial portion of said nozzle head, and said pipe being in communication with said nozzle tube; said pipe having a lower end which is fastened to said piston;

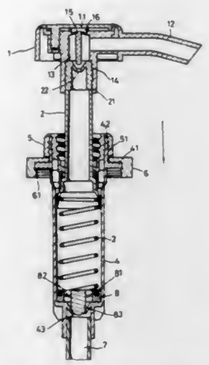
said piston having a lower end and said first spring member having a lower and an upper end, said upper end of said

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first spring member being attached to said lower end of said piston; and said first spring member and said piston being mounted in said liquid accumulator;

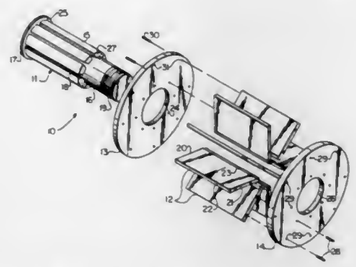
said liquid accumulator having a flange for mounting a container cap; said container cap is fastened in place by a fastening ring by which said container cap is fastened in a position between said fastening ring and said flange;

said liquid accumulator having a lower end and said delivery tube being fastened to said lower end of said liquid accumulator, and said lower end of said liquid accumulator having an inlet;



said pumping-head structure being characterized in that said inlet at said lower end of said liquid accumulator is installed with a valve annulus, said valve annulus having a top and a center, wherein said top of said valve annulus has a round groove for engaging with said lower end of said first spring member so as to fix said valve annulus in place; said center of said valve annulus is attached with a plunger valve via a second spring member, said second spring member exerts a downward force on said plunger valve and thus maintains said inlet tightly closed under normal conditions by a downward action of said plunger valve against said inlet.

5,307,963
FABRICATED ROTOR FOR ROTARY VALVES
Andrew Mitchell, Montoursville, Pa., assignor to Young Industries, Inc., Munch, Pa.
Filed Feb. 18, 1992, Ser. No. 836,376
Int. Cl.[5] G01F *11/10*
U.S. Cl. 222—368 **30 Claims**



1. A rotor for a rotary valve including a housing providing a rotor chamber having a material inlet and a material outlet and a drive shaft journaled in said housing for supporting said rotor in said rotor chamber, comprising:

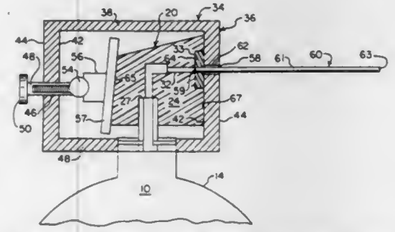
a rotor shaft operatively connectable to said drive shaft and disposable in said rotor chamber;

said rotor shaft having a plurality of longitudinally disposed, circumferentially spaced recesses each having a cross-section;

a plurality of vanes, each having an edge received within one of said plurality of recesses of said rotor shaft, said edge having a cross-section comparable to said cross-section of said recess causing said valve to recover locked in said recess; and

means for axially securing each of said vanes within one of said plurality of recess of said rotor shaft; and said securing means comprising a pair of shrouds mounted on said rotor shaft, each engaging a set of end edges of said vanes.

5,307,964
AEROSOL EXTENSION
John B. Toth, 11685 W. 25th Ave., Lakewood, Colo. 80215, assignor to John B. Toth, Arvada, Colo.
Filed Jan. 31, 1992, Ser. No. 828,719
Int. Cl.[5] B65D *83/20*
U.S. Cl. 222—402.13 **17 Claims**

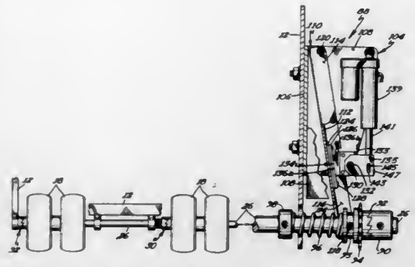


1. An aerosol extension for use with a pressurized container in domestic, industrial and general spray applications; said pressurized container having a cylindrically-shaped body with propellants and products for dispensing therewith, a planar bottom and a convex top; said convex top having a circular opening for receiving an actuator and a dispensing valve; said actuator and dispensing valve defining a dispensing system for delivering the products as a spray, a mist, a powder or a stream; said actuator defining an outlet orifice for delivering said products contained within said pressurized container; wherein the improvement comprises:

a. an annular clamping means for releasably locking said aerosol extension to the dispensing system; said clamping means being directly joined to said dispensing system with a ball and socket member without requiring physical engagement with the convex top, body, or bottom of said pressurized container; and

b. a flexible, elongated, tubular member for accurately delivering products contained in said pressurized container from said dispensing system to intended locations otherwise difficult to reach with said products; said tubular member being retained by said clamping member relative to the outlet orifice; said tubular member being coupled between said clamping means and the actuator with the aid of said ball and socket member to effect efficient delivery of said products; and said ball and socket member being disposed within said clamping member to allow adjustably attaching said clamping member and said tubular member to said actuator and said outlet orifice, respectively.

5,307,965
GROUND-DRIVEN TOP DRESSER UTILIZING EASILY ACTUATED CLUTCH MECHANISM
Vernon J. Worrel, Mahtomedi, Minn., assignor to Turfco Manufacturing, Incorporated, Minneapolis, Minn.
Filed Nov. 30, 1992, Ser. No. 983,385
Int. Cl.[5] A01C *15/16*
U.S. Cl. 222—616 **20 Claims**



1. Top dresser adapted to be pulled across the ground comprising, in combination: a frame; wheel means beneath the frame for supporting the frame for movement across the ground; a hopper surmounting the frame having an open bottom; conveyor means disposed beneath the open bottom of the hopper; a shaft rotatable by said wheel means; a clutch mechanism for connecting the shaft to the conveyor means, with the clutch mechanism having an engaged condition and a disengaged condition; a pivotal arm for changing the clutch mechanism between the engaged and disengaged condition; and a clutch actuation device comprising, in combination: a cam having first and second portions extending at an obtuse angle to each other; means for pivotally mounting the cam about a cam axis between a first position and a second position, with the first portion engaging the pivotal arm in the first position and the second portion engaging the pivotal arm in the second position, with the second portion being radially spaced from the cam axis a greater distance than the first portion is radially spaced from the cam axis; and means for rotating the cam to move from the first position to the second position in a first direction and then back to the first position in the opposite direction.

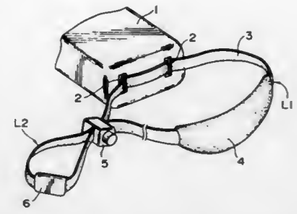
5,307,966
STRAPPING STRUCTURE FOR AN INSTRUMENT AND THE LIKE
Toshiya Inaba, Tokyo, and Masahiro Koinuma, Saitama, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1992, Ser. No. 853,119
Claims priority, application Japan, Mar. 18, 1991, 3-040445[U]
Int. Cl.[5] A45C *13/30*
U.S. Cl. 224—151 **8 Claims**

1. A strapping structure for an instrument comprising:

a loop-shaped strap adapted to be installed on said instrument;

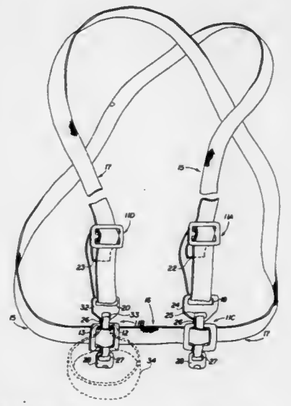
a pad;

a stopper provided on an intermediate portion of said loop for binding said loop to form a first loop portion and a second loop portion, said strap passing through said pad into said stopper, said stopper being shiftable along a longitudinal direction of said strap, whereby said first and second loop portions may be varied with respect to each other so that said pad can be positioned to serve as a hand pad or a shoulder pad wherein both ends of said strap are inserted into said stopper and connected by an end fastener; and



said end fastener is composed of a double-foldable clip which is formed with engaging means for engaging with the ends of said strap.

5,307,967
ARTICLE CARRIER
Michael L. Seals, 707 E. Brooks, Chandler, Ariz. 85225
Filed Dec. 10, 1991, Ser. No. 805,114
Int. Cl.[5] A45F *3/14*
U.S. Cl. 224—257 **1 Claim**



1. An article carrier for a person, comprising

(a) a continuous elongate strap including

(i) a first end (**15**) positioned at the front area of the person,

(ii) a second end (**17**) positioned at the front area of the person,

(iii) a first portion extending from said second end and from the front area of the person upwardly over the person's right shoulder,

(iv) a second portion extending from said first portion downwardly across the back area of the person,

(v) a third portion extending from said second portion around the left side of the person,

(vi) a fourth portion extending from said third portion horizontally across the front area of the person and beneath said first and second ends,

(vii) a fifth portion extending from said fourth portion around the right side of the person,

(viii) a sixth portion extending from the fifth portion upwardly across the back of the person, and

(ix) a seventh portion extending from the sixth portion downwardly over the person's left shoulder to the front area of the person and to said first end;

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(b) first buckle means (11B) slidably mounted on said fourth portion of said strap beneath said second end and including a bar(14) interposed between first and second spaced apart apertures (12,13) such that said fourth portion loops through said first aperture (12); over said bar (14), and through said second aperture (13);

(c) second buckle means (11C) slidably mounted on said fourth portion of said strap beneath said first end and including a bar (14) interposed between first and second spaced apart apertures (12, 13) such that said fourth portion loops through said first aperture (12), over said bar (14), and through said second aperture (13);

(d) first support means (26) attached to and extending outwardly from said first end of said strap intermediate said fourth portion of said strap and said bar (14) of said first buckle means (11B) and having a distal end spaced apart from said first end of said strap and from said fourth portion of said strap;

(e) first connector means (28, 29, 30, 31) attached to said distal end of said first support means for releasably retaining an article suspended from the front area of the person;

(f) second support means (26) spaced a distance apart from said first support means and attached to and extending outwardly from said second end of said strap intermediate said fourth portion of said strap and said bar (14) of said second buckle means (11C) and having a distal end spaced apart from said second end of said strap and said fourth portion of said strap;

(g) second connection means (28, 29, 30, 31) attached to said distal end of said second support means for releasably retaining the article suspended from the front area of the person;

said distance between said first and second support means and said first and second connector means being adjustable by sliding said first and second buckle means along said fourth portion of said strap to move said first and second support means along said strap intermediate said fourth portion of said strap and said first and second buckle means, respectively;

said first and second connector means extending away from said distal ends of said first and second support means, respectively, extending away from said first and second buckle means, and extending away from said fourth portion of said strap;

said first support means contacting and passing intermediate said fourth portion of said strap and said bar (14) of said first buckle (11B); and

said second support means contacting and passing intermediate said fourth portion of said strap and said bar (14) of said second buckle (11C).

5,307,968

TRAY FOR USE ON THE PASSENGER SEAT OF A MOTOR VEHICLE AND PROCESS OF SECURING IT IN PLACE

John R. Kalmbach, 5261 Wendover Rd., Yorba Linda, Calif. 92666

Filed Aug. 16, 1993, Ser. No. 106,591
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—275 **10 Claims**

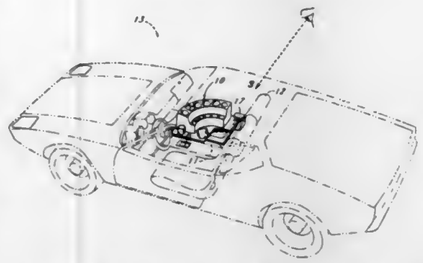
1. A tray for use on the passenger seat of a motor vehicle having a passenger seat with an outer edge and a passenger door, said tray comprising:

a tray base having an upper surface, a lower surface and an edge adjacent the passenger door;

at least one compartment on the upper surface of said tray base; and passenger door;

at least one compartment on the upper surface of said tray base; and

at least one resiliently compressible member held to the edge of the tray base adjacent the passenger door, said at least one resiliently compressible member being squeezed between the passenger door and the outer edge of the passenger seat.

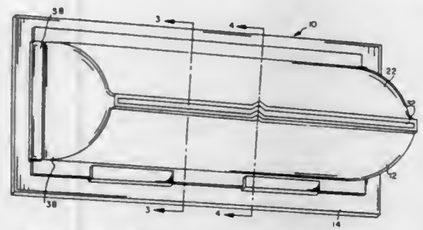


5,307,969

BAG DISPENSING APPARATUS

Vincent M. Menendez, 14003 Lake Magdalene Blvd., Tampa, Fla. 33618

Filed Nov. 27, 1992, Ser. No. 982,592
Int. Cl.[5] B26F *3/02*
U.S. Cl. 225—42 **6 Claims**



1. A system for facilitating sanitation in a hospital comprising:

a roll of red infectious bags, the bags being fabricated of a plastic material into an essentially identical configuration and formed together in a roll with each adjacent bag having a leading edge to be pulled from the roll, the leading edge constituting the top of the bag when used, each bag also having a trailing edge with the trailing edge constituting the bottom of the bag when used, perforations along the trailing edge of each bag to facilitate the one-handed separation of each bag from the next following bag, and an elongated slit centrally located between the perforations to restrain the pulling of the next adjacent bag, each bag having lateral edges with a heat seal line therebetween;

a dispenser for supporting, dispensing and separating individual bags from the roll of bags comprising a rigid housing molded of a polymeric material in a one-piece, generally semi-cylindrical configuration, the housing having an interior end and an exterior end; a transverse opening formed in the housing at the interior end adapted to allow loading a roll of bags into the interior of the housing, a transverse slot formed in the housing at the exterior end adapted to allow the dispensing of individual bags therethrough from the roll of bags from the interior of the housing to exterior thereof, the transverse slot separating the housing into an upper portion and the lower portion, end caps at the lateral ends of the slot to couple the upper portion and a lower portion, flanges in a plane extending downwardly and outwardly from the end caps and the upper and lower portions, the flanges adapted to be coupled to a bracket, lips formed in the upper portion and the lower portion of the housing on opposite sides of the slot, the lips being in a curvature in a direction opposite from the curvature of the remainder of the housing to guide the movement of individual bags through the slot, a finger formed in the center of the slot extending upwardly from the lower portion of the housing adapted to receive the slit in the bag at the region between adjacent bags to be separated, and a recess formed in the center of the slot extending upwardly in the upper portion of the housing adapted to receive the finger to assist in the separating of adjacent bags being dispensed; and

the bracket having holes for mounting on a wall and outstanding supports at the lateral edges and across the bottom thereof for receiving the flanges and supporting the dispenser.

5,307,970

PAPER WEB THREADING APPARATUS HAVING ABNORMALITY INDICATION ALARM

Kazuaki Shibuya, Tokyo, and Kunio Suzuki, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 805,749, Dec. 12, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 981,991
Claims priority, application Japan, Dec. 13, 1990, 2-410096
Int. Cl.[5] B41F *13/02;* **B65H** *23/18*
U.S. Cl. 226—92 **10 Claims**

1. A paper web threading apparatus for use in a paper web processing machine, comprising:

a guide member provided along a paper web threading path;

a paper web threading member to which a paper web is secured which is moved along the guide member so as to thread the paper web through the paper web threading path, said paper web threading member having at least a portion to be detected provided thereon;

a plurality of threading member detecting means, provided along said paper web threading path, for detecting the paper web threading member which is moved along the guide member and for outputting a detection signal (S_1);

a plurality of abnormality indication signal outputting means, provided along said paper web threading path, for outputting an abnormality indication signal (S_2) when the detection signal (S_1) is not outputted from said threading member detecting means within a predetermined period of time during the movement of said paper web threading member, at least one of said plurality of abnormality indication signal outputting means being operably coupled to at least a corresponding one of said plurality of threading member detecting means, and being operable when said at least a corresponding one of said plurality of threading member detecting means outputs said detection signal (S_1), wherein said predetermined period of time is determined by a movement speed of said paper web threading member and a distance between adjacent portions of said paper web threading member to be detected; and

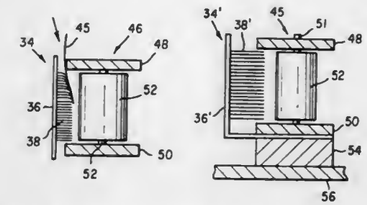
guide pieces attached to said paper web threading member, and at least one guide piece detecting means, operably coupled to at least a corresponding one of said plurality of threading member detecting means, for detecting said guide pieces and for outputting a guide piece detection signal (S_3) only while said detection signal (S_1) is outputted.

5,307,971

TAPE KEEPER FOR TAPE TRANSPORT ELEMENTS

Robert J. Evans, San Marino, Calif., assignor to Datatape Incorporated, Pasadena, Calif.

Filed Nov. 19, 1992, Ser. No. 978,593
Int. Cl.[5] B65H *27/00*
U.S. Cl. 226—168 **6 Claims**



1. In a web transport system including a web transport element having a core supporting said web and spaced edge guides for contacting the web edges, the improvement comprising:

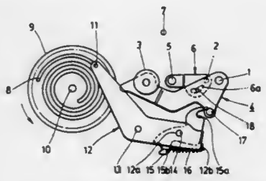
a web keeper including a plurality of bristles mounted on a fixed support opposite said core, wherein only said web keeper bristles permanently extend between said spaced edge guides to keep said web on said web transport element.

5,307,972

PINCH ROLLER PRESSING DEVICE IN CAMERA-INTEGRATED TYPE VCR

Byung K. Chang, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 746,630, Aug. 19, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,672
Claims priority, application Rep. of Korea, Aug. 21, 1990, 12550/1990
Int. Cl.[5] B65H *20/04*
U.S. Cl. 226—176 **5 Claims**



1. A pinch roller pressing device for contacting a capstan shaft in a camera-integrated type VCR, consisting essentially of:

cam gear means including a cam groove;

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a pivotally mounted angulated actuating lever having first and second arm members, said first arm member projecting toward and over said cam gear means and having an actuating pin at an outer end thereof for insertion in said cam groove;-

a single intermediate connecting lever rotatably mounted on said second arm member of said actuating lever and having first and second arm segments, said first arm segment being connected to an outer end portion of said second arm member of said actuating lever by a tension coil spring attached to an outer end portion of said first arm segment;

an angulated pinch roller lever located adjacent and connectable to said connecting lever and having first and second arm portions, said pinch roller lever being pivotally mounted at an outer end of said first arm portion and having a pinch roller at an outer end of said second arm portion, said first arm portion of said pinch roller lever further having means connectable to said second arm segment of said connecting lever for being activated thereby when said actuating lever is moved from a first position to a second position upon rotation of said cam gear means;

a take-up arm located adjacent and pivotally connected to said pinch roller lever and being rotated in response to activation of said pinch roller lever;

whereby when said cam gear means rotates in one direction, the rotation thereof is directly transferred to said actuating lever and said connecting lever, said pinch roller lever being engaged thereby to move said pinch roller into contact with said capstan shaft.

5,307,973

PROFILED ROD FOR A WEB-SPREADING ROLLER

Heinrich Schmidt, Stadtbergen; Otto Lorenz, Neusass, and Werner Geyer, Augsburg, all of Fed. Rep. of Germany, assignors to Erhardt & Leimer GmbH, Augsburg, Fed. Rep. of Germany

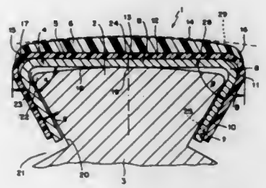
PCT No. PCT/EP90/00685, § 371 Date Jan. 29, 1991, § 102(e) Date Jan. 29, 1991, PCT Pub. No. WO90/13503, PCT Pub. Date Nov. 19, 1990

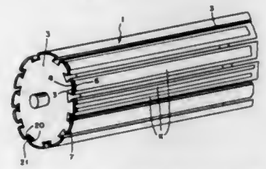
PCT Filed Apr. 27, 1990, Ser. No. 635,186

Claims priority, application Fed. Rep. of Germany, May 5, 1989, 3914766; Mar. 15, 1990, 4008220

Int. Cl.[5] B65H *20/02*

U.S. Cl. 226—190 **8 Claims**





1. Profiled rod for use with a web-spreading roller comprising:

an approximately C-shaped, extended basic element which can be displaced in a longitudinal direction of the web-spreading roller;

said basic element having a holder shank on each side to hold the profiled rod in place on support rings attached to the web-spreading roller;

said basic element having a longitudinal, frictionally-engaged, intermediate carrier on the back of said basic element;

an elastic contact surface attached to said intermediate carrier which is made from a more rigid material as compared with the contact surface;

said intermediate carrier being pushed onto said basic element in a longitudinal direction of the basic element and held at the back of the basic element and holder shanks with a clamp grip of the intermediate carrier.

5,307,974

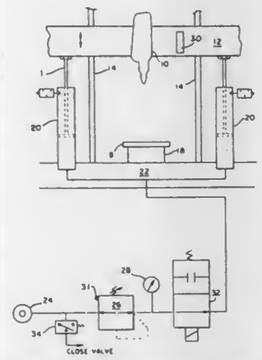
RIVET SETTING TOOL

Eymard J. Chitty, Norwalk, and David S. Rimkoski, Naugatuck, both of Conn., assignors to Emhart Inc., Newark, Del.

Filed Aug. 8, 1990, Ser. No. 564,176

Int. Cl.[5] B21J *15/20*

U.S. Cl. 227—1 **2 Claims**



1. A rivet setting tool assembly comprising

a rivet setting tool,

bracket means for supporting said rivet setting tool, and

means for supporting said bracket means for counterbalanced vertical movement throughout its displacement between an upper position and a lower position including vertical air cylinder means including a chamber and a displaceable rod connected to said bracket means,

precision pressure regulator means connected to said air cylinder means via an air line for continuously maintaining a predetermined pressure in said chamber of said air cylinder means, and

a normally closed two way, spring return solenoid valve located in said air line and displaceable from an open position allowing flow through said air line to a closed position closing said air line to prevent the displacement of said bracket means in the event electrical power is lost.

5,307,975

NEEDLE FOR USE AS PART OF A PLASTIC FASTENER DISPENSING TOOL

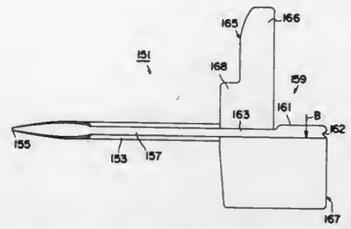
Charles L. Deschenes, North Attleboro; Philip C. Backholm, Northboro, both of Mass., and Richard M. Bastien, Cumberland, R.I., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Sep. 23, 1992, Ser. No. 950,877

Int. Cl.[5] B65C *7/00*; **A41H** *37/00*

U.S. Cl. 227—67 **12 Claims**

1. A needle for use as part of a fastener dispensing tool for dispensing a fastener, the fastener dispensing tool having an opening formed therein to receive the needle, the needle comprising a stem portion and a base portion, a part of said base portion being sized and shaped for insertion into the opening in the fastener dispensing tool, said base portion having a longitudinal slot, a first tab constructed for releasably securing said base portion within the opening in the fastener dispensing tool, and a second tab for aligning the needle in desired longitudinal,



vertical and angular orientations, said first tab and said second tab extending upwardly on opposite sides of said base portion and being bent outwardly away from each other, said stem portion being cylindrically shaped and including a longitudinal slot aligned with said longitudinal slot in said base portion, said first tab being a flexible spring tab movable between a first position relative to said stem during insertion and removal of said needle from said opening, and a second position relative to said stem for retaining said needle within said opening.

5,307,976

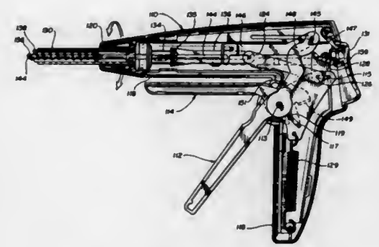
LINEAR STAPLING MECHANISM WITH CUTTING MEANS

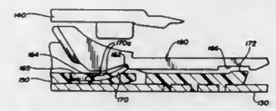
Todd Olson, Loveland; Dan Meiser, Oxford; Gary Steed, Cleves; Eric Huffman, Loveland; Matthew Otten, Cincinnati; Ronald VanOverloop, West Chester; Darrel Powell, Cincinnati; Thomas Knodell, Loveland; Edward Rhad, Fairfield; Ralph Chen, Cincinnati, and Robert Cook, West Chester, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 779,436, Oct. 18, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 917,636

Int. Cl.[5] A61B *17/072*

U.S. Cl. 227—178 **22 Claims**





1. An endoscopic surgical tissue fastening instrument comprising:

a tissue fastening portion;

a handle portion having a handle; and

an elongated shaft portion connecting said tissue fastening portion and said handle portion,

wherein said tissue fastening portion contains a cartridge portion having a plurality of fasteners arranged to be placed into tissue and an anvil portion arranged to clamp tissue between said anvil portion and said cartridge portion so as to permit the firing of said tissue fasteners into tissue; and

said cartridge portion and anvil portion pivotable one with respect to the other;

and said handle portion containing a closure trigger and a firing trigger, said closure trigger remotely connected to said anvil portion, said closure trigger capable of causing said anvil portion to pivot so as to bring said anvil portion into proximity with said cartridge portion, and said firing trigger connected to said cartridge portion and capable of firing said fasteners from said cartridge portion into said tissue so as to fasten said tissue, and

wherein said firing trigger and said closure trigger are pivotable with respect to said handle, and said closure trigger having: an initial position, and a clamping position pivotally displaced from said initial position; and said firing trigger having: an initial position pivotally displaced from said closure trigger initial position, an intermediate position pivotally displaced from said firing trigger initial position, and a final position pivotally displaced from said intermediate position: and further including engagement means on said closure trigger for actuating said firing trigger from its initial position to its intermediate position during motion of said closure trigger from its initial position to its clamping position.

5,307,977

MULTI HEATER BLOCK OF WIRE BONDER

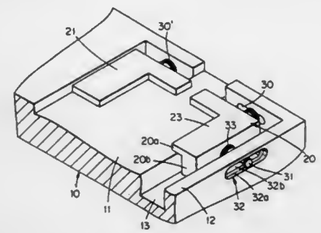
Sang B. Park, Choongchungbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 994,830

Claims priority, application Rep. of Korea, Dec. 23, 1991, 23607/1991

Int. Cl.[5] B23K *37/04*

U.S. Cl. 228—4.5 **9 Claims**



1. A multi heater block of a wire bonder, comprising:

a multi heater block of a wire bonder including a paddle support formed on the upper surface of a heater block body at a relatively lower height than that of the upper surface thereof:

a guide groove formed so as to have a predetermined depth and width between the paddle support and a periphery wall of the heater block body;

a plurality of lead support portions disposed in four corners of the paddle support portion so as to form a paddle seating portion therein, a support portion inserted into the guide groove and a thin plate portion folded at the upper surface of the paddle support portion being integrally formed with each other; and

a plurality of size adjusting means clamped between the support portion of the lead support portion and the periphery wall of the heater block body so as to move and fix

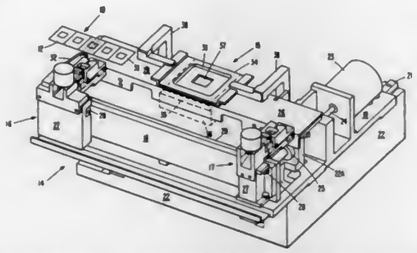
VOL 1162 ISS 1 MY 3 1994 UMI

the lead support portion in front/rear and left/right directions.

5,307,978
SMART INDEXING HEAD FOR UNIVERSAL LEAD FRAME WORK STATION

Tommy H. Ricketson, Danboro; Gautam N. Shah, Norristown; Bruce M. Bram, Perkasie, and Mohmod M. Tehrani, Paoli, all of Pa., assignors to Kulicke and Soffa Investments, Inc., Wilmington, Del.

Division of Ser. No. 792,801, Nov. 15, 1991, Pat. No. 5,238,174. This application Aug. 19, 1993, Ser. No. 109,097
Int. Cl.[5] H01L *21/68*
U.S. Cl. 228—4.5 **15 Claims**



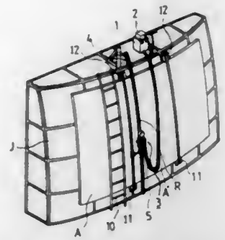
1. Apparatus for positioning individual lead frame bonding sites in the bonding window of a work station prior to a bonding operation, comprising:
a work holder base,
a Y-table mounted on said work holder base for movement relative thereto,
Y-drive means for moving said Y-table in a Y direction,
indexing head means comprising X-motor means mounted on said Y-table for movement relative thereto,
said X-motor means comprising an elongated rail means and an X-motor mounted thereon for movement relative thereto,
said indexing head means further comprising a gripper mechanism mounted on said X-motor means for movement therewith,
said gripper mechanism comprising a support arm having an upper jaw arm and a lower jar arm pivoted thereon,
upper and lower jaw arm pivot means mounted on said upper and lower jaw arms respectively for gripping a lead frame in a manner which leaves a lead frame edge exposed,
theta reference means movably mounted on said gripper mechanism for movement perpendicular to the direction of movement of said X-motor and for engaging said exposed edge of said lead frame and for mechanically orienting an individual bonding site on said lead frame in a theta orientation prior to positioning said oriented bonding site in said window of said work station.

5,307,979
APPARATUS FOR CARRYING OUT MIG WELDING ON THREE-DIMENSIONAL CURVED SURFACE, AND MILLING APPARATUS FOR AUTOMATICALLY FORMING WELDING GROOVES

Jong-Hee Kim, Kyungnam, Rep. of Korea, assignor to Hyundai Heavy Industries Co., Ltd., Kyungnam, Rep. of Korea

Filed Nov. 20, 1992, Ser. No. 978,962
Int. Cl.[5] B23K *37/02, 37/04, 9/173*
U.S. Cl. 228—32 **8 Claims**

1. An automatic MIG welding apparatus, comprising:
a jig corresponding to a shape of a workpiece to be welded;
a pipe rail disposed adjacent to a work surface of said jig;
a carriage movably disposed upon said pipe rail, said carriage including a wire supplying device having a wire spool enclosed in a case and a cover, with an electric heater also disposed therein, said carriage also including welding means for welding a workpiece, and a control box for controlling said wire supplying device and said welding means;
said apparatus also comprising a power source and a cooling

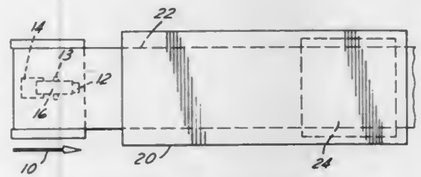


water pump disposed on said jig, said power source and said cooling water pump being connected to said carriage by cable means, said power source for supplying power to said welding means, said wire spool, and said heater;
wherein said workpiece is disposed on said work surface of said jig, and said carriage moves along said pipe rail such that said welding means welds seams of the workpiece.

5,307,980
SOLDER PAD CONFIGURATION FOR WAVE SOLDERING

Thomas D. Belanger, Jr., Saline, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 10, 1993, Ser. No. 16,329
Int. Cl.[5] H05K *1/00*
U.S. Cl. 228—56.3 **3 Claims**

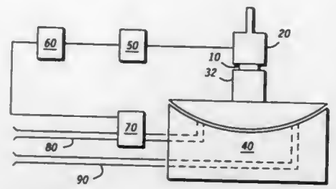


1. A printed circuit board assembly comprising:
a printed circuit board;
a surface mount device having a first end and second end wave soldered to said printed circuit board;
a first solder pad deposited on said printed circuit board having a width not greater than the width of said first end; and
a second solder pad deposited on said printed circuit board having a width greater than the width of said second end;
said first pad and said second pad oriented so that said first end is wave soldered to said first pad before said second end is wave soldered to said second pad.

5,307,981
METHOD AND APPARATUS FOR OPTIMIZING BOND TOOL PRESSURE DISTRIBUTION

James K. Heckman, Tempe, and Mark C. Hoggatt, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 993,985
Int. Cl.[5] B23K *1/00, 3/00*
U.S. Cl. 228—102 **13 Claims**

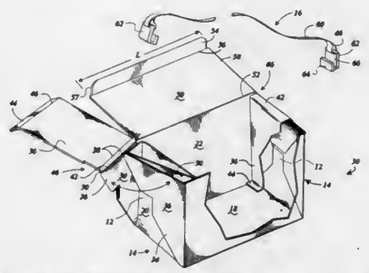


1. A method of optimizing a bond tool pressure distribution, comprising the steps of:
providing a device having a first surface which permits inclination of the first surface in at least one direction, wherein the device is in a locked position;
providing a first bonding arrangement having at least a portion positioned on the first surface of the device;
providing a second surface and contacting the second surface to the first bonding arrangement;
unlocking the device to allow the first surface to incline upon contact of the second surface to the first bonding arrangement;
applying the second surface to the first bonding arrangement with a bonding force; and
locking the device upon application of the bonding force.

5,307,982
LEAK-RESISTANT CORRUGATED PAPERBOARD CONTAINER WITH EXTERIOR HAND GRIPS

James F. Swindell, Athens, Ga., assignor to Coolers Unlimited, Inc., Hinesville, Ga.

Filed Dec. 16, 1992, Ser. No. 991,329
Int. Cl.[5] B65D *5/24, 5/46*
U.S. Cl. 229—172 **20 Claims**

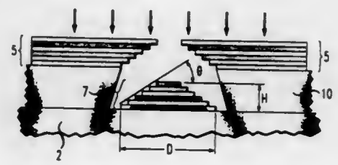


1. A container assembled from a single piece of corrugated paperboard blank, comprising:
a bottom panel with two side panels and two end panels that foldably extend upwardly from scores that define edges of the bottom panel;
four corner panels, each foldably joined on a first edge to a separate one of the end panels and along a second edge to the adjacent side panel, each corner panel including a hole and a foldable score extending diagonally from an outer corner of the corner panel to the bottom panel to define a pair of triangular sections, the corner panels folding along the respective diagonal scores and then folding overlappingly towards the respective end panel for aligning the holes in the two corner panels at each end to define hand grips for carrying the container,
a pair of inside end panels, each attached on a first side of the blank to an outside edge of one of the triangular sections by a pair of spaced apart scores that define a panel for overlapping an upper edge of the folded corner panels; and
a flap foldably attached to a distal edge of the inside end panel,
whereby the panel for overlapping covers the upper edge of the folded corner panels by folding the inside end panel inwardly of the end panel thereby positioning the flap in firm contact with the bottom panel for holding the corner panels together.

5,307,983
METHOD OF MAKING AN ARTICLE COMPRISING SOLDER BUMP BONDING

Thomas D. Dudderar, Chatham, and Chee C. Wong, Newark, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

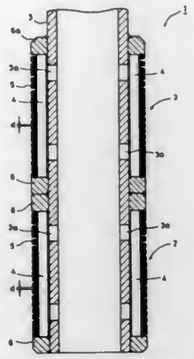
Filed Apr. 27, 1993, Ser. No. 54,505
Int. Cl.[5] H01L *21/58;* **B23K** *31/02*
U.S. Cl. 228—180.22 **8 Claims**



1. Method of making an article that comprises a first body attached to a second body (to be referred to as the "substrate") by means that comprise reflowable material (to be referred to as "solder"), the method comprising:
a) providing the substrate having a major surface that comprises at least one circular region of a first material that is wettable by the solder, said first material region being surrounded by a second material that is substantially not wettable by the solder, said first material region having diameter d;
b) forming on said first material region a substantially conical solder body associated with said solder body being a base of diameter D, a side wall, a conical height H and an angle θ (to be referred to as the "cone angle") between said base and said side wall;
c) causing said conical solder body to melt forming a molten material;
d) causing said molten material to re-solidify, such that a resolidified solder body (to be referred to as the first solder bump) results, said first solder bump having a truncated sphere shape, of height h, and truncation diameter d; and
e) attaching the first body to the substrate by a process that comprises melting said solder bump; Characterized In That
f) H, D, d and θ are selected such that a demagnification factor $\partial h/\partial H$, is less than or equal to 0.5.

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5,307,984
METHOD OF MANUFACTURING A SELECTIVE ISOLATION SCREEN
Tadayoshi Nagaoka, Mihara, Japan, and Derry D. Sparlin, Spring, Tex., assignors to Nagaoka International Corp., Japan
Filed Dec. 18, 1992, Ser. No. 992,556
Claims priority, application Japan, Dec. 27, 1991, 3-360493
Int. Cl.[5] B23K *31/02*; E03B *3/18*; E21B *43/08*
U.S. Cl. 228—189 9 Claims



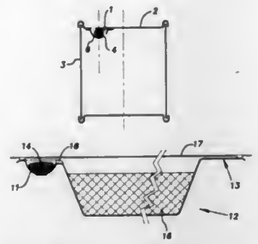
1. A method of manufacturing a selective isolation screen which includes a base member of a generally cylindrical configuration having a plurality of openings, a plurality of spacer members extending in the longitudinal direction which are disposed and circumferentially spaced, on the outer peripheral surface of the base member, and a wire wound about the outer periphery of the spacer members said wire being spaced to define a predetermined gap between the windings of said wire, an annulus defined by the spacer members which extends in the longitudinal direction between the inside of the wire and the outer surface of the base member over the entire periphery of the base member, and seal means being provided at selected locations in the longitudinal direction, said annulus being defined by said spacer members and extending longitudinally characterized in that said method comprises the steps of:

fitting a plurality of screen jackets one by one on the base member, each of the screen jackets comprising a plurality of spacer members extending in the longitudinal direction to be disposed, circumferentially spaced, on the base member and a wire wound about the periphery of the spacer members with a predetermined gap; and

welding the end portions of each of the screen jackets to the base member thereby fixing each of the screen jackets to the base member and also forming the seal means at adjacent end portions of the screen jackets and thus forming a single screen unit.

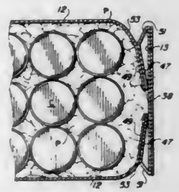
5,307,985
CONTAINER AND PROCESS FOR ITS MANUFACTURE
Michel Belzermann, Voiron, France, assignor to Societe de Constructions de Materiel Metallique et Electrique, France
Filed Dec. 4, 1992, Ser. No. 986,424
Claims priority, application France, Dec. 17, 1991, 91 16082; Jun. 24, 1992, 92 08063
Int. Cl.[5] B65D *3/28*
U.S. Cl. 229—120 19 Claims

1. Empty container, including an upper part and an element integral with the upper part, a housing being defined by the upper part and by the element, said housing including first and second outlets and communicating with an interior region within the container via the first orifice and with an exterior region outside of the container via the second orifice, and a



solid substance having a melting point between 65° C. and 150° C. contained in the housing.

5,307,986
EXPANDABLE WATERTIGHT ARTICLE CARRIER
Richard L. Schuster, Monroe, La., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Mar. 9, 1993, Ser. No. 28,508
Int. Cl.[5] B65D *5/24*
U.S. Cl. 229—186 7 Claims



1. An article carrier having a watertight interior, comprising;

top and bottom panels having side edges and end edges;

side panels connected to the side edges of the top and bottom panels;

end panels connected to the end edges of the top and bottom panels;

a gusset panel connecting adjacent ends of adjacent side and end panels;

a primary fold line in each gusset panel and a secondary fold line between the primary fold line and the adjacent ends of adjacent side and end panels;

the gusset panels being inwardly folded about the primary fold lines, the portion of each gusset panel between the primary and secondary fold lines being adhered in face-to-face contact and the portions of each gusset panel between the secondary fold lines and the ends of the gusset panel being in nonadhered, substantially face-to-face contact, whereby outward movement of the side and end panels permits the nonadhered portions of the gusset panels to move away from each other, thereby permitting limited outward movement of the side and end panels upon opening of the top panel.

5,307,987
HOODED CARTON
Harry I. Roccaforte, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.
Filed Dec. 8, 1992, Ser. No. 986,782
Int. Cl.[5] B65D *5/54*, *5/66*
U.S. Cl. 229—225 39 Claims

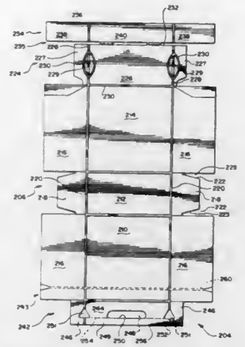
1. A carton comprising:

front and rear walls, said front and rear walls each having a top edge;

a bottom wall panel;

opposed side walls extending between and connected with said front and rear walls;

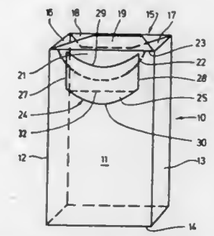
a top wall structure including a recloseable foldable hood comprising an outer hood panel foldably connected to the front wall, an inside hood panel underlying the outer hood panel and foldably connected to the rear wall, and a hood



skirt foldably connected to said hood and releasably connected to said front and side walls; and

a retaining wall secured to said front wall, a portion of said retaining wall extending above the top edge of said front wall after said carton is opened, wherein said retaining wall is formed by a front retaining wall panel and two opposed side retaining wall panels foldably carried by said front retaining wall panel, said front retaining wall panel being secured to the front wall and being releasably connected to said inside hood panel.

5,307,988
SOFT PACK FOR PAPER TISSUES
Heinz Focke, and Harald Gosebruch, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany
Filed Dec. 2, 1992, Ser. No. 984,473
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1991, 4139924
Int. Cl.[5] B65D *65/32*
U.S. Cl. 229—238 12 Claims



1. In a soft pack containing stacks of folded paper tissues, said pack being formed from a blank of thin flexible packaging material, which enclosed the pack contents on all sides, said pack having a tear-open flap (**21**) which is formed in a pack front wall (**11**), which is defined by a perforation line (**22**) in said front wall (**11**) and which is partially covered by a large-surfaced adhesive label (**24**) having an adhesive-free grip tab (**25**) for opening and reclosing the soft pack, the improvement wherein:

a) the adhesive label (**24**) is severed without creating waste by punching from a continuous web (**26**) of material having a width and having an adhesive coating on only one side;

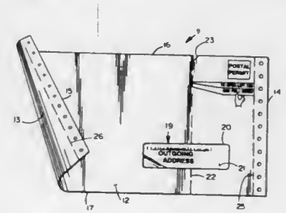
b) the adhesive label (**24**) has a width that is identical to the width of the web (**26**) of material;

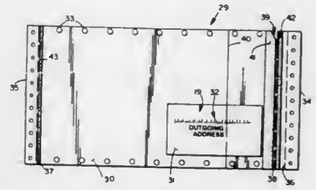
c) the adhesive label (**24**) has rectilinear side edges (**27,28**) which extend parallel to one another and which correspond to side edges of the web (**26**) of material (**26**);

d) the adhesive label has a lower portion, which engages said front wall (**11**) of the pack, and an upper portion secured to said tear-open flap (**21**); and

e) the adhesive label (**24**) has a pair of transverse edges (**29, 30**) which extend between said side edges (**27, 28**) and parallel to one another in non-linear, curved fashion so that said lower portion of the adhesive label (**24**) has a downwardly directed convex shape, and so that said upper portion of the adhesive label (**24**) has a corresponding downwardly directed concave shape.

5,307,989
TWO WAY MAILER WITH EXTERNAL "INSERT"
Michael C. Dyer, Gurnee, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jun. 24, 1992, Ser. No. 903,280
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—305 18 Claims





1. A return mailer comprising:

a first ply having a first face and a second face, and outgoing address indicia visible when viewing a first portion of said first face, and extending in a first direction;

a first line formed in said first ply intersecting said outgoing address indicia;

a second ply having a first face and a second face, said first face of said second ply in face to face contact with said second face of said first ply;

a second line formed in said second ply in alignment with said first line, and defining a first part of said second ply, and a second part of said second ply, said first part of said second ply having a length in said first direction sufficient so that when it is folded over said first ply about said second line it completely covers any remaining outgoing address indicia visible when viewing said first ply;

reply address information printed wholly on said second face of said second part of said second ply;

means for attaching said first and second plies together to form a reply envelope;

a third ply removably attached to said second ply to cover

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said second ply second face second portion, and when removed exposing said reply address; and

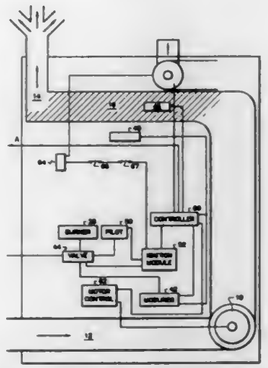
wherein said outgoing address indicia is printed on said second ply first face, and is visible through a window formed in said first ply at said first portion thereof.

5,307,990

ADAPTIVE FORCED WARM AIR FURNACE USING ANALOG TEMPERATURE AND PRESSURE SENSORS

Wilmer L. Adams, Fridley, and Ralph H. Torborg, Minnetonka, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 9, 1992, Ser. No. 973,793
Int. Cl.[5] F24F *7/00*
U.S. Cl. 236—11 **7 Claims**



1. A method for regulating circulation blower setpoints to maintain constant pressure in a forced air zoned heating system the forced air furnace having return ducts, a heat exchanger, warm air ducts, a circulation blower, and a burner, comprising the steps of:

receiving a heating request from an external controller;

energizing the burner in the furnace to heat the heat exchanger;

sensing the temperature of the heat exchanger;

energizing the circulation blower when the heat exchanger reaches a first predetermined temperature;

regulating the burner to maintain a second predetermined temperature, said second predetermined temperature being higher than said first predetermined temperature;

sensing the pressure in the heat exchanger;

regulating the circulation blower at a circulation setpoint to maintain a constant pressure in the heat exchanger;

de-energizing the burner when said heating request is satisfied; and

de-energizing the circulation blower when said heat exchanger cools to said first predetermined temperature.

5,307,991

FUEL INJECTOR AND METHOD OF MANUFACTURING

Scott A. Hanson, Ypsilanti; James L. Creehan, Livonia, and John C. Hickey, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1990, Ser. No. 594,753
Int. Cl.[5] F02M *51/00*
U.S. Cl. 239—1 **13 Claims**

4. A method for constructing a permanently mated needle and valve body group for a fuel injector of an internal combustion engine, comprising the steps of:

placing a valve needle in a valve body;

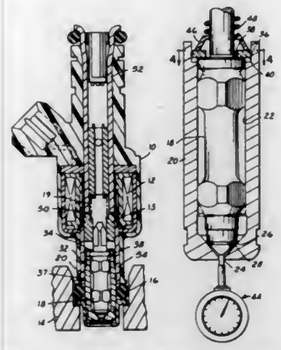
positioning said needle a predetermined distance from its closed position, in accord with the maximum stroke of said needle;

placing a stop abutment in contact with a shoulder formed in said needle; and

affixing said abutment to said valve body so as to both determine the maximum stroke of said needle and to prevent said needle from disengaging from said valve body.

8. An electromagnetically operated fuel injector for an internal combustion engine, comprising:

a main housing assembly; and



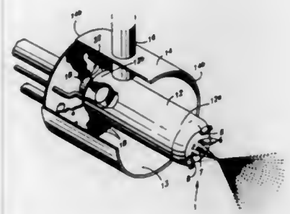
a preassembled, permanently mated needle and valve body group comprising a valve needle caged within a generally cylindrical valve body by a stop mechanism, which, in cooperation with said needle and with an orifice and seat within said body, establishes the maximum allowable fuel flow area for said injector, with said needle and valve body group being contained within said main housing, wherein said stop mechanism comprises a collar permanently joined to one end of said valve body such that the maximum allowable stroke of said needle is limited by said collar.

5,307,992

METHOD AND SYSTEM FOR COATING A SUBSTRATE WITH A REINFORCED RESIN MATRIX

Terry L. Hall; Jack G. Scarpa, both of Huntsville, and David D. Mathias, Athens, all of Ala., assignors to USBI Co., Huntsville, Ala.

Filed Nov. 18, 1992, Ser. No. 978,000
Int. Cl.[5] B05B *7/14, 7/16*
U.S. Cl. 239—135 **8 Claims**



1. An apparatus for applying a coating of a reinforced resin matrix to a substrate, comprising:

a. a spray nozzle for directing liquid resin toward the substrate, said nozzle having

i. an orifice located substantially in the center of said nozzle,

ii. a plurality of atomizing holes disposed circumferentially around said orifice for atomizing liquid resin after exiting said orifice, and

iii. a plurality of shaping holes disposed circumferentially around said orifice at a greater distance from said orifice than said atomizing holes for controlling the spray pattern of said liquid resin;

wherein at least one gas line is connected to said atomizing holes and said shaping holes;

b. a means for introducing said liquid resin to said nozzle, said means for introducing said liquid resin having a first end, a second end, and an axis which intersects said first end and said second end, wherein said nozzle is connected to said first end;

c. an outer housing located coaxial with and circumferentially disposed around said means for introducing said liquid resin so as to form a cavity therebetween, said outer housing having an open end and a closed end, with said open end of said outer housing being located near said first end of said means for introducing said liquid resin, wherein said outer housing is capable of delivering reinforcing material to said liquid resin after said liquid resin exits said nozzle; and

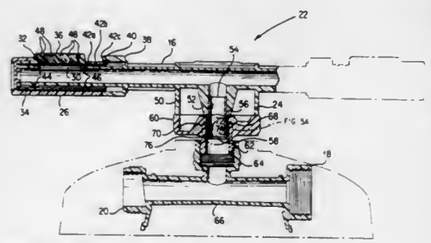
d. a means for introducing said reinforcing material to said outer housing.

5,307,993

ROTARY SPRINKLER

Sergio G. Simonetti, Westport, Conn., and Paul Aquilina, Kitchener, Canada, assignors to Melnor Industries, Inc., Moonachie, N.J.

Filed Jan. 22, 1992, Ser. No. 824,020
Int. Cl.[5] B05B *3/06*
U.S. Cl. 239—247 **24 Claims**



1. A sprinkler, comprising:

a base, having an inlet and an outlet;

a body, rotatably secured to said base, having a central portion with a first internal passageway formed therein, said first internal passageway being in fluid communication with said outlet on said base;

a plurality of arms secured to said body and extending radially therefrom, each said arm having an internal passageway formed therein maintained in fluid communication with said first internal passageway in said body, each said arm having a distal end portion with a generally upward facing opening formed therein; and

a plurality of nozzle units, equal in number to said plurality of arms, slidably disposed on said distal end portions of said arms and covering at least a portion of said openings formed therein, each said nozzle unit having a plurality of nozzles formed therethrough suitable for discharging water,

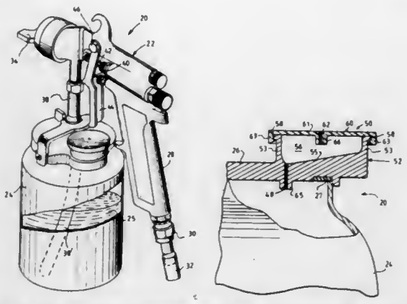
each said nozzle unit being selectively movable longitudinally between multiple positions along said distal end portion of one of said arms, with each said position placing a different number of said nozzles in fluid communication with said internal passageway of the respective arm through said opening in said distal end portion thereof, wherein at least one of said nozzles is maintained in constant fluid communication with said internal passageway.

5,307,994

DRIPLESS SPRAY GUN VENT AND RESERVOIR ASSEMBLY FOR SYPHON-CUP PAINT SPRAY GUN

John R. Hieronymus, 4234 Industrial Pl., Island Park, N.Y. 11558

Filed Jun. 4, 1993, Ser. No. 72,889
Int. Cl.[5] F16K *24/04;* B05B *7/30*
U.S. Cl. 239—340 **10 Claims**



1. In an improved syphon-cup paint spray gun assembly of the type including a spray paint gun and an associated cup container for paint having a cover and a syphon tube extending through said cover for drawing paint from said container through said tube and to said spray gun for discharge therefrom, said cover having a vent formed therethrough and means connected with said vent exteriorly of said container for preventing passage of paint through said vent to the exterior of said assembly upon manipulation of said assembly by an operator thereof into a position wherein the paint contacts said vent and would otherwise flow through said vent and drip from said assembly, the improvement comprising:

said means for preventing including an overflow reservoir mounted on said cover including a generally cup-shaped base defining an overflow chamber communicating with said lower vent and a removable cap attached to said base having a vent formed therethrough offset from said cover vent, said overflow chamber having a downwardly-sloping base wall, the lowermost portion of which is in communication with said cover vent.

5,307,995

LAWN AND GARDEN SPRAYER WITH HOSE COMPRESSION CONNECTOR

Gregory D. Jackson, Zeeland, and Alan J. Krebs, Howard City, both of Mich., assignors to RL Corporation, Lowell, Mich.

Filed Aug. 12, 1993, Ser. No. 105,711
Int. Cl.[5] B05B *9/04*
U.S. Cl. 239—373 **6 Claims**

1. A lawn and garden sprayer comprising:

a dispensing tank for holding the desired liquid to be applied;

a threaded, projecting boss on said tank, said boss including an opening therethrough which extends from the interior to the exterior of said tank, the outermost end of said boss facing away from said tank;

a hose adapter, positioned in said boss opening and including an inner end located towards the interior of said tank and an outer end projecting away from said boss, said hose adapter also including a fluid flow passageway extending from one end thereof to the other end;

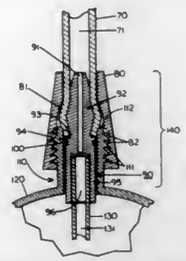
a supply tube, mounted on said inner end of said hose adapter and extending into said dispensing tank;

said hose adapter including an annular, projecting shoulder

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located generally outward from the outermost end of said threaded boss, said shoulder including outwardly and inwardly facing surfaces which meet at a point of maximum projection from the longitudinal axis of said adapter and recede away from each other back towards said longitudinal axis of said adapter;

a dispensing hose, extending from said adapter to a spray wand/handle, said dispensing hose extending over said



annular shoulder on said adapter such that when assembled, a portion of said hose is clamped between said boss and said inwardly facing surface of said adapter shoulder;

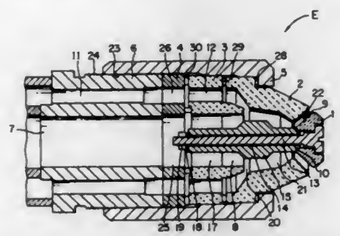
a threaded retainer nut threaded onto said threaded boss, having an opening through which said dispensing hose passes, and an annular compression surface engaging said dispensing hose and clamping said dispensing hose between said compression surface and said outwardly facing surface of said annular shoulder.

5,307,996

ATOMIZER FOR SLURRY FUEL

Shizuo Kataoka, Takatsuki; Osamu Nojiri, Osaka; Haruo Nogami, Amagasaki; Kiyomitsu Ikawa, Itami, and Yasuo Shimizu, Nara, all of Japan, assignors to Takuma Co., Ltd., Osaka, Japan

Filed Aug. 5, 1992, Ser. No. 926,222
Int. Cl.[5] F23D *21/00*
U.S. Cl. 239—424 **7 Claims**



1. An atomizer for slurry fuel comprising a fuel supply body having a first passage serving as a passage for slurry fuel and a second passage disposed outside the first passage serving as a gas passage and an atomizer body detachably attached to a tip end of the fuel supply body, wherein the atomizer body comprises:

an annular slit which communicates with the first passage for jetting the slurry fuel forming an annular liquid film;

a target for defining an inner surface of a fuel jet port;

a tip portion for retaining the target;

an intermediate member having a plurality of communication holes for communicating with the second passage and a flow dividing chamber for communicating with the first passage, the flow dividing chamber and the communication holes being integrally formed from the intermediate member;

a gas jet port which communicates with outlet ports of the communication holes and is directed toward a discharge side of the annular slit;

a steam cap having a mixing chamber which is defined between the gas jet port and the fuel jet port and an opening surface which cooperates with the target for forming an outer surface of the fuel jet port;

a fixed ring disposed adjacent to an intake side of the intermediate member; and

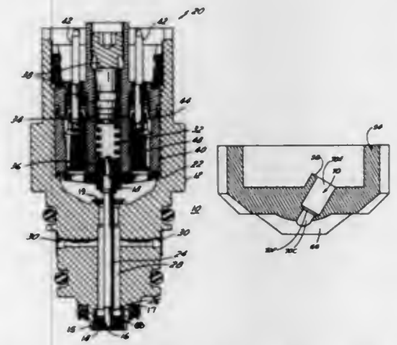
the annular slit being defined by a raised shoulder extending longitudinally along the tip portion.

5,307,997

FUEL INJECTOR SWIRL PASSAGES

Russell J. Wakeman, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Mar. 12, 1993, Ser. No. 30,529
Int. Cl.[5] F02M *61/12*
U.S. Cl. 239—491 **9 Claims**



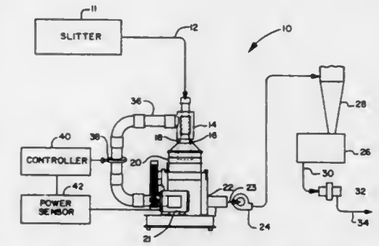
1. A fuel injector comprising a valve body having a main longitudinal axis and comprising an inlet via which pressurized liquid fuel is introduced into said valve body, a valve seat member comprising a frusto-conical surface containing a valve seat and circumscribing a fuel outlet, a fuel path extending through said valve body between said inlet and said outlet, a needle guide and fuel swirl member disposed within said valve body and comprising an axially upstream face that is toward said inlet and an axially downstream face that is toward said outlet, said needle guide and fuel swirl member's axially downstream face cooperating with said valve seat member to define a swirl chamber space, an electrically operated mechanism disposed on said valve body and comprising an axially reciprocal armature means and bias means for axially reciprocating over a given stroke a needle valve member that passes through a guide hole in said needle guide and fuel swirl member and has a tip end confronting said seat member such that said tip end is seated on and unseated from said valve seat to close and open said fuel path, said needle guide and fuel swirl member comprising plural swirl passages extending through said needle guide and fuel swirl member between said axially upstream and downstream faces thereof in directions that are skew to said axis and opening at said downstream face of said needle guide and fuel swirl member toward said frusto-conical surface in spaced upstream relation to said valve seat such that fuel exiting said swirl passages flows with a cicumferential component of motion about said axis as it passes through said swirl chamber toward said outlet, characterized in that each of said swirl passages is straight, comprising a calibrated portion of given transverse cross-sectional area that is downstream of an entrance portion, said entrance portion has a transverse cross-sectional area that is greater throughout than said given transverse cross-sectional area, wall surfaces of both said calibrated and entrance portions are surface portions of said needle guide and fuel swirl member, in each swirl passage the transverse cross-sectional area of said calibrated portion is circular throughout, the transverse cross-sectional area of aid entrance portion is circular throughout, and said calibrated and entrance positions are co-axial and characterized further that in each swirl passage said entrance portion begins at a corresponding flat surface portion of said upstream face of said needle guide and fuel swirl member that is perpendicular to said entrance and calibrated portions thereof.

5,307,998

METHOD FOR PROCESSING SCRAP FILM

Ray A. Buck, Picture Rocks; Kimber Smith, and Larry J. Wilson, both of Muncy, all of Pa., assignors to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Division of Ser. No. 746,357, Aug. 16, 1991, Pat. No. 5,170,949.
This application Sep. 2, 1992, Ser. No. 939,052
Int. Cl.[5] B02C *23/26, 23/30*
U.S. Cl. 241—3 **15 Claims**



1. A method of processing scrap film, comprising:

conveying the scrap film to a film-air separation means using a first conveying means,

conveying the scrap film from the film-air separation means to a cutting means using the first conveying means, the cutting means having an inlet end, an outlet end disposed upstream from the first conveying means, and a motor, the motor having a power output varying with changes in volume of scrap film in the cutting means, and

conveying the cut scrap film through a discharge conduit using the first conveying means, and

controlling the rate of flow of scrap film through the film-air separation means, the cutting means, and the discharge conduit by properly positioning, at one of an open and a closed position, an air bypass valve on an air bypass line directly connecting the film-air separation means and the outlet end of the cutting means.

5,307,999

METALLIC COOLANT FOR A METALLURGICAL BATH, METHOD OF MANUFACTURE

Jan A. Groopthoff, Aerdenhout, Netherlands, assignor to Heckett Holland B.V., AB Ijmuiden, Netherlands

Continuation of Ser. No. 720,618, Jun. 25, 1991, abandoned, which is a division of Ser. No. 534,304, Jun. 7, 1990, Pat. No. 5,066,322, which is a continuation of Ser. No. 289,020, Dec. 23, 1988, abandoned. This application Jul. 22, 1993, Ser. No. 95,412
Claims priority, application Netherlands, Jan. 18, 1988, 8800095
Int. Cl.[5] B02C *19/12*
U.S. Cl. 241—24 **6 Claims**

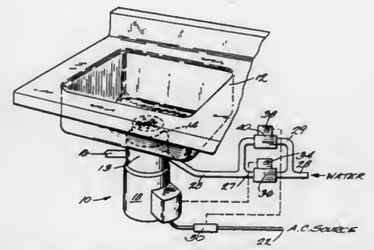
1. Method of manufacture of a metallic coolant of ball-shaped bodies made of steel, comprising processing material in the form of strip or bar shaped steel scrap in a hammer mill having movable hammers, which has an anvil grid with square holes of side length in the range 30 to 70 mm, the mill being kept filled during the hammering to a level which is at least 85% of the mill volume, collecting the processed scrap passing through said square holes of said hammer mill and reinserting said collected processed scrap into said hammer mill at least one more time for processing.

5,308,000

WATER SAVER CONTROL FOR DISPOSERS

Wayne C. Riley, Sturtevant, Wis., assignor to Emerson Electric Co., Inc., Racine, Wis.

Filed Apr. 8, 1993, Ser. No. 45,045
Int. Cl.[5] B02C *25/00*
U.S. Cl. 241—33 **7 Claims**



1. A waste disposer having a rotatable shredding element for grinding waste in a flushing liquid, an outlet for discharging ground waste material and liquid to a drain, an electrically powered motor for driving said rotatable shredding element and a conduit for supplying flushing liquid to said disposer comprising:

a detector for sensing the amount of electrical current flowing to said motor,

at least one valve controlling the flow through said conduit, and

a controller responsive to said detector for controlling said valve to increase the amount of liquid flowing through said conduit in response to a detected increase in the amount of said electrical current.

5,308,001

TRANSPORT SYSTEM FOR CIRCULATING AND ACCUMULATING TUBE SUPPORT MEMBERS IN ASSOCIATION WITH A BOBBIN WINDING MACHINE

Hans Grecksch, Mönchengladbach, and Jürgen Backhaus, Wegberg, both of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,110
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142621
Int. Cl.[5] B65H *67/06*
U.S. Cl. 242—35.5 A **26 Claims**

1. A transport system for circulating bobbin tube support members from and to a textile winder, said transport system comprising:

(1) means for conveying bobbin tube support members from the textile winder;

(2) means for conveying bobbin tube support members to the textile winder; and

(3) means for temporarily accumulating bobbin tube support members intermediate said means for conveying tube support members to and from the textile winder, said accumulating means including:

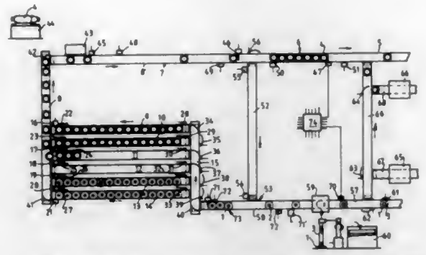
(a) inlet conveying means for receiving tube support members from said means for conveying bobbin tube support members from the textile winder;

(b) outlet conveying means for delivering tube support

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members to said means for conveying bobbin tube support members to the winder;

(c) a plurality of individual tube support member accumulating devices intermediate said inlet and outlet conveying means for selectively receiving support members



from said inlet conveying means, accumulating tube support members thereon, and releasing the tube support members to said outlet conveying means; and

(d) control means for selectively controlling the receipt and release of tube support members to and from said individual accumulating devices.

5,308,002

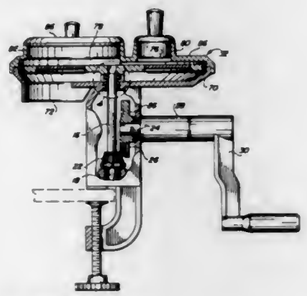
FOOD SLICER

Camilo Pereira, Flagler Center Bldg., Suite 112, 350 W. Flagler St., Miami, Fla. 33130

Filed Feb. 12, 1993, Ser. No. 16,942

Int. Cl.[5] A47J *17/00*; B26D *3/26*; B02C *18/18, 18/24*

U.S. Cl. 241—92 **7 Claims**



1. A food slicer, including:

A) A gear box having an upper end and a lower end,

B) means to change the gear box to the edge of a table,

C) a shaft with a lower end and an upper end extending from the upper end of said gear box,

D) a driven gear secured to said lower end of said shaft and in said gear box,

E) a driving gear in said gear box in driving engagement with the driven gear and including a handle means exterior of the gear box and shaft means interconnecting the handle and driving gear to rotate the driving gear, driven gear, and shaft in said gear box,

F) a blade carrier disc keyed on the extending upper end of said shaft for rotation therewith,

G) said blade carrier disc having an upper surface, a lower surface, a periphery and a central zone and at least one arcuate cutout extending from the disc periphery to the disc central zone,

H) a blade mounted on said upper disc surface and having a cutting edge extending into the projection along said cutout to cut slices of food oriented generally perpendicularly to said upper surf ace and bearing against said upper blade carrier disc surface,

I) a two-piece housing define a slicing chamber encapsulating said blade and carrier disc including a charging opening and a discharge opening for slices below the level of said charging opening, and

J) releasable lock means to maintain the housing in slicing chamber defining relation and to separate the housing into two pieces for cleaning the chamber in the housing.

5,308,003

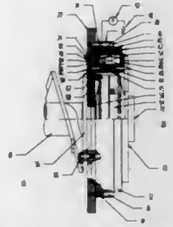
ROTARY AUGER SCREW CARTRIDGE

Larry E. Koenig, 4585 Vista Dr., Canal Winchester, Ohio 43110

Filed Dec. 18, 1992, Ser. No. 992,555

Int. Cl.[5] B02C *19/22*

U.S. Cl. 241—260.1 **12 Claims**



1. For use with a rotary auger having a grinding chamber, an equipment enclosure, a rear bulkhead separating said grinding chamber from said equipment enclosure and having an auger opening therethrough, bearing means, an auger screw mounted on said bearing means and extending into said grinding chamber, motor means mounted on said bearing means in said equipment enclosure for rotating said bearing and said auger screw, a cartridge assembly comprising:

an outer, stationary bearing housing attached to said bearing means and shaped to be attached to and extend about a periphery of said opening and said outer bearing housing defining an outer bearing periphery and being shaped to partially enclose said bearing means; and

an inner, rotatable bearing housing attached to said bearing means and extending about said outer bearing periphery, said inner bearing housing supporting said auger screw and said motor and, together with said stationary bearing housing, substantially enclosing said bearing means; and

means for removably mounting said cartridge assembly from said bulkhead, whereby said stationary bearing housing, said rotatable hearing housing and said bearing are removable from said auger as a unit through said equipment enclosure by detachment of said outer bearing housing from said bulkhead, and said bearing means is enclosed and protected by said housings when removed from said enclosure.

5,308,004

METHOD OF AUTOMATICALLY TRANSFERRING AN ELASTIC YARN FROM A FULL-BOBBIN TO AN EMPTY-BOBBIN

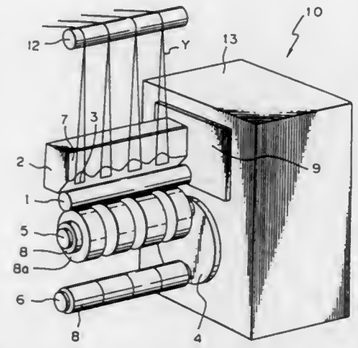
Norio Ukai, and Takamitu Kawazoe, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 944,714, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 817,992, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 688,383, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 586,393, Sep. 20, 1990, abandoned, which is a continuation of Ser. No. 401,003, Aug. 31, 1989, abandoned. This application Apr. 27, 1993, Ser. No. 86,109

Claims priority, application Japan, Sep. 6, 1988, 63-223288; Jun. 1, 1989, 1-139453

Int. Cl.[5] B65H *67/048*

U.S. Cl. 242—18 A **5 Claims**



1. A method for automatically transferring an elastic yarn from a full bobbin to an empty bobbin on a yarn winding device, the yarn winding device having a movable bobbin carrier, first and second bobbin shafts rotatably mounted to the bobbin carrier for carrying respective ones of the full and empty bobbins, a friction roll connected to a driving source, the friction roll being vertically movable, and a traverse device for obtaining a traverse movement of the yarn as it is wound on the bobbin, comprising the steps of:

(a) engaging the friction roll with a bobbin on the first bobbin shaft to wind the yarn onto the bobbin;

(b) traversing the yarn with the traverse device wile the yarn is wound onto the bobbin;

(c) rotating the empty bobbin on the second bobbin shaft at substantially the same speed as that of the friction roll when a full bobbin is obtained on the first shaft;

(d) moving the friction roll upwardly so that a gap is created between the friction roll and the full bobbin;

(e) maintaining rotation of the full bobbin at a speed substantially the same as that of the friction roll;

(f) moving the bobbin carrier to reverse the positions of the full bobbin and the empty bobbin relative to the friction roll and to contact the empty bobbin with that portion of the yarn extending between the friction roll and the full bobbin;

(g) disengaging the yarn from the traverse device;

(h) rapidly stopping rotation of the full bobbin so that the yarn is broken;

(i) engaging the broken end of the yarn to the empty bobbin to begin winding of the yarn onto the empty bobbin;

(j) engaging the yarn with the traverse device; and

(k) moving the friction roll into contact with the empty bobbin.

5,308,005

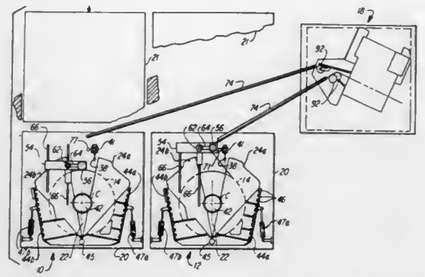
FILM HANDLING SYSTEM

Lyndon R. Hutteman; Michael Long, both of Rochester, and Robert W. Sanford, Wyoming, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 633,522, Dec. 28, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 998,888

Int. Cl.[5] B65H *20/14*; G03B *1/56*

U.S. Cl. 242—55 **27 Claims**



1. Apparatus for picking up a web end from a web roll and for feeding the web end into a web transport path, said apparatus comprising:

a movable carriage;

a rotatable vacuum drum on said carriage for directly picking up the web end with suction from said vacuum drum; and

means for moving said carriage to move said drum to a first position in close proximity to and in closely spaced relationship with the periphery of the web roll to cause said drum to pick up the web end and to a second position adjacent the web path to feed the web into the web transport path.

5,308,006

DEVICE FOR WINDING-UP MATERIAL WEBS

Reinhard Hehner, Haan, Fed. Rep. of Germany, assignor to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

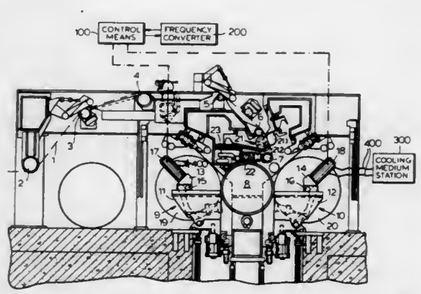
PCT No. PCT/EP91/00604, § 371 Date Jan. 22, 1992, § 102(e) Date Jan. 22, 1992, PCT Pub. No. WO91/17106, PCT Pub. Date Nov. 14, 1991

PCT Filed Mar. 28, 1991, Ser. No. 807,846

Claims priority, application Fed. Rep. of Germany, May 7, 1990, 4014512

Int. Cl.[5] B65H *18/16, 35/02*

U.S. Cl. 242—56.4 **5 Claims**



1. A device for winding up of material webs, especially

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paper webs or cardboard webs, transported along a web path, the device comprising:

slitting means along a web path for subdividing the web into individual strips;

a driven support roller downstream of the slitting means rotatable about a support axis and receiving the strips; and

a pair of winding stations spaced radially from the support axis to opposite sides thereof for withdrawing the strips from the support roller, each of the winding stations comprising:

a plurality of winding brackets and movable radially toward and away from the support axis and displaceable parallel to the axis for coiling strips of different format,

a respective angle drive mounted on each support element and displaceable therewith for rotatably driving a respective coiling roll winding up a respective strip,

a respective electric motor connected with each angle drive and inclined to a horizontal, each electric motor being provided with a respective housing and each angle drive being provided with respective flanges for connecting with the respective motor, each motor being displaceable with the respective support element actuating the angle drive, and

respective flexible cooling means providing a cooling medium for cooling the electric motor enabling shifting thereof along with a respective one of the support elements, each cooling means including:

bendable supply tubing conveying cooling liquid,

circulating cooling passages formed in each housing, and

cooling passages formed in each flange, so that the heat developed in each motor and each angle drive is carried off upon circulating of cooling liquid.

5,308,007

BAND-CHANGING APPARATUS FOR A FLYING BAND CHANGE

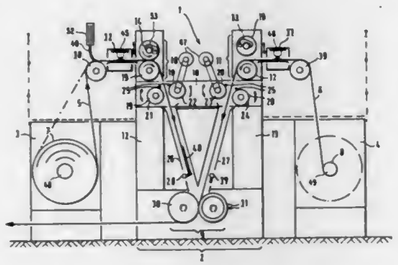
Joachim Stroszynski, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 610,010, Nov. 7, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 981,918

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1989, 3937286

Int. Cl.[5] B65H *57/00, 19/00, 19/16*

U.S. Cl. 242—58.1 **21 Claims**



1. A band-changing apparatus for instituting a flying band change from a running-off band to a new band in an in-line band installation comprising:

at least a first and a second unwinding station separately positioned from one another, each of said unwinding stations having a band roll rotatably disposed therein, a first band roll serving to hold the new band thereon and a second band roll serving to hold the running-off band thereon;

a band changer having a first end and a second end;

feeding means for feeding the new band and the running-off band from said band rolls into the band changer, said feeding means including press-contact roller units;

means for applying an adhesive layer to the new hand;

means for applying an adhesive layer to the new band;

channeling means, which converge in a V-shaped configuration, for channeling said new band and said running-off band from the first end of the band changer downwardly through the second end of the band changer such that said new band and said running-off band converge in said pressure roller unit;

wherein said channeling means comprises two channels which are positioned in a central portion of said band changer and converge in said V-shaped configuration such that said new band and said running-off band are guided through the press-contact roller units and the channeling means and into the pressure roller unit;

wherein the new band and the running-off band adhere to each other in the pressure roller unit; and

wherein centers of said band rolls are positioned at a level near lower ends of said channels; and

a pair of rotary stops, each of which is located within one of said two channels near the lower end of the channel, each of said rotary stops being pivotable into and out of the path of movement of one of the new band and the running-off band.

5,308,008

METHOD AND APPARATUS FOR PRODUCING ROLLS

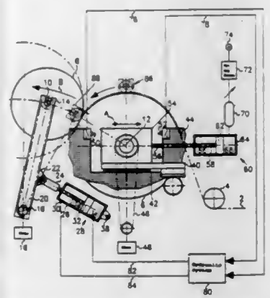
Anton Rüegg, St. Gallerstrasse 34, 8716 Schmerikon, Switzerland

Filed Jun. 15, 1992, Ser. No. 897,939

Claims priority, application Switzerland, Mar. 18, 1992, 00870/92

Int. Cl.[5] B65H *18/16*

U.S. Cl. 242—65 **13 Claims**



2. An apparatus of producing rolls from flexible sheet material, said apparatus comprising:

feeding means for continuously feeding flexible sheet material;

a bearing device rotatably receiving a winding drum, said winding drum having a circumference, a part of said circumference having said sheet material adapted to bear thereagainst, said bearing device being movable in a direction essentially perpendicular to a rotational axis of said winding drum between a forward limit position and rearward limit position;

biasing means acting upon said bearing device for urging said bearing device towards said forward limit position;

a winding core bearing for rotatably carrying a winding core during a winding operation, said winding core having a rotational axis which is parallel to the rotational axis of said winding drum during said winding operation, said winding core bearing being mounted for displacement together with said winding core in a perpendicular direction with respect to the rotational axis of said winding core;

a releasable blocking means for temporarily blocking said winding core bearing against displacement during the movement of said bearing device form the forward to the rearward limit position, whereby said bearing device together with said winding drum is moved form said forward to said rearward limit position against the action of said biasing means in accordance with the increase in radius of the roll being produced on said winding core while said blocking means blocks said winding core bearing against displacement;

a control and adjusting means including said biasing means for controlling the movement of said bearing device, said control and adjusting means further comprising:

detector means for detecting when said bearing device reaches said forward and rearward limit positions; and

control means which causes said blocking means to cease blocking winding core bearing displacement when said detector means detects arrival of said bearing device at said rearward limit position and thus allowing said bearing device to move to said forward limit position and said roll to simultaneously move such that one of the contact pressure and clearance between said winding drum and said roll remains constant, said control means causing said blocking means to again block winding core displacement upon arrival of said bearing device at said forward limit position.

5,308,009

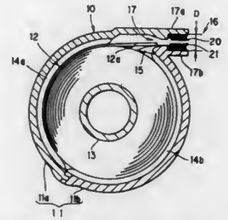
PHOTOGRAPHIC FILM CASSETTE AND LIGHT-TRAPPING METHOD FOR THE SAME

Kazunori Mizuno, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 11, 1992, Ser. No. 897,079

Int. Cl.[5] G03B *17/26*

U.S. Cl. 242—71.1 **13 Claims**



1. A photographic film cassette including a spool with photographic film wound thereon, a cassette shell for containing said spool rotatably, and a pair of light-trapping ribbons attached to an inside of a photographic film passageway of said cassette shell for preventing light from entering said cassette shell through said passageway, rotation of said spool in an unwinding direction causing a leader of said photographic film to advance outward from said passageway between said pair of ribbons, wherein:

said ribbons are a warp pile fabric woven from warp threads, weft threads and warp pile threads, and being constructed such that a first warp thread of one pair of warp threads juxtaposed to one pile thread passes above and across a weft thread, said one pile thread passing below and across said weft thread, and that a second warp thread of said one pair of warp threads passes below and across said weft thread;

said pile threads being slanted in a predetermined direction relative to a ground constituted of said warp and weft threads, which is towards said second warp thread and along said weft threads; and

said ribbons being oriented so that said pile threads slant toward and outside of said cassette shell.

5,308,010

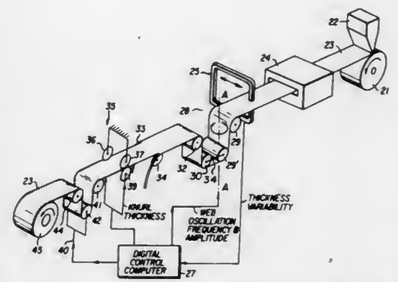
METHOD FOR ELIMINATING IMPERFECTIONS IN A WOUND WEB ROLL

Zbigniew Hakiel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 695,621, May 3, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 78,875

Int. Cl.[5] B65H *23/16, 16/02*

U.S. Cl. 242—75.3 **3 Claims**



1. A method of winding on cores plastic webs having thickened edges which comprises:

(a) measuring properties of a web to be wound on a core including:

(1) modulus of elasticity of the web plastic,

(2) stackwise compression modulus of the web,

(3) stackwise compression modulus of the thickened edges,

(4) Poisson's ratio of the web plastic, and

(5) stress relaxation modulus of the web plastic;

(b) measuring properties of the core, including

(1) core modulus, and

(2) core diameter;

(c) selecting initial winding conditions, including

(1) initial web tension,

(2) initial edge thickness, and

(3) initial web oscillation;

(d) iteratively measuring widthwise variations of said web at lengthwise locations on the web;

(e) determining the average widthwise thickness distribution for the web by averaging in the lengthwise direction the measured widthwise thickness variations;

(f) determining the combined imperfection severity function from the measurement of said properties of the web and the core, said initial winding conditions, and said average widthwise thickness distribution by means of the following relationship

$$\Phi = \sum_{k=1}^{4} c_k \phi_k$$

wherein Φ is the combined imperfection severity function, ϕ_k is the kth individual imperfection severity function, and c_k is the weight factor for the kth individual imperfection severity function;

(g) comparing the value of the combined imperfection severity function so determined with a pre-established tolerance to determine whether said value of the combined imperfection severity function is within or outside the tolerance;

(h) when said value of the combined imperfection severity function is within said tolerance, winding the web on the core at said initial winding conditions;

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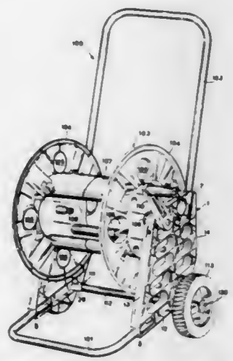
(i) when said value of the combined imperfection severity function is outside said tolerance, winding the web on the core under winding conditions corrected by adjustment of at least one of the conditions of web tension, edge thickness, and web oscillation to cause optimization of the value of said combined imperfection severity function.

5,308,011

SUPPORTING SIDE FOR A HOSE-WINDING DRUM FOR A DEVICE FOR WINDING FLEXIBLE HOSE

Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Italy

Filed Jol. 20, 1992, Ser. No. 915,541
Claims priority, application Italy, Jul. 31, 1991, MI91-1A002134
Int. Cl.[5] B65H *75/34*
U.S. Cl. 242—86 **9 Claims**



1. A supporting side for a hose-winding drum for a device for winding flexible hose, having a shape substantially of a parallelogram with substantially parallel upper and lower peripheral edges and upwardly extending front and rear peripheral edges defining a flat body with two major surfaces, said body comprising a plurality of ribs parallel to each other and to said upper and lower peripheral edges, a succession of slots between each pair of said parallel ribs, said slots being elongated parallel to said ribs and having edges connected to each other and to said ribs by stiffening ribs, said body further comprising a first upwardly open seat arranged in said upper edge and provided with first coupling means for the introduction and connection of a respective substantially vertical end of a U-shaped handle tubular element, a second frontally open seat arranged at a lower end of said front edge and provided with second coupling means for the introduction and connection of a respective substantially horizontal end of a U-shaped base tubular element, a first passing-through hole formed in the body for rotatably accommodating a hub of a hose-winding drum and a second passing-through hole formed in the body provided with third coupling means for accommodating and connecting a wheel supporting shaft.

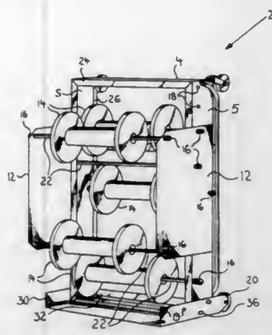
5,308,012

FOLDING WIRECART CONVERTIBLE INTO FLOAT AND HANDTRUCK

Carsen S. Fuller, 3818 Kinsley Dr., Winter Park, Fla. 32792

Filed May 20, 1992, Ser. No. 885,961
Int. Cl.[5] B65H *75/40*
U.S. Cl. 242—86.5 R **13 Claims**

1. A folding wirecart convertible into float and handtruck comprising a body rotatably attached to a base, said body comprising two body sides, a body top, and a body bottom, said base comprising a rectangular base floor, and each said body side further comprises a plurality of body punchouts, a body pivot fastener hole and a body lock bolt hole, and said



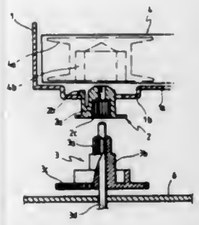
base further comprises two base walls rigidly attached to opposite sides of said base floor.

5,308,013

CASSETTE LOADING APPARATUS FOR CASSETTE PLAYER WHICH SMOOTHLY ENGAGES A REEL AND A DRIVING TABLE

Jae-su Lee, Seoul, and Byeong-sam Son, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Aug. 31, 1992, Ser. No. 937,389
Claims priority, application Rep. of Korea, Sep. 18, 1991, 91-15342
Int. Cl.[5] G11B *15/26*
U.S. Cl. 242—198 **9 Claims**



1. A cassette loading apparatus for a cassette player in which a tape cassette having an internal tape reel is inserted into a movable holder and is moved and loaded together with the holder onto a reel driving table for driving the tape reel, said apparatus comprising:

a connection driving body having a connection portion which is engageable with the reel driving table, said connection driving body being rotatably mounted to said holder and linearly movable, with respect to said holder, between a first position wherein said connection driving body is received in a reel hub of the tape reel and a second position wherein said connection driving body is withdrawn from the hub;

a guide protrusion formed on said connection driving body, said guide protrusion being engageable with a reel hub of the tape reel when said connecting driving body is in said first position; and

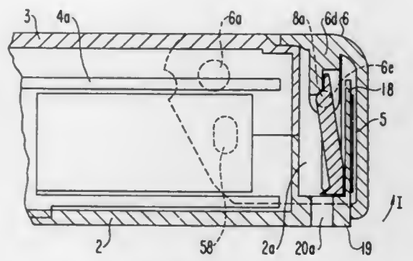
wherein said connection driving body is in said first position when the cassette is loaded onto said reel driving table.

5,308,014

TAPE CASSETTE WITH FRONT AND INNER TAPE COVERING LIDS

Hironori Honsho, Neyagawa, and Fuminari Saito, Kawanishi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 530,965, May 25, 1990, abandoned. This application Apr. 28, 1992, Ser. No. 875,594
Claims priority, application Japan, May 29, 1989, 1-134909; Oct. 12, 1989, 1-266908; Feb. 9, 1990, 2-30873
Int. Cl.[5] G11B *15/60, 23/087*
U.S. Cl. 242—199 **5 Claims**



1. A tape cassette comprising:

a cassette case having an opening formed at a front portion thereof;

a pair of tape reels mounted in said cassette case for winding a tape thereon and to which opposing ends of the tape are adapted to be attached, respectively;

means for stretching the tape along a front surface of said cassette case at a predetermined location forwardly of said opening formed at said front portion of said cassette case;

a front lid rotatably supported on side surfaces of said cassette case for rotation about a front lid rotation axis between a closed position in which said front lid is positioned forwardly of said predetermined location so as to cover a front surface of the tape stretched along said front surface of said cassette case, and an open position in which said front lid is not positioned forwardly of said predetermined location so as to expose the front surface of the tape stretched along said front surface of said cassette case;

an inner lid rotatably supported on said front lid for rotation about an inner lid rotation axis between a closed position in which said inner lid is positioned rearwardly of said predetermined location so as to cover a rear surface of the tape stretched along said front surface of said cassette case, and an open position in which said inner lid is not positioned rearwardly of said predetermined location so as to expose the rear surface of the tape stretched along said front surface of said cassette case;

a restriction plate extending from a bottom surface of said cassette case and located in said opening rearwardly of said predetermined location at which the tape stretched along said front surface of said cassette case is adapted to be disposed so as to prevent rearward movement of a portion of the tape stretched along said front surface of said cassette case; and

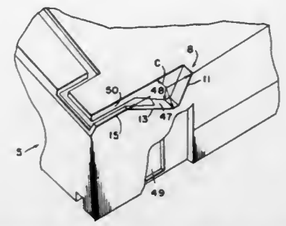
means, comprising a U-shaped cutout portion of said inner lid provided at a position facing said restriction plate when said inner lid is in its closed position, for engaging with said restriction plate in such a manner as to leave a space between said inner lid and said restriction plate when said inner lid is in its closed position.

5,308,015

DUST DOOR ARRANGEMENT FOR VIDEO CASSETTES

Paul J. Gelardi; John A. Gelardi, both of Kennebunkport, and David A. Capotosto, Kennebunk, all of Me., assignors to LCV Associates, Kennebunkport, Me.

Filed May 21, 1992, Ser. No. 886,152
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—199 **13 Claims**



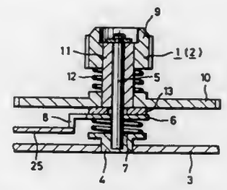
1. Video cassette apparatus comprising an integrally molded dust door and video cassette cover being joined by plural, integrally molded living hinges, at least one of the hinges incorporating a supplemental spring attached proximally to bias the door with respect to the cover, the spring incorporating a door attachment and a cassette attachment end for fitting within door and cassette spring receptors respectively, the dust door having a front face for covering exposed video tapes when in the closed position, and first and second opposite side walls extending from the front face toward first and second side hinges, the dust door side walls having rear edges, the hinges molded to the rear edges and oppositely to first and second opposite sides of the cover, the cover having first and second downward extensions at the first and second sides, and the rear edges of the dust door having bevelled tops, wherein the hinge is molded oppositely to the downward extension and the bevelled rear edge, thus positioning the hinge below a plane as provided by a top surface of the cover and dust door and forming an axis of revolution of the dust door with respect to the cover below that plane, the hinge provided in a cavity between the downward extension and bevelled edge, wherein the hinge has a flattened upper surface and a notched lower surface, the axis of rotation of the dust door prescribed proximal the notch, and the spring provided adjacent the lower surface and attached oppositely to the dust door and cassette.

5,308,016

TAPE TRANSPORT WITH DIFFERENTIAL TORQUE BETWEEN TAKEUP AND FEED REELS

Yutaka Saito, Yaita, and Sumiyoshi Kato, Hiki, both of Japan, assignors to Shinwa Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1992, Ser. No. 890,756
Claims priority, application Japan, May 29, 1991, 3-125777
Int. Cl.[5] G11B *15/26*
U.S. Cl. 242—201 **2 Claims**



1. A tape transport mechanism comprising:

a first reel block for transporting a tape in a first direction;

a second reel block for transporting said tape in a second direction;

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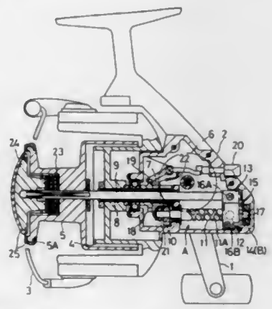
a first rotating disk in frictional drive relationship with said first reel block;
a second rotating disc in frictional drive relationship with said second reel block;
first frictional means for producing greater frictional torque on said first reel block when it transports tape in said first direction than is produced on said second reel block when said second reel block is feeding tape in said first direction; and
second frictional means for producing greater frictional torque on said second reel block when it transports tape in said second direction than is produced on said first reel block when said first reel block is feeding tape in said second direction;
said first and second frictional means comprising catching ridges on said first and second rotating disks, said catching ridges each having opposite side surfaces, one side surface of each catching ridge being disposed at a greater angle relative to a disk frictional contact surface than the opposite side surface, said catching ridges being oriented on said first and second rotating disks such that the said one side surface thereof face in the associated reel block tape transport direction so as to provide during tape transport with a reel block, greater friction inducing contact with the rotating disk, and correspondingly greater frictional torque in the associated reel block than is produced in the other reel block which is feeding tape.

5,308,017

SPINNING REEL WITH A SHOCK ABSORBING MECHANISM

Osamu Yoshikawa, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 711,963, Jun. 7, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 993,955
Claims priority, application Japan, Jun. 20, 1990, 2-65264[U]; Jun. 20, 1990, 2-65265[U]
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—241 **6 Claims**



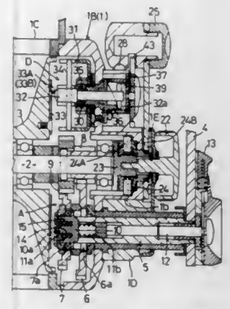
1. A spinning reel comprising:
a reel body;
an oscillating spool shaft having a spool at a first end thereof;
a handle;
a drive mechanism coupled to said handle for rotating a rotor to take up a fishing line on said spool upon operation of said handle;
an oscillating mechanism for oscillating said spool shaft, said oscillating mechanism being mounted in said reel body and including:
a screw shaft having a helical groove and mounted in said reel body, and a screw drive mechanism coupled to said handle for rotating said screw shaft;
a transmission member with a first end fixed at a second end of said spool shaft, and a second end of said transmission member being axially displaceably mounted to said screw shaft;
an insert piece mounted on said transmission member, said insert piece including an engaging portion to engage with said helical groove of said screw shaft;
wherein said oscillating mechanism converts a rotation of said screw shaft to said oscillating movement of said spool shaft and spool; and
cushion means including an elastic member provided between an end of said screw shaft and said reel body, said cushion means being capable of absorbing displacement of said spool shaft and said screw shaft with respect to said reel body produced in a direction axially of said spool shaft.

5,308,018

DRAG CONTROL STRUCTURE FOR BAITCASTING REEL

Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Feb. 3, 1992, Ser. No. 829,376
Claims priority, application Japan, Feb. 5, 1991, 3-003874[U]
Int. Cl.[5] A01K *89/033*
U.S. Cl. 242—271 **6 Claims**



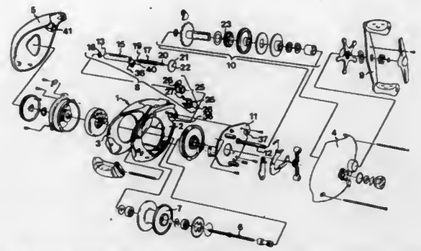
1. A drag control structure for a baitcasting reel having a spool and a frictional drag for retarding rotation of the spool, comprising:
a side case having an outer periphery;
a drag control element mounted to said side case, said drag control element being movable along an arcuate path, said arcuate path being located in a first plane;
a first guide plate for guiding said drag control element along said arcuate path, said guide plate being located adjacent to said side case, and said guide plate being substantially parallel to said first plane, said guide plate having an outer peripheral edge;
a stopper for selectively restricting movement of said drag control element, said stopper being radially movable, relative to said arcuate path of said drag control element, from a contacting position to a rest position, said drag control element being prevented from moving past said stopper when said stopper is in said contacting position, said drag control element being permitted to move past said stopper when said stopper is in said rest position; and
wherein said stopper does not protrude radially outwardly of said periphery of said side case, and wherein said stopper does not protrude radially outwardly of said outer peripheral edge of said guide plate.

5,308,019

LEVEL-WIND MECHANISM IN A FISHING REEL

Jarding Karlsson, Svängsta, Sweden, assignor to ABU Garcia Produktion AB, Svängsta, Sweden

Filed Apr. 6, 1993, Ser. No. 43,766
Int. Cl.[5] A01K *89/015*
U.S. Cl. 242—279 **4 Claims**



1. A level-wind mechanism in a fishing reel of the multiplier type, said fishing reel comprising a frame with two side members, a line-spool shaft, a line spool rotatably mounted on the line-spool shaft between said two side members, two side covers mounted on a respective side member, a mounting plate provided on one side member of the frame inwardly of the one side cover and having a spindle which is parallel to the line-spool shaft and extends through said one side cover, a handle mounted on said spindle outside said one side cover for rotating the line spool, and a driving gear mounted on said spindle to be rotated by means of the handle, said level-wind mechanism being removable from and insertable in the frame as a one-piece unit consisting of a sleeve provided with a slot extending along the sleeve, an endless screw rotatably mounted in the sleeve and carrying at one end a gear which is non-rotatably connected thereto and meshing with said driving gear to be driven thereby, a level-wind mounted on said sleeve and having a groove-follower pin which via the slot in said sleeve engages said endless screw in order, upon rotation thereof, to move the level-wind back and forth along said sleeve, and means for preventing the level-wind from being rotated on the sleeve, the frame having two recesses which are formed in a respective side member and in which said unit is so inserted that said sleeve extends parallel to the line-spool shaft while resting on the bottom of said recesses, said unit being retained in said recesses by means of projections formed on the side covers, and means being provided for preventing said sleeve from being rotated in said recesses.

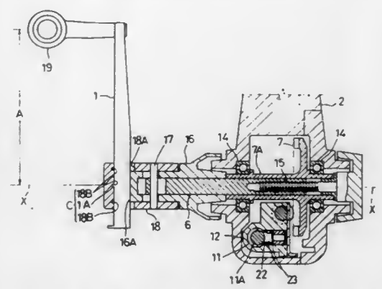
5,308,020

FISHING REEL

Yuzo Kawabe, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Sep. 16, 1991, Ser. No. 760,334
Claims priority, application Japan, Oct. 11, 1990, 2-107070[U]
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—284 **5 Claims**

1. A fishing reel comprising:
a spool for winding a fishing line thereabout, and a reel body;
a rotor rotatable about said spool to wind the fishing line on the spool;
a drive mechanism including a handle shaft, a handle, a drive gear, a pinion gear and a cylinder shaft and operable to transmit a force from said handle to said rotor, said handle shaft having a terminal end, and a slot located at said terminal end;
a movable member movable along an axis of said handle shaft;
a sleeve provided on said handle shaft;
said handle being provided between said movable member and said sleeve and being projectable and retractable relative to said movable member in a direction substantially normal to said axis of said handle shaft; and
a handle-length adjusting mechanism including said movable member, said sleeve, said handle shaft, a pin and engagement means, said pin being connected to said movable member and inserted into said slot located at said terminal end of said handle shaft said engagement means having a projection and a concave portion both provided between



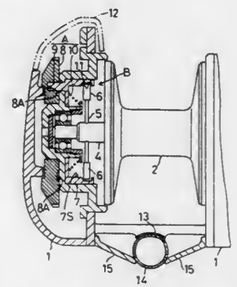
portions of said movable member and said handle, and wherein said movable member and said handle press against each other, and wherein, as said handle shaft is pulled toward said reel body along said axis of said handle shaft, said handle shaft moves said pin which moves said movable member to place said movable member and sleeve in pressure-contact with said handle, and also to place said projection and said concave projecting/retracting movement of said handle relative to said handle shaft.

5,308,021

CENTRIFUGAL BRAKE MECHANISM FOR A FISHING REEL

Takeshi Ikuta, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jul. 7, 1992, Ser. No. 909,764
Claims priority, application Japan, Jul. 10, 1991, 3-52990[U]
Int. Cl.[5] A01K *89/033*
U.S. Cl. 242—289 **8 Claims**



1. A centrifugal force brake mechanism for a fishing reel comprising:
rods extending radially from a spool shaft rotatable with a spool;
braking pieces slidably mounted on said rods and slidable in response to a centrifugal force;
a cylindrical friction member disposed outwardly of a locus of revolution of said braking pieces, said cylindrical friction member being coaxial with said spool shaft, said

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friction member having a substantially cylindrical friction surface and an inclined surface; and

braking force adjustment means operable from outside a reel body for changing the axial position of said friction member relative to said braking pieces, such that said braking pieces selectively come into contact with said friction surface and said inclined surface;

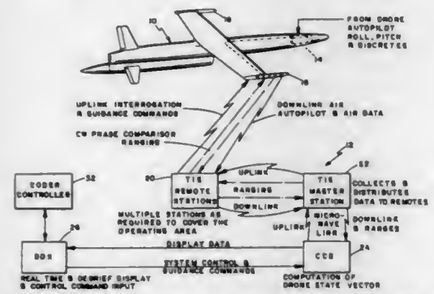
wherein said braking pieces develop a frictional force when in contact with said friction surface, and wherein said braking pieces develop substantially no frictional force when in contact with said inclined surface.

5,308,022

METHOD OF GENERATING A DYNAMIC DISPLAY OF AN AIRCRAFT FROM THE VIEWPOINT OF A PSEUDO CHASE AIRCRAFT

Minton B. Cronkhite, and Daniel N. Kamhis, both of San Diego, Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Apr. 30, 1982, Ser. No. 373,651
Int. Cl.[5] F41G *7/30*; B64C *13/20*
U.S. Cl. 244—3.14 **6 Claims**



1. A method of generating a dynamic display of an aircraft in flight, comprising the steps of:

generating kinematic data onboard the flying aircraft describing its state of motion;

transmitting the kinematic data to at least one station on a tracking range and generating tracking data representing the actual state vector of the flying aircraft;

generating pseudo tracking data, identical to the tracking data but delayed in time, for representing the state vector of a pseudo aircraft; and

generating from the pseudo tracking data an image of the flying aircraft from the viewpoint of the cockpit of the pseudo aircraft whereby a person may view the dynamics of the flying aircraft as if the person were chasing the aircraft in the pseudo aircraft.

5,308,023

MODEL AIRCRAFT RETRACTABLE LANDING GEAR DEVICE

Robert W. Kress, Saugerties, N.Y., assignor to Kress Jets, Inc., Saugerties, N.Y.

Filed Feb. 8, 1993, Ser. No. 14,760
Int. Cl.[5] B64C *25/10*
U.S. Cl. 244—102 R **10 Claims**

1. A model aircraft landing gear control device for a model aircraft having a fuselage mounting said control device and a landing wheel, said control device comprising

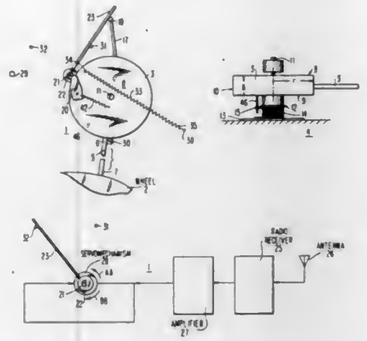
a control member rotatably mounted on said fuselage in spaced relation with a supporting surface of said fuselage;

a gear leg supported at one end by said control member and supporting a landing wheel at its spaced opposite end, said gear leg extending substantially radially of said control member;

torsion spring means coaxially mounted with said control member for storing energy when said control member is in a position whereby said gear leg is fully extended for ground operations and for releasing stored energy to rotate said control member in a manner whereby said gear leg is retracted for flying operations;

gear retracting initiating means coupled to said torsion spring means for initiating gear retraction;

extend locking means for locking said gear leg in its fully extended position;



retract locking means for locking said gear leg in its retracted position; and

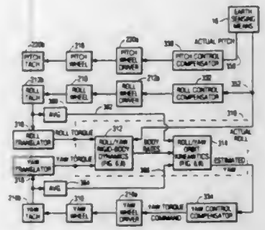
actuating means in operative proximity with said extend locking means and said retract locking means for assisting in locking said gear leg in its fully extended position and for assisting in locking said gear leg in its retracted position.

5,308,024

DISTURBANCE TORQUE COMPENSATED THREE AXIS YAW CONTROL SYSTEM

John B. Stetson, Jr., New Hope, Pa., assignor to General Electric Co., East Windsor, N.J.

Filed Jul. 20, 1992, Ser. No. 916,734
Int. Cl.[5] B64G *1/28*
U.S. Cl. 244—165 **9 Claims**



1. An attitude control system for controlling the orientation of a zero momentum satellite relative to a heavenly body, said satellite having gyroscopic freedom in the orbital plane, and deriving orientation references in the absence of operative gyroscopes, comprising:

a satellite body defining roll and yaw axes, said yaw axis being Earth pointing, said roll axis being parallel to the satellite motion, said satellite body having yaw and roll body inertias about said yaw and roll axes respectively;

first and second reaction wheels mounted on said body, each of said first and second reaction wheels having a component of momentum along the satellite roll and yaw axes, respectively;

Earth sensing means mounted on said body for generating signals representing roll attitude of said satellite relative to said heavenly body;

first and second reaction wheel driving means coupled to said first and second reaction wheels, respectively, for accelerating said wheels under the control of torque command signals representing torque commands about said satellite yaw and roll axes;

first and second tachometer means coupled to said first and second reaction wheels, respectively, for generating speed signals representing the angular velocities of said reaction wheels;

roll attitude control means coupled to said Earth sensing means, and to at least one of said first and second reaction wheel driving means for processing said roll attitude error signals with at least proportional and rate compensation of said roll attitude, for generating said torque command signals representing said torque commands about said roll axis, for accelerating at least an associated one of said reaction wheels;

yaw attitude control means coupled to at least one of said first and second reaction wheel driving means for processing estimated yaw signals with at least proportional and rate compensation of said yaw attitude, for generating said torque command signals representing said torque commands about said yaw axis, for accelerating at least an associated one of said reaction wheels;

roll reaction wheel torque translation means coupled to at least one of said first and second tachometer means for differentiating said speed signals to generate roll reaction wheel torque representative signals;

yaw reaction wheel torque translation means coupled to at least one of said first and second tachometer means for differentiating said speed signals to generate yaw reaction wheel torque representative signals;

yaw estimating means coupled to said Earth sensing means, to said roll and yaw reaction wheel torque translation means, and to at least one of said first and second reaction wheel driving means, for modelling the linearized roll-/yaw orbit kinematics of said satellite, and for additionally modelling the roll/yaw rigid body dynamics of said satellite, and for applying said signals representing roll attitude, and said yaw and roll reaction wheel torque representative signals to said model, for generating and applying signals representing torque commands about said satellite yaw axis, to said at least one of said first and second reaction wheel driving means;

disturbance torque estimating means, said disturbance torque estimating means comprising:

(a) average speed measuring means coupled to at least one of said first and second tachometer means for producing average speed signals representative of the average speed of said one of said reaction wheels; and

(b) scaling means coupled to said average speed measuring means, for scaling said average speed signals by a factor representative of reaction wheel gyroscopic momentum to produce disturbance torque representative signals representing the constant component of the disturbance torque; and

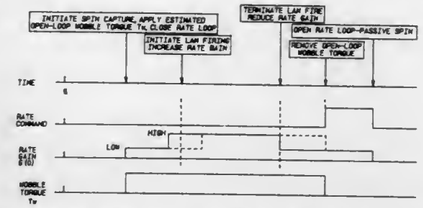
summing means coupled to said disturbance torque estimating means and to said yaw estimating means for adding said disturbance torque representative signals to one of said yaw and roll reaction wheel torque representative signals.

5,308,025

SPACECRAFT SPIN AXIS CAPTURE SYSTEM AND METHOD

John W. Smay, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 30, 1992, Ser. No. 921,676
Int. Cl.[5] B64G *1/38*
U.S. Cl. 244—170 **14 Claims**



1. In a spacecraft having a body spinning in a steady state about a principal axis of inertia and having an angular momentum vector, and said spacecraft having a control system, a method of transitioning the spacecraft body to spin about an arbitrary commanded axis having two mutually perpendicular transverse axes, said commanded spin axis coning about said angular momentum vector in said steady state, said method comprising the steps of:

applying predetermined torques T_1 and T_2 about each of said transverse axes to cancel wobble of said commanded spin axis and thereby inducing nutation about said transverse axes;

measuring rates of nutation about said transverse axes; and

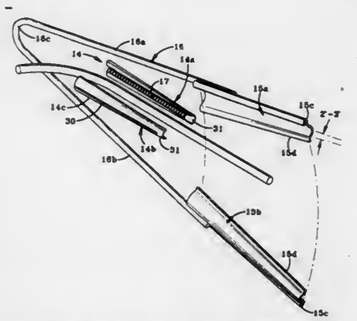
applying nutation damping torques about said transverse axes proportional to said transverse nutation rates to actively dampen said nutation and drive said commanded spin axis to the position of the initial momentum vector.

5,308,026

MIDLINE CABLE CLAMP CONSTRUCTION

Charles R. Shaw, Twinsburg, Ohio, assignor to Esmet, Inc., Canton, Ohio

Filed Mar. 9, 1992, Ser. No. 848,340
Int. Cl.[5] E21F *17/02*
U.S. Cl. 248—63 **21 Claims**



1. An improved midline cable clamp construction for supporting a lengthy continuous cable at spaced-apart intervals, said clamp construction comprising:

(a) an elongated separable tubular sleeve member having at least two longitudinal parts formed with first and second terminating ends and an internal tapered bore when joined

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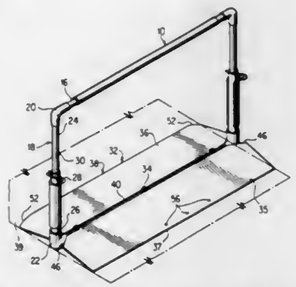
converging toward the second terminating end facing the length continuous cable to be supported,

(b) a separable tapered hollow plus member slidably mounted within the tapered bore of said separable tubular sleeve member for surrounding and gripping a limited intermediate portion of said cable,

(c) attachment means for securely joining the two longitudinal parts of said separable sleeve member to apply compressive gripping force to said plug member and the limited intermediate portion of said cable, and

(d) connecting means attached to a separate fixed supporting structure and the first terminating end of said sleeve member for supporting a substantial length of said cable in durable permanently-retained relation.

5,308,027
DUAL USE LEAF BAGGER
Tom P. Fullilove, P.O. Box 6063, Shreveport, La. 71136
Filed Jan. 7, 1993, Ser. No. 1,674
Int. Cl.[5] B65D *33/00*
U.S. Cl. 248—101 **7 Claims**



1. A leaf bagger comprising a planar frame including a pair of laterally spaced legs having first and second ends, a cross member interconnecting the first ends of said legs to define an outer portion of said frame, a support plate, and means for releasably connecting said support plate between said second ends of said legs substantially perpendicular to the plane of said frame, said plate having a width defining first and second parts having outer edges extending on opposite sides of the plane of said frame distances such that said edges comprise stable support means for engaging a supporting surface perpendicular to the plane of said frame, said frame being of a size to receive thereover the open end of a flexible refuse bag, said first part of said plate being of a size to be entirely received in the open end of a bag to overlie the inner surface thereof from said outer edge of said first plate part to said frame to serve as a protective guide for directing material into a bag received on said frame.

5,308,028
HEADREST SUPPORT FOR A WHEELCHAIR
Gary Kornberg, 19 Kathleen Dr. East, Syosset, N.Y. 11791
Filed Nov. 17, 1992, Ser. No. 977,555
Int. Cl.[5] B68G *5/00*
U.S. Cl. 248—118 **7 Claims**

1. A headrest support for a wheelchair comprising:

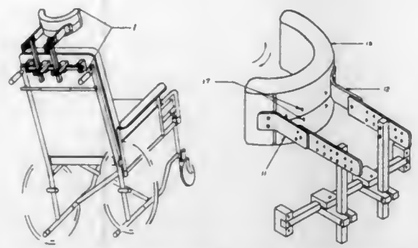
a) a horizontal member having opposite ends,

b) a pair of spacer blocks, one affixed to each end of said horizontal member,

c) a pair of slide-adjustable clamping blocks which slide along said horizontal member having means for locking said clamping blocks at a selected position along said horizontal member,

d) a pair of vertical members, slidable up and down through said slide-adjustable clamping blocks, said clamping blocks having means for locking said vertical members in a desired position providing for independent height adjustment of said vertical members,

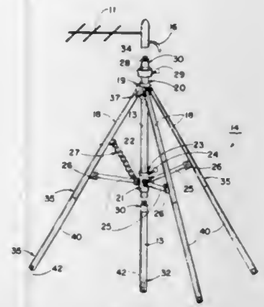
e) a pair of sectioned forward/rearward members, each projecting forward from the top of each of said vertical



members, each formed by tow sections joined by a locking hinge providing tilt adjustment between the sections, and

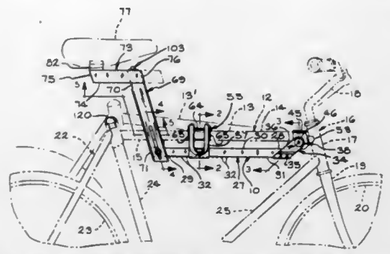
f) a padded, curved occipital support attached to the forward-most end of each of said forward/rearward members.

5,308,029
ANTENNA STAND
Grady A. Bingham, Eden, N.C., assignor to Old Stone Corporation, Eden, N.C.
Filed Jul. 15, 1992, Ser. No. 913,388
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—159 **8 Claims**



1. A collapsible antenna stand for supporting an adjustable height antenna mast comprising: a tripod, said tripod comprising three foldable legs, each of said legs having a lower, distal end for resting thereon, the lowermost points of each of said three distal ends of said foldable legs defining a spacial plane, a mast guide, said legs foldably joined to said mast guide, said mast guide defining a first mast bore, a brace assembly, said brace assembly comprising a mast support, said mast support defining a second mast bore, said brace assembly joined to said tripod, said second mast bore axially aligned with said first mast bore, a mast section, said mast section comprising a tubular member slidably positionable through said first and said second mast bores, said mast support spaced from said spacial plane such that the distance between said mast support and said spacial plane is greater than the length of said mast section, said brace assembly joined to said tripod whereby said mast section can be inserted into said second mast bore from beneath and upward into said first mast bore for engagement with a previously inserted mast section.

5,308,030
BICYCLE SEAT SUSPENSION ASSEMBLY
David W. Bales, High Point, N.C., assignor to Mobitech, Incorporated, Montpelier, Ohio
Filed Oct. 26, 1992, Ser. No. 966,556
Int. Cl.[5] B62K *19/36*
U.S. Cl. 248—214 **14 Claims**



1. A seat suspension assembly in combination with a bicycle having a generally horizontal frame member extending from a front handlebar and front wheel mounting assembly to a rear frame and rear wheel mount assembly, said horizontal frame member having a front end and a rear end, said seat suspension assembly comprising

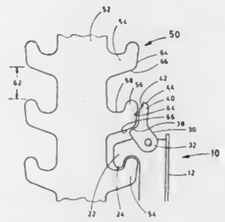
a longitudinally extending boom member having a first end and a second end, said first end being pivotally connected to the front end of the horizontal frame member,

a support assembly having an upper end and a lower end, said lower end of said support assembly connected to said longitudinally extending boom member adjacent its second end,

a seat assembly mounted adjacent said upper end of said support assembly, and

tension means for applying a tension force between the bicycle horizontal frame member and said longitudinally extending boom member.

5,308,031
LOCKING WALL ACCESSORY FASTENER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Los Angeles, Calif.
Continuation of Ser. No. 598,252, Oct. 16, 1990, abandoned.
This application Mar. 25, 1992, Ser. No. 859,283
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—222.1 **8 Claims**



1. An improved bracket for securing a desired accessory to an upright accessory standard, said standard being located in a space between opposed ends of a pair of modular wall panels and having a substantially flat elongated body portion and having a multiplicity of identical, spatially positioned upwardly-projected L-shaped hook-receiving members located on either side thereof and defining a plurality of apertures therebetween, wherein the apparatus comprises:

a flat mounting plate having a top and a bottom;

a flat hook plate made integral with the mounting plate, said hook plate being disposed at a substantially right angle to the mounting plate and having a plurality of identical spatially positioned downwardly projecting L-shaped hook members for detachable engagement with one or more upwardly-projecting L-shaped hook-receiving members of said accessory standard;

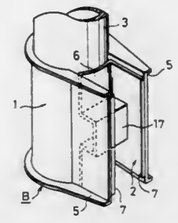
a flat locking member comprised of a substantially rectangular body portion having a proximate end and a distal end, the proximate end of the rectangular body portion being rotatably mounted at a topmost portion on a single side of said hook plate in close proximity to a topmost hook member thereof, the distal end being substantially straight;

a protrusion integrally formed with a portion of the distal end of the rectangular body portion, an inner edge of said protrusion and a portion of the distal end of the rectangular body portion forming an abutting surface;

said locking member having a width which is not substantially wider than a width of said hook plate such that both may fit into an aperture between a pair of hook-receiving members in the space between the opposed pair of modular walls;.

said substantially rectangular body portion having a length defined between said proximate end and said distal end which is sized whereby, when the downwardly projecting hook members of said hook plate are detachably engaged with upwardly-projecting L-shaped hook-receiving members of said accessory standard, said abutting surface may be pivoted toward and into an aperture in which a topmost hook member is engaged and abut along both bottom and outer portions of an L-shaped hook-receiving member immediately above said aperture to inhibit removal of said mounting plate from said accessory standard.

5,308,032
KNUCKLE BRACKET
Akihisa Ohta, Gifu, Japan, assignor to Kayaba Kogyo Kabuschiki Kaisha, Tokyo, Japan
Division of Ser. No. 741,144, Aug. 7, 1991, Pat. No. 5,170,973.
This application Oct. 27, 1992, Ser. No. 966,944
Int. Cl.[5] B60G *15/06*
U.S. Cl. 248—230 **5 Claims**



1. A knuckle bracket for holding a cylindrical member, the bracket comprising:

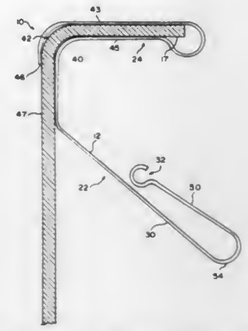
an outer bracket having an annular portion and a pair of clamp portions extending substantially in parallel from said annular portion, said annular portion receiving and surrounding the cylindrical member; and

an inner bracket positionable between said clamp portions of said outer bracket, said inner bracket having a bent backrest portion positioned against the cylindrical member and a pair of support pieces extending substantially in parallel from said backrest, said support pieces being positioned and clampable between said clamp portions of said outer bracket, said inner bracket having a reinforcing bracket means for retaining said clamp portions and said support pieces in a closed position during lateral loads on the cylindrical member, said reinforcing bracket means having a wall structure extending between said support pieces

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and in a plane substantially parallel to an axial axis of the cylindrical member and spaced from said cylinder member, positioned substantially centrally between upper and lower edges of said support pieces.

5,308,033
FLANGE MOUNTED ROUTING CLAMP
Robert H. Neely, Jr., Fort Wayne, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.
Filed Sep. 25, 1992, Ser. No. 951,244
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—231.8 **2 Claims**



1. A clamp for suspending elongated members passing therethrough adjacent a frame rail of an automotive vehicle, said frame rail having a web portion, a flange portion disposed perpendicularly thereto on one side of said web portion, and an arcuate portion joining said web portion and said flange portion, comprising:

an elongated strip of resilient material having a first end integrally formed into a loop of sufficient size to receive said elongated members, and a second end integrally formed therewith, said second end being folded back over itself to define a slot disposed to engage said frame rail from the one side of said web portion, said second end including a web engaging portion disposed to engage an extended length of said web portion of said frame rail on said one side thereof, a flange engaging portion disposed to clampingly engage an extended length of said flange portion on opposite sides thereof, and a terminal portion disposed to engage an opposite side of said web portion from said one side at a location removed from said arcuate portion thereof.

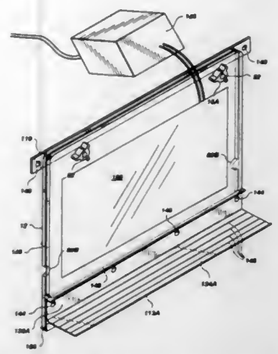
5,308,034
CLIPBOARD
Mark A. Hunter, P.O. Box 1068, Afton, Wyo. 83110
Continuation-in-part of Ser. No. 667,454, Mar. 11, 1991, Pat. No. 5,145,141. This application Sep. 8, 1992, Ser. No. 941,744
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—452 **18 Claims**

1. A display board comprising:

a first planar panel having a first end and a second end, said first planar panel being transparent;

a second planar panel, having a first end and a second end; connection means for detachably connecting said first end of said first planar panel to said first end of said second planar panel, said connection means positioning said first planar panel in parallel with said second planar panel, said planar panels being detachably held in abutment one against another;

wherein a sheet having a first face and a second face interposed between said planar panels is removably retained therebetween by said connection means operating on said planar panels to abut said first planar panel against the entire surface of said first face and to abut said second



planar panel against the entire surface of said second face, said sheet being visible through said first planar panel.

5,308,035
ADJUSTABLE ARTIST'S EASEL
Robert N. Ross, Orlando, Fla., assignor to Bob Ross Incorporated, Chantilly, Va.
Filed May 27, 1992, Ser. No. 887,757
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—454 **31 Claims**



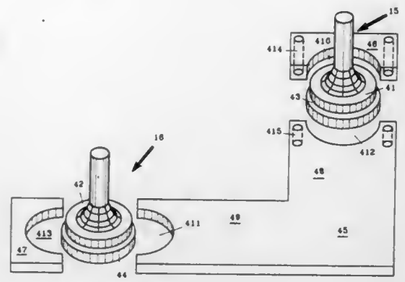
1. An adjustable artist's easel for holding a canvas comprising:

an upper stand including a canvas holding means for holding a canvas thereto and a standing means for holding a remainder of said upper stand in an upright position on a surface said standing means including at least one leg;

a free standing lower base including at least three base legs with each said base leg having a foot and a base leg mounting means for pivotally mounting said base legs to one another such that said base legs are movable between a collapsed position where said base legs are nearly coplanar and a supporting position where said feet of said base legs are spread apart and said lower base is supported in a standing position; and

an attaching means for removably attaching said at least one leg of said upper stand to at least one of said base legs of said lower base such that said upper stand is mounted above said lower base.

5,308,036
KINEMATIC ISOLATION STAND CONNECTOR
James D. Olson, San Mateo; Thomas E. Clawges, Pleasanton, and Robert T. LoBianco, Mountain View, all of Calif., assignors to Optical Specialties Inc., Fremont, Calif.
Filed Aug. 2, 1991, Ser. No. 739,897
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—638 **10 Claims**



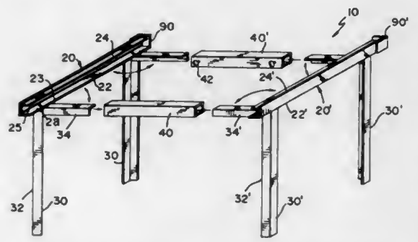
1. A device comprising:

a first apparatus having a first leg that has a bottom end that is to be in contact with a floor when this device is used;

a second apparatus having a second leg that has a bottom end that is to be in contact with the floor when this device is used; and

a connector attached to the bottom end of the first leg and attached to the bottom end of the second leg, said connector couples there two legs together at floor level, whereby substantially no vibrational energy is coupled between the first and second legs from vertical components of vibrations in either of these legs.

5,308,037
ADJUSTABLE AIR HANDLER BASE
Isidro Gonzalez, 8280 NW. 64 St., Miami, Fla. 33166
Filed Mar. 30, 1993, Ser. No. 40,041
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—670 **3 Claims**



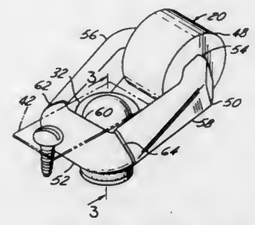
1. A base for air handlers having a filter, comprising:

A. first supporting means having first elongated means, having two ends and further including two first L-shaped members having each a first leg and a first arm perpendicular to each other and said first L-shaped members being perpendicularly and pivotally mounted to said first elongated means substantially at the ends of said first elongated means so that said arms can be pivoted from below said first elongated means to a position perpendicular thereto and said first elongated means includes first and second members with an L-shaped cross-section thereby providing a cooperative surface to support said air handler and defining a channel for cooperatively receiving said filter;

B. second supporting means having second elongated means having two ends and further including two second L-shaped members having each a second leg and a second arm perpendicular to each other, and being also pivotally mounted substantially at the ends of said second elongated means so that said arms can be pivoted from below said second elongated means to a position perpendicular thereto and said second elongated means includes first and second members with an L-shaped cross-section thereby providing a cooperative surface to support said air handler and defining a channel for cooperatively receiving said filter; and

C. two spacer means for receiving said arms from said first and second elongated means thereby forming a frame at a spaced apart relationship from the plane where said legs rest.

5,308,038
USING THE STATOR TO PREVENT VALVE SEAT TURNING
Robert A. McArthur, Waterford, Mich., assignor to Siemens Automotive L.P., Auburn Hills, Mich.
Filed Sep. 2, 1993, Ser. No. 116,237
Int. Cl.[5] F16K *31/06*; F02M *51/06*
U.S. Cl. 251—129.14 **6 Claims**

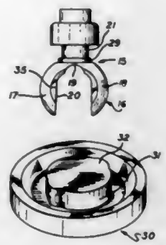


1. In an electromagnetically operated valve which comprises a valve body, a valve seat member having an axis and being received in a mounting in said body such that said seat member can potentially turn within said mounting about said axis, said valve seat member also comprising a frusto-conical seat as a surface of revolution about said axis, a sphere that is disposed for co-action with said seat to open and close flow through the valve, resilient means acting to resiliently urge said sphere along said axis toward concentrically seating on said seat and thereby closing flow through the valve, and sphere-actuating means, including electromagnetic operating means, for bodily displacing said sphere from concentric seating on said seat comprising a movable bar that is disposed along side said sphere and operated by said electromagnetic operating means to execute motion that is predominantly along the direction of an imaginary line that intersects said axis, said bar executing such motion toward and away from said axis in accordance with a control signal applied to said electromagnetic operating means, such motion of said bar toward said axis creating a force acting on said sphere at the end of a radial of said sphere, which radial, when viewed along said axis, is substantially coincident with said imaginary line, and such force created by such motion of said bar along said imaginary line being effective, in cooperation with said seat and resilient means, to cause said sphere to be bodily displaced from concentricity with said axis to eccentricity with said axis thereby opening flow through the valve, and such motion of said bar away from said axis being effective to allow said resilient means, in cooperation with said seat, to cause said sphere to be restored to concentricity with said axis and thereby close flow through the valve, the improvement in which said sphere-actuating means comprises a stator that in cooperation with

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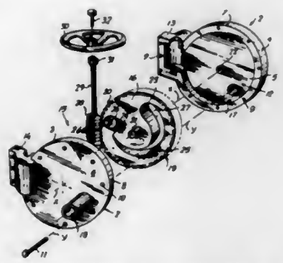
said bar forms a magnetic circuit and that has a termination confronting said bar across a gap via which magnetic force is delivered to operate said bar, and in which between said stator and said seat member there is provided means creating an interference causing said stator to constrain said seat member against turning within said mounting about said axis.

5,308,039
BALL VALVE
Robert King, 23122 8th St., Newhall, Calif. 91321
Filed Sep. 29, 1993, Ser. No. 128,531
Int. Cl.[5] F16K *5/20*
U.S. Cl. 251—192 **8 Claims**



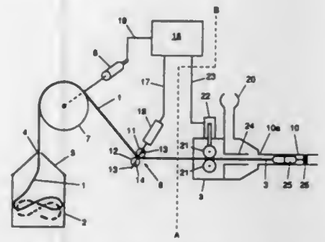
1. A ball valve comprising:
a main valve body portion having a throughbore with an inlet and outlet in fluid communication therewith;
a ball disposed in said throughbore, said ball being comprised of a pair of spaced, flexible, outwardly curved side portions defining a slot therebetween, said curved side portions conforming to a pair of ports, one of said ports being disposed on one side of said throughbore and the other of said ports being disposed on the other side of said throughbore, said inlet, outlet ports, slot and throughbore forming an opening through said valve for fluid flow therethrough when said slot is aligned with said throughbore; and
camming means associated with said valve body for flexing said side portions away from said camming means into mating and sealing relationship with said ports when said side portions engage said camming means.

5,308,040
FLUID FLOW REGULATING VALVE
Nestor/Ruben Torres, 331 Carlos Pellegrini Street-6th Floor, Buenos Aires, Argentina
Filed Nov. 6, 1992, Ser. No. 972,344
Claims priority, application Argentina, Nov. 28, 1991, 321265
Int. Cl.[5] F16K *3/32, 11/074*
U.S. Cl. 251—298 **16 Claims**



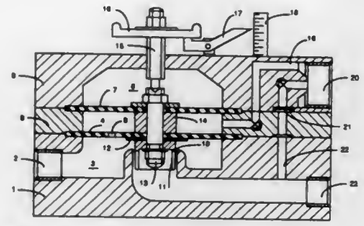
1. A fluid flow regulating valve comprising a casing which houses a flow regulating disc plate, the casing having an inner chamber, at least one inlet port and at least one outlet port for circulation of the fluid flow through the valve, the disc plate is rotatably mounted within the inner chamber and has at least one fluid regulating orifice passing through the disc plate and defining a plurality of flow-pass sections gradually decreasing from a first end to a second end of the orifice, whereby as the disc plate rotates the valve defines a regulating mode wherein different sections of the orifice can communicate the inlet and outlet ports to each other so as to regulate the fluid flow passing therethrough, and a close mode wherein at least one portion of the disc plate out of the orifice interrupts the fluid communication between the inlet and the outlet ports, wherein the at least one portion of the disc plate out of the orifice includes a hole passing through the plate, the hole freely receiving an insert made of a low-friction sealing material, and the insert closes the fluid communication between the inlet and the outlet ports of the casing in the close mode of the valve.

5,308,041
DEVICE FOR INSTALLING A CABLE IN A CABLE DUCT
Willem Griffioen, Ter Aar, and Geert J. Prins, Delft, both of Netherlands, assignors to Koninklijke Ptt Nederland N.V., AC Groningen, Netherlands
Division of Ser. No. 729,570, Jul. 15, 1991, Pat. No. 5,211,377.
This application Apr. 1, 1993, Ser. No. 41,678
Claims priority, application Netherlands, Jul. 17, 1990, 9001618
Int. Cl.[5] B66F *3/24*
U.S. Cl. 254—134.4 **9 Claims**



1. Device for introducing a cable into a cable duct from an inlet end of the cable duct in the direction of an outlet end, which device comprises:
cable storage means for the torsion-free storage of a cable;
cable guide means for guiding the foremost end and following portions of the cable to be introduced from the cable storage means via a predefined curved path towards the inlet end of the duct,
cable accelerating means for accelerating at least said foremost end and subsequent portions of the cable in the direction of he outlet end, said accelerating means including
pulling means or exerting pulling forces on the foremost end of the cable in the duct,
measuring means for measuring net transverse forces experienced by the cable guided through said curved path during the exertion of pulling forces by the pulling means, and
controllable speed cable supply means for supplying further portions of said cable from the cable storage means guided by said cable guide means via said curved path to the inlet end of the duct at first, with an increasing or at least uniform supply speed, as long as the measured net transverse forces correspond with a transverse component of the tension force larger than the centrifugal force, and after reaching a maximum supply speed, with a mainly decreasing supply speed controlled for adjusting to zero the net transverse forces as measured by the transverse force measuring means.

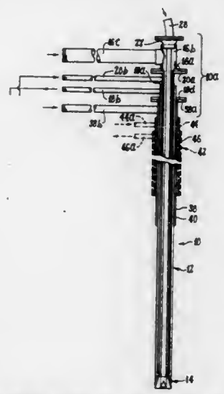
5,308,042
OXY-CUTTING MACHINE WITH MASS FLOW CONTROLLED SUPPLY TO THE CUTTING BURNER
Horst K. Lotz, Hofheim-Wallau, Fed. Rep. of Germany; Glyndwr Manning, Burton Upon Trent, Great Britain, and Mattias Lotz, Wiesbaden-Delkenheim, Fed. Rep. of Germany, assignors to GeGa Corporation, Carnegie, Pa.
Filed Jan. 10, 1992, Ser. No. 818,625
Int. Cl.[5] B23K *7/00*
U.S. Cl. 266—74 **7 Claims**



1. An Oxy-cutting machine, comprising:
a cutting burner;
separate supply line for supplying heating gas, heating oxygen and cutting oxygen to said cutting burner;
a pressure reducer on said heating gas supply line;
a pressure reducer connected to said oxygen supply lines and having a first outlet connected to said cutting oxygen supply line and a second outlet connected to a heating oxygen mass flow control valve; and
said heating oxygen mass flow control valve includes a body having a gas inlet, a first chamber in communication with said gas inlet, a second chamber, a gas outlet in communication with said first chamber, and a valve passage connecting said second chamber and said gas outlet, a flexible diaphragm positioned between said first chamber and said second chamber and preventing unrestricted flow of gas between the two chambers, a compensation opening positioned in said diaphragm and permitting restricted flow of gas through the diaphragm between the two chambers, a cock opening connecting said first chamber and said outlet, a cock piece connected to an underside of said diaphragm and positioned to be received into said cock opening, spring means urging said cock piece into said cock opening, a first end of said spring means in communication with an upper surface of said diaphragm, and adjustable spring stop means positioned above and in communication with a second end of said spring means opposite said end in communication with said diaphragm for adjustably positioning said second end of said spring means, whereby gas pressure differential between said first chamber and said second chamber will urge said diaphragm to move against the spring means and lift said cock piece out of said cock opening to allow gas to flow from said lower chamber to said gas outlet.

5,308,043
TOP SUBMERGABLE LANCE
John M. Floyd, Upper Beaconsfield; Kok T. Wong, Burwood, and Ian L. Chard, Cranbourne, all of Australia, assignors to Ausmelt Pty. Ltd., Australia
Filed Sep. 18, 1992, Ser. No. 947,771
Claims priority, application Australia, Sep. 20, 1991, PK8457
Int. Cl.[5] C21C *5/32*
U.S. Cl. 266—78 **15 Claims**

1. A top-submergable injection lance, for top submerged injection into a metallurgical bath, wherein the lance has an elongate conduit which, relative to the orientation of the lance in use, extends from an upper end inlet section to a lower, process fluid discharge end; the conduit defines a longitudinal bore extending therethrough from the inlet section, to an opening defined at the process fluid discharge end by an annular tip member mounted on the conduit, such that reactants for top submerged injection can be supplied through the bore; the conduit, between the inlet section and the discharge end, comprises an inner pipe which defines the bore, and an outer pipe, with an annular volume defined between the inner and outer pipes; the conduit is provided at, or adjacent to, the inlet section with a first and a second connector each communicating with the annular volume, with the first and second connectors adapted for respective connection to a coolant fluid supply line and a coolant fluid discharge line; wherein the lance further includes a third pipe which is intermediate the inner and outer pipes and divides the annular volume into an inner and an outer annular chamber with the third pipe extending from the inlet section and terminating a relatively short distance above the process fluid discharge end such that the chambers are in communication at the process fluid discharge end; each connector communicates with a respective one of the chambers, such that, in use, coolant fluid is able to flow from the first connector, through one of the chambers to the discharge end of the lance, and then return through the other of the chambers



for discharge through the second connector; the tip is made of a suitable alloy steel and has a solid annular form defined by inner and outer peripheral surfaces, which merge at a sharp lower edge of the tip, and by a top surface which extends between the outer and inner peripheral surfaces; the annular tip at the process fluid discharge end of the conduit is connected at said top surface thereof to the lower end of each of the inner and outer pipes, around the circumference of those pipes, so as to be contacted by coolant fluid flow through said chambers; said frusto-conical inner peripheral surface providing a continuation of the bore, from the inner pipe to the opening, which is of increasing cross-section from the inner pipe to the opening; and wherein the lance further includes a shroud pipe around the conduit, over an upper part of the length of the latter from the inlet section, the shroud pipe defining an upper region shroud gas discharge passage between the shroud pipe and the outer pipe of the conduit, and wherein the shroud gas discharge passage being closed at the upper end of the shroud pipe and open at the lower end of the latter at a level spaced from the tip; the shroud pipe having a connector which communicates with the discharge passage and which is connectable to a supply of pressurized shroud gas such that, in use, shroud gas is able to be discharged into the furnace space, above the slag bath, during the course of top submerged injection of reactants into the bath.

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5,308,044

BORON NITRIDE CERAMICS AND MOLTEN METAL CONTAINER PROVIDED WITH MEMBERS MADE OF THE SAME CERAMICS

Masazumi Nakashima; Mitsunori Kusumoto; Sumihiko Kurita; Hiroshi Nakamura; Katsumi Ura, and Akira Murata, all of Saga, Japan, assignors to Kabushiki Kaisha Kouransha, Saga, Japan

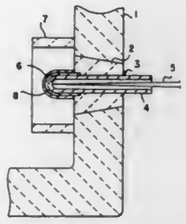
PCT No. PCT/JP88/00453, § 371 Date Jan. 6, 1989, § 102(e) Date Jan. 6, 1989, PCT Pub. No. WO88/08831, PCT Pub. Date Nov. 17, 1988

Continuation of Ser. No. 340,726, Jan. 6, 1989, abandoned. This PCT application May 12, 1988, Ser. No. 747,449

Claims priority, application Japan, May 12, 1987, 62-116627; Jul. 23, 1987, 62-113676; Dec. 21, 1987, 62-325007

Int. Cl.[5] C21D *11/00*

U.S. Cl. 266—88 **4 Claims**



1. A container structure means adapted to hold molten metal therein comprising;

a container body comprising at least one wall and a bottom, which is adapted to receive and hold said molten metal, and which has at least one hole through at least one wall thereof;

a refractory block replaceably fitted in and through said hole in said wall in a hole-closing condition;

a passageway through said refractory block adapted to allow communication therethrough, to said molten metal;

a protective end cap on the side of said refractory block directed toward said metal substantially covering and sealing said passageway from contact with said metal, which cap is closed at the end thereof directed toward said metal, and which cap has a hollow interior communicating with said passageway; and

thermocouple means disposed in said passageway and in the hollow portion of said end cap; wherein said protective cap consists essentially of a ceramic material having a high bending strength, which consists essentially of: at least 50 percent by weight boron nitride; at least 1 percent, but less than 50 percent, by weight aluminum nitride; and 1 to 10 weight percent, sufficient to increase the bending strength of said ceramic to at least about 5 kg/mm^2 of yttrium oxide, based on the weight of aluminum nitride;

said protective cap having been made by sintering at normal pressures, a composition comprising at least 20 weight percent of at least one of amorphous boron nitride and boron.

5,308,045

SCRAP MELTER IMPELLER

Paul V. Cooper, 8389 Sherman Rd., Chesterland, Ohio 44026

Filed Sep. 4, 1992, Ser. No. 939,482

Int. Cl.[5] C22B *9/00*

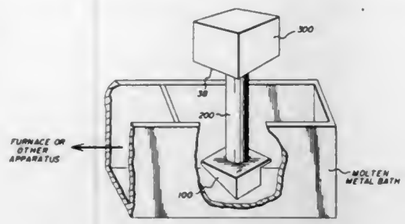
U.S. Cl. 266—235 **17 Claims**

1. A scrap melter impeller to be submerged into a molten metal bath, comprising:

a rectangular block of refractory material, said block having a flat upper surface and a formed lower surface, wherein said formed lower surface includes:

a first section disposed in a central portion of said block, said first section having an even thickness from a first side of the impeller to a second side of the impeller;

a second section adjacent to said first section, said second section being tapered from a thin section at the first side of said metal block to a thick section at the second side of the block, said thickness of said second section at said second side corresponding to the thickness of said central portion; and said formed lower surface also includes



a third section adjacent to and on an opposite side of said first section from said second section, said third section tapering from a thick section at the first side of the impeller where a thickness of said third section corresponds to the thickness of the central portion, to a thin section at the second side of the impeller.

5,308,046

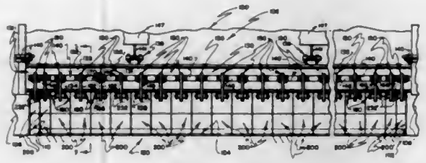
INSULATED FURNACE DOOR SYSTEM

Gary L. Cohle, R.D. #2, Box 214, DuBois, Pa. 15801

Continuation-in-part of Ser. No. 609,643, Nov. 6, 1990, Pat. No. 5,048,802, which is a continuation-in-part of Ser. No. 373,672, Jun. 28, 1989, abandoned, which is a continuation of Ser. No. 213,699, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 907,473, Sep. 15, 1986, Pat. No. 4,755,236, which is a division of Ser. No. 732,400, May 9, 1985, Pat. No. 4,611,791, which is a continuation-in-part of Ser. No. 456,823, Jan. 10, 1983, Pat. No. 4,516,758. This application Apr. 30, 1991, Ser. No. 693,346

Int. Cl.[5] C21D *1/06*

U.S. Cl. 266—263 **64 Claims**



1. An energy efficient entry door system for admitting elongate articles to a treatment chamber wherein a temperature substantially different from that of ambient air is maintained, with the entry door system serving to open and close at least a selected portion of a substantially horizontally extending entry opening that communicates from outside of the treatment chamber to inside the treatment chamber, comprising:

a) support means including structure extending substantially horizontally at a location near the outside the entry opening along such upper structure as defines the top of a portion of an entry opening portion is to be opened and closed by the entry door system;

b) door component means including a plurality of door components i) for being pivotally connected to the support means and ii) for depending substantially vertically therefrom in a manner that causes the door components to normally be biased by gravity toward a closed position of engagement with such lower structure as defines the bottom of said portion of the entry opening;

c) connection means i) for establishing a pivotal connection between the door component means and the support means to enable the door component means to pivot about a substantially horizontal axis that extends substantially parallel to the support means at a location that is outside the entry opening, ii) for positioning said plurality of door components so as to extend in a substantially contiguous, side-by-side array that bridges the horizontal length of said portion of the entry opening, and iii) for enabling the door components to pivot independently between their "closed" positions and "open" positions that enable an elongate article to move along a path of travel that extends from outside then entry opening through the bottom of said portion of the entry opening and into a treatment chamber that is located inside the entry opening; and,

d) wherein each of the door components has a rigid backing member that includes i) upper end region means for defining an upper end region that is connected by the connection means to said support means, ii) lower end region means for defining a lower end region that engages said lower structure when the door component is closed, and iii) central region means for defining an inwardly curved, outwardly convex central region that extends progressively inwardly as it extends from its connection with the upper end region to its connection with the lower end region, with said lower end region means being configured to cause the lower end region to be positioned relatively inwardly with respect to the entry opening at all times regardless of whether the door component is "closed" or "open," with said upper end region means being configured to cause the upper end region to be positioned relatively outwardly with respect to the entry opening at all times regardless of whether the door component is "closed" or "open," and with said central region means being configured so that the central region defines outwardly facing engagement surface means that extends at least partially through the furnace entry opening for being engaged by an elongate article that is being moved through the entry opening, with said engagement surface being inclined inwardly as it extends at least partially through the furnace entry opening so that as the elongate article is moved through the entry opening, the engagement of the elongate article with the engagement surface causes the door component to pivot open and to remain open only to the extent needed to permit passage through the entry opening of the elongate article.

5,308,047

MACHINE FOR PIERCING A TAPHOLE FOR A SHAFT FURNACE

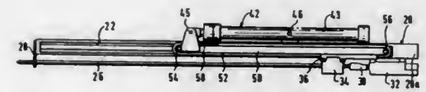
Emile Lonardi, Bascharage; Jean Metz, Pierret; Pierre Mailliet, Drosbach; Guy Thillen, Diekirch; Radomir Andonov, Mamer, all of Luxembourg, and Philippe Malivoir, Thionville, France, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Jan. 22, 1993, Ser. No. 8,129

Claims priority, application Luxembourg, Jan. 27, 1992, 88060

Int. Cl.[5] C21C *5/48*

U.S. Cl. 266—271 **13 Claims**



1. Machine for piercing a taphole for a shaft furnace, according to a method in which, after having plugged the taphole with taphole clay, a metal rod is driven into this clay, before it has fully hardened, and it is extracted, at the desired time, with a view to opening the taphole, the machine comprising:

a mounting having a front and a rear;

a front support for supporting the rod at the front of the mounting;

a sliding rear support for supporting the rod at the rear of the mounting;

a first clamp, mounted in a sliding manner on the mounting, the rod passing axially through said first clamp, said first clamp including means for gripping the rod at any place between said front support and said rear support;

a jack having a travel distance C, the distance C being less than the length of the rod, said jack mounted on the mounting;

a travel multiplier connected between the jack and the first clamp so that the first clamp may be moved by said jack over a distance 2C along the mounting, the distance 2C being two times the travel distance C of the jack; and

control means for controlling the jack in order to move the first clamp in a to-and-fro motion between a position (B) at the front of the mounting and a position (A) which is located at a distance L from the position (B), the distance L being less than the length of the rod.

5,308,048

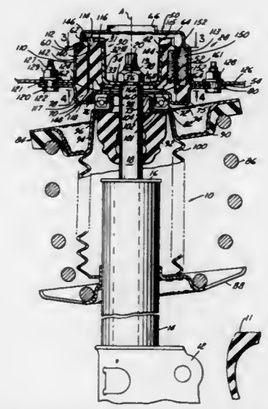
FRONT SUSPENSION STRUT UPPER MOUNT

Michael S. Weaver, Madison Heights; Donald A. Spravsow, Sterling Heights, and Robert L. Carter, Gibraltar, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 30, 1993, Ser. No. 129,478

Int. Cl.[5] B60G *13/00*

U.S. Cl. 267—220 **7 Claims**



1. An upper mounting assembly for a suspension shock absorber strut operatively connected between sprung and unsprung masses of a vehicle about the principal axis of the strut, the strut provided with a piston rod adapted for reciprocal movement along the strut axis, the mounting assembly comprising:

a composite isolator mount comprising a central inner metal cup, an outer elastomeric ring and a metal spring rate sleeve, said cup has a bottom wall and an upstanding annular side wall of predetermined axial dimension substantially equal said ring whereby said side wall is concentrically surrounded by an bonded to an inner surface of said ring;

said ring having an upper radially outer upper periphery defining an annular end face and an upper inner periphery defining an annular raised jounce collar, said ring having a lower outer periphery formed with an integral concentrically depending tubular extension in axially opposed

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conformity with said upper annular end face, and said ring having a lower inner periphery formed with an integral radially inwardly extending rebound collar bonded to an underside of said cup bottom wall;

said cup bottom wall formed with a central hole adapted to receive therethrough the piston rod upper end for attachment to said cup, said cup side wall having an upper open end terminating in an annular radially outwardly extending stop flange embedded in said ring upper jounce collar;

said mounting assembly further comprising an outer housing concentrically disposed about the principal axis defined by upper and lower one piece metal closures, said upper closure having a cylindrical outer wall having a lower open end terminating in a radially outward flanged brim, said ring sized for reception in said upper closure so as to be surrounded in a radially press-fit manner by said outer wall, said outer wall terminating at its upper end by a radially inward internal stepped shoulder and an axially extending riser, said riser terminating in a radial inward cap web having a central access aperture therein;

said lower closure defined by a radial disposed circular disc bordered by a U-sectional channel having interior and exterior axially extending channel walls joined at their lower ends by a radial disposed bight wall, said exterior channel wall of a predetermined diameter equal to said upper closure outer wall and terminating at its upper end in a radial outward terminal flange, whereby said closures providing a housing for said composite mount upon an undersurface of said upper closure flanged brim secured in flatwise contact with an upper surface of said lower closure terminal flange;

said composite mount configured and sized such that upon being received in said upper and lower closure housing with said ring upper end face abutting said upper closure internal shoulder and said tubular extension press-fitted in said lower closure channel with a free lower end face of said tubular extension abutting said bight wall causing said composite mount to be resiliently compressed within said housing by means of a predetermined axial pre-load;

said jounce collar spaced a determined axial extent from an underside of said cap web and said rebound collar spaced a determined axial extent from an upper side of said disc with said piston rod in a predetermined neutral design state;

said spring rate sleeve concentrically embedded in said ring so as to divide said ring into radial outer and inner ring body portions of substantially equal radial extent; and

wherein said outer body portion formed with a first pair of diametrically opposed axially extending blind voids having an opening in said ring upper end face, and said inner body portion formed with a second pair of diametrically opposed axially extending blind voids having an opening in said ring lower end face, whereby said mounting assembly provides selective spring rates for stiffening lateral vehicle motion while softening longitudinally imposed impact loads.

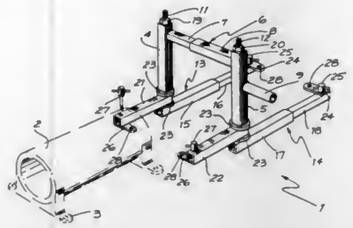
5,308,049

TRANSMISSION HOLDING JIG

Alan R. Swan, Unit 10/113 Hunter Street, Hornsby, New South Wales 2077, Australia

Filed Nov. 24, 1992, Ser. No. 981,134
Claims priority, application Australia, May 24, 1990, PK0320
Int. Cl.[5] B23Q *1/00*
U.S. Cl. 269—51 **7 Claims**

1. A jig for holding a transmission casing provided with boltholes for mounting the casing to the jig, the jig comprising a pair of upright stanchions coupled together via an extendible cross-bar, a first lateral arm provided at the base of each stanchion, each first arm being rotatable about an axis passing longitudinally through the stanchion and a second lateral arm provided at the base of each stanchion adjacent and parallel to the first arm and rotatable about the same axis, each of the first and second arms having a bracket rotatably attached to an end of the respective arm with the brackets being arranged so as to lie substantially in the same plane, whereby boltholes in different size casings can be aligned with boltholes provided in the brackets by appropriately extending the cross-bar and the first arms and by rotating the arms and brackets.

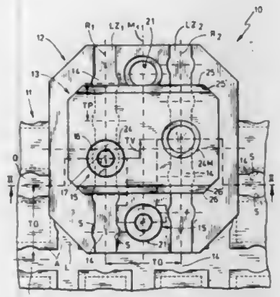


5,308,050

MOUNTING SYSTEM FOR MACHINE TOOLS AND THE LIKE

Harald Schröder, Lüdenscheid, Fed. Rep. of Germany, assignor to Hasco-Normalien Hasenclever GmbH & Co., Ludenscheld, Fed. Rep. of Germany

Filed Nov. 24, 1992, Ser. No. 990,623
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139522
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 269—309 **9 Claims**



1. A mounting system for machine-tool applications, comprising:

a mounting plate defining a support plane and formed with mutually parallel longitudinal and transverse spaced-apart rows of centering holes forming a matrix array of said holes with a common unit spacing of the holes along said rows and between said rows;

at least one mounting element on said mounting plate, resting on said support surface and provided with at least a pair of centering fasteners engageable in respective ones of said holes of said mounting plate and centered therein, said mounting element defining a mounting plane for a workpiece and having at least two spaced apart mutually parallel rows of centering holes spaced apart along the respective rows by a uniform spacing of one-half said unit spacing, the centering holes of one of said rows of said mounting element being longitudinally offset from the centering holes of the other of said rows of said mounting element by a distance of one-quarter of said unit spacing; and

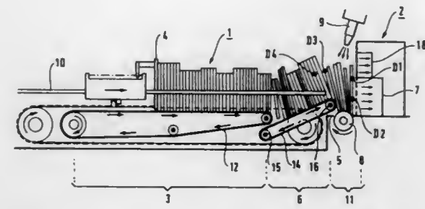
a positioning element resting upon said mounting plate and having a pair of mutually parallel opposite positioning surfaces substantially perpendicular to said mounting plane, said positioning element being formed with two countercentering holes positioned to register with two directly neighboring centering holes of two of said rows of said mounting element and receiving respective fasteners traversing the countercentering holes of said positioning element and the centering holes of the mounting element registering therewith, one of said countercentering holes having an axis located midway between said positioning surfaces while the other countercentering hole is offset from a plane of said axis midway between said positioning surfaces by one-quarter of said unit spacing toward one of said positioning surfaces.

5,308,052

DEVICE FOR FEEDING A STACK OF FLAT ARTICLES ON EDGE TO DE-STACKER HEAD OF AN AUTOMATIC SORTING MACHINE AND A METHOD OF OPERATING THIS DEVICE

Olivier Roch, Valence; Louis Sabatier, Montelier, and Jean-Marc Teluob, Valence, all of France, assignors to Compagnie Generale d'Automatisme CGA-HBS, Bretigny sur Orge, France

Filed Mar. 19, 1993, Ser. No. 34,472
Claims priority, application France, Mar. 27, 1992, 9203723
Int. Cl.[5] B65H *1/02*
U.S. Cl. 271—2 **4 Claims**



1. A device for supplying individual flat articles, said device comprising:

a) a first feed magazine (3) extending substantially horizontally between first upstream and downstream ends thereof, said first feed magazine receiving a stack of flat articles placed on edge thereon and including means for displacing the flat articles of the stack towards said first downstream end at a first feed speed;

b) a second feed magazine (6) downstream of said first feed magazine and extending obliquely upwardly between second upstream and downstream ends of said second feed magazine, said second feed magazine receiving a pack of flat articles placed on edge thereon, supplied by said first feed magazine, said pack being generally smaller than the stack of flat articles, said second feed magazine having means (14) for displacing the flat articles of the pack towards said second downstream end thereof at a second feed speed;

c) a third feed magazine (11) downstream of said second feed magazine and extending substantially horizontally between third upstream and downstream ends of said third feed magazine, said third feed magazine receiving flat articles disposed on edge thereon supplied by said second feed magazine, and wherein:

d) the downstream end of the first feed magazine is disposed above the upstream end of the second feed magazine to create a first drop of said flat articles and the upstream end of said third feed magazine is disposed below the downstream end of the second feed magazine to create a second drop of said flat articles for causing said flat articles disposed on the second, upwardly inclined feed magazine to be inclined rearwardly with respect to a vertical direction;

e) first sensor means for detecting the presence or absence of said flat articles on said third feed magazine and second sensor means for detecting an inclined presentation of said flat articles on said second upwardly inclined feed magazinc;

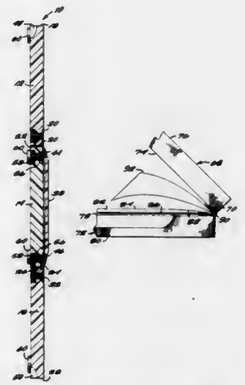
f) said first and second sensor means being operatively connected to said first and second feed magazines for controlling independently the first and second feed speeds of said flat articles so as to maintain a correct filling level of said third feed magazine along with a correct rearwardly inclined presentation of said flat articles on said second feed magazine.

5,308,051

DEVICE FOR FOLDING SHEETS OF PAPER

Gordon Spitzmesser, 535 Sewanee Ave., Cayce, S.C. 29033

Filed Nov. 10, 1992, Ser. No. 974,258
Int. Cl.[5] B31B *1/26*; B31F *1/00*
U.S. Cl. 270—45 **18 Claims**



1. A device for folding sheets of paper, said device comprising:

a first member;

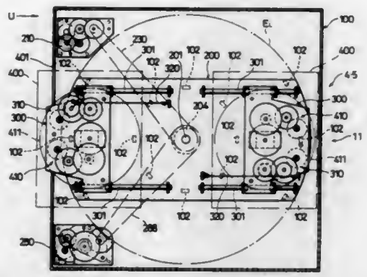
a second member;

hinge means for attaching said first member to said second member so that said first member can rotate about an axis with respect to said second member;

a laminar member having an edge, said laminar member attached to said first member so that said edge is just off said axis, said laminar member carried by said first member so that said sheet of paper can be placed between said laminar member and said first member with a portion of said paper extending beyond said first member to said second member, said laminar member creasing said sheet of paper when said second member is rotated about said axis with respect to said first member.

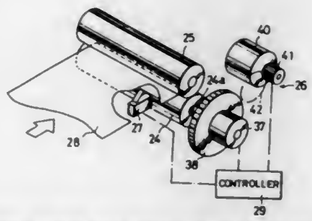
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,053
ROTATABLE CASSETTE-TYPE PAPER FEEDING APPARATUS
Hirotaka Toki, Kashihara; Hiranaga Yamamoto, Nara; Osamu Wakuda, Yamatotakada, and Hiroyuki Nagao, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 5, 1992, Ser. No. 846,173
Claims priority, application Japan, Mar. 8, 1991, 3-043798
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 **16 Claims**



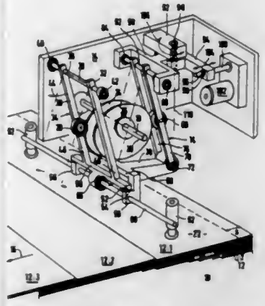
1. A rotatable cassette-type paper feeding apparatus, comprising:
a tray;
a turning member mounted rotatably on said tray;
first rotating means for rotating said turning member;
a plurality of paper cassettes installed rotatably on said turning member;
second rotating means for rotating said paper cassette located in a paper feeding side; and
controller means which controls said first rotating means to interchange said paper cassette in the paper feeding side and said paper cassette in a non-paper-feeding side, and said second rotating means to switch a position of said paper cassette in the paper feeding side between sideways and lengthways.

5,308,054
PAPER FEEDING DEVICE HAVING PAPER HAND FEED PATH
Takashi Sugito, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 1, 1992, Ser. No. 907,354
Claims priority, application Japan, Jul. 4, 1991, 3-164207
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 **3 Claims**



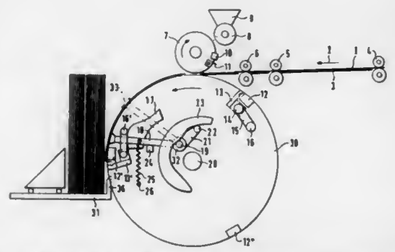
1. A paper feeding device used in an image forming apparatus for feeding a sheet of paper into a main body of the image forming apparatus in response to a print request sent from the main body, said device comprising:
a paper hand feed path onto which a sheet of paper is to be supplied by an operator;
an automatic paper feed path onto which a sheet of paper is to be supplied automatically;
a first roller couple disposed at said paper hand feed path for feeding a sheet of paper to the main body, said first roller couple including an upper roller and a lower roller;
a drive section for driving said first roller couple;
a paper feed detection switch disposed downstream of a junction of said paper hand feed path and said automatic paper feed path and in front of said first roller couple for detecting a sheet of paper supplied into said paper hand feed path and generating a detection signal upon detection of a sheet of paper;
a controller connected to receive said detection signal for controlling in response to said detection signal said drive section such that said first roller couple feeds a supplied sheet of paper by inserting a leading edge thereof into said first roller couple to set said leading edge between said upper and lower rollers and said supplied sheet of paper is kept where it is until receiving the print request; and
a second roller couple to be driven by said drive section disposed at said automatic paper feed path;
said controller controlling said drive section in response to the print request such that said first and second roller couples feed a sheet of paper from a paper tray to the main body in the absence of a sheet of paper in said paper hand feed path.

5,308,055
TRAILING NOZZLE DEVICE FOR FAST PAPER FEEDERS
Georg Binnen, Obersulm, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany
PCT No. PCT/DE91/00160, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/13822, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 27, 1991, Ser. No. 924,045
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1990, 4006635
Int. Cl.[5] B65H *5/08*
U.S. Cl. 271—15 **8 Claims**



1. A tractor nozzle device for a fast running sheet feeder, said tractor nozzle device comprising:
a front rocker supported at an upper end by a first support shaft for oscillating motion;
a first cam roller carrier by said front rocker
a first cam plate supported on a rotatable drive shaft, said first cam plate being in contact with said first cam roller;
a support bridge having a front end which is connected to a lower end of said front rocker;
a support device for a rear end of said support bridge, said support device including a rear rocker supported at an upper end by a second support shaft and having a lower end connected to a rear portion of said support bridge by a rubber-metal bushing and permitting back and forth oscillating movement of said support bridge;
a second cam roller carried by said rear rocker;
a second cam plate supported on said rotatable drive shaft, said second cam plate being in contact with said second cam roller;
spaced traction aspirators seated on a cross bar, said cross bar being pivotably seated in said lower end of said front rocker by a rubber-metal bushing; and
means for performing a deflection movement of said cross bar and said traction aspirators by causing said rear portion of said support bridge to move in a direction generally crosswise to said back and forth movement of said support bridge, said rubber-metal bushings facilitating said back and forth movement and said deflection movement of said support bridge and said support device.

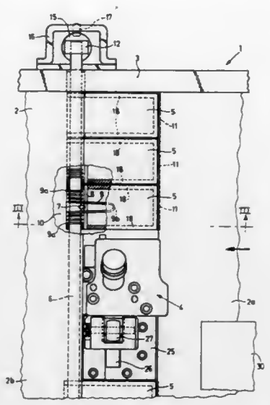
5,308,056
APPARATUS FOR STACKING FLAT WORKPIECES ON A STACKING TABLE
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Jul. 15, 1992, Ser. No. 913,420
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1991, 4123399
Int. Cl.[5] B65H *29/68*
U.S. Cl. 271—183 **5 Claims**



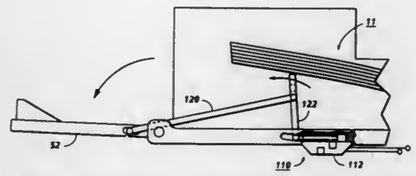
1. An apparatus for stacking flat workpieces, comprising a rotary transport cylinder provided with holding tongs for the workpieces, a stacking table adjacent the transport cylinder, means for opening the holding tongs before reaching the stacking table so as to release the workpieces, and movable suction means for taking the workpieces over from the holding tongs, decelerating the workpieces and placing same on the stacking table at a lower speed than the peripheral speed of the transport cylinder, wherein the suction means comprises at least one suction pipe provided at its end with a suction nozzle and pivotally mounted on the transport cylinder about a swivel axis which is eccentric with respect to a rotation axis of the transport cylinder parallel thereto, and control means for said at least one pipe for providing a decelerating swivel movement for decelerating the workpieces superimposed on the rotary transport cylinder.

5,308,057
FEED TABLE OF A SHEET-FED PRINTING PRESS
Peter Thoma, Mannheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed Jul. 10, 1992, Ser. No. 911,463
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122770
Int. Cl.[5] B65H *9/16*
U.S. Cl. 271—248 **9 Claims**

1. Method of forming and varying at least one of size and location of a pass-through opening extending transversely to a sheet-feeding direction in a table top of a feed table of a sheet-fed printing press, which comprises providing a plurality of adjustable table-top elements disposed transversely to the sheet-feeding direction at the pass-through opening, and varying the position of the table-top elements with respect to the table top of the feed table.



5,308,058
MAILBOX SECURITY DOOR WITH AUTOMATIC SET LIFTER
Barry P. Mandel, Fairport, N.Y.; Michael K. Sabocheck, Pottstown, Pa.; Richard Van Dongen, Newark, and Harold Halvorson, Jr., Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 25, 1993, Ser. No. 67,494
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—297 **3 Claims**

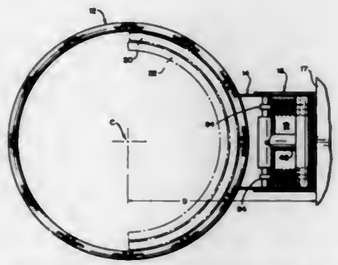


1. In a mailbox system for collecting the job sheet output of a shared user printer by separating and stacking print jobs of output sheets for respective users on stacking trays of respective mailbox bins of a mailbox module with openable and closeable privacy doors on at least some of said mailbox bins, the improvement comprising:
at least one job set lifting member mounted adjacent said stacking tray of a said mailbox bin having a said privacy door thereon;
said job set lifting member being adapted for stacking thereover at least one edge area of said job sheets on the side of said job sheets adjacent said privacy door in said bin;
a connecting element connecting between said privacy door and said job set lifting member for lifting said job set lifting member up substantially above said stacking tray when said privacy door is opened;
said connecting element automatically lifting up said edge area of said job sheets with said set lifting member by a distance sufficient for the user to reach thereunder and manually remove said job sheets from said bin with said privacy door opened;

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said job set lifting member automatically dropping down to adjacent said stacking tray in said bin when said privacy door is closed, for stacking further job sheets thereover;
wherein said mailbox bin has an open privacy door detection sensor which is activated by movement of said job set lifting member when said privacy door is opened.

5,308,059
BASKETBALL PRACTICE ASSEMBLY
Aubrey J. Owen, Jr., P.O. Box 177, Rowley, Mass. 01969, and Henry E. St. Louis, Jr., Georgetown, Mass., assignors to Aubrey J. Owen, Jr., Rowley, Mass.
Continuation of Ser. No. 720,006, Jun. 24, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 590
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **4 Claims**



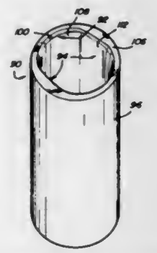
1. A basketball hoop assembly for improving the shooting accuracy of a basketball player, comprising:
a basketball frame support means for attachment to a basketball backboard, and including an articulable slam dunk mechanism;
a plurality of interchangeable basketball hoops, each having a different diameter, each of said hoops having a bracket fixedly secured thereto and adapted to securely engage its respective hoop to said frame support means such that a center point of each different diameter hoop is equidistant from the backboard when any one of said hoops is engaged with said frame support means;
wherein said frame support means further comprises a first axle and a second axle arranged to secure said bracket engaged therewith; and further wherein said first and second axles comprise a pair of pins extending from each end of a tubular housing, each of said pins having a compression means therebetween to bias said pins outwardly so as to effectuate mating engagement between said bracket and said frame support means.

3. A method of improving the shooting accuracy of a basketball player playing the game of basketball, comprising the steps of:
(a) attaching a first basketball hoop of a first diameter and an attached bracket of a first length, to a frame support on a backboard, wherein said basketball hoop has a center point which is a predetermined perpendicular distance from the backboard;
(b) removing said first basketball hoop of said first diameter with its respective bracket of said first length from said frame support;
(c) attaching a second basketball hoop of a second diameter different than said first diameter and a bracket of a second length to said frame support, so that said second basketball hoop has a center point located said predetermined perpendicular distance from the backboard; and
(d) providing a slam dunk mechanism on said frame support so as to allow either of said first and second basketball hoops, when secured to said frame support, to pivot downwardly when a force is applied to said hoop in a downward direction, and to return to a normal horizontal orientation after release of said force; and wherein the method comprises the further steps of
providing longitudinally expandable and contractable axle means for engaging said bracket to said frame support; and
camming one of said axle means in a slot in said frame support so as to control the downward pivoting of said basketball hoop secured therewith.

5,308,060
TENNIS BALL
Masao Nakamura, and Ichiro Tominaga, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jun. 2, 1992, Ser. No. 892,325
Claims priority, application Japan, Jun. 5, 1991, 3-162016
Int. Cl.[5] A63B *39/00*
U.S. Cl. 273—61 B **3 Claims**

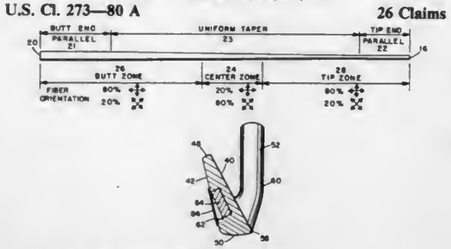
1. A tennis ball comprising a core and a woven felt covering affixed thereto, wherein said felt covering consists essentially of 5 to 50% by weight of a fiber of a polyethylene terephthalate polymer containing at least 90% by mole of recurring units of ethylene terephthalate, 50 to 95% by weight of a wool fiber and 0 to 45% by weight of a nylon fiber, said fiber of polyethylene terephthalate polymer satisfying the following conditions:
(a) hot air shrinkability/intrinsic viscosity of the polymer $\Delta S_{150^\circ C}/IV = 5.0$ to 7.5%,
(b) birefringence $\Delta n_D = 170 \times 10^{-3}$ to 185×10^{-3},
(c) Orientation factor for crystallites fc = 0.935 to 0.950, and
(d) amorphous molecular orientation parameter F = 0.75 to 0.90.

5,308,061
FINGER INSERT FOR A BOWLING BALL
David A. Bernhardt, Utica, Mich., assignor to Davalor Mold Corporation, Mt. Clemens, Mich.
Continuation-in-part of Ser. No. 836,126, Feb. 14, 1992, Pat. No. 5,176,378, which is a division of Ser. No. 648,217, Jan. 31, 1991, Pat. No. 5,123,644, which is a division of Ser. No. 513,443, Apr. 23, 1990, Pat. No. 5,007,640, which is a continuation-in-part of Ser. No. 498,009, Mar. 23, 1990, Pat. No. 5,002,276. This application Dec. 10, 1992, Ser. No. 988,763
Int. Cl.[5] A63B *43/02*
U.S. Cl. 473—127 **8 Claims**



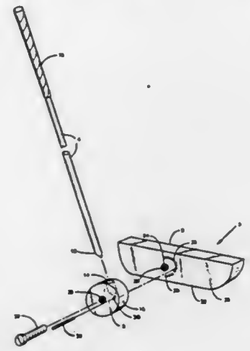
1. An insert for a finger hole in a bowling ball comprising a tubular body adapted to be inserted into the finger hole of the bowling ball and having a bore formed therethrough for defining finger openings at opposite terminal ends of said body which are adapted to receive a bowler's fingertip therein, said bore having an oblong edge profile including a pair of elongated and laterally-spaced arcuate, wall surfaces that are interconnected by a pair of parallel elongated planar wall surfaces.

5,308,062
GOLF CLUB SHAFT AND HEAD ASSEMBLY
Gerald F. Hogan, New South Wales, Australia, assignor to Fundamental Golf Company Pty. Ltd., North Sydney, Australia
Filed Jul. 2, 1992, Ser. No. 907,685
Int. Cl.[5] A63B *53/04, 53/10*
U.S. Cl. 273—80 A **26 Claims**



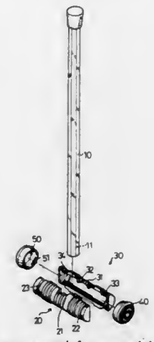
1. A golf club, comprising:
a club head;
an elongated tubular shaft having a tip end secured to the club head and an opposite, butt end for gripping by a player when swinging the club; and
the shaft having a central, flexible zone which spans the central point in the length of the shaft, a butt zone extending from the central zone to the butt end of the shaft, and a tip zone extending from the central zone to the tip end of the shaft, the central zone being of greater flexibility than both the butt and tip zones, and having a length shorter than the length of each of the butt and tip zones to provide a two-lever flail which hinges about the central zone of the shaft only.

5,308,063
ADJUSTABLE GOLF CLUB
John Vendur, 350 Penrod St., Johnstown, Pa. 15902
Filed May 11, 1993, Ser. No. 60,609
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.1 **11 Claims**



1. A golf club comprising:
an elongated handle having a grip end and a lower end;
a club head support secured to said lower end of said handle;
a club head having a generally planar striking face and a bottom surface, said club head being pivotally secured to said club head support on a pivotal axis generally perpendicular to said striking face, whereby angular orientation between said handle and said bottom surface is selectively adjustable in a plane generally parallel to said striking face between positive and negative inclinations from perpendicular with respect to said bottom surface; and
detent means engaging said club head and said club head support and operative for selectively maintaining the angular orientation between said handle and said bottom surface, said detent means including a plurality of angularly spaced apertures in said club head, and a locking pin positioned to engage said club head support and individually engage said apertures to selectively maintain the angular orientation between said handle and said bottom surface.

5,308,064
CROQUET STICK
Lin C. Jen, No. 82, Trong Wu Road, Trong We Hson, I-Lan, Taiwan
Filed Jun. 24, 1993, Ser. No. 82,204
Int. Cl.[5] A63B *59/10*
U.S. Cl. 273—83 **2 Claims**



1. An improved croquet stick comprising:
a stick with an octagonal cross section and with an opening in a side near a lower end;
a head comprised of two half portions generally semi-circular in cross section and two cases to cover ends thereof; wherein
two corresponding polygonal recesses are located in inner surfaces of the two half portions to receive said stick, the stick being secured to the head by means of a pillaret which protrudes from one of the half sections of the head and is received by the opening in the stick, the two half sections of the head being bonded securely together to form a single element to strike a ball.

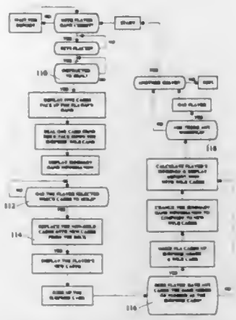
5,308,065
DRAW POKER WITH RANDOM WILD-CARD DETERMINATION
James L. Bridgeman; Nancy L. Bridgeman; Lance F. Bridgeman; Jerry K. Bridgeman; Stephanie A. Bridgeman, and Robert J. Bridgeman, all of 9582 Hamilton Ave., Huntington Beach, Calif. 92646
Filed Sep. 21, 1992, Ser. No. 948,026
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—85 CP **20 Claims**

8. A method of playing a game of chance utilizing a computerized video-game apparatus capable of generating and displaying images of playing cards wherein said playing cards can be assembled, according to predetermined rules, into hands having different card combinations, said method comprising the steps of:
a player registering a wager with said computerized video-game apparatus;
said player directing said computerized video-game apparatus to display an original hand of A cards randomly generated from a pool of elements corresponding to a deck of playing cards, where A is an integer, said original hand having a ranking known to said player;
said computerized video-game apparatus displaying guiding means for helping said player to evaluate the ranking of said original set;

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said computerized video-game apparatus displaying a solitary card randomly generated from said pool of elements, said solitary card having a value concealed from said player;

said player having a chance to improve the ranking of said original set by instructing said computerized video-game apparatus to discard up to A cards from said original hand and to replace them with an equal number of cards randomly generated from said pool of elements, thus forming a modified original hand;



said computerized video-game apparatus revealing the value of said solitary card to said player;

said computerized video-game apparatus assigning arbitrary replacement to all cards of said modified original hand which have the same value as said solitary card so that the ranking of said modified original hand is improved; and

said computerized video-game apparatus evaluating said ranking of said modified original hand in accordance with predefined criteria in order to determine whether said player has won or lost said wages.

5,308,066

SPHERICAL PUZZLE TOY

Zoltan Pataki, Zalaegerszeg, Hegyalja U. 20., Hungary; Geza Csomos, Heimhuder Str. 46, D-2000, Hamburg 13, Fed. Rep. of Germany, and Pal Boda, H-8171 Balatonvilagos, Csok Istvan Setany, Hungary

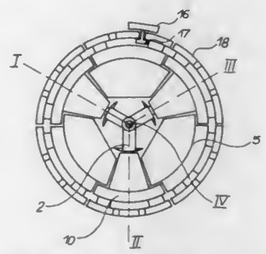
PCT No. PCT/HU90/00056, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO91/03293, PCT Pub. Date Mar. 21, 1991

PCT Filed Jul. 30, 1990, Ser. No. 835,477

Claims priority, application Hungary, Sep. 6, 1989, 4652; Mar. 30, 1990, 4652

Int. Cl.[5] A63F *9/08*

U.S. Cl. 273—153 S **20 Claims**



1. A spherical puzzle toy comprising:

a central member, including four radial shanks defining respective axes intersecting at a common point representing a center of a spherical surface of the puzzle toy;

a first group of four identical bodies respectively secured on said shanks in radial extension thereof, each of said four bodies including an inner portion secured on its respective shank and an outer portion forming a first part of the spherical surface of said puzzle toy, said inner portion having a tapered form with radial surfaces, said outer portion having a spherical, triangular shape;

a second group of bodies slidably supported by said first group of bodies and including inner portions of tapered form with radial surfaces which are slidable on one another and on the radial surfaces of said first group of bodies, said second group of bodies being of two types, one including outer portions of spherical, triangular shape, the other outer portions of spherical square shape, the outer portions of said first and second groups collectively forming said spherical surface of the puzzle toy, said outer portions undergoing relative change of positions on said spherical surface when bodies of said second group are slidably moved relative to the bodies of said first group.

5,308,067

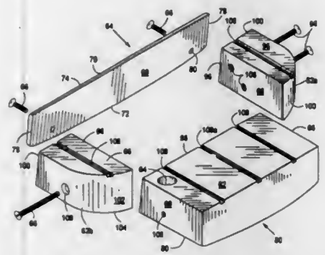
PUTTER HEAD

Raymon W. Cook, 13615 Pebble Way, San Antonio, Tex. 78231

Filed Jan. 11, 1993, Ser. No. 2,598

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—164.1 **16 Claims**



1. A putter head for use with a golf club having a shaft, said putter head having a heel end and a toe end comprising:

a heel weight and a toe weight, said heel weight and said toe weight being of the same composition, similarly shaped and having substantially the same mass;

a frame for maintaining fixed, spatial relation between said heel weight and said toe weight, said frame including an opening for securing said shaft to said putter head;

a face plate having uniform thickness, said face being generally tabular and having a front surface and a rear surface, the front surface and rear surface separated by a perimeter comprising a top edge and a bottom edge and two side edges, said face plate abuttingly attached by a first means for attachment to a first surface of said heel weight and by a second means for attachment to a first surface of said toe weight to form a uniform gap between said frame and said face plate along the entire height of said face plate from said top edge to said bottom edge between said heel weight and said toe weight;

wherein said heel weight, said toe weight, said frame and said face are assembled into a unitary structure defining said putter head wherein 70% of the total weight of said putter head is located within three-quarter inch of said heel end and said toe end.

5,308,068

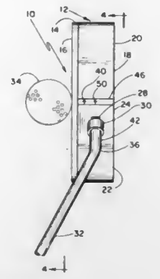
GOLF PUTTER

Allan M. Strand, 4615 W. 28th St., St. Louis Park, Minn. 55416

Filed Jul. 7, 1993, Ser. No. 88,326

Int. Cl.[5] A63B *53/02*

U.S. Cl. 273—164.1 **10 Claims**



1. A golf putter, comprising:

(a) a putter head having a front member including a lower portion and a front plate having a front ball striking surface, said putter head further including a generally horizontally oriented elongated sole plate rigidly secured to said front member lower portion and extending rearwardly of said front member, said sole plate having a heel and a toe portion with an intermediate portion extending therebetween, wherein the thickness of both said heel and toe portions is greater than said intermediate portion to define a heel and toe weight, respectively;

(b) a hosel rigidly secured at a first securing point to said sole plate heel portion and extending upwardly therefrom, said first securing point offset a preselected distance rearward of said front member ball striking surface; and

(c) a shaft rigidly secured to an upper portion of said hosel and extending upward therefrom at a first angle with respect to a vertical reference, said shaft characterized in having a bend defined a predetermined distance above said hosel wherein a portion of the shaft defined above said bend is angled forwardly and intersects an imaginary vertical plane extending upwardly from said front member ball striking surface.

5,308,069

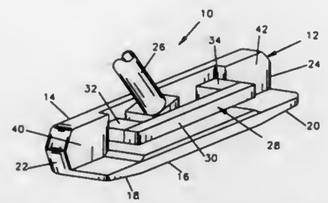
PUTTER APPARATUS FOR THE GAME OF GOLF

Ross A. Paquette, 39 Colburn St., North Attleboro, Mass. 02760

Filed Mar. 19, 1993, Ser. No. 34,483

Int. Cl.[5] A63B *53/02*

U.S. Cl. 273—164.1 **20 Claims**



12. Putter apparatus for use in the game of golf comprising a body having a generally flat, upright blade portion extending along a longitudinal axis from a first toe side through a central portion including the longitudinal center of the body to a second heel side, the body having a back portion, a generally U-shaped shaft attachment bar having first and second legs joined together by a bight portion, the first and second legs attached to the back portion with the bight portion extending generally laterally and being centered relative to the toe side and the heel side and means including a pin mounting block having a longitudinal center attached to the bight portion with the longitudinal center of the block being on the heel side of a plane passing through the longitudinal center of the body and perpendicular to the longitudinal axis to mount the body to the shaft through the first and second legs.

5,308,070

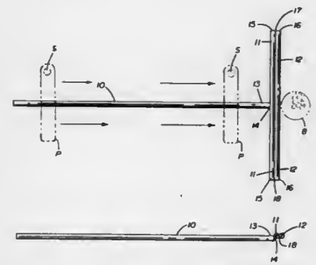
GOLF PUTT PRACTICE DEVICE

Richard E. Whittaker, RD #8 - Box 562, Leawood Dr., New Castle, Pa. 16105

Filed Sep. 18, 1992, Ser. No. 946,562

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—186.1 **5 Claims**



1. A portable device for training a golfer to putt a ball along a target line comprising an elongated straight body member of a length corresponding to that used in exercising a putting stroke therealong and having an upper surface and a shorter body member having a pair of parallel upper surfaces positioned transversely on one end of said elongated body member and elevated with respect to the upper surface of the same and secured thereto, the elevated distance of said shorter body being such as to permit a golf putter head striking face to hit a golf ball positioned on a horizontal surface adjacent said shorter body and in alignment with said elongated member when said device and ball are resting on a horizontal surface and said putter head is stroked horizontally along said elongated member and above said shorter body.

5,308,071

APPARATUS FOR IMPROVING A GOLFER'S PUTTING STROKE

John F. Lewis, P.O. Box 363, Hudson Heights, Quebec, Canada J0P 1J0

Filed Dec. 9, 1992, Ser. No. 987,630

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—187.2 **16 Claims**

1. Apparatus for assisting a golfer while putting comprising, in combination:

an extension adapted to be attached to a grip of a gulf putter, the extension extending beyond a top end of the grip when attached thereto in a predetermined orientation and having a free end which terminates in a guide member with opposed guide surfaces, at least one of the guide surfaces being planar, the planar surface being aligned at right angles to a face of the putter when the extension is attached to the grip in the predetermined orientation; and

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a guide means with means for attachment to a waist of the golfer, the guide means including a slot for slidably ac-



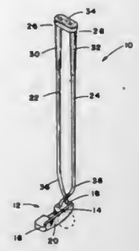
commodating the guide member to direct the putting stroke in a predetermined plane.

5,308,072
GOLF CLUB COUNTERWEIGHT APPARATUS
Anthony J. Pettinelli, 6377 Elmer Hill Rd., and Carl Heim, Jr., 7328 Coleman Mills Rd., both of Rome, N.Y. 13440
Filed Apr. 12, 1993, Ser. No. 44,763
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.4 **5 Claims**



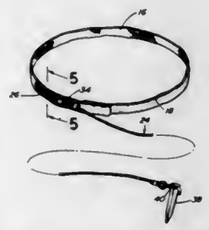
1. A golf club counterweight apparatus, comprising,
an elongated shank, the shank including a golf club head at a first end of the shank, and a handle mounted to the shank extending along the shank to a shank second end, with the handle including a handle free end, and
the golf club head including a head forward end and a golf club rear end positioned on opposed sides of the shank, and
a rigid J-shaped support rod directed into the shank medially of and coaxially aligned relative to the shank and the handle and extending from the handle free end, the support rod having a support rod first leg, and the handle having a handle bore coaxially aligned with the handle and the shank and receiving the first leg, and
an arcuate intermediate leg extending from the first leg and a second leg extending from the arcuate intermediate leg, the second leg including a counterweight mounted to the second leg spaced from the intermediate leg at a second leg free end, wherein the counterweight and the second leg are joined together at a junction, with the counterweight positioned over the golf club head rear end.

5,308,073
GOLF PUTTER
Carl T. McKoon, 1501 Knightsbridge Ct., Winston-Salem, N.C. 27127, and Michael T. McKoon, 845 Apt. E, Stadium Dr., Wake Forest, N.C. 27587
Filed Jun. 21, 1993, Ser. No. 78,649
Int. Cl.[5] A63B *69/36, 53/02, 53/14*
U.S. Cl. 273—187.4 **5 Claims**



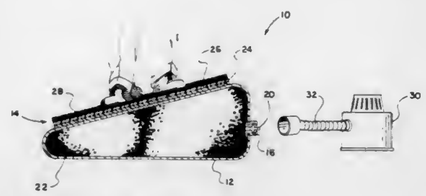
1. A golf putter comprising: a putter head having an elongated body with a striking side and a back side, a heel portion, a toe portion, and a putting face for striking a golf ball; substantially parallel shafts extending from the putter head each having a gripping section adapted to be gripped by one of the golfer's hands to move the golf putter; and a connector joining the gripping sections, each of the parallel shafts having a straight portion and a bent portion proximate to the putter head, the parallel shafts joining the putter head elongated body in a plane parallel with the longitudinal axis of the elongated body, one shaft having the bent portion extending from the elongated body and away from the striking side and the other shaft having the bent portion extending from the body and away from the back side.

5,308,074
ADJUSTABLE GOLF SWING TRAINING DEVICE
Dennis R. Dorotinsky, 23241 Prospect, Farmington, Mich. 48336, and Kenneth G. Lesson, 7002 Timberview Trail, W. Bloomfield, Mich. 48322
Continuation of Ser. No. 812,735, Dec. 23, 1991, Pat. No. 5,188,366. This application Nov. 19, 1992, Ser. No. 963,117
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] A63B *69/36, 21/12*
U.S. Cl. 273—188 R **1 Claim**



1. A golf swing training device to be affixed between a golfer and a ground mass for guiding a golfer from an address position to a back swing and through a down swing, comprising:
an adjustable belt for encircling said golfer's waist, said belt including an elongated material strip having an inner surface with a plurality of hook members extending from at least a portion thereof and an outer surface having a plurality of loop members extending from a substantial circumferential extent thereof, such that said belt may be adjustably affixed to the golfer by the interlocking engagement of said hook and loop members;
a ground anchoring stake for affixing said training device to said ground mass;
a resilient cord having a first end affixed to the ground anchoring stake and a second end adjustably affixable to the belt to set a first bias thereon where said golfer is in said address position, the resilient cord being stretchable during said back swing to create a second bias on the belt sufficient to guide said golfer through said down swing with proper hip turn and body rotation; and
fastening means for adjustably engaging and removably fastening said resilient cord to said belt when said golfer is in said address position; said fastening means comprising an elongated material strip having an inner surface and an outer surface, the material strip affixed to said resilient cord second end and having a plurality of hook members extending from at least a portion of one surface of said strip for engaging select loop members on the outer surface of said belt so that the resilient cord second end is adjustably affixed to said belt.

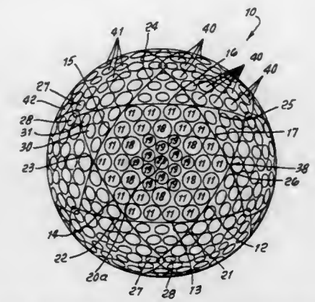
5,308,075
CONFIGURABLE GOLF PRACTICE MAT
Joseph H. Theriault, 424 Emerson Dr., Raleigh, N.C. 27609
Filed Feb. 22, 1993, Ser. No. 20,757
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 A **7 Claims**



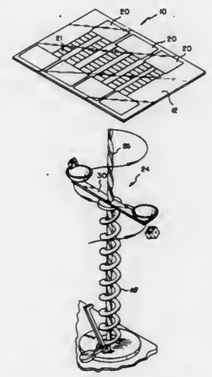
1. A golf practice aid comprising:
(a) a pliable bag;
(b) a granular media filling the bag;
(c) a flexible practice mat secured to the outside of the bag and defining a practice area; and
(d) a valve in said bag for admitting air into and extracting air from said bag; and
(e) a vacuum device connectable to said valve for extracting air from said bag so that the bag conforms to the shape of the granular media contained therein and provides a relatively rigid support underlying said flexible mat.

5,308,076
GOLF BALL WITH POLAR REGION UNINTERRUPTED DIMPLES
Donald J. C. Sun, 4521 Ocean Valley La., San Diego, Calif. 92130
Filed Jan. 19, 1993, Ser. No. 5,453
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 **10 Claims**

1. In a golf ball characterized by enhanced flight distance and enhanced aerodynamic symmetry, the ball having a generally spherical surface with patterns of dimples thereon, the improvement comprising:
a) the ball having a main axis and opposite surface polar regions associated with said axis,
b) there being six geodesic lines defining a spherical hexagon bordering each said polar region, said axis being at the center of said hexagons,
c) there being at least three groups of dimples associated with each said hexagon, all of the dimples of said groups being completely within said spherical hexagon,
d) the dimples of each group having the same diameter, the dimples of one group having diameters d_1, the dimples of the second group having diameters d_2, and the dimples of the third group having diameters d_3, and
e) the dimples of each group arranged symmetrically about said axis, said geodesic lines also intersect to form six like isosceles spherical triangles respectively adjacent the six sides of each said hexagon, there being additional dimples confined by said triangles, all dimples confined by each triangle being completely within each triangle, each said geodesic line having a length between said opposite ends which is at least 20% of its surface circumference of the golf ball, said golf ball having an equational region everywhere spaced from said spherical hexagons, the ball having dimple density per unit area at said equatorial region which is greater than dimple density per unit area in said spherical hexagons.



5,308,077
BOARD GAME
Jeffrey J. Caggiano, 284 Plantation St. #2, Worcester, Mass. 01604
Filed Mar. 22, 1993, Ser. No. 35,324
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **2 Claims**

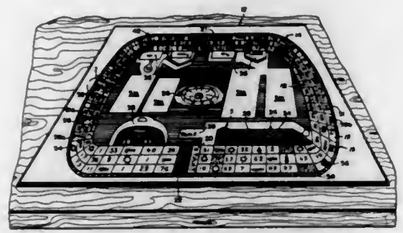


1. A new and improved board game comprising:
a game board;
at least one die;
at least one game piece for moving around said game board;

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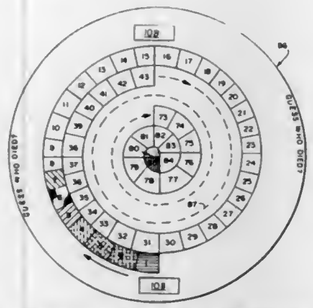
at least one category of question cards; and
a combined timer and dice thrower;
wherein said combined timer and dice thrower includes a spiral support arm, and a dice holding member,
said dice holding member mounted on said spiral support arm and being rotatable thereon, said dice holding member being selectively positionable on said support arm such that said dice holding member may descend along said support arm from a selected first position to a second position during a predetermined interval of time so as to provide a means for timing rate of play by a player.

5,308,078
AUTO RACING BOARD GAME
Gary Hatter, P.O. Box 1033, Mahomet, Ill. 61853
Filed Feb. 4, 1993, Ser. No. 13,323
Int. Cl.[5] A73F *300*
U.S. Cl. 273—246 **3 Claims**



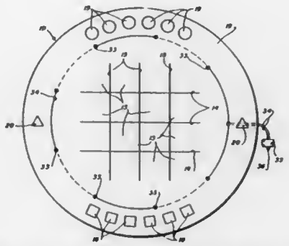
1. An auto racing board game which comprises:
a) a game board having a simulated race course thereon, with a plurality of adjacent racing grooves, each said racing groove divided into a plurality of sequential playing spaces and having a starting position, a halfway point stripe, a turn four stripe and a finish line;
b) a plurality of playing pieces, each representing a player for movement along said race course from the starting position to the finish line, said game board further includes a pit area, a plurality of repair shop locations, a victory circle location and a scale location;
c) a spinner for randomly choosing the movement each said playing piece along said race course on said game board, each said playing piece is a mini race car;
d) a lap counter to indicate the location of each said mini race car in its lap along said race course on said game board;
e) play money used during the play of said game for each player; and
f) said game board further includes a pit area, a plurality of repair shop locations, a victory circle location and a scale location, a simulated check for one million dollars presented to the player that wins said game at said victory circle location on said game board;
g) a plurality of pit pass cards, in which two are given to each player, so that each can be used to enter said pit area on said game board, during the play of said game;
h) a plurality of exemption cards, in which two are given to each player, so that each can be used to prevent a player from doing whatever the playing space they land on indicates;
i) a plurality of sponsor cards used by each player, so that a sponsor can be chosen by each player, during the play of said game;
j) a trophy presented to the player that wins said game at said victory circle location on said game board;
k) an instruction booklet to provide the rules of said game to each player, said game board further includes indicia located within each of said playing spaces to provide information to each player for playing said game, most of said indicia in most of said playing spaces on said game board are a plurality of numbers, each corresponding to a list on said game board indicating various things that can happen during said game;
l) most of said indicia in most of said playing spaces on said game board are a plurality of numbers, each corresponding to a list on said game board indicating various things that can happen during said game, said indicia in one of said playing spaces on said game board are the words "say no to drugs", so that when a player lands on said playing space and says "I will always say no to drugs", the player will receive thirty thousand dollars of said play money, some of said indicia in some of said playing spaces on said game board are symbols indicating new sponsors, so that a player must draw a sponsor card and collect the amount of money said sponsor card lists, some of said indicia in some of said playing spaces on said game board are symbols indicating major sponsors, so that a player must draw a sponsor card and collect the amount of money said sponsor card lists, some of said indicia in some of said playing spaces on said game board are symbols indicating racers choices, giving the players four options. some of said indicia in some of said playing spaces on said game board are the letter "C" indicating catch the leader, wherein some of said indicia in some of said playing spaces on said game board are arrows indicating that a player may choose a different groove, some of said indicia in some of said playing spaces on said game board are words indicating a sponsor name and amount of money, a stop watch, an MPH chart and a selection of trading cards, which could be utilized to introduce said game to the public.

5,308,079
BOARD GAME APPARATUS AND METHOD FOR PLAYING SAME
Elliott Dreznick, 3 Sylvan La., Pt. Jefferson Station, N.Y. 11776; Jeffrey Dreznick, 97 Haverhill Rd., Trumbull, Conn. 06611, and Howard Futerman, Port Jefferson Station, N.Y., assignors to Elliott Dreznick, Port. Jeff. Sta., N.Y. and Jeffrey Dreznick, Trumbull, Conn.
Filed Feb. 24, 1993, Ser. No. 22,075
Int. Cl.[5] A63F *3/00, 9/18*
U.S. Cl. 273—249 **9 Claims**



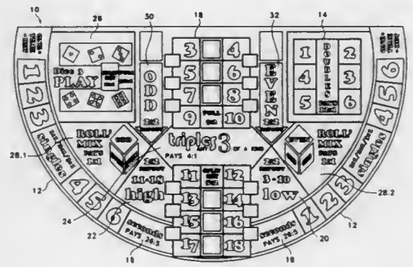
1. A board game apparatus requiring the demonstration of knowledge of deceased individuals and the circumstances surrounding their deaths, and the like, on the part of the players of the game, comprising:
a game board having a continuous spiral course including a periphery, a center and radii extending between said periphery and said center and a plurality of colored spaces defining a predetermined number of colorations, said plurality of colored spaces being arranged in a repeating pattern beginning at said periphery and ending at said center;
a terminal space located at said center of said game board having a color different from said plurality of colored spaces;
said plurality of colored spaces that lie along a radius of said game board being contiguous with each other;
said terminal space being contiguous with at least one of said plurality of colored spaces located on the spiral course several spaces preceding the terminal space, said terminal space having a marking connecting the terminal space to the contiguous preceding space indicating a continued path of travel from the terminal space to said contiguous preceding space to form a closed circular course within said continuous spiral course at said center of said game board;
several distinctive death-related markers, each of said markers being moved along said colored spaces and said terminal space by a different one of said players in playing said game;
a plurality of decks of question-posing cards containing questions relating to deceased individuals, the circumstances surrounding their deaths, or the like, each deck containing a category of questions corresponding to one of said predetermined colors, and the color of said terminal space; and
chance means for directing random forward movement of said markers along said spiral course and subsequently around said closed circular course, wherein an individual player effecting operation of said chance means to advance the player's marker to a space and selecting a question-posing card from the deck corresponding to the color and, upon proper response to the question-posing card, is directed to repeat operation of said chance means to further advance the player's marker and select another question-posing card, until a proper response is elicited from a player located on said terminal space.

5,308,080
METHOD OF PLAYING A BOARD GAME
Stewart M. Lamle, 230 Fifth Ave., Suite 809, New York, N.Y. 10001
Continuation of Ser. No. 631,665, Dec. 21, 1990, abandoned. This application Jan. 24, 1992, Ser. No. 826,267
Int. Cl.[5] A63F *3/02*; B65D *33/28*
U.S. Cl. 273—264 **8 Claims**



1. A method of playing a game with a plurality of playing pieces and a game board having a plurality of adjacent squares comprising:
dividing the playing pieces into first, second, and third distinguishable sets;
assigning the first set to a first player;
assigning the second set to a second player;
allowing the first player to use only the pieces of the first and the third sets;
allowing the second player to use only the pieces of the second and third sets;
restricting the players to the placement of pieces only on unoccupied squares of the game board; and
allowing the players to alternate turns until one of the players moves the pieces he is allowed to use into a winning configuration.

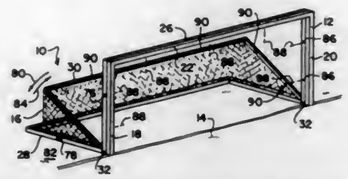
5,308,081
METHOD OF PLAYING A THREE DICE BETTING GAME
Richard J. E. Bartle, 2 Grenoble Place, Ormonde 2091, Johannesburg, Transvaal, South Africa
Filed Nov. 6, 1991, Ser. No. 788,475
Claims priority, application South Africa, Nov. 7, 1990, 90/8917
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—274 **2 Claims**



1. A method of playing a betting game including the steps of:
providing a playing surface, betting tokens and dice, the playing surface having three types of betting zones demarcated on it, the first type of betting zone having a representation corresponding to a result obtainable from the throw of only a first die, the second type of betting zone having a representation corresponding to a result obtainable from the throw of only two dice or of only a second die with reference to the first die, the third type of betting zone having a representation corresponding to a result obtainable from the throw of three dice;
placing at least one bet with at least one betting token on a first, second or third type of betting zone;
throwing only a first die and determining the result obtained from the first die;
placing at least one bet with at least one betting token on a second and/or third type of betting zone;
throwing only a second die and determining the cumulative result obtained from the previous result obtained from the first die and the result obtained from the second die or the result of the second die with reference to the previous result obtained from the first die;
placing at least one bet with at least one betting token on a third type of betting zone;
throwing only a third die and determining the cumulative result obtained from the previous results obtained from the first and second dice and the results obtained from the third die
determining winners and/or losers after determining winners and/or losers after having determined the results obtained from the first, second and/or third dice and after having evaluated the placement of the betting tokens on the betting zones; and
paying out the winners.

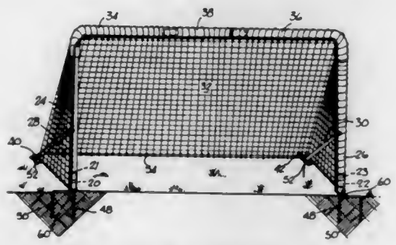
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,082
SOCCER NET STORAGE COMPARTMENT
Robert Bigelow, 2511 Poppy St., East Meadow, N.Y. 11554
Filed Sep. 3, 1993, Ser. No. 115,575
Int. Cl.[5] A63B *63/04*
U.S. Cl. 273—400 **3 Claims**



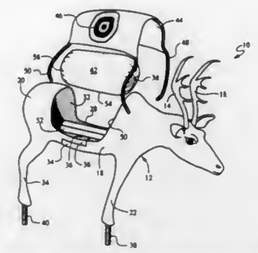
1. A storage compartment for a soccer net of a type having an operative position supported on right and left upstanding goal posts and a top cross piece connected in spanning relation therebetween, said storage compartment comprising a first U-shaped compartment member connected to extend rearwardly of said goal posts and cross piece such that side walls of said U-shape bound therebetween a first portion of said storage compartment, a net-support member pivotally mounted in said first portion of said storage compartment having in attached relation thereto a length portion of a peripheral edge of a soccer net, a second U-shaped compartment member bounding a second portion of said storage compartment pivotally connected to partake of opening and closing movement with respect to said first U-shaped compartment member having in attached relation thereto another length portion of said peripheral edge of said soccer net, said opening movement of said second U-shaped compartment member resulting in corresponding opening of said soccer net preparatory to the use thereof, and said closing movement of said second U-shaped compartment member against said first U-shaped compartment member defining a storage compartment of said first and second cooperating storage compartment portions, whereby when not in use said soccer net is in a storage condition in between said first and second U-shaped compartment members following the closing movement of said second U-shaped compartment member.

5,308,083
REBOUNDING PORTABLE SOCCER GOAL AND METHOD OF USE
Dan Y. Grunfeld, P.O. Box 592, 1200 Madison St., and John P. Hencmann, 570 Jackson St., both of Denver, Colo. 80206
Filed Oct. 12, 1993, Ser. No. 135,174
Int. Cl.[5] A63B *63/02*
U.S. Cl. 273—400 **5 Claims**



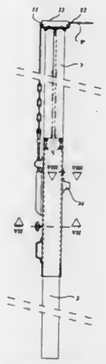
1. A rebounding soccer goal, comprising:
(a) a right horizontal tube member having a curved 90° bend to the vertical at one end thereof;
(b) a left horizontal tube member having a curved 90° bend to the vertical at one end thereof;
(c) a horizontal connecting tube for connecting the right and left horizontal tube members, forming thereby a long horizontal bar having curved 90° bends to the vertical at both ends thereof;
(d) a right base support having a right vertical support tube enclosing a first prong and a second prong, said first prong and said second prong being sharpened ends of a single rod, said rod being bent into a bent section with said sharpened ends pointing downwards and said rod being oriented so that said bent section is enclosed within the right vertical support tube, said right vertical support tube extending above a playing surface when the prongs are driven into the surface;
(e) a left base support having a left vertical support tube enclosing a first prong and a second prong, said first prong and said second prong being sharpened ends of a single rod, said rod being bent into a bent section with said sharpened ends pointing downwards and said rod being oriented so that said bent section is enclosed within the left vertical support tube, said left vertical support tube extending above a playing surface when the prongs are driven into the surface;
(f) a right vertical post telescopically attached to the right vertical support tube of the right base support member so as to stand above the playing surface;
(g) a left vertical post telescopically attached to the left vertical support tube of the left base support member so as to stand above the playing surface;
(h) wherein the long horizontal bar is telescopically attached, at the curved 90 bends to the vertical thereof, to the right and left vertical posts, forming thereby a goal frame standing above the playing surface;
(i) a right strut pivotally attached, at one end thereof to the right vertical post at a point on the rear of the post, said strut extending backwards and downwards so as to contact said playing surface behind the post;
(j) a left strut pivotally attached, at one end thereof to the left vertical post at a point on the rear of the post, said strut extending backwards and downwards so as to contact said playing surface behind the post;
(k) a net having a portion near the periphery thereof corresponding to the goal frame folded back over itself to form a sleeve, said sleeve threaded over said frame so as to removably connect the net and frame, and said net being disposed behind the frame at the outside of said left and right struts;
(l) a right hook attached to one of said net or said right base support near the juncture of the prongs and the right vertical support tube;
(m) a left hook attached to one of said net or said left base support near the juncture of the prongs and the left vertical support tube;
(n) wherein said net is removably connected to the right and left base supports by the right and left hooks;
(o) a mainstay cord threaded into the net near the periphery thereof, a portion of said mainstay cord being removably attached to the right and left base supports by the right and left hooks;
(p) a pair of spikes, one to secure each of the left and right struts to the playing surface after the struts are spread outwards so as to pull the net outwards;
wherein the mainstay cord of the net, the sleeve of the net, the hooks holding the net to the base supports, and the struts cooperate so as to impart a tension to the net, said net thereby using said tension to rebound a ball kicked into the net.

5,308,084
THREE-DIMENSIONAL ARCHERY TARGET
Dale A. Morrell, Rte. 2, Box 699, Alma, Ark. 72921
Filed Mar. 1, 1993, Ser. No. 24,395
Int. Cl.[5] F41J *3/00*
U.S. Cl. 273—403 **27 Claims**



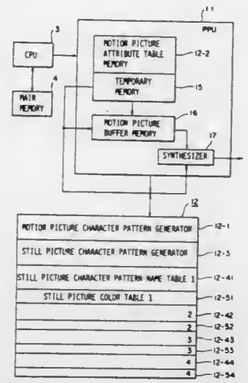
1. A three-dimensional animal-simulating archery target comprising:
a foam animal body shaped in the form of an animal having at least two legs, a head, and front and rear shoulders so as to simulate an animal at least when viewed from the side, and having a target insert receiving recess located in the back of the animal between the front and rear shoulders,
a substantially cylindrical, removable arrow receiving target insert adapted to be received in and substantially fill said target insert receiving recess and,
a removable arrow penetrating body cover adapted for placement over said target insert and providing a uniform appearance to the exterior surface of the foam animal body,
whereby said target insert and body cover are located in the primary aiming point and the intended target for arrows during use of the archery target so that during extended use the foam animal body remains intact while the target insert and body cover are damaged by repeated arrow strikes and replaced as needed.

5,308,085
GAME NET POST
Peter M. Koole, Kloetinge, Netherlands, assignor to Scheide International B.V., Olympiastraat, Netherlands
Filed May 19, 1993, Ser. No. 63,909
Int. Cl.[5] A63B *61/02*
U.S. Cl. 273—411 **6 Claims**



1. A game net post comprising
an inner pipe adapted to be placed in substantially vertical position into a sleeve or pot arranged in the ground or floor,
an outer pipe, having an internal cross sectional dimension greater than the external cross sectional dimension of said inner pipe and being slidable over at least part of said inner pipe,
said outer pipe being provided with upper and lower means for attaching a game net, and wherein
the outer pipe at its top is provided with an at least diametrical suspension means from which suspends a rod extending substantially along the pipe axis,
the inner pipe at its top is provided with guiding means substantially centrally located in the inner pipe and thru which said rod extends slidably,
there being provided around said rod between stop means arranged on the rod and said rod guiding means resilient means in permanently tensioned state.

5,308,086
VIDEO GAME EXTERNAL MEMORY ARRANGEMENT WITH REDUCED MEMORY REQUIREMENTS
Hiroo Ueda, Toyonaka, and Hiromitsu Yagi, Itami, both of Japan, assignors to Ricoh Co., Ltd, Tokyo and Nintendo Co., Ltd., Kyoto, both of Japan
Continuation of Ser. No. 534,305, Jun. 7, 1990, Pat. No. 5,125,671, which is a continuation of Ser. No. 343,786, Apr. 26, 1989, abandoned, which is a continuation of Ser. No. 14,150, Feb. 12, 1987, Pat. No. 4,824,106, which is a continuation of Ser. No. 869,383, May 30, 1986, abandoned, which is a continuation of Ser. No. 564,091, Dec. 21, 1983, abandoned. This application Jun. 19, 1992, Ser. No. 901,030
Claims priority, application Japan, Dec. 22, 1982, 57-234487; Dec. 23, 1982, 57-234473
Int. Cl.[5] A63F *9/24*; G09G *1/16*
U.S. Cl. 273—435 **2 Claims**



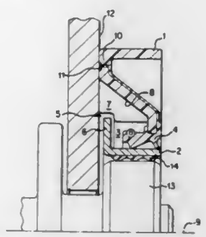
1. An external video game memory arrangement for coupling to a video game system having: (a) a picture processing unit including an attribute table memory, a temporary memory coupled to said attribute table memory, a buffer memory coupled to said temporary memory, and background signal generation circuitry; (b) a video signal synthesizer means coupled to said picture processing unit for outputting composite video signals defining video frames for display by a television set, said video signals including line scanning periods, horizontal blanking periods, and vertical blanking periods, and (c) a programmable processor coupled to and cooperating with said picture processing unit, said external memory arrangement comprising:
an external character generator coupled to said picture processor unit, said character generator for providing first

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character data for storage into said buffer memory during horizontal blanking periods in response to character identification data stored in said temporary memory, and providing further character data to said background signal generation circuitry during line scanning periods, and

a program memory for coupling to said programmable processor, said program memory providing at least program control instructions for execution by said programmable processor so as to effect writing of data specifying character identification and position into said attribute table memory during a vertical blanking period associated with a video frame, said character position data being selectively written from said attribute memory into said temporary memory during line scanning and subsequently written from said temporary memory into said buffer memory during horizontal blanking for use in generating composite video signals during a next subsequent video line scanning period.

5,308,087
CASSETTE SEAL
Wolfgang Schmitt, Viernheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Jun. 18, 1992, Ser. No. 900,982
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1991, 4124521
Int. Cl.[5] F16J *15/16*
U.S. Cl. 277—14 R **9 Claims**



1. A cassette seal for sealing off a space to be sealed, comprising:

an outer ring positioned around a longitudinal axis and having at least one sealing lip;

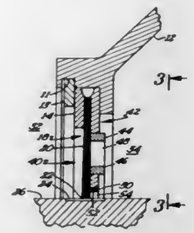
an inner ring positioned around said longitudinal axis and having an annular profile opposite to an annular profile of said outer ring, said inner and outer rings surrounding an annular space having an imaginary concentric axis, said sealing lip abutting said inner ring;

said outer and inner rings forming a gap connection between said annular space and the space to be sealed off by the cassette seal;

a flange radially coupled to said inner ring and limiting said gap connection, said gap connection being wider on a side of said gap connection turned away from said flange in a plurality of segmental cut-outs uniformly distributed over the circumference of the outer ring, said plurality of segmental cut-outs functioning as ducts between the annular space and the space to be sealed off; and

a conically inclined run-off surface forming a part of a diameter concentrically surrounding said axis and extending in a funnel shape toward said annular space, said ducts being limited in an axial direction on a side facing said flange by said run-off surface, said run-off surface forming an angle with said longitudinal axis such that said run-off surface completely surrounds said flange in the axial direction and partially surrounds said sealing lip.

5,308,088
BRUSH SEAL WITH FLEXIBLE BACKING PLATE
Edward Atkinson, Morrow, and Brent L. Bristol, Milford, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Aug. 20, 1992, Ser. No. 932,823
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—53 **6 Claims**



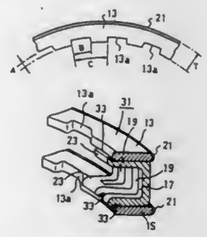
1. A brush seal for sealing a leakage gap between two relatively concentrically rotatable members, said leakage gap extending axially from a high pressure, upstream area to a low pressure, downstream area, said seal comprising upstream and downstream plates and a plurality of bristles sandwiched between said plates, said downstream plate including means for radially deflecting so as to avoid damaging contact with a said relatively movable member during transient operating conditions of said members, wherein said means for deflecting comprises said downstream plate including:

a primary backing ring;

a secondary backing ring, said secondary backing ring being disposed radially inwardly of said primary backing ring; and

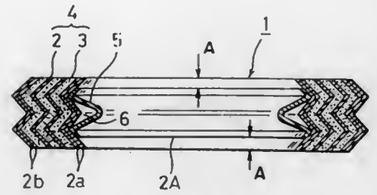
means for flexibly connecting said primary and secondary rings wherein said means for connecting comprises clusters of bristles.

5,308,089
COMBINED OIL RING
Masao Ishida, Tokyo, Japan, assignor to Teikoku Piston Ring Co., Ltd., Tokyo, Japan
Filed Jul. 27, 1992, Ser. No. 919,862
Claims priority, application Japan, Aug. 9, 1991, 3-225178
Int. Cl.[5] F16J *9/00*
U.S. Cl. 277—139 **4 Claims**



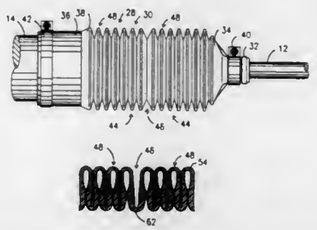
1. In a three-piece combined oil ring comprising a pair of side rails and provided between them a spacer expander, the improvement wherein said side rails are each provided in the inner edge thereof with a plurality of cutouts at given intervals; and wherein said cutouts in the side rails are in a cutout pitch of from 2 to 4 mm, a cutout width of from 1 to 2 mm and a cutout depth of from 0.3 to 0.5 mm.

5,308,090
SPIRAL WOUND GASKET
Eiichi Hamada, Toyota; Koji Shimoji, Susono; Suekichi Hangeishi, Toyota; Mamoru Yashima, Nagoya; Takahisa Ueda, Sanda; Keiji Okada, Hyogo, and Shoichi Nishiwaki, Sanda, all of Japan, assignors to Nippon Pillar Packing Co., Ltd., Osaka, Japan
Continuation of Ser. No. 713,774, Jun. 12, 1991, abandoned.
This application Nov. 19, 1992, Ser. No. 978,458
Int. Cl.[5] F16J *15/02*
U.S. Cl. 277—204 **3 Claims**



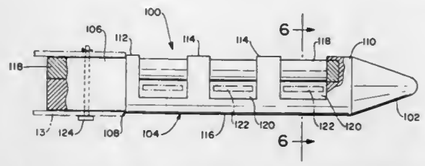
1. A spiral wound gasket for an exhaust pipe connection, which is formed into a spiral, said spiral wound gasket comprising: a gasket body comprising a metal hoop material overlapped with filler material; and an annular metal body comprising a metal hoop material, said annular metal body serving as a centering member integrally disposed at an inner periphery side of the gasket body, said annular metal body having a convex section which extends radially inwardly from the inner periphery side of the gasket body, said annular metal body defining an annular closed space with the inner periphery side of the gasket body.

5,308,091
PROTECTIVE BOOT
E. Robert Mihalcin, 7605 Egypt Lake Dr., Tampa, Fla. 33614
Filed Sep. 14, 1992, Ser. No. 943,890
Int. Cl.[5] F16J *15/52*
U.S. Cl. 277—212 FB **6 Claims**



1. A protective boot comprising a hollow bellows member configured to operatively house a reciprocating mechanical structure therein to isolate the reciprocating mechanical structure from dust, moisture and other contaminants in the surrounding environment, said hollow bellows member movable between a fully extended and fully retracted position comprising at least two longitudinally compressible sections, each said longitudinally compressible section comprises a plurality of compressible segments, each said compressible segment includes a first leg and a second leg intersecting each other to cooperatively form an apex, said second leg of said compressible section intersects said first leg of a next adjacent compressible segment forming a base to cooperatively form a trough between said adjacent compressible segments, said longitudinally compressible sections are disposed in spaced relationship relative to each other by a separation means comprising an enlarged base to increase the resistance to compression between said longitudinally compressible sections wherein the distance between the longitudinal axis of said hollow bellows member and each said apex is substantially equal and the distance between the longitudinal axis of said hollow bellows member and the base of each said trough is substantially equal and, the distance between the base of each said trough and the longitudinal axis of said hollow bellows member is greater than the distance between the base of said separation means and the longitudinal axis of said hollow bellows member such that said longitudinally compressible sections extend and retract independent of each other and wherein said compressible segments in each of said longitudinally compressible sections extend and retract in unison and uniformly to evenly distribute the longitudinal forces exerted on said protective boot during extension and retraction thereof along the entire length of said hollow bellows member.

5,308,092
SHAFT QUICK HITCH
William Kiraly, 1641 Roselawn Rd., Mayfield Heights, Ohio 44124
Filed Jul. 27, 1992, Ser. No. 919,452
Int. Cl.[5] B62C *5/00;* **B68B** *5/00*
U.S. Cl. 278—118 **10 Claims**



10. A racing sulky comprising two spaced apart generally longitudinally extending shafts, each of said shafts having a tubular forward end portion which terminates in an open forward end, a transverse member, and a pair of wheels rotatably mounted on said transverse member, each of said shafts being fixably secured to said transverse member;

and a pair of hitches for securing said sulky to a harness or saddle of a horse, each of said hitches including a tapered front portion, a mid-portion and a cylindrical rear portion, the cylindrical rear portions of said hitches being received in the respective open forward ends of said shafts, said mid-portion including first and second longitudinally extending rigid members which together form longitudinally extending opening means therebetween for receiving an attaching member associated with a harness or saddle.

5,308,093
SKATE BRAKE
Richard D. Walin, Brooklyn Park, Minn., assignor to Creative Sports Concepts, Incorporated, Brooklyn Park, Minn.
Filed Feb. 25, 1992, Ser. No. 840,854
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 **31 Claims**

1. In a skate of the type having a brake and a plurality of wheels for rolling on a ground surface, the wheels having a circumferential hardness and an average rotational friction, an improved skate brake comprising:

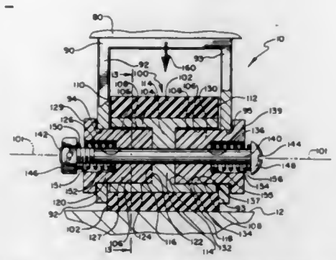
a) a bracket adapted to be mounted on one end of the skate;

b) a rotatable assembly mounted for rotation in the bracket and positioned on the skate such that the rotatable assembly is above the ground surface when no braking is desired, the rotatable assembly having

i) an outer circumferential member having a circular cross-section and a rotatable assembly circumferential hardness,

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ii) an axis of rotation perpendicular to the circular cross-section of the outer circumferential member,
iii) a first axial end and a second axial end,
iv) an inner hub fixedly attached to the outer circumferential member, the inner hub having an interior surface and an inner hub hardness harder than the rotatable assembly circumferential hardness, and
v) a rotational friction greater than the average rotational friction of the skate wheels;



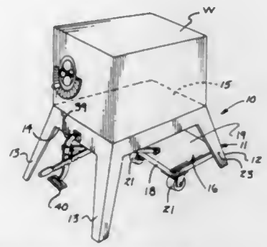
c) a first brake pad located in physical contact with the interior surface of the inner hub; and
d) a first securing means for securing the first brake pad against rotation when the inner hub rotates; such that the skate is pivotable about at least one wheel to bring the rotatable assembly into contact with the ground surface so as to cause the rotatable assembly to rotate about the axis of rotation and provide braking as a result of the rotational friction of the rotatable assembly.

5,308,094

TRANSPORT APPARATUS

Clyde C. McWhorter, and Lynne C. McWhorter, both of 6807 Glen Ridge Dr., Austin, Tex. 78731

Filed Jul. 30, 1993, Ser. No. 99,532
Int. Cl.[5] B62B *1/14*
U.S. Cl. 280—43.17 **3 Claims**



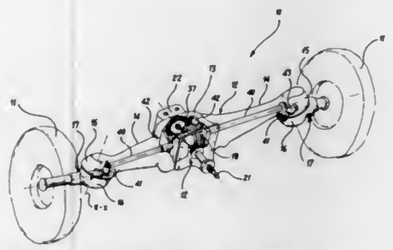
1. A transport apparatus, comprising,
a table member, the table member including a plurality of forward legs spaced from a plurality of rear legs, and the table member including a table support top plate, with the top plate having a side wall flange extending at least between the rear table legs, and
a carriage plate, the carriage plate positioned below the table support top plate and including a carriage plate forward end wall spaced from a carriage plate rear end wall, a carriage plate top wall spaced from a carriage plate bottom wall, and carriage plate side walls, with a plurality of caster wheels mounted to the carriage plate bottom wall in adjacency to the carriage plate rear end wall, with each carriage plate side wall including an axle, each said axle linearly aligned relative to one another, and each said axle pivotally mounted within one of said forward table legs, and
a mounting flange orthogonally and fixedly mounted to the carriage plate top wall in adjacency to the carriage plate rear end wall, 7ith linkage means extending between the table side wall flange and the mounting flange to effect displacement of the caster wheels from a first position spaced from an underlying support to a second position in engagement with an underlying support, and
the linkage means includes a table side wall clamp, the table side wall clamp includes a side wall clamp receiving slot receiving said table side wall flange therewithin, and a table side wall clamp fastener directed through said table side wall clamp into said table side wall clamp receiving slot, and the table side wall clamp having a plurality of spaced clamp boss plates and a clamp front wall, with the clamp boss plates mounted to said clamp front wall, and a lever plate, the lever plate including a lever plate first end spaced from a lever plate second end, the lever plate first end including a lever axle directed through said lever plate adjacent said lever plate first end and orthogonally through said clamp boss plates, said lever plate second end including a pedal flange to permit ease of projection and pivoting of the lever plate about said lever axle, and an actuator link extending from said lever plate intermediate said lever plate first end and said lever plate second end, with the actuator link extending pivotally to said mounting flange from said lever plate, whereupon pivoting of said lever plate effects projection of said carriage plate to said underlying support surface.

5,308,095

STEERING AXLE FOR VEHICLES

Armando Fabris, Campodarsego; Gianni Massaccesi, Vigodarzere; Timante Carraro, Campodarsego, and Santino Pirotta, Vaprio D'Adda, all of Italy, assignors to Carraro S.p.A., Campodarsego, Italy

Filed Feb. 14, 1992, Ser. No. 835,542
Claims priority, application Italy, Feb. 14, 1991, PD91 A 000034; Nov. 22, 1991, PD91 A 000216
Int. Cl.[5] B62D *3/02*
U.S. Cl. 280—93 **21 Claims**



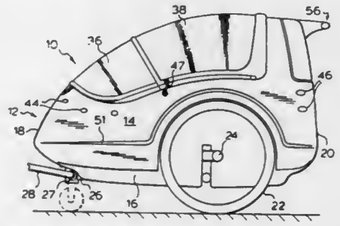
I. A steering axle for vehicles, comprising:
a beam adapted to be mounted on a load-bearing structure of a vehicle;
a road wheel hub supported rotatably on each of two opposite longitudinal ends of the beam;
a steering actuator arranged to act on at least one of said road wheel hubs; and
a steering drive interconnecting the two road wheel hubs to synchronize their relative angular displacements in accordance with pre-determined drive parameters, said steering drive comprising two shafts, synchronously counter-rotating relatively to each other and being rotatively connected to the corresponding one of the hubs through respective angle transfer gear mechanisms, said transfer mechanisms including first and second gears keyed respectively to the end of said shaft next to the corresponding hub and being made rotatively rigid with said hub;
characterized in that said actuator is fully carried on said beam and comprises a stationary part which is rigid with the beam and independent of the load-bearing structure of the vehicle, and a movable part relatively to said stationary part which is connected to said road wheel hubs through said steering drive.

5,308,096

BICYCLE TRAILER

Gilbert Smith, London, Canada, assignor to Kid Around Kinetics Inc., Cambridge, Canada

Continuation-in-part of Ser. No. 832,295, Feb. 7, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 88,719
Int. Cl.[5] B62K *27/00*
U.S. Cl. 280—204 **5 Claims**



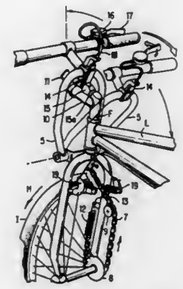
1. A convertible trailer for towing behind a bicycle, said trailer convertible between a trailer, a stroller and an automobile luggage carrier, said trailer comprising
a rigid chassis, said chassis having a closable compartment for storing food products, said closable compartment having a drain at a lowermost extent thereof for draining said compartment and having a cover for releasably closing said compartment,
a trailer body portion having a floor, side walls and front and rear walls defining a cavity having an opening, said trailer mounted on said chassis,
a top cover portion releasably mounted on the body portion for covering the opening,
a seat releasably mounted in the cavity of the body portion,
a towing bar hingedly connected to a forward portion of the chassis, for pivoting between a towing position extending forwardly of the chassis and an upwardly extending position,
a pair of wheels rotatably and releasably mounted on a rearward end of the chassis,
a stroller wheel releasably and pivotally mounted on the forward end of the chassis and pivotal between a stroller position for stably supporting the forward end of the chassis and a retracted position,
a handle on a rear portion of the body and extending from said cover end said handle adapted for pushing the trailer as a stroller, and
attachment means mounted on the chassis for securing said chassis to an automobile roof, wherein said trailer is convertible between a trailer condition, a stroller condition and a carrier condition, said trailer condition is characterized by the towing bar in the towing position, the stroller wheels in the retracted position and the pair of wheel rotatably mounted on the chassis, said stroller condition is characterized by the towing bar in an upwardly extending position, the stroller wheel in the stroller position and the pair of wheels rotatably mounted on the chassis and the carrier condition is characterized by the towing bar, the stroller wheel and the pair of wheels removed from the chassis.

5,308,097

MECHANISM TO CONVERT THE FRONT IDLE WHEELS OF BICYCLES IN GENERAL INTO DRIVE WHEELS

Francesco Bono, S.S.22, n°16, San Rocco di Bernezzo; Paolo Garelli, Frazione Roata Chiusani Centallo, and Luigi Lerda, Corso Romita, 122 Busca, both of Cuneo, all of Italy

Filed Apr. 24, 1992, Ser. No. 874,172
Claims priority, application Italy, Nov. 6, 1991, 91 A 000 844
Int. Cl.[5] B62M *1/12*
U.S. Cl. 280—234 **8 Claims**



1. In a bicycle having a frame including a sleeve, a steering column having an upper segment journalled in said sleeve and a lower segment with a downwardly directed fork, and a handle bar and an idle front wheel connected to said steering column at opposite ends for rotation relative to said frame about the axis of said steering column, the improvement comprising
hinge means mounted on said steering column,
lever means connected to said hinge means for rotation relative to said steering column, said handle bar being mounted on said lever means,
a catch mounted on said lever means, said catch having a slidable tooth and actuating means for moving said tooth between an extended position and a retracted position,
a first stop mounted on said steering column for limiting rotation of said lever means relative to said steering column, said first stop being engageable with said tooth when said tooth is in said extended position but not when said tooth is in said retracted position,
a first free wheel mounted coaxially and in driving engagement with said front wheel,
a first chain means in engagement with said free wheel and having one end connected to said steering column and another end connected to said lever means for imparting rotational motion to said first free wheel for driving said front wheel when said lever means is rotated relative to said steering column, and
said first stop comprising latching means mounted on said steering column for snugly receiving said tooth when in the extended position to prevent movement of said lever means relative to said steering column when said front wheel is not to be driven.

5,308,098

SELF-PROPELLED ALL TERRAIN WHEELCHAIR

Brian J. Shea, 2122 N. Sawmill, Cedar City, Utah 84720

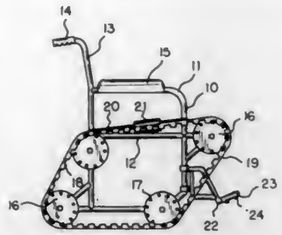
Filed Apr. 22, 1993, Ser. No. 50,606
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 **6 Claims**

1. A self-propelled all terrain wheelchair comprising:
a frame including a back portion and a seat;
four axles mounted rotatably on said frame in a spaced relationship to one another;

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wheels rotatably mounted on each of said axles, said wheels having belt engaging means thereon;

a cleated belt having a plurality of lugs thereon, said cleated belt extending around all four wheels and being in engagement with the belt engaging means thereof; and,



a slidable hand grip slidably mounted on said frame and engagable with said belt to move said belt relative to said wheels.

5,308,099

BICYCLE SUSPENSION SYSTEM

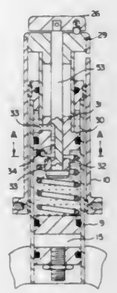
Michael R. S. Browning, 7 Belgrave Ct., Blackwater, Camberley GU17 9JE, England

Filed Sep. 26, 1990, Ser. No. 588,160

Claims priority, application United Kingdom, Sep. 26, 1989, 8921962

Int. Cl.[5] B62K *25/08*

U.S. Cl. 280—276 **8 Claims**



1. A bicycle having a suspension system comprising:

a frame comprising a head tube and a steering tube located in the head tube;

front and rear wheels;

damping means located within said steering tube for damping movement of said front wheel relative to said frame, said damping means including a chamber containing hydraulic fluid and divided into two communicating portions by a piston;

means for adjusting the damping provided by said damping means, said adjusting means comprising means for varying the rate at which fluid can flow between said portions of said damping means chamber from one side of said damping means piston to the other, said adjusting means being operable by a rider while cycling; and

resilient load bearing means for co-operating between said frame and said front wheel to permit limited movement of said front wheel relative to said frame against a resiliant restoring force.

5,308,100

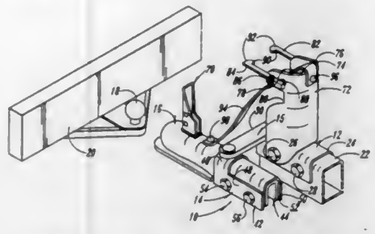
TRAILER COUPLER ASSEMBLY

Merle J. Heider, 203-12th St. SW.; Dale J. Heider, 1108 8th Ave. SW.; Leon J. Heider, 1107 Third Ave. SW., and Craig J. Heider, 812 S. Taft St., all of Humboldt, Iowa 50548

Filed Oct. 15, 1992, Ser. No. 961,614

Int. Cl.[5] B60D *1/36*

U.S. Cl. 280—474 **6 Claims**



1. A coupling device for coupling a vehicle to a trailer, said vehicle having a first hitch member attached thereto and said trailer having an elongated trailer tongue attached thereto, said trailer tongue having a longitudinal axis, said coupling device comprising:

a first elongated channel having a longitudinal axis;

first securing means for rigidly attaching said first channel to said trailer tongue;

a second hitch member adapted to be detachably secured to said first hitch member on said vehicle;

a second elongated channel having a longitudinal axis and being rigidly connected to said second hitch member;

an elongated linkage mechanism having a longitudinal axis and having first and second opposite ends;

first pivot means pivotally connecting said first end of said linkage mechanism to said first elongated channel for pivotal movement about a first vertical axis;

second pivot means pivotally connecting said second end of said linkage mechanism to said second elongated channel for pivotal movement about a second vertical axis;

said first channel, said linkage mechanism, and said second channel being pivotal about said first and second vertical axis to a plurality of positions, one of which is an extended position wherein said longitudinal axis of said first channel, said second channel and said linkage mechanism are all in end to end alignment;

a lock member having spaced part legs and being pivotally connected to one of said first and second channels for pivotal movement about a horizontal lock axis form an unlocked position to a locked position when said first channel, said second channel and said linkage mechanism are in said extended position whereby said spaced apart legs engage said first channel, said second channel, and said linkage mechanism to hold them in said extended position.

5,308,101

ELASTICALLY RETRACTABLE AUTOMOBILE TOWING STRAP

Chuck Monty, Milwaukee, Wis., assignor to Monty Corp., Houston, Tex.

Filed Jul. 20, 1992, Ser. No. 916,891

Int. Cl.[5] B60D *1/18*

U.S. Cl. 280—480.1 **7 Claims**

1. An automobile towing strap used for towing a first vehicle with a second vehicle comprising:

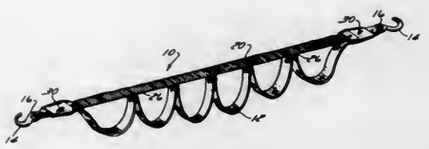
a length of strap of heavy-duty fabric material;

a first hook connected to a first end of the strap of fabric material for hooking said first end to said first vehicle and a second hook connected to a second end of the strap of fabric material for hooking said second end to said second vehicle with the fabric material being looped through an eyelet on each hook and the fabric material being folded over and fastened to itself;

a length of elastic strap material, which in its non-stretched state is substantially shorter than the length of the strap of fabric material and when fully stretched is approximately equal to the length of the strap of fabric material;

a first end of the elastic material connected by a first double loop fastener to the first end of the length of the strap of fabric material and a second end of the elastic material connected by a second double loop fastener to the second end of the length of the strap of fabric material;

a sleeve of fabric material extending from the first end to the second end of the length of the strap with only the elastic material being slidably enclosed within the sleeve;



the sleeve being connected at a number of spaced points along the length of the strap of fabric material such that the strap of fabric material and the strap of elastic material and the sleeve are cooperatively attached whereby when said first vehicle is being towed by said second vehicle that the strap of fabric material and the strap of elastic material and the sleeve are fully extended, and whereby in the event that said first vehicle moves closer to said second vehicle than the length of the strap of fabric material then the strap of elastic material elastically retracts and concurrently bunches the strap of fabric material and sleeve to prevent the towing strap from striking a road surface and to prevent the towing strap from becoming entangled underneath either said first or second vehicle.

5,308,102

ELASTIC LOCKING DEVICE, ESPECIALLY A HEEL PORTION OF A SAFETY SKI BINDING

Heinz H. Bildner, Am Anger 18, 8221 Seebruck/Arlaching, Fed. Rep. of Germany

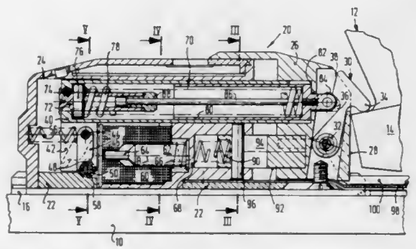
PCT No. PCT/EP92/00265, § 371 Date Nov. 17, 1992, § 102(e) Date Nov. 17, 1992, PCT Pub. No. WO92/17252, PCT Pub. Date Oct. 15, 1992

PCT Filed Feb. 6, 1992, Ser. No. 946,460

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 4110163

Int. Cl.[5] A63C *9/084*

U.S. Cl. 280—612 **10 Claims**



1. An elastic locking device, for a heel portion of a safety ski binding, comprising:

a housing (**24**) for fastening to a ski (**10**),

a retainer member (**26**) movably guided with respect to the housing (**24**) in a direction of contact pressure (A) against a ski boot (**12**),

a support member (**40**) which is movable with respect to the housing (**240**, in a direction opposite to the contact pressure direction (A), form an inoperative position into a retracted position,

a spring assembly (**70**) which rests on the support member (**40**) and loads the retainer member (**26**) in the contact pressure direction (A),

at lest one locking member (**50**), normally in a locking position for keeping the support member (**40**) in the inoperative position, said at least one locking member being movable into a passing position for permitting movement of the support member (**40**) into the retracted position,

a pawl (**46**) for normally keeping the locking member (**50**) in a locking position, and

an electromagnet **960**) including an armature (**62**) for moving along a magnet axis (B) against the pawl (**46**) to move the pawl (**46**) out of engagement and to unlock the locking member, thus permitting movement of the support member (**40**) into the retracted position, when a power circuit containing the electromagnet (**60**) is in a predetermined switching state,

wherein the pawl (**46**) is supported for pivoting movement about a pivot axis (**44**) which extends transversely of and spaced form the magnet axis (B), and comprises a shoulder (**48**) which is spaced form the pivot axis (**44**) and normally presses against the locking member (**50**) in the locking position and wherein the angle between the pawl and the magnet axis (B), defines an angle within which self-locking takes place.

5,308,103

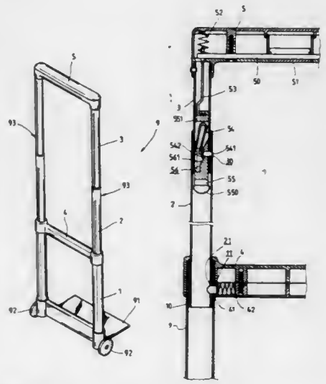
COLLAPSIBLE LUGGAGE TROLLEY

Liu Chin-Shung, 2F, No. 6 Lane 75 Sec. 4 Minsbeng E. Road, Taipei, Taiwan

Filed Jul. 16, 1993, Ser. No. 92,617

Int. Cl.[5] B62B *1/12*

U.S. Cl. 280—655 **5 Claims**



1. A collapsible luggage trolley comprising:

a base having wheels mounted thereon for rollingly supporting said collapsible luggage trolley on ground;

two substantially parallel side posts extending upward from said base with a handhold mounted between free ends thereof and a middle support member connected between said posts at a middle position thereof, said handhold having a first interior space defined therein, said middle support member having a second interior space defined therein;

each of said posts comprising a lower tubular section

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mounted at a lower end thereof on said base, a middle tubular section telescopically received within said lower section, and an upper tubular member telescopically received within said middle section, said handhold being mounted to an upper end of said upper section which constitutes the free end of the respective post and said upper section having a hole formed in the proximity of a lower end thereof, said middle support member being connected to an upper end of said lower section with a hole formed in the proximity of the upper end of said lower section to be in communication with the second interior space defined within said middle support member, said middle section having an upper end and an opposite lower end, each having a hole formed thereon respectively corresponding to the holes formed on said upper section and said lower section;

first release means comprising a release bar movably disposed within the first interior space defined within said handhold and biased by first biasing means to abut against a bottom of said handhold, said bottom having a portion separated therefrom and movable relative thereto for depressing said release bar against said first biasing means, said first release means further comprising a plug movably fit into each of said upper sections with a lower end thereof projecting out of the lower end of the upper section and into said middle section, said plug having an opposite upper end connected to said release bar by a linking member so that by depressing the release bar, the plug is moved within the upper section, said plug defining therein a cavity having an inclined camming surface formed therein;

first engaging means comprising a first retaining pin biased by first pin biasing means disposed in the cavity defined within said plug to extend through the hole of the upper section and the hole formed on the upper end of the middle section to retainingly engage the upper section and the middle section to each other to be in a relative expanded condition, said first retaining pin being disposed within the cavity so as to be in contact engagement with the camming surface and thus be withdrawn out of the holes through which the first retaining pin extends by the camming surface when the plug is moved by said release bar to break the retaining engagement between the upper section and the middle section;

a second retaining pin disposed within the second interior space defined within said middle support member and biased by second pin biasing means to extend through the hole of the lower section and the hole formed on the lower end of the middle section so as to retainingly engage the middle section and the lower section to each other to be in a relative expanded condition; and

second release means comprising an expanded, round-headed end portion formed on the lower end of said plug so that when the upper section is released to telescope into the middle section by the depressing of said release bar, the round-headed end of said plug contacts and acts upon the second retaining pin to force the second retaining pin into the second interior space to break the retaining engagement between the middle section and the lower section.

5,308,104

STEER-SENSITIVE JOUNCE BUMPER AND BUMP PLATE

Harlan W. Charles, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1993, Ser. No. 24,055
Int. Cl.[5] B60G *15/07*; F16F *9/32*
U.S. Cl. 280—668 **10 Claims**

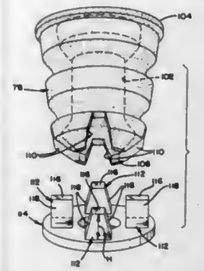
6. A vehicular suspension system for a steerable wheel assembly, comprising:

(a) a hydraulic strut having a telescoping piston rod projecting from a first end;

(b) means for securing a second end of the strut to the wheel assembly so that the strut rotates with the wheel assembly;

(c) mount means for attaching an end of the piston rod to a vehicle so that the mount means does not rotate as the wheel assembly is steered;

(d) a jounce bumper concentrically mounted on the piston rod and mounted at a first end to the mount means so that the jounce bumper does not rotate as the wheel assembly is steered;



(e) a bump plate mounted on the strut so that the bump plate rotates with the strut as the wheel assembly is steered;

(f) a pattern of indentations in a second end of the jounce bumper; and

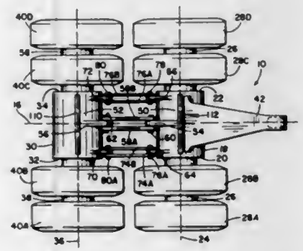
(g) a plurality of pins on the bump plate aligned with the indentations of the jounce bumper when the wheel assembly is at a predetermined steer angle.

5,308,105

STEERABLE DUAL REAR AXLE SYSTEM FOR LARGE VEHICLES

Steven J. Fujan, and Frederick W. Loeber, both of Tulsa, Okla., assignors to Terex Corporation, Green Bay, Wis.

Continuation-in-part of Ser. No. 805,531, Dec. 11, 1991. This application Mar. 9, 1992, Ser. No. 849,154
Int. Cl.[5] B60G *5/00*
U.S. Cl. 280—676 **17 Claims**



1. A steerable dual rear axle system for large vehicles comprising:

a frame with a longitudinal axis in the direction of normal travel, the frame having a front end and a rear end;

a forward axle housing having an axis and opposed ends and having an upper portion and a lower portion;

a draft arm having one end affixed to said forward axle housing and the other end pivotally affixed to said frame in the direction towards said frame front end;

a rearward axle housing having an axis and opposed ends, the rearward axle housing being spaced from said forward axle housing and their axii being in vertical planes, the rearward axle housing having an upper portion and a lower portion;

axle means rotatably supported by both said forward and rearward axle housings;

wheel means secured to said axle means;

upper linkage means having opposed ends, one end being pivotally attached to said upper portion of said forward axle housing and the other end being pivotally attached to said upper portion of said rearward axle housing;

lower linkage means having opposed ends, one end being pivotally attached to said lower portion of said forward axle housing and the other end being pivotally attached to said lower portion of said rearward axle housing, said upper and lower linkage means being in a common vertical plane of said frame longitudinal axis intermediate said forward and rearward axles opposed ends;

means providing spring support between said forward and rearward axle housings and said frame to thereby transfer weight from said frame to said forward and rearward axle housings; and

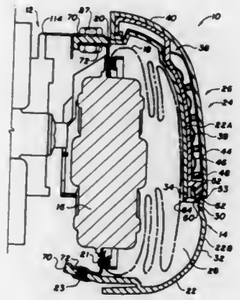
means of steerably pivoting said rearward axle housing relative to said forward axle housing.

5,308,106

AIR BAG MODULE COVER ASSEMBLY WITH HORN BLOWING SWITCH

Michael E. Heldorn, Royal Oak, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Oct. 4, 1990, Ser. No. 592,948
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **19 Claims**



1. A vehicle air bag module cover assembly, comprising:

a closure attached to a reaction device to complete a container for an inflator and a folded air bag, at least part of said closure being movable relative to the container upon deployment of the air bag;

a horn blowing switch overlying said part of said closure adapted to move relative to the container upon deployment of the air bag, said horn blowing switch being connected to an external portion of the container in such a manner that said horn blowing switch is removable intact from said container, said horn blowing switch normally assuming a disengaged condition and being responsive to the application of pressure to assume an engaged condition, said horn blowing switch when in said engaged condition completing a horn blowing circuit; and

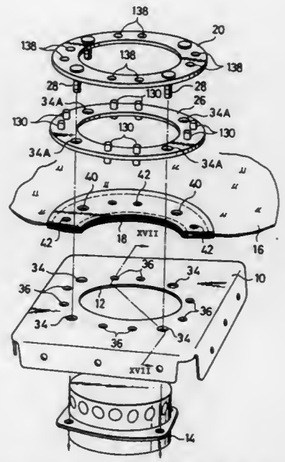
a flexible cover for said horn blowing switch, said flexible cover being adapted to communicate physical pressure exerted thereon to said horn blowing switch to cause said horn blowing switch to assume an engaged condition.

5,308,107

STRUCTURE FOR MOUNTING AN AIR BAG IN AN AIR BAG SYSTEM

Kazuo Watanabe, and Tadahiro Igawa, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,522
Claims priority, application Japan, Nov. 30, 1990, 2-334586; Nov. 30, 1990, 2-334588
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **4 Claims**



1. A structure for mounting an air bag in an air bag system comprising:

a retainer having an inflator mounting opening, and a plurality of first and second openings around the inflator mounting opening,

an air bag having an inflator receiving opening aligned with the inflator mounting opening, a peripheral edge around the inflator receiving opening, and a plurality of third and fourth openings at the peripheral edge, said third and fourth openings corresponding to the first and second openings, respectively,

a press ring situated above the peripheral edge of the air bag to hold the peripheral edge of the air bag relative to the retainer, said press ring having a plurality of fifth openings,

an annular sheet made of synthetic resin and situated between the press ring and the peripheral edge of the air bag, said sheet having a plurality of first projections extending upwardly from the sheet and a plurality of second projections extending downwardly from the sheet so that when the air bag is assembled, the first projections engage the fifth openings of the press ring without projecting outwardly beyond an upper surface of the press ring, and the second projections extend through the third openings of the air bag and engage the first openings of the retainer to immovably hold the peripheral edge of the air bag relative to the retainer and the press ring by the first and second projections, said annular sheet having a plurality of sixth openings corresponding to the second and fourth openings, and

means for securing the press ring to the retainer, said securing means passing through the second, fourth and sixth openings to thereby securely fix the press ring and the peripheral edge of the air bag to the retainer.

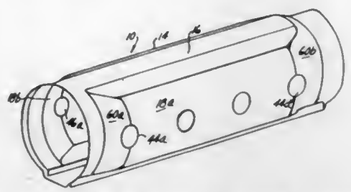
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5,308,108

MANIFOLD OR RETAINER FOR A GAS GENERATOR

Robert B. Rion, Redford, Mich., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 26, 1992, Ser. No. 966,763
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—728 A **7 Claims**



1. A manifold (**10**) for holding a generally cylindrically shaped gas generator (**12**), the gas generator including inflation ports (**26***a, b*) through which inflation gas exists to inflate an air bag, the manifold comprising:

a hollow one piece extruded cylindrical structure (**14**) comprising:

a cylindrical middle portion (**16**) and first (**32**) and second (**34**) ends, the first end being narrowed to provide an interference fit with a mating portion of the gas generator upon insertion of the gas generator, the middle portion having a first walled portion, having a diameter section slightly larger than the diameter of the gas generator;

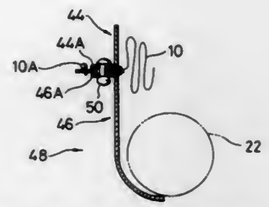
the middle portion further comprising two opposingly positioned outwardly flared portions (**18***a, b*) extending outwardly from the first walled portion and having a substantially constant diameter thereacross larger than that of the first walled portion, each flared portion including a second walled portion and ends tapering to the first walled portion, the flared portions in cooperation with walls of the gas generator, defining gas receiving portions (**22***a, b*) to receive inflation gas from the gas generator, the flared portions each including at least an exit port (**44***a–d*, **46***a–d*) to direct inflation gas out of the manifold.

5,308,109

AIR BAG DEVICE FOR A PASSENGER

Tadahiro Igawa, Hikone, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,103
Claims priority, application Japan, Dec. 5, 1991, 3-321856
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 R **7 Claims**



1. An air bag device for a passenger comprising:

a box-shaped container including a forward section having a front opening for air bag extension and a rear edge to surround the forward section, and a rearward section having a forward edge to surround the rearward section, said forward edge being joined to the rear edge of the forward section to form the container;

a gas generator secured to the rearward section of the container on a side opposite to the opening,

an air bag folded and contained in the container and having a hem composed of at least two layers of cloth joined together with an outer line of stitches provided near an end of the air bag to protrude from a surface of the air bag, said hem being placed between the rear and forward edges of the forward and rearward sections so that the outer line of protruded stitches is exposed to atmosphere and disposed outside and not between the rear and forward edges of the forward and rearward sections; and

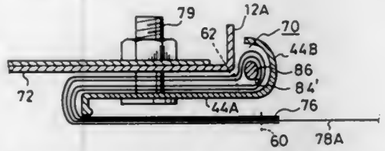
securing means passed through the rear edge of the forward section, the hem, and the forward edge of the rearward section to join them together so that when the air bag is expanded, the protruded stitches engage outside of the rear and forward edges of the forward and rearward sections to thereby prevent slip off of the air bag.

5,308,110

STRUCTURE FOR MOUNTING AN AIR BAG TO A CONTAINER IN AN AIR BAG DEVICE FOR USE IN A PASSENGER SEAT

Akira Kokeguchi, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,254
Claims priority, application Japan, Jan. 6, 1992, 4-000256
Int. Cl.[5] B60R *21/16, 21/20*
U.S. Cl. 280—728 A **5 Claims**



1. A structure for mounting an air bag to a container in a passenger seat, comprising:

a rectangular container having an inlet opened at a front face thereof, a side wall to define the inlet, and a flange extending perpendicularly outwardly from the side wall to surround the inlet,

an air bag folded and retained in the container, said air bag having an opening to receive gas from an inflator, an edge portion extending along the opening, and a turned back portion turned back for a predetermined length from the edge portion,

a reinforcing cloth folded to retain the turned back portion and a part of the air bag corresponding to the turned back portion, said reinforcing cloth and the air bag being stitched together at a first stitch near an end of the turned back portion away from the edge portion and at a second stitch near the edge portion of the air bag so that a cylindrical bore is formed at the edge portion,

a rod inserted in the bore to bulge at the edge portion,

a plate fixed only to the container at an inner side around the inlet thereof, said plate having at one side thereof an inner flange extending in a direction away from the side wall of the container and at the other side thereof a curved portion extending outwardly from the inlet and turning back to a portion near the flange of the container to have a space between the curved portion and the flange, and

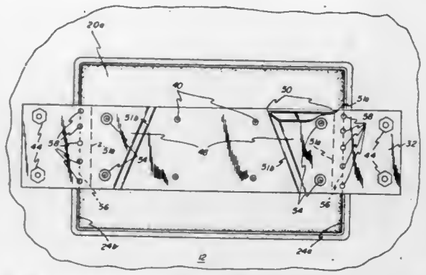
securing means for securing the plate to the container so that when the air bag is attached to the container, almost half of the turned back portion is seized between the plate and the container while the edge portion with the rod therein is located in the space between the curved portion and the flange to prevent movement of the edge of the air bag, a remaining half of the turned back portion not held by the plate turning around the inner flange of the plate and extending near the curved portion to thereby securely fix the air bag to the container.

5,308,111

INFLATABLE RESTRAINT HAVING AN IMPROVED TETHER

James J. Sommer, Tipp City, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 29, 1993, Ser. No. 10,801
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 B **7 Claims**



1. A tether for securing a cover door in a deployment opening of an instrument panel in an automobile; said instrument panel having an air bag and an inflator for inflating said air bag located in operative relationship with said deployment opening, said tether comprising:

a first end portion for securing to said instrument panel;

a second end portion for securing to said instrument panel;

a central portion located between said first and second end portions for securing to said cover door;

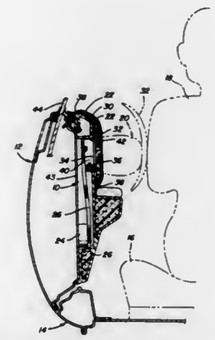
and said first and second end portions each comprising a folded area where a portion of the tether comprises a plurality of predetermined folds including at least two non-parallel fold lines and causing the tether to deform into a predetermined shape when the air bag is deployed through the deployment opening.

5,308,112

UNFURLED SIDE IMPACT AIR BAG

Timothy W. Hill, Troy; Jeffrey A. Welch, St. Clair Shores; Ian V. Lau, Troy, and Kenneth H. Desaele, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1993, Ser. No. 49,332
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 A **7 Claims**



1. An air bag assembly in a motor vehicle having an occupant seat mounted in the vehicle and an enclosure adjacent said occupant seat, said air bag assembly comprising:

an air bag having a front side wall and a back side wall, said front side wall being adjacent to and substantially parallel to said back side wall when said air bag is deflated so that said air bag is in an unfurled and unfolded position extending along said enclosure with said back side wall and said front side wall stored engaging one another, and

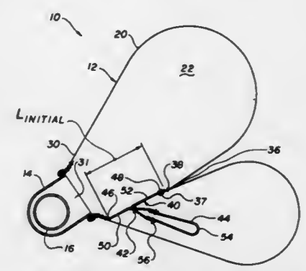
an inflator actuable to inflate said air bag to an inflated position extending along said enclosure between the occupant and said enclosure.

5,308,113

AIRBAG INFLATION-CONTROLLING MEMBER

Michael A. Moriset, Troy, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 9, 1992, Ser. No. 959,291
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 A **51 Claims**



1. A vehicle airbag comprising an inflatable bag and an inflation-controlling member which is coupled to said bag;

said bag including chamber-defining portions defining a chamber which is filled with inflation fluid to inflate said airbag during an inflation process, said bag being subjected to initial forces during initial stages of the inflation process, intermediate forced during intermediate stages of the inflation process, and final forces during final stages of the inflation process;

said inflation-controlling member extending through said chamber during the inflation process and controlling the shape of said bag;

said inflation-controlling member including a releasable connection and a stretchable section;

said releasable connection including means for remaining intact during the initial stages of the inflation process so that said inflation-controlling member extends to an initial length and so that said bag assumes an initial shape during initial stages of the inflation process and for

extending said inflation-controlling member from said initial length to an intermediate length greater than said initial length so that said bag assumes an intermediate shape during intermediate stages of the inflation process; and

said stretchable section including means for stretching said inflation-controlling member from said intermediate length to a final length greater than said intermediate length so that said bag assumes a final shape.

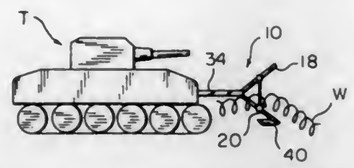
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,114

WIRE CUTTING DEVICE FOR LAND VEHICLES

Robert C. Williams, Killeen, Tex., and Stephen W. Bachinski, Ft. Knox, Ky., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 834,959, Feb. 14, 1992, abandoned.
This application Dec. 8, 1992, Ser. No. 987,729
Int. Cl.[5] B60R *11/00, 27/00*
U.S. Cl. 280—762 **15 Claims**



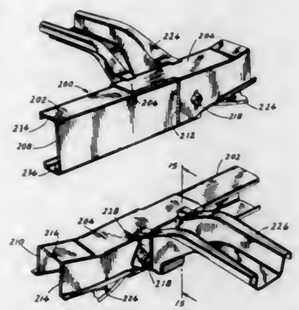
13. A wire cutter device for cutting a path through wires to allow a land vehicle on which the wire cutter is mounted to pass therethrough, said wire cutter device comprising:
- an electrical power supply having positive and negative poles;
- first and second spaced conductive rods, said first rod being electrically connected to said positive pole and said second rod being electrically connected to said negative pole;
- guide means for guiding wires in the path of the vehicle into contact with said rods to provide melting of these wires; and
- mounting means for securing said rods and said guide means to the land vehicle.

5,308,115

VEHICLE FRAME WITH OVERLAPPED SECTIONS

Phillip C. Ruehl, Elm Grove, and Benjamin E. Coursin, Milwaukee, both of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 650,057, Feb. 4, 1991, Pat. No. 5,149,132. This application Sep. 9, 1992, Ser. No. 942,250
The portion of the term of this patent subsequent to Apr. 22, 2009, has been disclaimed.
Int. Cl.[5] B62D *21/11*
U.S. Cl. 280—785 **11 Claims**



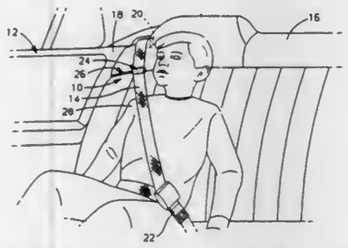
6. A vehicle frame comprising a first portion having a first siderail, a second portion having a second siderail, each of said siderails being a structural component formed separately from the other siderail but attached thereto at a joint, said first and second siderails having respective vertical sections in overlapped contact with each other at said joint, a cross member attached to said first and second siderails at said joint and having a vertical flange in overlapped contact with a second vertical section of said second siderail, and said overlapped contact of said respective vertical sections of said first and second siderails provides a first mounting pad of increased stock thickness, and said overlapped contact of said vertical flange of said cross member and said second vertical section of said second siderail provides a second mounting pad of increased stock thickness, said first and second mounting pads being horizontally spaced from each other, and comprising a spring hanger mounted to and extending between said first and second mounting pads.

5,308,116

REAR SEAT SHOULDER BELT GUIDE

Kenneth M. Zawisa, Farmington Hills; Gregory S. Ches, Clinton Township, Macomb County; Richard D. Loose, Birmingham, and Michael J. Wendzinski, Grosse Pointe, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1992, Ser. No. 982,913
Int. Cl.[5] B60R *22/00*
U.S. Cl. 280—808 **6 Claims**



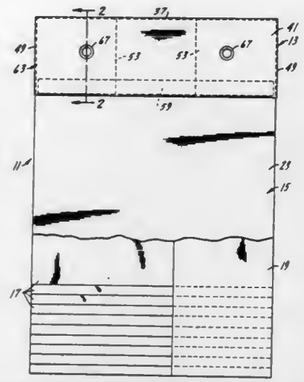
4. A rear seat shoulder belt guide for adjusting the routing of a standard rear seat shoulder belt in a passenger compartment of a vehicle wherein said vehicle has a rear seat back cushion and a side trim adjacent said rear seat back cushion comprising:
- said side trim having a hole hidden from view from said passenger compartment;
- a substantially elliptical tab having a first end and a second end and having a hole at said first end;
- a plastic push-in fastener inserted through said hole of said tab and through said hole of said vehicle side trim thereby pivotally connecting said tab to said vehicle side trim and said tab being hidden from view from said passenger compartment;
- an elastic cord having a first end and a second end and having said first end of said elastic cord sewn to form a loop wherein said push-in fastener is inserted through said loop wherein said loop lies between said tab and said vehicle side trim thereby pivotally connecting said elastic cord to said side trim and said tab;
- a plastic C-shaped guide having an opening whereby said shoulder belt may be removably inserted and held by said C-shaped guide and said C-shaped guide having the ability to slide along the length of said shoulder belt;
- said plastic C-shaped guide having opposing ends and one of said opposing ends having a hole larger than said second end of said elastic cord and said second end of said elastic cord extending through said hole in said one opposing end of said C-shaped guide;
- a retainer cap connected to said second end of said elastic cord and said retainer cap being larger than said hole in said C-shaped guide thereby pivotally connecting said elastic cord to said C-shaped guide; and
- said elastic cord pulling said C-shaped guide to adjust the routing of said shoulder belt when in use.

5,308,117

SWATCH BOOK FOR PAPER SWATCHES

Jeffrey L. Yelton, Sherwood, Wis., assignor to Fox River Paper Company, Appleton, Wis.

Filed Apr. 20, 1993, Ser. No. 49,811
Int. Cl.[5] B42D *1/00*
U.S. Cl. 281—15.1 **5 Claims**



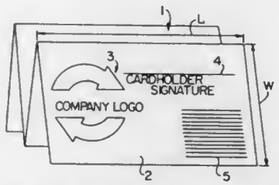
1. A swatch book for displaying sample swatches of paper, said swatch book having a front cover sheet and a rear cover sheet which are non-integral,
said rear cover sheet having integral panels which are folded to encompass said front cover sheet and said sample swatches, and
fastening means extending through said front cover sheet, said integral panels, said rear cover sheet and said sample swatches to form a permanently bound book.

5,308,118

CARRY CARD OFFER STRIP

Victor A. Ovadia, 1929 Boulevard, West Hartford, Conn. 06107

Filed Oct. 14, 1992, Ser. No. 960,717
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—56 **10 Claims**



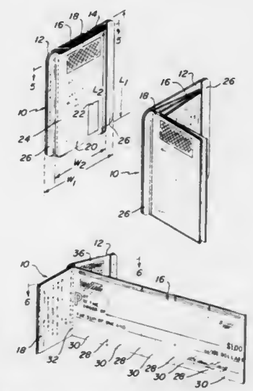
1. A carry card for displaying in a compact and discernable manner a plurality of advertiser discount offers, said carry card comprising:
- sheet material having a given length and a given width and having an identification face portion and offer strip first and second portions, said identification face portion having printed thereon a logo identifying said carry card, and said offer strip first and second portions having printed thereon at least one advertiser discount offer;
- said identification face portion having a first given dimension extending in a direction parallel to the direction of said given length of said sheet material and has a second given dimension extending generally orthogonally to the first given dimension and parallel to said given width of said sheet material;
- said offer strip portion being nondetachably integrally formed with said identification face portion and including a plurality of fold lines extending parallel to said second given dimension of said identification face portion and being spaced from one another by a distance equal to the first given dimension of said identification face portion,
- said fold lines dividing said offer strip first and second portions into blocks having third and fourth dimensions equal respectively to the first and second given dimensions of said identification face portion;
- at least one advertiser discount offer is printed in at least one of said blocks;
- said carry card second strip portion being disposed along one common side edge of said identification face portion and said offer strip first portion and having a length extending with said given length of said sheet material, said second strip portion being separated from said first strip portion and from said identification face portion by one of said plurality of fold lines extending parallel to the given length of the sheet material.

5,308,119

PACKAGING LABEL INCLUDING NEGOTIABLE INSTRUMENT

Kenneth S. Roshkoff, Newtown, Pa., assignor to Attitude Measurement Corporation, Southampton, Pa.

Filed Dec. 23, 1992, Ser. No. 996,255
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—58 **11 Claims**



1. A label for affixing to a container comprising:
(a) an opaque base layer having an adhesive side for affixing to the container and an imprinting side for printing indicia thereon, the imprinting side having oppositely disposed edges flanked by a product information portion;
(b) a longitudinally foldable strip having a perforation running perpendicular to the longitude, the perforation separating the strip into two parts, one part being a negotiable instrument intended to be severed from the strip along the perforation and the other part being a product information label, the strip being folded into a plurality of overlying panels by fold lines with at least a portion of the product information label forming an outer panel, the folded strip overlying the opaque base layer's product information portion; and
(c) a transparent top layer permanently attached to at least a part of
(i) the strip's outer panel; and
(ii) both oppositely disposed edges of the base layer,
thereby attaching the strip to the base layer and enclosing the strip between the top layer and the base layer, the

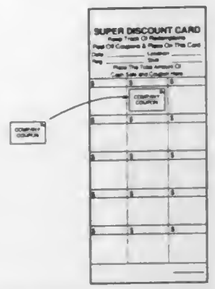
VOL 1162 ISS 1 MY 3 1994 UMI

transparent top layer being severable along one edge so as to allow access to the negotiable instrument.

5,308,120
PEEL OFF COUPON REDEMPTION CARD AND TRACKING SYSTEM

Kenneth Thompson, 2368 Eastman Ave., Ste. 3, Ventura, Calif. 93003, assignor to Kenneth Thompson and Debra Tak Thompson, both of Ventura, Calif.

Continuation-in-part of Ser. No. 881,542, May 12, 1992. This application May 15, 1992, Ser. No. 884,962
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—70 **6 Claims**



1. A method of redeeming a coupon secured to a redemption card and tracking the redeemed coupon, which comprises:
presenting to a redemption center other than a bank a redemption card containing at least one non-negotiable peel-off coupon;
placing a tracking sheet at said redemption center;
peeling off at least one said peel-off coupon that is die cut from said redemption card;
transferring said peeled-off coupon to said tracking sheet;
crediting the value of said coupon to the redeemer; and
returning said redemption card to the redeemer.

5,308,121
CREDIT/SERVICE CARD WITH EXPANDED SURFACE AREA

Robert T. Gunn, 360 E. 65th St., New York, N.Y. 10021

Filed Jul. 30, 1992, Ser. No. 922,145
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—99 **26 Claims**

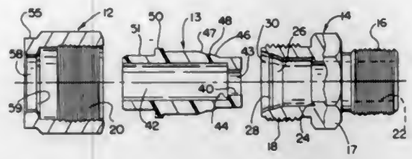


1. A credit/service card comprising:
a first card member;
a second card member;
a hinge connecting the first car member to the second card member; and
a releasable and reclosable fastener holding the first card member to the second card member when the credit/service card is in a closed position, wherein the credit/service card has a thickness in the closed position approximately equal to that of a conventional credit/service card.

5,308,122
TUBE COUPLING

Cullen B. Crawford, deceased, late of Euclid, and Carole C. Hahl, executrix, Novelty, both of Ohio, assignors to Tylok International, Inc., Cleveland, Ohio

Filed Jul. 6, 1992, Ser. No. 908,043
Int. Cl.[5] F16L *19/02*
U.S. Cl. 285—52 **13 Claims**



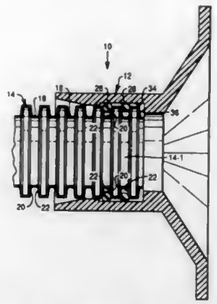
1. A tube coupling comprising a body, a nut adapted to be threaded on said body, a non-metallic coupling member adapted to surround a tube end and be captured by said nut to be seated together with said tube into said body as said nut is tightened, cooperating cam surfaces on the exterior of said coupling member and the interior of said body operative to constrict said coupling member about said tube end as the tube and body move relative to each other, an internal abutment flange on said coupling member extending between said tube end and body adapted to be driven against a seat on said body as said nut is tightened, and an external flange on said coupling member adapted to engage an internal flange on said nut, whereby when said nut is tightened, said coupling member and internal abutment flange will be driven into engagement with said seat as said cooperating cam surfaces constrict the coupling member about said tube end, said cooperating cam surfaces comprising axially spaced annular sloping surfaces on the interior of said body, said cam surfaces being axially separated by a cylindrical non-sloping surface, and corresponding to annular sloping surfaces on the exterior of said coupling member.

5,308,123
CORRUGATED HOSE COUPLING

Donald Zorn, Kitchener, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 21, 1992, Ser. No. 993,583
Int. Cl.[5] F16L *21/02*
U.S. Cl. 285—226 **2 Claims**

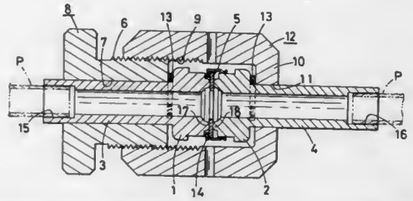
1. A coupling comprised solely of a socket, a flexible corrugated hose, and an "O"-ring:
said socket having a cylindrical body having an annular recess therein;
said flexible corrugated hose having an outside surface with parallel grooves having tapered sides therein;
said "O"-ring positioned in one of said grooves near one end of said flexible corrugated hose;
said "O"-ring being positioned in said annular recess when said one end of said flexible corrugated hose is inserted in said socket to enable said "O"-ring to provide only a three point seal between the tapered sides of the groove in which the "O"-ring is located and the annular recess in said socket; and
said socket having an annular shoulder therein to limit the movement of said one end of said flexible corrugated hose into said socket and said "O"-ring cooperating with said annular recess to restrain the movement of said flexible corrugated hose out of said socket.



5,308,124
THRUST RING FOR PIPE JOINTS

Michio Yamaji; Nobukazu Ikeda; Naoya Masuda, and Tetsuya Kojima, all of Osaka, Japan, assignors to Fujikin Incorporated, Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,542
Claims priority, application Japan, Apr. 11, 1991, 3-023970[U]
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—328 **7 Claims**



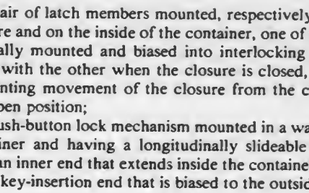
1. A pipe joint thrust ring interposed between a joint member of a pipe joint and a connecting threaded member rotatably fitted to the joint member, the thrust ring comprising a C-shaped body having a substantially rectangular cross-section and being in the form of a circle having approximately one-third of the circle cut away and having spring elasticity, the inner width between opposed ends of the C-shaped body being smaller than the outside diameter of the joint member and increasable to a value equal to the outside diameter of the joint member, wherein adjacent and in contact with said thrust ring, said joint member has a flange of greater outside diameter than an outside diameter of said thrust ring.

5,308,125
SEALED CONNECTOR FOR AUTOMOTIVE A/C SYSTEM

Russell C. Anderson, Jr., North Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1993, Ser. No. 14,924
Int. Cl.[5] F16L *23/16*
U.S. Cl. 285—349 **2 Claims**

1. For use in an automotive air conditioning system having a high pressure compressor line to be connected to a heat exchanger, a sealed connector comprising:
a first connector block having a planar primary engagement face and a refrigerant passage therethrough of predetermined diameter,
a second connector block having a planar secondary engagement face abutable with said primary engagement face and a tubular inlet projecting therefrom sized to fit within said refrigerant passage with a slight radial clearance therefrom,
a planar, primary seal face on said first block surrounding said passage,
a planar, generally annular secondary seal face on said second block surrounding said tubular inlet and axially offset from said primary seal face so as to define a predetermined thickness axial gap therewith when said primary and secondary engagement faces are in abutment,
one of said blocks also having a relief notch therein concentrically surrounding said secondary seal face and axially offset from the sealing face in the other of said blocks when said blocks are abutted so as to define a greater



thickness axial gap therewith than said predetermined thickness axial gap,
a sealing assembly comprised of a solid, annular retainer with a diameter substantially equal to said relief notch and an axial thickness less than said greater axial gap and an elastomeric, annular seal ring with a diameter substantially equal to said secondary sealing face and a thickness slightly greater than said predetermined axial gap, and,
clamping means for applying a clamping force to said connector blocks to draw said engagement faces into tight abutment,
whereby said sealing assembly may be placed between said connector blocks, concentric to said tubular inlet and refrigerant passage, before said clamping force is applied, after which said seal ring is assured of complete axial compression between said primary and secondary sealing faces while said retainer is assured of noninterference with said connector blocks

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5,308,126
PUSH-BUTTON LOCK SYSTEM

Kenneth F. Weger, Jr., Cary; Richard A. Koenig, Crystal Lake; Gerald A. Draffkorn, Jr., Crystal Lake; Steven J. Rogman, Crystal Lake, and Jose R. Rodriquez, Marengo, all of Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.

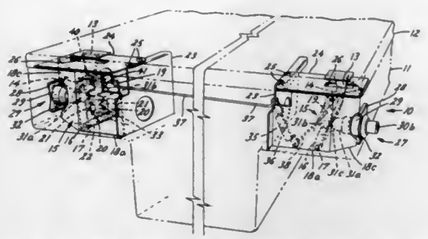
Filed Sep. 17, 1990, Ser. No. 583,582
Int. Cl.[5] E05C *3/22*
U.S. Cl. 292—53 **17 Claims**

1. A lock system for a container with a closure that is movable between open and closed positions, said lock system comprising:
a first pair of latch members mounted, respectively, on the closure and on the inside of the container, one of which is pivotally mounted and biased into interlocking engagement with the other when the closure is closed, thereby preventing movement of the closure from the closed to the open position;
a first push-button lock mechanism mounted in a wall of the container and having a longitudinally slideable portion with an inner end that extends inside the container and an outer key-insertion end that is biased to the outside of the

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container and forms a push-button, said slideable portion being rotatable between locked and unlocked positions;

a first shoulder mechanism coupled to the inner end of the slideable portion which, only when the slideable portion is in its unlocked position and the push-button is depressed, impinges on the pivotally mounted latch member, counteracting the bias thereon and disengaging the pair of latch members, whereby movement of the closure to the open position is possible; and



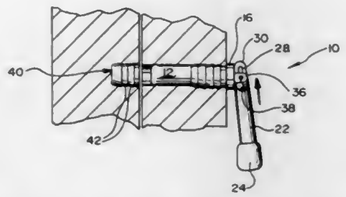
a second push-button lock mechanism having a second shoulder mechanism and a second associated pair of disengageable latch members, wherein the two pivotally mounted latch members are mechanically coupled to one another such that both pairs of latch members are disengaged when either of the push-button lock mechanisms is in the unlocked position and its push-button is depressed.

5,308,127

METHOD FOR LOCKING A SASH

Michael J. Foster, Brigown, St. Philomena's Road, Crosshaven County Cork, Ireland

Filed Jan. 14, 1993, Ser. No. 4,317
Int. Cl.[5] E05C *1/14*
U.S. Cl. 292—175 **4 Claims**



1. A method for selectively locking first and second frame members of a window or door to prevent sliding movement of one side frame member relative to the other; wherein the method comprises the steps of:

(a) providing an aperture in said first frame member;

(b) securing a sleeve member to said second frame member in a manner such that said aperture and said sleeve member are axially aligned;

(c) inserting a bolt system through said sleeve member, said bolt system comprising:

(i) a first bolt member which is axially movable between extended and retracted positions; wherein said first bolt members includes first and second end portions; wherein said second end portion extends into said aperture when said first bolt member is in said extended position; and

(II) a second bolt member including a connecting end portion and a head portion; wherein said connecting end portion is pivotably connected to said first end portion of said first bolt member, and said connecting end portion of said second bolt member is received in said sleeve member when said first bolt member is in its extended position; wherein when said first bolt member is in said retracted position said second bolt member may be pivoted relative to said first bolt member and then moved along a line generally perpendicular to the longitudinal axis of said first bolt member; and

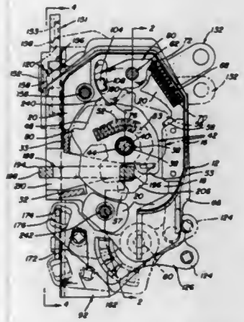
(d) providing bias means for biasing said first bolt member to its said extended position.

5,308,128

VEHICLE DOOR LATCH

Alfred L. Portelli, Waterford, and Rita M. Paulik, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 3, 1993, Ser. No. 12,858
Int. Cl.[5] E05C *3/16*
U.S. Cl. 292—216 **8 Claims**



1. An automotive vehicle door latch having a security lock comprising;

a frame rotatably mounting an unlatching lever for rotation from a rest position to an unlatch position where the unlatching lever has a potential for unlatching the door latch, and

an inside operating lever rotatably mounted on the frame for rotation from a rest position to an unlatch position where the unlatching lever has a potential for positioning the unlatching lever in its unlatch position,

the inside operating lever consisting essentially of a rotor that is rotatably mounted on the frame and an arm disposed between the rotor and the frame and is slideably mounted in tracks provided on the rotor so that is has a bypass position where it bypasses the unlatching lever when the inside operating lever is rotated from its rest position to its unlatch position and so that it has an engage position where it positions the unlatching lever in its unlatch position when the inside operating lever is rotated from its rest position to its unlatch position.

5,308,129

DOOR HARDWARE MODULE WITH LATCH

David G. Hlavaty, Allen Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 857,116, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 602,593, Oct. 24, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 15,039
Int. Cl.[5] E05C *21/00*
U.S. Cl. 292—216 **3 Claims**

1. In combination,

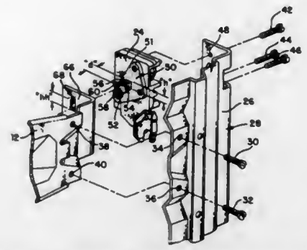
a door having a front end and rear end;

a mounting panel having door hardware fixedly mounted thereon and having front and rear ends adapted for fixed attachment on the door to thereby mount the door hardware on the door;

a door latch adapted for fixed attachment on the rear end of the door for latching the door in a closed position;

said door hardware including at least a door handle and operating rod means connecting the handle to the latch;

retainer means acting between the rear end of the panel and the door latch independent of the door handle and the



operating rod means to loosely connect the door latch to the mounting panel in readiness for the subsequent fixed attachment of the mounting panel and the door latch on the door;

first fasteners independent of the retainer means for fixedly attaching the door latch on the door;

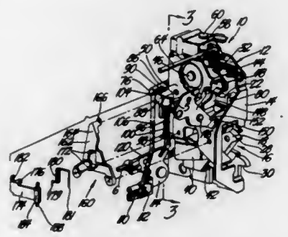
and second fasteners independent of both the retainer means and the first fasteners for fixedly attaching the rear end of the mounting panel to the door.

5,308,130

VEHICLE DOOR LATCH

Charles H. Lee, Almont, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1992, Ser. No. 992,663
Int. Cl.[5] E05B *3/00*
U.S. Cl. 292—336.3 **13 Claims**



1. A block out mechanism for an automotive vehicle door latch that includes a movably mounted operating lever that is moved by release means comprising;

a block out lever that is pivotally mounted on the door to pivot about a generally vertical axis between an unactuated position and an actuated position,

means biasing the block out lever toward the unactuated position,

the block out lever having a stop and a weight so that the block out lever pivots toward the actuated position in response to deceleration of the vehicle,

the stop being out of the path of movement of the operating lever when the block out lever is in the unactuated position,

the stop being in the path of movement of the operating lever to prevent unlatching of the door latch when the block out lever is in the actuated position, and

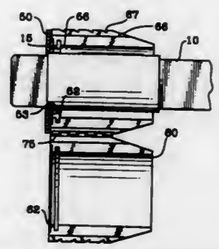
the weight being sufficient to pivot the block out lever to the actuated position before the release means rotate the operating lever any appreciable amount in response to vehicle deceleration.

5,308,131

INTERCHANGEABLE FACEPLATES FOR DOOR LATCHES PERMITTING ADAPTATION TO A VARIETY OF STANDARD DOOR PREPARATIONS

Jaime Galindo, Hayward, and Ralph Neary, San Francisco, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 26, 1993, Ser. No. 37,748
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—337 **1 Claim**



1. In a door latch of the type having a housing with one or more protrusions thereon, which is to be installed in a prepared cavity at a door edge and which requires a faceplate for finishing the door edge, the improvement, in combination with said door latch, comprising;

an interchangeable faceplate having an opening for permitting extensions and retraction for a latch bolt, having a peripheral shape required for compatibility with the prepared cavity, and having one or more recesses in said faceplate for receiving said one or more protrusions on said housing;

means releasably attached to said faceplate, for capturing said protrusions on said housing in engagement with said recesses in said faceplate, said means comprising a sleeve having a lip for engaging a retention ring on said faceplate, said sleeve being split longitudinally into two or more segments and having a beveled outer surface facilitating driving or pressing said sleeve into a prepared cavity in a door edge when assembled on said faceplate and said housing; and

means for securing said faceplate and said housing to said door edge.

5,308,132

CIRCUIT ASSEMBLY DEVICE FOR PROGRAMMABLY CONTROLLING PLACEMENT FORCE AND METHOD THERETO

Thomas P. Kirby; Christopher L. Becher, and David H. Rubin, all of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1992, Ser. No. 956,198
Int. Cl.[5] B25J *15/06*; B66C *1/02*
U.S. Cl. 294—64.1 **10 Claims**

1. A robotic placement device, comprising:

a programmable end-effector for picking and placing component parts, the programmable end-effector comprising a cylinder having a piston including a first and second shafts coupled together, the first shaft being larger than the second shaft;

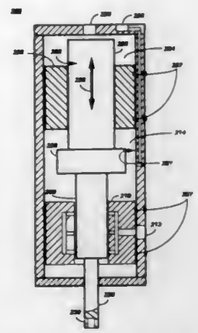
a controlling means for controlling a pressure applied to the cylinder and the piston including the first and second shafts of said programmable end-effector establishes a

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predetermined placement force at the programmable end-effector while placing component parts;

an air-bearing moveably coupled to the second shaft for providing substantially friction-free coupling therebetween as the piston moves vertically;

means for sensing the pressure and in response thereto generating a signal; and



a processing means, coupled to the controlling means, for processing the signal and in response thereto varying the pressure for maintaining a substantially constant placement force at the programmable end-effector while the programmable end-effector moves vertically.

5,308,133

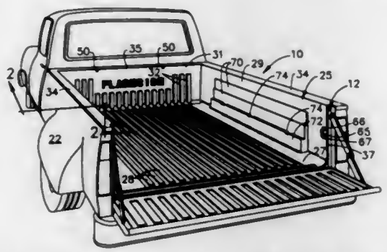
TRUCK BED LINER AND FASTENING SYSTEM

Cody Mangum, St. George, and Richard D. Rowland, Hurricane, both of Utah, assignors to LRV Acquisition Corporation, Wapakoneta, Ohio

Filed Mar. 8, 1993, Ser. No. 27,474

Int. Cl.[5] B62D *33/00*

U.S. Cl. 296—39.2 **20 Claims**



1. A combination truck bed liner and fastening system for truck beds having a front wall with a top rail with an outwardly facing lip, said combination comprising:

a truck bed liner having a floor, upstanding side walls, and a substantially planar front wall extending upwardly from said floor to upper edges, and at least one recess formed adjacent an upper edge of said front wall; and

at least one resilient snap-type clip having a hook end and a stay end and means for providing compressive force between said ends, said hook end extending outwardly to lockingly overlie said top rail, and said stay end overlying at least a portion of said upper edge adjacent said liner front wall and having an outwardly protruding stay which interacts with said recess in said truck bed, wherein said clip is compressively fitted over said upper edge and said rail to fasten said bed liner in place within said truck bed.

5,308,134

HEAVY TRUCK BUG AND GRAVEL SHIELD

John M. Stanesic, Johnston, Iowa, assignor to DFM Corporation, Urbandale, Iowa

Filed Mar. 30, 1993, Ser. No. 39,645

Int. Cl.[5] B60J *1/20*

U.S. Cl. 296—91 **12 Claims**



1. A heavy duty truck bug and gravel shield assembly, comprising:

a base portion adapted for covering and conforming relationship over the top front end portion of the grill and hood of an over-the-road truck, said grill having a front and opposing vertical sides and said base portion wrapping over said hood and then vertically downward over said sides of said grill;

a shield portion comprised of a unitary durable but flexible plastic material having top and bottom edges, with the bottom edge mounted to said base portion; and

means to detachably mount said base portion to the front end hood of said over-the-road truck.

5,308,135

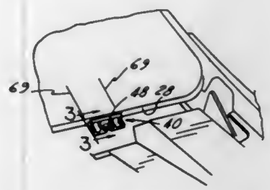
SACRIFICIAL STATIONARY SUPPORT FOR MOUNTING SAFETY GLASS IN AUTOMOTIVE VEHICLES AND WINDOW INSTALLATION METHOD

Dennis F. Stedman, Ortonville, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 13, 1993, Ser. No. 60,137

Int. Cl.[5] B60J *1/00*

U.S. Cl. 296—96.21 **5 Claims**



1. A method of securing glass windows into window openings provided in the body work of a vehicle and defined by peripheral portions of said body work comprising the steps of:

a. securing a support spacer of water soluble material to the body work of the vehicle in a position on the body work adjacent to a window opening so that it can support a glass window thereon,

b. providing an adhesive between the peripheral edge portions of said glass window and the peripheral portions of said body work which defines said window opening,

c. installing said glass window onto said body work so that at least one edge thereof is supported on said support spacer and said glass window fits onto said peripheral portions of said body work defining said opening,

e. curing said adhesive to form a bond between said peripheral portion of said glass window and the peripheral portion of said body work defining said opening to secure said glass window therein,

f. dissolving said support spacer with moisture at least to a point where there is substantially no contact between said glass window and said support surface and to thereby substantially eliminate the potential for noise otherwise generated by contact between said glass and said support spacer and including any frictional rubbing of said glass and foreign matter located between said glass and said support spacer.

5,308,136

SUN VISOR FOR MOTOR-POWERED VEHICLES

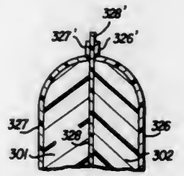
Gerhard Schwarz, Tamm; Hans-Georg Goletz, Bietigheim-Bissingen, and Lothar Stoczek, Markgröningen, all of Fed. Rep. of Germany, assignors to Eugen Zipperle GmbH & Co., KG, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 962,653

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1992, 9209123[U]; European Pat. Off., Sep. 1, 1992, 92114897.9

Int. Cl.[5] B60J *3/00*

U.S. Cl. 296—97.1 **13 Claims**



1. Sun visor for motor-powered vehicles comprising a visor body formed of two parts which are arranged about a partition plane which is located between two outer surface sides of the sun visor, one outer surface side turned toward the windshield and one outer surface side turned away from the windshield when the sun visor is positioned for use, an inside frame positioned between the two parts of the visor body; and a covering over the visor body, said two parts of the visor body being formed of a plastic, said covering including two thin sheets of plastic which are formed together along a partition joint of the visor body by a weld seam, and a thin sheet disposed between the two parts of the visor body and made of the same material as the covering to provide material accumulation in the area of the weld seam.

5,308,137

SUN VISOR FOR VEHICLES AND METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

Lothar Vlertel, Altforweiler, Fed. Rep. of Germany; Patrick Welter, La chambre, France; René Lercorvaisier, Hombourg-Houts, France; Serge Mosser, Bambiderstroff, France, and Karl-Heinz Pompino, Wuppertal, Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

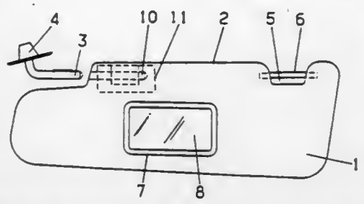
Filed Mar. 3, 1993, Ser. No. 25,884

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1992, 4242939

Int. Cl.[5] B60J *3/00*

U.S. Cl. 296—97.1 **18 Claims**

1. A sun visor for automotive vehicles having a sun-visor body of plastic foam, the sun-visor body comprising at least one stiffening, the stiffening being formed integral with the sun-visor body and both being formed from polypropylene particle foam, and the stiffening having a substantially greater



hardness and stiffness than the rest of the plastic foam material of the sun-visor body.

5,308,138

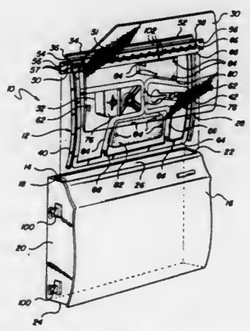
DOOR CARTRIDGE MODULE WITH DISCRETE ENERGY ABSORBING ELEMENTS

David G. Hlavaty, Northville Twp., Wayne County, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1992, Ser. No. 992,661

Int. Cl.[5] B60J *5/04*

U.S. Cl. 296—146.6 **22 Claims**



1. A vehicle door assembly, comprising:

an outer panel;

an inner panel;

modular support frame means disposed between said panels for providing structural integrity to said door assembly;

at least one energy-absorbing occupant protection member disposed between said panels; and

push-together connection means extending from said frame means for engaging and retaining said occupant protection member connected to said frame means in response to forcing said occupant protection member toward engagement with said frame means.

5,308,139

SEAT COVER

Paul J. Rieger, Arrington, Tenn., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 4, 1992, Ser. No. 924,744

Int. Cl.[5] A47C *7/62*

U.S. Cl. 297—184.11 **20 Claims**

1. A seat cover for covering and protecting a seat, the seat being of the type having a first end and a second end opposing the first end, the seat cover comprising:

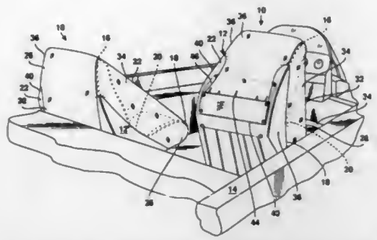
a collapsible jacket having a securing end secured to one of the first and second ends of the seat and a free end that is releasably securable to the other of the first and second

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ends of the seat, said jacket having sufficient surface area to substantially overlie the seat between said first end and said second end;

securing means for releasably securing said jacket to the said one end of the seat;

a pouch having an inner pocket dimensioned to receive and store said jacket when said jacket is not in use, said pouch including a protective flap that covers the entry to said inner pocket;



said jacket having at least one strip of hook and loop fastening material secured to said securing end and arranged to mate with a complementary strip of hook and loop fastening material located on said pouch to removably secure said jacket to said pouch; and

attaching means for attaching said pouch to the said other end of said seat.

5,308,140

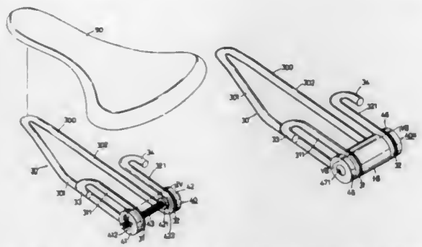
SHOCK-ABSORBING DEVICE FOR A BICYCLE SEAT

Stella Yu, No. 1012, Sec. 1, Chung-Shan Rd., Ta-Chia Chen, Taichung Hsien, Taiwan

Filed Mar. 3, 1993, Ser. No. 25,878

Int. Cl.[5] B62J *1/02*

U.S. Cl. 297—195.1 **3 Claims**



1. A shock-absorbing device for a bicycle seat with a saddle, said shock-absorbing device including a saddle support to be mounted to a bottom side of the saddle, wherein the improvement comprises:

said saddle support being made of metal and having a substantially U-shaped horizontal portion with left and right arms, each of said left and right arms having a distal upwardly curving end, said saddle support further having a pair of extensions which extend respectively from said upwardly curving end of said left and right arms, said extensions being disposed above and being parallel to a respective one of said left and right arms, each of said extensions having a distal outwardly bent hook end; and

said shock-absorbing device further including an adjustment unit with a pair of cylindrical portions, which are clamped tightly between a respective one of said left and right arms and a respective one of said extensions, and a retaining unit which extends across said left and right arms so as to retain said adjustment unit on said saddle support.

5,308,141

UPHOLSTERY FABRIC

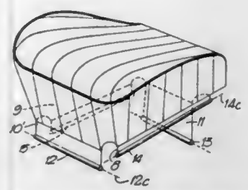
Frank Robinson; Gerald F. Day, both of Derbyshire, and Keith Jeffcoat, Warwickshire, all of United Kingdom, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 25, 1989, Ser. No. 412,173

Claims priority, application United Kingdom, Sep. 27, 1988, 8822638

Int. Cl.[5] A47C *27/00*

U.S. Cl. 297—218 **11 Claims**



1. A piece of machine-knitted upholstery fabric for covering at least part of a surface of a three-dimensional support, characterised by one or more portions of tubular fabric integrally knitted with the upholstery fabric piece at location(s) where each such tubular portion can serve as an anchorage device for facilitating the securing of the upholstery fabric piece to said support.

5,308,142

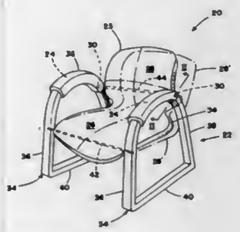
CHAIR WITH ARM MOUNTED MOTION CONTROL

Carl V. Forslund, III, Grand Rapids; Frederick S. Falks, Greenville, and Thomas G. Feldpausch, Hastings, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed Jan. 23, 1992, Ser. No. 824,571

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—286 **38 Claims**



1. A chair comprising:

a frame defining a curved arm support;

a seat supported on said frame;

a back;

an arm member movably mounted on said curved arm support, said arm member being operatively connected to said back and guided by said curved arm support so that movement of said back from an upright position to a reclined position is controlled by said arm member and said curved arm support; and

resilient means operatively connected to said back for resiliently biasing said back towards said upright position, said resilient means providing a static preload force and a dynamic biasing force on said back when reclined, and including release means for selectively changing one of said static preload force and said dynamic biasing force of said resilient means as said back is reclined.

5,308,143

SAFETY ROCKER FOR AN INFANT SEAT

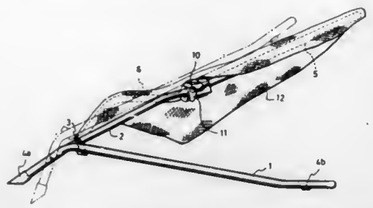
Kenny Cheng, Taipei, and Scott Lin, Taipei Hsien, both of Taiwan, assignors to Joanna A. Nichols, Baldwin Park, Calif.

Filed Dec. 1, 1992, Ser. No. 983,706

Claims priority, application Taiwan, Sep. 23, 1992, 81212880

Int. Cl.[5] A47D *13/10*

U.S. Cl. 297—292 **5 Claims**



1. A safety rocker or an infant seat, said rocker comprising:

a foot piece;

a support bracket;

at least one clip, wherein said clip is mounted on the foot piece near a bend point thereof to fix said support bracket on said foot piece;

two sets of pads, wherein said two sets of pads are disposed on said foot piece;

an upper frame;

a lower frame;

an inner fastener;

an outer fastener;

a bolt;

a swivel head;

a seat; and

a swinging mechanism constructed by using said bolt to penetrate said lower frame, said inner fastener, said torsion coil spring, said outer fastener, and said support bracket, and then threadedly engaging said swivel head with said bolt such that said lower frame and said upper frame can limitedly rotate about said bolt with respect to said support bracket,

wherein said support bracket can e detached from said clip to fold up the rocker when the safety rocker for an infant seat is not in use;

said swivel head is locked by engaging said inner fastener and said outer fastener together to fix said lower frame and said upper frame on said support bracket if the rotation of said lower frame and said upper frame with respect to said support bracket is not intended.

5,308,144

CHAIR, IN PARTICULAR WORK OR OFFICE CHAIR

Heinrich Korn, Maintal, Fed. Rep. of Germany, assignor to Roeder GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 526,463, May 21, 1990, abandoned. This application Jul. 15, 1991, Ser. No. 730,243

Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916474

Int. Cl.[5] A47C *1/032*

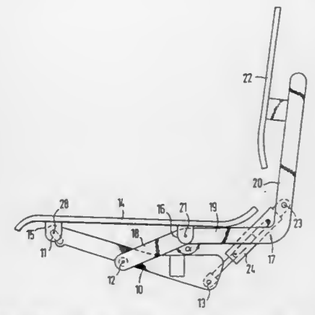
U.S. Cl. 297—301 **7 Claims**

1. In a chair having a seat that is variable in inclination and is pivotal in a forward region about a horizontal pivot shaft, a backrest, an inclination of which is mandatorily disproportionately variable as a function of a change in inclination of the seat, with increasing inclination of the seat the backrest approaching a rear end of the seat, the horizontal pivot shaft of the seat being limitedly adjustable both downward and toward the backrest on a bearing block of a chair pedestal, the seat being pivotally connected to a plurality of pivot levers, each of said pivot levers comprising three segments, a first segment attached to said backrest, a second segment extending at a right angle to said first segment, an end of said second segment opposite said first segment being pivotally attached to the underside of said seat and spaced apart by about ¼ of a depth from said rear end of said seat and a third segment adjoining and extending from the pivotally attached opposite end of said second segment, the improvement comprising:

the end of said third segment (**18**) opposite said second segment (**19**) pivotally attached to said bearing block (**10**) approximately beneath a middle of said seat (**14**);

said second segment (**19**) and said third segment (**18**) forming an obtuse angle of approximately 150° to 170° in a direction facing away from said seat (**14**), said second segment (**19**) extending approximately horizontally in an upright position of said chair;

said pivot levers (**17**) joined together in a vicinity of said first segments (**20**) which carry said backrest (**22**), and a gas



spring (**24**) pivotally (**13, 23**) supported on said bearing block (**10**) and on a cross bar (**27**) joining said first segments (**20**);

a horizontal bearing block crossbar (**26**) secured to a front end of said bearing block (**10**), vertical tabs (**15**) secured to said seat (**14**) and having bores for receiving shaft ends of said horizontal pivot shaft (**28**), said vertical tabs overlapping crossbar ends of said horizontal bearing block crossbar (**26**), said horizontal pivot shaft (**28**) adjustable limitedly downward and toward said backrest in at least one oblong slot (**11**) disposed in at least one of said bearing block (**10**) and each of said crossbar ends of said horizontal bearing block crossbar (**26**);

and said bearing block (**10**) inclining upward to an angle of approximately 20° toward said pivot shaft (**28**) of said seat (**14**).

5,308,145

RECLINING CHAIR

Marcus C. Koepke, and Earl H. Koepke, both of Sturgis, Mich., assignors to Kimball International Marketing, Inc., Jasper, Ind.

Filed Feb. 12, 1992, Ser. No. 836,071

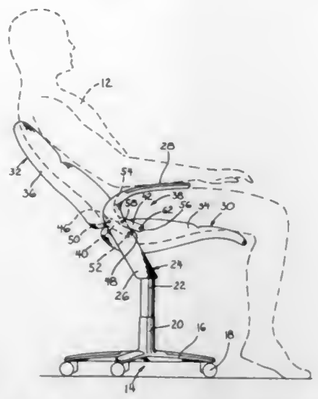
Int. Cl.[5] A47C *1/032*

U.S. Cl. 297—342 **4 Claims**

1. In a reclining chair including a base, peripheral arm supports fixedly connected to said base, a seat support, and a back support, means for pivotally connecting said seat support and back support to one of said arm supports wherein the back support is shiftable between a generally upright position and a reclined position, the improvement wherein said means for connecting comprises first and second links, said first link having a first end connected to said back support to and one of said arm supports, and a second end pivotally connected to said seat support, said second link having a first end pivotally connected to one of said arm supports, and a second end pivot-

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ally connected to said seat support and to one of said arm supports whereby said seat support is raised vertically upon



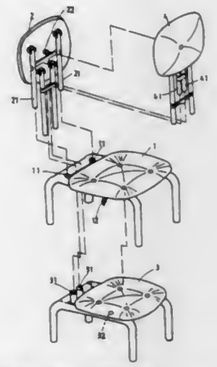
shifting of the back support toward its reclined position to maintain vertical eye level of a user seated therein.

5,308,146

COMBINATION CHAIR

Shin C. Chou, No. 11, Lane 195, An Kang Road, Hsin Hen City, Taipei Hsien, Taiwan

Filed Aug. 27, 1992, Ser. No. 935,918
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—440.16 **1 Claim**



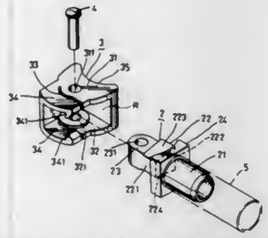
1. A combination chair, comprising:
a base chair having a first back end portion extending between opposing first sides thereof;
a top chair having a second back end portion extending between opposing second sides thereof, said top chair being stackable on said base chair;
means for releasably lockingly coupling said top chair on said base chair in a stack, said releasable locking means including complementary fastening members coupled to respective said first and second sides of said base and top chairs;
a first back chair having two pairs of legs pivotedly coupled to a bottom surface thereof, said two pairs of legs having mean for folding to extend substantially parallel to said bottom surface of said first back chair and one of said two pairs of legs being insertable through an opening in said second back end portion for releasable coupling with a pair of first sleeve members secured to said first back end portion of said base chair; and,
a second back chair having two pairs of legs pivotedly coupled to a bottom surface thereof, said two pairs of legs of said second back chair having means for folding to extend substantially parallel said bottom surface of said second back chair and one of said two pairs of legs of said second back chair being insertable into a pair of second sleeve members secured to said second back end portion of said top chair for releasable coupling therewith, said first and second back chairs being respectuvely coupled to said stacked base and top chairs with said bottom surface of said first back chair facing said bottom surface of said second back chair to form a single chair unit, whereby said first and second back chairs are separable from said stacked top and base chairs and said top chair is separable from said base chair to yield four independent chairs.

5,308,147

ASSEMBLY OF CHAIR FRAME AND REINFORCING ROD UNIT

Chuen-Jong Tseng, Chia-I-Hsien, Taiwan, assignor to Shin Yeh Enterprise Co., Ltd., Taiwan

Filed Apr. 22, 1993, Ser. No. 51,464
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—452.18 **3 Claims**



1. An assembly of a chair frame and a reinforcing rod unit, said chair frame being U-shaped and having two parallel longitudinal frame portions, said reinforcing rod unit being made of a rigid material and having two ends coupled with said longitudinal frame portions respectively so as to prevent deformation of said longitudinal frame portions, wherein the improvement comprises said reinforcing rod unit including a horizontal tube and two pivotal connector mechanisms respectively coupled with two ends of said tube, each of said pivotal connector mechanisms including an elongated tube connector coupled with said tube, a flexible hollow frame connector coupled with a corresponding said longitudinal frame portion, and a pivot pin for mounting said tube connector pivotally on said frame connector, each of said tube connectors including an insert section engaged within an end portion of said tube, a shoulder section against which the end portion of said tube abuts, a tapered section connected securely to an end of said shoulder section and having a high side surface with two aligned vertical sides, and a low side surface with two aligned vertical sides smaller than said vertical sides of said high side surface, and a pivot section connected securely to an end of said tapered section, said pivot section having a pivot hole formed therethrough, each of said frame connectors including a horizontal top wall, a horizontal bottom wall, a curved vertical side wall interconnecting said top and bottom walls and being adapted to abut against the corresponding said longitudinal frame portion, and a recess formed in said frame connector between said top and bottom walls, each of said top and bottom walls having an open-ended slot formed therethrough and defining a pawl plate portion on one side of said slot, and a pivot hole formed on the other side of said slot between said slot and said curved

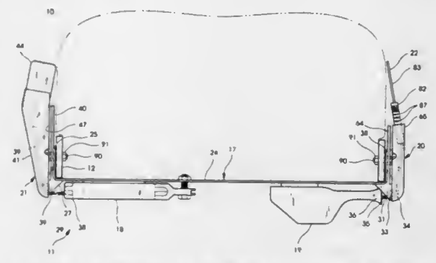
side wall, said pivot pin extending through said pivot hole of said tube connector and said pivot holes of said frame connector, each of said pawl plate portions having a barb projecting inward from an end portion thereof so as to define a restricted gap between said pawl plate portions, thereby confining said tapered section of a corresponding said tube connector within said restricted gap in such a manner that said high side surface of said tapered section abuts against said barbs, said barbs being spaced apart from each other at a distance which is greater than a length of said vertical sides of said lower side surface and which is smaller than a length of said vertical sides of said high side surface.

5,308,148

SEAT BELT MODULE ASSEMBLY

Jeffrey E. Peterson, Indianapolis; Niels Dybro, Carmel; Ronald F. Homeier, Plainfield, and Allan R. Lortz, Noblesville, all of Ind., assignors to Indiana Mills and Manufacturing, Inc., Westfield, Ind.

Filed Sep. 24, 1992, Ser. No. 950,908
Int. Cl.[5] A62B *35/00*
U.S. Cl. 297—468 **2 Claims**



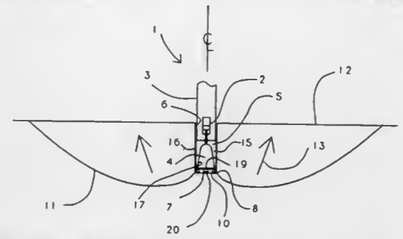
1. A seat belt assembly for mounting to a vehicle seat having a vehicle seat frame comprising:
a U-shaped wall having a horizontal portion positioned beneath said seat and opposite vertical end portions positioned on opposite sides of said seat adjacent said seat frame, said vertical end portions joined to said horizontal portion at junctions and including fastener openings and first cover openings;
first fastener means extending through said fastener openings of said vertical end portions and fastening said U-shaped wall to said seat frame;
retractor means mounted to and beneath said horizontal portion and opening outwardly to allow a belt to extend therefrom;
tensioning means mounted to and beneath said horizontal portion and opening outwardly in a direction oppositely of said retractor means to allow a belt to extend therefrom;
a pair of belts having distal ends and being mounted adjacent and beneath said horizontal portion by said retractor means and said tensioning means and extending therefrom;
roller means mounted to said U-shaped wall and positioned at said junctions of said horizontal portion with said roller means operable to guide said belts from said retractor means and said tensioning means to said vertical end portions;
a tongue and buckle mounted to said distal ends of said belts;
a pair of vertical covers positioned outwardly of and to said vertical end portions with said pair of belts extending therebetween with said tongue and said buckle stored when not in use between said pair of vertical covers and said vertical end portions, said pair of vertical covers include second cover openings aligned with said first cover openings, said vertical covers concealing said first fastener openings and said first fastener means, said vertical covers being sized and selected to receive said tongue and said buckle at the desired elevation; and,
second fastening means extending through said first cover openings and said second cover openings to secure said covers to said vertical end portions after said first fastening means have secured said U-shaped wall to said seat frame.

5,308,149

NON-EXPLOSIVE DRILL HOLE PRESSURIZATION METHOD AND APPARATUS FOR CONTROLLED FRAGMENTATION OF HARD COMPACT ROCK AND CONCRETE

John D. Watson, Evergreen, and Chapman Young, III, Steamboat Springs, both of Colo., assignors to Sunburst Excavation, Inc., Denver, Colo.

Filed Jun. 5, 1992, Ser. No. 894,604
Int. Cl.[5] E21C *37/14*; F42D *1/22, 3/04*
U.S. Cl. 299—13 **29 Claims**



12. A method for breaking rock, concrete and other hard materials comprising the steps of:
drilling a hole in a material by a drilling means;
inserting into the hole a cartridge containing a propellant charge, the cartridge having an external diameter slightly less than a diameter of the hole;
stemming the hole with a relatively heavy bar having a diameter slightly less than the diameter of the hole and having a mass sufficient to limit the bar recoiling to less than one third the diameter of the hole;
igniting the propellant by any one of electrical, optical or percussive means;
fracturing the material by the initiation and propagation of controlled fractures from a bottom of the hole.

5,308,150

DOWN REAMING APPARATUS

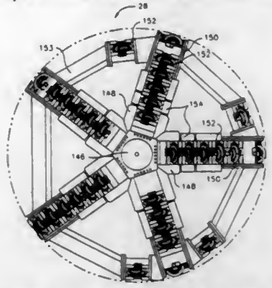
Thomas C. Whitebouse, Puyallup, Wash., assignor to The Robbins Company, Kent, Wash.

Division of Ser. No. 859,321, Mar. 27, 1992. This application Jul. 26, 1993, Ser. No. 96,264
Int. Cl.[5] E21B *10/20*; E21D *9/10*
U.S. Cl. 299—61 **9 Claims**

1. A cutterhead for a rock boring apparatus comprising:
a cutterhead body;
a plurality of arms radially disposed on said cutterhead body, said arms having cutter assemblies thereon, said plurality of arms including a first arm having a given length and additional arms, said additional arms each of a different length that is less than the given length of said first arm, said additional arms being oriented on said cutterhead body such that the lengths of said additional arms are decreased by the same amount from each of said additional arms to another of said additional arms;
a plurality of arm extenders having cutter assemblies thereon, said arm extenders being oriented in a first position in which each of said arm extenders is attached to one of said arms, said arm extenders each having a length such that the combined length of each of said arms and attached arm extender is substantially equal; and

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spacer means having a cutter assembly, said spacer means being adapted to be attached to at least one of said arms to increase the diameter of said cutterhead in conjunction with relocation of each of said arm extenders from said first position to a second position on another of said arms such



that the combined length of each of said arms and attached arm extender in said second position is substantially equal and is greater than the combined length of each of said arms and attached arm extender in said first position.

5,308,151

CUTTER WHEEL ASSEMBLY FOR MINING MACHINE

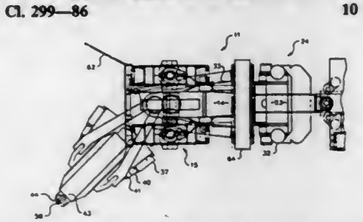
David B. Sugden, Tasmania, Australia, and John Turner, Renton, Wash., assignors to Z C Mines Pty Ltd., New South Wales, Australia

Division of Ser. No. 701,503, May 16, 1991, Pat. No. 5,205,612. This application Nov. 23, 1992, Ser. No. 980,251

Claims priority, application Australia, May 17, 1990, PK 0197

Int. Cl.[5] E21B *10/12*; E21C *25/10*

U.S. Cl. 299—86 **10 Claims**



1. A cutter wheel assembly including a cutting wheel having a peripheral wheel rim supporting a plurality of main wheel cutters having cutting rims and being disposed with their cutting rims vertical to the cutter wheel axis, said main wheel cutters being characterized in that said cutting rims are substantially within a single main cutting plane, and a plurality of gauge wheel cutters disposed on either side of the single plane of the cutting rims, said gauge wheel cutters being characterized in that the gauge axes about which said gauge wheel cutters rotate are substantially inclined to said main cutting plane.

5,308,152

WHEEL UNIT FOR IN-LINE ROLLER SKATE

Diana Ho, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Jul. 6, 1993, Ser. No. 85,833

Int. Cl.[5] B60B *5/02*

U.S. Cl. 301—5.3 **2 Claims**

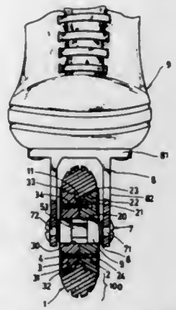
1. A wheel unit adapted for use on an in-line roller skate comprising:

a wheel member made of elastomer material having a central hole formed through said wheel member;

a first disk and a second disk combinable with each other and engageable with the central hole in said wheel member, with said first and second disks cooperatively firmly clamping said wheel member in between two said disks, said wheel member embedded with and clamped by said two disks being rotatably mounted on an axle of a mounting frame positioned under an in-line roller skate;

said wheel member including: the central hole formed through the wheel member, a pair of side holes each said side hole enlarged from and radially diverged outwardly from the central hole with the pair of side holes disposed on two opposite sides of the central hole of the wheel member;

said first disk including: a first disk hole formed through the first disk engageable with a first bearing rotatably mounted on an axle of a mounting frame of a roller skate, a first coupling portion protruding inwardly from a first intermediate extension of the first disk to be engageable with a first half portion of the central hole of the wheel member, and a first clamping flange formed on an outer portion of the first disk connected with the first intermediate extension of the first disk for operatively retaining a first central rim portion disposed on a first side surface of the wheel member in cooperation with the second disk, with the first intermediate extension engageable with the side hole disposed on a first side portion of the wheel member; said second disk including: a second disk hole formed through the second disk aligned with the first disk hole and engageable with a second bearing rotatably mounted on the axle of the mounting frame of the roller



skate, a second coupling portion protruding inwardly from a second intermediate extension of the second disk towards the first coupling portion of the first disk when embedded in the wheel member to be engageable with a second half portion of the central hole of the wheel member, and a second clamping flange formed on an outer portion of the second disk connected with the second intermediate extension of the second disk for operatively retaining a second central rim portion disposed on a second side surface of the wheel member in cooperation with the first disk, with the second intermediate extension engageable with the other side hole disposed on a second side portion of the wheel member, and with the second disk combinable with the first disk into the central hole and the two side holes in the wheel member by a plurality of fixing screws inserted through a plurality of screw holes respectively formed in the second disk and in the first disk;

said second disk having a rim groove annularly recessed in a periphery of the second coupling portion of the second disk to be engageable with a rim extension annularly protruding inwardly from the first disk towards the second disk when mounted in the wheel member to allow both said coupling portions of the two disks to be engageable with the central hole of the wheel member; each said disk formed with a plurality of protrusion recesses annularly recessed in each said intermediate extension of each said disk to be engageable with a plurality of protrusions

concentrically formed on a perimeter of each said side hole of the wheel member so that each said disk is firmly engaged with the wheel member to prevent any unexpected disengagement of each said disk from the wheel member; and

each said coupling portion of each said disk having an outside diameter slightly larger than an inside diameter of the central hole of the wheel member; and each said intermediate extension of each said disk having an outside diameter slightly larger than an inside diameter of each said side hole of the wheel member for a firm and stable embedding of said two disks into the central hole and the side holes in the wheel member, whereby upon a fixing of the screws into screw holes formed in said two disks, the two disks will be firmly combined to clamp the wheel member in between the two disks for enhancing a stability of the wheel unit used in the roller skate.

5,308,153

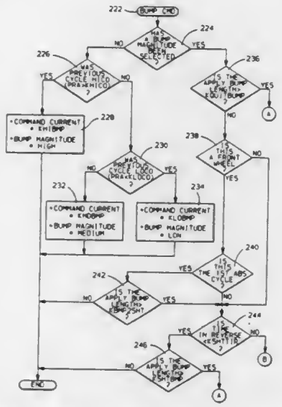
ANTILOCK BRAKE SYSTEM WITH CLOSED LOOP APPLY BUMP

Kevin S. Kidston, New Hudson; Eric E. Krueger, Livonia, and Jerry J. Queen, II, Brighton, all of Mich., assignors to General Motors Corp., Detroit, Mich. and Delco Electronics Corp., Kokomo, Ind.

Filed Aug. 19, 1992, Ser. No. 932,204

Int. Cl.[5] B60T *8/70*

U.S. Cl. 303—97 **4 Claims**



1. A method of antilock control of the brake pressure applied to a brake of a vehicle wheel traveling over a road surface in a vehicle braking system having a pressure modulator for modulating the applied brake pressure during antilock controlled braking of the wheel, the method comprising the steps of:

measuring wheel acceleration;

determining a peak wheel acceleration during an ABS cycle having a release phase initiated in response to an incipient wheel lock condition and an apply phase initiated in response to a recovery from the incipient wheel lock condition;

detecting the incipient wheel lock condition;

controlling brake pressure during the release phase of the ABS pressure cycle in response to the detected incipient wheel lock condition by controlling the modulator to release brake pressure to allow recovery from the wheel lock condition;

detecting the recovery from the wheel lock condition; and

controlling an increase in brake pressure during the apply phase of the ABS pressure cycle in response to the detected recovery from the wheel lock condition by controlling the modulator to apply brake pressure;

(A) at a predetermined initial high rate to quickly restore brake pressure and for a period ending when the wheel acceleration becomes less than a threshold level that is a predetermined function of the determined peak acceleration, and

(B) at a predetermined low ramp rate when the ending of the initial high rate.

5,308,154

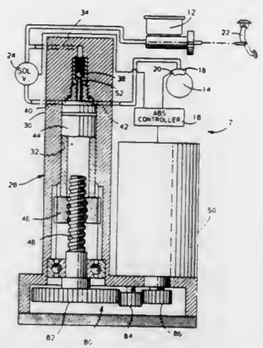
BRAKING SYSTEM WITH NONBACKDRIVEABLE ACTUATOR

Michael F. Matouka, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 694,286, May 1, 1991, which is a continuation-in-part of Ser. No. 353,320, May 17, 1989, Pat. No. 5,011,237. This application Jul. 13, 1992, Ser. No. 912,473

Int. Cl.[5] B60T *8/42*

U.S. Cl. 303—115.2 **2 Claims**



1. An anti-lock braking system for a wheel of an automotive vehicle comprising:

master cylinder means for supplying pressurized fluid;

sensor means to determine a rotational speed of the wheel;

a wheel brake means receiving pressurized fluid from said master cylinder means and for restraining rotational movement of said wheel;

an anti-lock braking controller cognizant of the rotational condition of said wheel via the sensor means and providing a signal when the rotational condition of said wheel is within present parameters;

an actuator frame having a bore with means of fluid communication with said wheel brake means;

a piston slidably sealably mounted with said bore for providing a variable control volume in communication with said wheel brake means and thereby modulating the pressure therein;

a nut operatively associated with said piston and slidably mounted within said bore in a non-rotative fashion;

a power screw projecting into said nut and threadably engaged within in a low friction, backdriveable manner, said power screw having a fixed rotational axis with respect to said actuator frame;

reversible motor means for powering said power screw, said motor means being responsive to signals given by said controller;

a non-rotative sleeve located between said power screw and said motor means in a fixed position, said sleeve having an inner diameter of a first value;

a coil spring having a free outer diameter of a second value generally equal to or greater than said first value, said coil spring being captured within said non-rotative sleeve, and

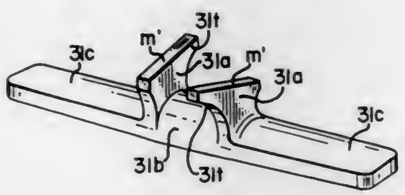
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said coil spring having a tang a first generally radial tab and a second tab with a generally radial portion connected with a loop;

a driver member with a torsion transfer portion projecting into said non-rotative sleeve, said drive member having a rotational axis passing though said loop, said driver member having an angular position in correspondence with the angular position of said motor means, said driver member having first and second contact surfaces for engagement with said respective first and second spring tangs to cause said tangs to release and to allow said spring to have sliding movement within said non-rotative sleeve in both directions;

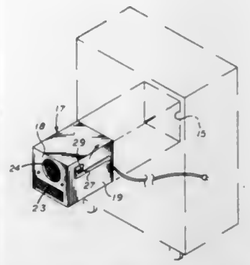
a driven member with an angular position in correspondence with the angular position of said power screw, said driven member having a rotational axis generally coterminous with said rotational axis of said driver member and said driven member having projecting into said sleeve a torsion transfer portion for making contact with said driver member torsion transfer portion for transferring torque from said driver member to said power screw, said driven member having at least one contact surface for making contact on one of said second spring tang on the opposite side of said spring tang said driver contact surface makes contact on to cause said spring to radially expand and lock within said sleeve to prevent torque from said power screw being transferred to said motor means when said piston is moving away from a position more adjacent to said actuator frame bore means of fluid communication with said wheel brake means by fluid pressure within bore.

5,308,155
CORE BAR MEMBER FOR RUBBER CRAWLER AND RUBBER CRAWLER DEVICE
Yusaku Katoh, Fukuyama, Japan, assignor to Fukuyama Gomu Kogyo Kabushikikaisha, Japan
PCT No. PCT/JP91/01039, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/02399, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 2, 1991, Ser. No. 852,264
Int. Cl.[5] B62D *55/24*
U.S. Cl. 305—38 **6 Claims**



1. A core bar member for a rubber crawler which includes:
(a) a pair of projections, each of said projections having an upper face;
(b) left and right wing portions
(c) said upper faces of said pair of projections protruding to a fixed height upward and having protruding parts having a width direction and of a fixed length in said width direction of said left and right wing portions;
(d) the upper faces of said left and right projections including said protruding parts being upwardly arcuate and having a center portion with said center portion of said upwardly arcuate protruding parts being the bottom thereof.

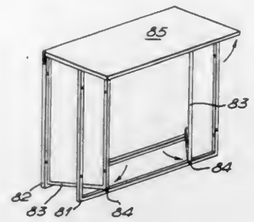
5,308,156
TOOL BOX FAN, HEATER, OR BOTH
Robert R. Gutierrez, 17750 E. Lone Oak Rd., Sanger, Calif. 93657
Filed Nov. 12, 1991, Ser. No. 790,830
Int. Cl.[5] A47B *83/00*
U.S. Cl. 312—236 **5 Claims**



1. A tool box and heater apparatus, comprising,
a tool cabinet, including spaced side walls, a front wall, and a top lid, and
a tray mounted within the cabinet underlying the top lid, the tray including a tray flange extending upwardly about the tray, and
a heater housing oriented within the tool cabinet directed interiorly thereof extending from the front wall, and
the heater housing slidably and removably mounted relative to the heater housing cavity, the heater housing including a housing front wall, housing side walls, and a housing top wall, and
the heater housing including an air inlet screen, and an air outlet screen directed through the front wall, the air outlet screen defined by a predetermined diameter, and
each side wall of said housing side walls including a support leg, and
said support leg includes a pivot axle pivotally mounting each support leg at a lower terminal end of each support leg into a side wall of said housing side walls, and each upper terminal end of each support leg including a support leg slot, the support leg slot arranged for receiving the tray flange therewithin for mounting the heater housing selectively about the tool cabinet.

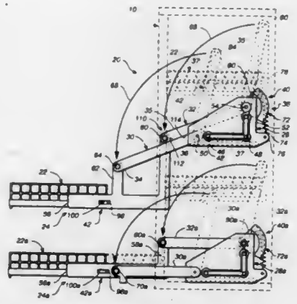
5,308,157
FOLDABLE STRUCTURES
David C. Dyer, 25B London Road, Hertford SG13 7RL, England
PCT No. PCT/GB90/00697, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO90/13241, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 777,219
Claims priority, application United Kingdom, May 4, 1989, 8910228
Int. Cl.[5] A47B *43/00*
U.S. Cl. 312—258 **4 Claims**

1. A foldable structure comprising:
a front frame;
a top frame;
a back frame being parallel to said front frame;
a first side frame hingedly attached to said front frame and by a first pair of slidable and hingeable swivel cleats;
a second side frame hingedly attached to said front frame and slidably and hingedly attached to said back frame by a second pair of swivel cleats,
said first side frame and said second side frame being adapted for simultaneous movement so as to expand the foldable structure into an erected box configuration when said first side frame and said second side frame are moved parallel to each other and to collapse the foldable structure into a flat collapsed configuration when sliding and hinging ends of said first side frame and said second side frame are moved toward each other;
connection means for connecting said top frame to one of said front frame and back frame when the foldable structure is in said flat collapsed configuration,
said top frame being movable to be at right angles to said front frame and being disposed on said front frame so as to prevent movement of said front and back frames relative to each other and to form a top to the foldable structure



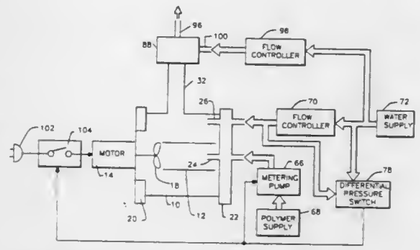
when the foldable structure is in said erected box configuration; and
a plurality of panels, one of each being attached to said front, back, first side, second side, and top frames,
said panels enclosing said frames such that the foldable structure is an enclosed rectangular container when in said erected box configuration and said front frame is vertically disposed whereby the foldable structure can be collapsed into a flat collapsed configuration when said panels are attached to said frames.

5,308,158
PULL DOWN STORAGE SHELF ASSEMBLY
Doug Vogelgesang, P.O. Box 2564, and Douglas Ching, P.O. Box 1388, both of Kailua-Kona, Hi. 96745
Filed Aug. 20, 1992, Ser. No. 932,984
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—319.3 **26 Claims**



18. A pull down shelf assembly comprising:
a shelf guide track mechanism;
a storage shelf member mounted to said track mechanism for movement between an extended position and a retracted position;
a pair of laterally spaced apart pantographic pull down assemblies each including shelf mounting bracket member formed for mounting of said shelf assembly to a support member, and each including a pair of arms pivotally mounted at first ends to said track mechanism at spaced apart locations and pivotally mounted at second ends to said mounting bracket member at spaced apart locations, each said pair of arms being mounted to said mounting bracket member and said track mechanism at locations producing pantographic movement of said track mechanism with said shelf member carried thereby and oriented in a near-horizontal orientation throughout an arcuate path between a deployed position and an elevated stored position;
a spring biasing mechanism coupled between said bracket member and one of said arms for biasing said track mechanism toward said stored position;
a spring alignment mechanism mounted to said one of said arms proximate said second end and formed to align a spring biasing force, caused by said spring biasing mechanism and acting on said second end, in a substantially similar direction during said pantographic movement of said track mechanism between the stored position and the deployed position; and
a shelf locking mechanism positioned between one of said track mechanism and said shelf mechanism and movable between an engaged position and a disengaged position for locking said shelf member in an extended position during movement of said track mechanism from said deployed position to said elevated stored position.

5,308,159
CONTINUOUS FLOW MIXER
Alfonso M. Misuraca, Somerset, N.J., assignor to Excell Design & Construction Services, Inc., Somerset, N.J.
Filed Sep. 10, 1993, Ser. No. 120,167
Int. Cl.[5] B01F *5/12, 15/02*
U.S. Cl. 366—152 **11 Claims**



1. Apparatus for mixing a first material with a fluid solvent, comprising:
a hollow generally cylindrical outer casing having a first open end and a second open end;
first sealing means for sealing said first open end of said outer casing;
second sealing means for sealing said second open end of said outer casing;
a hollow generally cylindrical inner tube having a first open end and a second open end, said inner tube having a length less than the length of said outer casing and exterior cross sectional dimensions less than the interior cross sectional dimensions of said outer casing;
an impeller assembly mounted to said first sealing means inside said outer casing, said impeller assembly having an inlet port substantially centrally of said outer casing and at least one discharge port directing discharged fluid outwardly toward said outer casing;
support means for supporting said inner tube within said outer casing between said impeller assembly and said second sealing means so as to maintain a generally annular region between said inner tube and said outer casing, said support means having means for allowing axial movement and constraining radial movement of said inner tube, with said inner tube first open end being closely adjacent said

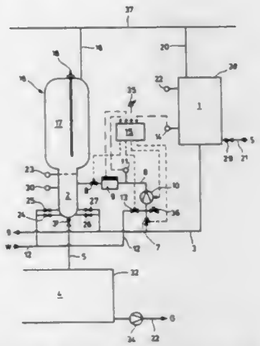
VOL 1162 ISS 1 MY 3 1994 UMI

impeller assembly and there being a space between said inner tube second open end and said second sealing means;
first inlet means for introducing said first material to the interior of said outer casing;
second inlet means for introducing said fluid solvent to the interior of said outer casing; and
an outlet extending through said outer casing between said outer casing first and second ends and communicating with said annular region.

5,308,160
PROCESS AND DEVICE FOR THE MIXING OF BEVERAGE COMPONENTS

Wilhelm Weiss, Lappersdorf, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

PCT No. PCT/EP92/01540, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO93/00988, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 8, 1992, Ser. No. 969,246
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123047
Int. Cl.[5] B01F *15/04*
U.S. Cl. 366—160 **12 Claims**

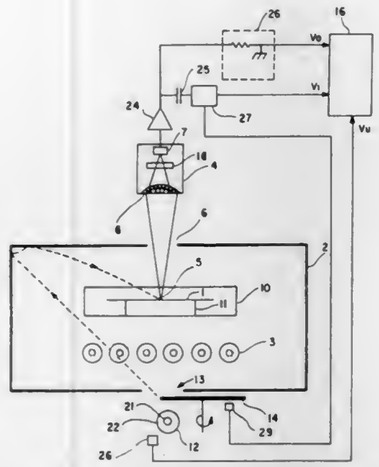


1. In a method for mixing at least two beverage components in predetermined ratios in which a first component is fed into a measuring chamber having a specific volume from a first component storage chamber and a predetermined amount of a second component is then metered into and through said measuring chamber in accordance with said volume of the first component and the desired mixing ratio to form a mixture of said two components, said mixture then being discharged to a collecting chamber, the improvement comprising sensing the volume of said first component in said storage chamber and, when the residual volume of the first component in said storage chamber falls below the specific volume of the measuring chamber, measuring the amount of the first component being fed into the measuring chamber from the first component storage chamber and thereafter metering the amount of the second component being fed to the measuring chamber in accordance with said measured amount of the first component and the desired mixing ratio.

5,308,161
PYROMETER APPARATUS FOR USE IN RAPID THERMAL PROCESSING OF SEMICONDUCTOR WAFERS

Alexander Stein, Secaucus, N.J., assignor to Quantum Logic Corporation, East Norwalk, Conn.

Filed Feb. 11, 1993, Ser. No. 16,713
Int. Cl.[5] G01J *5/10;* **G01N** *25/20;* **H05B** *3/62*
U.S. Cl. 374—5 **6 Claims**

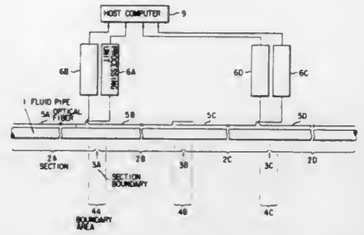


1. Pyrometer apparatus for measuring the temperature of a semiconductor wafer which when heated by radiation from a bank of lamps emits thermal radiation which includes radiation contained in a selected spectral band, said apparatus comprising:
a reaction chamber supporting the wafer and disposed above the bank of lamps, the chamber being transparent to the thermal radiation from the lamp bank and from the wafer, that portion of the radiation from said bank which is contained in a selected spectral band being suppressed before impinging upon the chamber;
a hollow envelope reflecting incident radiation and thermal radiation from the wafer which surrounds and is spaced from the chamber and the bank of lamps, the envelope having a first opening disposed above the wafer and a second opening spaced from the first opening, a portion of the reflected radiation and the thermal radiation passing upwardly through the first opening;
a source of said incident radiation disposed adjacent the second opening for producing radiation within said spectral band which enters said envelope and is reflected inside the envelope to illuminate a selected spot on the wafer hemispherically, said spot reflecting a portion of the incident radiation upwardly through the first opening;
first means disposed outside of said envelope adjacent and above the first opening in the path of the reflected portion of incident radiation and said upward portion of wafer thermal radiation and responsive within said spectral band to both of said portions to produce a first electrical signal proportional to the said reflected portion of incident radiation and a second electrical signal proportional to said upward portion of wafer thermal radiation; and
second means responsive to the first and second electrical signals to calculate the temperature of the wafer.

5,308,162
TEMPERATURE ABNORMALITY DETECTING STRUCTURE FOR FLUID PIPE

Kazuo Amano, and Shotaro Yoshida, both of Tokyo, Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,996
Claims priority, application Japan, Feb. 13, 1992, 4-59801; Feb. 13, 1992, 4-59802; Feb. 13, 1992, 4-59803
Int. Cl.[5] G01J *5/08;* **G01R** *31/08*
U.S. Cl. 374—131 **11 Claims**

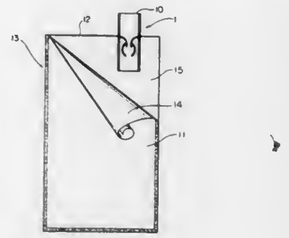


1. A temperature abnormality detecting structure for a fluid pipe, for detecting a temperature abnormality location by laying, along the fluid pipe, an optical fiber serving as a temperature detecting portion of a Raman scattering optical fiber distribution type temperature sensor, wherein:
said fluid pipe is divided into a plurality of adjacent sections in a longitudinal direction of said fluid pipe, with adjacent ones of said sections meeting each other at a boundary;
said optical fiber comprises independent optical fibers laid along said fluid pipe in the respective sections, and a portion of one said optical fiber, which is laid along one of the adjacent sections is extended along another of the adjacent sections, so that said extended portion of said one optical fiber is superposed to be laid on a portion of another of said optical fibers, which is laid along said another of the adjacent sections to form a superposed portion of the optical fibers in the vicinity of the boundary of the adjacent sections, to detect temperature data of the boundary of the adjacent sections; and
data processing means for processing the detected temperature data to determine whether or not a temperature abnormality occurs at the boundary of the adjacent sections.

5,308,163
CHECK VALVE FOR FLUID CONTAINERS AND A METHOD OF MANUFACTURING THE SAME

Tomematsu Abe, Numazu, Japan, assignor to Kabushiki Kaisha Nichiwa, Shizuoka, Japan

Filed Mar. 16, 1993, Ser. No. 33,273
Int. Cl.[5] B65D *30/24;* **F16K** *15/16*
U.S. Cl. 383—44 **11 Claims**

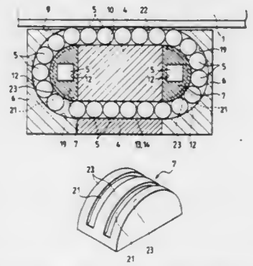


10. A container comprising:
first and second overlaying sheets of film cooperating to define a sealed bag having a plurality of heat sealed bag edges joined therebetween;
third and fourth overlaying sheets of film cooperating to define a check valve projecting from one of said plurality of heat sealed bag edges;
said check valve including a fluid inlet and outlet passage extending between said third and fourth sheets of film along a central axis and having an outer opening disposed at an end of said passage extending outside of said bag and an inner opening disposed at an end of said passage extending within said bag, first and second heat sealed check valve edges joined between said third and fourth sheets of film and extending substantially parallel to said central axis along opposite sides of said passage, first and second sidewardly spaced-apart heat sealed portions joined between said third and fourth sheets of film and arranged symmetrically within said passage relative to said central axis, and said third and fourth sheets of film as extending between said heat sealed portions defining valve flaps; and
each of said heat sealed portions including a first curved heat seal having a first end joined with said respective check valve edge and a second free end projecting toward said inner opening and disposed between said respective check valve edge and said central axis, a second curved heat seal joined to said first heat seal between said first and second ends to form a T-junction therebetween and projecting toward said inner opening between said respective check valve edge and said central axis, and a fluid return pocket defined by said second free end extending from said T-junction and said second curved heat seal.

5,308,164
LINEAR MOTION ROLLING GUIDE UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson, Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,864
Claims priority, application Japan, Jan. 31, 1992, 4-40718
Int. Cl.[5] F16C *31/06*
U.S. Cl. 384—13 **4 Claims**

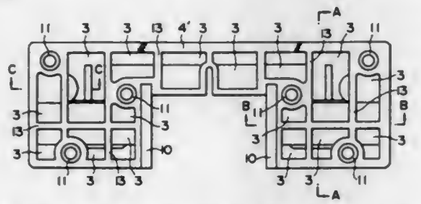


1. A linear motion rolling guide unit comprising:
a track rail having raceway surfaces formed longitudinally extending on both side walls thereof;
a casing saddling and movable on the track rail and having raceway surfaces formed at positions facing the raceway surfaces on the track rail, the casing also having return passages formed therein;
raceways formed between the raceway surfaces on the track rail and the raceway surfaces on the casing;
end caps attached to longitudinal ends of the casing, the end caps each having a recessed arc surface for a direction changing passage on the side facing the casing;
a spacer for a direction changing passage so disposed that it faces and is spaced from the recessed arc surface formed in the end caps, the direction changing passage spacer having a raised arc surface corresponding in shape to the recessed arc surface;

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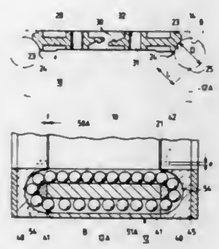
direction changing passages formed between the raised arc surface of the spacer and the recessed arc surface of the end cap;
a number of rollers circulating through the raceways, the direction changing passages and the return passages;
roller-contacting surfaces formed by the raised arc surfaces of the spacers on which the rollers roll; and
oil grooves formed in the roller-contacting surfaces and extending in the direction of the roller travel.

5,308,165
END BLOCK OF A LINEAR MOTION GUIDE UNIT
Akihiko Kamimura, Yokosuka, Japan, assignor to Nippon Thompson Co., Ltd., Japan
Filed Mar. 27, 1992, Ser. No. 858,833
Claims priority, application Japan, Mar. 29, 1991, 3-27858[U]
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **20 Claims**



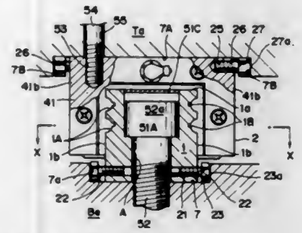
1. An end block for use as a part of a slider of a linear motion guide unit, comprising:
a rib structure of a predetermined shape and comprised of a first resin material, said rib structure including at least one curved connecting path section of an endless circulating path provided in said guide unit and a rib system which defines a plurality of recesses; and
a filling material provided in at least one of said plurality of recesses.

5,308,166
LINEAR GUIDE APPARATUS
Nobuyuki Osawa, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Dec. 16, 1992, Ser. No. 990,986
Claims priority, application Japan, Dec. 17, 1991, 3-110391[U]
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **4 Claims**



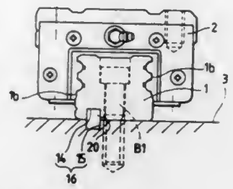
1. A linear guide apparatus comprising:
a guide rail having ball rolling grooves;
a slider body having ball rolling grooves opposed to said ball rolling grooves of said guide rail which are extended axially in parallel to each other;
end caps secured respectively to both ends of said slider body, each end cap having a ball retainer locking portion in a joining surface which is in contact with said slider body; and
a plurality of balls inserted in the corresponding ball rolling grooves of said guide rail and said slider body;
a ball retainer having engaging portions which are engaged with said ball retainer locking portion of said end caps, and both side walls each of which defines, with an edge of each of said ball rolling grooves of said slider body, an opening which is slightly smaller than a diameter of said balls; and
means for preventing movement of the balls from being obstructed by said ball retainer, said preventing means being provided in such a manner that said ball retainer is movably mounted on said slider body with said engaging portions which is movably engaged with said ball retainer locking portions of said end caps.

5,308,167
LINEAR GUIDE APPARATUS WITH LATERAL POSITION ADJUSTING MECHANISM
Toru Tsukada, Maebashi, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Dec. 24, 1992, Ser. No. 996,633
Claims priority, application Japan, Jan. 13, 1992, 4-3965
Int. Cl.[5] F16C *29/06, 29/04*
U.S. Cl. 384—45 **3 Claims**



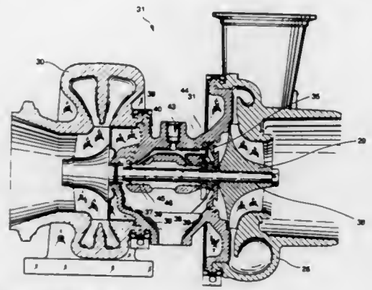
1. A linear guide apparatus comprising at least one elongated guide rail adapted to be attached to a fixed member by a fastening member and being provided with a rolling body receiving groove at respective side surfaces thereof, and at least one slider having a saddle shape riding on said guide rail and adapted to be attached to a shiftable member and further having a pair of skirt portions each provided at an inner surface thereof with a rolling body receiving groove facing a respective one of said rail grooves, said slider being linearly displaceable on said guide rail, characterized in that:
at least one set of paired adjustment threaded holes are formed along a longitudinal direction of said guide rail, each pair of said adjustment threaded holes extending in a widthwise direction of said guide rail through both side surfaces of said guide rail at lower portions thereof and being axially aligned with each other, and adjusting threaded members are threaded into corresponding adjustment threaded holes in such a manner that outer ends of said threaded members protrude from said side surfaces of said guide rail; and
a recess having a width greater than that of said guide rail is formed in a guide rail attachment surface of said fixed member and a fixing threaded hole for receiving said fastening member is formed in a bottom of said recess;
whereby, after a widthwise position of said guide rail on said fixed member has been adjusted by abutting the outer ends of said adjusting threaded members against side surfaces of said recess by rotating said adjusting threaded members, said guide rail is fixed to said fixed member by tightening said fastening member.

5,308,168
GUIDE RAIL SIDEWARD DISPLACEMENT PREVENTING MECHANISM
Hiroki Yamaguchi, and Toru Tsukada, both of Gunma, Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Jul. 7, 1993, Ser. No. 86,855
Claims priority, application Japan, Jul. 8, 1992, 4-181063
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **10 Claims**



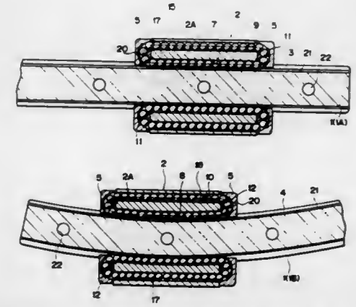
1. A linear guide device comprising:
a guide rail fixedly secured by a bolt member to the mounted surface of a supporting member adapted to support said linear guide device;
a slider engaged with said guide rail so as to be movable relative to said guide rail; and
a guide rail sideward displacement preventing mechanism in which recesses are formed in the mounting surface of said guide rail and in the mounted surface of said supporting member which is in contact with the mounting surface of said guide rail, respectively, to provide a space therein, and said space thus provided is filled with a hardenable filling material, and said hardenable filling material is solidified therein.

5,308,169
BEARING SYSTEM FOR TURBOCHARGER
Glenn L. Baker, Columbus; David R. Engle, Paris Crossing, and Roger Williams, North Vernon, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Nov. 20, 1992, Ser. No. 984,186
Int. Cl.[5] F16C *17/04*; F04B *17/00*
U.S. Cl. 384—99 **15 Claims**



1. In combination:
a turbocharger thrust bearing including:
a main body portion defining a cylindrical bore;
oil reservoir means for storing oil to be delivered to said cylindrical bore, said oil reservoir means disposed in and defined by said body portion; and
an oil passageway defined by said main body portion and connecting said oil reservoir means with said cylindrical bore;
a turbocharger thrust collar having a generally cylindrical hub and a surrounding flange, said hub being received within said cylindrical bore; and
a semi-cylindrical volume of oil disposed between the outside diameter of said cylindrical hub and the inside diameter of said cylindrical bore.

5,308,170
LINEAR GUIDE APPARATUS
Toshiaki Yamaguchi, Maebashi, and Nobuyuki Osawa, Takasaki, both of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Jul. 21, 1993, Ser. No. 94,349
Claims priority, application Japan, Jul. 30, 1992, 4-203919
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **3 Claims**



1. A linear guide apparatus, including guide rails having rolling grooves for rolling members elongated in the axial direction in both side surfaces, a slider movably straddling said guide rails and having rolling grooves for loaded rolling members formed in the inner surfaces corresponding to the rolling grooves for the rolling members of the guide rail and circulation paths to be connected with said rolling grooves for the loaded rolling members and constitute, together with these rolling grooves for the loaded rolling members, endless circulation paths, and a multitude of rolling members which roll in the endless circulation paths of the slider and carry the load between said rolling grooves for the rolling members opposite to each other,
wherein the guide rails include straight portion elongated linearly and curved portion curved with predetermined curvature, and a pair of upper and lower rolling grooves for the rolling members parallel with each other are formed on each side surface of the straight and curved portions;
a pair of upper and lower rolling grooves for the loaded rolling members opposite to said pair of rolling grooves of the guide rail are formed in each inner surface of the slider, and one of upper and lower rolling grooves for the loaded rolling members are elongated straight and the other are curved with the same curvature as the curved portion of the guide rails.

5,308,171
AXLE BEARING UNIT WITH ROTATIONAL SPEED SENSOR
Junshi Sakamoto, Yokohama, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Jun. 21, 1993, Ser. No. 79,059
Claims priority, application Japan, Jun. 22, 1992, 4-48997[U]
Int. Cl.[5] F16C *32/00*; G01P *3/48*
U.S. Cl. 384—448 **4 Claims**

1. A ball bearing unit connected to an axle housing through which an axle shaft is extended to support an automobile wheel and supported at one end by the ball bearing unit and at the

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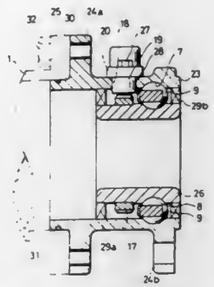
other end by another bearing, the axle housing containing oil therein, comprising;

an outer ring having an outer peripheral surface from which a flange is extended to be secured to the axle housing, an inner peripheral surface on which a single outer race is provided, and an installation hole provided adjacent the outer race,

a sensor mounted to the outer ring through the installation hole,

an inner ring having an outer peripheral surface on which a single inner race is provided, and an inner peripheral surface through which the axle shaft is extended,

a pulser ring secured to the outer peripheral surface of the inner ring,



a plurality of balls provided between the outer race and the inner race to form a single-row, deep groove ball bearing,

a first sealing means provided closer to the axle housing with reference to the balls and pulser ring, to seal the inner and outer rings so as to prevent the oil in the axle housing from penetrating into the ball bearing,

a second sealing means provided closer to the automobile wheel with reference to the balls and pulser ring to seal the outer and inner rings so as to prevent foreign substances from penetrating into the ball bearing, and

the flange of the outer ring having a seal surface formed thereon to seal the flange and the axle housing to prevent the oil in the axle housing from leaking out.

5,308,172

BEARING ASSEMBLY

Kamleshwar Upadhya, Quartz Hill, Calif., and David S. Lee, Brookfield, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jul. 19, 1993, Ser. No. 93,609

Int. Cl.[5] F16C *19/54, 19/10;* H01J *35/10*

U.S. Cl. 384—453 **10 Claims**

1. An improved electrically and thermally conducting self-centering bearing assembly comprising in combination

(a) a hollow cylinder housing member having one closed end,

(b) a pair of axially spaced apart concentric shaft bearings in said housing and axially spaced from the said closed end,

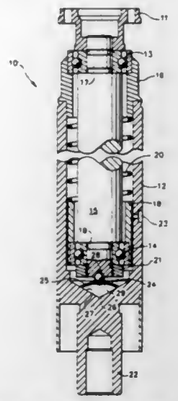
(c) a shaft member supported in said bearings for rotation therein with one end of said shaft exposed to said housing closed end,

(d) said shaft having a concentric conical cavity therein at said exposed shaft end,

(e) a spring ball unit in said housing having a circular dome spring means concentrically positioned in said housing at said closed end,

(1) said dome spring means including a circular depression concentrically therein and spaced from said closed housing end, and

(2) an electrically and thermally conducting ball in said circular depression and biased by said dome spring means into simultaneous engagement with said conical



cavity in said shaft and said dome spring circular depression.

5,308,173

SELF-PROPELLED COMPOSITE PRINTING DEVICE FOR PRINTING EITHER ON A TAPE OR ON A FLAT SURFACE

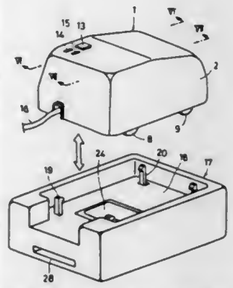
Toshio Amano, and Hisayoshi Fujimoto, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 30, 1992, Ser. No. 906,939

Claims priority, application Japan, Sep. 6, 1991, 3-71837[U]

Int. Cl.[5] B41J *3/28, 11/48*

U.S. Cl. 400—29 **10 Claims**



1. A composite printing device for printing either on a tape or on a flat surface comprising:

a tape printer case including therein a tape roll for supplying a tape, a guide means for guiding the tape, and a feed roller for feeding the tape from the tape roll and means for receiving a portable printer; and

the portable printer including a printing head having a downwardly facing printing portion, a plurality of wheels for supporting the portable printer, the wheels including at least one drive wheel, and a motor always held in driving connection with the drive wheel, the motor comprising means for rotationally driving the drive wheel to propel the printer across a flat surface when the printer has been removed from the printer case;

wherein the composite printing device further comprises means for removably engaging the tape printer case with the portable printer from below to bring the printing portion of the printing head to a position racing the tape guided by the guide means and to connect operatively the drive wheel to the feed roller for driving the feed roller rotationally.

5,308,174

TEXT PROCESSING SYSTEM WITH A MOVABLE DISPLAY DEVICE

Masakazu Kuki, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 24, 1992, Ser. No. 980,714

Claims priority, application Japan, Jan. 8, 1992, 4-199[U]

Int. Cl.[5] B41J *3/46*

U.S. Cl. 400—83 **20 Claims**



1. A text processing apparatus, comprising:

a text processing device having an exterior surface with a treatment thereon;

a display device coupled to said text processing device, said display device having an exterior surface;

support means coupled to said text processing device and said display device for selectively movably supporting said display device with respect to said text processing device; and

rotational means coupled to said display device and independent of said support means for providing rotational contact between said exterior surface of said text processing device and said display device.

5,308,175

PRINTER WITH REVERSE SHEET FEED PATH TO SHEET INLET

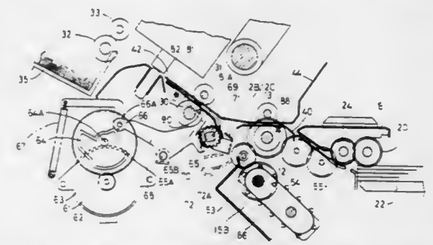
Noritsugu Ito, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 8, 1993, Ser. No. 87,272

Claims priority, application Japan, Aug. 20, 1992, 4-221288

Int. Cl.[5] B41J *11/50*

U.S. Cl. 400—605 **26 Claims**



1. A printer that prints on single-sheet forms and a continuous form and is capable of discharging the printed single-sheet forms back to an input position, comprising:

a printing area;

a feed path leading to the printing area comprising a single-sheet feed path for feeding single-sheets to the printing area and a continuous sheet feed path for feeding a continuous sheet to the printing area, the continuous sheet feed path joining the single-sheet feed path at a joining area;

a feeding mechanism coupled to the single-sheet feed path and the continuous sheet feed path that selectively feeds single-sheets and a continuous sheet to and from the printing area;

a path switch disposed in the joining area of the feed path and movable between at least a first position and a second position in the feed path; and

a controller coupled to the feeding mechanism controlling forward and reverse driving of the feeding mechanism and coupled to the path switch controlling movement of the path switch between the first position and the second position, said controller delaying driving of the feeding mechanism and moving the path switch into the first position when a sheet is located adjacent the path switch during discharge.

5,308,176

APPARATUS FOR CONVEYING PAPER IN A PRINTER

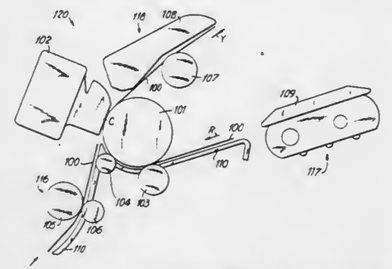
Naoto Yamaguchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,759

Claims priority, application Japan, May 27, 1991, 3-121135; Feb. 26, 1992, 4-21299

Int. Cl.[5] B41J *13/03*

U.S. Cl. 400—618 **18 Claims**



1. An apparatus for conveying paper in a printer along a paper path past a print head, in a first direction and in a second direction opposite to the first direction, comprising:

paper conveying means positioned upstream of said print head for applying force to said paper to selectively convey said paper along said paper path;

paper discharging means positioned downstream of said print head for applying force to said paper to selectively convey said paper along said paper path away from said print head in said first direction;

driving means for driving said paper conveying means and said paper discharging means in said first direction and at least said paper conveying means in said second direction;

said paper discharging means being displaced at a faster rate than said paper conveying means;

said driving means driving said paper conveying means and said paper discharging means in said first direction to convey paper in said first direction to at least one predetermined printing position;

said driving means being adapted to drive at least said paper conveying means in said second direction to convey said paper in a second direction a predetermined distance from said at least one predetermined printing position past a second predetermined printing position and to then drive said paper conveying means in said first direction to con-

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vey said paper to said at least second predetermined printing position;

said driving means including a drive motor, a first and second power transmission means for respectively operationally coupling said drive motor with each of said paper conveying means and said paper discharging means, said first power transmission means having a play b1 and said second power transmission means having a play b2;

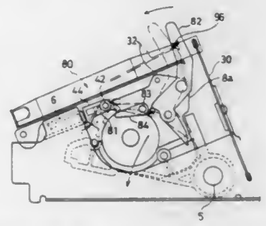
Max(D4) being greater than zero and equal to a length of paper to be conveyed in said second direction from said at least one predetermined printing position to a second predetermined position if play b1 equalled 0, Max(d2) being greater than zero and equal to the amount of rotation of said drive motor required to convey said paper the length Max(D4) in said second direction, and γ being greater than zero and equal to an additional amount of rotation of said drive motor; and

said play b2 being greater than (play b1+said amount of rotation Max(d2) of said drive motor +said additional predetermined amount of displacement γ).

5,308,177
PRINTER WITH RIBBON HOLDER

Hiroki Kawamura, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 28, 1993, Ser. No. 53,421
Claims priority, application Japan, Jun. 29, 1992, 4-196433
Int. Cl.[5] B41J *29/36*
U.S. Cl. 400—697 **13 Claims**



1. A printer comprising:

a body;

a platen rotatably secured to said body;

a guide shaft secured to said body parallel to said platen;

a guide member secured to said body, parallel to said platen;

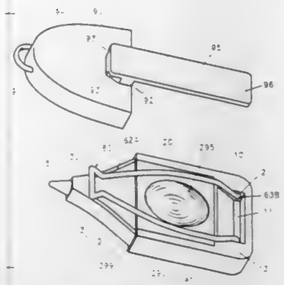
a carriage axially movably supported by said guide shaft and guided by said guide member, wherein said carriage supports a type wheel, a print hammer adjacent said type wheel, a print mechanism for driving said print hammer, a swing limiter mechanism, and a holder member for holding a print ribbon and a correction ribbon adjacent said print hammer, and wherein said carriage further includes a frame, an abutment member pivotally connected to said frame and engaging said guide member to guide lateral movement of said carriage, and a release mechanism connected to said frame for releasing a portion of said carriage from said guide member by disengaging said abutment member, said swing limiter mechanism being connected to said release mechanism and abutting said holder member when said abutment member is disengaged from said guide member and being spaced from said holder member when said abutment member is engaged with said guide member,

said holder member being movable between a print position in which the print ribbon faces said print hammer and an erasing position in which the correction ribbon faces said print hammer and being restrained against movement beyond said erasing position by said swing limiter mechanism.

5,308,178
WRITING INSTRUMENT

Curtis T. Jiang, San Francisco, Calif., assignor to QLH USA Inc., San Francisco, Calif.

Filed Jun. 1, 1993, Ser. No. 69,921
Int. Cl.[5] B43K *9/00*
U.S. Cl. 401—8 **11 Claims**



1. A writing instrument comprising:

a generally planar holder having an upper section continuous with a body section continuous with a lower section, said holder having a lower aslant structure;

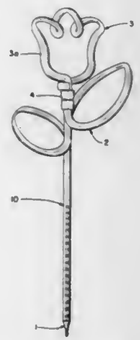
a removable planar cap having an open end for receipt of said aslant structure of said holder, and a substantially closed radial end with anchoring means and clipping means thereon for carrying; and

fastening means for releasably and safely storing said holder in said cap as well as temporary retaining said holder on a finger of a user.

5,308,179
WRITING INSTRUMENT

Curt E. Whitright, Chardon, Ohio, assignor to Novelty Creations, Inc., Chardon, Ohio

Filed Nov. 20, 1992, Ser. No. 979,664
Int. Cl.[5] B43K *29/00, 9/00*
U.S. Cl. 401—131 **19 Claims**



1. A writing instrument comprising:

a housing of substantially continuous, opaque and rigid hollow tubing, having a first and second end, said housing comprising at least a first region which is essentially straight and a second region which is curvilinear, said second region having a plurality of loops;

a stylus instrument inserted in the first end of said housing and extending outward therefrom;

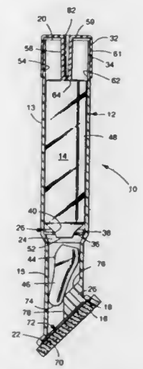
a top portion of substantially rigid hollow tubing, molded into the shape of a flower, capable of attachment to the second end of said housing so as to complete an overall flower design in conjunction with said housing when said writing instrument is in use; and

a connecting means for detachably connecting said top portion to said housing, said connecting means capable of detaching said top portion from said housing second end and reattaching said top portion at said housing first end to cover said stylus instrument.

5,308,180
LIQUID APPLICATOR WITH METERING INSERT

Kaveh Pournoor, and John D. Dell, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 804,294, Dec. 9, 1991. This application Dec. 4, 1992, Ser. No. 985,666
Int. Cl.[5] A47L *13/17;* **A61M** *35/00*
U.S. Cl. 401—205 **12 Claims**



1. An article useful as a dispenser for the application of a liquid to a surface, comprising

(a) a hollow elongate member having a first major orifice at one end thereof;

(b) a flexible, porous layer disposed over said first major orifice having at least one array of pores extending therein, each array of pores having an average pore size of between about 1 and 100 microns and a distribution of pore sizes of less than about 30 percent of the average pore size;

(c) a layer of sponge material disposed over the exterior surface of said porous layer; and

(d) means of maintaining atmospheric pressure within said hollow elongate member while the liquid to be applied by said applicator is being dispensed.

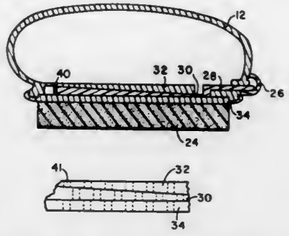
5,308,181
ERGONOMICALLY DESIGNED LIQUID DISPENSER AND APPLICATOR

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Patty C. Marshall, P.O. Box Drawer F, Silver City, Nev. 89428

Filed Oct. 9, 1992, Ser. No. 958,721
Int. Cl.[5] B05C *17/00*
U.S. Cl. 401—206 **8 Claims**

1. A liquid applicator adapted to be used with livestock comprising: a reservoir for fluid, said reservoir having filling means, an application implement in the form of a sponge, said reservoir having at least one flat surface on one of its sides, said application implement having a first mounting plate, valve means disposed between said flat surface of said reservoir and said first mounting plate of said application implement for selectively controlling the passage of fluid from the reservoir to the sponge and comprising a substantially rectangular second plate, said second plate being wedge shaped across its width, said second plate being slidably mounted between said flat surface of said reservoir and said first mounting plate, said flat surface of said reservoir, said first mounting plate and said second plate having a plurality of openings therein for selective registration from a first closed position to a second open position, said second plate being spring loaded to be normally closed in its said first position, means to manually urge said second plate into its said second position, means to removably affix said first mounting plate to said flat surface of said reservoir, whereby,

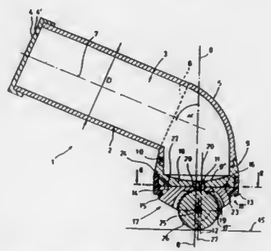
when said valve means is in its said first position said openings are out of registration and when said valve means is in its said second position, said openings are in registration and said fluid may pass thru said openings into said application implement.



5,308,182
METERING CONTAINER AND SUPPORT CONSTRUCTION FOR THIS PURPOSE

Kurt Lampert, Neusand/Industriestrasse, FL-9495 Triesen, Liechtenstein

PCT No. PCT/CH91/00192, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/04131, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 6, 1991, Ser. No. 856,025
Claims priority, application Switzerland, Sep. 7, 1990, 2932/90
Int. Cl.[5] B05G *17/025*
U.S. Cl. 401—219 **16 Claims**



1. A metering container for viscous thixotropic liquids, comprising

a container having a container wall, said container having a lower end,

a substantially circular mouthpiece at said lower end of said container, said mouthpiece having a central axis and a mouthpiece wall with a first slot opening arranged eccentrically with respect to said central axis, said first slot opening being elongated and having a longitudinal axis

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extending substantially parallel to a plane through said central axis,

closing means in the region of said first slot opening comprising a rotary slide rotatable about said central axis and having a rotary slide wall substantially parallel to said mouthpiece wall, with a second slot opening arranged substantially as eccentrically and parallel to said central axis as said first slot opening, said second slot opening being at least approximately the same size as said first slot opening,

means for rotating said rotary slide from an open position in which said first slot opening and said second slot opening are arranged one above the other to a closed position in which said first slot opening is covered by said rotary slide wall and said second slot opening is covered by said mouthpiece wall,

said first slot opening and said second slot opening having straight longitudinal edges that make an adjustable angle with one another in the manner of a scissors on rotation of said rotary slide, and

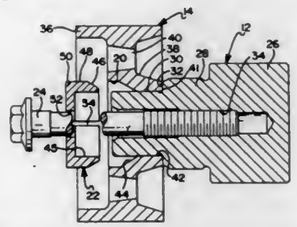
at least one applicator roller arranged on said rotary slide, having an axis of rotation running substantially parallel to said longitudinal axis of said second slot opening, said applicator roller having a roller surface that runs close to said second slot opening.

5,308,183

LOCK COUPLING BETWEEN SHAFT AND ROTOR

George T. Stegeman, Harbor Beach, and Walter J. Planck, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 9, 1992, Ser. No. 910,799
Int. Cl.[5] F16B *2/02*
U.S. Cl. 403—259 **7 Claims**



1. Means for coupling a shaft and a rotor comprising:

a shaft having an end, a shoulder spaced from the end and a cylindrical portion between the shoulder and the end;

a rotor having an end face engaging the shoulder and having a bore mating with the cylindrical portion, a cylindrical counterbore larger than and concentric with the cylindrical portion, and an inwardly tapered section connecting the bore and the counterbore;

locking means between the shaft and the rotor and having cylindrical inner and outer surfaces contacting the cylindrical portion and the counterbore respectively, the locking means having tapered end means in mating engagement with the tapered section; and

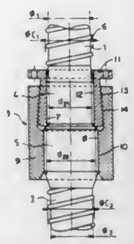
threaded fastener means connected axially to the shaft for drawings the locking means toward the shoulder for loosely fastening the shaft and the rotor to permit rotary adjustment between the shaft and the rotor and for selectively tightly fastening the shaft and the rotor for locking the shaft and rotor against rotation.

5,308,184

METHOD AND APPARATUS FOR MECHANICALLY JOINING CONCRETE-REINFORCING RODS

Alain Bernard, Marco-en-Baroeul, France, assignor to Technipont S.A., Marquette, France

Continuation-in-part of Ser. No. 302,201, Jan. 27, 1989, Pat. No. 5,158,527. This application Oct. 24, 1991, Ser. No. 781,968
Claims priority, application France, Jan. 4, 1991, 91 00595
Int. Cl.[5] F16B *7/18*
U.S. Cl. 403—305 **14 Claims**



1. A mechanical connection, particularly for application in the field of concrete element construction, comprising:

a first reinforcing rod comprising a first threaded end, said first reinforcing rod further comprising protuberances on an external surface thereof;

a second reinforcing rod comprising a second threaded end, said second reinforcing rod further comprising protuberances on an external surface thereof;

a connecting sleeve having a first tapped portion for receiving said first threaded end of said first reinforcing rod, and a second tapped portion for receiving said second end of said second reinforcing rod, and means for allowing said connecting sleeve to be rotated around said first end while simultaneously threadedly engaging said second end on said second reinforcing rod, so that said first and second ends are positioned substantially coaxially and in substantially end-to-end relationship, and are rotationally immobile with respect to one another, at least one of said first and second tapped portions is rotatable with respect to said sleeve, and at least one of said first and second tapped portions permits longitudinal deflection to adjust said threads of said first and second ends; and

said connecting sleeve comprising a sheath having a conical bore therein, and a conical socket positioned in said conical bore, said conical socket comprising a plurality of conical socket members having external portions enabling longitudinal rotation and blockage with respect to said sheath, said conical socket members together providing a threaded inner bore comprising said first tapped portion and said second tapped portion, wherein said first and second tapped portions have opposed threads.

5,308,185

METHOD AND MEANS OF FASTENING TWO PARTS WITH AN INTERNALLY THREADED FOLDED FASTENER

Charles E. Laue, 1041 Pawnee Rd., Wilmette, Ill. 60091

Filed Dec. 17, 1992, Ser. No. 992,085
Int. Cl.[5] F16B *7/18, 7/00*
U.S. Cl. 403—342 **12 Claims**

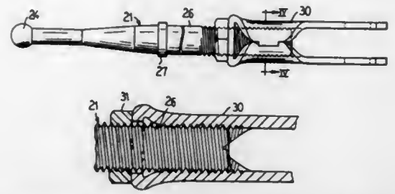
1. In combination, a first part comprising a strip form ductile metal member of

elongated configuration having spaced apart surfaces with each of said surfaces being means for deformably displacing to form projections extending upwardly from said surfaces and recesses extending into said surfaces thereby to provide thread portions which are press formed without rotation,

said first part having an opening extending therethrough at a location between said thread portions,

said first part being folded back upon itself on fold lines extending laterally of said first part on opposite longitudinal sides of said opening,

said first part being folded so that said threaded portions in said spaced apart surfaces are placed in complemental



registration with one another, said spaced apart surfaces being means for cooperating with one another to form a threaded bore inwardly of said opening and,

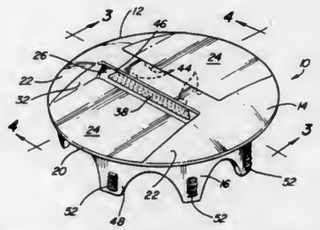
a second part comprising an externally threaded cylindrical part sized and shaped to be received in said opening and engaging said first part in threaded engagement with said threaded portions.

5,308,186

SNOWPLOWABLE ROAD MARKER

Peter Hedgewick, Windsor, Canada, assignor to Pac-Tec, Inc., Heath, Ohio

Continuation-in-part of Ser. No. 527,754, May 23, 1990, Pat. No. 5,098,217. This application Jan. 17, 1992, Ser. No. 822,542
Int. Cl.[5] E01F *11/00*
U.S. Cl. 404—14 **15 Claims**



1. A snowplowable road marker for installation in a road having a top surface, said road marker comprising:

means for signalling; and

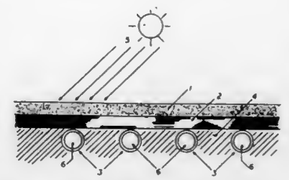
a base member having a circular top portion and means for mounting said base member to said road, said means for mounting extending downwardly from said top portion, said top portion having an annular surface extending between an outer peripheral edge and said mans for mounting, said top portion further having a pair of diametrically opposed dished top surfaces extending upwardly and outwardly from said peripheral edge, said annular surface and said peripheral edge adapted to be mounted in a first ore at a predetermined depth below said top surface of said road, said base member further having means for mounting said means for signalling between said pair of top surfaces and a pair of channels disposed between said pair of top surfaces, each of said pair of channels having a generally planer lower surface extending generally along a plane aligned with said top surface of said road, said lower surface being spaced apart form said peripheral edge a distance equal to said predetermined depth.

5,308,187

PARKING LOT PAVEMENT FOR MAKING HOT PRECOMBUSTION AIR FOR A FOSSIL FUEL BURNER

Martin E. Nix, P.O. Box 95173, Seattle, Wash. 98105-2105

Filed May 17, 1993, Ser. No. 63,159
Int. Cl.[5] E01C *11/26;* **F24J** *2/24*
U.S. Cl. 404—17 **1 Claim**



1. A system for heating air with solar energy and for supplying the air to a fossil fuel burner, said system comprising;

(a) an opaque pavement layer overlying a ground surface, said pavement layer having a pavement top surface;

(b) an upper transparent layer formed on said pavement top surface, said upper transparent layer being transparent to sunlight and formed of a material which traps heat generated by said opaque pavement layer; and

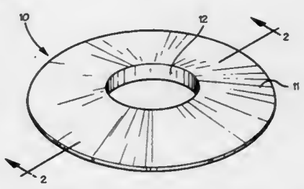
(c) a plurality of parallel pipes within the ground surface beneath said pavement layer, said pipes carrying air and transferring heat between said ground surface and said air.

5,308,188

RAMP FOR TEMPORARILY ELEVATED UTILITY ACCESS HOLE

Timothy K. Shaftner, 305 Silversmith La., Charlotte, N.C. 28270

Filed Jun. 4, 1991, Ser. No. 709,898
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—25 **13 Claims**



1. In combination, a manhole cover support temporarily elevated above an adjacent roadway and a protective ramp placed removably around said manhole cover support to prevent potentially damaging impact with said manhole cover support by vehicles traveling on the roadway, said protection ramp comprising:

(a) a ramp member having a top surface and an obverse bottom surface, said bottom surface being supported on the roadway;

(b) said ramp member having an opening therein of a size which receives and closely surrounds said manhole cover support;

(c) said ramp member having a thickness defining said opening approximating the elevated height of said manhole cover support around which the ramp is placed, said top surface of said ramp member at said opening being approximately flush with said manhole cover support;

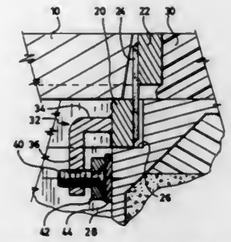
(d) said ramp member having a progressively diminishing thickness from the opening to the outer edge thereof, said top surface of said ramp member at said outer edge being approximately flush with the roadway;

(e) wherein the ratio of the thickness of the ramp member at

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the opening to the distance from the opening to the outer edge thereof is no less than one to five.

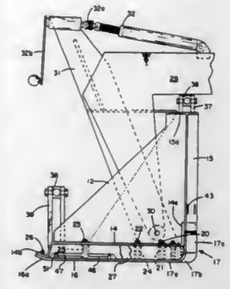
5,308,189
GRIPPING DEVICE FOR RETAINING A RING MEMBER SUPPORTING A MANHOLE COVER
Jean-Louis Claing, 337, rue Principale, St-Bernard de Michaudville, Quebec, Canada J0H 1C0
Filed Jun. 15, 1992, Ser. No. 897,947
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—26 **7 Claims**



1. In a manhole cover, a gripping device for retaining a ring member supporting the manhole cover, said supporting ring member comprising means for sitting on a peripheral horizontal shoulder of an upstanding tubular member mounted in a manhole, said gripping device comprising a plurality of rigid elbow-shaped members having a substantially horizontal arm radially secured inside said ring member and a substantially vertical pending arm extending below said ring member to internally face said tubular member, a screw member threadedly mounted through said vertical arm in the direction of said tubular member, a friction plate fixed to said screw member at one end thereof between said vertical arm and said tubular member, said screw member being rotatable in said vertical arm for tightening said friction plate on said tubular member to thereby frictionally retain said ring member to said tubular member and vertically fix said ring member on said shoulder relative to said tubular member, wherein said ring member and each elbow-shaped member are made of steel and welded together at one end of said horizontal arm, and wherein said friction plate is made of resilient plastic material for preventing said plate from upwardly sliding on said tubular member and from being unintentionally lifted from said shoulder.

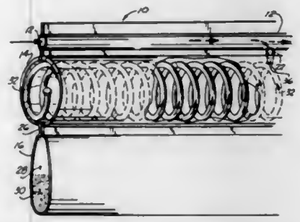
5,308,190
METHOD AND APPARATUS FOR HEATING AN ASPHALT PAVING SCREED
Larry Raymond, Tacoma, Wash., assignor to Carlson Paving Products, Inc., Tacoma, Wash.
Continuation-in-part of Ser. No. 847,648, Mar. 3, 1992, Pat. No. 5,259,693, which is a continuation-in-part of Ser. No. 577,615, Sep. 4, 1990, Pat. No. 5,096,331. This application Oct. 13, 1993, Ser. No. 136,330
Int. Cl.[5] E01C *23/14, 19/22*
U.S. Cl. 404—95 **13 Claims**

1. A heating system for the sole plate of a screed on an asphalt paving machine comprising:
a tractor;
an internal combustion engine on said tractor powering the tractor, said engine having an exhaust system;
a screed coupled to said tractor, said screed having a sole plate;
a first heat exchanger in said exhaust system;
a second heat exchanger on said sole plate; and



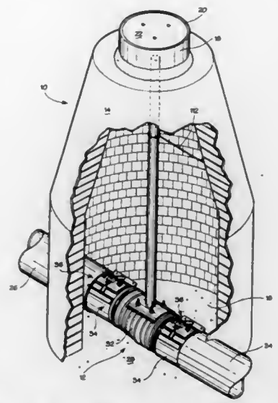
circulating means for circulating liquid between said heat exchangers and thereby transferring heat from said exhaust system to said sole plate.

5,308,191
FLOATING BARRIER METHOD AND APPARATUS
Kip B. Goans, Harvey, La., assignor to Oil Stop, Inc., Harvey, La.
Continuation-in-part of Ser. No. 933,721, Aug. 24, 1992, which is a continuation-in-part of Ser. No. 752,002, Aug. 29, 1991, Pat. No. 5,195,844, which is a continuation of Ser. No. 638,704, Jan. 8, 1991, abandoned, which is a continuation of Ser. No. 424,158, Oct. 19, 1989, Pat. No. 5,022,785. This application Feb. 18, 1993, Ser. No. 19,030
Int. Cl.[5] E02B *15/04*
U.S. Cl. 405—68 **18 Claims**



16. An inflatable float boom for confining material floatable on a liquid surface comprising:
a) a first elongated collapsible tube formed of fluid impervious material, said first tube defining a flat reelable configuration when collapsed;
b) sealing means separating the interior of said first tube into a plurality of adjacent first compartments sequentially disposed along the length of said first tube; and,
c) inflatable flotation means disposed within said first compartments for expanding said first compartments, thereby displacing fluid to increase the buoyancy of the boom, said flotation means being coupled to inflation means for inflating said flotation means and comprising at least one spiral coil within each said first compartment for biasing said first compartment outwardly when inflated.

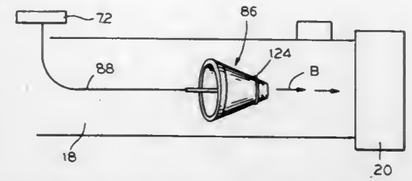
5,308,192
METHOD AND APPARATUS FOR REHABILITATING SEWAGE MANHOLES
James V. Srackangast, Concord, N.C., assignor to Tru-Contour, Inc., Harrisburg, N.C.
Filed Apr. 1, 1993, Ser. No. 40,211
Int. Cl.[5] E02D *29/12*; F16L *1/00*
U.S. Cl. 405—154 **18 Claims**



1. A method for rehabilitating sewage manholes having a manhole housing structure defining an interior area which is subject to undesired infiltration of water and fluids through the manhole housing structure, wherein at least one inflow pipe and at least one outflow pipe open through the manhole housing structure into the interior area, the method comprising the steps of:
a) partially inserting a respective sleeve axially into each of the inflow and outflow pipes, leaving an exposed free end of each of the sleeves projecting into the interior area of the manhole housing structure,
b) connecting at least one substantially annularly-closed tubular conduit between the exposed free ends of the sleeve within the interior area of the manhole housing structure, and
c) sealing each sleeve with respect to the respective pipe in which the sleeve is inserted and with respect to the tubular conduit with which the sleeve is connected to form a fluid flow path between the inflow and outflow pipes which is sealably enclosed against infiltration by water and other fluids entering the interior area of the manhole housing structure and against exfiltration of sewage flowing through the pipes and the tubular conduit.

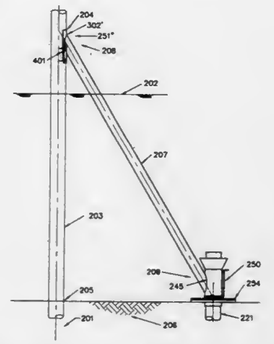
5,308,193
PREVENTATIVE MAINTENANCE SYSTEM FOR UNDERWATER PIPES
Paul G. Rufolo, 149 Gregory St., Mt. Prospect, Ill. 60056
Division of Ser. No. 479,337, Feb. 13, 1990, Pat. No. 5,008,075, and a continuation-in-part of Ser. No. 464,958, Jan. 16, 1990, abandoned. This application Mar. 15, 1991, Ser. No. 669,774
Int. Cl.[5] F16L *1/20*
U.S. Cl. 405—158 **33 Claims**

1. An apparatus suitable for passing cable through an underwater intake pipe, comprising:
a cone-shaped device having a forward end and a rear end, the device including a first cone element and a second cone element, each cone element having a narrow end and a wide end;
wherein said second cone element is substantially wholly nested within said first cone element substantially axially;
wherein said first cone element narrow end is located as said device forward end, and wherein said second cone element narrow end is adjacent said first cone element narrow end;
wherein at positions along a longitudinal axis of said cone-shaped device, said first and second cone elements are spaced apart from each other radially;



wherein said wide ends of both said first and said second cone elements have substantially equal longitudinal axis positions, substantially at said device rear end;
wherein said first and second cone elements define at least a portion of an air pocket between an inner surface of said first cone element and an outer surface of said second cone element.

5,308,194
OFFSHORE SUPPORT STRUCTURE APPARATUS
Samuel C. Carruba, Fulshear, Tex., assignor to CBS Engineering, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 608,382, Nov. 2, 1990, Pat. No. 5,181,799, which is a continuation-in-part of Ser. No. 503,704, Apr. 3, 1990, Pat. No. 5,026,210. This application Oct. 13, 1992, Ser. No. 960,592
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—195.1 **14 Claims**



1. A support structure for use with a well located in a body of water, the well having an upstanding conductor pipe having upper and lower ends, extending from the ground below the body of water to above the surface of the water, comprising:
two tubular legs, each leg having upper and lower ends and adapted to extend from the ground to at least the surface of the water;
a pile skirt disposed on each of the two legs, at the lower end of each of the two legs; and
means for connecting the upper ends of each of the two legs to the conductor pipe, the two legs being radially spaced from one another, the connection means including a doubler plate fixedly secured to the upper end of each of the

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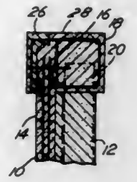
tubular legs, and means for guiding each doubler plate into an abutting and sliding relationship with the conductor pipe, the guiding means being adapted to be fixedly secured to the upper end of the conductor pipe at least at the surface of the water or higher, whereby the two legs and connection means can be secured at their upper ends to the conductor pipe and the lower ends of the legs can be moved downwardly into contact with the ground.

5,308,195

COPING CONSTRUCTION FOR A RETAINING WALL

Dan J. Hotek, Chantilly, Va., assignor to The Reinforced Earth Company, Vienna, Va.

Filed Feb. 12, 1993, Ser. No. 17,645
Int. Cl.[5] E02D *29/02*
U.S. Cl. 405—284 **8 Claims**



1. A finite length partial coping construction for a retaining wall, said partial coping construction comprising in combination:

a plurality of reinforcing bars forming a finite length lattice for said partial precast coping construction, said bars defining a generally upright planar facing section for the partial precast coping construction, said lattice having a top and a center;

a plurality of transverse reinforcing bars projecting outwardly from the top and center of the facing section;

precast cast material encapsulating the lattice and at least a portion of the top projecting reinforcing bars to define a planar front facing surface and an upper edge so that the plurality of transverse reinforcing bars project from the precast material away from the front surface; and

an upper transverse section of precast material extending from the facing section at the upper edge in the same general direction as the top transverse reinforcing bars, the finite length coping construction being constructed to comprise only one side of a coping and being cooperative with cast in place material as the other side of the coping whereby the entire coping is comprised of at least two parts, which may be of distinctive materials, but both of which comprise in combination a generally equal elevation coping for a retaining wall.

5,308,196

YIELDABLE CONFINED CORE MINE ROOF SUPPORT

John R. Frederick, Aurora, Utah, assignor to The Coastal Corporation, Houston, Tex.

Filed Mar. 23, 1993, Ser. No. 35,722
Int. Cl.[5] E21D *11/00*
U.S. Cl. 405—288 **31 Claims**

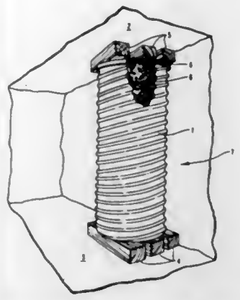
1. A mine roof support comprising:

(a) a yieldable container having a longitudinal axis, said container being adapted to yield by folding upon itself under a load substantially along its longitudinal axis, and

(b) a compressible filler within said container;

wherein said container is adapted to be placed with its longitudinal axis in substantially a vertical orientation between a mine roof and a mine floor; and

wherein a combination of said container and said filler within said container is yieldable upon itself under a load



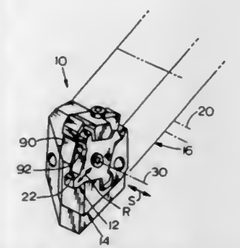
exerted on said combination generally along the longitudinal axis of said container.

5,308,197

MACHINING APPARATUS

Roger W. Little, Santa Fe, Tex., assignor to Threading Systems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 837,362, Feb. 14, 1992, abandoned, which is a continuation of Ser. No. 675,571, Mar. 25, 1991, Pat. No. 5,088,861, which is a continuation-in-part of Ser. No. 468,546, Jan. 23, 1990, Pat. No. 5,004,379. This application Mar. 27, 1992, Ser. No. 859,082
The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.
Int. Cl.[5] B23B *27/16*
U.S. Cl. 407—101 **9 Claims**



1. A machining apparatus comprising:

an insert having a mount portion with a plurality of straight locating sides lying on the sides of an imaginary polygon that has an axis and corners, said insert having a largely radially outwardly extending arm at each of a plurality of said corners of said imaginary polygon, with each arm having a cutting edge, with each arm having an arm upper side extending substantially radially to said cutting edge, and with each arm having a lower side;

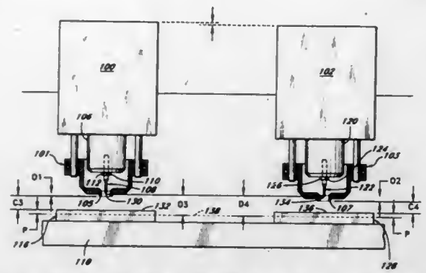
said insert forms a concave transition portion between each end of each of said straight locating sides and an adjacent side of a corresponding one of said arms.

5,308,198

METHOD AND APPARATUS FOR DRILL LENGTH COMPENSATION

Dennis M. Pumphrey, 5012 Ruby St., Torrance, Calif. 90503

Continuation-in-part of Ser. No. 780,881, Oct. 23, 1991, Pat. No. 5,139,376. This application Aug. 17, 1992, Ser. No. 931,155
Int. Cl.[5] B23B *35/00*
U.S. Cl. 408—1 R **11 Claims**



1. A method of rapidly drilling holes in workpiece on a drilling machine, said drilling machine having a first and second spindle movable at least in a vertical direction, a first and second drill tool mounted in said first and second spindle, respectively, said first and said second spindle being adapted to cause rotation of said first and second drill tools to effect drilling, said drill tools depending varying lengths below said respective spindles, a worktable positioned beneath said spindles on which a workpiece can be mounted, said method comprising the steps of:

prior to conducting a drill stroke, sensing the actual vertical position of a tip of said first drill tool and a tip of said second drill tool;

designating an upper limit for said first spindle and an upper limit for said second spindle such that said tips of said first and second drill tools are positioned an equal distance above said worktable; and,

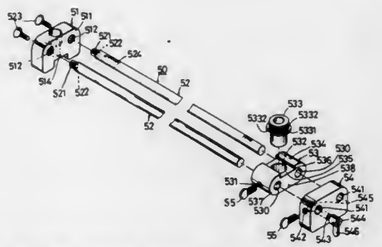
advancing said first and second spindles through a drilling stroke.

5,308,199

DRILL BIT GUIDING DEVICE

Bor-Chang Juang, No. 3, Lane 14, Chen-Hsing Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Aug. 5, 1993, Ser. No. 102,342
Int. Cl.[5] B23B *49/00*
U.S. Cl. 408—115 R **15 Claims**



1. A drill bit guiding device for guiding axial movement of a drill bit when forming holes in a workpiece, comprising:

an end block having an end face which is formed with a spaced pair of horizontally aligned through bores;

a pair of guide shafts, each having a first end portion extending into a respective one of said through bores of said end block and being mounted removably on said end block in such a manner that said guide shafts are parallel to one another and extend horizontally from said end face of said end block, one of said guide shafts being formed with a graduated line that is marked off in units of length, each of said guide shafts further having a second end portion;

a plurality of guide blocks mounted slidably on said guide shafts and parallel to said end block, each of said guide blocks being formed with a single vertically extending hole in a direction that is transverse to axes of said guide shafts, said vertically extending hole receiving a corresponding tubular guide sleeve therein, said guide sleeve permitting extension of the drill bit thereinto, said guide blocks being locked releasably at desired positions on said guide shafts; and

a positioning block mounted slidably on said second end portions of said guide shafts;

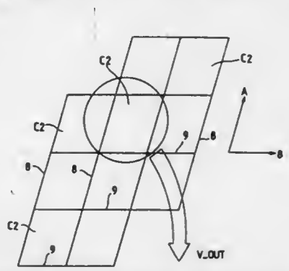
whereby, said end block and said positioning block clamp opposite sides of said workpiece, and said guide blocks are positioned on said guide shafts so that said vertically extending holes are aligned with intended locations of the holes to be formed in the workpiece when said drill bit guiding device is in use.

5,308,200

METHOD OF PRODUCING A DIE FORMING LENS FISHEYE STEPS

Yoshinori Otsuka, Shizuoka, Japan, assignor to Kolto Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,786
Claims priority, application Japan, Dec. 13, 1991, 3-351322
Int. Cl.[5] B23C *1/00*; F21Q *3/00*
U.S. Cl. 409—132 **3 Claims**



1. A method of producing from a die workpiece block a die to be used for forming, on a lens having a curved portion, a plurality of fisheye steps that are divided by boundary lines into generally parallelogram-like sections, said die being divided into a plurality of concave portions corresponding to the respective fisheye steps by a first group of boundary lines extending in a first direction and a second group of boundary lines extending in a second direction, said method comprising the steps of:

(1) entering a cutting tool into a divided section of said die block corresponding to one concave portion while controlling an entrance movement direction of said cutting tool so that is locus becomes perpendicular to a start side boundary line comprising a first one of said second group of boundary lines and specified to become a boundary of said divided section;

(2) moving said cutting tool relative to said die block so that said cutting tool proceeds generally in parallel with the boundary lines of said divided section belonging to said first group of boundary lines; and

(3) controlling a relative exit movement direction of said cutting tool so that the new locus of said cutting tool becomes perpendicular to a specified end side boundary line comprising a second one of said second group of boundary lines, wherein:

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said second group of boundary lines is formed substantially as a straight line, said second group of boundary lines obliquely intersecting said first group of boundary lines.

5,308,201

MILLING MACHINE

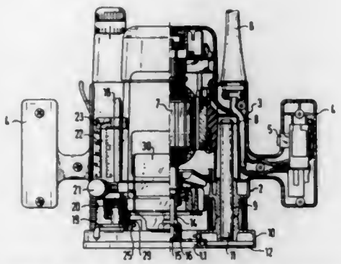
Wendell Wilson, Atlanta, Ga., and David M. Martinez, New Bern, N.C., assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,685

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 9114811

Int. Cl.[5] B23C *1/20*; B27G *21/00*; B23Q *11/08*

U.S. Cl. 409—134 **10 Claims**



1. A milling machine, in particular a hand-guided router, comprising a foot plate to be placed on a workpiece; a motor housing having a lower side provided with a tool receptacle for a milling tool and displaceable relative to said foot plate; a protective shield arranged between said foot plate and said motor housing before the milling tool to hold back chips from an operator, said protective shield being foldably mounted on said foot plate so as to facilitate a tool exchange.

5,308,202

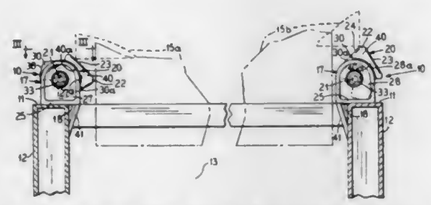
ADJUSTABLE GUIDE ASSEMBLY FOR CARGO CONTAINER TRAIN WELL CARS

Richard A. Tatina, Countryside, Ill., assignor to Portec, Inc., Shipping Systems Div., Oak Brook, Ill.

Filed Dec. 11, 1991, Ser. No. 804,997

Int. Cl.[5] B61D *45/00*

U.S. Cl. 410—94 **20 Claims**



16. An adjustable guide assembly for mounting on the upper edge of a longitudinal retainer wall defining a cargo container well of a well car adapted for accommodating containers of different widths in said well, comprising:

a casting providing a base member having means for attachment to said upper edge of the retainer wall;

a casting providing a guide member having thereon a narrow-container loading assistance cam surface and a wide-container loading assistance cam surface; and

means connecting said members for rocking movement of said guide member for shifting said narrow container cam surface into position for assisting loading of a narrow-container into the well and for rocking movement of said guide member for shifting said wide-container loading assistance cam surface into position relative to said well for guiding a wide container into said well.

5,308,203

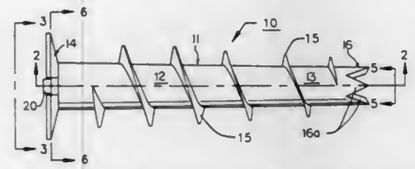
SAW TIPPED ANCHOR INSERT

Thomas W. McSherry, Salem, N.Y.; Steven D. Townsend, and Phillip S. Townsend, both of Waterbury, Conn., assignors to Titan Technologies, Inc., Temple, Pa.

Continuation-in-part of Ser. No. 949,425, Sep. 22, 1992, abandoned. This application Oct. 23, 1992, Ser. No. 965,735

Int. Cl.[5] F16B *13/04*

U.S. Cl. 411—31 **8 Claims**



1. A wall anchor for insertion in a wall, said wall anchor comprising a cylindrical body having an outer thread and an axial through passage extending from a flanged proximal end of said body to a saw-tipped distal end of said body, saw teeth extending distally from said distal end in the configuration of peaks separated by flat valleys circumferentially spaced about said distal end surrounding said through passage, said flat valleys comprising the distal edge of said distal end, means extending axially along said through passage from said proximal end for receiving the threads of a screw fastener and recess means at said flanged proximal end for receiving a drive tool for rotating said anchor for sawing through the wall with said saw-tipped distal end.

5,308,204

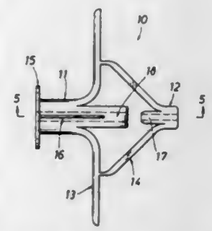
WALL PLUG TYPE FASTENER

Lasse O. Moen, 16734 Township Meadows, Houston, Tex. 77095

Filed Apr. 23, 1993, Ser. No. 52,174

Int. Cl.[5] F16B *13/04, 21/00*

U.S. Cl. 411—37 **19 Claims**



1. A wall plug type fastener, comprising:

(a) an elongate anchor body defining an internal anchor axial void, the anchor body having first and second ends;

(b) a wall engaging flange at the first end of the anchor body, the flange defining an exposed hole coaxial with the void;

(c) an elongate satellite body defining a secondary axial void spaced from and coaxial with the anchor axial void, said satellite body constructed and adapted to move toward and abut said elongate anchor body to enhance alignment of the fastener;

(d) first articulated arm members radially coupled to the anchor body at a point between the first and second ends; and

(e) second articulated arm members coupled to the first articulated arm members and also coupled to the satellite body.

5,308,205

PLASTIC RETAINING PEG, PARTICULARLY FOR FURNITURE FITTINGS

Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to MEPLA-Werke Lautenschlager GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

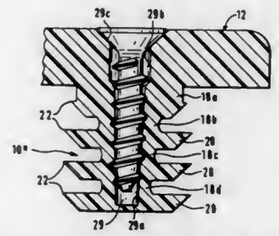
PCT No. PCT/EP92/00637, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO92/17706, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 23, 1992, Ser. No. 949,237

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 4110079; Jun. 10, 1991, 4119047

Int. Cl.[5] F16B *19/00, 37/04*

U.S. Cl. 411—182 **11 Claims**



1. A dowel-like retaining peg of plastics material which may be fitted by pressing or driven into a bore, particularly for fastening a furniture fitting member (**12**) to an article of furniture, with an elongate peg portion from whose outer peripheral surface a number of peripheral annular projections extend radially, offset in the longitudinal direction of the peg and with a triangular cross-section tapering towards the exterior and defining a respective knife blade-like retaining ridge, wherein the furniture fitting member is plastic and the peg portion (**18**) has a substantially smaller diameter over the major portion of its longitudinal extent with respect to the diameter (d) of the associated bore (**16**), that the peripheral annular projections are construed as annular disc-shaped, elastically deformable fins (**20**) which are integrally attached to the peg portion (**18**), and that the external diameter (D) of the annular projections in the undeformed state is greater than the diameter (d) of the associated bore (**16**), said retaining peg being integrally connected to the plastic furniture fitting member (**12**), said peg portion (**18**) and said plastic furniture fitting member (**12**) have a longitudinal bore (**29**) which is open on the side of the furniture fitting member (**12**) remote from the peg portion and into which the shaft of a retaining screw (**24'**) is screwed, said retaining peg having a section (**29c**) of a longitudinal bore extending within the peg portion (**18**), said peg portion having said longitudinal bore (**29**) which has a free diameter that is smaller than the external diameter of the threaded shaft of the retaining screw (**24'**) and that the section (**29b**) of said longitudinal bore (**29**) extending within the plastic component **912**) has an oversized free diameter with respect to the external diameter of the threaded shaft.

5,308,206

PROTECTION NUT FOR A PUSH BUTTON

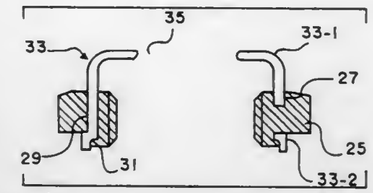
Michel Dorey, Saint Paul les Romans, France, assignor to Crouzet Automatismes, Valence, France

Filed Oct. 30, 1992, Ser. No. 968,863

Claims priority, application France, Oct. 31, 1991, 91 13955

Int. Cl.[5] F16B *37/14*

U.S. Cl. 411—429 **10 Claims**



1. A protection nut for screwing on a stud in which a button slides, comprising:

an internally threaded nut body;

an approximately bell-shaped elastic membrane mounted to one face of the nut body for fitting around or covering the button; and

an annular seal-ring mounted to an opposite face of the nut body, the membrane and the seal-ring forming only one part and being connected together through at least one through-hole of the nut body,

wherein the base of the bell-shaped membrane is fitted in a groove formed in the nut body so that said at least one through-hole opens in the groove.

5,308,207

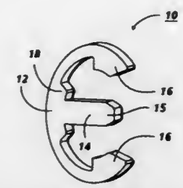
RETAINING RING AND SHAFT FOR SECURING A COMPONENT THEREON

Timothy R. Jaskowiak, Lyndonville, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1992, Ser. No. 922,407

Int. Cl.[5] F16B *21/14, 21/18*

U.S. Cl. 411—513 **4 Claims**



1. A retaining apparatus for axially securing a component having a bearing surface onto a shaft, comprising:

a shaft having an unthreaded portion and an outer periphery adapted to receive the component for mounting thereon, said shaft defining a first aperture extending radially inwardly from said outer periphery along the unthreaded portion; and

a retaining ring including an inner periphery adapted to be assembled on the unthreaded portion of said shaft and a ring body for applying a retaining force against the bearing surface of the component mounted thereon, said retaining ring including a center post extending radially inwardly from said inner periphery for insertion within the aperture of said shaft, wherein said retaining ring further includes a plurality of shoulder segments extending radially inwardly from said inner periphery for defining stabilizing points against which said retaining ring will rest when assembled on said shaft.

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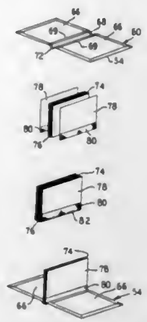
METHOD FOR BINDING A BOOK

Rodger Ranson, Winchester, Ill., assignor to Hertzberg-New Method, Inc., Jacksonville, Ill.

Division of Ser. No. 850,223, Mar. 12, 1992, Pat. No. 5,203,590, which is a continuation of Ser. No. 606,441, Oct. 31, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 49,680

Int. Cl.[5] **B42C** *11/00*

U.S. Cl. 412—5 **2 Claims**



1. A method for binding a book comprising the steps of:

(a) first positioning a pair of end sheets so that each one is adjacent a different one of the respective opposed faces of a stack that is comprised of a plurality of adjacent pages and which has a straight side at which respective edge portions of each page are generally aligned, each one of said pair of end sheets having an associated edge portion that extends generally along said side, and each one of said edge portions including a reinforcing fabric strip;

(b) stitching together all of said pages and said end sheets at said edge portions in laterally spaced relationship to said side, said stitching extending transversely through said pages, said fabric strips and said end sheets, thereby producing a stitched assembly of said end sheets and said stack having a stitched side;

(c) secondly positioning said assembly so that said stitched side is located in a generally U-shaped channel existing in the transverse mid-region of a preformed book cover, said book cover comprising

(1) a generally rectangular cover sheet member having opposed inner and outer faces and having inwardly foldable flap members defined along perimeter edge portions thereof;

(2) a foldable spine strip with opposed longitudinal sides that is centrally located adjacent said inner face and extends transversely thereacross;

(3) a pair of support boards each located adjacent said inner face and positioned in spaced, adjacent relationship to a different one of said longitudinal sides of said spine strip;

(4) said flap members being folded over adjacent peripheral portions of said spine strip and of each one of said support boards; and

(5) adhesive means bonding said cover sheet and said flaps to said spine strip and to said support boards; so that, in the resulting book cover, said spine strip and adjacent bonded portions of said cover sheet are together definable into said generally U-shaped channel wherein;

said second positioning being carried out so that the resulting interrelationship between said assembly and said generally U-shaped channel is such that said generally U-shaped channel extends around said stitched side and over said stitching in said edge portions;

(d) folding each one of said end sheets outwardly into contacting adjacent associated relationship with a different one of each of said support boards; and

(e) adhesively bonding contacting portions of each one of said end sheets to its adjacent associated said support board, thereby binding said assembly to said book cover.

5,308,209

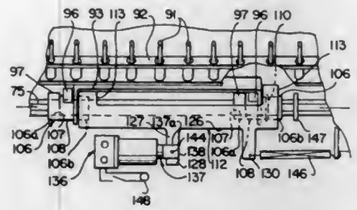
BINDING MACHINE WITH DEBINDER

Phillip M. Crudo, and Luis de Leon, both of Sparks, Nev., assignors to VeloBind, Inc., Sparks, Nev.

Filed Nov. 25, 1992, Ser. No. 981,622

Int. Cl.[5] **B42C** *17/00*

U.S. Cl. 412—15 **10 Claims**



1. A debinding apparatus for a machine adapted to bind together sheets formed with first apertures spaced longitudinally on one edge thereof using a first narrow thermoplastic strip having studs projecting therefrom spaced complementary to said first apertures and a second narrow strip formed with second apertures spaced complementary to said first apertures, said machine comprising a frame, means for supporting said second strip with said sheets superimposed on said second strip and said first strip superimposed on said sheets with said studs extending through said first apertures and said second apertures and protruding below said second strip, a plurality of cutting elements, means for heating said cutting elements, actuating means for moving said cutting elements to cut off excess stud length and create an end thereon and to initiate the formation of heads on the ends of said studs, and means for forming heads on the ends of said studs which includes a plurality of fingers for engaging said ends and movement means for actuating said fingers from an inoperative to an operative position,

the improvement comprising debinding means for disengaging said finger movement means to facilitate separation of said strips and sheets and means operable to initiate said debinding means.

5,308,210

INTERFACE APPARATUS FOR TRANSPORTING SUBSTRATES BETWEEN SUBSTRATE PROCESSING APPARATUS

Masami Ohtani; Yoshiji Oka; Takeo Okamoto, and Yoshiteru Fukutomi, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 729,959, Jul. 15, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 80,652

Claims priority, application Japan, Jul. 23, 1990, 2-78099[U]; Jul. 24, 1990, 2-195129

Int. Cl.[5] **B65G** *49/07*

U.S. Cl. 414—222 **7 Claims**

1. A photoresist processing system for carrying out a series of photoresist processes on substrates, said system comprising:

a first photoresist processing apparatus including a plurality of processing units;

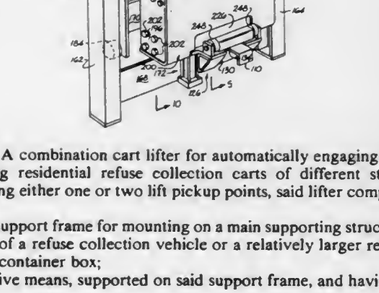
a second photoresist processing apparatus including at least one processing unit;

storage means disposed between said first photoresist processing apparatus and said second photoresist processing apparatus for storing a plurality of substrates in multiple stages;

first transport means for transporting the substrates into and out of said processing units of said first photoresist processing apparatus;

second transport means for transporting the substrates into and out of said processing unit of said second photoresist processing apparatus;

vertically movable third transport means for transporting the substrates into and out of said storage means;



transfer means for transferring the substrates between said first transport means and said second transport means, between said first transport means and said third transport means and between said second transport means and said third transport means; and

vertically movable temporary support means operable independently of said first, second and third transport means for raising a substrate from said transfer means and for retaining the substrate above a position to which said third transport means is raised for transporting a substrate into and out of an uppermost stage in said storage means.

5,308,211

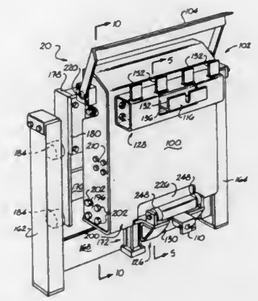
RESIDENTIAL REFUSE COLLECTION CART LIFTER WITH UNIVERSAL FEATURES

Jimmy O. Bayne, Simpsonville, S.C., assignor to Bayne Machine Works, Inc., Simpsonville, S.C.

Filed Jun. 22, 1992, Ser. No. 903,078

Int. Cl.[5] **B65F** *3/02*

U.S. Cl. 414—408 **13 Claims**



1. A combination cart lifter for automatically engaging and lifting residential refuse collection carts of different styles having either one or two lift pickup points, said lifter comprising:

a support frame for mounting on a main supporting structure of a refuse collection vehicle or a relatively larger refuse container box;

drive means, supported on said support frame, and having a rotatable output shaft, said drive means controllably positioning the rotary orientation of said output shaft;

a main lift carriage for receipt and dumping of a residential refuse collection cart, said main lift carriage comprising a generally planar member having relative base and top portions and oriented in a generally vertical position with said top portion up and said base portion down whenever said main lift carriage is in a lowered upright position thereof, and said main lift carriage being movable to a generally raised inverted position thereof with said base portion thereof substantially higher than said top portion thereof for dumping the contents of a refuse collection cart received thereon;

a pair of torque arms fixedly received on opposing respective ends of said drive means output shaft for being rotated therewith, and respectively pivotably mounted adjacent said base portion of said main lift carriage;

a pair of idler arms pivotably supported at respective first ends thereof on said support frame and at respective second ends thereof on said main lift carriage respectively relatively displaced from said base portion thereof, so that said main lift carriage is raised and inverted by said torque and idler arms responsive to predetermined rotation of said drive means output shaft;

a first support bar and clamp bar assembly associated with said main lift carriage for securing thereto a refuse collection cart of the style having a single lift pickup point comprising either a lift lip at the top of the cart or a lift pocket near the top of the cart, said first support bar comprising an engagement support element fixedly mounted on said main lift carriage relatively adjacent said top portion thereof, and wherein said clamp bar assembly includes a clamp bar pivotably mounted on said main lift carriage adjacent said top portion thereof and clamp bar actuation means responsive to operation of said drive means for closing said clamp bar towards said fixedly mounted engagement support element as said main lift carriage is raised so as to clamp the single lift pickup point of the cart being lifted and dumped;

a lift saddle pivotably mounted on said main lift carriage relatively adjacent said first support bar, said lift saddle projecting out from said first support bar so as to make lifting engagement with the relative underside of an upper of two lift pickup points of a refuse collection cart of the style having two such pickup points, said lift saddle by appropriate physical contact thereto being freely rotatable generally towards said main lift carriage top portion into a retracted position of said saddle so as to permit cart pickup by said clamping operations for appropriate cart styles, and said lift saddle being resiliently biased towards an engaging position thereof relatively rotated towards said main lift carriage base portion so as to permit cart pickup with said lift saddle for appropriate cart styles;

a slider latch assembly comprising a carriage extension member received adjacent said main lift carriage base portion for controlled alternate extension relatively therefrom and retraction relative thereto, and further comprising carriage extension member actuation means responsive to operation of said drive means for relatively extending said carriage extension member in correspondence with raising of said main lift carriage with said drive means and for relatively retracting said carriage extension member in correspondence with lowering of said main lift carriage with said drive means; and

a lift hook pivotably mounted on a distal end of said carriage extension member, said lift hook projecting out from said main lift carriage so as to make securement engagement with the relative topside of a lower of two lift pickup points of a refuse collection cart of the style having two such pickup points, whenever said carriage extension member actuation means is operative for relatively extending said carriage extension member, said lift hook by appropriate physical contact thereto being freely rotatable

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generally away from said main lift carriage top portion into a retracted position of said lift hook so as to permit cart pickup by said clamping operations for appropriate cart styles, and said lift hook being resiliently biased towards said main lift carriage top portion so as to permit cart pickup and lift securement engagement with said lift hook for appropriate cart styles;

such that said cart lifter automatically uses said first support bar and clamp bar assembly for lifting cart styles having one lift pickup point with said lift saddle and lift hook pivoted into their respective retracted positions, while automatically using said lift saddle and lift hook resiliently biased into their respective engaging positions and projecting beyond said first support bar and main lift carriage respectively for lifting cart styles having two respective upper and lower pickup points.

5,308,212

AIRCRAFT TOWING VEHICLE

Jürgen Pollner, Munich, and Gregor Trummer, Aschering, both of Fed. Rep. of Germany, assignors to Krauss Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

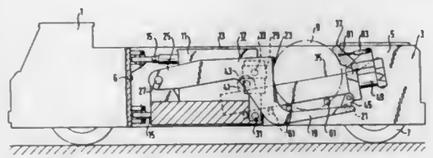
PCT No. PCT/DE92/00057, § 371 Date Sep. 24, 1992, § 102(e) Date Sep. 24, 1992, PCT Pub. No. WO92/13762, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 30, 1992, Ser. No. 930,537

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1991, 4102861; Sep. 23, 1991, 4131649

Int. Cl.[5] B64F *1/22*

U.S. Cl. 414—428 **8 Claims**



1. Towing vehicle for towing an aircraft comprising: a chassis having a fork shaped recess at a rear portion thereof, a receiving device arranged in the recess for supporting and securing a nose wheel of an aircraft, a lifting cradle supported for swinging movement about a horizontal axis while being constrained against sliding movement in a longitudinal direction, a lifting device for raising and lowering said lifting cradle, two telescopic traction arms arranged on both sides of the lifting cradle, said traction arms being mechanically coupled with the lifting cradle for a linked vertical motion, hydraulic cylinder means for extending and retracting said traction arms, located at free end portions of said traction arms for reaching behind the nose wheel, whereby shortening of the traction arms pulls the nose wheel onto the lowered lifting cradle and secures the nose wheel thereto, wherein

the recess of the chassis comprises a bearing frame supporting said lifting cradle and said traction arms guide rod suspensions for supporting the bearing frame arranged on both sides thereof, so that the bearing frame can twist and tilt in a transverse direction;

wherein the lifting cradle and the traction arms are supported swingably on the bearing frame about different horizontal bearing axles longitudinally offset with respect to each other;

and wherein each traction arm is coupled with the lifting cradle via a joint plate for allowing pivoting motions about their respective bearing axles during vertical motions of the lifting cradle, whereby the gripping members travel over a larger upward path than the lifting cradle when said lifting cradle is elevated.

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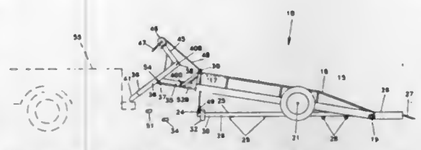
GROUND LEVEL LOADING UNIVERSAL TRAILER

Gerald M. Gilbertson, R.R. 1, Box 297B, Devils Lake, N. Dak. 58301

Filed Jun. 21, 1993, Ser. No. 79,262

Int. Cl.[5] B60P *1/44*

U.S. Cl. 414—482 **6 Claims**



1. A ground level loading universal trailer comprising

wheeled means having a plurality of axles for moving said universal trailer;

a frame being generally U-shaped and securely mounted upon said wheeled means, said frame having a front end and a back end and further comprising a plurality of interconnected rails;

a support bed having a rear end and a forward end and having sides which are journaled to said frame of said support bed;

a locking means for locking said support bed in a transport mode;

a tongue means having a first tongue extension member fixedly attached to said front end of said frame and extending therefrom and having an outer end, said tongue means further having a second tongue extension member having a frontal end and a rearward end and being hingedly connected to said first tongue extension member, said second tongue extension member further having a hitch means at said frontal end for connecting to a hitch on a vehicle; and

a winch mechanism securely mounted on an upright support member which is fixedly attached upon said second tongue extension member, said winch mechanism having a flexible member attached to the support bed for raising and lowering said support bed relative to the ground.

5,308,214

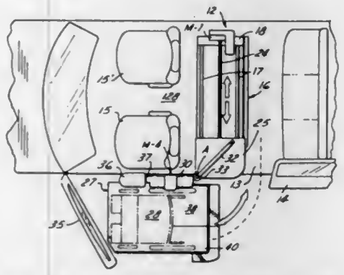
WHEELCHAIR LIFT APPARATUS

John E. Crain, Birmingham; Mariano T. Cadiz, Rochester Hills; James J. Todd, Commerce Township, Oakland County, and Lawrence J. Teal, Canton, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1993, Ser. No. 28,065

Int. Cl.[5] B60P *1/44*

U.S. Cl. 414—541 **20 Claims**



1. A wheelchair lift apparatus adapted for removable use with a vehicle body, the body having a passenger compartment defined in part by a floor and two sides, one of said body sides having a front door opening and an adjacent side door opening, each said front and side door opening having an associated door movable supported relative thereto, the passenger compartment having front seat means fixed to the floor providing a driver's seat and a front passenger seat, seat retention means disposed in the floor for removably coupling a rear seat to the floor in transverse alignment with the side door opening, said removable wheelchair lift apparatus comprising:

a base frame having latch means operatively connected thereto adapted to releasably engage said seat retention means, platform means for supporting a wheelchair mounted above said base frame, and actuation means for reciprocally moving said platform means relative to said base frame into and out of the vehicle through said side door opening.

5,308,215

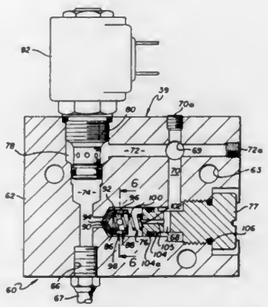
PASSENGER LIFT MOVABLE AT VARIABLE SPEEDS

Stanton D. Saucier, Tarzana, Calif., assignor to Ricon Corporation, Pacoima, Calif.

Filed Jul. 28, 1992, Ser. No. 920,796

Int. Cl.[5] B60P *1/44*

U.S. Cl. 414—546 **10 Claims**



1. A multiple motion-pattern hydraulic lift as for moving passengers in relation to a vehicle, said lift comprising:

a platform mechanism structure for carrying a passenger and adapted to be affixed to said vehicle for movement through phases of distinct storage and passenger bearing motion patterns, said platform mechanism structure adapted to lie in a substantially horizontal plane and move along a substantially vertical plane through said passenger bearing motion pattern, between a lower position outside said vehicle and a raised position substantially level with a floor of said vehicle, said platform mechanism further adapted to swing from said raised position through swing up and swing down phases of said storage motion pattern;

hydraulic apparatus connected to said platform mechanism structure for actuating said platform mechanism structure; and

a hydraulic flow control structure connected in a circuit with said hydraulic apparatus to control said motion patterns and including, passage structure defining a plurality of passages, valve means for controlling flow in said passages, and a moving orifice member in at least one of said passages for attenuating flow in one direction through said one passage during at least said swing up phase of said storage motion pattern.

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FORWARDER

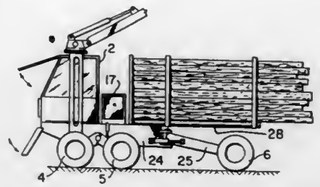
Olof Herolf, Sundsvall, Sweden, assignor to Osa AB, Alfta, Sweden

Continuation-in-part of Ser. No. 104,060, Aug. 25, 1987, abandoned. This application Apr. 24, 1989, Ser. No. 342,958

Claims priority, application Sweden, Jan. 10, 1987, 8600123

Int. Cl.[5] B60P *1/54*

U.S. Cl. 414—550 **17 Claims**



1. A forwarder having a wheeled chassis, a driver's cab, a load carrier and a load lifting device for serving the load carrier, comprising:

a longitudinally extending rigid chassis having a longitudinal axis, said driver's cab mounted on and above the front end of the chassis on said axis; a pair of non-steerable wheels mounted on each side of said chassis beneath said driver's cab, each pair of wheels mounted on a common yoke to form a bogie which is individually pivotal about a horizontal axis relative to said chassis; said load carrier mounted on said chassis and symmetrical with said axis; a single pair of wheels attached to said chassis, at the rear end, a wheel on each side of said chassis and mounted by a pendulum suspension, each wheel of said single pair of wheels being steerable by a pivotal movement relative to said chassis, said load lifting device mounted on the front end of the chassis above the driver's cab along said axis, the load lifting device, the drivers cab and the load carrier having a fixed geometrical orientation along said axis at all times.

5,308,217

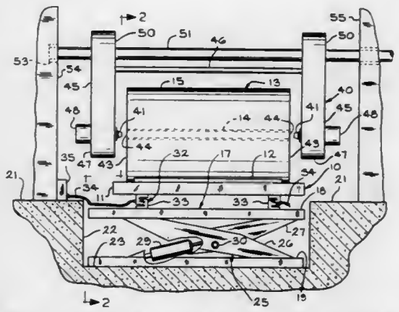
ROLL CHUCKING APPARATUS

David J. Pienta, Temperance, Mich., assignor to Automatic Handling, Inc., Erie, Mich.

Filed Jul. 20, 1992, Ser. No. 915,261

Int. Cl.[5] B66F *3/22*

U.S. Cl. 414—610 **5 Claims**



1. Roll chucking apparatus for a roll having roll ends and a central opening in each roll end, such roll being engaged at such roll ends by opposed support pins, said chucking apparatus comprising, in combination, a platform for supporting such roll, said platform defining four corners, lift means for verti-

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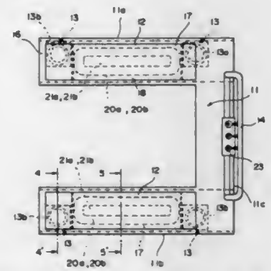
cally adjusting said platform and means for sensing an increase or decrease in the platform load upon initial insertion of such opposed pins into such opposed openings, said sensing means including four load cells positioned adjacent said four corners of said platform and a control box operatively connected between said plurality of load cells and said lift means, whereby upon misalignment of said opposed openings said platform is moved vertically to obtain a neutral load and thus to align such opposed pins with respective ones of said opposed openings.

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TRANSPORTATION DEVICE HAVING AN AIR-FOIL BEARING

Hisami Kobayashi, and Yoshinori Noguchi, both of Kamikodanaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 10, 1992, Ser. No. 866,923
Claims priority, application Japan, Apr. 11, 1991, 3-079140
Int. Cl.[5] B65G *25/02*
U.S. Cl. 414—676 **12 Claims**



1. A transportation device for transporting an object, comprising:
a base body having a top surface and a bottom surface;
a depression provided in said top surface of said base body;
lifting means provided on said base body in correspondence with said depression for lifting said object, said lifting means comprising a lift plate for supporting said object thereon and air envelope means supplied with compressed air for causing a dilatation in response thereto, said lift plate being connected to said air envelope means such that the lift plate is lifted upward upon a supply of compressed air to said air envelope means; and
air foil bearing means having a top surface and a bottom surface and provided on said base body such that said top surface of the air foil bearing means is located at a level above said bottom surface of said base body, said air foil bearing means being supplied with compressed air for discharging the same from said bottom surface of said air foil bearing means to form an air-foil.

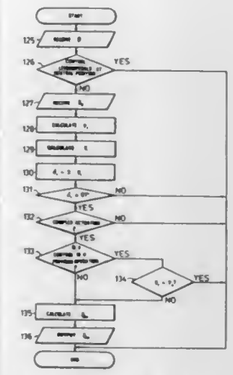
5,308,219

PROCESS FOR AUTOMATICALLY CONTROLLING ACTUATORS OF EXCAVATOR

Jin H. Lee, Seo-Myeon; Jin T. Kim, Changweon; Jang U. Jo, Chungmu; Bong D. Hoang, Changweon; Jn K. Kim, Busan, and Sang T. Jeong, Seoul, all of Rep. of Korea, assignors to Samsung Heavy Industries Co., Ltd., Changwon, Rep. of Korea

Filed Sep. 23, 1991, Ser. No. 765,162
Claims priority, application Rep. of Korea, Sep. 29, 1990, 90-15861; Oct. 29, 1990, 90-17387; Nov. 1, 1990, 90-17672; Nov. 13, 1990, 90-18304; Dec. 29, 1990, 90-22389; May 2, 1991, 91-7081
Int. Cl.[5] E02F *3/00*
U.S. Cl. 414—695.5 **2 Claims**

1. A process for automatically controlling an apparatus for operating an excavator, said apparatus including a pair of adjustable volume hydraulic pumps with swash plates and swash plate control valves, an engine operably connected to the hydraulic pumps, a plurality of actuators operably connected to said hydraulic pumps, directional control valves operably connected to the pumps and actuators, and control levers and control pedals for generating electric control signals to control the actuators, the process comprising the steps of:
determining displacement values for said actuators to be actuated in response to electric control signals received from the control levers and control pedals for controlling said actuators;
determining a quantity of hydraulic fluid under pressure to be delivered from said hydraulic pumps to said actuators;



determining values representing the desired position of the directional control valves in order to cause the determined quantity of hydraulic fluid under pressure to be efficiently supplied to said actuators; and
limiting the output volume of said hydraulic pumps in accordance with the determined quantity of the hydraulic fluid to be supplied to said actuators and in accordance with the determined values of said directional control valves by outputting electric signals representing the limited pump output volumes of said hydraulic pumps to the swash plate control valves by way of an amplifier so as to control inclination angles of swash plates on said hydraulic pumps and in turn control the pump output volumes.

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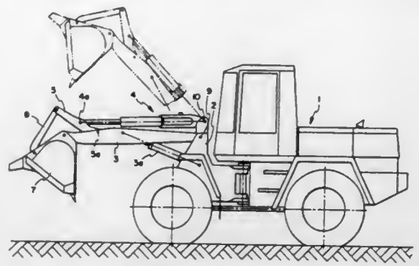
SCOOP-AND-DUMP JACK FOR SHOVEL-LOADER

Hans Schaeff, Langenburg, Fed. Rep. of Germany, assignor to Karl Schaeff GmbH & Co., Maschinenfabrik, Langenburg, Fed. Rep. of Germany

Filed Aug. 27, 1992, Ser. No. 935,809
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128959
Int. Cl.[5] E02F *3/00*
U.S. Cl. 414—699 **19 Claims**

1. A shovel loader device including a scoop-and-dump jack in combination with a loader shovel for a construction vehicle, the jack having a case and a cyliner-bottom, the cylinder-bottom hinges by a bearing eye on a loader chassis above a pivotable operational truss, and a piston rod which hinges by means of a bearing eye on a rocker lever attached to the operational truss, in such a manner that the loader shovel indirectly linked to the scoop-and-dump jack remains in an upwardly open pivoted position over the entire pivoting range of the operational truss while the length of the jack remains constant, the combination of said loader shovel and said scoop-and-dump jack wherein:

a) the jack comprises a piston-rod extension guided inside a sealed borehole of the jack cylinder-bottom, the diameter of said extension corresponding at least to that of the piston rod and of which the length corresponds at least to that of the maximum piston stroke;
b) the jack bearing-eye and the jack cylinder-bottom are integrally connected by a connection member extending



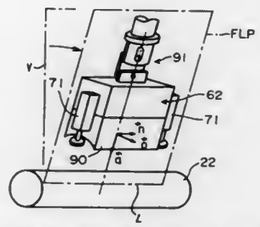
across most of the length of the movement of the piston-rod extension and tensionally and compressively resistant to the jack forces; and
c) a central receiving space for the piston-rod extension being present in the connection member, which comprises a laterally open access for assembly and exchange of piston-rod seals in the jack cylinder-bottom.

5,308,221

METHOD AND APPARATUS FOR CONTROLLING A ROBOT HAVING A FLOATING HAND

Akira Shimokoshi, Toyoake; Osamu Matsuda, Obu; Toshio Matsumura, Toyoake, and Fumihiko Komuro, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Continuation of Ser. No. 736,500, Jul. 26, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,599
Claims priority, application Japan, Aug. 2, 1990, 2-205418
Int. Cl.[5] B25J *9/18*
U.S. Cl. 414—734 **7 Claims**



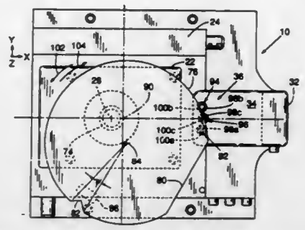
4. An apparatus for controlling a robot having a floating hand to pick up a workpiece, wherein said hand is freely swingable in only one floating plane, said apparatus comprising:
means for determining a desired inclined posture of a wrist portion in such a way that a line of intersection of said floating plane of said only one hand with a vertical plane becomes parallel to a horizontal direction, and a center axis of said wrist portion becomes perpendicular to said line of intersection;
means for changing the posture of said wrist portion in such a way that the posture of said wrist portion coincides with said desired inclined posture; and
means for moving said hand toward said workpiece while keeping said inclined posture to pick up said workpiece.

5,308,222

NONCENTERING SPECIMEN PREALIGNER

Paul E. Bacchi, and Paul S. Filipski, both of Novato, Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.

Filed May 17, 1991, Ser. No. 701,915
Int. Cl.[5] B65G *47/24*
U.S. Cl. 414—783 **22 Claims**



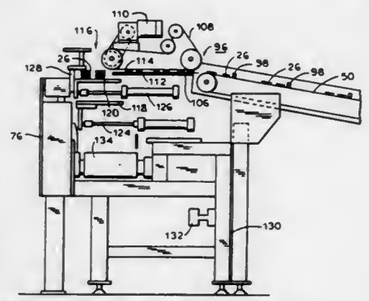
11. A specimen prealigner for positioning in a preselected alignment a specimen having a peripheral edge that includes adjacent edge segments of first and second contours with a contour transition between them, comprising:
edge detecting means for detecting the peripheral edge of the specimen, the edge detecting means including a first light emitter that directs a light beam toward the peripheral edge of the specimen and a corresponding light detector that receives the light beam after it strikes the specimen;
scanning means for scanning the first and second contours of the peripheral edge past the edge detecting means at a first scan rate and for scanning the contour transition past the edge detecting means at a second scan rate; and
contour predicting means for predicting whether the edge detecting means will scan the contour transition and for generating a corresponding contour prediction signal, the scanning means including a second light emitter that directs a light beam toward the peripheral edge of the specimen and a corresponding light detector that receives the light beam after it strikes the specimen, and the scanning means being responsive to the contour prediction signal to scan the peripheral edge with the edge detecting means along the contour transition at the second scan rate.

5,308,223

PACKAGE HANDLING SYSTEM

Arthur Sternheimer, Spring Valley, N.Y.; Anthony Marchiano, E. Stroudsburg, Pa., and Donald Johnson, Matawan, N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Aug. 29, 1991, Ser. No. 751,999
Int. Cl.[5] B65G *57/00*
U.S. Cl. 414—790.3 **7 Claims**



1. A package handling system, comprising:

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an abort plate which is movable between a first position and a second position, the abort plate being adapted to support a stack of packages when the abort plate is in its first position, the abort plate being adapted to permit packages to fall past the first position when the abort plate is in its second position;

a pusher plate which is movable between a first position and a second position, the pusher plate being adapted to support packages when the pusher plate is in its first position, the pusher plate being adapted to permit packages to fall onto the abort plate when the pusher plate is in its second position and the abort plate is in its first position, the pusher plate being adapted to push the stack of packages off the abort plate when the pusher plate is moved from its second position to its first position; and

a gate which is movable between a first position and a second position, the gate being adapted to separate packages from the stack when the gate is in its first position, the gate being adapted to permit packages to fall onto the pusher plate when the gate is in its second position and the pusher plate is in its first position.

5,308,224

ANTIVIBRATION SUSPENSION DEVICE FOR A BLOWER

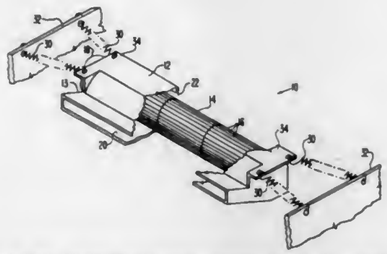
Michele Olivero, Volpiano, and Renato Bortolin, Montanaro, both of Italy, assignors to Olivetti-Canon Industriale S.p.A., Ivrea, Italy

Filed Feb. 8, 1993, Ser. No. 14,511

Claims priority, application Italy, Feb. 10, 1992, TO92A000100

Int. Cl.[5] F04D *29/66*

U.S. Cl. 415—53.1 **9 Claims**



1. An antivibration suspension device for a blower mounted on a rigid structure, said blower having a casing, an impeller with blades which rotates on said casing and a motor mounted on said casing so as to turn said impeller; having:

the suspension device comprising two sets of springs anchored by first ends of said springs to opposite sides of said casing and by opposite ends of said springs to fixed points on said rigid structure, wherein each of said springs is slung between said casing and said rigid structure with an extension δL of between 35% and 45% of the initial length of said spring.

5,308,225

ROTOR CASE TREATMENT

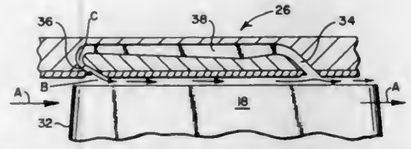
Steven G. Koff, Cambridge, Mass.; John P. Nikkanen, West Hartford, and Robert S. Mazzawy, South Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 648,499, Jan. 30, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 925,312

Int. Cl.[5] F01D *1/12*

U.S. Cl. 415—57.3 **8 Claims**

1. For rotating machine including a having circumferentially spaced blades and a case encasing said rotor for defining a flow stream that includes momentum flow including a high axial velocity of fluid flow and low axial velocity of fluid flow, a passageway in said case having an inlet passage located downstream of the leading edge of the fan blade of said fan rotor for bleeding low momentum flow relative to the rotor from the flow stream into said passageway and an outlet located at a point upstream of said inlet passage for returning said removed flow to said flow stream at a velocity that is higher than the velocity of said flow stream in said inlet passage, anti-swirl vanes in said passageway of said low momentum flow, said inlet passage flow being oriented with respect to said flow stream to selectively remove form said flow stream momentum



flow relative to the rotor that has low axial velocity and to prevent the strong rotor relative flow that has high axial velocity from being admitted into said passageway, wherein said passageway is curved to direct flow backtoward said inlet passage wherein said outlet is oriented with respect to the main flow such that the ratio of the differential of the minimum pressure measured between said curved portion and said outlet passage and the pressure at said discharge end of said outlet passage to the value of $\frac{1}{2} V^2$ is equal to or less than 1.5, where " " is the density of the fluid and "V" is the velocity of the fluid.

5,308,226

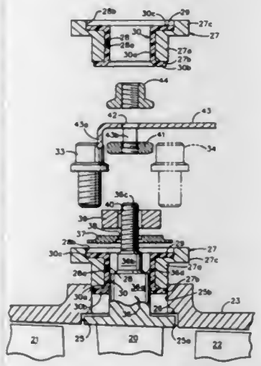
VARIABLE STATOR VANE ASSEMBLY FOR AN AXIAL FLOW COMPRESSOR OF A GAS TURBINE ENGINE

Srinivasan Venkatasubbu, Cincinnati, and Stephen R. Payling, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 801,135, Dec. 2, 1991. This application Apr. 23, 1993, Ser. No. 60,673

Int. Cl.[5] F01B *25/02*

U.S. Cl. 415—160 **13 Claims**



1. A variable angle stator vane assembly for use in an axial flow compressor of a gas turbine engine having a compressor casing with a bore formed therein at the position of said variable angle stator vane assembly, said variable angle stator vane assembly comprising: an upstanding external boss integrally

formed on said casing and surrounding said casing bore, a housing having a central bore, a bushing assembly in said housing, said housing having a body mounted in said casing bore and an integrally formed lateral flange overlying and removably affixed to said external casing boss, said variable angle stator vane having a base terminating in a spindle rotatively mounted in said bushing assembly, said housing and bushing assembly thereof being removable and replaceable from the exterior of said casing without removing said casing from said compressor or said stator vane spindle from said casing bore.

5,308,227

DRUM ROTOR FOR AN IMPULSE STEAM TURBINE HAVING BLADES MOUNTED IN LONGITUDINAL GROOVES, AND AN IMPULSE STEAM TURBINE INCLUDING SUCH A MOTOR

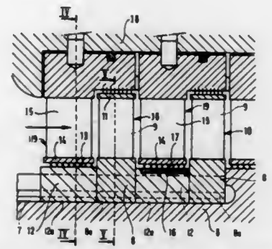
Jean-Pierre Gros, Villemomble, and Guillaume Verschaeve, St Jean de Braye, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Jan. 7, 1993, Ser. No. 1,675

Claims priority, application France, Jan. 8, 1992, 92 00122; Jan. 29, 1992, 92 00948

Int. Cl.[5] F01D *5/30*

U.S. Cl. 416—219 R **6 Claims**



1. A drum rotor for an impulse steam turbine having moving wheels constituted by rotor blades having roots provided with dovetails, said dovetails being locked in dovetail shaped grooves formed in said rotor, and wherein the dovetail shaped grooves extend longitudinally over at least a portion of the rotor parallel to the rotor axis, wherein the dovetail roots of the rotor blades of a moving wheel are separated from the roots of the blades of an adjacent moving wheel by dovetail shaped spacers, and wherein said dovetail shaped grooves are exactly complementary to said dovetail shaped roots, and said dovetail shaped spacers and adjacent roots separated by a spacer are lodged with said spacers inside the same dovetail shaped longitudinal groove.

5,308,228

GAS TURBINE BLADE COMPRISING LAYERS OF COMPOSITE MATERIAL

Joël M. D. Benoit, Cesson La Foret; Bruno J. G. Dambrine, Chartrettes; Laurent J. P. David, Limours; Patrick Fouche, Viry-Chatillon; Daniel G. Girault, Melun; Christophe G. R. Grosbois, Bagneux, and Catherine L. F. Guet, Brunoy, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Nov. 30, 1992, Ser. No. 982,945

Claims priority, application France, Dec. 4, 1991, 91 14984

Int. Cl.[5] F04D *29/38*

U.S. Cl. 416—230 **2 Claims**

1. A gas turbine blade comprising:

a central core and a fixing root forming an integral, monolithic single part of the blade, a plurality of layers of a first composite material covering said central core, and a network of transverse seams passing through at least said layers of composite material; and

a sleeve made from a woven composite material, said sleeve having an open end and a closed end and which receives



said central core and said layers of composite material covering said core, said network of transverse seams also passing through said sleeve wherein said central core is made from a second composite material and said transverse seams also pass through said core.

5,308,229

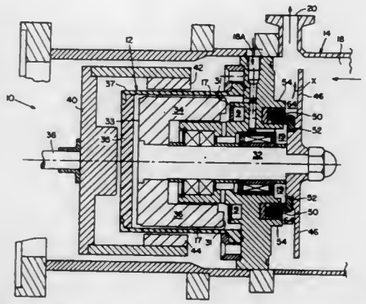
PUMP HAVING AN INTERNAL GAS PUMP

Francis A. DuPuis, Lebanon, and Ali M. Nasr, Summit, both of N.J., assignors to PMC Liquiflo Equipment Company, Warren, N.J.

Continuation-in-part of Ser. No. 892,752, Jun. 3, 1992, abandoned. This application Nov. 19, 1992, Ser. No. 978,629

Int. Cl.[5] F04D *13/14*

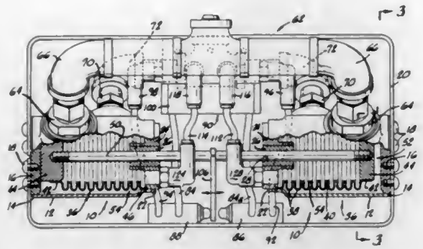
U.S. Cl. 417—368 **16 Claims**



1. A pump comprising a rotatable shaft mounted in a wear end of said pump, said wear end including a rotor, means for effecting rotation of said rotor and said shaft and a housing seal between said means for effecting rotation and said rotor, a pump means mounted on said rotatable shaft in a pump end of said pump, means for introducing a liquid into said pump end, means for removing said liquid from said pump end, means for introducing pressurized gas into said wear end, an internal pump positioned between said pump end and said wear end on said rotatable shaft, said internal pump comprising a rotatable ring connected to said shaft and having a first face contacting a second face on a stationary ring, said first face and second face having a surface configuration which effects transfer of said gas in said wear end to said pump end while preventing said liquid in said pump end from entering said wear end when said shaft is rotated and said internal pump sealing said wear end from said pump end when said shaft is not rotated.

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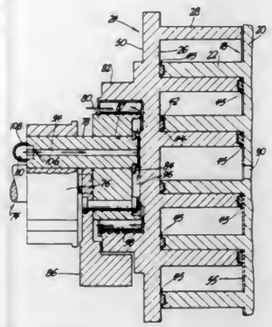
5,308,230
BELLOWS PUMP
Arthur L. Moore, Canyon Country, Calif., assignor to Stainless Steel Products, Inc., Burbank, Calif.
Filed Mar. 8, 1993, Ser. No. 27,662
Int. Cl.[5] F04B *43/10*
U.S. Cl. 417—394 **14 Claims**



1. A reciprocating metallic bellows pump adapted to receive a fluid in a measured quantity and discharge the same from the pump in a preselected period of time, said pump comprising:
- a metallic casing including first and second end closures to seal the inside of said casing;
- a hollow flexible formed metallic bellows having ends and also having walls of a common thickness, with one end affixed to said first end closure and said second end secured to a piston closure plate, said end and said piston closure plate being free to shift toward and from said fixed end by the contraction and expansion of said bellows due to external pressure means said bellows is a single piece of metal and includes more than four annular convolutions and each convolution separated from another by an annular web of a lesser diameter than said annular convolutions;
- an inlet means to said casing capable of delivering said fluid to said bellows pump with contracted movement of said bellows;
- an outlet means in said casing capable of discharging said delivered fluid when said bellows is expanded;
- said metallic casing includes an annular wall and said bellows is annular and spaced from said annular wall wherein a space is created around said bellows and between said second end closure and said piston closure plate when said bellows is contracted; and
- said spaces are adapted to receive said fluid for discharging.

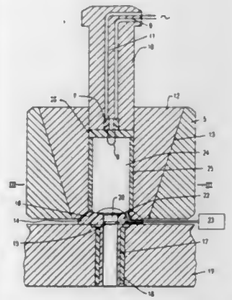
5,308,231
SCROLL COMPRESSOR LUBRICATION
Mark J. Bookbinder, Detroit, Mich.; Chrisotpher M. Bellinger, Lockport, N.Y.; Dwayne L. Jobnson, La Crescent, Minn., and , assignors to General Motors Corporation, Detroit, Mich.
Filed May 10, 1993, Ser. No. 58,856
Int. Cl.[5] F01K *1/02*
U.S. Cl. 418—55.6 **1 Claim**

1. A scroll type fluid compressor having a housing with a front section and a rear section; a fluid inlet in the housing, a fluid outlet in the housing, a fixed scroll with an end plate, the end plate having a forward wall, a spiral wrap and a central discharge aperture in the end plate, mounted in the rear section of the housing; an orbital scroll with an end plate and a spiral wrap cooperating with the fixed scroll to form fluid pockets; a rotation prevention assembly mounted in the housing which prohibits rotation and allows orbital movement of the orbital scroll; an orbital scroll drive including a crankshaft with an integral disk and an eccentric crank pin rotatably supported in the front section of the housing, a boss on the forward wall of the end plate of the orbital scroll, a bore in the boss, an eccentric bushing journaled by a bearing in the bore in the boss on the orbital scroll and closing a cavity formed by the bore, and an aperture in the eccentric bushing which receives the crankshaft crank pin; a cavity in the front section of the housing forming a crankcase that is in communication with the fluid inlet port; a lubrication passage through the crank pin which



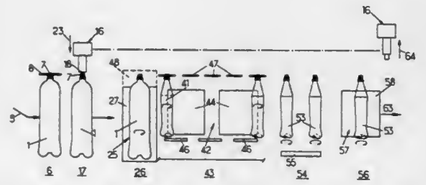
allows fluid and entrained lubricant to pass from the crankcase to the bore on the orbital scroll in which the eccentric bushing is journaled; and a scoop on one end of the lubrication passage through the crank pin operable to pick up lubricant and fluid in the crankcase and force the lubricant and fluid into the bore on the orbital scroll.

5,308,232
APPARATUS FOR MAKING PRODUCTS FROM POWDERED MATERIALS
Alexandr G. Merzhanov; Alexandr M. Stolin; Vadim V. Podlesov; Leonid M. Buchatsky, and Tatyana N. Shiskina, all of Chernogolovka, U.S.S.R., assignors to Institut Strukturnoi Makrokinetiki Akademii Nauk SSSR, Chernogolovka, U.S.S.R.
Division of Ser. No. 566,360, Aug. 23, 1990, Pat. No. 5,053,192.
This application Jul. 25, 1991, Ser. No. 735,618
Int. Cl.[5] B22F *3/20*
U.S. Cl. 425—79 **2 Claims**



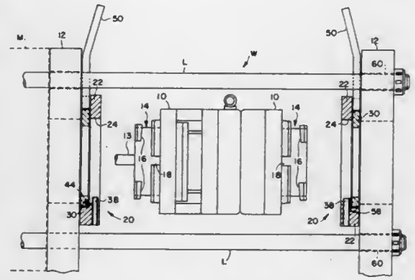
1. An apparatus comprising a press mould (**4**) with a container (**5**) having a cavity (**6**) for a powdery mixture, a device (**7**) for initiating the combustion of mixture in the cavity (**6**) of the container (**5**), a ram (**10**) for deforming combustion products in the cavity (**6**) of the container (**5**) and a press (**1**) building up a pressure for deforming the combustion products, said press comprising a slide (**2**) linked kinematically with the ram (**10**) and provided with a system (**3**) controlling movement of the slide and wherein the container (**6**) is made up of vertical segments (**12**) with spaces (**13**) therebetween for discharge of gases from the apparatus and comprises a die (**14**) with an orifice (**15**) and has a conical entry portion (**16**) conjugated with the orifice (**15**) of the die (**14**) and with the cavity (**6**) of the container (**5**) and has a heat-insulated sizing member (**17**) for imparting a form to a product, the cross section of said sizing member (**17**) corresponding to a shape of the orifice (**15**) of the die (**14**), the system (**3**) controlling the movement of the slide (**2**) comprises a unit (**21**) for controlling temperature conditions of extrusion, said unit comprising a temperature sensor (**22**) installed on a surface of said conical entry portion (**16**) of the die (**14**) and a member (**23**) of said unit electrically coupled with the sensor (**22**) and the press (**1**) and sending a command for moving the ram (**10**).

5,308,233
THERMAL TREATMENT UNIT FOR THE MANUFACTURE OF PET CONTAINERS
Gerard Denis, Turretot, and Alain Evrard, Le Havre, both of France, assignors to Sidel, Le Havre Cedex, France
Filed May 17, 1993, Ser. No. 62,815
Claims priority, application France, May 20, 1992, 92 06126
Int. Cl.[5] B29C *49/64*
U.S. Cl. 425—151 **25 Claims**



1. A continuous-feed thermal treatment unit for the manufacture of containers made of polyethyleneterephthalate (PET) and capable of withstanding, during use and without appreciable deformation, relatively severe thermal conditions encountered during processes filling the containers with a hot liquid or pasteurizing their contents, said unit comprising:
- a) heating means for heating both the body and neck of each container, the body having preliminarily undergone bidirectional stretching and being heated to a temperature of 160° to 240° C. to produce contractive recovery followed by increased crystallization, and the neck being heated under temperature and time conditions suitable for producing spherulitic crystallization of the PET in the neck;
- b) cooling means for lowering the temperature of both the neck and body of each container, wherein the neck is cooled relatively slowly to ensure the crystallization thereof;
- c) wherein the heating means comprises:
  - 1) means (**27**, **44**) for heating the bodies of the containers positioned facing the bodies in proximity thereto along a path of conveyance thereof, extending continuously over approximately the height thereof, and configured to emit, in the direction of the bodies, medium-wavelength infrared radiation having a wavelength equal to or greater than 2 μm, said body-heating means comprising first heating means (**27**) for producing the contractive recovery and second heating means (**44**) for increasing the crystallization of the body; and
  - 2) means (**47**) for heating the necks of the containers positioned opposite the necks along the path of conveyance and configured to emit, in the direction of the necks, short-wavelength infrared radiation having a wavelength to equal to or less than 2 μm, said neck-heating means being cooperable with internal heating mandrels (**18**) individually inserted inside the necks for supporting the containers during the conveyance thereof, said neck-heating means being positioned following the first heating means in the direction of conveyance and alongside the second heating means; and
- d) means (**9**, **10**, **15**) for modifying the spacing distance between adjacent containers such that a substantially large spacing distance (P) is provided along the length of the first heating means whereat said bodies have a substantially large transverse dimension, and a reduced spacing distance (p) is provided along the length of the second heating means and neck-heating means whereat the heated bodies have contracted and have reduced transverse and longitudinal dimensions.

5,308,234
GRIPPING DEVICE FOR TWO PART MOLDS
Horst Nicke, Dautphatal; Hans Hackler, and Hans-Georg Wied, both of Rückershausen, all of Fed. Rep. of Germany, assignors to HA-WI Kunststoffe GmbH, Bad Laasphe Ruckershausen, Fed. Rep. of Germany
Filed Jun. 18, 1992, Ser. No. 900,290
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 9107470[U]
Int. Cl.[5] B29C *45/10*
U.S. Cl. 425—188 **15 Claims**



1. An injection molding machine having two opposed mold halves, operating means for opening and closing said mold halves, each mold half being equipped with a centering ring having outwardly projecting radial wedges, a pair of machine base plates, each base plate having a gripping plate mounted thereon, each gripping plate having a center bore whereby each centering ring is located in one of said center bores, each of said centering rings being lockable by projecting radial counter wedges of a gripping ring matching said projecting radial wedges, wherein each gripping plate has a rear side thereof, a flat U-shaped recess dimensioned to accommodate the thickness as well as the outer circumference of the gripping ring, each flat U-shaped recess further encompassing a corresponding one of said center bores with a shoulder and having lead-in bevels.

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ROLL STAMPER AND APPARATUS FOR FORMING A SUBSTRATE FOR INFORMATION RECORDING MEDIUM

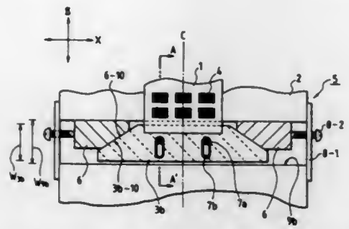
Hirofumi Kamitakahara; Yukitoshi Ohkubo; Naoki Kushida, all of Yokohama; Hitoshi Yoshino, Kawasaki; Osamu Kanome, Yokohama; Tetsuya Sato, and Hisanori Hayashi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 862,523

Claims priority, application Japan, Apr. 4, 1991, 3-097909; Jun. 19, 1991, 3-147467

Int. Cl.[5] B29C *43/46*

U.S. Cl. 425—194 **44 Claims**



1. A roll stamper for forming an information recording medium substrate, comprising:

a stamper member having a pattern corresponding to a pre-format for an information recording medium formed on its obverse surface;

fixation members fixed to both end portions of a reverse surface of said stamper so as to be integral with said stamper member;

fit grooves capable of fittingly receiving said fixation members and formed on a circumferential surface of a specular roll base parallel to the axis of said specular roll base;

said fixation members being fitted in said fit grooves, said stamper member being fixed along the circumferential surface of said specular roll base; and

means for applying a tensile force to said stamper member including a wedge capable of being inserted between said fixation member and a wall portion of said fit groove, and means for applying a pressing force to the wedge in a direction parallel to an axis of said roll stamper.

5,308,236

APPARATUS FOR FORMING NOODLE BUNDLES

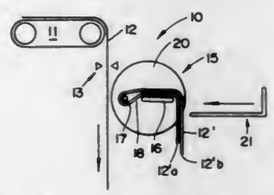
Jor Wing-Fai, Flat C, 22nd Floor, Aik San Industrial Building, 14 Westlands Road, Quarry Bay, Hong Kong

Division of Ser. No. 720,387, Jun. 25, 1991, Pat. No. 5,186,969. This application Jul. 27, 1992, Ser. No. 928,296

Claims priority, application United Kingdom, May 9, 1990, 9019322

Int. Cl.[5] A23L *01/00*; A23P *01/00*

U.S. Cl. 425—305.1 **9 Claims**



1. Apparatus for forming noodle bundles comprising:

means for conveying at least one length of noodle material along a path;

means for deflecting the length of noodle material from said path to form a fold in the length of noodle material;

means for severing the length of noodle material into noodles of preset length as the noodle material is conveyed along said path by said conveying means; and

an operating device which receives a folded noodle from said deflecting means and from which said folded noodle is suspended at an intermediate position thereof, after being deflected by said deflecting means and severed from the length of noodle material by said severing means, thereby folding over said folded noodle again, said operating device further rotating about an axis to further fold or roll up said folded noodle to form a noodle bundle;

a portion of said operating device being movable along a direction of said axis in order to release said noodle bundle from said operating device.

5,308,237

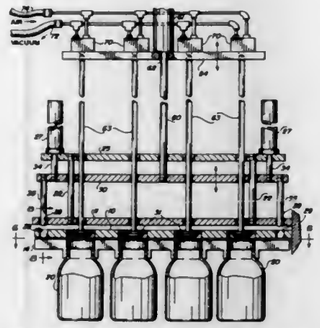
CONTAINER EJECTION SYSTEM

Thomas G. Kieran, Phoenix, Ariz., assignor to Star Container, Inc., Phoenix, Ariz., a part interest

Filed Jul. 6, 1992, Ser. No. 908,034

Int. Cl.[5] B29C *33/46, 49/70*

U.S. Cl. 425—437 **15 Claims**



1. In a machine for molding a hollow open-ended container, said machine having a lip forming portion from which said container is suspended in a final stage of operation thereof, and having an ejector pad for entrance into the open end of said container to center the container at the time a lip spreader operates to part the lip forming portion to release the container, an improvement including in combination;

a support surface;

means coupled with the ejector pad for releasably holding a container on the ejector pad following the release of the container from the lip forming portion of the molding machine; and

means for lowering the ejector pad, with the container releaseably held thereon, to place the container on said support surface after release of the container by the lip forming portion of the molding machine; and

means for releasing the ejector pad from the container only after the container is placed on said support surface.

5,308,238

DENTAL HANDPIECE HOLDER AND TREATMENT ASSEMBLY BY USE THEREOF

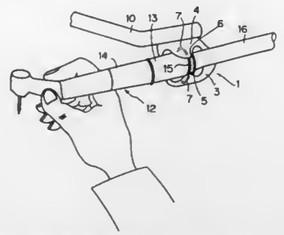
Daryl R. Beach, Atami, and Katsumi Suzuki, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Division of Ser. No. 841,824, Feb. 26, 1992, Pat. No. 5,244,389. This application Jul. 22, 1993, Ser. No. 76,541

Claims priority, application Japan, Mar. 15, 1991, 3-76980

Int. Cl.[5] A61G *15/00*; A61C *1/02, 1/08*

U.S. Cl. 433—79 **5 Claims**



1. A dental handpiece holder comprising a gutter-shaped receiving seat, first and second grip sections extending from both side fringes of said receiving seat, contact sections formed at the leading ends of said first and second grip sections respectively and and engagement groove or projection extending across said contact sections or the peripheral areas thereof in the internal circumferential direction of said grip sections.

5,308,239

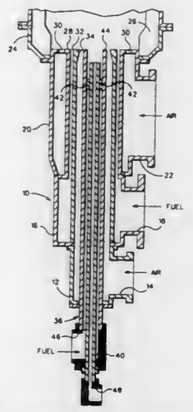
METHOD FOR REDUCING NOX PRODUCTION DURING AIR-FUEL COMBUSTION PROCESSES

Edward R. Bazarian, Allentown; James F. Heffron, Orwigsburg, and Charles E. Baukal, Jr., Harleysville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 4, 1992, Ser. No. 831,149

Int. Cl.[5] F23M *3/04*

U.S. Cl. 431—10 **10 Claims**



1. A method of reducing nitrogen oxide levels produced during the combustion of an air-fuel mixture comprising the steps of:

(a) combusting an oxy-fuel mixture inside an envelope of air-fuel combustion to shield the oxy-fuel combustion from nitrogen during combustion;

(b) maintaining the oxy-fuel mixture in a fuel rich condition during the entire combustion process; and

(c) maintaining combustion of the air-fuel mixture at conditions dictated by stoichiometry or slightly fuel-lean.

5,308,240

FLAME LIGHTER

Hans Lowenthal, London, England, assignor to Colibri Lighters Limited, England

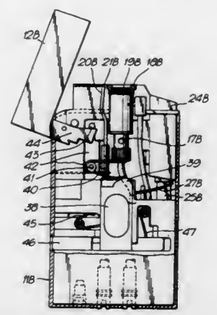
PCT No. PCT/GB91/00838, § 371 Date Nov. 27, 1992, § 102(e) Date Nov. 27, 1992, PCT Pub. No. WO91/19134, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 949,621

Claims priority, application United Kingdom, Jun. 1, 1990, 9012202; Jul. 19, 1990, 9015880

Int. Cl.[5] F23Q *2/08*

U.S. Cl. 431—131 **19 Claims**



1. A flame lighter comprising: a casing containing at least one reservoir for liquefied gaseous fuel; a first, blue flame burner, which is arranged to be supplied with gaseous fuel from the, or one of the, reservoir(s) through a first valve; a manually operated ignition mechanism for igniting the fuel at the first burner so that the fuel burns near to a glow element which is thus heated by the blue flame; and a second, luminous flame burner, which is arranged to be supplied with gaseous fuel from the, or another of the, reservoir(s) through a second valve; a nozzle of the second burner being adjacent to the glow element of the first burner so that the fuel at the second burner is ignitable by heat generated at the first burner whenever the first burner is burning and the second valve is open, and means for closing the first valve while the second valve remains open so that only the luminous flame continues to burn.

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5,308,241

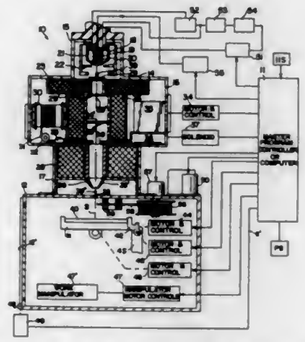
SURFACE SHAPING AND FINSHING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 351,650, May 15, 1989, Pat. No. 5,064,989, which is a continuation of Ser. No. 936,484, Nov. 26, 1986, Pat. No. 4,831,230, which is a continuation of Ser. No. 647,897, Sep. 6, 1984, abandoned, which is a continuation of Ser. No. 571,188, Apr. 24, 1975, abandoned, which is a continuation of Ser. No. 163,203, Jul. 16, 1971, abandoned, which is a continuation of Ser. No. 849,013, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 422,875, Nov. 25, 1964, Pat. No. 3,461,347, and a continuation-in-part of Ser. No. 710,517, Mar. 5, 1968, which is a continuation-in-part of Ser. No. 501,395, Oct. 22, 1965, Pat. No. 3,371,404, which is a continuation-in-part of Ser. No. 668,561, Jun. 27, 1957, abandoned, said Ser. No. 422,875, is a continuation-in-part of Ser. No. 86,838, Dec. 27, 1960, Pat. No. 3,169,892, which is a continuation-in-part of Ser. No. 805,025, Apr. 8, 1959, abandoned, and Ser. No. 24,393, Apr. 25, 1960, abandoned, said Ser. No. 849,013, is a continuation-in-part of Ser. No. 691,676, Nov. 27, 1967. This application Dec. 17, 1990, Ser. No. 628,373

Int. Cl.[5] B23K *15/00*

U.S. Cl. 219—121.13 **6 Claims**



1. A method for selectively treating the surface of a substrate with a material, said method comprising:

(a) supporting a workpiece at a work station,

(b) providing a source of fluent material for treating a select portion of a surface of the workpiece,

(c) directing a stream of said fluent material toward the surface of the workpiece,

(d) effecting controlled relative movement between said stream of fluent material and the workpiece to impinge a selected amount of said fluent material along a selected path on the select portion of the surface of the workpiece, and

(e) bonding the fluent material contiguously to the select portion of the surface of the workpiece to produce a predetermined physical change on said select portion,

(f) the fluent material source being a wire that is vaporized to form said fluent material.

5,308,242

DISPOSABLE HANDPIECE FOR DENTAL PROCEDURES

Roger McLaughlin; Delwin K. McCarthy, and Clyde Barson, all of 40485-D Murrieta Hot Sp. Rd., Murrieta, Calif. 92563

Filed May 26, 1992, Ser. No. 889,072

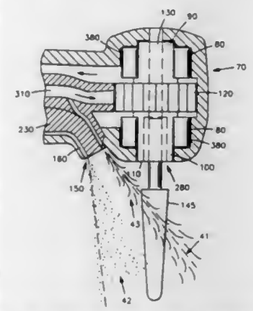
Int. Cl.[5] A61C *1/10, 3/00, 1/08, 1/14*

U.S. Cl. 433—114 **7 Claims**

1. A disposable hand tool of the compressed air drive type for use in performing dental procedures on a workpiece, the tool comprising:

an elongated body including a pair of shell halves and a core, the shell halves being joined to establish an exterior surface for manual grasping and manipulation of the body, and further, forming a cavity within, the cavity wall comprising a first set of integrally formed grooves aligned with the longitudinal axis of the body, the core providing a second set of integrally formed grooves for mating with the first set of grooves, the first and the second sets of grooves being matched in shape and location so as to define a set of longitudinal passageways as enclosed fluid conduits in the body;

a base at one end of the body in which a plurality of tubular conduits penetrate for conducting entry into the body of a light beam, a pressurized water stream and a compressed air stream and for providing an exit from the body of the



air stream, the base having means for attachment of the body to a source of the light beam, pressurized water stream and compressed air stream, the tubular conduits mating with the enclosed conduits within the body; and

a head at the other end of the body in which bearings are attached to the upper and lower portions of a supporting shaft provided with a turbine impeller, and a means for removable attachment of a dental bur supported in a downwardly projecting direction, the air stream driving the impeller at high speed for rotating the bur about a rotational axis;

an opening in the body adjacent the head for release of the light beam the pressurized water stream and a portion of the compressed air stream in a direction approximating the projecting direction of the bur so that the bur, the light beam, the water and the air stream all converge on the workpiece to enable illumination, cooling and removal of debris from the workpiece during said procedures.

5,308,243

METHOD AND COMPOSITIONS FOR PRODUCING LIFE-LIKE DENTAL PORCELAIN RESTORATIONS AND DENTAL PORCELAIN RESTORATIONS SO PRODUCED

James D. Emmons, Rowlett, Tex., assignor to Steven Edward Severy, Trabuco Canyon, Calif., a part interest

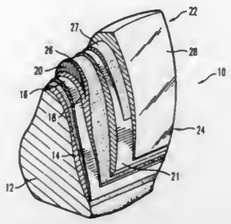
Filed Sep. 17, 1992, Ser. No. 946,191

Int. Cl.[5] A61C *13/08, 5/08*

U.S. Cl. 433—203.1 **55 Claims**

1. A dental restoration having a natural, warm and vital appearance, the restoration in formed on a coping and comprising layers of dental porcelain materials, the dental porcelain materials having chroma particles encapsulated therein which correct hue values of light transmitted from the restoration to replace wavelengths of light absorbed by portions of the restoration from light entering the restoration, the chroma particles further internally reflecting light within the restoration translaterally over surfaces and between surfaces of the layers

forming the restoration, the coping having a color stabilizing layer of high temperature dental porcelain formed thereover,



the color stabilizing porcelain layer having a red pigment comprising purified selenium oxide encapsulated therein.

5,308,244

LEARNING DEVICE

Atsushi Hirose, Sanda, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 6, 1992, Ser. No. 909,314

Claims priority, application Japan, Jul. 4, 1991, 3-164321

Int. Cl.[5] G09B *5/00*

U.S. Cl. 434—169 **19 Claims**

1. A learning device comprising:

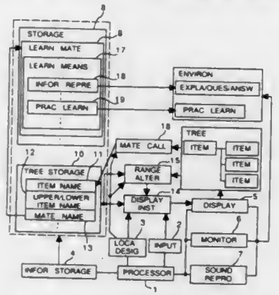
an information processing unit;

a characteristic input means, operatively connected with said information processing unit, for inputting characters;

an information storage means, operatively connected with said information processing unit, for storing a variety of data;

a first visual information display means, operatively connected with said information processing unit, for displaying characters and figures;

a location designation means, operatively connected with said information processing unit, for designating a specific location on said first visual information display means;



a learning material storage means for storing a plurality of learning materials of which respective learning items has a tree structure;

a tree structure storage mans for storing said tree structure of said learning items, a name of each learning item, names of learning items positioned at next upper and next lower levels in said tree structure, and a name of a learning material corresponding to said each learning item;

a display instruction means for instructing said first visual information display means to display at least a portion of said tree structure with reference to information stored in said tree structure storage means in response to at least one of a first character input by said character input means and a first location designation by said location designation means;

a tree structure display range alteration means for altering a range of said tree structure displayed on said first visual information display means with reference to said information in response to at least one of a second character input by said character input means and a second location designation by said location designation means; and

a learning material calling means for reading from said tree structure storage means a learning material name of one of said learning items displayed on said first visual information display means and calling a learning material having said learning material name from said learning material storage means, said one of said learning items being designated by said location designation means.

5,308,245

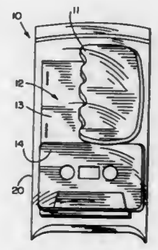
KIT AND METHOD FOR FACILITATING STOPPING SMOKING

Joseph A. Constantino, Strongsville, Ohio, assignor to Gat-A-Grip Enterprises, Strongsville, Ohio

Filed Aug. 31, 1992, Ser. No. 938,277

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—236 **6 Claims**



2. A method to facilitate a person stopping smoking, comprising

holding a tactile means in one hand,

squeezing the tactile means until a burning sensation is experienced in the forearm,

releasing the tactile means, and

further comprising repeating the foregoing steps until the desire to smoke a cigarette decreases to a controllable level.

5,308,246

VISUALIZATION TRAINING DEVICE WITH ADJUSTABLE ELECTRO-OPTICAL SHUTTER

Mark E. Balocco, 545 Shell Pkwy., Apt. 3211, Redwood City, Calif. 94065

Filed Jan. 5, 1993, Ser. No. 605

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—236 **4 Claims**

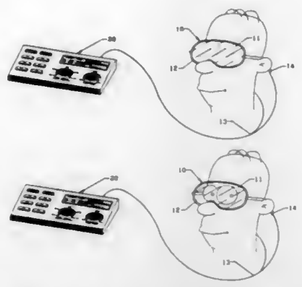
1. A method of training a person to visualize, comprising:

providing said person with a field of view so that said person can view an image in said field of view,

periodically interrupting said field of view with a series of sequential interruption intervals so that said person will not see said image during each of said interruption intervals, said periodically interrupting being performed by an

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electro-optical shutter in front of at least one eye of said person,



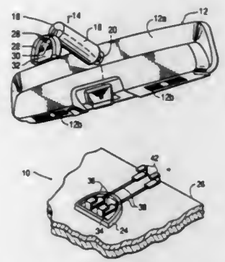
whereby said person will be forced to visualize said image during each of said interruption intervals.

5,308,247

ELECTRICAL CONNECTOR ASSEMBLY FOR AUTOMOBILE REARVIEW MIRROR AND LIGHT ASSEMBLY AND METHOD OF ASSEMBLING THE SAME

Robert D. Dyrdek, AP Technoglass Corp./Kentucky, 1 Autoglass Dr., P.O. box 5000, Elizabethtown, Ky. 42702-5000

Filed Jan. 21, 1993, Ser. No. 6,983
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—34 **9 Claims**



1. An electrical connector assembly for electrically coupling a rearview mirror and light assembly directly to a vehicular window, said assembly comprising:

a rearview mirror and light assembly including mounting means and a first set of electrical terminal means in said mounting means;

a second set of electrical terminal means directly adhesively secured to a surface of said vehicular window, said second set of electrical terminal means being constructed for slidable electrical coupling to said first set of terminal means;

mounting bracket means mounted on said surface of said vehicular window for encompassing said second set of terminal means, said bracket means being constructed for mounting said rearview mirror and light assembly directly thereon and coupling said first and second set of terminal means; and,

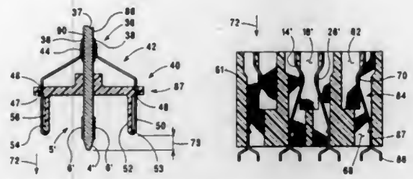
electrically conductive strip means directly attached to said surface of said vehicular window for electrically connecting said second set of terminal means to a source of electrical power therefor.

5,308,248

HIGH DENSITY INTERCONNECTION SYSTEM

Ronald V. Davidge, Coral Springs; Todd A. McClurg; Jay H. Neer, both of Boca Raton; Richard J. Nelson, Boynton Beach; Darryl C. Newell, Boca Raton, all of Fla.; Rocco J. Noschese, Wilton, and Ronald P. Sidor, Stratford, both of Conn., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 31, 1992, Ser. No. 937,256
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—59 **5 Claims**



1. A daughter card assembly comprising:

a circuit card with an insertion edge facing in a first direction, conditioned for insertion into a card edge connector, divided into a plurality of sections, various of said sections being slanted to extend axially and in said first direction, wherein said insertion edge is interrupted by a slot for locating said daughter card assembly in an axial direction relative to said card edge connector, wherein said insertion edge includes location sections being slanted to extend axially away from said slot and in a direction opposite said first direction;

a plurality of conductive circuit paths on a surface of each side of said circuit card adjacent to said insertion edge;

means for holding a plurality of contact terminals spaced away from said circuit card, and parallel to said circuit card, wherein said means for holding comprises first and second support structures extending from opposite sides of said circuit card, outward beyond opposite outer side surfaces of a card edge connector engaging said circuit card over said insertion edge, each said support structure including a blase-shaped section extending, spaced apart from said circuit card, in said first direction;

a plurality of conductive terminal elements including contact terminals individually extending in said first direction along said means for holding, being supported on said means for holding and being electrically insulated from each other, said terminal elements including sections extending inward, connected individually to electrical circuit traces on said circuit card, wherein said plurality of conductive terminal elements comprises a first plurality of conductive terminal elements including contact terminals individually extending along said blade-shaped section of said first support structure, and a second plurality of conductive terminal elements including contact terminals individually extending along said blase-shaped section of said second support structure;

a plurality of essential electronic circuits on said circuit card, electrically connected to various of said conductive circuit pads, said essential electronic circuits being necessary for proper functioning of said daughter card assembly in cooperation with various circuits attached thereto through said conductive circuit pads; and

a plurality of non-essential electronic circuits on said circuit card, electrically connected to various of said conductive terminal elements, said non-essential electronic circuits being necessary for providing non-essential features of said daughter card assembly in cooperation with various additional circuits attached thereto through said conductive terminal elements, wherein said non-essential electronic circuits are variously wired among said first and second pluralities of conductive terminal elements;

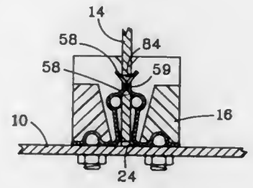
wherein said blade-shaped section, together with said contact terminals, extend in said first direction outwardly adjacent to said opposite outer side surfaces of a card edge connector, overlapping said conductive circuit pads in said first direction, being divided into a plurality of sections, various of said section being slanted to extend axially in said first direction, including sections extending axially away from ends thereof, slanted to extend in a direction opposite said first direction.

5,308,249

BACKPLANE CONNECTOR UTILIZING FLEXIBLE FILM CIRCUITRY

Robert M. Renn, Pfafftown; Robert D. Irlbeck, Greensboro; Frederick R. Deak, Kernersville; Keith L. Volz, Jamestown; David C. Johnson, and Warren A. Bates, both of Winston-Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 16, 1993, Ser. No. 78,665
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—62 **8 Claims**



1. A backplane connector assembly of the type including a mother board, a connector housing mounted on said mother board, and a daughter board slidably insertable within said connector housing for electrical interconnection to said mother board,

said assembly comprising an elongated connector housing having a pair of parallelly disposed spaced apart housing members defining at least one slot therebetween for receiving said daughter board,

a force generating member disposed within said slot, said force generating member comprising a pair of resilient, essentially L-shaped members, where one leg of each said L-shaped member is fixedly disposed between said mother board and a respective one of said housing members, and the others of said legs upstand within said slot in a spaced apart relationship to receive said daughter board therebetween, said upstanding legs including a pair of opposing elastomeric members to apply a compressive pressure to said daughter board, and,

a flexible circuit element mounted on said force generating member and operatively disposed to electrically interconnect said daughter board to said mother board.

5,308,250

PRESSURE CONTACT FOR CONNECTING A COAXIAL SHIELD TO A MICROSTRIP GROUND PLANE

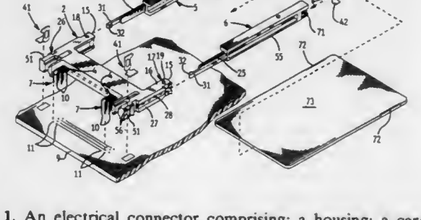
Dale D. Walz, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1992, Ser. No. 968,908
Int. Cl.[5] G01R *1/06*
U.S. Cl. 439—63 **7 Claims**

1. An apparatus for connecting a coaxial cable shield to a ground conductor on a dielectric substrate, the apparatus comprising:

adapter means for mechanically attaching a coaxial cable to a panel having a panel first side and a panel second side, the adapter means comprising a conductive adapter barrel and an adapter center conductor electrically isolated from the adapter barrel, wherein the adapter barrel passes through a hole in the panel, wherein the adapter barrel electrically connects to the coaxial cable shield and wherein the coaxial cable is mechanically attached to the adapter means on the panel first side;

a conductive ground spring having a planar portion with a ground spring hole and one or more spring tabs bent at an angle relative to the planar portion, wherein the adapter barrel passes through the ground spring hole;



mechanical fastener means for attaching the ground spring to the adapter barrel and the panel second side, wherein the mechanical fastener means attaches to the adapter barrel and presses the ground spring between the mechanical fastener means and the panel second side; and

wherein the ground spring tabs are spring loaded against the ground conductor on the dielectric substrate.

5,308,251

MOUNTING BRACKET WITH ESD PROTECTION FOR AN ELECTRICAL CONNECTOR

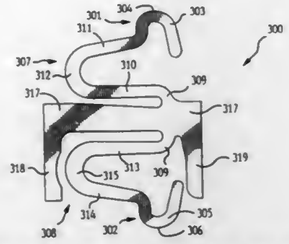
John W. Kaufman, Hershey; John L. Broschard, III, Harrisburg, and John A. Woratyla, Camp Hill, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 926,628, Aug. 10, 1992. This application Dec. 8, 1992, Ser. No. 986,660
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—64 **7 Claims**

1. An electrical connector comprising: a housing; a card receiving mouth in the housing; electrical contacts carried by the housing in the mouth; guide arms on opposite sides of the mouth; a card receiving groove on each of the guide arms; a grounding contact in each groove, each grounding contact comprising; a resilient spring finger projecting in the card receiving groove of a guide arm to engage a card inserted along the card receiving groove, a base providing a solder connection to a circuit board, a finger, an arm between the base and the finger, and the finger and the arm clasping the guide arm to provide a secure connection of the grounding contact to the guide arm.

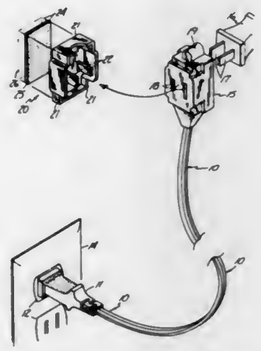
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,252
INTERPOSER CONNECTOR AND CONTACT ELEMENT THEREFORE
Robert S. Mroczkowski, Lititz, and Richard E. Rothenberger, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Dec. 24, 1992, Ser. No. 996,751
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **30 Claims**



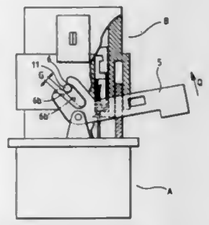
1. An electrical contact for electrically mating with two electronic components comprising:
(a) first interface mans for electrically mating with a first electronic component;
(b) second interface means for electrically mating with a second electronic component;
(c) connecting means for electrically connecting said first and second interface means; and
(d) first mating resistance means for providing a first amount of mating resistance to mating deflection of said first interface means; and
(e) second mating resistance means for providing a second amount of mating resistance to mating deflection of said second interface means different from said first amount of mating resistance.

5,308,253
PLUG HOLDER
Philip J. Maki, 4860 Morris Thomas Rd., Duluth, Minn. 55811
Filed Oct. 27, 1992, Ser. No. 967,230
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—148 **18 Claims**



1. A receptacle plug holder for supporting at a selected location electrical receptacle plugs of electrical extension cords, said receptacle plug holder comprising:
an electrically insulating base portion;
an electrical receptacle engagement portion extending from said base portion and capable of engaging a said electrical receptacle plug on an end of a said electrical extension cord to hold that said electrical receptacle plug by having a pair of spaced apart blades extending substantially parallel to one another and sized to be forcibly, but removably, insertable in corresponding blade receptacles in that said electrical receptacle plug; and
a support engagement portion extending from said base portion and capable of engaging a selected support structure to become substantially affixed thereto.

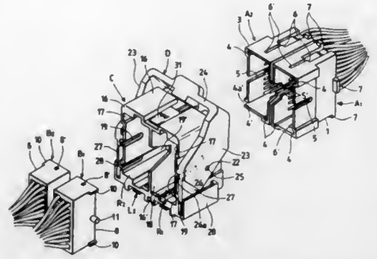
5,308,254
CONNECTORS CONNECTING DEVICE
Yuji Hatagishi, and Naoto Taguchi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Mar. 5, 1993, Ser. No. 26,636
Claims priority, application Japan, Mar. 17, 1992, 4-060321
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—157 **9 Claims**



1. A connector device, comprising:
a male connector and a female connector adapted to be connected with each other;
a fitting operation lever rotatably coupled to one of said connectors, said lever having a driving groove in a front end portion thereof;
a driven pin disposed in another one of said connectors and engageable with said driving groove of said lever for interconnecting said connectors to each other when said lever is rotated in a locking direction and for disconnecting said connectors when said lever is rotated in an opposite, un-locking direction; and
reverse rotating means for allowing said lever to rotate a predetermined angle in said unlocking direction when said drive pin is at least partially engaged with said driving groove and said connectors are not completely connected to each other, wherein said predetermined angle is at least 10°.

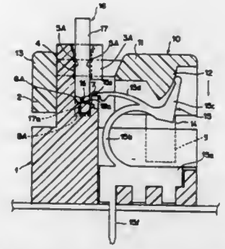
5,308,255
CONNECTOR ASSEMBLY OF LOW INSERTION FORCE TYPE
Makoto Yamanashi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 47,286
Claims priority, application Japan, Apr. 21, 1992, 4-100996
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—157 **6 Claims**

1. A connector assembly, comprising:
a cam frame on which an engaging lever member having cam grooves is rotatably provided, said cam frame being provided with a surrounding frame having guide slots formed in two side walls of said surrounding frame and extending to a forward end thereof, said engaging lever including a pair of levers which are connected through a coupling plate;
a first connector including a plurality of metal terminal accommodating chambers and a cover portion having a pair of side walls on which accommodating recesses are respectively formed, said first connector being received by a rearward end of said cam frame; and
a second connector including a plurality of metal terminal accommodating chambers, said second connector including supporting shafts thereon, said second connector being received by said forward end of said cam frame such



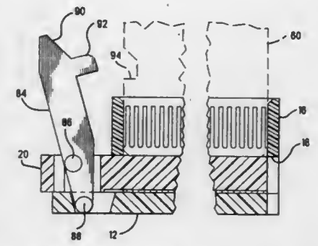
that said supporting shafts are inserted into said accommodating recesses and said guide slots, respectively, wherein upon rotation of said lever in a predetermined direction said supporting shafts are received in said cam grooves so that said first and second connectors are slidably engaged with each other.

5,308,256
SOCKET
Takashi Tonooka, Susono, and Masahiro Fuchigami, Gotenba, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 3, 1992, Ser. No. 984,768
Claims priority, application Japan, Dec. 27, 1991, 3-358641
Int. Cl.[5] H01R *13/635*
U.S. Cl. 439—266 **14 Claims**



1. A socket adapted for mounting an electrical part with lead members for use in a burn-in test of said electrical part comprising a base member, resilient contact element means secured in said base member adapted to make contact with the lead members of said electrical part, a reciprocating cover means capable of reciprocating motion in respect to said base member, said reciprocating cover means having a cam means adapted to be in contact with said contact element means such that as said reciprocating cover means moves from a first position to a second position for mounting said electrical part, said cam means causes said contact element means also to move from a first original position to a second electrical part mounting position, and upon said reciprocal cover means returning to said original position said contact element also moving back to said original position from said second position thereby providing electrical contacting between said terminal lead members and said contact element means; and means formed within said base member for precisely guiding and positioning said electrical part during mounting in said socket and for holding said electrical part after mounting to ensure reliable contacting, said guiding and positioning means adapted to receive said electrical part which is a generally parallelepiped configuration with lead members being provided only on one side of the electrical part and including blind holes in the base member for receiving protrusions extending from the electrical part on the same side surface as the lead members during mounting of the electrical part.

5,308,257
ZIF CARD EDGE CONNECTOR UTILIZING FLEXIBLE FILM CIRCUITRY
Randolph L. Buchter, Harrisburg; Michael A. Viselli, Middletown, and Jon A. Fortuna, Mechanicsburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Feb. 1, 1993, Ser. No. 12,116
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—267 **9 Claims**



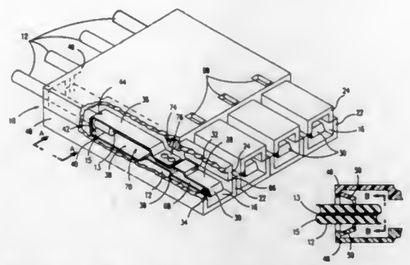
1. A zero insertion force card edge connector utilizing flexible film circuitry, comprising an elongated housing consisting of a base, a pair of spaced apart side walls upstanding therefrom, and a pair of end walls to define an elongated slot, a U-shaped spring member disposed within said elongated slot, where the spring member having spring member arms provided proximate the side walls, a card release slide member disposed within said U-shaped spring member in contact with said spring member arms, where said card release slide member is adapted to shift longitudinally to effect a lateral movement of said spring member arms, at least one release member mounted in an end wall to effect the shifting of said card release slide member, and a flexible film, having electrical circuitry interconnecting means thereon, disposed in a loop between the arms of said spring member within said elongated slot, whereby a printed circuit board card, having circuitry thereon for registration with the circuitry of said flexible film, may be inserted into said loop.

5,308,258
PLANAR MODULAR INTERCONNECT SYSTEM
John G. Hatsios, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 29, 1993, Ser. No. 11,030
Int. Cl.[5] H01R *13/28*
U.S. Cl. 439—284 **20 Claims**

1. An electrical connector comprising:
a plurality of electrical conductors, each said conductor comprising a wire and a sheath of insulation surrounding said wire;
a pair of identical hermaphroditic shell assemblies mateable with each other and having an axis of insertion; said shell assemblies comprised of shell members; each of said shell assemblies contacting a contact member for engagement with an identical contact member in the other of said shell assemblies, said contact member comprises a pair of loops, said loops having ends and joined at one end of each of said loops, one of said loops having multiple angularly arranged contact surfaces including a planar contact sur-

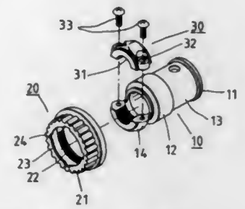
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face disposed parallel to said axis, said surfaces exposed for engaging contact with corresponding contact surfaces of said other of said contact members;



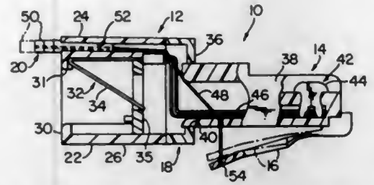
said other of said loops comprising at least one insulation displacement engaging means for displacing insulation on a wire and for engaging said wire electrically, when forced against said wire.

5,308,259
COMMUNICATION PLUG
Lu-Lee Liao, No. 22, 23rd Road, Taichung Industrial Park, Taichung, Taiwan
Filed Jun. 7, 1993, Ser. No. 71,402
Int. Cl.[5] H01R *4/38*
U.S. Cl. 439—320 **3 Claims**



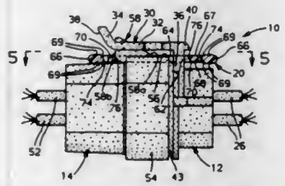
1. A communication plug comprising:
a cylindrical housing made integrally of a plastic material and provided therein with a space for receiving therein a guide wire and an insulator, said cylindrical housing having a front end provided thereon with a flange and having a rear end provided with a rear cylindrical segment and further having a recessed segment located between said flange and said rear cylindrical rear segment, said recessed segment having an outer diameter smaller than an outer diameter of said flange and an outer diameter of said rear cylindrical segment provided at the outer end thereof with at least one wire fastening piece; and
a fastening ring of a plastic material and having therein an inner threaded segment and further having at one end thereof a retaining ring;
wherein said rear cylindrical segment has an inner end, which is adjacent to said recessed segment and which has an outer diameter greater than an outer diameter of an outer end of said rear cylindrical segment; wherein said retaining ring has an inner hole with a diameter greater than said outer diameter of said outer end of said rear cylindrical segment but smaller than said outer diameter of said inner end of said rear cylindrical segment; and wherein said retaining ring of said fastening ring is forced to deform so as to pass through said rear cylindrical segment to be secured in place over said recessed segment at the time when said fastening ring is fitted over said cylindrical housing.

5,308,260
FRONT RELEASABLE MODULAR TELECOMMUNICATION JACK ADAPTER
James J. Johnston, Newington, and John P. Goodsell, Stratford, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed Sep. 1, 1992, Ser. No. 938,714
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—344 **18 Claims**



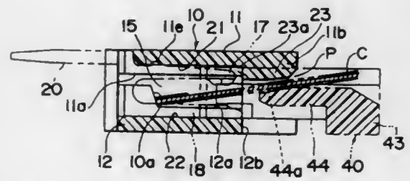
1. A front releasable modular telecommunication jack adapter comprising an adapter assembly including an adapter body having a front part defining at least one forwardly open telecommunication plug receptacle and a rear part defining a rearwardly projecting telecommunication plug, a first group of contacts mounted within said plug receptacle, a second group of contacts carried by said telecommunication plug, electrically conductive means for connecting contacts of said first group to contacts of said second group, a latch member supported on said rear part for pivotal movement between latching and releasing positions and biased toward said latching position, a latch operator supported on said adapter assembly for movement between inoperative and latch operating positions and having an exposed portion at the forward end of said front part, and attaching means directly connected to said latch operator and to said latch member for pivoting said latch member from latching position to a releasing position in response to pulling force applied to said latch operator to move said latch operator in a direction away from said adapter body and from its inoperative position to a latch operating position.

5,308,261
LOW PROFILE CONNECTOR POSITION ASSURANCE
John T. Kightlinger, Canfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jul. 13, 1993, Ser. No. 94,599
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—358 **6 Claims**



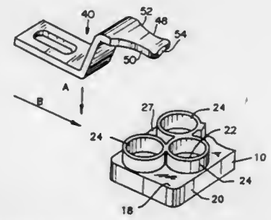
1. An electrical connector assembly having a first connector body provided with an integral deflectable cantilevered lock arm extending axially along the first connector body,
a second connector body matable with the first connector body and having a transversely extending ramp,
said lock arm engaging and being deflectable from a normal free state position by said ramp when said first and second connector bodies are being mated until the lock arm clears said ramp whereupon its self-biasing forces return it towards its normal free state position to lock behind the ramp to lock the connector bodies together,
and a connector position assurance means for insuring that said connector bodies have been properly mated together, the improvement being that said connector position assurance means comprises a thin, planar, one piece, flexible member having a central through opening and opposed ends, said member including at least one transverse flexible bridge portion extending transversely thereacross adjacent and generally parallel to one of said ends and which can be flexed toward and from said one end,
said member being connected to said connector bodies when mated by positioning it under the lock arm at one end and over the lock arm at its other end,
sliding the same in an axial direction to cause said one end of said member to slide under the lock arm and toward the ramp and with the bridge portion engaging a keeper projection on the lock arm and then pushing the member toward said first connector body to cause the bridge portion to be deflected towards its adjacent end until it clears the keeper projection on the lock arm whereupon it snaps beneath the keeper projection with an audible click to insure that the connector bodies have been properly mated,
said connector position assurance member not being connectable to said connector bodies if the connector bodies are not properly mated.

5,308,262
ELECTRIC CONNECTOR FOR FLEXIBLE RIBBON CABLE
Masamitsu Chishima, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 8, 1992, Ser. No. 986,964
Claims priority, application Japan, Dec. 10, 1991, 3-101517[U]; Dec. 10, 1991, 3-101520[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—495 **2 Claims**



1. A connector for a flat cable having a plurality of cable lines laid in a common plane in a side-by-side fashion with each other, said connector comprising:
a housing having a longitudinal axis and also having a hollow defined therein, said hollow opening outwardly at a front face of said housing, said housing first and second walls opposite to each other, and a rear wall;
said first wall of the housing having a plurality of first guide grooves defined therein in communication with the hollow, and a sloped face;
said second wall of the housing having second guide grooves equal in number to the number of the first guide grooves and defined therein in communication with the hollow and immediately beneath associated first guide grooves;
terminal members of generally h-shaped configuration equal in number to the number of each of the first and second guide grooves and arranged in side-by-side fashion in a direction parallel to the longitudinal axis of the housing, each of said terminal members including a contact finger having a contact protuberance formed integrally therewith, an anchoring finger extending generally parallel to the contact finger and connected at one end with one end of the contact finger remote from the contact protuberance, and a connecting finger;
each of said terminal members being accommodated within the housing with the contact and anchoring fingers firmly received within the respective first and second guide grooves while the contact protuberance protrudes into the hollow, said connecting finger of each terminal member extending outwardly from the rear wall of the housing when the respective terminal member is accommodated within the housing;
a lock-on insert means adapted to be fully inserted into the hollow to allow the cable lines to be held in contact with the associated contact protuberances, said lock-on insert means being inserted into the hollow after the flat cable has been inserted into the hollow; and
means for holding the lock-on insert means at a temporarily mounted position to facilitate easy insertion of the flat cable into the hollow, and wherein said lock-on insert means includes a generally wedge-like plate member adapted to be engaged into the hollow, said wedge-like plate member having a sloped side edge which defines an insertion passage of an increased size in cooperation with said sloped face of the first wall when the lock-on insert means is held at the temporarily mounted position, and wherein the size of said insertion passage is decreased when said lock-on insert means has been fully inserted into the hollow.

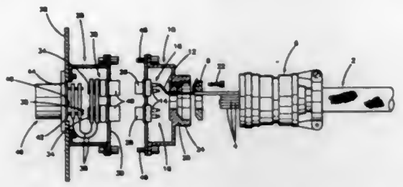
5,308,263
HOLD-DOWN BRACKET FOR AN ELECTRICAL TERMINAL BLOCK
Peter Noorily, Bridgewater, and Sidney Levy, Belle Mead, both of N.J., assignors to Thomas & Betts Corporation, Memphis, Tenn.
Filed Dec. 30, 1992, Ser. No. 998,719
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—570 **8 Claims**



1. A hold-down bracket for securing an electrical terminal block to an enclosure surface, said terminal block including a base having a plurality of circular terminal modules extending upwardly therefrom and arranged in plural staggered rows, adjacent modules defining a longitudinal passage therebetween, said bracket comprising:
an elongate body having securement means at one end for mechanical securement to said enclosure surface and an elongate terminal block support member at an other end for positioning from above within said passage between said adjacent terminal modules, said terminal block support member having outwardly diverging opposed curved sidewalls preventing lateral withdrawal of said support member through said passage wherein said support member includes a curved transverse endwall between said outwardly diverging sidewalls, said curved endwall having a radius of curvature substantially similar to said radius of curvature of said terminal modules.

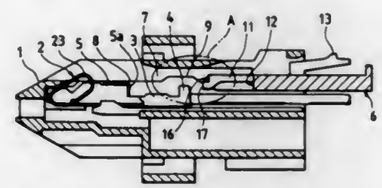
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5,308,264
MODULAR BACKSHELL INTERFACE SYSTEM
Frederick A. Perretta, Huntington, and Miles R. Frate, Monroe, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 15, 1993, Ser. No. 47,316
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—607 **1 Claim**



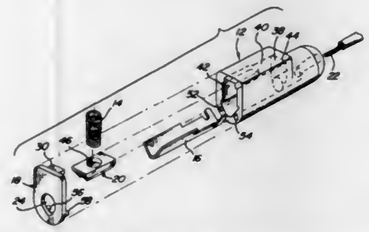
1. An interface system for interconnecting multiconductor bundle harnesses in a grounded environment, said system comprising:
a) an ambient-EMI shielding grounded backshell module which is grounded to said grounded environment and which includes signal connector means for interconnection with electrically operated equipment;
b) an incoming multi-conductor bundle harness having an outer EMI shielding, a plurality of conductor wires shielded from ambient EMI by said outer shielding; and said conductor wires being shielded from interconductor EMI by inner individual EMI shields;
c) a harness backshell module which receives stripped conductor wires from said harness;
d) said grounded module and said harness module including interfitting pin and socket connectors for establishing signal paths between conductors in said harness with said grounded backshell signal connector means; and
e) a plurality of semi-flexible circuit boards disposed in said grounded backshell module, said circuit boards containing internal shielded circuit lines which are electrically connected at one end of a pin array in said grounded module and which are connected at an opposite end to said signal connector means.

5,308,265
CONNECTOR TERMINAL HOLDING MECHANISM
Tohru Kaneko, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Mar. 12, 1993, Ser. No. 31,128
Claims priority, application Japan, Mar. 30, 1992, 4-73730
Int. Cl.[5] H01R *13/514*
U.S. Cl. 439—752 **3 Claims**



1. A connector comprising:
a terminal including an upright standing engagement portion and an engagement shoulder located forwardly of said upright standing engagement portion;
a rear holder including an engagement projecting portion and a stepped engagement portion, said stepped engagement portion being engageable with said upright standing portion; and
a connector housing including at least one guide rail which partially defines a terminal accommodating chamber in which said terminal is received, said at least one guide rail including a raised portion having a height which is greater than the height of said upright standing engaging portion, wherein said engagement projecting portion includes a slidable portion and a contact portion, said slidable portion being slidably engaged with said at least one guide rail, and said contact portion being brought into contact with said engagement shoulder of said terminal.

5,308,266
UNIVERSAL ELECTRICAL SOCKET APPARATUS
Philip H. Booker, Lake Forest, Calif., assignor to Trooomed, Inc., San Juan Capistrano, Calif.
Filed Jan. 7, 1993, Ser. No. 1,169
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—817 **18 Claims**

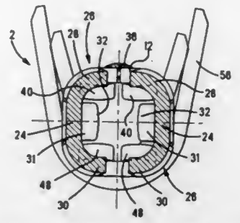


1. A socket apparatus including:
a housing member with a stepped cavity defining a channel within the housing member;
a conductive contact within the housing member;
means for securing a conductive terminal within the housing member against the conductive contact, the securing means being positioned within the channel; and
a lid attached tot he housing member, the lid including a guiding tab sized to fit within the channel such that the guiding tab and the channel mutually support the securing means within the housing member, wherein one of the housing member and the lid contains an aperture through which the conductive terminal is inserted into the housing member, whereby the conductive terminal is inserted into the socket apparatus through the aperture and secured by the securing means.

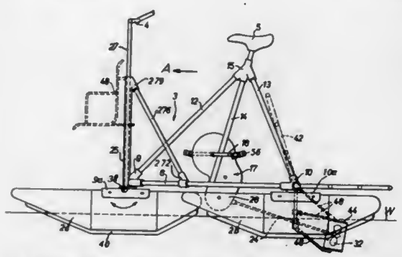
5,308,267
ELECTRICAL SOCKET TERMINAL
Gheorghe Hotea, Griesbeim, Fed. Rep. of Germany, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Apr. 5, 1993, Ser. No. 43,171
Claims priority, application United Kingdom, Apr. 14, 1992, 9208205.6
Int. Cl.[5] H01R *13/11*
U.S. Cl. 439—851 **8 Claims**

1. A one-piece electrical socket terminal provided with an elongate socket having a central longitudinal plane and comprising a tubular base having a forward end; first and second contact springs on opposite sides of said central plane, connected to, and projecting forwardly from, respective first and second opposite walls of the base, and third and fourth contact springs connected to, and projecting forwardly from, the base between said first and second walls of the base, the socket further comprising a forward portion to which the forward end of each contact spring is connected, each contact spring having an inwardly protruding contact surface intermediate the base and said forward portion of the socket;

characterized in that the forward portion of the socket comprises first and second spaced, opposed straps one on each side of said central plane, the third and fourth contact springs projecting, on opposite sides of said central plane from a third wall of the base, and fifth and sixth contact springs on opposite sides of said central plane and having inwardly protruding contact surfaces, projecting forwardly from and being connected to, a fourth wall of the base opposite to said third wall thereof, the forward ends of the contact springs on one side of the central plane being connected to the first strap and the forward ends of the contact springs on the opposite side of the central plane being connected to the second strap, wherein said central plane is generally perpendicular to said third and fourth walls of said base.

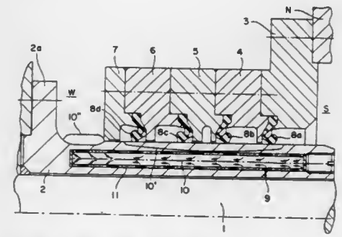


5,308,268
HUMANLY OPERABLE, RECREATIONAL, READILY DISASSEMBLABLE WATER CYCLE
August Schmid, Schwerzenbach, Switzerland, assignor to A. G. Schmid AG, Schwerzenbach, Switzerland
Filed Oct. 19, 1992, Ser. No. 963,114
Int. Cl.[5] B63H *21/175*
U.S. Cl. 440—30 **20 Claims**



1. Recreational, readily assemblable and disassemblable water cycle having
at least three flotation bodies (*2a*, *2b*, *2c*);
a plurality of frame elements;
a plurality of severable coupling means for severably coupling said elements together, and thus forming a frame (**3**);
said frame (**3**) being secured to the flotation bodies and extending upwardly therefrom, at least one of said flotation bodies being deflectable transversely with respect to said frame to provide for steering of the cycle;
a seat (**5**) secured to an upper portion of the frame; and
wherein, in accordance with the invention,
the flotation bodies (*2a*, *2b*, *2c*) are elongated;
the frame (**3**) comprises a plurality of essentially triangular frame portions (**6**, **7**, **8**; **6**, **12**, **13**; **7**, **12**, **14**; **8**, **13**, **14**),
said coupling means coupling said frame elements together to form said essentially triangular frame portions;
said frame portions forming a first triangular frame portion (**6**, **7**, **8**) which is in an essentially horizontal plane, when the cycle is in use, and further essentially triangular frame portion (**6**, **12**, **13**; **7**, **12**, **14**; **8**, **13**, **14**) located in planes inclined with respect to the horizontal plane,
said further essentially triangular frame portions converging at a junction (**15**) to which said seat (**5**) is secured;
and further severable coupling means are provided, severably coupling the flotation bodies (*2a*, *2b*, *2c*) to the frame (**3**).

5,308,269
SEAL DEVICE FOR ROTATING SHAFTS, IN PARTICULAR STERN TUBE SEAL FOR PROPELLER SHAFTS OF A SHIP
Ernst-Peter von Bergen, Ahlefeld, and Günter Pietsch, Hamburg, both of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany
Filed Oct. 30, 1992, Ser. No. 969,889
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135709
Int. Cl.[5] B63H *23/36*
U.S. Cl. 440—112 **14 Claims**



1. An ocean-going vessel comprising:
a hull;
shaft means extending within the hull and outwardly therefrom;
a propeller being mounted at an end of said shaft means for propelling said ocean-going vessel;
means for rotatingly driving said shaft means to rotate said propeller;
a shaft support system, disposed at least partly within said hull, for encasing said shaft means;
sealing means, disposed within said shaft support system, for sealing about said shaft means;
a first portion of said shaft means, being disposed in the vicinity of said sealing means, being configured for being in contact with a lubricating medium, the lubricating medium for lubricating said shaft means;
another, second portion of said shaft means, being disposed away from said sealing means, being configured for being in contact with water disposed outside of and about said hull, the outside water generally having a substantially lower temperature, during operation of said propeller, than the lubricating medium;
means for cooling said first portion of said shaft means; said cooling means comprising:
heat pipe means disposed along a longitudinal extent of said shaft means;
a first portion of said heat pipe means being disposed in a thermally conductive relationship with said first portion of said shaft means and with the lubricating medium;
a second portion of said heat pipe means being disposed in a thermally conductive relationship with said second portion of said shaft means and with the outside water;
coolant means for circulating within said heat pipe means;
said heat pipe means having an interior surface portion;
said coolant means being configured for vaporizing, upon thermal interaction with the lubricating medium, at said first portion of said heat pipe means and for condensing,

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upon thermal interaction with the outside water, at said second portion of said heat pipe means;

capillary means, extending along said interior surface portion of said heat pipe means, for directing return flow of said coolant means between said second portion of said heat pipe means and said first portion of said heat pipe means, when said coolant means has condensed at said second portion of said heat pipe means;

said heat pipe means comprising opposite ends along the longitudinal extend of said shaft means;

said heat pipe means being closed at said opposite ends;

wherein, during operation of said propeller: said sealing means are configured for producing heat, said sealing means have a maximum allowable heating temperature, and said heat pipe means has a pressure prevailing therewithin;

said coolant means having a boiling point at the pressure prevailing within said heat pipe means during operation of said propeller; and

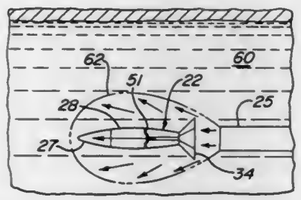
said coolant means being configured such that its boiling point, at the pressure prevailing within said heat pipe means during operation of said propeller, is less than the maximum allowable heating temperature of said sealing means.

5,308,270

ICE PENETRATING BUOY

Bruce W. Travor, Holland, and Ronald D. DiGirolamo, Churchville, both of Pa., assignors to The United Stated of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1993, Ser. No. 53,763
Int. Cl.[5] B63B *21/52*
U.S. Cl. 441—21 **9 Claims**



1. A submarine-launched buoy capable of decelerating immediately after launch, ascending beneath an ice flow, rupturing an opening in said flow and erecting an antenna in said opening, comprising:

a slender, buoy body having a front end and a rear end and with expandable tail-fin means to resist launch pressure and to decelerate the buoy removably attached to the rear end; and

wherein said body has at least one rearward-most section and at least one forward-most section for holding detection and communication means, said rearward-most section and said forward-most section being substantially in the shape of right circular cylinders separatable at a common, joined surface, and

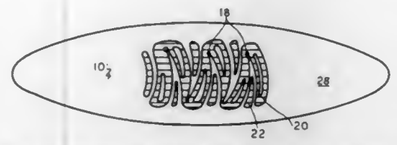
a nose cone section having explosive means therein joined to the forward-most section.

5,308,271

NON-SLIP DESIGN PAD FOR SURFBOARD AND METHOD

Robert W. Foulke, San Clemente, Calif., assignor to Q.P.I. Consumer Products Corporation, Tampa, Fla.

Filed Sep. 11, 1992, Ser. No. 943,743
Int. Cl.[5] B63B *35/79*
U.S. Cl. 441—74 **23 Claims**



1. A design pad apparatus adapted for use on an object surface to provide a non-slip surface and a design pattern thereon, which design pad apparatus comprises:

a) a thin sheet of a flexible foam material having a non-skid foam top surface and a bottom surface and a longitudinal axis and sides;

b) a pressure-sensitive adhesive layer on the bottom surface of the foam material;

c) a removable adhesive protective layer on the pressure-sensitive adhesive layer; and

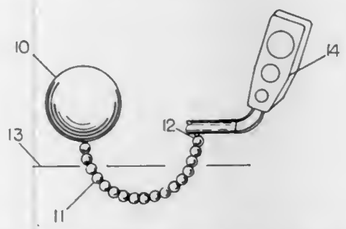
d) the foam sheet material comprising a plurality of transverse connected diecut sections formed by diecut lines, the connected sections connected by short, uncut sections of the foam material on alternating sides of the foam sheet material, the connected sections adapted to be moved between a relaxed adjacent position and a stretched spaced-apart position along the longitudinal axis to form a selected design prior to being adhered by the pressure-sensitive adhesive layer to the object surface.

5,308,272

ASCENT RATE INDICATOR

Mark Thurlow, 173 Copper Ave., Vista, Calif. 92083

Filed Jun. 29, 1992, Ser. No. 905,439
Int. Cl.[5] G01F *23/14*
U.S. Cl. 441—88 **1 Claim**



1. An ascent rate indicator using a high density sphere attached to a ball chain tether attached to a diver's gauges, or hose, whereby the relative rate of ascent is indicated by the vertical position of the sphere wherein the improvements comprise:

(a), the sphere of less than one inch in diameter made from a corrosion and pressure resistant material;

(b), the sphere having a density less than 1.00 grams/centimeter cubed;

(c), the sphere attached to a flexible ball chain tether made from a corrosion, and pressure resistant material;

(d), the mass of the tether serving as a partial counterweight to the buoyant forces of the sphere;

(e), the end of said tether attachable to the scuba diver's hose or equipment on a horizontal plane level with the diver's eyes; and,

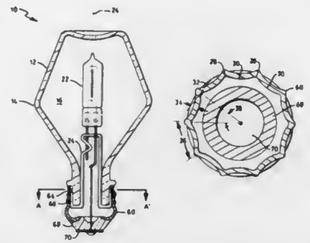
(f), the ascent rate of the sphere compared to the ascent rate of the diver is indicated by the relative position of the sphere to the place of attachment of the ball chain tether on the diver's equipment.

5,308,273

METHOD OF MAKING AN ELECTRIC LAMP WITH A HIGH TORQUE THREADED BASE

Steven L. Meade, 1870 Bahama Rd., Lexington, Ky. 40509, and Joseph P. Gallant, 3049 Dale Hollow Dr., Lexington, Ky. 40515

Filed Sep. 23, 1992, Ser. No. 950,098
Int. Cl.[5] H01J *9/34*
U.S. Cl. 445—27 **2 Claims**



1. A method of forming an electric lamp with a high torque resistant base comprising the steps of:

a) forming a lamp envelope with a tubular end have a series of prominences defining intermediate concavities encircling the tubular end,

b) forming a threaded base having an end ring with a diameter sufficient to allow the threaded base to cover the tubular end, and prominences of the lamp envelope,

c) inserting a light source having at least two electric leads into the lamp envelope,

d) mating the threaded base to the light source for electrical connection,

e) coupling the threaded base to the lamp envelope by at least deforming the end ring to mesh portions of the end ring into the concavities, thereby forming an electric lamp with a high torque resistant base.

5,308,274

SPARKER VEHICLE SET

Ed Watrobka, Sauk Village, and Dan Polanek, Beach Park, both of Ill., assignors to Marchon, Inc., Vernon Hills, Ill.

Filed Aug. 10, 1992, Ser. No. 928,243
Int. Cl.[5] A63H *33/36, 18/00*
U.S. Cl. 446—23 **31 Claims**

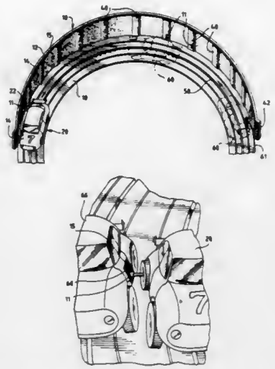
1. A toy racing set comprising:

a toy racing track;

a toy vehicle for racing on said racing track;

means associated with both said racing track and said toy vehicle for producing sparks as said vehicle moves along said track, said spark producing means comprising a rough surfaced rail and at least one spark-producing element associated with said toy vehicle, said spark-producing element being made from flint or a spark-producing alloy; and

said toy vehicle including a swinging member having at least one of said spark-producing elements mounted thereon, said swinging member being operated by manual switching means and adapted to pivot out from said vehicle to engage said rough surfaced rail.

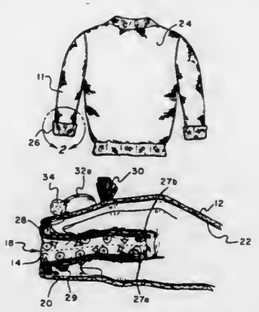


5,308,275

SLEEVE PUPPET

Eric J. Kornbleuth, Voorhees, N.J., assignor to Neushama Enterprises, LP, Brooklyn, N.Y.

Filed Feb. 25, 1993, Ser. No. 22,451
Int. Cl.[5] A63H *33/80, 3/14;* A41B *1/00;* A41D *1/04*
U.S. Cl. 446—28 **3 Claims**



1. A garment having a left sleeve and a right sleeve; each of said sleeves having a main portion comprised of fabric material formed in a substantially cylindrical tubular shape defining an interior and outer surface and having a central axis extending from the distal end thereof through the substantial length of the sleeve; the extreme distal end of each of said sleeves defining a perimeter which lies in a single plane substantially perpendicular to the axis of the sleeve; at least one of said sleeves having an additional tubularly shaped fabric member coaxially located within the interior thereof adjacent the distal end, said tubularly shaped member having a first end secured to the distal end of its respective sleeve around the entire perimeter thereof and having a second end lying within the interior of the sleeve, said additional tubularly shaped member being stitched substantially throughout its length to said main portion of said sleeve along two opposed axially extending lines thereby forming upper and lower cavities between said additional tubularly shaped member and said main portion, the cavities being respectively adapted to receive the wearer's thumb and fingers

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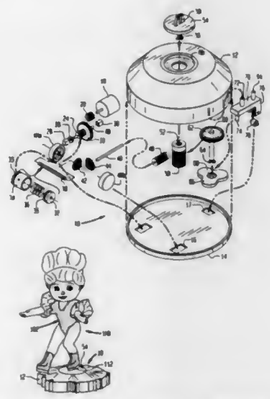
for manipulating the end of said sleeve in the manner of a hand puppet, decorative means applied to the outer surface of said at least one sleeve adjacent the end thereof so as to resemble facial features of an animal with said tubularly shaped member forming a mouth thereof, said additional tubularly shaped member and the end of the sleeve being capable of being folded back over the outer surface of said sleeve to form a cuff and to hide said decorative means from view.

5,308,276

MOVING TOY DOLL

A. Edward Fogarty; Bonnie R. Fogarty, both of 39 Sandy Hook Rd., Sarasota, Fla. 34242, and Joseph F. Skrivan, 9070 Solon Dr., Cincinnati, Ohio 45242

Filed Jun. 22, 1993, Ser. No. 80,696
Int. Cl.[5] A63H *17/25, 11/00*
U.S. Cl. 446—288 **4 Claims**



1. A posable toy doll which simulates movements of a skater comprising:

a torso having legs pivotally connected thereto which are frictionally engaged to said torso whereby each one of said legs is selectively posable and held in the selected pose, each one of said legs having a skate in the form of an ice skate, a roller skate, a roller blade and the like disposed at a lower distal end thereof;

said torso also having arms pivotally connected thereto which are frictionally engaged to said torso whereby each one of said arms is selectively posable and held in the selected pose;

a self-propelled base having a platform forming an upper surface of said base, said platform for supporting said toy doll in an upright position by supportive releasable engagement with, and having a transverse size similar to a length of either said skate;

said base supported on a generally horizontal surface by two spaced apart rear wheels, one of said rear wheels drivably connected to a battery-powered drive motor means within said base, and an independent steerable front wheel;

said platform and said doll rotatably driven at a constant rotational speed about an upright axis passing through said base by said drive motor means;

said front wheel steerably moved about an upright steering axis through a repeating arcuate steering pattern moved by a profile cam mounted for driven rotation on said base by said drive motor means;

said profile cam being interchangeable with a second profile cam having a different cam profile;

said toy doll being removable from said base;

said base having a top plan size similar to an imaginary perimeter around said torso;

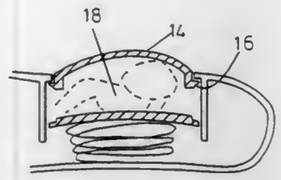
said base also having a sculptured surface which simulates ice upon which said doll appears to skate.

5,308,277

FEMALE PLAYING DOLL, CAPABLE OF IMITATING PREGNANCY AND CHILD BIRTH

Pia Nielsen, Sydbakken 51, DK-8462 Harlev, Denmark

Continuation of Ser. No. 833,500, Feb. 10, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 2,023
Int. Cl.[5] A63H *3/36, 13/02;* **G09B** *23/28*
U.S. Cl. 446—320 **3 Claims**



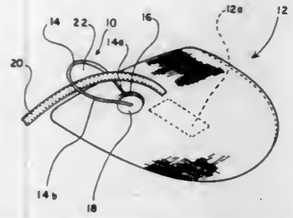
1. A female playing doll adapted to temporarily imitate a pregnant state and, after a symbolic child birth, to resume a non-pregnant state, characterized in that the doll body is provided with an inwardly extending deep stomach cavity, in which is accomodated a flat, forwardly displaceably biased stomach member, said stomach member biased by a spring in said deep stomach cavity and when in a free condition, is urged into a position flush, with a surrounding stomach surface of the doll, said surrounding stomach surface including an inward edge, said cavity further being closable by a separate bulging stomach element with a baby doll interposed between a rear side of the bulging stomach element and a front side of the flat stomach member, and the flat stomach member being rearwardly depressed in dependance upon a space occupied by the baby doll wherein said inward edge engages and retains either of said bulging stomach element or said flat biased stomach member.

5,308,278

FLEXIBLE STRING-LIKE BRASSIERE RETAINER

Lindy W. Huang, 3332 Manor Ridge Dr., Raleigh, N.C. 27603

Filed Nov. 20, 1992, Ser. No. 979,645
Int. Cl.[5] A41F *15/02*
U.S. Cl. 450—86 **4 Claims**



1. A brassiere strap retainer connected to a garment for confining a brassiere strap about the shoulder of a woman comprising:

a) an elongated flexible string retainer having first and second opposite ends;

b) a pair of mating fasteners attached to opposite ends of the string retainer, the retainer secured to the garment by only one of said fasteners, wherein the retainer has an unconnected mode wherein the pair of fasteners are not attached to each other and the retainer hangs freely from the secured fastener, and wherein the retainer has a connected mode wherein the pair of fasteners are attached to each other and the string retainer forms an enclosed loop that defines a brassiere strap opening and that can be moved, rotated and swung with respect to it point of connection with the garment; and

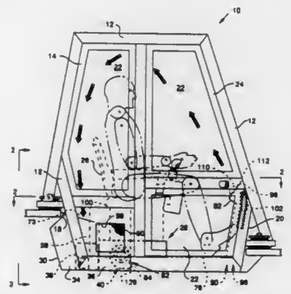
c) wherein when the pair of mating fasteners are connected to give rise to the connected mode the string retainer is adapted to receive a brassiere strap through the brassiere strap opening and to loosely confine the brassiere strap underneath the garment such that the brassiere strap is completely flexible and can be moved, rotated and swung with respect to its point of connection with the garment.

5,308,279

AIR CIRCULATORY SYSTEM FOR AN ENCLOSURE

Eugene Grinberg, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/07953, § 371 Date Oct. 28, 1991, § 102(e) Date Oct. 28, 1991, PCT Pub. No. WO93/08997, PCT Pub. Date May 13, 1993
PCT Filed Oct. 28, 1991, Ser. No. 773,629
Int. Cl.[5] B60H *1/26*
U.S. Cl. 454—139 **18 Claims**



1. An air circulatory system (32) adapted for use with a cab (10) of a vehicle, comprising:

a housing (30) having first and second compartments (34,36) and an inlet (70) defined by the housing (30) for communication with air circulating within the cab (10) into the first compartment (34) said housing providing support for a seat assembly;

a pair of fresh air passageways (48,50) each having a first end portion (59) that defines an opening (56) in a respective one of an opposing side (14,16) of the cab (10) and a second end portion (62) that is engaged with a respective one of opposing sides (52,54) of the first compartment (34), said fresh air passages (48,50) being sufficient for communicating ambient air outside the cab (10) with the first compartment (34);

an air duct means (78,80) having a first end portion (82) positioned for communication with the second compartment (36) of the housing (30) and a second end portion (90) that extends forwardly from the housing (30) to a position that is adjacent a front wall (18) of the cab (10) and defines a plurality of air discharge ports (102,104,110,114) that are spaced laterally from one another a distance that is substantially equal to the width of the seat assembly; and

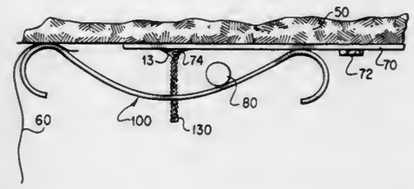
a blower assembly (40) positioned in the second compartment (36) and being sufficient for drawing ambient air and air circulating within the cab (10) through the first compartment (34) and into the second compartment (36) and directing it back into the cab (10) through the discharge ports (102,104,110,114) at a preselected pressure that is within a range of 0.398 to 0.439 KpA greater upon discharge from the second compartment (36) than the air that is drawn into the second compartment (36).

5,308,280

METHOD AND APPARATUS FOR SUPPORTING VENTILATION CURTAINS IN COAL MINES

Clyde H. Dotson, McCarr, Ky., assignor to Curtain Buddy Corp., McCarr, Ky.

Filed Dec. 14, 1992, Ser. No. 990,065
Int. Cl.[5] E21F *17/00*
U.S. Cl. 454—170 **11 Claims**



9. Apparatus for suspending a ventilation curtain from a surface of a mine, the mine surface having a roof plate with a loop, comprising:

a spring support having a curtain supporting portion adjacent the mine surface and a body portion spaced from the mine surface;

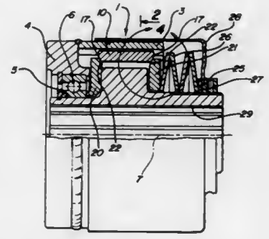
a flexible tension member having a hook fixed to one end thereof, said hook being releasably engageable with the roof plate loop and said flexible tension member being engageable with said body portion to pull said body portion toward the mine surface to yieldably urge said curtain supporting portion toward the mine surface and trap the curtain between said curtain supporting portion and the mine surface said body portion including means for engaging said flexible tension member.

5,308,281

COUPLING DISCONNECTED IN THE CASE OF OVERLOADING

Clemens Nienhaus, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 905,805
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4121631
Int. Cl.[5] F16D *11/06, 11/00*
U.S. Cl. 464—30 **7 Claims**



1. A coupling comprising:

a coupling hub and a coupling sleeve rotatably received thereon;

a plurality of locking catches swivelably arranged between the coupling hub and coupling sleeve, said catches in a

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disengaged position engaging recesses in said coupling hub and, in a torque transmitting position, said catches being, at one end, held on a supporting face of the hub recess and at the other end being held in contact with an opposed supporting face of a recess of the coupling sleeve;

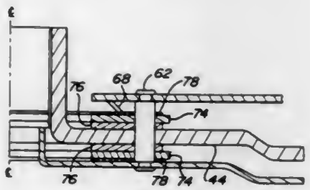
said coupling hub being a driving part, and said locking catches, at their sides, including first switching faces which, if viewed in longitudinal section, extend on an incline which intersects the rotational axis of the coupling in the region of axial extension of the locking catches, said catches' first switching faces being loaded by switching faces of laterally arranged switching rings, at least one of said switching rings being spring-loaded in the axial direction towards the locking catches and a second supporting face of the locking catches and a supporting face of the coupling sleeve, viewed in the cross-section, corresponding to each other and intersecting a plane of a longitudinal section containing the rotational axis in such a way that when a predetermined torque value is exceeded, the locking catches move away from the supporting face of the coupling sleeve.

5,308,282

PRESSURE PLATE FOR A VIBRATION DAMPER ASSEMBLY HAVING BUILT IN LASH

James E. Hansen, Northville, and Christopher G. Garbacz, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 15, 1992, Ser. No. 913,338
Int. Cl.[5] F16D *3/12, 3/14, 13/68*
U.S. Cl. 464—68 **15 Claims**



1. A pressure plate for a vibration damper assembly connectable between a rotary input and a rotary output, said vibration damper assembly including a rotary input member having an axis of rotation, at least one drive pin attached to the rotary input member offset from said axis of rotation and a driven member resiliently connected to said rotary input member and frictionally connected to said pressure plate, said at least one drive pin engageable with said pressure plate to rotate said pressure plate about said axis of rotation, said pressure plate comprising:

an annular plate having a first surface on one side thereof and a second surface on the opposite side thereof, said annular plate further having at least one arcuate slot receiving said at least one drive pin, said at least one arcuate slot having a circumferential width greater than the diameter of said at least one drive pin, permitting said rotary input member to rotate relative to said driven member through a predetermined angle;

a first layer of friction material bonded to said first surface; and

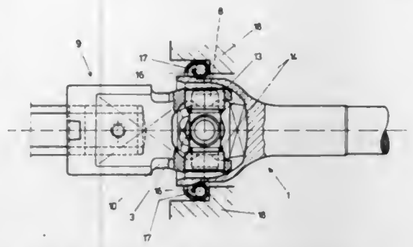
a second layer of friction material bonded to said second surface.

5,308,283

JOINT FOR CARDAN SHAFTS

Christian Lutz, Nüziders, Austria, assignor to Etablissement Supervis, Vaduz, Liechtenstein

Filed Jan. 13, 1992, Ser. No. 820,093
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102515
Int. Cl.[5] F16D *3/40;* **B62D** *1/16*
U.S. Cl. 464—136 **1 Claim**



1. Joint for cardan shafts, for steering columns in motor vehicles, comprising:

a trunnion cross (**5**) as a coupling link including a first pair of trunnions (**7**) whose entire longitudinal length is a first length (L) and a second pair of trunnions (**8**) whose entire longitudinal length is a second length (**1**), the first length (L) being greater than the second length (**1**);

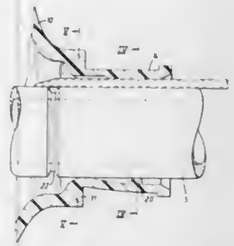
wherein an end of a shaft (**9**) is configured as a fork, where the second trunnion pair (**8**) is rotatably supported and wherein an end of another shaft (**2**) is configured as a bell-shaped joint part (**1**), where the first trunnion pair (**7**) is rotatably supported, characterized in that the external surface of the bell-shaped joint part (**1**) is set off in a step-like manner for receiving or contacting a bearing such that the center point of the bell-shaped joint part (**1**) is located close to the central plane of the bearing received by the bell-shaped joint part (**1**).

5,308,284

PROTECTIVE BELLOWS

Bernard Renzo, Nantes, and Joel Breheret, Treillieres, both of France, assignors to Draftex Industries Limited, Edinburgh, Scotland

Filed Dec. 3, 1992, Ser. No. 985,602
Claims priority, application United Kingdom, Dec. 3, 1991, 9125658.6
Int. Cl.[5] F16D *3/84;* **F16J** *15/52*
U.S. Cl. 464—175 **6 Claims**



1. A protective bellows for encasing a mechanism connected to an axially extending shaft around the periphery of which an end collar of the bellows resiliently clamps itself, comprising means on the collar defining an inner peripheral surface, the inner peripheral surface being formed, at a first axial position therealong with respect to the axis of the shaft, with a radially inwardly-directed formation which, during fitment of the collar onto the shaft, spaces part of the adjacent inner peripheral surface of the collar from the outer surface of the shaft but leaving a further part of the inner peripheral surface resiliently in contact with the outer surface of the shaft, the further part of the inner peripheral surface being at a second axial position along the inner peripheral surface which is spaced axially therealong from the said first axial position,

means defining at least one first channel extending in an axial direction through the radially inwardly-directed formation, and

means defining at least one second channel through the said further part of the inner peripheral surface of the collar,

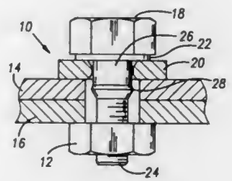
whereby the channels vent the interior of the bellows to atmosphere during fitment of the bellows, the radially-inward formation being adapted to engage a groove in the outer surface of the shaft on completion of the fitment.

5,308,285

METHOD OF MAKING A BOLT AND WASHER ASSEMBLY

Gerald Malen, Troy; William Deason, Mt. Clemens, and Joseph Muschella, Troy, all of Mich., assignors to The Cold Heading Company, Detroit, Mich.

Filed Feb. 3, 1992, Ser. No. 829,496
Int. Cl.[5] B21H *3/02;* **F16B** *43/00;* **B21D** *53/20*
U.S. Cl. 470—4 **7 Claims**



1. A method for cold forming a fastener and washer assembly wherein said washer is permanently retained on a shank formed on said fastener, said method comprising the steps of:

forming a shank and a head on said fastener, said shank defining a shank diameter;

forming at least one axial end surface and an inner diameter surface on said washer, said inner diameter surface defining an inner diameter;

forming at least one chamfer between said at least one axial end surface of said washer and said inner diameter surface of said washer;

cold forming a raised portion on said shank, said raised portion having a predetermined diameter greater than said shank diameter, said raised portion having a first chamfer between said shank diameter and said predetermined diameter of said raised portion, said step of cold forming a raised portion on said shank further comprising the step of simultaneously cold forming a second surface located between said shank diameter and said predetermined diameter of said raised portion, said second surface having a diameter less than said predetermined diameter of said raised portion; and

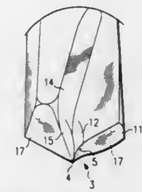
assembling said washer onto said shank of said fastener by first abutting said inner diameter surface of said washer against said first chamfer of said raised portion of said shank and thereafter forcing said inner diameter surface of said washer past said first chamfer of said raised portion of said shank such that said inner diameter surface of said washer is elastically expanded while said raised portion is elastically compressed, each said washer and said raised portion elastically reverting back to said inner diameter and said predetermined diameter, respectively, once said washer is forced past said raised portion, said washer being permanently retained on said fastener to form said fastener and washer assembly.

5,308,286

DEVICE FOR MANUFACTURING AUSTENITIC STAINLESS STEEL DRILL SCREWS

Yasu Uejima, Osaka, Japan, assignor to Hargro 300-Technology, Inc., Tyler, Tex.

Continuation of Ser. No. 853,102, Mar. 18, 1992, Pat. No. 5,186,688. This application Dec. 16, 1992, Ser. No. 991,825
Claims priority, application Japan, Jul. 26, 1991, 3-276095
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] B12H *3/02*
U.S. Cl. 470—9 **5 Claims**



1. A method for making an austenitic stainless steel drill screw having a head, a threaded shaft, and a drill portion, which comprises:

forming by cold working a head and shaft from austenitic stainless steel including nitrogen;

forming a drill portion on the end of the shaft opposite the head, said drill portion having a pointed part and a cutting edge;

forming threads on the shaft, said forming steps providing increased hardness through cold work hardening; and

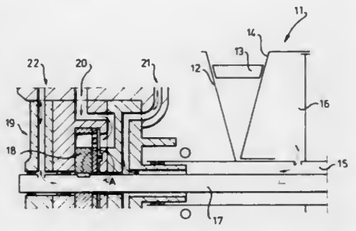
aging the drill screw, such that said nitrogen is precipitated to the surface of said drill screw to provide further increased hardness.

5,308,287

ROTARY PUMP

Johannes T. Gunsing, Eindhoven, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Jul. 8, 1992, Ser. No. 910,732
Claims priority, application Netherlands, Aug. 23, 1991, 9101422
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—28 **12 Claims**



1. Continuously variable transmission comprising a driving belt/pulley arrangement whose pulley has two sheaves, at least one of which is axially displaceable relative to a pulley shaft by means of a hydraulic cylinder, and a rotary pump with a drive shaft, said rotary pump having a rotor with displacement elements which are movable in grooves of the rotor, a cam ring

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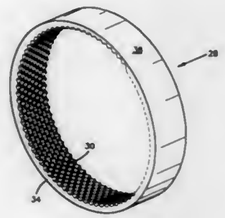
surrounding the rotor, said displacement elements sliding along the radial inner side of the cam ring and thereby surrounding pump chambers, end faces bounding the rotor at both sides, and one or more supply and discharge apertures, and end plate being provided between at least one of said end faces and a side face of the rotor, and at least one seal disposed between the end face and the end plate, for sealing the supply and/or discharge apertures in order to prevent leakages between the end plate and the end face.

5,308,288

VACUUM SWEEPER DRIVE BELT

John R. Lackner, Westlake, and Alfred Schiazza, Avon Lake, both of Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio

Filed Jul. 28, 1992, Ser. No. 920,767
Int. Cl.[5] F16H *57/00*
U.S. Cl. 474—92 **16 Claims**



3. In combination, a vacuum cleaner comprising a nozzle housing having an inlet, a filter, a vacuum source for creating air flow through said inlet to said filter, a brush roll rotatable in said housing, a motor shaft, and a drive belt entrained around said shaft and brush roll, said belt having narrow traction ridges engaging said shaft and brush roll and multiple recesses defined by said narrow traction ridges, whereby dirt drawn into said inlet is inhibited from causing said belt to slip and is displaced from under the traction surfaces at least in part into said recesses and then dispersed into the air stream flowing to said filter.

5. In a vacuum sweeper, a flexible, elastic drive belt having a plurality of inwardly projecting diamond shaped traction members, said diamond shape being with reference to the direction of travel when the belt is in use, said members having tapered surfaces defining cutting edges for expelling foreign matter lodged between the drive surface and a vacuum sweeper brush roll.

14. A process in inhibiting the development of foreign matter film on a vacuum cleaner brush roll, a brush belt and a drive member comprising:

a) tensioning the belt around the roll and member to establish surface contact between inwardly extending projections on the belt and the roll and member respectively;

b) rotating the member to thereby drive the belt and the roll and thereby cease the projections to disperse forcing matter into belt recesses interspersed among the projections; and,

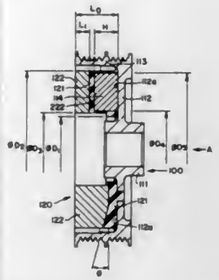
c) flexing the belt as it passes through a flow of air from a cleaner inlet to a filter whereby to cause foreign matter in such recesses to be transferred to such filter.

5,308,289

DAMPER PULLEY

Nobuaki Funahashi, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 30, 1992, Ser. No. 921,575
Claims priority, application Japan, Aug. 9, 1991, 3-225187
Int. Cl.[5] F16D *3/00*; F16H *35/14*
U.S. Cl. 474—94 **4 Claims**



1. A damper pulley comprising:

a pulley having a boss portion and a plate portion formed around said boss portion; and

a dynamic damper having a damper-mass member with an annular shape having a center of rotation common with said pulley, and a first resilient rubber member for joining said damper-mass member to an annular surface of said plate portion of said pulley,

said damper-mass member having at least two fan-like concave portions with at least two positions that are symmetrical with respect to said center of rotation of said pulley, in a surface facing said annular surface of said plate portion of said pulley, each of said fan-like concave portions being defined by a pair of circumferentially facing upright surfaces that are perpendicular to said annular surface of said plate portion of said pulley,

said pulley being provided with at least two projections which perpendicularly project from said annular surface of said plate portion into each of said at least two fan-like concave portions,

side surfaces of each of said at least two projections, which circumferentially face said plate portion, are opposed to each of said circumferentially facing upright surfaces respectively, and

a second resilient rubber member of a predetermined thickness being interposed between said pair of circumferentially facing upright surfaces of each of said concave portions and said side surfaces of each of said projections.

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BELT PULLEY

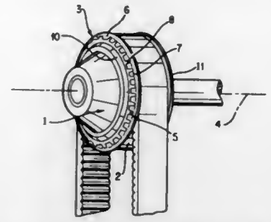
Bernhard Gesenhues, Birkenau, and Roger Weinlein, Viernheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 40,164
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1992, 4210345
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—152 **14 Claims**

1. A belt pulley assembly comprising:

a pulley member comprising a belt-bearing surface and a projection disposed at a position axially adjacent to said belt-bearing surface; and

a flanged wheel that is capable of being assembled separately on said pulley member, said flanged wheel comprising a spring washer having an inside diameter and an outside diameter, said spring washer being substantially elastically extendable only in said area of said inside diameter, the dimensions of said inside diameter defined such that, upon assembly, said inside diameter elastically extends and touches upon a surface of said projection over at least a portion of said inside diameter in a manner whereby said flanged wheel is mounted concentrically and non-rotatably in relation to said belt-bearing surface, said inner diameter and said outer diameter of said spring washer defined such that, upon assembly, said flanged wheel projects outwardly in a radial direction beyond said belt-bearing surface, thereby delimiting said belt-bearing surface in an axial direction.

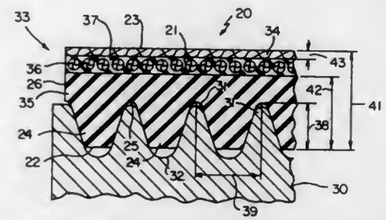


5,308,291

BELT CONSTRUCTION, THE COMBINATION OF THE BELT CONSTRUCTION AND A PULLEY AND METHODS OF MAKING THE SAME

Larry A. Robertson, Springfield, and Ernest C. Arnsmeyer, Billings, both of Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Oct. 16, 1992, Ser. No. 962,639
Int. Cl.[5] F16G *1/28*
U.S. Cl. 474—205 **20 Claims**



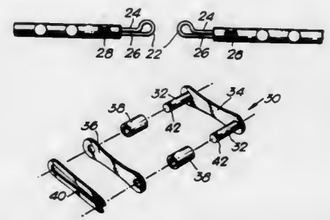
1. In the combination of an endless power transmission belt construction having opposed side edge means and having opposed inner surface means and outer surface means with said inner surface means defining a plurality of longitudinally disposed and alternately spaced apart like longitudinal projections and longitudinal grooves, said belt construction having a certain thickness, and a rotatable pulley means having an outer peripheral ribbed surface means meshing with a portion of said inner surface means of said belt construction and defining a plurality of longitudinally disposed and alternately spaced apart like longitudinal grooves and longitudinal projections that respectively have portions thereof for serially meshing respectively with cooperating portions of said longitudinal projections and longitudinal grooves of said inner surface means of said belt construction, the depth of said longitudinal grooves of said inner surface means of said belt construction being substantially less than the approximately 2.4 mm depth of the longitudinal grooves of a similar belt construction that is adapted to have the inner surface means thereof mesh with said ribbed surface means of said pulley means, said inner surface means being cogged and defining a plurality of transversely disposed and alternately spaced apart transverse projections and transverse grooves, the improvement wherein said transverse grooves each has a depth that is approximately one-half of said depth of said longitudinal grooves and that is approximately one-fourth of said thickness of said belt construction.

5,308,292

CABLE CHAIN

Anil Mistry, Letchworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 8, 1993, Ser. No. 45,441
Claims priority, application United Kingdom, Apr. 13, 1992, 9208109
Int. Cl.[5] F16G *13/00*
U.S. Cl. 474—207 **13 Claims**



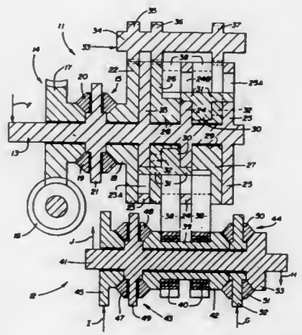
1. A plastic cable chain having two opposing free ends, the chain comprising a plurality of metallic cables jacketed in a plastic material and spaced apart by cross-linked spacer members, each of the free ends of each of the cables having a respective eyelet for facilitating coupling between said free ends, the eyelets on the free ends of the cables being confrontingly aligned and coupled together by means of a connecting link to define thereby a continuous substantially plastic cable chain.

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VARIABLE SPEED DRIVE TRANSMISSION

Kyung S. Han, 1922 Coe's Post Run, Westlake, Ohio 44145

Continuation-in-part of Ser. No. 807,192, Dec. 16, 1991, Pat. No. 5,169,359. This application Oct. 19, 1992, Ser. No. 963,439
Int. Cl.[5] F16H *37/12*
U.S. Cl. 475—18 **9 Claims**



1. A variable speed gear drive device having a constant input and a variable speed and directional output, comprises a first speed control gear assembly and a directional output gear assembly, said first speed control gear assembly comprising multiple geared pairs, an input drive shaft, and a control gear interengaging one of said geared pairs rotatably positioned on said input shaft, an adjustable camming and drive assembly

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interconnected by said input shaft by transfer gears, said control gear selectively and intermittently driving said geared pairs on said input shaft, said camming and drive assembly comprising offset circular disks on respective cam disks, offset cams rotatably positioned on said offset circular disk, control disks extending from said input drive shaft, means on said cams for registering with said control disks, a pair of cam engagement arms with one-way clutch drive gear selectively engaged thereon, said directional gear assembly comprising first and second multiple geared pairs on an output shaft, selective control input to said selective gear pairs and means for interconnecting said multiple gear pairs on said one-way clutch drive gears.

5,308,294

HINGE JOINT WITH BEARINGS FOR THE ECCENTRIC FOR USE IN SEATS OF MOTOR VEHICLES AND THE LIKE

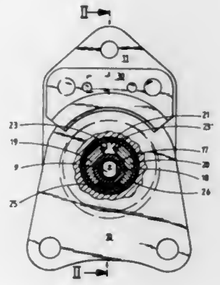
Werner Wittig, Wianweiler; Dirk Angermann, Cologne; Herbert Eich, Mönchengladbach, and Heinz Werner, Remscheid-Hasten, all of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH. & Co., Remscheid, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 39,836

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211617

Int. Cl.[5] **B60N** *2/22*

U.S. Cl. 475—162 **9 Claims**



1. A hinge joint for use in the seats of vehicles, comprising a first component; a second component; a pintle having an axis and pivotally connecting said second component to said first component; and means for pivoting said second component about said axis between a plurality of different positions, including a motion transmitting member, first and second substantially wedge-like sections extending circumferentially of said pintle within one of said first and second components and flanking said motion transmitting member, said wedge-like sections and said member together forming an eccentric section, energy storing means reacting against one of said sections and bearing against the other of said sections to urge said sections away from each other and toward said member, and means for establishing substantially only rolling friction between said wedge-like sections and said one component, said means for establishing such rolling friction comprising an annular outer race surrounded by said one component and a plurality of rolling elements directly contacting said outer race and an outer periphery of said wedge-like sections.

5,308,295

PLANETARY GEAR SYSTEM FOR AUTOMATIC TRANSMISSION

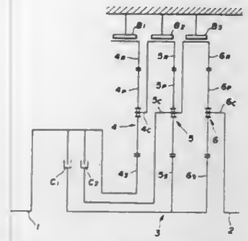
Hirofumi Michioka; Yuji Hayashi, and Koichi Hayasaki, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Washington, D.C.

Filed Jul. 23, 1992, Ser. No. 917,334

Claims priority, application Japan, Jul. 26, 1991, 3-208858

Int. Cl.[5] **F16H** *59/00*

U.S. Cl. 475—275 **8 Claims**



1. An automatic transmission comprising:

a planetary gear system disposed between an input end and an output end of said automatic transmission, said planetary gear system comprises first, second and third planetary gear sets, said third planetary gear set being closer than said second and third planetary gear sets to said output end and being smaller in diametral size than a diametral size of said first and second planetary gear sets;

an engaging device group comprising a first holding device surrounding said third planetary gear set;

wherein

said first, second and third planetary gear sets are coaxially arranged around a common center axis extending from said input end to said output end of said automatic transmission, said second planetary gear set is located axially between said first and third planetary gear sets, said first planetary gear set is located axially between said input end and said second planetary gear set, said third planetary gear set is located axially between said second planetary gear set and said output end, said first planetary gear set comprises a first ring gear having a first pitch diameter, said second planetary gear set comprises a second ring gear having a second pitch diameter, said third planetary gear set comprises a third ring gear having a third pitch diameter which is smaller than said first pitch diameter, and smaller than said second pitch diameter, and said first holding device comprises a pack of friction brake plates surrounding said third ring gear;

said automatic transmission further comprises input and output shafts which are aligned on said common center axis, each of said input and output shaft comprises inner and outer shaft ends, said inner ends of said input and output shafts confronting each other and located axially between said outer ends of said input and output shafts, said first planetary gear set further comprises a first sun gear located axially between said outer end of said input shaft and said second planetary gear set, said second planetary gear set further comprises a second sun gear located axially between said first sun gear and said third planetary gear set, and said third planetary gear set further comprises a third sun gear located axially between said second sun gear and said outer end of said output shaft, and wherein said device group further comprises a second holding device surrounding said first and second ring gears;

said first holding device further comprises a brake piston which is disposed around said output shaft and which

comprises a circular inner periphery having a diameter which is smaller than said third pitch diameter;

said second pitch diameter of said second ring gear is smaller than said first pitch diameter of said first ring gear, and said second holding device comprises a pack of friction brake plates disposed around said first ring gear and a brake piston disposed around said second ring gear;

said automatic transmission further comprises a transmission case comprising a first portion enclosing said second holding device, and a second portion which encloses said first holding device, said second portion being smaller in diameter than said first portion; and

said first portion of said transmission case comprises a first case section surrounding the pack of said brake plates of said second holding device, and a second case section surrounding said brake piston of said second holding device, and said second portion of said transmission case comprises a third case section surrounding the pack of said brake plates of said first holding device, and a fourth case section surrounding said brake piston of said first holding device, said second case section being smaller in cross sectional size than said first case section, said third case section being smaller in cross sectional size than said second case section, said fourth case section being smaller in cross sectional size than said third case section.

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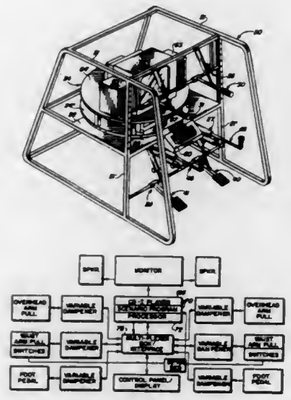
INTERACTIVE VIDEO AND EXERCISE APPARATUS

Donald Eckstein, 8125 SW. 205 Ter., Miami, Fla. 33189

Filed Jul. 16, 1992, Ser. No. 914,879

Int. Cl.[5] **A63B** *21/005*

U.S. Cl. 482—5 **13 Claims**



1. An exercise apparatus comprising:

a support frame structure,

a plurality of exercise members attached to said frame structure and movable relative thereto through a predetermined range of movement for performing one of a plurality of simulated actions by a user,

a compact disc-interactive player supported on said frame structure and structured to play a compact disc having a scenario program recorded thereon, including a plurality of scenario segments, each of said scenario segments dictating required movements of said exercise members to perform said simulated actions,

a video monitor supported on said frame structure and interconnected to and structured to receive a video signal from said compact disc-interactive player for displaying a real time motion video portion of said scenario program,

audio means interconnected to and structured to receive an audio signal from said compact disc-interactive player for transmission of an audible sound portion of said scenario program corresponding with said motion video portion,

variable dampening means interconnected to each of said exercise members and structured and disposed to variably control a level of resistance to movement of said exercise members so as to effectively vary the level of difficulty of moving said exercise members when performing said simulated actions as dictated by the scenario segment being presented at that time to the user, said variable dampening means including an electronic variable resistance dampening device interconnected to each of said exercise members, each of said variable resistance dampening devices including a linear variable potential meter attached thereto, said potential meter generating data relating to the movement of each of said exercise members for transmission to processing means and indicating said processing means when a movement of a particular one of said exercise members has been made including the rate and extent of that movement,

interface means interconnected between said variable dampening means and said compact disc-interactive player and structured to transmit and receive data therebetween, said interface means including a multiplexing box structured and disposed to receive a plurality of data inputs from said potential meters for transmission through a combined input and output port of said compact disc-interactive player,

said compact disc-interactive player including said processing means structured and disposed to receive and process data relating to the scenario segment being presented and the movement of the exercise members, said processing means further being structured and disposed to control said scenario program and transmit processed data to said interface means for controlling said variable dampening means so as to effectively vary the respective resistance levels of said exercise members,

remote infra red transmitting and receiving means structured and disposed for transmitting and receiving said data between said interface means and said processing means, and

whereby a new scenario segment is presented to the user as a direct result of the user's performance in moving said exercise members to execute said simulated actions in response to the previous scenario segment.

13. An exercise apparatus comprising:

a support frame structure,

a plurality of exercise members attached to said frame structure and movable relative thereto through a predetermined range of movement for performing one of a plurality of simulated actions by a user, said exercise members including a stairstepper assembly, said stairstepper assembly including a right lever and step portion, a left lever and step portion, and synchronizing means structured and disposed to cause the upward movement of one of said levers upon the downward movement of the other of said levers such that when one of said levers is in an uppermost position the other of said levers is in a lowermost position, said exercise members further including a right and a left overhead arm puller assembly and a right and a left waist level arm puller assembly,

a compact disc-interactive player supported on said frame structure and structured to play a compact disc having a scenario program recorded thereon, including a plurality of scenario segments, each of said scenario segments dictating required movements of said exercise members to perform said simulated actions,

a video monitor supported on said frame structure and interconnected to and structured to receive a video signal from said compact disc-interactive player for displaying a real time motion video portion of said scenario program,

audio means interconnected to and structured to receive an audio signal from said compact disc-interactive player for

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transmission of an audible sound portion of said scenario program corresponding with said motion video portion,

variable dampening means interconnected to each of said exercise members and structured and disposed to variably control a level of resistance to movement of said exercise members so as to effectively vary the level of difficulty of moving said exercise members when performing said simulated actions as dictated by the scenario segment being presented at that time to the user, said dampening means including an electronic variable resistance dampening device interconnected to each of said exercise members, each of said variable resistance dampening devices including a linear variable potential meter attached thereto, said potential meter generating data relating to the movement of each of said exercise members for transmission to processing means to indicate to said processing means when a movement of a particular exercise member has been made including the rate and extent of that movement,

interface means interconnected between said variable dampening means and said compact disc-interactive player and structured to transmit and receive data therebetween, said interface means including a multiplexing box structured and disposed to receive a plurality of data inputs from said potential meters for transmission through a combined input and output port of said compact disc-interactive player, said compact disc-interactive player including said processing means structured and disposed to receive and process data relating to the scenario segment being presented and the movement of the exercise members, said processing means further being structured and disposed to control said scenario program and transmit processed data to said interface means for controlling said variable dampening means so as to effectively vary the respective resistance levels of said exercise members,

remote infra red transmitting and receiving means structured and disposed for transmitting and receiving said data between said interface means and said processing means,

each of said waste level arm pullers including a control grip structured and disposed to facilitate movement of said waste level arm pullers, and accordingly to facilitate performance of one of said simulated actions, said control grips including a plurality of control switches thereon adapted to transmit control data through said interface means to said processing means for receipt and processing thereof,

said support frame structure including a control panel and display attached thereto and having a digital display and keys thereon being structured and disposed for manual control and operation of said variable dampening means independently of said processor means,

a turntable centrally positioned and rotatably mounted to said frame structure and structured and disposed to support said compact disc-interactive player, video monitor, and audio means thereon so as to be rotatably movable relative to the user and said frame structure allowing said compact disc-interactive player, video monitor, and audio means to be conveniently disposed for use independent of said exercise members, and

whereby a new scenario segment is presented to the user as a direct result of the user's performance in moving said exercise members to execute said simulated actions in response to the previous scenario segment.

5,308,297

TRANSMISSIONS OF THE TOROIDAL-RACE ROLLING-TRACTION TYPE

Christopher J. Greenwood, Preston, England, assignor to Torotrak (Development) Limited, England

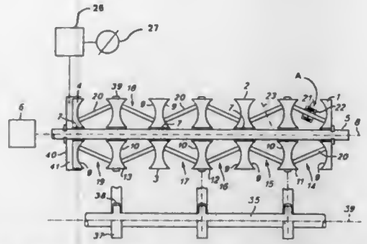
PCT No. PCT/GB90/01868, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO91/08405, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 30, 1990, Ser. No. 859,445

Claims priority, application United Kingdom, Dec. 1, 1989, 8927161

Int. Cl.[5] F16H *15/08*

U.S. Cl. 476—10 **10 Claims**



1. A variator transmission of the toroidal-race rolling traction type comprising at least two input discs (**1–4**) and at least two output discs (**11–13**) arranged alternately in coaxial sequence, wherein all discs except the first (**1**) and last (**4**) in the sequence are formed with part-toroidal races (**9, 10**) on both faces of the disc thereby defining a sequence of at least four clearances where an input and output race confront each other across an imaginary torus, and

a separate set of rollers (**14–19**) of adjustable orientation arranged to transmit traction across each successive clearance between the respective input and output races;

means to exert a control force on each said roller;

each said roller being free to adjust its said orientation to a valve at which the said control force is balanced by the resultant reaction force exerted upon the roller at its interface with the said input and output forces;

and means (**35–19**) to transmit drive from the output discs to at least one rotatable output member.

5,308,298

HYDRAULIC CONTROL SYSTEMS

David R. Lambert, Preston, England, assignor to Torotrak (Development) Limited, England

PCT No. PCT/GB91/00414, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO91/14116, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 18, 1991, Ser. No. 920,586

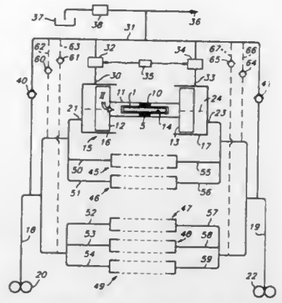
Claims priority, application United Kingdom, Mar. 16, 1990, 9005969

Int. Cl.[5] F16H *15/38*

U.S. Cl. 476—10 **6 Claims**

1. A hydraulic control system for a continuously-variable-ratio transmission of the toroidal-race rolling-traction type, said hydraulic control system comprising at least a first double-acting ram supporting a first roller, said first double-acting ram having two opposed faces which are exposed, in normal use, to pressurized fluid being supplied via at least one pump and two separate fluid supply lines, each said fluid supply line being pressure-controlled by a separate pressure control valve located downstream of the respective ram face, and the discharge from both of said pressure control valves being combined in a common region,

wherein return means are provided for returning pressurized fluid from said common region to a desired one of said fluid supply lines and, when a present difference in fluid pressure between a desired one of said fluid supply lines and said common region occurs, said return means opens



and allows pressurized fluid flow from said common region to a desired one of said fluid supply lines.

5,308,299

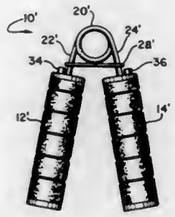
HAND EXERCISER

Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11753

Filed Jul. 26, 1993, Ser. No. 96,884

Int. Cl.[5] A63B *23/16*

U.S. Cl. 482—49 **1 Claim**



1. An improved hand exerciser of a type consisting of two hand grips extending outwardly in a diverging angular relation from each other and a helical coil spring having arm projections in a corresponding diverging angular relation connected from a helical coil configuration to said hand grips and having an operational mode in which said hand grips are squeezed by hand pressure in closing movement towards each other against the resistance of said helical coil spring and open in opposite directional movement when said hand pressure is released to assume outwardly diverging relative positions limited by a link engaged about said arm projections of said helical coil spring, said link undergoing descending tracking movement along said helical coil spring arm projections towards said hand grips when said hand grips are urged through closing movement towards each other, said improvement comprising an upstanding projection on each hand grip in said path of descending tracking movement of said link to limit said movement to a position of movement above each said hand grip which is coincident with said diverging angularly of said helical coil spring arm projections, whereby in said squeezed together position of said hand grips said diverging angular relation of said helical coil spring arm projections contributes to obviating engagement of said link to said arm projections and thereby impeding the opening of said hand grips when hand pressure is released.

5,308,300

STEP-TYPE TRAINING MACHINE AND CONTROL METHOD

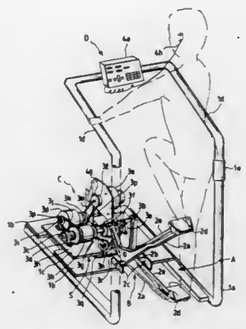
Takashi Chino; Hideo Hata; Kazuhiko Arai, and Masao Ito, all of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 792,633

Claims priority, application Japan, Nov. 15, 1990, 2-307265; Nov. 19, 1990, 2-314987; Jul. 30, 1991, 3-189967

Int. Cl.[5] A63B *22/04*

U.S. Cl. 482—52 **7 Claims**



1. In a step-type training machine having a pair of left and right crank pedals which are forced in a reciprocating up and down movement by an exerciser and an eddy current load means for exerting a load on said pedals to resist said movement of the pedals, the improvement comprising:

a pair of L-shaped cranks to which each of said pedals are secured at one end thereof, said L-shaped cranks being pivotally secured to said machine to allow said pedals to move up and down; and

a crank pedal return mechanism to which said load means exerts a force, said return mechanism including a pair of connectors respectively connected at one end thereof to the other ends of said L-shaped cranks and a spring interconnecting the other ends of said connectors wherein the reaction force of said crank pedals remains constant so as to accurately control the exercise load exerted on the exerciser.

3. A step-type training machine, comprising:

a frame;

a crank pedal portion connected to said frame and being driven by an exerciser between an upper rest position and a lower rest position in a reciprocating manner;

drive means connected to said crank pedal portion for exerting an exercise load thereon so as to control the speed at which said crank pedal portion is driven;

detecting means for continuously detecting the heart rate of said exerciser;

determining means for determining a target heart rate range in accordance with data corresponding to at least the age and sex of the exerciser and for determining the target exercise load in which the detected heart rate is within the target range; and

control means for controlling said exercise load based on the thus determined target exercise load, wherein said crank pedal portion includes a pair of right and left crank pedals which are driven up and down by the feet of said exerciser and wherein said drive means comprises:

a drive shaft rotatably supported on said frame;

a fixed sprocket fixedly mounted on one end portion of said drive shaft;

a pair of right and left free wheel sprockets mounted on said drive shaft;

a speed increaser mounted on said frame and including a

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rotation shaft, a speed increaser sprocket mounted on one end portion of said rotation shaft, and a speed increaser pulley mounted on the other end portion of said rotation shaft;

a first chain circumscribing said fixed sprocket and said speed increaser sprocket;

eddy current load means mounted adjacent said speed increaser and including an input shaft having a timing pulley disposed thereon;

an endless timing belt circumscribing said speed increaser pulley and said timing pulley;

a pair of second chains respectively connected to said crank pedals at one end thereof and engaging said free wheel sprockets wherein up and down movement of said crank pedals causes said drive shaft and said fixed sprocket to rotate, which rotation is transmitted to said speed increaser and said load means via said first chain and said timing belt; and

a spring interconnecting said second chains.

5,308,301

FOLDING STEPPER

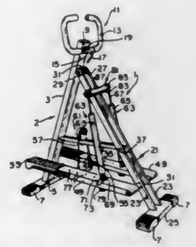
Matt Chiarello, Browns, Ill., assignor to Roadmaster Corporation, Olney, Ill.

Continuation of Ser. No. 806,644, Dec. 13, 1991. This application Apr. 29, 1992, Ser. No. 875,673

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] A63B *22/04*

U.S. Cl. 482—53 **7 Claims**



1. A foldable exercise stair climbing machine comprising:

a support frame having

first support means including a lower end portion adapted to rest upon a horizontal surface;

second support means having a lower end portion adapted to rest upon such surface at a point spaced from said first support means, said second support means having an upper end portion pivotally connected to said first support means;

cross-member means communicating between said first and second support means for holding a set position between said first and second support means, said cross-member means being removably connected to one of said first and second support means;

first and second step members pivotally connected to said second support means, said first support means being positioned between said first and said second step members;

flexible linkage means communicating between said first and second step members for producing equal and opposite pivotal movement of said first and second step members; and

motion inhibiting means connected between said support frame and said step member means for inhibiting downward motion of said step members;

said first support means being pivotally moveable toward said second support means upon disconnection of said cross member means from at least one of said first and second support means;

whereby said first and second support means, said cross member means, said step members and said motion inhibiting means can all be folded together into a flattened assemblage.

5,308,302

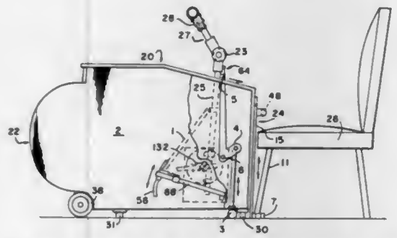
EXERCISE MACHINE FOR SEATED OPERATOR

Samuel Miller, 2724 N. Garden Dr., Apt. 302, Lake Worth, Fla. 33461

Filed Nov. 1, 1993, Ser. No. 143,664

Int. Cl.[5] A63B *21/00, 22/06*

U.S. Cl. 482—60 **9 Claims**



1. A movable exercise machine having rear wheels, support posts and a front end, said machine arranged to be positioned before, and operated by a user with said front end toward said user while said user is seated on a stationary support, the improvement comprising:

A) a retractable pivoting wheel mounted on said machine toward said front end, said wheel arranged for lifting said machine free of said support posts when lowered for ease of positioning on three wheels and enabling said machine to be firmly supported only by said support posts when said wheel is retracted, said pivoting wheel arranged to be raised and lowered by said user while seated;

B) a pair of adjustable hand levers, each hand lever comprising an elongate lower lever portion having a lower end connected to a separate friction mechanism and an upper end pivotally connected by adjustable and lockable pivot means to an upper lever portion, said upper lever portion terminating in a hand grip means for comfortable grasping by a user, said pivot means enabling said grip means to be adjusted through an arc about said pivot means for enhanced operation by a seated user;

C) an elongate floor channel means having a closed bottom web and an open top adapted to receive, when resting on a floor, parallel legs of a support on which a user is seated to thereby anchor said channel means by weight of said support and said user, said channel means provided, at a point substantially midway between said parallel legs, with engaging means;

D) an elongate member connected at an upper end to the front of said machine and at a lower end to a channel engaging element, said channel engaging element arranged for removably engaging said engaging means on said channel means; and

E) a lifting mechanism on said machine connected to said upper end of said elongate member, said lifting mechanism arranged to apply tension on said elongate member when said channel engaging means is engaging said channel means to thereby prevent movement of said machine when operated by said seated user.

5,308,303

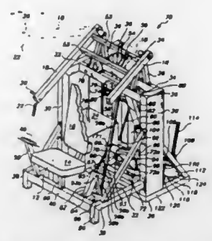
RESISTANCE TRAINING MACHINE

R. Lee Rawls, Woodinville, Wash., and Jeffrey T. Prince, Grass Valley, Nev., assignors to Stairmaster Sports/Medical Products, Inc., Kirkland, Wash.

Filed Oct. 2, 1992, Ser. No. 955,667

Int. Cl.[5] A63B *21/08*

U.S. Cl. 482—97 **64 Claims**



1. An exercise device for a human user, comprising:

a first member movable by the user between a rest position and an end limit of travel position, the user achieving exercise by the application of a moving force thereto to move said first member from said rest position to a desired position toward said end-limit position, and by the application of a resisting force thereto to resist return movement of said first member from said desired position toward said rest position;

a constant weight movable between a lowered position to an elevated position which corresponds to said rest and end-limit positions of said first member, respectively;

a second member operatively connected to said weight and movable within a second member plane between a first position and a second position to move said weight between said lowered position and said elevated position;

a conversion member operatively engaging said first and second members to transmit a selectable force between said first member and said weight as said conversion member moves along a prescribed path within a conversion member plane having a selectable angular orientation, said conversion member being restrained to move along said path within said conversion member plane, said angular orientation of said conversion member plane being selectively adjustable to a plurality of angular orientations between first and second end limit of adjustment angular orientations, said second and conversion members being arranged such that adjustment of said conversion member plane angular orientation to selected angular orientations between said first and second orientations selectively changes the amount of said selectable force coupled by said conversion member between said first member and said weight connected to said second member, adjustment of said conversion member plane angular orientation from said first orientation toward said second orientation selectively increasing said selectable force coupled by said conversion member between said first member and said weight, and adjustment of said conversion member plane angular orientation from said second orientation toward said first orientation selectively decreasing said selectable force coupled by said conversion member between said first member and said weight, thereby the user moving force required to move said first member from said rest position toward said desired position and the user resisting force required to resist return movement of said first member from said desired position toward said rest position can be selectively increased or decreased by adjusting said conversion member plane angular orientation; and

an adjustable member operable to selectively adjust said converion member plane angular orientation between said first and second angular orientations.

5,308,304

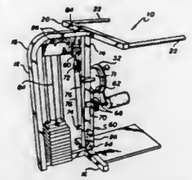
MULTI-HIP EXERCISER

Theodore G. Habing, Long Beach, Calif., assignor to Pacific Fitness Corporation, Cypress, Calif.

Filed Jul. 22, 1992, Ser. No. 918,251

Int. Cl.[5] A03B *21/062*

U.S. Cl. 482—99 **11 Claims**



10. An exercising apparatus, comprising:

a frame having a bar;

a sleeve adapted to slide over said bar;

attachment means for detachably connecting said sleeve to said frame such that said sleeve can be positioned at one of at least two locations on said bar;

a cam selector plate coupled to said sleeve, said cam selector plate being adapted to rotate relative to said sleeve and said frame;

an actuator arm operatively connected to said cam selector plate such that movement of said actuator arm rotates said cam selector plate;

a first cable attached to said cam selector plate and said sleeve;

a first tension pulley attached to said frame and coupled said cam selector plate by said first cable;

a first floating pulley coupled to said first tension pulley and said sleeve by said first cable such that said first floating pulley remains in a same stationary position when said sleeve moved relative to said frame;

a second cable attached to said first floating pulley;

a weight attached to said second cable; and

a second tension pulley attached to said frame and coupled to said first floating pulley by said second cable.

5,308,305

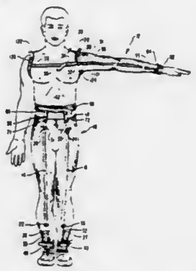
DEVICE TO AUGMENT EXERCISE

Jan W. Romney, 645 E. 5900 South, Salt Lake City, Utah 84107, assignor to Jan W. Romney, Salt Lake City, Utah

Filed Mar. 19, 1991, Ser. No. 671,498

Int. Cl.[5] A63B *21/02*

U.S. Cl. 482—124 **41 Claims**



1. An apparatus for augmenting the exercise of body muscle(s) comprising:

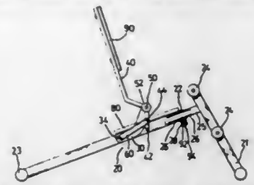
one or more closing-fitting articles of wearing apparel configured to encompass one or more limbs of the user, the article(s) comprising one or more elongate passageways along a portion of the length of the limbs, one or more releasably anchored resistance members, the passageway(s) configured to removably receive the releasably anchored resistance member and to bias the resistance

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member against or toward the body of the user when in use, the resistance member being extendable in a longitudinal direction, wherein the means for anchoring the first end and second end of the resistance member are releasably attached to the body of the user independent of wearing apparel.

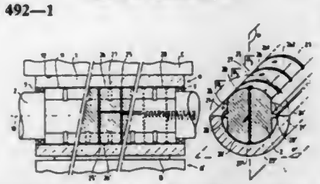
5,308,306
ABDOMEN EXERCISING APPARATUS
Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Ind. Corp., Taichung Hsien, Taiwan
Filed Dec. 18, 1992, Ser. No. 992,730
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—142 **2 Claims**

1. An abdomen exercising apparatus comprising an elongated master rod connected between a front stand and a rear stand, said master rod having a cross bar at the middle, a cushion fastened to said master rod at the top near said front stand, two curved supports respectively connected to said cross bar at two opposite sides relative to said cushion, a back rest movably supported on said curved supports by two cranks and two elastic elements, wherein said curved supports have each a front end curved upwards and terminated to a barrel and a rear end welded to either end of said cross bar and made with a pin at an outer side; said cranks have each a series of screw holes at one end alternatively fastened with a screw rod, a barrel near the screw holes pivotally connected to the barrel on either curved support by a bolt, a set of bushings and a retainer, and a rear part fastened to said back rest at the bottom; said elastic elements are detachably connected between



said curved supports and said cranks to automatically pull said back rest to a top position perpendicular to said cushion, each elastic element having one end connected to the screw rod on either screw hole on either crank and an opposite end connected to the pin on the curved support at the same side; said back rest is moved backwards to a bottom position closely attached to said master rod in line with said cushion as the player sits on said cushion and then lies down; said back rest is pulled upwards to said top position by said elastic elements through said cranks as the player sits up.

5,308,307
WORKING ROLL FOR A ROLLING MILL
Michel Morel, Chelles, and André Ravenet, Les Mureaux, both of France, assignors to CLECIM, Certy-Pontoise, France
Filed Dec. 12, 1991, Ser. No. 805,952
Claims priority, application France, Dec. 14, 1990, 90 15725
Int. Cl.[5] B21B *27/05*
U.S. Cl. 492—1 **5 Claims**



1. A working roll for a rolling mill comprising a support stand composed of two spaced uprights between which is placed a plurality of superposed rolls mounted for rotation about substantially parallel axes, respectively two working rolls (A, A') delimiting a gap for passage of a product (B) to be rolled, said working rolls respectively bearing on at least two backup rolls, said working roll comprising

(a) a stationary central shaft having an axis and a cylindrical outer face;

(b) a tubular jacket mounted for rotation on said central shaft, said tubular jacket having a cylindrical outer face and a cylindrical inner face with a diameter substantially equal, apart from play, to a diameter of said cylindrical outer face of said shaft;

(c) said central shaft being provided with two recesses, respectively on each side of a vertical plane of symmetry (P) constituted by a squeezing plane passing through axes of said working rolls (A, A'), said recesses dividing said cylindrical outer face into two circular bands respectively covering two diametrically opposed angular sectors centered on said plane of symmetry (P);

(d) each said circular band being respectively divided into a sequence of segments by a series of grooves located in spaced planes (P1, P2, P3 . . .) perpendicular to said axis of said shaft and hollowed out in a thickness of said shaft, said grooves provided, respectively, on two opposite bands being located two by two in same planes and said segments being disposed in pairs of two diametrically opposed segments, each having a form of an arched rectangle;

(e) means for circulating a pressurized fluid between each segment and an inner face of said jacket, each segment thus constituting a bearing bush which is separated from each adjacent bush of a same circular band by a said groove, said grooves isolating a fluid film of each bush by collecting excess fluid and discharging said excess fluid toward said recesses; and

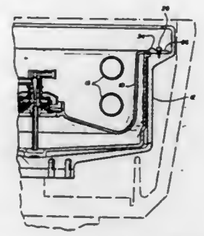
(f) means for individual adjustment of a pressure of said fluid film between each bush and a corresponding zone of said jacket for application on said jacket of radial forces of adjustable intensity from bush to bush, the pressure of said fluid film in bushes of each pair being at a same level.

5,308,308
METHOD OF CARDHOLDER AND POCKET CONSTRUCTION
Thomas A. Bauman, West Bend, Wis., assignor to Enger-Kress Company, West Bend, Wis.
Division of Ser. No. 660,200, Feb. 25, 1991, Pat. No. 5,184,658.
This application Nov. 2, 1992, Ser. No. 976,462
Int. Cl.[5] B31B *41/14, 41/64*
U.S. Cl. 493—199 **7 Claims**



5. A method for constructing a pocket in a cardholder, from a first, sheet of fusible material having a front side and a back side, and a second sheet of fusible material having a front side and a back side, the method comprising: a first step in which slits of desired size are made through the first sheet of fusible material; a second step in which the second sheet of fusible material, having at least one dimension of size equal to the size of the slits in the first sheet of fusible material, is slid through the slits of the first sheet of fusible material, over the front side of the first sheet of fusible material with the back side of the second sheet of fusible material facing the front side of the first sheet of fusible material and under the back side of the first sheet of fusible material with the front side of the second sheet of fusible material facing the back side of the first sheet of fusible material, so that a first portion of the second sheet of fusible material covers the front side of the first sheet of fusible material and a second portion of the second sheet of fusible material is in contact with the back side of the first sheet of fusible material; and a third step in which the second portion of the second sheet of fusible material in contact with the back side of the first sheet of fusible material is fused to the back side of the first sheet of fusible material so that interior pockets are produced.

5,308,309
SECURING SYSTEM FOR CENTRIFUGE CHAMBER
Livingston B. Morris, Devon, Pa., assignor to Therakos, Inc., West Chester, Pa.
Filed Dec. 23, 1992, Ser. No. 996,298
Int. Cl.[5] B04B *9/00*
U.S. Cl. 494—85 **5 Claims**



1. An improved system for separating and irradiating multicomponent bodily fluid, said system including a housing, a rotatable chuck located within said housing, a removable separation irradiation. chamber suitable for mounting in said rotatable chuck and having at least one passageway for the passing of the multicomponent bodily fluid, and a source of radiant energy located proximate said separation/irradiation chamber so as to allow transmission of radiant energy to the interior of said chamber,

wherein the improvement in said system is an apparatus for automatically retaining said removable centrifuge during operation, said apparatus comprising:

a clamp arm having two portions, a first portion securing means and a second portion containing the clamp arm center of mass,

a pivot for allowing at least partial rotation of said clamp arm about the pivot, said pivot located between said first portion having a securing means and said second portion containing the clamp arm center of mass,

said pivot attaching said clamp arm to said rotatable chuck at a location where rotation of the second clamp arm portion about the pivot in a direction away from the chuckchamber central axis causes said clamp arm first portion securing means to take a position above said chamber, preventing its removal.

5,308,310
PLETHYSMOGRAPH SYSTEM AND AIR-TIGHT SEALING ASSEMBLY THEREFOR
Terence M. Roff, Westwood, N.J., and Jerome B. Korten, New York, N.Y., assignors to Vitaltrends Technology, Inc., New York, N.Y.
Filed Aug. 18, 1992, Ser. No. 931,714
Int. Cl.[5] A61G *10/00*
U.S. Cl. 600—21 **26 Claims**

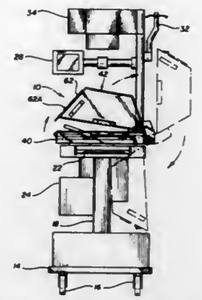
1. A plethysmograph system comprising:

a base;

a lid, the base and the lid defining a substantially air-tight chamber when the lid is positioned upon the base;

a sealing assembly for providing an air-tight seal about a tube, said sealing assembly including first and second sealing members, one of said sealing members being secured to said base, the other of said sealing members being secured to said lid, at least one of said sealing members including a channel including a plurality of resilient walls extending across said channel, said channel including means for directing a tube into said chamber;

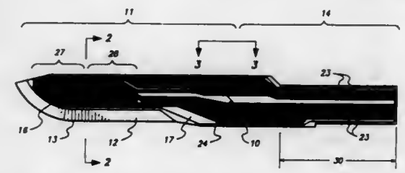
said first and second sealing members engaging each other when said lid is positioned upon said base, said walls being deformed when a tube extends through said channel and said first and second sealing members are engaged with each other, said walls engaging the other of said sealing members when no tube extends through said channel, said



sealing assembly providing a substantially air-tight seal when said first and second sealing members are engaged with each other whether or not a tube extending through said channel, and

means for introducing air into said chamber.

5,308,311
ELECTRICALLY HEATED SURGICAL BLADE AND METHODS OF MAKING
Philip E. Eggers, Dublin, Ohio, and Robert F. Shaw, 1750 Taylor St., San Francisco, Calif. 94108, assignors to Robert F. Shaw, San Francisco, Calif.
Filed May 1, 1992, Ser. No. 877,698
Int. Cl.[5] A61B *17/38*
U.S. Cl. 606—28 **29 Claims**



1. A blade for use in a surgical instrument for hemostatically cutting tissue to reduce bleeding, the instrument including a handle having an electrical terminal, the blade comprising:

a first region of a laminate material having a cutting edge and two lateral sides, the laminate comprising a core of a high strength hardenable material and a pair of outer layers of a material having a high thermal conductivity, each of the pair of outer layers disposed on opposite sides of the core and in thermal communication therewith;

a second region comprising a low thermal conductivity metallic material, the second region metallurgically joined to the first region at a longitudinal joint, the longitudinal joint being mechanically finished to provide a smooth surface, the second region having a portion adapted to engage the handle;

a heating element for heating the first region to a temperature in the range from about 100° C. to about 500° C., the heating element secured to first region in thermal communication therewith and electrically isolated therefrom; and

an electrical lead for connecting the heating element to the electrical terminal, the electrical lead disposed on the first and second regions and extending continuously across the longitudinal joint.

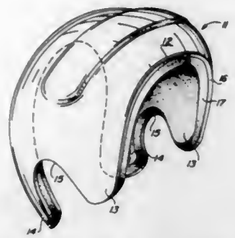
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,312

CRANIAL REMODELING ORTHOSIS

R. Craig Pomatto, and Jeanne K. Pomatto, both of 24200 N. Alma School Rd., #35, Scottsdale, Ariz. 85255

Filed Mar. 5, 1993, Ser. No. 26,774
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—17 4 Claims



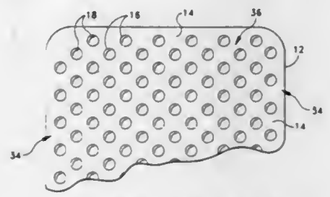
1. A cranial remodeling orthosis comprising a resilient band adapted to extend across the parietal bone region of the cranium and having depending regions shaped to closely confine the temporal bone regions and the mastoid process regions of the cranium with relief areas therebetween to expose the ears of a patient wearing the orthosis, said depending regions of the orthosis being adapted to provide regions of contact which fall within planes of the cranium which have circumferences which are less than the maximum occipitofrontal circumference of the cranium whereby the orthosis is held in place on the cranium.

5,308,313

VENTED WOUND DRESSING

Hamzeh Karami, and Thomas H. Gilman, both of Mansfield, Mass., assignors to The Kendall Company, Mansfield, Mass.

Continuation of Ser. No. 738,983, Jul. 29, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 945,052
Int. Cl.[5] A61F *13/00, 15/00, 13/02;* A61L *15/00*
U.S. Cl. 602—55 12 Claims



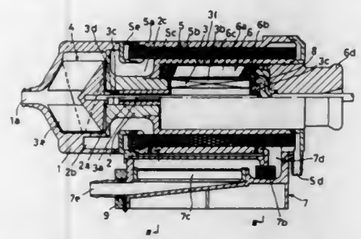
1. A vented wound dressing comprising a thin conformable sheet material a portion of which is adopted for placement as a dressing covering a wound and skin surrounding the wound, the dressing having a periphery defined by opposed edges of the sheet material, the sheet material having opposed surfaces, one of the surfaces carrying a layer of a pressure-sensitive adhesive, the adhesive in that portion for placement on the wound being applied to provide repeating spaced areas containing no adhesive, at least a portion of only the repeating areas of the sheet material containing no adhesive having slits extending through the opposed surfaces of the sheet material to permit transfer of wound fluids through the sheet material unimpeded by a presence of adhesive material which can clog the slits and thereby inhibit fluid transfer therethrough, each of the slits having smaller dimensions than the repeating areas of the sheet material containing no adhesive whereby each slit occupies only a portion of the area containing no adhesive having a slit, the dimensions and number of the slits being such as to retain sufficient moisture to provide a moist healing wound dressing, the adhesive around the periphery of the sheet material being present as a continuous layer uninterrupted by repeating areas containing no adhesive for securing the dressing to skin, the continuous peripheral layer of adhesive defining the portion of the sheet material adapted for placement on a wound, the continuous peripheral layer of adhesive further maintaining a barrier function against bacteria and other external contaminants as well as helping to insure that no wound fluids escape laterally.

5,308,314

INTEGRATED HEART-LUNG MACHINE

Yasuhiro Fukui, 14-13, 3-chome, Kanamecho, Toshima-ku, Tokyo; Akio Funakubo, Sagamihara; Katsumi Takahashi, 771-56, Onazakounosu, Koga-shi, Ibaraki Pref.; Hiroshi Sasagawa, Koga, and Hikaru Nakanishi, Tokyo, all of Japan, assignors to Yasuhiro Fukui, Tokyo and Katsumi Takahashi, Koga, both of Japan

Filed Sep. 11, 1992, Ser. No. 944,086
Claims priority, application Japan, Nov. 19, 1991, 3-329821
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 6 Claims



1. An integrated heart-lung machine, comprising:
a blood pump having a casing of a substantially cup-like shape, the casing having a blood inlet and a guide flange, the casing interiorly defining a pump chamber at an intermediate portion thereof for pumping in and out blood from said blood inlet to said guide flange, said guide flange having a blood flow passage formed therein;
a rotor having a rotational shaft with rotor blades securely fixed to the fore end thereof within said pump chamber and the rotational shaft being journalled in said guide flange;
an artificial lung having one of a substantially doughnut-like and cylindrical shape connected contiguously to said blood flow passage in said guide flange and positioned concentrically with said rotor;
a stator detachably fitted in an intermediate portion between said rotor and said artificial lung; and
a pedestal base located at one side of said artificial lung and provided with a blood outlet in communication with said artificial lung wherein said blood flow passage is of a helical shape and wherein said guide flange includes a blood chamber located between said rotor blades and said rotor which is communicated with said artificial lung substantially along an entire inner peripheral portion thereof and which is communicated with said blood flow passage.

5,308,315

METHOD FOR DETERMINING THE ADEQUACY OF DIALYSIS

Raja N. Khuri, 122 Longmeadow Rd., Greenville, N.C. 27858, and Nazih L. Nakhoul, Greenville, N.C., assignors to Raja N. Khuri, Greenville, N.C.

Filed Jul. 27, 1993, Ser. No. 98,119
Int. Cl.[5] A61M *1/16*
U.S. Cl. 604—4 2 Claims

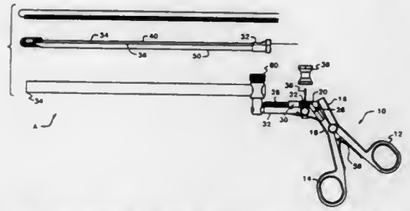
1. A method of determining adequacy of dialysis of a patient, comprising:
(a) providing an enzymatic urease-based sensor;
(b) using said sensor to determine the concentration of urea in dialysate from said dialysis;
(c) determining rates of venous blood flow, dialysis fluid flow and arterial blood flow in said dialysis;
(d) determining a flow ratio defined as the sum of said rates of venous blood flow and said dialysis fluid flow, divided by the rate of arterial blood flow;
(e) determining urea nitrogen concentration in the arterial blood of said patient utilizing said urea concentration in said dialysate and said flow ratio;
(f) calculating a urea reduction ratio;
(g) utilizing the arterial blood urea nitrogen concentration as an absolute quantity and the urea reduction ratio as a relative quantity to determine dialysis adequacy; and
(h) ceasing dialysis of said patient when said dialysis is adequate as determined in step (g).

5,308,316

ENCOSCOPIC KITNER

Donald B. Williams, Deerfield, and Peter L. Visconti, Chicago, both of Ill., assignors to Edward Weck Incorporated, Research Triangle Park, N.C.

Filed Dec. 28, 1992, Ser. No. 997,590
Int. Cl.[5] A61F *13/20*
U.S. Cl. 604—13 10 Claims



1. An instrument for surgical procedures that feeds and retracts absorbent material, comprising:
an elongated housing;
gripping means on said housing for manipulation of said housing;
absorbent material movably mounted to said housing;
means for feeding said absorbent material so that at least a portion thereof selectively extends beyond said housing to replace a portion of said absorbent material which has been retracted into said housing.

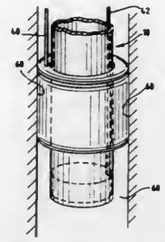
5,308,317

PROTECTIVE TUBE LASER ENDOSCOPY

Mark K. Ferguson, Hinsdale; David Schucart, Highland Park, and Lev Melinyshyn, Mt. Prospect, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Jun. 7, 1990, Ser. No. 534,758
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—22 6 Claims

1. A protective tube for a laser endoscope that prevents the passage of laser smoke towards the oral cavity of a patient, removes debris from said endoscope and which is adapted to be inserted through the oral cavity and into an esophagus of a patient receiving medical treatment, said protective tube comprising a resilient member having a proximal end and a distal end, said proximal end including a mouthpiece, the improvement comprising:
said distal end including a first expandable cuff and a second expandable cuff which are adapted to be inflated by cuff



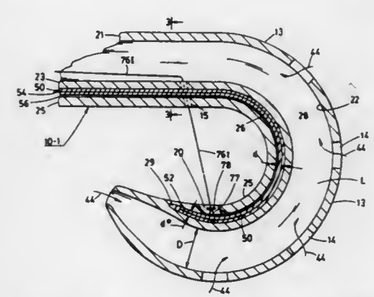
expanding means after insertion of said tube in said esophagus, said first expandable cuff after expansion being capable of forming a first seal between an outer surface of said tube and an inner surface of said esophagus and said second expandable cuff after expansion being capable of forming a second seal between an inner surface of said tube and an outer surface of said laser endoscope.

5,308,318

EASY-EXCHANGE DRAINAGE CATHETER SYSTEM WITH INTEGRAL OBTURATOR CHANNEL

Walter M. Plasscbe, Jr., 1209 Clover St., Eochester, N.Y. 14610

Filed May 7, 1993, Ser. No. 59,142
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—54 19 Claims



1. A method of easy exchange of an occluded percutaneous drainage catheter system along a tract into a fluid collection space of a patient's body region to be drained through a main drainage lumen and having an obturator in an obturator channel, the method comprising the steps of:
inserting a non-occluded drainage catheter to remove body fluid;
withdrawing the obturator from the obturator channel, thereby providing an unobturated channel;
inserting a guidewire slidably through the unobturated channel into the fluid collection space of the body region;
holding the guidewire in its inserted position;
removing the drainage catheter system along the held guidewire when the catheter is occluded;
introducing an exchange drainage catheter system with the lumen passing over and along the guidewire along the same tract into the fluid collection space of the region; and
pulling the guidewire from the exchange catheter system.

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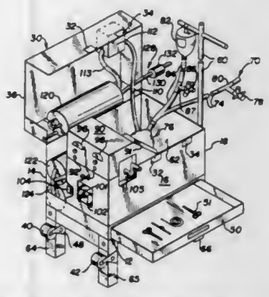
6. An easy-exchange percutaneous drainage catheter system insertable through a tract into patient's body for drainage of fluids from body regions or organs having blocked natural drainage pathways, comprising:
a drainage catheter insertable through said tract and having at least one main drainage lumen extending to a distal section within the fluid collection space of the organ to be drained;
an obturator channel alongside and connected to said main lumen and insertable therewith in said tract, said channel having a distal termination at said distal section; and
a withdrawable obturator sealingly located within said obturator channel and extending to the distal termination of said obturator channel or the vicinity thereof, means for withdrawing said obturator from said channel, means for replacing said obturator with a guidewire along which an exchange catheter system can be inserted through said tract.

5,308,319
CARDIO ASSIST SYSTEM AND INSERTION DEVICE THEREFOR
Hirofumi Ide, Tokyo; Atsushi Yamaguchi, Omiya, and Harubiko Masuda, Fujisawa, all of Japan, assignors to Sumitmo Bakelite Company Limited, Tokyo, Japan
Continuation of Ser. No. 630,623, Dec. 20, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 998,768
Claims priority, application Japan, Dec. 28, 1989, 1-338140; Nov. 30, 1990, 2-329555
Int. Cl.[5] A61N *1/362*
U.S. Cl. 600—18 **4 Claims**



1. A cardio assist system comprising:
a catheter for insertion from one femoral artery into a left ventricle through an aorta, said catheter including a main lumen, a sub-lumen which is sealed at a distal end thereof, and a distal end of said catheter having an open end of said main lumen for retention in said left ventricle;
a balloon means gas-tightly attached and surrounding a distal end portion of said catheter to define therebetween a balloon chamber, for inflation and deflation in a descending aorta;
a plurality of apertures provided in said distal end portion of said catheter for communication between said balloon chamber and said sub-lumen;
a balloon driver means connected to a proximal end of said sub-lumen for supplying a drive gas to and discharging it from said balloon chamber through said sub-lumen and said apertures, said balloon driver means being synchronized with a patient's electrocardiogram or arterial pressure waveform so as to inflate and deflate said balloon means to produce a pulsatile flow; and
a blood pump connected in suction to said open end of said main lumen at a proximal end of said main lumen of said catheter;
a return line connected to said blood pump for retention in another femoral artery or subclavian artery;
said blood pump constituting means for selectively sucking blood from said left ventricle through said main lumen and thereafter pumping said blood through said return line to said another femoral artery or subclavian artery.

5,308,320
PORTABLE AND MODULAR CARDIOPULMONARY BYPASS APPARATUS AND ASSOCIATED AORTIC BALLOON CATHETER AND ASSOCIATED METHOD
Peter Safar; S. William Stezoski, and Miroslav Klain, all of Pittsburgh, Pa., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.
Filed Dec. 28, 1990, Ser. No. 637,565
Int. Cl.[5] A61M *1/14*
U.S. Cl. 604—4 **8 Claims**

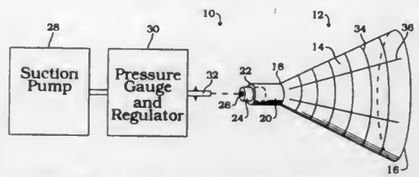


1. A portable and modular cardiopulmonary bypass apparatus comprising:
first cannula assembly means for withdrawing blood from a patient;
pump means connected to said first cannula assembly means for receiving said withdrawn blood and for moving said blood through said apparatus;
first tubing means connected to said pump means to transport said blood away from said pump means;
oxygenator means for receiving said blood from said first tubing means and for oxygenating said blood;
second cannula assembly means connected to said oxygenator means for returning said oxygenated blood to said patient;
said apparatus being portable, whereby said apparatus can be used by medical personnel at the scene of an accident or of a cardiac arrest victim or the like;
surgical tray means for containing surgical tools removably stored in said apparatus;
retractable legs positioned on the underside of said apparatus, whereby said legs may be deployed when said apparatus is in use to stabilize said apparatus; and
said retractable legs being of different dimensions, whereby said apparatus can be obliquely positioned when said retractable legs are deployed.

5,308,321
RETAINER ASSISTED BY VACUUM EXPANSION SYSTEM
Donna J. Castro, 527 Ave. B, Redondo Beach, Calif. 90277
Filed May 5, 1992, Ser. No. 878,832
Int. Cl.[5] A61M *1/06*
U.S. Cl. 604—74 **24 Claims**

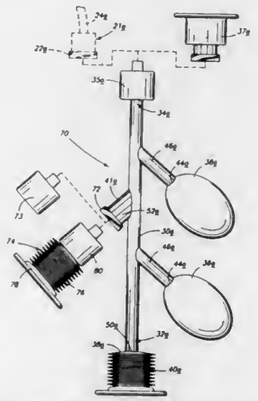
1. A retainer operable with a suction source for retaining a portion of a patient's anatomy for at least one of an examination and engagement with a medical instrument, the retainer comprising:

a cup member having an interior configured to receive at least a portion of a patient's anatomy therein; and
a suction port provided in communication with the interior of the cup member and operable to be connected to the suction source for communicating suction pressure from the suction source into the interior of the cup member to



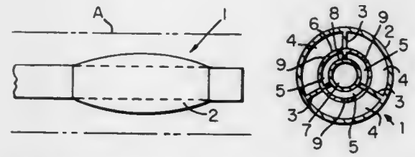
expand the portion of a patient's anatomy received therein;
wherein the cup member has at least one wall defining the cup member interior and a plurality of indicia lines provided on the wall with each of said indicia lines crossing at least one other of said indicia lines to define a plurality of discrete wall areas bordered by said indicia lines.

5,308,322
CENTRAL VENOUS CATHETER ACCESS SYSTEM
Patrick O. Tennican, W. 105 8th Ave., Suite 350, Spokane, Wash. 99204; L. Myles Phipps, 2811 E. 11th, Spokane, Wash. 99202, and Russell A. Michaelsen, P.O. Box 847, Spokane, Wash. 99210
Filed Apr. 19, 1993, Ser. No. 48,906
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—83 **18 Claims**



1. A central venous catheter access apparatus, comprising:
a central venous access system comprising a manifold;
central venous catheter connector means for connecting the access system to a central venous catheter, the central venous catheter connector means being in bi-directional fluid communication with the manifold for providing bi-directional fluid communication between the manifold and a central venous catheter when the access system is connected to a central venous catheter;
a flush syringe connected in fluid communication with the manifold, the manifold and central venous catheter connector means providing fluid communication from the flush syringe to a central venous catheter when the access system is connected to a central venous catheter;
a fluid withdrawal syringe connected in fluid communication with the manifold, the manifold and central venous catheter connector means providing fluid communication between a central venous catheter and the fluid withdrawal syringe to allow withdrawal of fluid from a central venous catheter through the connector means when the access system is connected to a central venous catheter; and
a transfer lumen connected in fluid communication with the manifold, the manifold and central venous catheter connector means providing fluid communication between the transfer lumen and a central venous catheter when the access system is connected to a central venous catheter, the transfer lumen allowing fluid passage between a transfer syringe and a central venous catheter when the access system is connected to a central venous catheter.

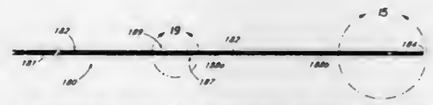
5,308,323
MULTIPLE COMPARTMENT BALLOON CATHETER
Ichiro Sogawa; Shin-ichiro Niwa; Koro Yotsuya; Takafumi Uemiya, and Shin-ichi Kanazawa, all of Osaka, Japan, assignors to Sumitomo Electric Industries. Ltd., Osaka, Japan
PCT No. PCT/JP89/00575, § 371 Date Feb. 6, 1990, § 102(e) Date Feb. 6, 1990, PCT Pub. No. WO89/11889, PCT Pub. Date Dec. 14, 1989
Continuation of Ser. No. 465,087, Feb. 6, 1990, abandoned. This PCT application Jun. 6, 1989, Ser. No. 24,864
Claims priority, application Japan, Jun. 6, 1988, 63-74906[U]
Int. Cl.[5] A61M *37/00, 29/00*
U.S. Cl. 604—95 **2 Claims**



1. A catheter comprising:
a tube sized so as to be capable of being inserted into a vessel of the human body, said tube having partitions for dividing said tube into a plurality of channels for carrying a first fluid, said tube having a tip disposed at an end thereof;
a balloon disposed about said tip of said tube, said balloon including radial walls defining multiple compartments, said compartments being disposed between said walls inside of said balloon, each compartment corresponding to a respective channel of said tube, said balloon compartments further including separation walls defined by said tube for separating said compartments from corresponding channels, each said separation wall having an opening so that each compartment can be selectively inflated by directing fluid into a corresponding channel and through said opening enabling the position of said catheter to be controlled by contact with a wall of said vessel.

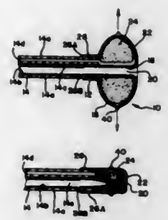
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5,308,324
STEERABLE MEDICAL DEVICE
Gary R. Hammerslag, Dana Point, and Julius G. Hammerslag, San Juan Capistrano, both of Calif., assignors to Pilot Cardiovascular Systems, Inc., San Clemente, Calif.
Division of Ser. No. 865,357, Apr. 8, 1992, Pat. No. 5,203,772, which is a continuation-in-part of Ser. No. 583,819, Sep. 17, 1990, Pat. No. 5,108,368, which is a continuation-in-part of Ser. No. 461,049, Jan. 4, 1990, Pat. No. 4,998,916, which is a continuation-in-part of Ser. No. 295,124, Jan. 9, 1989, Pat. No. 4,921,482. This application Mar. 17, 1993, Ser. No. 32,681
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **30 Claims**



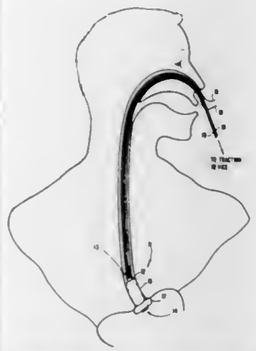
1. A steerable device for transluminal insertion into a body cavity and controlled negotiation of branches and turns therein, said device comprising:
an elongate flexible housing having a proximal end and a distal end and at least one lumen extending axially therethrough;
a steering element secured within the lumen and adapted to displace the distal end of the housing in a lateral direction; and
at least one deflection wire axially movably disposed within the lumen of the flexible housing and extending from a distal point of attachment with respect to the steering element throughout the length of the flexible housing to the proximal end thereof;
wherein axial movement of said deflection wire in a proximal direction displaces the axis of a portion of the housing in a lateral direction to facilitate steering of said device through the body cavity.

5,308,325
RETENTION BALLOON FOR PERCUTANEOUS CATHETER
David G. Quinn, Grayslake, and Erik Andersen, Gurnee, both of Ill., assignors to Corpak, Inc., Wheeling, Ill.
Filed Jan. 28, 1991, Ser. No. 646,889
Int. Cl.[5] A61M *29/00, 5/32*
U.S. Cl. 604—96 **5 Claims**



1. In a single body access tube having an inner surface and an outer surface defining a fluid lumen and an inflation lumen, the tube including an inflatable retention member carried near a distal open end of the tube, the member having an inflation/retention chamber surrounding the outer surface of the tube, the member circumferentially secured to the outer surface of the tube, the improvement comprising:
the member being circumferentially secured to the distal open end of the tube and to both the inner surface and the outer surface of the tube, the member having an axial opening communicating with the fluid lumen of the tube, the inflation chamber of the member being substantially foam filled and extending beyond the distal open end of the tube so that no portion of the tube passes through the chamber;
such that when inflated, the member projects beyond the distal end of the tube and assumes an outer configuration having an outer diameter greater than the outer diameter of the tube, when deflated, the member collapses upon itself and assumes an outer collapsed configuration having an outer diameter no greater than the outer diameter of the tube.

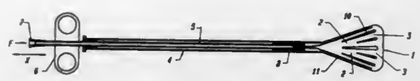
5,308,326
BALLOON TAMPONADE DEVICES AND METHODS FOR THEIR PLACEMENT
David S. Zimmon, 7 Farm View Rd., Port Washington, N.Y. 11050
PCT No. PCT/US90/03684, § 371 Date Dec. 30, 1991, § 102(e) Date Dec. 30, 1991, PCT Pub. No. WO91/00752, PCT Pub. Date Jan. 24, 1991
Continuation-in-part of Ser. No. 372,875, Jun. 28, 1989, abandoned. This PCT application Jun. 28, 1990, Ser. No. 781,224
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **24 Claims**



1. A balloon tamponade device for treating bleeding sites within the digestive tract, said device comprising:
a tube having proximal and distal open ends;
a bridle attached to aid tube, said bridle adapted to extend up the esophagus to a traction means, said bridle adapted to secure and position said proximal open end of said tube within the digestive tract to permit normal feeding and swallowing function;
a first inflatable balloon mounted over said tube; and
a first inflation lumen opening into said first inflatable balloon, for directing pressurized fluid to inflate said first balloon.

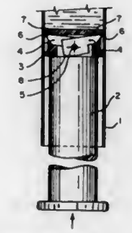
5,308,327
SELF-DEPLOYED INFLATABLE RETRACTOR
Malcolm D. Heaven, Newark, and Stephen J. Shapiro, Encino, both of Calif., assignors to Advanced Surgical Inc., Princeton, N.J.
Filed Nov. 25, 1991, Ser. No. 797,727
Int. Cl.[5] A61H *29/00*
U.S. Cl. 604—96 **12 Claims**

1. A medical device usable within a body cavity comprising:
an inflatable and collapsible retractor blade, the retractor blade having a first configuration in a collapsed state and a second configuration in an expanded state, the retractor blade including a substantially flat planar section in the expanded state, the the retractor blade being introducible into a body cavity by passing the retractor blade through a tube while the retractor blade is in the collapsed state, and the retractor blade being expandable from the first configuration to the second configuration when the retractor blade is inserted into the cavity beyond an end of the tube; and



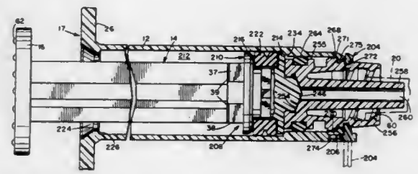
fluid actuating means for expanding the retractor blade from the first configuration to the second configuration, the fluid actuating means comprising a conduit supported by the retractor blade, the retractor blade being expanded into the second configuration by supplying pressurized gas or liquid to the conduit.

5,308,328
SINGLE-USE SYRINGE
Antonio S. Gonzalez, Canyoles 6., 46900 El Vedat De Torrent (Valencia), Sweden
PCT No. PCT/ES91/00047, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO92/01486, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 25, 1991, Ser. No. 838,417
Claims priority, application Sweden, Jul. 25, 1990, 9002007
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **2 Claims**



1. A single-use syringe having a cylindrical body, piston means mounted in said body and movable along a longitudinal central axis therein in a respective fluid suction stroke and an opposite fluid ejection stroke seal means adjacent one end of the said piston means for fluid sealing between said body and said piston means, one or more cutting arms mounted adjacent said one end of said piston means for pivotal movement about one or more pivot axes transverse to said longitudinal axis between a retracted position when said piston means is moved on a suction stroke in said body and a cutting position when said piston means is moved on an ejection stroke for cutting an opening in a wall portion of said body, said pivot axes being in a fixed position relative to said piston means each said cutting arm having a pointed free end portions passing through a side portion of said seal means firmly securing said arm against pivotal movement penetrating said body during a suction stroke, each of said arms having a bevelled, stop surface engaging said piston means to prevent pivotal movement in one direction for allowing said arms to move along the inside of said cylindrical body during a stroke without cutting suction action, each of said arms having a sharpened front edge end section forming a cutting blade which is pivoted to a cutting position as said piston means moves on an ejection stroke inside of said cylindrical body to penetrate and cut through said wall of the said cylindrical body rendering said syringe unusable for further use after said ejection stroke is stopped.

5,308,329
RETRACTABLE SYRINGE WITH A CLOSED BARREL
Matthew S. Mazur, Coronado, and Carlos H. Manjarrez, Alta Loma, both of Calif., assignors to U.S. Medical Instruments, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 714,431, Jun. 13, 1991, Pat. No. 5,205,824. This application Sep. 2, 1992, Ser. No. 939,449
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **53 Claims**



1. A retractable syringe comprising:
a syringe barrel having an internal chamber with open forward and rearward ends and a piston and shaft in the barrel with one end of the shaft extending out the rearward open end;
a needle holder and needle releasably held in the forward end of the barrel in a first position in which the needle holder projects partially out of the open forward end of the barrel;
said piston and needle holder having engageable means for selectively securing the piston to the needle holder;
said piston and needle holder having engageable means for selectively securing the piston to the needle holder;
said piston being movable in said barrel for retracting the needle holder from said first position to a retracted position in which the barrel encloses the needle holder and needle;
said shaft being breakable along its length
said needle holder having a first circumferential slot;
said forward opening of said barrel having a circumferential lip;
said lip fitting in said slot for releasably securing said needle holder in a releasable position;
said needle holder having a second circumferential slot rearward of said first circumferential slot; and
an O-ring positioned in said slot for resiliently sealing the inner barrel opening adjacent the forward end.

5,308,330
SYRINGE HAVING NEEDLE ISOLATION FEATURES
Jean P. Grimard, Vif, France, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Sep. 16, 1992, Ser. No. 945,796
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **17 Claims**

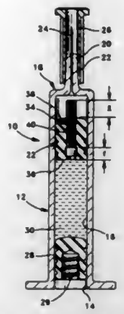
1. A hypodermic syringe comprising:
a barrel having opposed proximal and distal ends and a fluid-retaining chamber extending therebetween, said distal end of said barrel having a passageway extending therethrough and communicating with said chamber;
a stopper slidably disposed in fluid-tight engagement in said chamber, said stopper having opposed proximal and distal ends, an aperture extending through said stopper from said proximal end to said distal end and defining an axial length;
a plug having a head positioned in said aperture of said stopper and a tail extending distally from said head and projecting beyond said distal end of said stopper, said aperture including a sealing portion along its length, said

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head being in fluid-tight engagement with said sealing portion;

means for allowing fluid flow between said sealing portion of said aperture and said tail so that fluid can flow through said aperture when said tail is positioned within said sealing portion;

whereby distally directed fluid pressure in the chamber



causes said stopper and said plug to move simultaneously until said tail of said plug engages said distal end of said barrel, whereafter the fluid pressure urges said stopper distally independent of said plug to disengage said head of said plug from said sealing portion of said aperture so that said tail is positioned within said sealing portion of said aperture and to permit fluid flow between said tail and said sealing portion toward said passageway of said barrel.

5,308,331

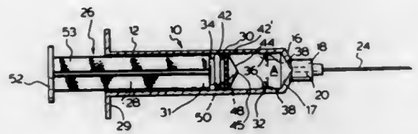
SINGLE USE SYRINGE

Les Avila, 170 Oakmount Rd., Toronto, Ontario, Canada M6P 2M9 , and Samir Machhour, P.H. 11, 284 Mill Road, Etobicoke, Ontario, Canada M9C 4W6

Continuation of Ser. No. 635,008, Dec. 28, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 998,608

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **8 Claims**



1. A non-reusable hypodermic syringe, comprising:

(a) an elongated cylinder open at one end and substantially closed at the opposite other end;

(b) a hollow member formed on said other and defining an internal duct communicating with the interior of said cylinder, said hollow member being configured and dimensioned to have a hypodermic needle affixed to it;

(c) a plunger means comprised of a rigid shaft member and a resilient piston member releasably attached to a first end of the shaft member, the piston member fitting into the interior of said cylinder in longitudinally sliding, frictional sealing engagement therewith;

(d) a retention means positioned on the interior wall of the cylinder adjacent to but spaced from said other end and projecting into the interior of the cylinder so as to define a terminal end zone of the cylinder between said other end and said retention means said retention means being comprised of a continuous, inwardly inclined, annular ramp portion having a generally parabolic slope, of increasing inside diameter towards the other end, said ramped portion reaching a minimum inside diameter and terminating at an outwardly stepped generally planar annular wall portion, the plane defined by said annular wall portion being arranged substantially transverse to the axis of the said cylinder;

(e) an engagement member comprised of the trailing face of the piston member, which trailing face is substantially planar and of greater outside diameter than said minimum inside diameter of the retention means, the plane defined by said trailing face being oriented substantially transverse to the axis of the cylinder;

whereby, the retention means is configured and dimensioned to cooperate with the piston member and the engagement member to allow insertion of the piston member into said terminal end zone upon urging by the shaft member in a first longitudinal direction towards said other end, so that said piston member completely enters said terminal zone and is thereby prevented from further sliding movement in said longitudinal direction and to blockingly engage the engagement member upon retraction of the shaft member in a second opposite longitudinal direction so as to cause release of the piston member from the shaft member and retention of the piston member within the terminal end zone upon continued retraction of the shaft member.

5,308,332

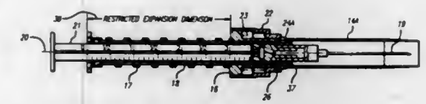
ACTUATOR SPRING FOR SYRINGE SHEATHS

John A. B. Dillard, III, Camarillo, and James A. Orr, Goleta, both of Calif., assignors to Square One Medical, LP, Camarillo, Calif.

Division of Ser. No. 901,095, Jun. 19, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 7,261

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **3 Claims**



1. A hypodermic syringe having:

a) a hollow tubular syringe body,

b) a hollow needle communicating with the hollow of the syringe body,

c) a reciprocal tubular needle sheath disposed on the exterior of the syringe body,

d) a spring engaging the syringe body and the sheath and expandable to move the sheath to cover the needle and having a free expansion dimension, and

e) a latch engaging the syringe body and the sheath to normally latch the sheath over the needle,

characterized by said latch latching the body and sheath when the spring has expanded to not more than 90% of its free expansion dimension.

5,308,333

AIR ELIMINATING INTRAVENOUS INFUSION PUMP SET

James G. Skakoon, Melrose, Mass., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 804,823, Dec. 6, 1991, abandoned. This application May 24, 1993, Ser. No. 66,916

Int. Cl.[5] A61M *1/00, 5/00*

U.S. Cl. 604—126 **11 Claims**

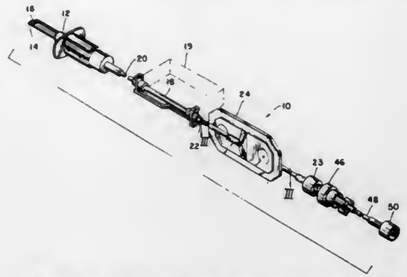
1. An intravenous set having an upstream end and a downstream end and comprising:

receiving means for receiving a supply of pharmaceutical product solution at the upstream end;

peristaltic pumping section means in fluid communication with said receiving means, said peristaltic pumping section means being arranged and constructed to interface with a peristaltic pump;

an air eliminating filter in fluid communication with said pumping section means for receiving said solution propelled by said peristaltic pump form said receiving means;

a positive crack pressure anti-siphon valve downstream from said air eliminating filter, wherein said valve is arranged to



maintain said solution within said eliminating filter at a preselected threshold level above atmospheric pressure, wherein said valve precludes flow of solution through sad valve in the direction of said means for receiving a supply of pharmaceutical product solution and wherein said valve seals to prevent flow of solution through said valve away from said means for receiving a supply of pharmaceutical product solution when pressure across said valve as measured from said air eliminating filter to atmosphere falls below a predetermined positive threshold; and

means for engaging an IV access device downstream from said valve at the downstream end.

5,308,334

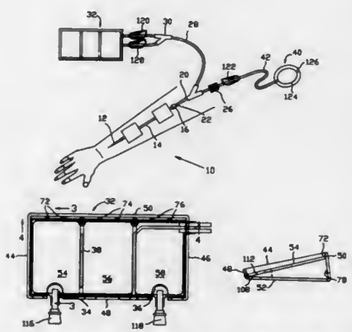
CLOSED SYSTEM FOR IV SITE FLUSH

Gregory E. Sancoff, Leucadia, Calif., assignor to Block Medical, Inc., Carlsbad, Calif.

Continuation of Ser. No. 634,408, Dec. 27, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 842,443

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—131 **19 Claims**



1. A closed system for flushing an IV infusion site comprising:

a box-like housing having a chamber;

a unitary pliable reservoir assembly disposed in said chamber and comprising a first fluid reservoir for containing a first flush fluid, a second fluid reservoir for containing a second flush fluid, said first and said second reservoirs are disposed in side by side relation and one of said reservoirs is divided into two interconnected chambers;

a tubing array connecting said first and said second reservoirs together and for connecting to an IV infusion site comprising a common tube having means on one end thereof for connection to said site, and means on the other end thereof for controlling communication of each of said first and said second reservoirs via said common tube to said site; and

means for selectively positively collapsing each of said first and said second reservoirs for controlling the flow of a fluid therefrom.

5,308,335

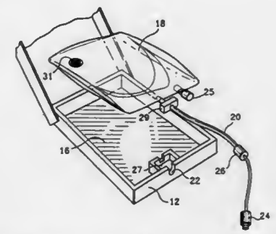
INFUSION PUMP, TREATMENT FLUID BAG THEREFOR, AND METHOD FOR THE USE THEREOF

Stephen O. Ross, Vista, and Mark D. McWilliams, San Diego, both of Calif., assignors to Medication Delivery Devices, San Diego, Calif.

Continuation of Ser. No. 720,658, Jun. 25, 1991, Pat. No. 5,207,645. This application Nov. 2, 1992, Ser. No. 970,299

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—141 **20 Claims**



1. A collapsible fluid treatment bag useful in a infusion pump comprising:

said collapsible treatment fluid bag;

an inflatable bladder juxtaposed with said treatment fluid bag;

means to vent said bladder;

means for impinging said bladder against said treatment fluid bag as said bladder is inflated;

means for electronically controlling the pressure of said bladder so as to collapse said treatment fluid bag and controllably expel treatment fluid therefrom; and

an outlet tube in fluid communication with said treatment fluid bag and said patient; wherein said collapsible fluid treatment bag comprises:

an attached extension set; and

activator means capable of interacting with the means for electronically controlling the pressure of said bladder so as to enable said means for electronically controlling the pressure of said bladder to operate; wherein said means for electronically controlling the pressure of said bladder is disabled in the absence of the activator means of said fluid treatment bag.

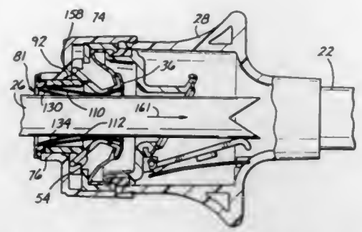
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,336

SEAL PROTECTION MECHANISM

Charles C. Hart, Huntington Beach, and Mark A. Ritchart, Murrieta, both of Calif., assignors to Applied Medical Resources, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 732,141, Jul. 18, 1992, Pat. No. 5,209,737. This application Sep. 28, 1982, Ser. No. 952,300
Int. Cl.[5] A61M 5/178
U.S. Cl. 604—167 24 Claims



1. An access device having an axis extending between a proximal end and an opening distal end, and properties for facilitating introduction into the body of an instrument having a pointed distal tip, the device comprising:

a housing having walls defining a channel extending through the device;

a valve disposed in the housing across the channel and adapted to form a seal around the instrument when the instrument is inserted into the channel;

the valve including inner portions defining an aperture to receive the instrument and outer portions extending radially outwardly of the inner portions;

means having a continuous, generally conical inner surface engageable by the instrument, and positioned between the instrument and at least the outer portion of the valve for isolating the valve from the pointed distal tip during insertion of the instrument;

the valve being formed of an elastomeric material; and

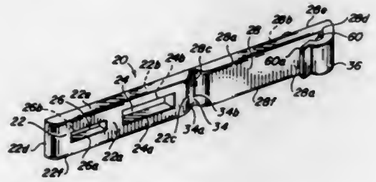
the isolating means being formed of a material having compliance less than that of the elastomeric material forming the valve in order to distribute the insertion forces along the valve.

5,308,337

MEDICAL TUBE CLIP DEVICE

Timothy A. Bingisser, 12431 110th La., NE. #N101, Kirkland, Wash. 98034

Filed Mar. 16, 1993, Ser. No. 33,265
Int. Cl.[5] A61M 5/32, 15/08
U.S. Cl. 604—174 17 Claims



1. A tube clip device, comprising:

(a) a flat base member having a pair of opposite surfaces and a plurality of first attachment elements, said first attachment elements including an elongated bar slot and an elongated stud slot being separate and spaced from one another and defined through said flat base member between and opening at said opposite surfaces of said flat base member, said bar slot being greater in length than said stud slot;

(b) a flat closure member having a pair of opposite sides and a plurality of second attachment elements being matable and interengageable with said first attachment elements for attaching said device to a garment, said second attachment elements including an elongated bar and a cylindrical stud being separate, shaped different and spaced from one another and projecting outwardly from one of said opposite sides of said closure member;

(c) means for pivotally connecting said base member and said closure member together for pivotal movement relative to one another between opened and closed positions; and

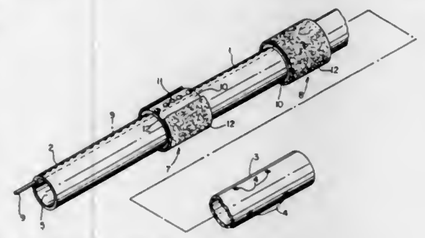
(d) means mounted on the other of said opposite sides of said closure member for releasably clasping a flexible tube.

5,308,338

CATHETER OR THE LIKE WITH MEDICATION INJECTOR TO PREVENT INFECTION

G. Baird Helfrich, 4001 89th St., Lubbock, Tex. 79423

Filed Apr. 22, 1993, Ser. No. 50,659
Int. Cl.[5] A61M 5/32, 25/00
U.S. Cl. 604—175 24 Claims



1. A catheter comprising:

a) a tubular body having a tube wall, proximal and distal ends, and an exterior surface, adapted to be positioned in an operative position in a living body wall such that said proximal end is positioned outside the living body and said distal end lies within the living body inwardly of the body wall;

b) at least one primary interior channel within said tubular body, extending substantially the entire length of said tubular body and having openings at said proximal and distal ends, the opening at said distal end being positioned to communicate with the interior of the living body when said tubular body is in its operative position;

c) a cuff having proximal and distal ends and comprising an inner base sleeve and a outer porous cylindrical pad mounted on said inner base sleeve and flow ports extending through said inner base sleeve and said tubular body; said inner base sleeve being disposed annularly and engagingly around said tubular body, and adapted to be located within the body wall of the living body when said tubular body is in its operative position;

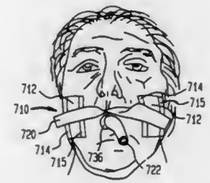
d) a secondary channel within said tubular body, extending from said proximal end a distance along said tubular body and being positioned to communicate with said flow ports extending through said tube wall at a point located between said proximal and distal ends of said cuff, said secondary channel permitting the introduction of disinfectant fluid through said flow ports to engage and cleanse the body wall.

5,308,339

UNIVERSAL CLAMP

Glenda G. Kalt, Boca Raton, Fla.; Dale K. Straub, Alhambra, Calif., and Peter Piwonka, Munich, Fed. Rep. of Germany, assignors to Medical Distributors, Inc., Boca Raton, Fla.

Continuation of Ser. No. 740,911, Aug. 6, 1991, abandoned, which is a division of Ser. No. 366,300, Jun. 30, 1989, Pat. No. 5,037,397, and a continuation of Ser. No. 86,473, Aug. 16, 1987, Pat. No. 4,838,867, and a continuation-in-part of Ser. No. 28,927, Mar. 23, 1987, Pat. No. 4,838,878, which is a division of Ser. No. 730,344, May 3, 1985, Pat. No. 4,702,736, and a continuation-in-part of Ser. No. 813,730, Dec. 27, 1985, Pat. No. 4,738,662, which is a continuation-in-part of Ser. No. 730,344, Dec. 27, 1985. This application Oct. 5, 1992, Ser. No. 956,829
The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—180 8 Claims



1. A clamp for holding a nasal tube in a patient's nostril, said clamp comprising:

a) a base for adhering said clamp to the patient's nose;

b) a flap;

c) a first securing device for releasably securing said flap to said base; and

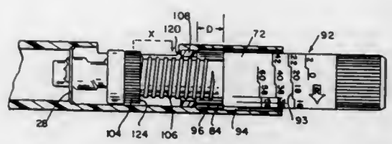
d) a second securing device for securing the nasal tube at an angle from the nostril without crimping the tube.

5,308,340

MULTIPLE DOSE INJECTION PEN

Dale C. Harris, Fairland, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 960,314, Oct. 13, 1992, Pat. No. 5,226,895, which is a continuation of Ser. No. 361,132, Jun. 5, 1989, abandoned. This application Jun. 17, 1993, Ser. No. 79,307
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—208 29 Claims



1. An improved means for adjustment of the dosage of liquid to be injected from a syringe having a housing for receiving a container of liquid, the container of liquid having a closed first end and a piston closing a second end of the container, the housing having a proximal end and a distal end, the distal end being adapted to receive an injection needle assembly for permitting liquid to pass out of the container first end, a plunger rod, having a non-cylindrical cross-section with a first surface, including threads, and a second surface, received within the housing for exerting a force on the piston closing the container second end, the improvement comprising:

first means received within the housing adjacent the container second end for preventing rotation of the plunger rod in relation to the housing;

second means engaging a second surface of the plunger road for restricting movement of the plunger rod toward the housing proximal end,

third means used to adjust the dosage of liquid to be injected from the syringe, which means rotatably engages a first surface of the plunger road for calibrated axial movement with respect to the plunger rod and housing toward the housing proximal end,

fourth means fixed with respect to the housing for stopping any movement of the third means toward the housing distal end at a fixed position relative to the housing, and

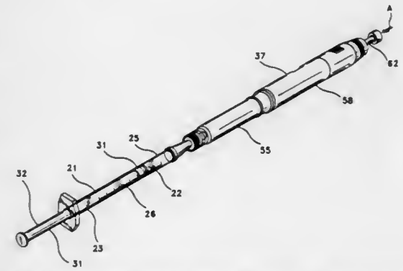
limit means for limiting the maximum calibrated movement of the third means.

5,308,341

METHOD OF TESTING THE DOSE ACCURACY OF A MEDICATION DELIVERY DEVICE

Lawrence H. Chanoch, Mahwah, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 28, 1993, Ser. No. 127,850
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—208 6 Claims



1. A method for testing the dose accuracy of a medication delivery device comprising the steps of:

a) providing a syringe assembly having a hollow barrel with volume measuring indicia on said barrel, said barrel including an internal chamber, a slidable stopper in said chamber, a needle cannula at a distal end of said barrel, said needle cannula having a lumen therethrough in fluid communication with said chamber;

b) providing a medication delivery pen having a distal end including a pierceable septum and means for engaging a needle assembly, a reservoir containing liquid adjacent to said septum, a movable plunger for delivering liquid from said reservoir, said plunger projecting from a proximal end of said pen, and dose setting means for manually selecting the volume of liquid to be delivered by action of said plunger;

c) manually activating said dose setting apparatus to select the volume of liquid to be delivered from said pen;

d) piercing the septum of said pen with said needle cannula of said syringe so that said lumen is in fluid communication with said reservoir;

e) activating said plunger to disperse the selected volume of liquid from said reservoir through said lumen into said syringe barrel chamber so that as liquid enters said chamber, said slidable stopper is moved proximally along said chamber; and

f) observing the volume of liquid dispensed into said syringe barrel chamber.

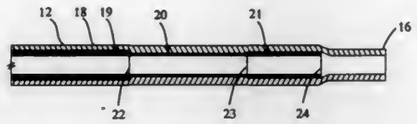
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,342

VARIABLE STIFFNESS CATHETER

Ivan Sepetka, Redwood City; Phong Pham, San Jose, and Erik T. Engelson, Portola Valley, all of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Aug. 7, 1991, Ser. No. 741,775
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—282 **9 Claims**



1. A catheter for use in combination with a guide wire for placement within a tortuous, small vessel, said catheter comprising an elongate tubular body having proximal and distal ends and a lumen extending between said ends for receiving the guide wire, said body comprising;

(a) an outer coaxial tube extending continuously between said ends, having a wall thickness of 0.05 to 0.13 mm and being made of a polymer having a flexural modulus of about 100,000 to 250,000 kpa; and

(b) proximal, intermediate, and distal inner coaxial polymeric tube segments contiguously abutted in tandem within the outer tube from said proximal end to a site proximal said distal end and which form the catheter lumen within these segments, the proximal segment having a constant wall thickness of 0.08 to 0.18 mm and being made of a polymer having a flexural modulus of about 1,500,000 to 1,800,000 kpa, the intermediate segment being less stiff than the proximal segment and the distal segment having a constant wall thickness of 0.05 to 0.10 mm and different than that of the proximal segment and being made of a polymer having a flexural modulus of about 200,000 to 300,000 kpa and being less stiff than the intermediate segment but stiffer than the portion of the outer tube extending from said site to said distal end.

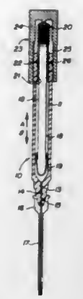
5,308,343

APPLICATION DEVICE FOR DEPOSITING A LIQUID SUBSTANCE LOCALLY ON A SURFACE TO BE TREATED

Paul-Félix Gafner, Là-Haut, Essert-Pittet 1435, Switzerland

PCT No. PCT/CH89/00120, § 371 Date Aug. 8, 1990, § 102(e) Date Aug. 8, 1990, PCT Pub. No. WO89/12480, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 22, 1989, Ser. No. 459,790
Claims priority, application France, Jun. 23, 1988, 88 08628
Int. Cl.[5] A61M *35/00, 5/178, 5/00*
U.S. Cl. 604—289 **20 Claims**

1. An application device for local deposition of a liquid substance onto a surface to be treated, particularly a medicinal solution onto a cutaneous surface for a dermatological treatment, said device having an elongated element comprising an internal cavity having a volume, a micrometric-screw dosing mechanism located at a second end of the elongate element, and a distribution tip, located at a first end of the elongate element, provided with a capillary conduit communicating with said internal cavity, sand adjustment of the micrometric-screw dosing mechanism causing the volume of said internal cavity to be altered, wherein the internal cavity (**12**) contains at least one supple pocket containing a predetermined volume of a fluid, and the micrometric-screw dosing mechanism (**23**) comprises a mobile element for at least one of compressing and allowing expansion of said at least one supple pocket (**20**) so as to vary the volume of said at least one supple pocket and cause



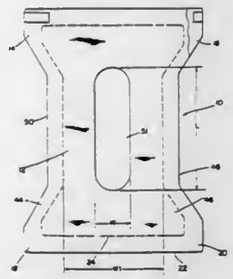
the volume of said internal cavity to be altered thereby controlling flow of the liquid substance into and out of said device.

5,308,344

ABSORBENT PAD WITH MOISTURE BARRIER

Michael R. Toth, Andover, Mass., assignor to The Kendall Company, Mansfield, Mass.

Division of Ser. No. 59,657, Jun. 8, 1987, Pat. No. 4,900,318. This application Jan. 22, 1990, Ser. No. 468,315
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—378 **4 Claims**



1. A disposable absorbent pad assembly for use on humans comprising:

(1) a fluid-impervious backing sheet;

(2) a fluid-impervious top sheet provided with a generally centrally disposed central portion which is fluid-pervious to permit passage of fluid into said assembly;

(3) an absorbent pad disposed between said backing and top sheets; and

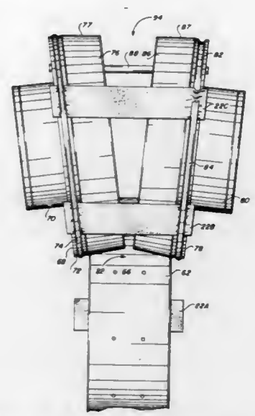
(4) a pair of fluid-impervious barriers arranged between said pad and said top sheet, each said barrier being disposed longitudinally along a longitudinal side portion of said absorbent pad assembly, each said barrier being of undivided, single layer construction to present a barrier structure of minimum thickness and bulk, said barriers thus defining a centrally disposed longitudinally directed fluid-pervious area between said barriers, said barriers, backing sheet and top sheet being bonded together along their common periphery whereby to form sealed edges blocking the escape of fluid among the entire side periphery of said absorbent pad assembly, said barriers and said backing sheet further being characterized as providing a pair of pockets for fluid retention extending longitudinally along the length of said absorbent pad on each side thereof.

5,308,345

SYSTEM AND METHOD FOR MANUFACTURING DISPOSABLE DIAPERS HAVING ELASTIC WAISTBAND

Robert M. Herrin, Orlando, Fla., assignor to John M. Tharpe, Albany, Ga., a part interest

Filed Nov. 28, 1989, Ser. No. 442,215
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **32 Claims**



29. Apparatus for the continuous manufacture of disposable diapers having a stretchable foam waistband with an elastic memory comprising:

a moving transfer surface;

means for spacing a plurality of individual waistband lengths along the moving transfer surface;

a pair of spaced, rotating stretching rollers, the stretching rollers being spaced at an outward angle along the direction of waistband length travel away from the transfer surface;

means for moving the transfer surface into proximity to the pair of stretching rollers;

two smoothed surface gripping belts positioned across only a portion of the surface of a corresponding stretching roller, each belt having an entry point and an exit point to the corresponding roller surface, each belt for engaging an end of the length of waistband material near the entry point so as to pinch the end of the waistband material against the corresponding stretching roller during rotation between the entry and exit points; and

the stretching rollers defining means for depositing the stretched waistband lengths at spaced intervals along a moving web of a disposable diaper layer.

5,308,346

ELASTICIZED SANITARY NAPKIN

Dian L. Sneller; June T. Brennock, both of Cincinnati, and Carl L. Bergman, all of Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 811,348, Dec. 20, 1991, Pat. No. 5,234,422. This application Oct. 26, 1992, Ser. No. 966,238
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **14 Claims**

1. A unitary disposable catamenial pad for placement in a user's undergarment, the catamenial pad comprising:

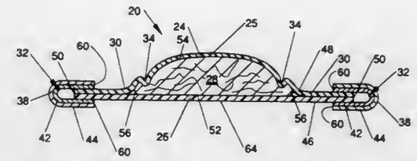
a liquid pervious topsheet;

a liquid impervious backsheet joined with said topsheet;

an absorbent core having side edges and positioned between said topsheet and said backsheet;

a side flap extending outwardly from and along each side edge of said absorbent core, each said side flap having an inner surface, an outer surface, and a distal edge, each said side flap comprising a portion of said topsheet and said backsheet;

an elastic member operatively associated with each said side flap by being folded about said distal edge of said side flap such that a portion of said elastic member is secured to the outer surface of said side flap and another portion is secured to the inner surface of said side flap, said elastic member comprising an elastomeric laminate comprising an elastomeric layer and a coverstock layer, said elastomeric layer being positioned adjacent said side flap such that said coverstock layer forms a portion of the outer



surface of the catamenial pad, said elastomeric member having a pair of longitudinal edges, the longitudinal edge positioned on said inner surface of said side flap being positioned laterally outwardly from said side edge of said absorbent core so that a hinge point is formed;

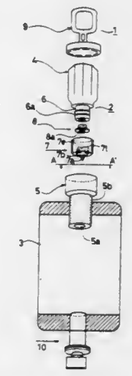
and means for providing a weakened area that enhances controlled bunching and provides a stiffened hinge for said elastic members to works against to allow said elastic members to flatten out adjacent the edges of a user's undergarment, said means comprising a pair of embossed channels positioned in at least said absorbent core.

5,308,347

TRANSFUSION DEVICE

Seizo Sunago, Hyogo, and Osamu Aoki, Osaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 14, 1992, Ser. No. 944,401
Claims priority, application Japan, Sep. 18, 1991, 3-238085
Int. Cl.[5] A61B *19/00;* A61M *5/32, 37/00*
U.S. Cl. 604—403 **5 Claims**



1. A transfusion device comprising a flexible vessel containing a solvent fluid, a drug container containing a drug, and a communicating portion for communicating the drug container and the flexible vessel with each other;

wherein the communicating portion includes a first communicating passage leading to the interior of the flexible

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vessel integrally through an upper portion thereof, a membrane for closing the first communicating passage, a second communicating passage leading to the interior of the drug container integrally through a lower portion thereof, a plug member for releasably plugging a lower port of the second communicating passage, and a cap including a threaded peripheral portion engaging a threaded periphery of said second communicating passage said cap having a puncturing needle for puncturing said membrane, wherein at least one of said cap and said first communicating passage includes a guide member which restrains rotational movement of said cap such that relative rotation between said drug container and said flexible vessel causes said cap to move axially with respect to said first communication passage with said cap thereby movable along a path within said first communicating passage, said path including a first position at which said puncturing needle is spaced from said membrane, and wherein said plug member is disposed between an end of said cap and an interior of said drug container such that in said first position said cap holds said plug to close said lower port of the second communicating passage, said path further including a second position at which said puncturing needle extends through said membrane;

whereby the cap moves along said path from said first position to said second position by relative rotational movement of the flexible vessel and the drug container to disengage said plug member and to cause said puncturing needle to puncture said membrane, thereby bringing the drug container and the flexible vessel into communication with each other.

5,308,348

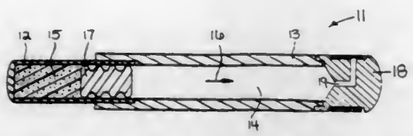
DELIVERY DEVICES WITH PULSATILE EFFECT

Stephen M. Balaban, Chesterfield; James B. Pike, St. Peters; Jonathan P. Smith, St. Louis, and Clifton A. Baile, Chesterfield, all of Mo., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 837,183, Feb. 18, 1992, Pat. No. 5,209,746. This application May 5, 1993, Ser. No. 58,151

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—892.1 **15 Claims**



1. A delivery device for placement in an environment of use for the pulsate delivery of a beneficial agent to said environment, the device comprising:

an enclosure having first and second ends and an orifice at or near said first end;

a partition dividing the interior of said enclosure into a first compartment for retaining a beneficial agent and a second compartment for retaining an activating mechanism, said first and second compartments being adjacent to said first and second ends, respectively, said partition being capable of moving within said enclosure;

a band of resilient material on the exterior of said enclosure and covering said orifice, said resilient material being sufficiently tight to seal or substantially seal said orifice while at the same time being capable of being stretched in response to pressure generated by said activating mechanism; and

a trough formed in the outer surface of the side wall of said enclosure near said first end and encircling said enclosure, wherein said orifice is located inside said trough and said band of resilient material is seated inside said trough.

5,308,349

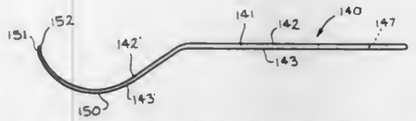
METHOD FOR PERFORMING KNEE SURGERY AND RETRACTORS FOR USE THEREIN

W. F. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Division of Ser. No. 508,090, Apr. 11, 1990, Pat. No. 5,217,463. This application Dec. 9, 1992, Ser. No. 988,200

Int. Cl.[5] A61F *2/32*; **A61B** *17/02*

U.S. Cl. 606—88 **11 Claims**



1. An unicompartmental retractor for use in performing knee surgery comprising:

(a) a handle having a longitudinal axis and having a flat section defining a first plane and,

(b) an integral tip extending from said handle and having first, second and third sections, said first section having a planar portion disposed at an angle between 43.5°0 and 46.5° to said first plane, said second section following an arcuate path having a radius between 1.3 inches and 1.7 inches and said third section following a straight line path disposed at an angle of 5° ±2°0 to a second plane perpendicular to said first plane and extending in a direction away from said handle and terminating below said first plane such that the included angle between said path straight line and said first plane is between 83° and 87°.

5,308,350

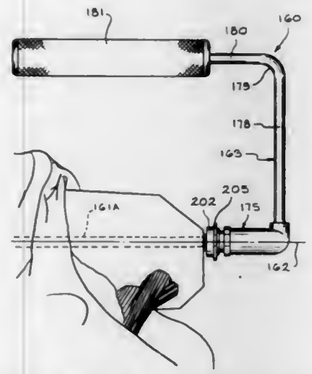
FEMORAL DISTRACTOR FOR USE IN KNEE SURGERY

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Continuation-in-part of Ser. No. 871,036, Apr. 20, 1992, which is a division of Ser. No. 508,090, Apr. 11, 1990, Pat. No. 5,217,463. This application Dec. 15, 1992, Ser. No. 990,435

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—88 **8 Claims**



1. A femoral distractor for use in performing knee surgery comprising a rod and a handle assembly, said rod having first and second sections lying on a longitudinal axis, said first section having a cross-sectional size permitting its insertion in the medullary canal of a human femur, said second section

extending to a free end and having engagement means, said handle assembly including (a) coupling means releasably engageable with said engagement means, (b) a support member engaged to said coupling means and being disposed at substantially right angles to said rod and (c) gripping means substantially parallel to said rod spaced from said longitudinal axis and extending along a path generally reverse of the path of said rod.

5,308,351

EAR TAG

Reinhard Nehls, Bocholt, Fed. Rep. of Germany, assignor to Caisley International GmbH, Bocholt-Suderwick, Fed. Rep. of Germany

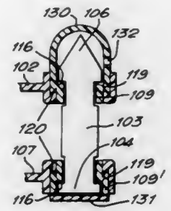
PCT No. PCT/EP90/01116, § 371 Date Mar. 5, 1992, § 102(e) Date Mar. 5, 1992, PCT Pub. No. WO91/00686, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 5, 1990, Ser. No. 793,404

Claims priority, application United Kingdom, Jul. 11, 1989, 8915879; Jul. 11, 1989, 8915880

Int. Cl.[5] G09F *3/00*

U.S. Cl. 606—116 **20 Claims**



1. A frangible ear tag comprising:

a first button having an aperture;

a pin having a head and a heel and being attached to the first button via engagement of the heel in the aperture prior to application of the tag to an animal, and

a second button which is separate from the pin prior to application of the tag, the second button having an aperture in which the head of the pin is engaged on application of the tag,

at least one of the buttons having:

an additional ring positioned in proximity to the at least one button's aperture and via which the pin engages said at least one button, wherein the additional ring comprises:

a frangible annular element provided with means for engaging said at least one of the buttons, the frangible annular element dimensioned so that on application of excessive force to the buttons in opposite directions, the additional ring breaks, allowing the frangible annular element to disengage from said at least one button having the additional ring, so as to render subsequent re-connection of said at least one button to the pin impractical.

5,308,352

STEREOTACTIC DEVICE

Panos G. Koutrouvelis, 1201 Ballantrae La., McLean, Va. 22101

Continuation-in-part of Ser. No. 437,605, Nov. 17, 1989, Pat. No. 5,047,036. This application Jun. 11, 1990, Ser. No. 535,653

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—130 **20 Claims**

7. A stereotactic medical device for accurate placement of a medical instrument in a plane of horizontal or sagittal orientation comprising:

a. a stereotactic bridge comprising:

(i) a span configured to overly a body;

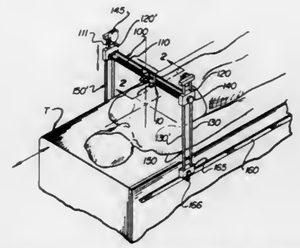
(ii) stanchions supporting said span;

(iii) means for moving said span vertically up and down said stanchions; and

(iv) means for moving said stanchions horizontally along at least a portion of the length of the body overlaid by the span;

b. a guidance device for accurate introduction of a part of medical instrument of a given length into said body, said guidance device comprising:

(i) a base comprised of a plate and an upstanding leg positioned substantially perpendicular to the plate, said plate on one side of said upstanding leg having a cutout opening delimiting a sterile field through which a part of the medical instrument can pass unobstructed into a predetermined part of the patient's body and on the other side of said upstanding leg, said plate having a means for connecting said guidance device to said span of said stereotactic bridge, said leg comprised of an arcuate track with means therealong for indicating a plurality of preselected angles relative to the predetermined part of the patient's body which is accessible through the opening in the plate;



(ii) a carrier including riding means for movement along the arcuate track, retaining means for retaining the medical instrument in a fixed position relative to the riding means, and means for locking the retaining means at one of the preselected angles relative to the predetermined part of the body, wherein said retaining means is selectively openable such that the medical device can be laterally placed in and removed from the carrier; and

(iii) means for axially rotating the guidance device in correlation with an angulation of a C.T. scanner to enable sagittal insertion of the medical instrument;

whereby the part of the medical instrument retained by the carrier can be extended through the opening in the plate and into the predetermined part of the body at said one of the preselected angles;

c. means for moving and locking the guidance device along the length of said span, said means including said means for connecting said guidance device to said span of said stereotactic bridge.

5,308,353

SURGICAL SUTURING DEVICE

Henry R. Beurrier, Far Hills, N.J., assignor to Merrimac Industries, Inc., West Caldwell, N.J.

Filed Aug. 31, 1992, Ser. No. 938,923

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—144 **21 Claims**

1. An apparatus for suturing or ligating, comprising:

a body member having first and second ends;

at least two rotatable pulleys mounted within the body member;

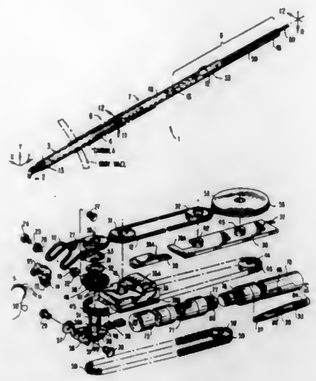
a flexible, continuous loop drive element mounted on said pulleys for circulation therearound;

means mounted in the body member adjacent to the first end for circulating the continuous loop element; and

an arcuate suturing needle mounted at the second end of the

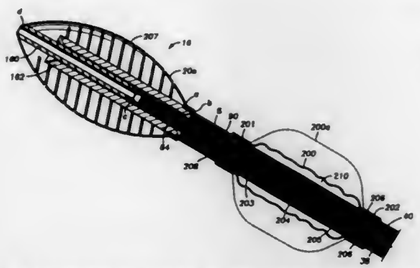
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body member for 360° rotation through a closed path, said needle having a plurality of spaced projecting means for



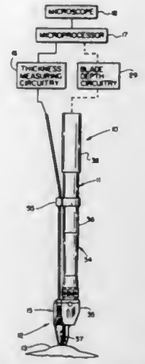
engaging the continuous loop element over an included segment of the needle's outer perimeter.

5,308,354
ATHERECTOMY AND ANGIOPLASTY METHOD AND APPARATUS
Nadim M. Zacca, 6550 Fannin St., Ste. 2229, Houston, Tex. 77030, and Martin R. Jasso, 11655 Sagelink Dr., Houston, Tex. 77089
Continuation-in-part of Ser. No. 731,109, Jul. 15, 1991, Pat. No. 5,217,474. This application Dec. 10, 1991, Ser. No. 805,577
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **11 Claims**



1. An apparatus for treating an obstruction in a vessel, comprising:
a coil;
said coil being capable of elongation thereby reducing the circumference as said coil is elongated;
means for selectively elongating said coil;
means for introducing said coil inside a vessel proximate to an obstruction;
said coil having an abrasive surface covering at least part of its outer surface;
means for selectively rotating said coil;
an angioplasty balloon disposed proximal to said coil; and
means for selectively inflating said balloon.

5,308,355
OPHTHALMIC SURGICAL INSTRUMENT AND METHOD
Alexander Dybbs, 2588 Edgerton Rd., Cleveland, Ohio 44118
Filed Nov. 6, 1992, Ser. No. 972,756
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **21 Claims**



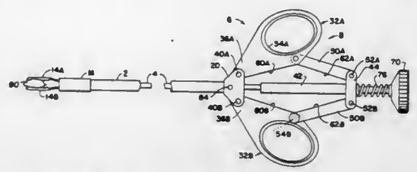
1. A surgical instrument for making incisions in the cornea of an eye comprising a knife body and a cutting blade connected to the knife body, the cutting blade having a cutting plane, and the surgical instrument being characterized by a pair of ultrasonic probes connected to the knife body and disposed on opposite sides of the cutting plane for measuring the thickness of the cornea, the ultrasonic probes each having a probe tip for contacting the cornea, and each said probe tip being laterally spaced apart from the other to form therebetween a window through which the cutting blade can be viewed.

5,308,356
PASSIVE PERFUSION ANGIOPLASTY CATHETER
Perry L. Blackshear, Jr., 29 Birchwood Rd., Mahtomedi, Minn. 55115, and Joseph L. Blackshear, 700 Ranch Rd., Ponte Vedra Beach, Fla. 32082
Filed Feb. 25, 1993, Ser. No. 22,573
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—194 **56 Claims**



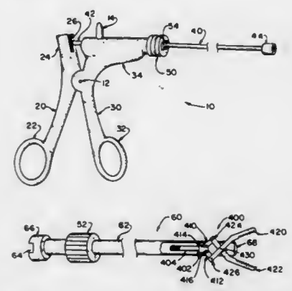
1. A passive perfusion angioplasty catheter comprising:
an elongated flexible member defining an inflation lumen; and
inflatable balloon means affixed to a distal end of said flexible member for pressing against an interior surface of an arterial lumen, said balloon means defining at least one passage between an exterior thereof and said interior surface of said arterial lumen for permitting blood to flow past said balloon means when said balloon means is pressed against said interior surface,
said balloon means comprising at least one inflatable lobe, said at least one passage being a helical groove defined by said at least one lobe, a band being helically wound about a longitudinal axis of said balloon means, ends of said band being affixed to said flexible member, thereby defining a helical lobe and said helical groove.

5,308,357
HANDLE MECHANISM FOR MANUAL INSTRUMENTS
Philip R. Lichtman, Newton, Mass., assignor to Microsurge, Inc., Needham, Mass.
Filed Aug. 21, 1992, Ser. No. 934,002
Int. Cl.[5] A61B *17/42*
U.S. Cl. 606—205 **47 Claims**



1. A surgical instrument comprising:
an outer, hollow shaft having a longitudinal axis, a first proximal end, a first distal end and a first length;
an inner shaft co-axially disposed in said outer shaft for reciprocal movement with respect to said outer shaft, said inner shaft having a second proximal end, a second distal end, and a second length, said second length being longer than said first length;
means for surgical interaction with animal tissue associated with said first and second distal ends, said surgical interaction means comprising first and second tissue interacting means movable relative to one another transversely of said longitudinal axis between a first open position and a second closed position by axially directed changes in the relative positions of said first and said second distal ends; and
a self-locking mechanism for changing the relative positions of said first and said second distal ends lengthwise of said longitudinal axis, said mechanism comprising:
(A) driver means mounted on said inner shaft substantially adjacent said second proximal end, said driver means being slidable relative to said inner shaft along the axis of said inner shaft;
(B) at least one flexible linkage means having a first linkage end, a second linkage end and a central portion, said first linkage end being connected to said outer shaft at a first point located radially outwardly of and substantially adjacent to said first proximal end of said outer shaft, said second linkage end being connected to said driver means at a second point located radially outwardly of said inner shaft, and said central portion being adapted to receive a force applied substantially normally to said longitudinal axis and transmit said force to said driver means and said outer shaft so as to move said driver means relative to said outer shaft along the axis of said inner shaft, the maximum length of said linkage means being longer than the minimum axial separation between said first point and said second point when said first and second tissue interacting means are in said first open position and also when said first and second tissue interacting means are in said second closed position; and
(C) force-transmitting means coupled to said inner shaft and engageable by said driver means for transmitting an axial force from said driver means to said inner shaft in response to a force applied to said central portion normally of said longitudinal axis, whereby a force applied to said central portion in a first direction normal to said longitudinal axis will cause said linkage to move said driver means in a first axial direction and a force applied to said central portion in a second opposite direction normal to said longitudinal axis will cause said linkage to move said driver means in a second opposite axial direction, whereby said first and second tissue interacting means are caused to move from one to the other of said first open position and said second closed position depending on the direction of the normal force applied to said central portion;
said linkage being arranged so as that said mechanism is self-locking when said first and second tissue interacting means are in said second closed position.

5,308,358
RIGID-SHAFT SURGICAL INSTRUMENTS THAT CAN BE DISASSEMBLED FOR IMPROVED CLEANING
Albert L. Bond, Rte. 1, Box 146, Patterson, Mo. 63956; George W. Doerr, III, 410 May Valley, Apt. F, Fenton, Mo. 63026, and John M. Mayerik, Jr., 12434 Matthews La., St. Louis, Mo. 63127
Filed Aug. 25, 1992, Ser. No. 935,525
Int. Cl.[5] A61B *17/42*
U.S. Cl. 606—205 **6 Claims**



1. A surgical instrument comprising an operable handle assembly, a rigid shaft comprising a shaft tube and a shaft yoke which is affixed to one end of the shaft tube in a non-rotatable manner, an internal rod, and an actuator assembly, wherein:
a. the operable handle assembly comprises a first gripping component which is affixedly attached to a handle barrel, and a second gripping component which is movable relative to said handle barrel and which is coupled to the interior rod in a manner such that the interior rod moves relative to the handle barrel when the handle assembly is operated;
b. the internal rod passes through the shaft tube when the surgical instrument is assembled, wherein a first end of the interior rod is coupled to the second gripping component of the operable handle assembly and a second opposed end of the interior rod is threadedly and detachably coupled to an actuator yoke;
c. The shaft tube has an outside diameter of about 10 millimeters or less and a length of about 20 centimeters or more; and wherein the shaft tube is reversibly coupled at one end of said shaft tube to the handle barrel, by means of an attachment device that does not require rotation of the shaft relative to the handle assembly; and wherein the shaft yoke is positioned at a second opposed end of said shaft tube and is coupled to the actuator assembly;
d. the actuator assembly comprises (1) a actuator yoke which is movable relative to the shaft and which is threadedly and detachably coupled to the internal rod when the instrument is assembled, which can be uncoupled from the internal rod, thereby allowing removal of the internal rod from inside the shaft when the surgical instrument is disassembled; (2) at least two actuator components capable of opening and closing relative to useful manner during surgery, wherein at lest one movable actuator component is coupled via a pivot to the actuator yoke in a manner such that when the internal rod and actuator yoke are moved relative to the shaft due to operation of the handle assembly, at least one movable actuator component moves

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in a desired direction that allows a desired tissue manipulation,

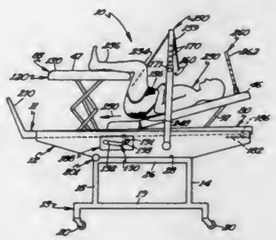
wherein the surgical instrument can be disassembled, for cleaning purposes, by steps consisting essentially of: (a) disengaging the operable handle assembly from the shaft; (b) unscrewing the actuator yoke from the internal rod; and (c) removing the interior rod from inside the shaft, and wherein disassembly of other component parts is not necessary to allow disassembly, cleaning, and sterilization of components which enter a patient's body during a surgical procedure.

5,308,359

APPARATUS AND METHOD FOR PRODUCING SPINAL DISTRACTION

Wallace W. Lossing, Fisherville, Va., assignor to Lossing Orthopedic, Inc., Minneapolis, Minn.

Filed Jun. 24, 1991, Ser. No. 720,655
Int. Cl.[5] A61F 5/00
U.S. Cl. 606—242 **44 Claims**



21. Apparatus for treating the spine of a patient, said apparatus comprising:

a carriage;

means for supporting the patient in a 90/90 position, said means for supporting including a bed;

means for lifting and rotating the pelvic region of the patient such that the lumbar portion of the spine is straightened, said means for lifting and rotating generally carrying the weight of the pelvic region of the patient while said means for supporting generally carries the remainder of the body weight of the patient; and

means for selectively providing relative substantially translational motion between said means for supporting and said means for lifting and rotating such that a portion of the patient's body weight carried by said means for supporting is transferred from said means for supporting to said means for rotating and lifting and such that the patient's buttocks are raised off said means for supporting, wherein the transferred weight acts as a traction force applied to the spine to therapeutically and selectively elongate the spine;

wherein said means for lifting and rotating is movably supported by said carriage and includes;

an elongate arm pivotally attached at one end thereof to said carriage and extending generally upwardly therefrom;

a cross-piece attached to the other end of said arm, said cross-piece extending generally horizontally over said bed;

a harness for encircling the pelvic region of the patient, said cross-piece supporting said harness; and

means for varying the height of said harness relative to said bed;

wherein said harness is attached to the pelvic region of the patient and the pelvic region of the patient is elevated from and raised above said bed by said means for varying; and

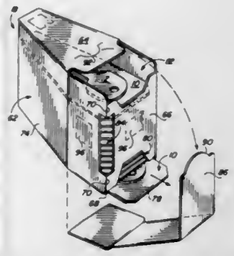
wherein said bed includes a head and a foot and said arm is movable along a path relative to said bed in a foot to head direction, said path having a first path segment in a generally upwardly inclined direction.

5,308,360

KEY STORAGE CONTAINER

William J. Neitzke, and G. Lynn Hagen, both of Paradise Valley, Ariz., assignors to Axxess Entry Technologies, Inc., Tempe, Ariz.

Filed Dec. 16, 1992, Ser. No. 991,296
Int. Cl.[5] B65H 1/00
U.S. Cl. 221—197 **19 Claims**



1. A key storage container for receiving, storing and dispensing along a longitudinal axis a supply of identical key storage tags each holding a key blank having a first area, each key storage tag having a length, a front edge, a rear edge, opposing side edges defining a width, a second area greater than the first area and a maximum cross sectional area, the key storage container comprising:

a. a horizontally oriented base defining a third area greater than the second area and having a front edge and a perimeter edge;

b. a vertically oriented sidewall having a sidewall height defining a storage volume for holding a supply of key storage tags in alignment in a vertical stack including a lowest key storage tag supported directly by the base and including

i. a first sidewall segment aligned with and extending vertically upward from the base front edge and including first and second edge surfaces;

ii. a second sidewall segment coupled to and extending vertically upward from the base and coupled to the first and second edge surfaces of the first sidewall segment;

c. a top surface coupled to the second sidewall segment for at least partially closing off the storage volume from above; and

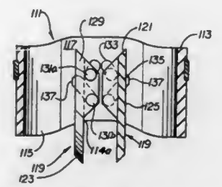
d. a dispensing aperture located at the junction of the first sidewall segment with the base and including a height and a width sufficient to allow the maximum cross sectional area of the lowest key storage tag to be longitudinally displaced along the base of the storage volume through the dispensing aperture.

5,308,361

PROSTHETIC HEART VALVE

Jack C. Bokros; Michael R. Emken, both of Austin; Axel D. Haubold, Liberty Hill; T. Scott Peters, Georgetown, and Jonathan C. Stupka, Austin, all of Tex., assignors to Onx, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 674,871, Mar. 25, 1991, Pat. No. 5,152,785, and a continuation-in-part of Ser. No. 837,761, Feb. 18, 1992, Pat. No. 5,192,309, and a continuation-in-part of Ser. No. 888,872, May 26, 1992, Pat. No. 5,236,449. This application Sep. 25, 1992, Ser. No. 951,680
Int. Cl.[5] A61F 2/24
U.S. Cl. 623—2 **11 Claims**



1. A bi-leaflet prosthetic heart valve comprising

an annular valve body having an upstream end, a downstream end and a central passageway therethrough for blood flow, which passageway has an axial centerline,

two leaflets mounted in valve body, each having an inflow surface and an outflow surface,

pivot means formed on said leaflets and said valve body which define paths of movement of said leaflets on eccentric pivot axes between an open position which allows blood flow through said central passageway and a closed position which blocks blood flow therethrough, said paths of movement being such that downstream edges of said leaflets move outward away from the axial centerline to reach the closed position in which said outflow surfaces face generally downstream,

said valve body having a generally cylindrical interior sidewall of generally circular cross section which is interrupted with a pair of diametrically opposed flat sidewall sections wherein portions of said pivot means are located,

said valve body being contoured in an axial direction with a pair of open notches extending laterally through said sidewall in the downstream end laterally through said sidewall in the downstream end thereof located in generally axial alignment with said flat sidewall sections, which notches provide a pair of side openings that extend a substantial distance upstream from farthest downstream points along said valve body's downstream edge, which side openings are laterally aligned with a central passageway region located between said two leaflets in the open position so that, upon reversal of blood flow, backflowing blood laterally enters said valve body passageway through said side openings and results in a surge of blood flow into said central passageway region between said two leaflets, the forces which are exerted by such blood flow in said central passageway region against said leaflet outflow surfaces causing prompt pivoting of said eccentrically mounted leaflets toward their closed position orientation.

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5,308,362

FIBER REACTIVE YELLOW DYE COMPOSITION

Yutaka Kayane, Ikoma; Naoki Harada, Ibaraki, and Kingo Akahori, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

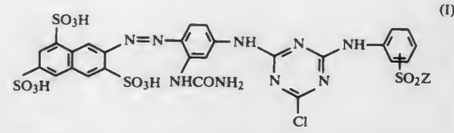
Filed Nov. 19, 1991, Ser. No. 794,217

Claims priority, application Japan, Nov. 27, 1990, 2-326672; Feb. 15, 1991, 3-022104; Apr. 12, 1991, 3-079707; Jul. 1, 1991, 3-160470

Int. Cl.[5] C09B *49/00*

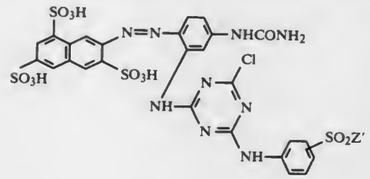
U.S. Cl. 8—641 10 Claims

1. A fiber reactive dye composition which comprises (1) a reactive dye represented by the following formula (I) in the free acid form,



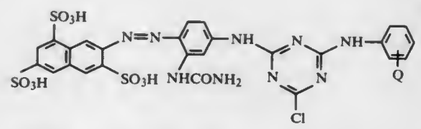
(I)

wherein Z is $-CH=CH_2$ or $-CH_2CH_2Z_1$ in which Z_1 is a group capable of being split by the action of an alkali, and (2) at least one member selected from the group consisting of reactive dyes represented by the following formulas (II), (III) and (IV) in the free acid form, the formula (II) being



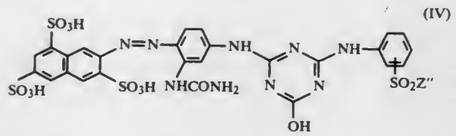
(II)

wherein Z' is $-CH=CH_2$ or $-CH_2CH_2Z_2$ in which Z_2 is a group capable of being split by the action of an alkali, the formula (III) being



(III)

wherein Q is $-SO_2CH=CH_2$ located at o-, m- or p-position against the imino group where Q in the formula (III) is located at the same position relative to imino as is the SO_2Z in the formula (I), and the formula (IV) being



(IV)

wherein Z'' is $-CH=CH_2$ or $-CH_2CH_2Z_3$ in which Z_3 is a group capable of being split by the action of an alkali, provided that the reactive dye of the formula (I) is one having $-CH_2CH_2Z_1$ as Z when the fiber reactive dye composition comprises the reactive dye of the formula (III), and a weight ratio of at least one reactive dye of the formulas (II) to (IV) to the reactive dye of the formula (I) is from 1:100 to 50:100.

5,308,363

PROCESS FOR QUATERNARY AMMONIUM BISULFATES

George Liebermann, Mississauga; H. Bruce Goodbrand, Hamilton, both of Canada; John L. Haack, Pittsford, N.Y., and John Abate, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 18, 1992, Ser. No. 836,435

Int. Cl.[5] C07C *211/63*

U.S. Cl. 23—295 R 11 Claims

1. A process for the preparation of a quaternary ammonium bisulfate which consists essentially of the reaction of a quaternary ammonium alkylsulfate with sulfuric acid in solvent mixture comprised of water and isopropyl alcohol, wherein the isopropyl alcohol is present in an amount of about 80 weight percent, and the water is present in an amount of 20 weight percent based on the total weight of the solvent mixture, followed by the recovery of the solid quaternary ammonium bisulfate by crystallization from the reaction mixture.

5,308,364

FUEL COMPOSITIONS CONTAINING IMPROVED BRANCHED AMIDO-AMINE DISPERSANT ADDITIVES

Antonio Gutierrez, Mercerville, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 926,129, Aug. 5, 1992, Pat. No. 5,229,020, which is a continuation of Ser. No. 358,903, May 30, 1989, abandoned. This application Jul. 14, 1993, Ser. No. 91,699

Int. Cl.[5] C10L *1/22, 1/18*

U.S. Cl. 44—347 18 Claims

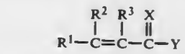
1. A fuel composition containing a dispersant additive formed by a process which comprises:

(a) contacting in a first liquid reaction mixture a first nitrogen-containing compound having at least two reactive nitrogen moieties with a polyfunctional reactant having within its structure a first functional group reactive with a —NH— group, and at least one additional functional group reactive with a —NH— group, in an amount and under conditions sufficient to selectively react at least a portion of the first functional groups in the polyfunctional reactant with the reactive nitrogen moieties to form a first adduct;

(b) contacting the first adduct with a second nitrogen-containing compound having at least two —NH— groups in an amount and under conditions sufficient to react the additional functional groups in the first adduct with the —NH— groups in the second nitrogen-containing compound to form a second adduct characterized by having within its structure on average (i) at least two nitrogen-containing moieties derived from the second nitrogen-containing compound per nitrogen-containing moiety derived from the first nitrogen-containing compound and (ii) at least two unreacted primary or secondary amine groups per molecule; and

(c) contacting the second adduct in a second liquid reaction mixture with at least one long chain hydrocarbon substituted with mono- or dicarboxylic acid, anhydride or ester groups;

wherein the polyfunctional reactant comprises at least one alpha, beta-unsaturated compound of the formula:



wherein X is sulfur or oxygen, Y is $—OR^4$, $—SR^4$, or $—NR^4(R^5)$, and R^1, R^2, R^3, R^4 and R^5 are the same or different and are hydrogen or substituted or unsubstituted hydrocarbyl.

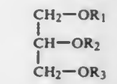
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5,308,365
DIESEL FUEL

Haven S. Kesling, Jr., Drexel Hill; Lawrence J. Karas, West Chester, and Frank J. Liotta, Jr., Collegeville, all of Pa., assignors to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Aug. 31, 1993, Ser. No. 114,806
Int. Cl.[5] C10L *1/00, 1/02*
U.S. Cl. 44—447 **9 Claims**

1. A fuel composition comprised of hydrocarbons boiling in the diesel fuel range at about 160° C. to about 370° C. and containing up to 500 ppm sulfur, and a particulate emission reducing amount of a glycerol ether additive having the formula

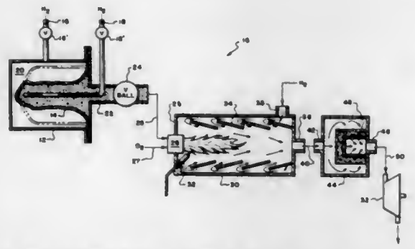


wherein R_1, and R_2 and R_3 are each hydrogen or a C_1–C_{10} alkyl group with the proviso that at least two of R_1, R_2 or R_3 are C_1–C_{10} alkyl group.

5,308,366
HOT HYDROGEN PRODUCTION APPARATUS

David Stelman, West Hills, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 9, 1992, Ser. No. 973,455
Int. Cl.[5] B01J *7/00*
U.S. Cl. 48—61 **1 Claim**



1. An apparatus for generating hydrogen in vacuo comprising:
a) a housing having a collapsible container containing beryllium therein and a reactor connected there;
b) means defining a conduit communicating with the interior of said housing and said container, and an injector associated with said reactor for receiving beryllium reactant via said conduit, and oxygen reactor;
c) an ignitor positioned within the reactor proximate the injector for igniting the reactants upon introduction into the reactor;
d) baffles circumferentially positioned about interior walls of the reactor;
e) means defining an opening within the reactor for admitting hydrogen around the baffles;
f) means defining an exit port for removing reaction by-product and hot hydrogen;
g) means defining a conduit connected to the exit port of the reactor and a filter intake of a filter;
h) a filter element housed within the filter for separation of byproduct and hot hydrogen; and
i) means defining a filter exit connected to a conduit means for transporting said hot hydrogen from said filter to a power generating device.

5,308,367
TITANIUM-NITRIDE AND TITANIUM-CARBIDE COATED GRINDING TOOLS AND METHOD THEREFOR

D. Lynn Julien, 918 N. 104th St., Apache Junction, Ariz. 85220

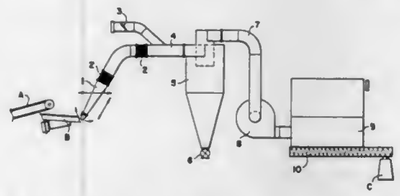
Continuation-in-part of Ser. No. 714,635, Jun. 13, 1991, Pat. No. 5,139,537. This application Aug. 20, 1992, Ser. No. 932,874
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **15 Claims**

1. A method of protecting the bond between the CBN abrasive particles embedded in the surface of a grinding tool and the bonding layer between the abrasive particles and the supporting metal substrate, comprising the following steps:
(a) preheating the grinding tool to a temperature between 400° and 600° F. in a physical vapor deposition chamber under vacuum; and
(b) depositing a titanium nitride coating approximately 2 to 8 microns in thickness over the CBN abrasive particles embedded in said bonding layer in the physical vapor deposition chamber, wherein the deposition is carried out in a nitrogen atmosphere under an absolute pressure between 10 and 30 millitors and at a temperature between 400° and 700° F.

5,308,368
SYSTEM FOR SEPARATION OF MATERIALS USING SUCTION AIR POWER

Cornelis G. S. Duijn, Heemskerk, Netherlands, assignor to Duos Engineering, Inc., Jacksonville, Fla.

Filed Nov. 16, 1992, Ser. No. 977,036
Claims priority, application European Pat. Off., May 15, 1990, 90201218.6
Int. Cl.[5] B01D *19/00, 46/02*
U.S. Cl. 55—315 **20 Claims**

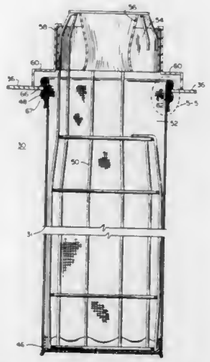


1. A system for separating a mixture of materials having particles and other particles using suction air through a suction nozzle having an inlet from a fan via a duct, a vibrating conveyor for supplying the materials toward said nozzle with the particles migrating upwardly and the other particles migrating downwardly, first support means for positioning said nozzle above and with said inlet spaced downstream from the end of said conveyor to permit the materials to free fall therefrom prior to the particles being sucked up by said nozzle through said inlet with the atmospheric air pressure aiding the particles trapped between the other particles to be moved toward and into said inlet of said nozzle, said inlet of said nozzle having a length and a width, the improvement comprising adjustable means for varying the width of said inlet without varying the length of said inlet.

5,308,369
SNAP-IN FILTER BAG ASSEMBLY FOR BOTTOM LOADING IN DUST COLLECTOR

Leslie R. Morton, Town of Spafford, and Ronald P. Nadeau, Syracuse, both of N.Y., assignors to Griffin Environmental Company, Inc., Syracuse, N.Y.

Filed Apr. 28, 1993, Ser. No. 53,247
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—379 **10 Claims**



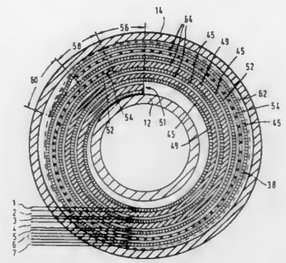
1. In a dust collector of the type having a baghouse including an let for receiving air to be filtered, an outlet for exhausting filtered air, a plurality of cylindrical filter bags each having an open end and an internal support member, the filter bags being positioned between said inlet and outlet to filter airborne particulate matter from the inlet air, and a tube sheet with a top and a bottom side, the tube sheet for supporting said plurality of cylindrical filter bags within said baghouse, the improvement comprising:
an access opening formed in the internal support member being positioned proximate to the open end of the filter bag associated therewith;
means for elastically deforming the open end of the filter bag into said access opening so that upon reformation, the open end is capable of being snapped into a circular hole provided in the tube sheet and securely seated therein in an airtight manner; and
a collar having a radially extended flange portion being attached on the top side of the tube sheet around the circular hole to center said collar above the hole, said collar having an inside diameter being less than the diameter of the circular hole whereby the filter bag and internal support member are only mountable in the baghouse from beneath the tube sheet.

5,308,370
FILTER DEVICE FOR FILTERING A GAS FLOW

Josef Kraft, Berg, and Gerrit Scheiderer, Furth, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jan. 25, 1993, Ser. No. 8,700
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 4201741
Int. Cl.[5] B01D *39/10*
U.S. Cl. 55—487 **28 Claims**

1. A filter device for filtering a gas flow of gases produced by a tubular gas generator for inflating an impact protection cushion, comprising
a filter element that can be traversed by the gases and that comprises several plies of metallic filter materials of differing permeability following one another in the flow direction of the gases;
said filter element being a roll formed by winding up a single, continuous length of filter material web, and

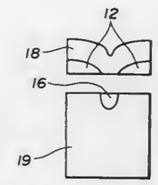


the length of filter material web comprising several filter material sections of differing permeability; said filter device being adapted to fit within an annular space of the tubular gas generator.

5,308,371
METHOD OF FORMING FLUORIDE GLASS FIBER PREFORM

Hiromi Kawamoto; Yoshinori Kubota; Natsuya Nishimura, and Akira Sakanoue, all of Ube, Japan, assignors to Central Glass Co., Ltd., Ube, Japan

Filed Apr. 19, 1993, Ser. No. 47,522
Claims priority, application Japan, Apr. 28, 1992, 4-110442
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—3.110 **7 Claims**



1. A method of forming a fiber glass preform, comprising the steps of:
(a) pouring a cladding glass into a mold;
(b) pouring a core glass on a flat horizontal upper surface of said cladding glass so as to form a united glass body having said core glass and said cladding glass under a condition that viscosity of said cladding glass and viscosity of said core glass are adjusted to certain predetermined values respectively so that said core glass is separated from and placed on said cladding glass;
(c) cooling said united glass body to solidify the same so that said cladding glass is deformed by contraction thereof so as to produce a depression at a top middle, portion thereof and that said core glass is deformed so as to form a projected portion thereof to fill said depression therewith;
(d) separating said united glass body into an upper portion and a lower portion which comprises said projected portion of said core glass; and
(e) extruding said lower portion of said united glass body so as to form the fiber glass preform.

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5,308,372

VEGETABLE OIL PROCESSING TO OBTAIN NUTRIENT BY-PRODUCTS

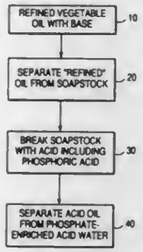
Ralph S. Daniels, 80 Old Faith Rd., Shrewsbury, Mass. 01545

Continuation of Ser. No. 598,777, Oct. 16, 1990, abandoned, which is a continuation of Ser. No. 197,058, May 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 179,280, Apr. 8, 1988, Pat. No. 4,836,843, which is a continuation of Ser. No. 26,052, Mar. 16, 1987, abandoned, which is a continuation of Ser. No. 886,937, Jul. 21, 1986, abandoned, which is a continuation of Ser. No. 738,742, May 29, 1985, abandoned, which is a continuation of Ser. No. 575,455, Jan. 31, 1984, abandoned, which is a continuation-in-part of Ser. No. 572,202, Jan. 18, 1984, abandoned. This application Aug. 4, 1992, Ser. No. 925,814

The portion of the term of this patent subsequent to Jan. 6, 2006, has been disclaimed.

Int. Cl.[5] C05F *7/00*; C11B *1/04*

U.S. Cl. 71—25 **5 Claims**



1. A method of processing vegetable oil so that waste streams from the process are provided with enhanced usefulness as nutrient sources, comprising the steps of:

(a) harvesting oil-containing vegetables from a growing area,

(b) extracting crude vegetable oil from the vegetables,

(c) forming a soapstock by refining the crude oil with a base, the components of which have low toxicity to plants or animals,

(d) separating the refined oil from the soapstock,

(e) treating the resulting soapstock with an acid, the components of which have low toxicity for said plants and animals, to form a mixture of an acid water phase and an acid oil phase,

(f) separating the resulting acid oil from the resulting acid water phase, and

(g) utilizing the nutrients contained in said acid oil and or acid water phases.

5,308,373

METAL AMMONIUM PHOSPHATE-ALKYLENE UREA BUFFERED FERTILIZER

William P. Moore, Hopewell, Va., assignor to The Vigoro Corporation, Chicago, Ill.

Filed Jan. 8, 1993, Ser. No. 2,272

Int. Cl.[5] C05C *9/00, 9/02*

U.S. Cl. 71—29 **19 Claims**

1. A method of preparing a sustained releasing concentrated fertilizer exhibiting buffering properties, the method comprising;

(a) admixing ammonium and divalent metal moieties with comminuted alkylene urea amounting to between 20 and 70 percent of the fertilizer;

(b) coreacting the admixed ammonium and divalent metal moieties mixed with the alkylene urea with one or more admixed aqueous phosphate moieties, in respective mol ratios of between 1.0 and 1.2 to between 1.0 and 1.2 and to between 1.0 and 1.2, so that the alkylene urea is contained in the coreacting mixture at a pH between 6.0 and 8.0;

(c) coreacting the admixed moieties at a temperature between 50° and 150° C. with continued mixing until water insoluble metal ammonium phosphate containing the alkylene urea is formed as a solid slow releasing fertilizer containing between 14 and 30 percent total nitrogen of which between 40 and 80 percent is insoluble in cold water.

5,308,374

METHOD OF MANUFACTURING ZINC-ALKALINE BATTERIES

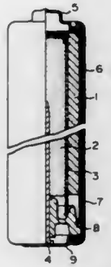
Hiroshi Yoshizawa; Akira Miura, both of Katano; Yoshiaki Nitta, Osaka, and Sachiko Sugihara, Katano, all of Japan, assignors to Matsnshita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 16, 1993, Ser. No. 18,433

Claims priority, application Japan, Feb. 26, 1992, 4-039081

Int. Cl.[5] H01M *4/42, 10/24*

U.S. Cl. 29—623.1 **20 Claims**



1. A method of manufacturing a zinc-alkaline battery where a zinc alloy which contains at least one element selected from the group consisting of bismuth, lithium, calcium and aluminum and which is free from mercury, lead, cadmium, indium and thallium is used as an active material and gallium hydroxide prepared by subjecting a gallium salt as a starting material to neutralizing treatment in an aqueous solution thereof is contained in an alkaline electrolyte in an amount of 0.005–0.5 wt % based on the zinc alloy.

5,308,375

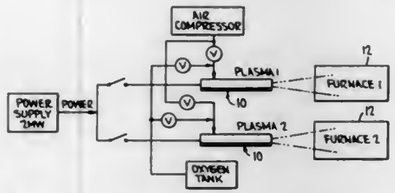
PROCESS FOR RECOVERY OF FREE ALUMINUM FROM ALUMINUM DROSS OR ALUMINUM SCRAP USING PLASMA ENERGY WITH OXYGEN SECOND STAGE TREATMENT

Richard D. Lindsay, Brentwood, Tenn., assignor to Plasma Processing Corporation, Millwood, W. Va.

Filed Jun. 22, 1992, Ser. No. 901,723

Int. Cl.[5] C22B *4/02*

U.S. Cl. 75—10.21 **8 Claims**



1. A process of recovering free aluminum from aluminum dross or aluminum scrap comprising charging aluminum dross or aluminum scrap to a furnace equipped with a plasma arc torch for heating said charge, heating said charge by providing plasma energy to said charge, continuing said heating with said plasma arc torch until said charge is molten and free aluminum is separated, thereafter discontinuing the plasma heating and injecting oxygen in a controlled amount to said charge.

5,308,376

CERMET HAVING DIFFERENT TYPES OF DUPLEX HARD CONSTITUENTS OF A CORE AND RIM STRUCTURE IN A CO AND/OR NI MATRIX

Rolf Oskarsson, Ronninge, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Jun. 26, 1990, Ser. No. 543,474

Claims priority, application Sweden, Jnn. 26, 1989, 8902306

Int. Cl.[5] C22C *29/04, 29/08, 29/10*

U.S. Cl. 75—238 **35 Claims**



1. A cermet comprising hard constituents selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, carbides, nitrides, carbonitrides and mixtures thereof and a binder phase selected from the group consisting of Co, Ni and mixtures thereof, at least 80% by volume of the hard constituents consisting of duplex structures comprising a core and at least one rim surrounding the core, the duplex hard constituents consisting of at least two different types of said hard constituents, each of the different types of said duplex hard constituents having compositional ratios or ingredients in the core, rim(s) or core and rim(s) which differ from those of other types of the duplex hard constituents and each of the different types of said duplex hard constituents being present in amounts of 10–80% by volume of a total amount of the hard constituents.

5,308,377

PROCESS FOR PREPARING MICROCRYSTALLINE-TO-AMORPHOUS METAL AND/OR ALLOY POWDERS AND METALS AND/OR ALLOYS DISSOLVED WITHOUT PROTECTIVE COLLOID IN ORGANIC SOLVENTS

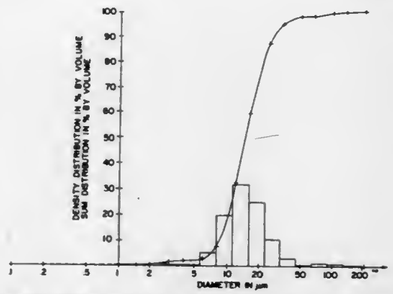
Helmut Bönnemann; Werner Brijoux, and Thomas Joussen, all of Mülheim, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle MbH, Mulheim, Fed. Rep. of Germany

Filed Oct. 10, 1990, Ser. No. 595,345

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1989, 3934351

Int. Cl.[5] B22F *9/00*

U.S. Cl. 75—351 **11 Claims**



1. A process for the preparation of a highly dispersed microcrystalline-to-amorphous metal and/or alloy in the form of a powder or colloid, which comprises forming a solution of a metal hydride of the 1st or 2nd main groups of the Periodic Table of the Elements (PSE) by means of a complexing agent, or with $NR''_4(BR_3H)$, $NR''_4[BR_n(OR')_{3-n}H)$, (R=C_1–C_6-alkyl, Ar-C_1–C_6-alkyl; R'=C_1–C_6-alkyl, aryl, Ar-C_1–C_6-alkyl; R''=C_1–C_6-alkyl, aryl, Ar-C_1–C_6-alkyl, tri-C_1 –C_6-alkyl; n=0, 1, 2), and reacting said solution with a metal salt in an inert organic solvent.

5,308,378

SURFACE PASSIFICATION OF A GROUP IVB METAL SPONGE REGULUS

Steven C. Evans; Dayle R. Flynn, both of Ogden, and R. James Adams, West Point, all of Utah, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 24, 1993, Ser. No. 23,034

Int. Cl.[5] C22B *34/14*

U.S. Cl. 75—611 **3 Claims**

1. A process for passifying the surface of a Group IVB metal sponge regulus, comprising the steps of:

cooling a Group IVB metal sponge regulus in a vessel under vacuum from a temperature of at least about 800° C.; and

backfilling the vessel containing the sponge with a gas containing from 25% to 75%, by volume, of a gas selected from the group carbon dioxide, carbon monoxide and mixtures thereof, and the balance an inert gas and impurities associated therewith before opening the vessel to the atmosphere.

5,308,379

EXTRA-LOW-OXYGEN COPPER AND A METHOD OF PROCESSING SAME

Norikazu Ishida, Saitama, and Takurou Iwamura, Chiyoda, both of Japan, assignors to Mitsubishi Materials Corporation, Ohtemachi, Japan

Filed Apr. 8, 1993, Ser. No. 46,250

Claims priority, application Japan, Apr. 9, 1992, 4-117022

Int. Cl.[5] C22B *15/00*

U.S. Cl. 75—646 **18 Claims**

1. A method of processing copper comprising:

deoxidizing a molten copper;

adding a Cu_xO to said molten copper to produce a mixture;

said Cu_xO producing an oxygen concentration within a range of from 50 to 200 ppm relative to said molten copper for a portion of said deoxidizing; and

maintaining said mixture at a predetermined melting temperature for a predetermined time.

5,308,380

MIC OXYGENATION: "EXTRACTION OF METALS VALUES FROM METALS BEARING ORES"

Mark S. Hallinan, and Anthony R. Stephens, both of Johannesburg, South Africa, assignors to African Oxygen Limited, Johannesburg, South Africa

Filed Jun. 8, 1992, Ser. No. 895,298

Claims priority, application South Africa, Jun. 6, 1991, 91/4338

Int. Cl.[5] C22B *3/12, 3/02*

U.S. Cl. 75—744 **19 Claims**

1. A process for extracting metal values from metal bearing ores, which comprises:

(a) milling wetted ore to produce a slurry;

(b) removing water from the slurry to produce a thickened slurry of low water content and a water overflow component;

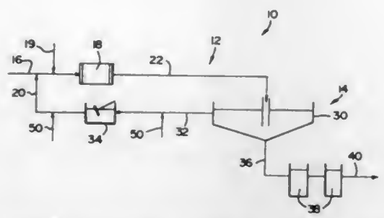
(c) adding a lixiviant to the thickened slurry;

(d) leaching metal from the thickened slurry such that the metal is dissolved in the lixiviant to form a leached slurry;

(e) absorbing the leached slurry in a carbon-in-pulp absorption section via contact with activated carbon particles

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which absorb the metal from the lixiviant to form a residual slurry;
(f) separating the carbon particles from the residual slurry; and
(g) recovering the metal from the carbon particles;



wherein the improvement comprises introducing a gaseous agent into the water overflow component, where at least a portion of the water overflow component is recycled to the milling stage for wetting of the ore, which agent is capable of promoting recovery of the metal values from the ore.

5,308,381

AMMONIA EXTRACTION OF GOLD AND SILVER FROM ORES AND OTHER MATERIALS

Kenneth N. Han, and Xinghui Meng, both of Rapid City, S. Dak., assignors to South Dakota School of Mines & Techology, Rapid City, S. Dak.

Filed Apr. 15, 1993, Ser. No. 46,311
The portion of the term of this patent subsequent to May 9, 2009, has been disclaimed.
Int. Cl.[5] C01G *3/14*
U.S. Cl. 75—744 **10 Claims**

1. A process for extracting elemental gold and elemental silver from gold-silver ores comprising the steps of:
I. suspending the gold-silver ore in an aqueous leach solution comprising:
from about 2 to about 8 gram-moles per liter of ammonia;
from about 0.1 to 2 gram-moles of ammonia salts selected from the group consisting of ammonium iodide, ammonium phosphate, ammonium bromide, ammonium carbonate, ammonium acetate and mixtures thereof; and
an effective amount of an oxidant selected from the group consisting of cupric ions, manganic ions, oxygen, ozone, hypochlorite, hydrogen peroxide and mixtures thereof; thereby forming a suspension; and
II. charging the suspension to a reaction zone; and
III. heating the suspension in the reaction zone to a temperature of about 100° C. to 300° C. and a pressure of about 689.5 (100 psi) to 6895 kN/m^2 (1000 psi) thereby forming a leach solution containing gold-ammine and silver-ammine; and
IV. recovering the elemental gold and silver from the leach solution.

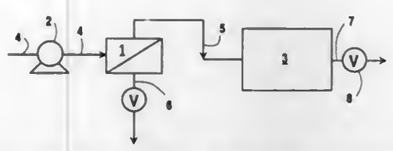
5,308,382

CONTAINER INERTING

Ravi Prasad, East Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Apr. 16, 1993, Ser. No. 48,622
Int. Cl.[5] B01D *53/22, 53/04*
U.S. Cl. 95—12 **13 Claims**

1. A process for inerting an interior of a container, said process comprising:
(a) steadily introducing an inert fluid rich stream into said interior of said container, the concentration of inert fluid in said inert fluid rich stream being greater than the inert fluid concentration in said interior of said container;
(b) increasing the concentration of inert fluid in said inert fluid rich stream during its introduction into said container; and



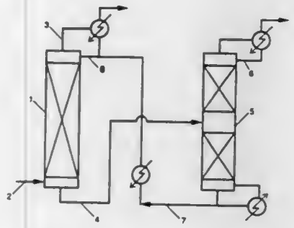
(c) withdrawing or purging a waste gas stream containing at least one impurity and inert gas from said interior of said container.

5,308,383

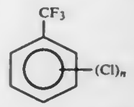
METHOD FOR SEPARATING CHLORINE FROM A MIXTURE OF GASES

Edward A. Rowe, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jun. 21, 1993, Ser. No. 78,908
Int. Cl.[5] B01D *53/14*
U.S. Cl. 95—182 **13 Claims**



1. A method of removing chlorine from a mixture of gases comprising
(a) contacting said mixture of gases with a liquid which comprises a compound having the general formula



where n is 1 to 3, whereby chlorine in said mixture of gases is absorbed by said liquid; and
(b) heating said liquid to volatilize said chlorine therefrom and separate said chlorine from said liquid.

5,308,384

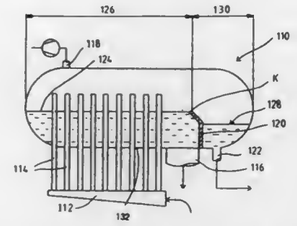
DEAERATION VESSEL

Kari Kapanen; Seppo Lukkarinen; Jouni Parviainen, all of Savonlinna, and Pentti Viklö, Kerimäki, all of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Oct. 1, 1992, Ser. No. 953,688
Claims priority, application Finland, Oct. 16, 1991, 914871
Int. Cl.[5] B01D *19/00*
U.S. Cl. 95—260 **22 Claims**

1. A method of deaerating cellulose pulp having a consistency of about 0.1–3% utilizing a hollow vessel having a weir disposed therein defining a liquid level within the vessel interior, and dividing the vessel interior into first and second portions, comprising the steps of:
introducing pulp suspension into the vessel first portion above the liquid level;

withdrawing gas which separates from the pulp suspension from above the liquid level;
withdrawing liquid that passes over the weir from the second portion of the vessel; and
withdrawing deaerated pulp from the vessel first portion through an outlet immediately adjacent the weir so as to minimize turbulence in and of the deaerated pulp suspension withdrawn from the vessel first portion.
3. A deaeration vessel comprising:
a hollow vessel body having a bottom and a top;
means for introducing fluent material to be deaerated into said vessel, above said bottom, a fluent material level being established in said vessel body;



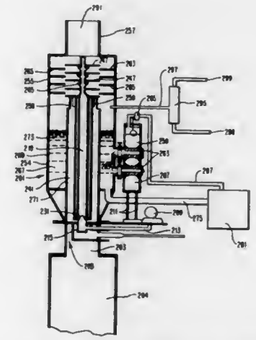
means for withdrawing gas separated from said fluent material above the level of fluent material in said body;
a partition wall dividing said hollow vessel body into first and second portions and defining a weir and having a top surface which establishes the level of fluent material in said vessel body, said partition wall extending upwardly from said bottom;
said means for introducing fluent material disposed in said first portion of said vessel body; and
outlet means for deaerated fluent material disposed in said bottom of said first portion of said vessel body immediately adjacent said partition wall, so as to minimize turbulence in and of the deaerated pulp suspension withdrawn therethrough.

5,308,385

POLLUTION ABATEMENT APPARATUS AND METHOD

Dennis Winn, 397 N. 1400 West, Cedar City, Utah 84720

Filed Jun. 10, 1992, Ser. No. 896,811
Int. Cl.[5] B01D *47/06*
U.S. Cl. 95—195 **21 Claims**



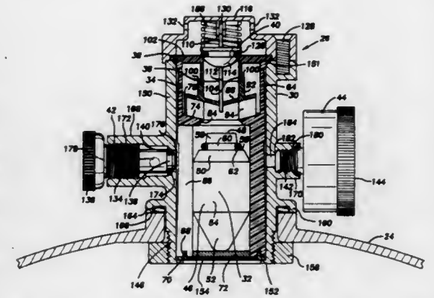
1. A method for removing pollutants from a gas steam comprising:
(i) directing the gas stream into a chamber;
(ii) forming an aerosol within the chamber by directing a spray of saturated steam against a primary deflector plate to disperse a portion of the spray and repelling a substantial portion of the spray off of the primary deflector plate against a secondary deflector plate to disperse a portion of the spray rebounded against the secondary deflector plate,
(iii) directing the gas stream through the aerosol to allow the aerosol to remove pollutants from the gas stream by condensation of the steam,
(iv) directing the pollutant-removed gas stream from the chamber, and
(v) recovering the condensed water with the removed pollutants from the chamber.

5,308,386

AIR RELIEF VALVE FOR A PRESSURE VESSEL

Robert D. Wilkes, Sanford, N.C., assignor to Essef Corporation, Chardon, Ohio

Filed Feb. 3, 1993, Ser. No. 13,101
Int. Cl.[5] B01D *19/00*
U.S. Cl. 96—158 **20 Claims**



1. A relief valve for a pressure vessel, said pressure vessel being adapted to retain a quantity of liquid therein, said relief valve comprising a valve body which is adapted to mount within a port in the pressure vessel, automatic valve means mounted to said valve body and adapted to vent fluid from said valve body while preventing gas from the atmosphere from entering said valve body therethrough, flow control means housed within the valve body and adapted to control communication of a fluid stream in accordance with liquid level in the pressure vessel, and a fluid stream diversion and separation means, said diversion and separation means being operable to separate the fluid stream into a non-gaseous portion and a gaseous portion, said non-gaseous portion being retained within said valve body and said gaseous portion being vented to atmosphere via said automatic valve means.

5,308,387

PRE-ETCH TREATMENT OF A PLASTIC SUBSTRATE

Barry S. James, Rugby, England, assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 597,290, Oct. 12, 1990, abandoned, which is a continuation of Ser. No. 244,900, Sep. 15, 1988, abandoned. This application Jun. 3, 1992, Ser. No. 893,190
Claims priority, application United Kingdom, Sep. 25, 1987, 8722643; Dec. 23, 1987, 8730038
Int. Cl.[5] C09K *3/00;* B05D *3/10*
U.S. Cl. 106—1.11 **4 Claims**

1. A method of preparing the surface of a polycarbonate, polysulfone, or polyester for plating with a metal, which method comprises applying to the said surface a solvent composition consisting essentially of an aqueous solution containing a component selected from the group consisting of diethylene glycol monobutyl ether acetate, diethylene glycol monoethyl ether acetate, and mixtures thereof.

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5,308,388

FOUNTAIN SOLUTION FOR OFFSET PRINTING

Loni Schell, Hofheim-Wallau, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 694,250, May 1, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 950,239

Claims priority, application Fed. Rep. of Germany, May 10, 1990, 4014960

Int. Cl.[5] C09K *3/18*

U.S. Cl. 106—2 **14 Claims**

1. A fountain solution for offset printing consisting essentially of:

water;

about 0.001 to 0.08% by weight of at least one polyether surfactant selected from the group consisting of C_5–C_{15}-alkanols, C_5–C_{15}-alkenols, C_5–C_{15}-alkanediols and C_5–C_{15}-alkenediols which have been ethoxylated or propoxylated, the polyether surfactant having 3 to 12 units selected from the group consisting of ethylene oxide units and propylene oxide units and having an HLB value of more than 8;

at least one pH-adjusting substance selected from the group consisting of an organic acid, a salt of an organic acid and a buffer, said pH-adjusting compound being present in an amount sufficient to produce a pH of between 4 and 6 in the fountain solution; and

optionally at least one additive selected from the group consisting of water-soluble organic solvents having a boiling point above about 100° C. and a flash point above about 21° C., humectants, water-soluble polyers, corrosion inhibitors, chelate formers, preservatives, dyes and antifoams

wherein said fountain solution is hydrotrope-free.

5,308,389

METAL APPEARANCE COMPOSITION

Joseph M. Russo, The Woodlands, and Randall R. Hendrix, Spring, both of Tex., assignors to Pennzoil Products Company, Houston, Tex.

Filed May 5, 1992, Ser. No. 878,694

Int. Cl.[5] B05D *3/00, 7/16;* **C09D** *5/08*

U.S. Cl. 427—385.5 **15 Claims**

1. A composition for spraying on a surface to provide a flexible protective film on said surface, the composition comprising the following components:

Component	Amount - Weight Percent
Polyurethane	25–40
Anti-corrosive Agent	1.0–2.0
Thickener	0.1–2.0
Distilled Water	40–70
Dispersing Agent	0.1–10
Antifreeze Agent	0.5–2.0.

5,308,390

INK COMPOSITION AND METHOD OF MAKING AND USING SUCH COMPOSITION

Thomas J. Pennaz, Brooklyn Park, Minn., assignor to Deluxe Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 946,762, Sep. 17, 1992, abandoned. This application Apr. 1, 1993, Ser. No. 41,794

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—20 R **15 Claims**

1. An oil based ink composition comprising an ink varnish having a resin component, an oil component and a surfactant component wherein said oil resin and surfactant components are compatible with one another and said resin component includes a first resin component which is substantially water insoluble and a second resin component which is compatible with said first resin component and which comprises a water reducible resin whose water solubility is pH dependent, said second resin component and said surfactant component being present in said ink varnish in an amount sufficient to cause the ink varnish to be substantially water insoluble at acid pH levels and water washable at alkaline pH levels, said second resin component further being present in an amount of at least 2% by weight of said ink varnish and said surfactant further being present in an amount of at least 1% by weight of said ink varnish.

5,308,391

CERAMIC MATERIAL FOR VENEERING METALLIC DENTAL PROTHESES

Ottmar Komma, Niddatal, and Juergen Steidl, Woellstadt, both of Fed. Rep. of Germany, assignors to Ducera Dental-Gesellschaft mbH, Rosbach, Fed. Rep. of Germany

Continuation of Ser. No. 27,589, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 764,231, Sep. 23, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 120,471

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1990, 4031168

Int. Cl.[5] A61C *13/083;* **C03C** *3/091*

U.S. Cl. 106—35 **12 Claims**

1. A method of using a ceramic material to make a veneer on a gold alloy dental prostheses comprising depositing a ceramic material on said gold alloy dental prostheses and firing at a sufficiently high temperature and for a sufficient period of time to form said veneer, said ceramic material having a coefficient of thermal expansion between 20° and 500° C. of $16 \cdot 10^{-6}$ to $17.5 \cdot 10^{-6}\ K^{-1}$ and comprising 60 to 68% by weight SiO_2, 10 to 15% by weight Al_2O_3, 0.7 to 1.5% by weight B_2O_3, 0 to 0.5% by weight Sb_2O_3, 0 to 0.5% by weight CeO_2, 0 to 0.5% by weight BaO, 0.1 to 0.5% by weight CaO, 9 to 12% by weight K_2O, 9 to 11% by weight Na_2O, 0.8 to 1.4% by weight Li_2O and 0.2 to 0.4% by weight F_2 and wherein said gold alloy dental prothesis comprises a gold alloy having a coefficient of thermal expansion between 20° and 500° C. of $16 \cdot 10^{-6}$ to $17.5 \cdot 10^{-6}\ K^{-1}$.

5,308,392

DRY FRICTION MATERIAL

Kazuya Morita, Toyota; Teruo Matsukawa, Nishio, and Mikio Harada, Aichi, all of Japan, assignors to Aisin Kako Kabushiki Kaisha, Aichi, Japan

Filed Oct. 23, 1992, Ser. No. 965,012

Claims priority, application Japan, Oct. 23, 1991, 3-275393

Int. Cl.[5] C09K *3/14*

U.S. Cl. 106—36 **8 Claims**

1. A dry friction material comprising:

a fiber base material comprising at least one fiber selected from the group consisting of aromatic polyamide fibers, titanic acid potassium whiskers and glass fibers;

a bonding agent selected from the group consisting of phenol resin and epoxy resin;

a friction conditioner selected from the group consisting of graphite and cashew dust;

a filler selected from the group consisting of at least one of barium sulfate, calcium carbonate and magnesium oxide; and

2 to 20% by weight of a tin alloy having a fusing point of more than 500° C. and a hardness of less than 4 Moh's.

5,308,393

AQUEOUS RELEASE AGENT AND THE USE THEREOF

Thomas Hättich, Hauselgasse 39, 6900 Heidelberg, and Gerhard Schuster, Pachelbelstr. 56, Nuremberg, both of Fed. Rep. of Germany

Continuation of Ser. No. 711,884, Jun. 7, 1991, abandoned. This application Aug. 26, 1992, Ser. No. 935,659

Claims priority, application European Pat. Off., Jun. 7, 1990, 90110797.9

Int. Cl.[5] C09D *191/00, 191/06*

U.S. Cl. 106—38.22 **9 Claims**

1. An aqueous release agent consisting essentially of:

a) at least one of oil, wax, fat, fatty amines, and esters of fatty acids with fatty alcohols, as release-active substances, emulsified in water which acts as a carrier; and

b) one or more ammonium salts of the formula $[NR_1R_2R_3R_4]^+X^-$, as an emulsifier

wherein R_1, R_2, R_3, and R_4, independently, represent hydrogen or C_1–C_{25} alkyl radicals, provided that at least one of the radicals is a C_1–C_{25} alkyl radical, and

wherein X^- represents an anion which contains at least one higher C_{10}–C_{30} surfactant acid.

5,308,394

PIGMENT AND PROCESS FOR PRODUCING THE SAME

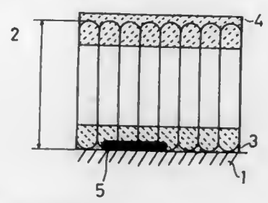
Taketoshi Minohara, Toyota; Hiroshi Ito, Ichinomiya; Junichi Handa, and Yuji Tanaka, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Continuation of Ser. No. 869,846, Apr. 16, 1992, abandoned, and Ser. No. 679,677, Apr. 4, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 930,463

Claims priority, application Japan, Apr. 5, 1990, 2-91223

Int. Cl.[5] C09C *1/62, 1/36*

U.S. Cl. 106—403 **15 Claims**



1. A pigment comprising:

a light-transparent ceramic scaly substrate;

a tin compound layer coated on a surface of said substrate in an amount of 0.6 to 0.75% by weight with respect to said substrate, said amount being converted into metallic tin;

a rutile type titanium dioxide layer formed on a surface of said substrate coated with said tin compound;

a metal compound layer coated on a surface of said titanium dioxide layer in an amount of 0.15 to 0.6% by weight with respect to said substrate, the metal of said metal compound being at least one selected from the group consisting of Bi, Sb, As, Cd, Zn, Mn, Pb and Cr, and said amount being converted into metal; and

metallic glossy dots formed on said substrate in a scattering manner, said metallic glossy dots occupying 0.05 to 95% of a total surface area of said surfaces,

wherein said metal dots are of uniform particle diameters and are formed between said titanium dioxide layer and said substrate.

5,308,395

LIQUID COLORANT/ADDITIVE CONCENTRATE FOR INCORPORATION INTO PLASTICS

Neil A. Burditt, Shaker Heights, and Richard L. Abrams, N. Royalton, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 686,033, Apr. 16, 1991, Pat. No. 5,157,067, which is a continuation-in-part of Ser. No. 545,350, Jun. 27, 1990, abandoned. This application Jun. 4, 1992, Ser. No. 878,358

Int. Cl.[5] C08J *3/20;* **C08L** *93/04*

U.S. Cl. 106—500 **8 Claims**

1. A liquid concentrate comprising:

(I) a rosin based vehicle comprising:

(A) at least about 52 percent by weight of the vehicle of at least one non-polymeric organic rosin ester;

(B) at least about 0.1 percent by weight of the total concentrate of at least one surfactant having a surfactant demand which is met by a concentration of no more than about 20 percent by weight of the total concentrate; and

(II) up to about 85 percent by weight of the total concentrate of at least one colorant or additive, wherein said concentrate flows readily by gravity and is characterized by a viscosity at 25° C. under a shear stress of 12.5 thousand dynes/cm^2 of about 5 to about 1500 poise.

5,308,396

METHOD OF MAKING LIGHTWEIGHT GRANULES COATED WITH CEMENTITIOUS MATERIAL

Laszlo Kovacs, West Molesey, England, assignor to Mazedawn Limited, Kent, England

Continuation of Ser. No. 572,935, Sep. 10, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 911,241

Claims priority, application United Kingdom, Mar. 10, 1988, 8805694

Int. Cl.[5] C04B *16/08*

U.S. Cl. 106—677 **10 Claims**

7. A method of making a cementitious building material with a lightweight additive comprising discrete granules of a lightweight material each coated with an adhesive to which is adhered a cured cementitious coating, said method comprising the consecutive steps of:

mixing said granules of a lightweight material with said adhesive in a mixer to form an adhesive coating thereon;

adding a wet cementitious coating material to said mixer and mixing said cementitious coating material with the adhesive coated granules until the adhesive coated granules become coated with the cementitious coating material and separated;

removing said granules from the mixer;

drying said granules to produce granules with a cured cementitious coating; and

adding said granules to said cementitious building material.

5,308,397

BASE COAT STUCCO MORTARS FOR COATING AND FINISHING INTERIOR AND EXTERIOR WALLS OF A BUILDING

Burton K. Whatcott, P.O. Box 863, Dolores, Colo. 81323

Filed Feb. 16, 1993, Ser. No. 18,164

Int. Cl.[5] C04B *14/38, 14/42, 7/02*

U.S. Cl. 106—711 **7 Claims**

1. A refractory combination for a base coating for mortars comprising in combination:

approximately 90 pounds of Portland cement,

approximately 10 pounds of hydrated lime,

approximately 2 pounds of reinforcing fibers,

approximately 8 pounds of polymer solids,

approximately 3 parts of sand to 1 part of cement by volume,

water as needed to provide a fluid workable combination, wherein

said reinforcing fibers comprise fiberglass, and

said polymer solids comprise styrene butadiene rubber.

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5,308,398

DEVICE FOR THE CONTACT-FREE APPLICATION OF A STRIP OF LIQUID TO A MOVING WEB OF MATERIAL

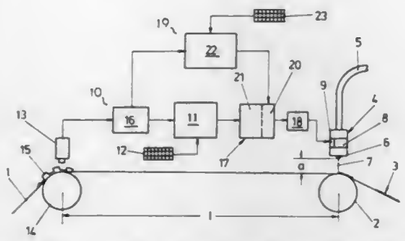
Josef Öttl, Diedorf, and Karl-Heinz Reichel-Langer, Zusmarshausen, both of Fed. Rep. of Germany, assignors to Grafotec Kotterer GmbH, Diedorf, Fed. Rep. of Germany

Filed Jnn. 8, 1992, Ser. No. 895,124

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122105

Int. Cl.[5] B05B *12/02, 12/10*

U.S. Cl. 118—674 **7 Claims**



1. An apparatus for the contact-free application of a liquid strip, on a moving web of material, comprising at least one application head, which is provided with at least one nozzle arranged at a distance from the web of material and a valve adapted to put the nozzle into and out of operation and adapted to be operated in accordance with the desired pattern of application, wherein the timing of the valve is modified to depart from basic values, which are dependent on the application pattern, in accordance with a correction value which is a function of the speed of the web of material and at least the distance of the web from the nozzle, the apparatus further comprising a sensor adapted to respond to the web of material and a program control device adapted to be timed by said sensor, said program control device being coupled in series with an auxiliary control device for determining the correction value, said auxiliary control device comprising a calculating device with an input device for manual input of parameters entering into the correction value, the apparatus further comprising means adapted to derive a time factor from the parameters and means to multiply such time factor by the speed of the web of material so as to produce the correction value, the correction value being subtracted by a comparator from the basic values which are a function of the distance of the web from the nozzle.

5,308,399

METHOD AND APPARATUS FOR COATING A STRUCTURAL COMPONENT BY GAS DIFFUSION

Horst Pillhoefer, Roehrmoos; Martin Thoma, Munich; Heinrich Walter, Friedberg, and Peter Adam, Dachan, all of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

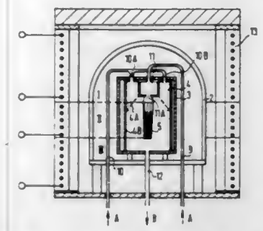
Division of Ser. No. 899,762, Jun. 17, 1992. This application Jun. 4, 1993, Ser. No. 72,149

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4119967

Int. Cl.[5] C23C *14/00, 16/00*

U.S. Cl. 118—719 **3 Claims**

1. An apparatus for aluminizing surfaces of a structural component, comprising a retort chamber, two aluminum sources in said retort chamber, means for heating different zones of said retort chamber to different temperatures, one of said zones having the highest temperature holding said aluminum sources, a first diffusion gas conduit for feeding a diffusion gas mixture through one of said aluminum sources for diffusion coating an outer surface of said structural component in said retort chamber, a second diffusion gas conduit for feeding a further diffusion gas mixture through the other of said aluminum sources for diffusion coating inner surfaces of said structural component in said retort chamber and a common gas discharge conduit connected to said retort chamber.



5,308,400

ROOM TEMPERATURE WAFER CLEANING PROCESS

Chao-Yang Chen, Taipei, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 2, 1992, Ser. No. 939,615

Int. Cl.[5] C23G *1/02, 5/032;* **B08B** *3/02*

U.S. Cl. 134—2 **20 Claims**

1. The method of removing surface particles from a wafer comprising:

immersing said wafer in a hydrofluoric acid solution;

while said wafer is still wet, removing surface particles from said wafer using an ammonium hydroxide-hydrogen peroxide solution at room temperature;

performing a quick dump rinse and spin dry on said wafer to complete said particle removal process.

5,308,401

METHOD OF CLEANING A COMBINATION OF IONIC AND NONIONIC SURFACTANTS

Juergen Geke, Duesseldorf; Bernd Stedry, Kempen, and Raina Hirthe, Cologne, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00823, § 371 Date Nov. 9, 1992, § 102(e) Date Nov. 9, 1992, PCT Pub. No. WO91/17233, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 30, 1991, Ser. No. 946,367

Claims priority, application Fed. Rep. of Germany, May 9, 1990, 4014859

Int. Cl.[5] C11D *1/835*

U.S. Cl. 134—2 **20 Claims**

1. A process for cleaning hard surfaces with a combination of ionic and non-ionic surfactants, containing:

(a) at least one quaternary ammonium compound having the general formula (I):

$$R^1(-CHOH-CHR^2)_n-N^+R^3R^4R^5X^- \quad (I),$$

wherein R^1 represents a linear or branched alkyl group having from 1 to 22 carbon atoms; R^2 represents hydrogen or a linear or branched alkyl group having from 1 to 21 carbon atoms, the total number of the carbon atoms of the substituents R^1 and R^2 being within the range of from 10 t0 22; n=0 or 1; R^3 and R^4 represent methyl, ethyl, 2-hydroxyethyl or hydroxypropyl; R^5 represents an alkyl group having from 4 to 6 carbon atoms or a phenylalkyl group having from 1 to 3 carbon atoms in the alkyl moiety; and X^- represents a halide or the anion of an organic acid having from 4 to 15 carbon atoms; and

(b) at least one alkyl or alkenyl polyethylene glycol mixed ether having the general formula (II):

$$R^6-O-(CH_2CH_2-O)_s-R^7 \quad (II),$$

wherein R^6 represents a linear alkyl group having from 8 to 10 carbon atoms or a cyclic alkyl group having from 5 to 6 carbon atoms; s represents a number within the range of from 2 to 4.5, and R^7 represents a linear alkyl group having 4 carbon atoms or a benzyl group,

the ratio by weight of the components (a):(b) being within the range of from 20:1 to 1:20.

5,308,402

FURFURYL ALCOHOL MIXTURES FOR USE AS CLEANING AGENTS

Michael L. Bixenman, Old Hickory, Tenn., and George C. Wolf, Kokomo, Ind., assignors to Kyzen Corporation, Nashville, Tenn. and Delco Electronics Corporation, Kokomo, Ind.

Continuation of Ser. No. 873,101, Apr. 24, 1992, abandoned, which is a division of Ser. No. 586,080, Sep. 21, 1990, Pat. No. 5,128,057, which is a continuation-in-part of Ser. No. 414,011, Sep. 29, 1989, abandoned. This application Mar. 26, 1993, Ser. No. 37,528

Int. Cl.[5] B08B *7/00;* **C11D** *1/18, 3/26, 7/32*

U.S. Cl. 134—2 **14 Claims**

1. A process for removing flux residue from an electronic component comprising contacting the component with a solution of an effective amount to remove said flux residue of a composition at a temperature below the boiling point of the composition without harming the component, said composition comprising tetrahydrofurfuryl alcohol and an activator of the formula

$$R_1-\overset{R_2}{\underset{\|}{N}}-R_3 \quad (I)$$

wherein R_1, R_2 and R_3 are independently hydrogen, C_1–C_7 alkyl, C_5–C_6 cycloalkyl, furanyl which can be substituted by C_1–C_7 alkyl, tetrahydrofuranyl which can be substituted by C_1–C_7 alkyl, pyrrolyl, pyrrolidinyl, benzyl which can be substituted by C_1–C_7 alkyl, C_1–C_7 alkenyl, C_1–C_7 alkynl, furfuryl which can be substituted by C_1–C_7 alkyl, or tetrahydrofurfuryl which can be substituted by C_1–C_7 alkyl, wherein R_1, R_2 and R_3 can be substituted by at least one hydroxy group, provided that R_1, R_2 and R_3 are not simultaneously hydrogen, or

$$R_4-\overset{O}{\underset{\|}{C}}-O-R_5 \quad (II)$$

wherein R_4 is hydrogen, C_1–C_6 alkyl, C_5–C_6 cycloalkyl, furanyl which can be substituted by C_1–C_6 alkyl, tetrahydrofuranyl which can be substituted by C_1–C_6 alkyl, pyrrolyl, pyrrolidinyl, or benzyl which can be substituted by C_1–C_6 alkyl, R_5 is C_1–C_6 alkyl, C_5–C_6 cycloalkyl, furanyl which can be substituted by C_1–C_6 alkyl, tetrahydrofuranyl which can be substituted by C_1–C_6 alkyl, furanyl, which can be substituted by C_1–C_6 alkyl, tetrahydrofurfuryl which can be substituted by C_1–C_6 alkyl, pyrrolyl, pyrrolidinyl, benzyl which can be substituted by C_1–C_6 alkyl, or the group

$$-(c)_a-O-(C)_b-OH$$

wherein a is from 1 to 3 and b is from 1 to 4, and rinsing with a solution of water, alcohol or a fluorinated hydrocarbon, said composition being effective for use at standard temperature and pressure conditions.

5,308,403

BLAST MEDIA CONTAINING MAGNESIUM OXIDE

Benny S. Yam, Holmdel, and Anthony E. Winston, East Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jan. 21, 1993, Ser. No. 6,648

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—7 **20 Claims**

1. A method of blast cleaning a solid surface comprising; propelling an abrasive blast media against a solid surface by means of a water-containing pressurized fluid stream to strip coatings or other contaminants from said surface, said blast media comprising water soluble abrasive particles and a magnesium oxide rinse aid effective to reduce blast media residues on said solid surface.

5,308,404

LESS AGGRESSIVE BLAST MEDIA FORMED FROM COMPACTED PARTICLES

Benny S. Yam, Holmdel; Amy L. Joseph, Hopewell, both of N.J., and Keith A. Jones, Yardley, Pa., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jan. 21, 1993, Ser. No. 6,654

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—7 **20 Claims**

15. A process for removing contaminants from substrates comprising blast cleaning said substrates with a blast media comprising water soluble abrasive particles formed by compacting fine particles of said abrasive having an average diameter of from submicron to less than 200 microns into larger particles having an average diameter of from about 50 to 1,000 microns, said abrasive particles having a Mohs hardness of from about 2.0 to about 5.0.

5,308,405

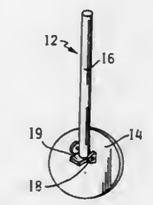
TOILET BOWL CLEANING SYSTEM

John F. McElroy, 324 N. Margeno Ave., Alhambra, Calif. 91804

Filed Sep. 9, 1992, Ser. No. 943,224

Int. Cl.[5] B08B *1/00;* **A47K** *1/14*

U.S. Cl. 134—24 **1 Claim**



1. In a method of cleaning a toilet having a toilet tank, a flush handle and a toilet bowl, the toilet bowl having a top, a bottom, a rim proximate to the top and a drain proximate to the bottom, said method of cleaning comprising the steps of:

a) flushing the toilet to empty the tank and to initiate the flow of refill water into the tank,

b) holding down the flush handle to cause the refill water to continuously flow out of the tank and into the toilet bowl;

c) plugging the drain with a tool comprising a plug and a handle attached to the plug, where the plug is a flexible disc which is attached to the handle by a hinge that is not attached to the disc precisely at the geometric center of the disc so that disposing the handle vertically above the disc causes the disc to gravitate into a substantially parallel relationship with the handle,

d) releasing the flush handle when the water in the bowl rises to a height proximate to the top of the bowl to prevent the flow of additional refill water into the bowl;

e) adding to the water in the bowl a cleaning agent to cleanse

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the bowl, including the area of the bowl under the rim, and

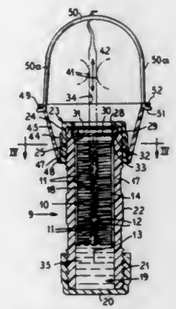
f) unplugging the drain and flushing the toilet to rinse the cleaning agent and water mixture from the bowl.

5,308,406

CLEANING OF HEALTH CARE INSTRUMENTS

Joan Wallock, 836 Bonnie Brae La., and James M. Leu, 159 Thornhurst, both of Bolingbrook, Ill. 60440

Filed Dec. 14, 1992, Ser. No. 990,015
Int. Cl.[5] B08B *1/00, 7/00*
U.S. Cl. 134—42 **20 Claims**



1. A new and improved method of cleaning elongate soiled health care instruments, comprising:

providing a tubular container having opposite ends, one of which ends is closed and opposite end is open for projection therethrough into the container of instruments to be cleaned;

providing a flexible panel having instrument-cleaning bristles on one face thereof;

bending the panel into substantially tubular form and thereby directing said bristles generally convergently towards one another about an axis;

inserting said tubularly bent panel into said container; instruments to be cleaned and relatively agitating said instruments and the bristles in contact with the instruments and thereby effecting cleansing of the instruments by the bristles.

5,308,407

ELECTROSLAG WELDING FLUX

Robert A. Bishel, Evan B. Hinshaw, both of Huntington, W.Va., assignor to Inco Alloys International, Inc., Huntington, W. Va.

Filed Apr. 16, 1993, Ser. No. 48,686
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—26 **20 Claims**

1. A flux useful for electroslag welding metals consisting essentially of in weigh percent: 50 to 95 fluoride compound, 0 to 45 oxide compound, 1 to 25 rare earth-containing material, 1 to 45 potassium-containing material and 0 to 25 total metallics.

5,308,408

AUSTENITIC WEAR RESISTANT STEEL AND METHOD FOR HEAT TREATMENT THEREOF

Reijo Katila, Tampere, Finland, assignor to Lokomo Oy, Tampere, Finland

PCT No. PCT/FI91/00279, § 371 Date Mar. 9, 1993, § 102(e) Date Mar. 9, 1993, PCT Pub. No. WO92/04478, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 12, 1991, Ser. No. 984,590
Claims priority, application Finland, Sep. 12, 1990, 904500
Int. Cl.[5] C22C *38/04;* **C21D** *6/02*
U.S. Cl. 148—328 **6 Claims**



1. A wear resisting steel alloyed with manganese having a ductile austenitic microstructure wherein said steel contains carbon, silicon, manganese, chromium, molybdenum and tungsten in following contents:

Carbon	1.0 to 1.5%,
Silicon	0.3 to 1.5%,
Manganese	11.0 to 21.0%
Chromium	0.0 to 4.0%,
Molybdenum	0.0 to 3.0%, and
Tungsten	0.0 to 2.0%,

and as additional alloying elements nitrogen and at least one of vanadium, titanium and niobium in following contents:

Nitrogen	0.05 to 0.35%,
Vanadium	0.10 to 0.60%,
Titanium	0.10 to 0.50%, and
Niobium	0.10 to 0.30%,

and the balance being iron and normal quantities of impurities, and wherein carbides are present on the grain boundaries as hard precipitates, and hard mainly needle-shaped nitrides and carbonitrides are present in the grain boundary zone and inside the grains which serve to improve wear resistance.

5,308,409

METHOD OF STRENGTHENING ALUMINUM CASTINGS IN A SPECIFIED LOCAL PART

Tadashi Kamimura, Yokohama, and Akira Tsujimura, Chigasaki, both of Japan, assignors to Isuzu Motor Limited, Tokyo, Japan

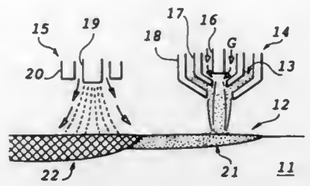
Filed Apr. 22, 1991, Ser. No. 689,218
Claims priority, application Japan, Apr. 23, 1990, 2-105282
Int. Cl.[5] C22F *3/00*
U.S. Cl. 148—512 **19 Claims**

1. A method of strengthening an aluminum casting, comprising the steps of:

encapsulating a core particle made from a heat resisting element with particles made from a metal soluble in Al to form a capsule particle;

applying a first electric arc to a local part of the aluminum casting so as to melt the local part;

spraying a plurality of capsule particles over the melted local part to form an overlay, the encapsulating particles serving as a binding material between the aluminum casting and the core particle; and



applying a second electric arc of high density energy to the overlaid local part so as to remelt the overlaid local part and form a remelt alloy layer.

5,308,410

PROCESS FOR PRODUCING HIGH STRENGTH AND HIGH TOUGHNESS ALUMINUM ALLOY

Hiroyuki Horimura; Kenji Okamoto; Noriaki Matsumoto, and Masao Ichikawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 896,823
Int. Cl.[5] C22C *45/08*
U.S. Cl. 148—561 **5 Claims**



1. A process for producing an aluminum alloy with a high strength and a high toughness, comprising the steps of:

preparing an alloy blank having a primary structure which is one selected from a single-phase structure comprised of a solid-solution phase, a single-phase structure comprised of an amorphous phase, and a mixed-phase structure comprised of a solid-solution phase and an amorphous phase,

subjecting the alloy blank to a thermal treatment at a temperature in a range of about 17K–36K below the destruction temperature of the primary structure, and

maintaining the thermal treatment until an aluminum alloy is formed which has a secondary structure containing 20% or more by volume fraction Vf of chrysanthemum-shaped phases each having a diameter of at most 5 μm and comprising a solid-solution phase and an intermetallic compound phase arranged radiately.

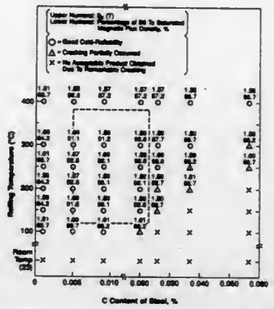
5,308,411

ULTRAHIGH SILICON, GRAIN-ORIENTED ELECTRICAL STEEL SHEET AND PROCES FOR PRODUCING THE SAME

Yozo Suga; Yoshiyuki Ushigami; Hodaka Honma, and Nobuyuki Takahashi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP91/00829, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/19825, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 20, 1991, Ser. No. 835,982
Claims priority, application Japan, Jnn. 20, 1990, 2-162244
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—113 **4 Claims**

1. A process for producing an ultrahigh silicon, grain-oriented electrical steel sheet, comprising cold-rolling an ultrahigh silicon steel sheet comprising by weight 0.005 to 0.023% of C, 5 to 7.1% of Si, 0.014% or less of S, 0.013 to 0.055% of acid soluble Al and 0.0095% or less of total N with the balance consisting of Fe and unavoidable impurities at a temperature in the range of from 120° to 380° C., subjecting the cold-rolled sheet to decarburization annealing, coating the annealed sheet with an annealing separator, coiling the coated sheet to prepare



a strip coil and then subjecting the strip coil to high-temperature finish annealing for secondary recrystallization, wherein the steel sheet being subjected to nitriding during a period from after the decarburization annealing to the initiation of secondary recrystallization in the high-temperature finish annealing, to increase the nitrogen content.

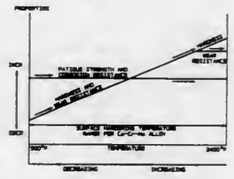
5,308,412

METHOD OF SURFACE HARDENING COBALT-CHROMIUM BASED ALLOYS FOR ORTHOPEDIC IMPLANT DEVICES

H. Ravindranath Shetty, and Walter H. Ottersberg, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Mar. 15, 1993, Ser. No. 30,912
Int. Cl.[5] B22F *1/00;* **A61F** *2/00*
U.S. Cl. 148—238 **21 Claims**





1. A method of manufacturing a cobalt-chromium orthopedic implant device having enhanced wear resistance properties, comprising the steps of:

providing a cobalt-chromium substrate in the form of an orthopedic implant device; and

hardening the surface of the cobalt-chromium substrate by exposing the cobalt-chromium substrate to an atmosphere

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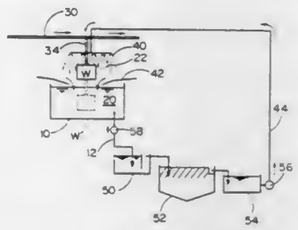
of non-diluted molecular nitrogen gas at a process temperature within the range of 500° F. to 2400° F. for a process time duration sufficient to achieve a hardened outer surface layer and a hardened diffusion layer characterized primarily by solid solution hardening of the surface of the cobalt-chromium substrate by dissolution of nitrogen and oxygen in the cobalt-chromium substrate.

5,308,413

PROCESS FOR PHOSPHATING METAL SURFACE TO MAKE THEREON A ZINC PHOSPHATE COATING FILM

Tamotsu Sobata; Teturo Kishimoto, and Minoru Ishida, all of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 17, 1991, Ser. No. 686,463
Claims priority, application Japan, Apr. 24, 1990, 2-109426
Int. Cl.[5] C23C *22/73*
U.S. Cl. 148—255 **2 Claims**



1. A process for phosphating a metal surface to make thereon a zinc phosphate coating film, wherein a metal surface is brought in contact with a zinc phosphating solution, comprising dipping the metal surface into a first zinc phosphating solution containing a fluoride complex and a simple fluoride, wherein the concentration of the simple fluoride is 200 to 300 mg/l on a basis converted into the HF concentration and a concentration of the fluoride complex is shown as, (fluoride complex)/(simple fluoride)≧0.01 in a mole ratio with the simple fluoride converted into the HF concentration, and then spraying a second zinc phosphating solution having a simple fluoride concentration of 500 mg/l or less on a basis converted into the HF concentration, and wherein the simple fluoride concentration of the second zinc phosphating solution is higher than that of said first zinc phosphating solution.

5,308,414

METHOD AND APPARATUS FOR OPTICAL EMISSION END POINT DETECTION IN PLASMA ETCHING PROCESSES

James A. O'Neill, New City; Michael L. Passow, Pleasant Valley, and Jyothi Singh, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

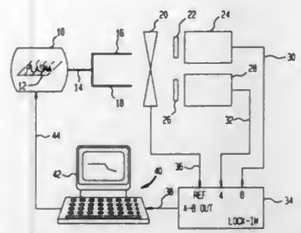
Filed Dec. 23, 1992, Ser. No. 995,727
Int. Cl.[5] G01N *21/00*
U.S. Cl. 156—626 **16 Claims**

1. An apparatus for determining the time at which a plasma etching process should be terminated, said process generating at least one discrete plasma species indicative of the progress of said process and a continuum plasma emission, comprising:

means for monitoring the optical emission intensity of said plasma in a narrow band centered about a predetermined spectral line and generating a first signal indicative of the spectral intensity of said plasma species;

means for monitoring the optical emission intensity of said plasma in a wide band distinct from said narrow band and the emission spectral line of any discrete plasma species and generating a second signal indicative of the spectral intensity of only said continuum plasma emission; and

means for monitoring the magnitudes of said first and second signals and generating a termination signal when said



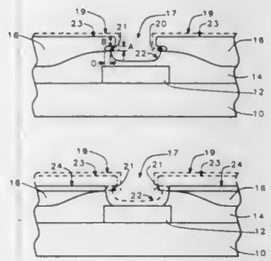
magnitudes diverge, thereby indicating when said plasma etching process should be terminated.

5,308,415

ENHANCING STEP COVERAGE BY CREATING A TAPERED PROFILE THROUGH THREE DIMENSIONAL RESIST PULL BACK

Erh-Nan Chou, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing PTE Ltd., Singapore, Singapore

Filed Dec. 31, 1992, Ser. No. 999,404
Int. Cl.[5] H01L *21/31, 21/312*
U.S. Cl. 156—643 **15 Claims**



1. The method of forming a tapered opening in an insulating layer comprising:

providing said insulating layer on a semiconductor substrate;

forming and patterning a photoresist layer on top of said insulating layer with openings in said photoresist layer where the desired said tapered opening is to be located;

isotropically etching through said openings a portion of said insulating layer vertically and horizontally;

pulling back said photoresist layer via a pure isotropic etch wherein said photoresist layer is eroded from the portion of said photoresist layer in contact with said insulating layer forming an overhang photoresist profile and leaving a step at the top of said insulating layer underneath said overhand photoresist profile;

anisotropically etching remainder of said opening through said insulating layer wherein said overhang photoresist profile is etched away exposing said insulating layer step which is smoothed into said tapered opening having positive sloped sidewalls; and

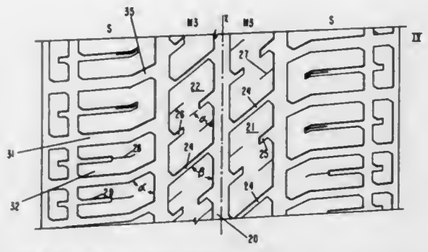
wherein said anisotropic etch is performed using a first step with low selectivity of said photoresist to said insulating layer of between about 2:1 to 3:1 and followed by a second step using higher selectivity of said photoresist to said insulating layer.

5,308,416

VEHICLE TIRE

Johannes Baumhöfer; Joachim Bellut; Dionysius Poque, and Helmut Rickling, all of Aachen, Fed. Rep. of Germany, assignors to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany

Filed Feb. 17, 1994, Ser. No. 710,785
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1990, 9016454
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R **8 Claims**



1. In a vehicle tire of a radial carcass construction with a low cross-sectional profile having a tread portion that is reinforced by a belt layer, whereby said tread portion comprises two circumferential tread element bands in a center portion of said tread portion and a respective shoulder tread element row on shoulders of said tread portion; said tread element bands are separated from one another and from said shoulder tread element rows in an axial direction of said vehicle tire by respective wide and deep circumferential grooves that have straight edges; said tread element bands have notches that are distributed in a circumferential direction of said vehicle tire and are oriented at a slant relative to a center plane of said vehicle tire; said notches begin at said circumferential grooves and end within said tread element bands; said shoulder tread element rows comprise transverse tread elements that are separated from one another by transverse grooves and are arranged transverse relative to said tread element bands; the improvement wherein:

said tread element bands are provided with narrow grooves that are spaced relative to one another by twice a circumferential length of a tread element repeating unit defined by said transverse tread elements in said circumferential direction, and are slanted at a first angle relative to said center plane, with said narrow grooves communicating with said circumferential grooves and being essentially as deep and ½ to ¾ as wide as said circumferential grooves, and with said transverse grooves of said shoulder tread element rows each having a bent portion in the vicinity of said circumferential grooves, whereby said bent portion is oriented at a second angle relative to said center plane, with said second angle being greater than said first angle of said narrow grooves; and

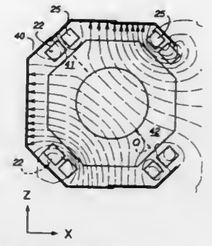
said notches of a respective one of said tread element bands alternate relative to a circumferential center line of said respective tread element band and are slanted at a third angle relative to said center plane, with two alternating ones of said notches being disposed between two neighboring ones of said narrow grooves.

5,308,417

UNIFORMITY FOR MAGNETICALLY ENHANCED PLASMA CHAMBERS

David W. Groechel; Masato M. Toshima, both of Sunnyvale; Robert J. Steger, Cupertino; Jerry Y. Wong, Fremont, all of Calif.; Tetsuya Ishikawa, Funabashi, Japan; Regga Tekeste, San Jose, Calif.; Koichi Ito, Narita, and Tetsuhiko Sambei, Tomisato, both of Japan, assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 12, 1991, Ser. No. 758,670
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 **14 Claims**



1. A plasma reactor comprising:

walls that enclose a processing chamber in which a wafer can be transferred for processing;

a pedestal at which the wafer is transferred for processing;

means for producing a plasma within this processing chamber;

means for producing a magnetic field within the processing chamber; and

within said pedestal, at least one piece of magnetic material that is neither permanently magnetized nor a core of an electromagnet, and that is positioned adjacent to a surface of this pedestal on which said wafer is to be mounted, this magnetic material being positioned adjacent to a region of said pedestal surface at which processing uniformity is improved by a reduction of magnetic field in that region, such that magnetization of this magnetic material, that is induced in response to said produced magnetic field, produces a total magnetic field within the processing chamber having an average systematic spatial deviations in processing rate of said wafer that is less than that in a plasma reactor that differs only in the absence of such magnetic material.

5,308,418

PACKING CONTAINER FOR LIQUID, ESPECIALLY PRESSURIZED CONTENTS

Bengt Björck, Lund, Sweden, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Division of Ser. No. 703,041, May 16, 1991, Pat. No. 5,219,086, which is a continuation of Ser. No. 482,849, Feb. 22, 1990, abandoned. This application Aug. 25, 1992, Ser. No. 934,337
Claims priority, application Sweden, Mar. 29, 1989, 8901092
Int. Cl.[5] B65B *7/00*
U.S. Cl. 156—69 **4 Claims**

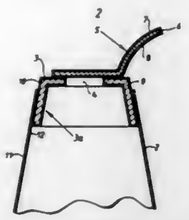
1. A method of forming an opening arrangement on a container, comprising the steps of:

forming a container having an end wall located at one end thereof, said end wall including a metal layer, forming an opening in the end wall so that said opening is defined by an inner peripheral wall that extends between upper and lower surfaces of said end wall, applying a coating of weldable plastic material to the metal layer of the end wall so that the coating of weldable plastic material is in contact with the metal layer on at least one side of the metal layer and so that the coating of weldable plastic

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material covers substantially the entire inner peripheral wall of the opening;

providing a cover strip formed of a metal layer and a coating of weldable plastic material in contact with the metal layer on at least one side of the metal layer; and



sealing the cover strip to the end wall by sealing the coating of weldable plastic material of the cover strip directly to and in contact with the coating of weldable plastic material of the end wall, and cover strip being sealed to the end wall such that the cover strip covers the opening in the end wall.

5,308,419

PARTS FOR TWO-WHEELED VEHICLES WITH IMPROVED SEALING PERFORMANCE FROM THE OUTSIDE

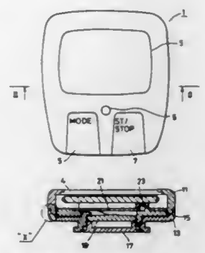
Nobuo Sakurai, Itami, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan

Division of Ser. No. 837,849, Feb. 18, 1992, Pat. No. 5,236,759. This application Mar. 19, 1993, Ser. No. 34,502

Claims priority, application Japan, Feb. 22, 1991, 3-008388

Int. Cl.[5] B32B *31//16*

U.S. Cl. 156—73.1 **4 Claims**



1. A method of manufacturing parts for a two-wheeled vehicle for connecting a first cover and a second cover constituting the two-wheeled vehicle parts containing a crystal oscillator, comprising the steps of:

forming a projection on one of an end surface of said first cover and an end surface of said second cover corresponding to the end surface of said first cover;

mounting the crystal oscillator having a predetermined frequency of natural oscillation on one of the covers,

pressing the end surface of said first cover and the end surface of said second cover through said projection; and

providing an oscillation less than the predetermined frequency to at least one of said first cover and said second cover, so as to connect said first cover and said second cover to each other without damaging the crystal oscillator.

5,308,420

EVA INSOLE MANUFACTURING PROCESS

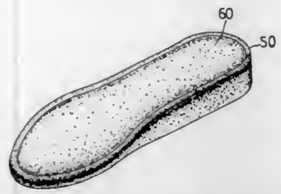
Kuo-Nan Yang, No. 1, Alley 104, Lane 270, Hsueh Shih Rd., Taichung, Taiwan

Filed Feb. 22, 1993, Ser. No. 20,391

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] B29C *67/22*

U.S. Cl. 156—79 **1 Claim**



1. An EVA insole manufacturing process comprising:

(i) forming a first molding and a second molding respectively by the steps of:

(a) mixing an ethylene vinyl acetate resin with a foaming agent according to predetermined proportions, thereby forming first and second mixtures, the concentration of the foaming agent being different in each mixture;

(b) injection molding the resulting mixtures into the first molding and the second molding, so that the first molding has an opening for receiving the second molding;

(ii) placing the second molding within the opening of the first molding and heat foaming both the first and second moldings together in a mold to form an integral molding; and

(iii) form setting the integral molding into an insole.

5,308,421

METHOD FOR FORMING FIBER-REINFORCED GLASS COMPOSITE PROTECTIVE LAYERS ON INSULATING BODIES

Stephen T. Gonczy, Mt. Prospect, and Roger Y. Leung, Schaumburg, both of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

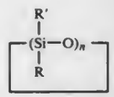
Filed Apr. 12, 1991, Ser. No. 685,303

Int. Cl.[5] C04B *37/00*; B05D *3/02*

U.S. Cl. 156—89 **5 Claims**

1. A method of applying fiber-reinforced glass ceramic composite skin to ceramic insulating bodies comprising:

(a) reacting (1) a cyclosiloxane monomer having the formula



where n is an integer from 3 to 30, R is hydrogen, and R' is an alkene of from 2 to 20 carbon atoms in which one vinyl carbon atom is directly bonded to silicon or (2) two or more different cyclosiloxane monomers having the formula of (1) where for at least one monomer R is hydrogen and R' is an alkyl group having from 1 to 20 carbon atoms and for the other monomers R is an alkene from 2 to 20 carbon atoms in which one vinyl carbon is directly bonded to silicon and R' is an alkyl group of from 1 to 20 carbon atoms, or (3) cyclosiloxane monomers having the formula of (1) where R and R' are independently selected from hydrogen, an alkene of from 2 to about 20 carbon atoms in which one vinyl carbon atom is directly bonded to silicon, or an alkyl group of from 1 to about 20 carbon atoms and at least some of said monomers contain each of said hydrogen, alkene, and alkyl moieties, said reaction taking place in the presence of an effective amount of hydrosilylation catalyst;

(b) applying the reaction product of (a) to at least one refractory fiber selected from the group consisting of boron, silicon carbide, graphite, silica, quartz, S-glass, E-glass, alumina, aluminosilicate, boron nitride, silicon nitride, silicon carbonitride, silicon oxycarbonitride, boron carbide, titanium boride, titanium carbide, zirconium oxide, and zirconia-toughened alumina to form a prepreg;

(c) laying-up plies of the prepreg of (b) on a ceramic insulating body free of the reaction product of (a) to form a bonded green structure;

(d) pressing the green structure of (c) at a pressure above about 100 kPa and at a temperature above about 40° C. to bond the plies of the prepreg of (b) to the ceramic insulating body;

(e) curing the bonded structure of (d) at a temperature not greater than 250° C.;

(f) pyrolyzing the cured structure of (e) at a temperature of about 800° C. to about 1400° C. to form a glass ceramic;

(g) recovering the pyrolyzed product of (f) as the fiber-reinforced glass ceramic composite applied to the ceramic insulating body.

5,308,422

METHOD OF MAKING CERAMIC/METAL COMPOSITES WITH LAYERS OF HIGH AND LOW METAL CONTENT

Ilhan A. Askay, Bellevue; David L. Milius, Seattle, both of Wash.; Mehrdad Yasrebi, Clackamas, Oreg.; Gyeung H. Kim, and Mehmet Sarikaya, both of Seattle, Wash., assignors to The Washington Technology Center, Seattle, Wash.

Filed Aug. 12, 1991, Ser. No. 743,605

Int. Cl.[5] B22D *19/00*

U.S. Cl. 156—89 **24 Claims**



1. A method of making a composite of a ceramic and a metal, the method comprising the steps of:

forming a first set of unsintered layers from a suspension of ceramic particles;

forming a second set of unsintered layers from a suspension of ceramic particles, the volume percent of the ceramic particles in the first set of layers being unequal to the volume percent of the ceramic particles in the second set of layers;

stacking the unsintered layers to form a body;

converting the body to a porous body having layers with different pore volumes; and

infiltrating the porous body with the metal.

5,308,423

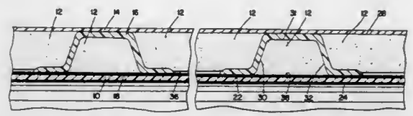
METHOD OF MAKING MULTI-WALLED PIPES AND STORAGE TANKS FOR TOXIC AND CORROSIVE FLUIDS

Donn Kauffman, Daphne, Ala., assignor to Theresa M. Kauffman, Daphne, Ala.; Martha A. Burdick, Meridian, Miss. and George L. Williamson, Daphne, Ala.

Continuation-in-part of Ser. No. 922,572, Jul. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 775,208, Oct. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 552,619, Jul. 16, 1990, abandoned. This application May 3, 1993, Ser. No. 56,354

Int. Cl.[5] B65D *25/20*

U.S. Cl. 156—171 **18 Claims**



1. A process for making multi-walled vessels of improved circumferential and axial strength for transporting and storing fluids, comprising the steps of:

(a) Assembling on a cylindrical form or mold an overlay comprising first sheet to receive a first layer of glass fiber reinforced resinous material;

(b) Applying a resinous material with chopped glass fibers over said first sheet to form a highly chemically resistant barrier;

(c) Applying over said highly chemically resistant barrier, a resinous material with chopped glass fibers and continuous strands of glass fibers;

(d) Curing said resinous material containing said chopped glass fibers and continuous strands of glass fibers to form a first containment wall;

(e) Applying at predetermined points on said first containment wall substantially circumferential preformed continuous rib shaped foam, and securing said foam to said first containment wall;

(f) Applying over said rib shaped foam chopped and continuous glass fibers with a resinous material form a plurality of substantially circumferential ribs integrally bonded to said first containment wall;

(g) Applying and securing bridging foam to said first containment wall between said ribs up to the level of the top of said ribs;

(h) Applying over said bridging foam and said ribs, a resinous material with chopped glass fibers and continuous strands of glass fibers;

(i) Curing said resinous material containing said chopped glass fibers and continuous strands of glass fibers to form a second containment wall integrally bonded to said ribs;

(j) Attaching to said first containment wall a leak alarm safety monitor to detect liquid seepage;

(k) Applying an impervious layer of film between said first containment wall and said bridging foam;

(l) Applying said layer of film between the outer surfaces of said ribs;

(m) Applying said layer of film over said leak alarm safety monitor; and

(n) Having said layer of film extend entirely around the vessel.

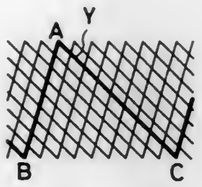
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5,308,424

MULTIAXIAL NONWOVEN FABRIC, AND METHOD OF MAKING THE SAME

Yasuo Sasaki, Houya; Haruhisa Tani, Tokorozawa; Yuuki Kuroiwa, Niiza, and Setsuya Tsuyama, Nerima, all of Japan, assignors to Polymer Processing Research Institute Ltd., Japan

Filed Jun. 1, 1989, Ser. No. 359,569
Claims priority, application Japan, Jun. 6, 1988, 63-138888
Int. Cl.[5] B32B *5/00*
U.S. Cl. 156—178 15 Claims



1. A method of producing a multiaxial nonwoven fabric which comprises:

(a) driving a conveyor belt along a path of travel, said belt being provided with two arrays of pins of a predetermined pitch extending on and along respective opposite longitudinal edges thereof;

(b) reciprocating a multiplicity of parallel continuous yarns at a predetermined angle between said arrays of pins and at the same pitch as said pins;

(c) advancing said pins in the same number as said yarns with one reciprocation of the yarns in such a manner that said yarns are brought into hooking engagement, upon arrival at their turning points, with said pins in either array and bent in zigzag form with varying lengths of the yarns at their going and coming routes, thereby forming a yarn assembly having said yarns intersected on weft and oblique axes by reciprocation between said arrays of pins and parallel to an orbit determined by one side of an isosceles triangle, said isosceles triangle being defined by taking as the height thereof the distance between said arrays of pins and as the base thereof the distance at which said belt travels with one reciprocation of said yarns, and by subsequent displacement of the axial centers of said yarns at a right angle to the warp axis at either one of the going and coming routes; and

(d) overlaying and bonding a warp material on a lower or an upper surface or both surfaces of said yarn assembly prior to or after release thereof from said arrays of pins.

5,308,425

METHOD OF MAKING CROSSLINKED ACRYLIC SHEET WITH ENHANCED VACUUM MOLDING ATTRIBUTES

Richard A. Daff, Erlanger, and James D. Leaseburge, Villa Hills, both of Ky., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 22, 1992, Ser. No. 964,999
Int. Cl.[5] B32B *31/00;* B29C *39/20*
U.S. Cl. 156—231 13 Claims

1. Method of continuously making an acrylic sheet having improved properties for thermoforming comprising continuously casting said sheet on a casting belt from a casting syrup comprising methyl methacrylate and about 5% to about 40% polymethylmethacrylate dissolved therein and containing about 0.1% to about 0.3% crosslinking agent based on the weight of the syrup, continuously curing said sheet while on said belt, and applying continuously to said sheet a film comprising a layer of polyethylene and a layer of a blend of polyethylene and a copolymer of ethylene and vinyl acetate, said film being applied to said acrylic sheet by the layer thereof which is made of said lend of polyethylene and a copolymer of ethylene and vinyl acetate.

5,308,426

PROCESS OF DECORATION BY SUBLIMATION

Jean-Noël Claveau, Coisia, Arinthod, France 39240

Filed Nov. 16, 1992, Ser. No. 977,019
Claims priority, application France, Nov. 26, 1991, 91 14875
Int. Cl.[5] B32B *9/00*
U.S. Cl. 156—234 2 Claims

1. A process for decoration of the surfaces of an object by sublimation of ink,

comprising the steps of:

using as a sublimable ink support a material which is extensible and air-permeable so as to conform to the shape of the object to be decorated without altering the decoration to be sublimated;

enveloping the object in the ink support so that all its surfaces are covered; and

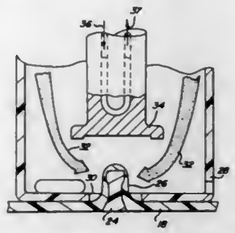
placing the assembly in a vacuum machine, which is thereafter introduced into a heated space to cause transfer of the decoration to all the surfaces of the object to be decorated.

5,308,427

METHOD FOR FASTENING PLASTIC ARTICLES

Daniel M. Duhaime, Bloomfield Hills; Charles A. Dunn, Livonia, and Mark R. Henault, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 28, 1992, Ser. No. 952,088
Int. Cl.[5] B29C *49/20, 65/70*
U.S. Cl. 156—245 1 Claim



1. A method of attaching a member to the interior of a blow-molded plastic fuel tank wall comprising the steps of:

molding said wall from a pliable parison;

forming one or more inwardly directed projection in said wall, said projection being formed integral with said wall, said projection having an inner surface and an outer surface, said outer surface forming a cavity receiving a core;

inserting said core within said cavity while said parison is partially pliable, said core fusing to said outer surface of said wall;

inserting said projection through an aperture in said member;

heating said projection and causing said projection to soften; and

squashing said projection over said aperture and securing said member to said inner surface of said projection.

5,308,428

PRIMED POLYOLEFIN SURFACES FOR EPOXY ADHESIVES

J. Thomas Simpson, Lake Elmo; James J. Kobe, Newport, and Frank J. Armatis, Jr., Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 406,810, Dec. 14, 1989, Pat. No. 5,132,172, which is a continuation of Ser. No. 480,073, May 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 872,922, Jun. 11, 1986, abandoned. This application May 1, 1992, Ser. No. 877,531
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—272.6 9 Claims

1. A method for adhering a polyolefin first substrate to a second substrate with an epoxy adhesive comprising the steps of

a) coating on said polyolefin first substrate a liquid monomer selected from the group consisting of sulfonic and carboxylic acids and alkyl esters thereof containing fewer than eight carbon atoms in the ester group, amides and mono- and di-substituted amides, alcohols, amines, epoxides, and 5-, 6-, and 7-membered heterocyclic rings having at least one oxygen and/or nitrogen atoms in the ring, in a layer less than 5 micrometers in thickness, with the proviso that said monomer contain an ethylenically unsaturated polymerizable moiety;

b) irradiating the coated substrate with ionizing radiation to graft polymerize said monomer to said substrate;

c) coating an epoxy adhesive on at least one of (i) said graft-polymerized monomer surface of said first substrate and (ii) a surface of said second substrate;

d) contacting said surfaces (i) and (ii), and

e) curing said epoxy adhesive.

7. A method for adhering a polyolefin first substrate to a second substrate with an epoxy adhesive comprising the steps of

a) coating on said polyolefin first substrate dimethylacrylamide and trimethylolpropane triacrylate,

b) irradiating the coated substrate with ionizing radiation to graft polymerize said dimethylacrylamide and trimethylolpropane triacrylate to said substrate,

c) coating an epoxy adhesive on at least one of (i) said graft-polymerized monomer surface of said first substrate and (ii) a surface of said second substrate,

d) contacting said surfaces (i) and (ii), and

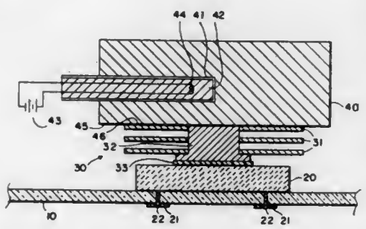
e) curing said epoxy adhesive.

5,308,429

SYSTEM FOR BONDING A HEATSINK TO A SEMICONDUCTOR CHIP PACKAGE

Susan J. Bradley, East Hampstead, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 29, 1992, Ser. No. 953,448
Int. Cl.[5] C09J *5/06*
U.S. Cl. 156—306.6 5 Claims



1. A method for bonding a heatsink to a semiconductor chip package, comprising the steps of:

mounting a semiconductor chip package including a heat removal surface on a printed circuit board;

positioning a thermally conductive heat curable adhesive on said heat removal surface;

positioning a heatsink on said thermally conductive heat curable adhesive;

selecting a thermally conductive slug having a predetermined weight;

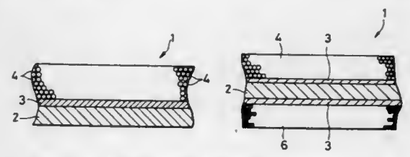
placing said thermally conductive slug on said heatsink to melt, flow, and cure said thermally conductive heat curable adhesive by using heat supplied by said slug and pressure supplied by the weight of said slug.

5,308,430

REINFORCING FIBER SHEET, METHOD OF MANUFACTURING THE SAME, AND THE METHOD OF REINFORCING STRUCTURE WITH THE REINFORCING FIBER SHEET

Makoto Saito; Makoto Takezawa, and Hiroshi Inoue, all c/o Tonen Corporation, Corporate Research and Development Laboratory, 3-1, Nishi-tsurugaoka 1-chrome, Oi-machi, Iruma-gun, Saitama-ken, Japan

Filed Jan. 28, 1991, Ser. No. 646,572
Claims priority, application Japan, Jan. 30, 1990, 2-19927; Jan. 30, 1990, 2-19928; Apr. 10, 1990, 2-94436; Apr. 10, 1990, 2-94437; Apr. 10, 1990, 2-94438; Oct. 12, 1990, 2-2755049
Int. Cl.[5] B32B *5/08, 31/00, 35/00;* C09J *5/00, 7/04*
U.S. Cl. 156—307.1 6 Claims



1. A method of reinforcing a structure comprising the steps of:

attaching to a surface of a portion of the structure to be reinforced at least one reinforcing fiber sheet comprising a support sheet and reinforcing fibers arranged in one direction on at least one surface of the support sheet with an adhesive layer therebetween; and

setting a room-temperature setting type matrix resin impregnated in the reinforcing fibers.

5,308,431

SYSTEM PROVIDING MULTIPLE PROCESSING OF SUBSTRATES

Joseph A. Maher, South Hamilton, Mass.; E. John Vowles, Goffstown; Joseph D. Napoli, Winham, both of N.H.; Arthur W. Zafiropoulo, Manchester, and Mark W. Miller, Burlington, both of Mass., assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 689,357, Apr. 22, 1991, Pat. No. 5,102,495, which is a continuation of Ser. No. 443,039, Dec. 1, 1989, Pat. No. 5,013,385, which is a continuation of Ser. No. 115,774, Oct. 30, 1987, abandoned, which is a continuation of Ser. No. 923,125, Oct. 24, 1986, Pat. No. 4,715,921, and a continuation-in-part of Ser. No. 853,775, Apr. 18, 1986, abandoned. This application Apr. 3, 1992, Ser. No. 863,723
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.[5] H01L *21/306;* B44C *1/22*
U.S. Cl. 156—345 4 Claims

1. A multiple-processing and contamination-free substrate surface processing system, comprising:

plural, single-substrate substrate surface processing vessels each having an ingress and egress defining port that are arrayed about a predetermined spacial locus in such a way

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that the several ports thereof are accessible from a single location spaced from the several ports;

a substrate queuing station spaced with the plural vessels along the same predetermined spacial locus defining a substrate access port accessible from said single location;

plural valve means individually coupled to corresponding ones of said plural, single-substrate substrate surface processing vessel ingress and egress ports and to said substrate queuing station substrate access port;

single-substrate transfer means disposed at said single location and cooperative with corresponding ones of said plural valve means for moving substrates from and to said substrate access port of said queuing station from and to selected ones of said single-substrate substrate surface processing vessels through the associated one of said ingress and egress ports thereof; and

processor means coupled to said vessels, said transfer means and said valve means for providing selectable single and multi-step substrate surface processing of plural substrates in accord with substrate commands in one or more of said substrate surface processing vessels.

5,308,432

METHOD AND DEVICE FOR PRODUCING A TOROIDAL ROAD VEHICLE TIRE CARCASS

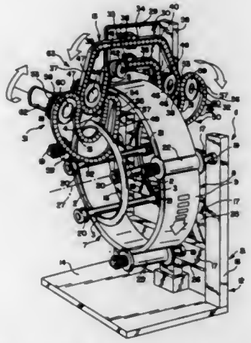
Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,829

Claims priority, application Italy, Dec. 30, 1991, TO91A001048

Int. Cl.[5] B29D *30/34*

U.S. Cl. 156—117 **8 Claims**



1. A method of producing a toroidal road vehicle tire carcass comprising two coaxial annular beads, and a number of elongated reinforcing elements located between and extending substantially radially in relation to the beads; said method comprising the steps of forming a toroidal frame for supporting said carcass, the toroidal frame comprising said beads and a removable auxiliary outer annular element located radially outwards of and centered axially in relation to the two beads, so as to define, with the same, two annular openings; providing a device for winding at least one continuous cord which includes a central guide element and a first and second lateral guide element and a carriage; moving the lateral guide elements from a first open idle position to a second closed operating position such that when in the closed operating position, each lateral guide element extends through a corresponding bead; moving said carriage along said guide elements with switching of said moving carriage selectively between the central guide element and the first and second lateral guide elements while simultaneously rotating the toroidal frame about its axis and in relation to the device for winding at least one continuous cord; winding said cord, via the movement of said carriage and simultaneous rotation of said toroidal frame, about the toroidal frame along a spiral path comprising a number of turns, each turn defining one of said elongated reinforcing elements, and comprising first and second portions, the first portion extending outside the frame, and the second portion extending outside the outer annular element and through both of said openings.

4. A device for producing a toroidal road vehicle tire carcass comprising two coaxial annular beads, and a number of elongated reinforcing elements located between and extending substantially radially in relation to the beads; said device comprising a removable auxiliary annular element adapted to be positioned radially outwards of and centered axially in relation to the two beads, so as to define, with the same, a toroidal frame having two annular openings; a winding device for winding a cord about the toroidal frame and along a given path including a carriage and guide means having a central guide element and a pair of lateral guide elements which are movable between an open idle position and a closed operating position such that when in the closed operating position, each lateral guide element extends through a corresponding bead; switch means for selectively switching the carriage between the central guide element and the lateral guide elements as the carriage moves along an annular path defined by said guide means; and a supporting and drive device for rotating the toroidal frame about its axis and in relation to said winding device, so that said path is a spiral path comprising a number of turns, each defining one of said elongated reinforcing elements, and comprising first and second portions, the first portion extending outside the frame, and the second portion extending outside the outer annular element and through both of said openings.

5,308,433

APPARATUS AND METHOD FOR VAPOR GROWTH

Nobuyuki Otsuka, and Yasushi Matsui, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,426

Claims priority, application Japan, Apr. 11, 1991, 3-078883

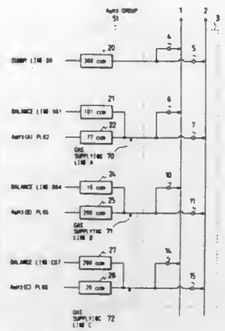
Int. Cl.[5] C30B *25/14*

U.S. Cl. 117—93 **1 Claim**

1. A vapor growth method comprising the steps of:

adjusting a flow rate in a balance line to equalize products of the viscosity and the flow rate of a gas in a dummy line and gases in gas supplying lines;

supplying a process gas required for vapor growth in a gas supplying line to a main line; and



supplying a gas from the dummy line to the main line only when the process gas is not supplied from the process gas line to the main line.

5,308,434

SEALING DEVICE FOR A PRESSURE CASE USED IN A ROTARY MACHINE

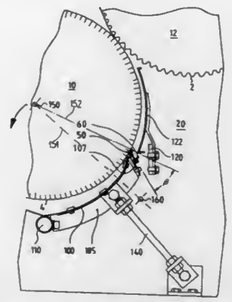
Martin Hoffmann, Tangstedt-Wilstedt, and Dieter Pallas, Lentfoehrden, both of Fed. Rep. of Germany, assignors to Peters Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 907,694

Claims priority, application Switzerland, Jul. 1, 1991, 01946/91

Int. Cl.[5] B29C *53/22*; B31F *1/20*

U.S. Cl. 156—472 **9 Claims**



1. In a rotary machine for producing corrugated board using a pressing cylinder coacting with a first corrugating roller to press a sheet on a corrugated sheet on the first corrugating roller, said pressing cylinder being mounted by positioning levers for pivotable movement around a center of rotation, said machine having a sealing device situated between the pressing cylinder and an opposite edge of a wall of a pressure case, said sealing device including a seal member fitted over its whole length along the edge, which extends parallel to a rotary axis of the cylinder and said seal member being positioned between the corrugating roller and a line connecting the rotary axis of the pressing cylinder and the center of rotation of the positioning levers, said wall being mounted for shifting toward the cylinder, pressing means for shifting the wall toward the cylinder so as to enable the seal member to be applied against the cylinder, the improvements comprising the seal member having the shape of at least one lengthwise brush with bristles consisting of a flexible and heat resistant synthetic material and the wall being an arc-shaped segment of a cylindrical portion and being hinged at a lower edge on a stud, the arc-shaped segment having an angular length in a range of between 45° and 75°, and the pressing means acting at a point on the wall in a range of between one-fourth and one-third of the length of the arc-shaped segment as measured from the seal member.

5,308,435

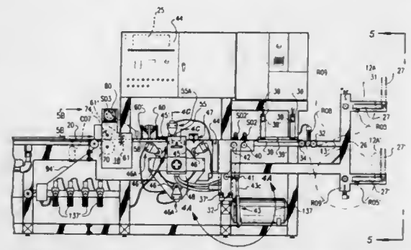
METHOD AND APPARATUS FOR FABRICATING HONEYCOMB INSULATING MATERIAL

Kay L. Ruggles, Salt Lake City; Cary L. Ruggles, Mendon; Bryan K. Ruggles, Salt Lake City; Kerry Strauss, Provo, and Dennis Buehner, Salt Lake City, all of Utah, assignors to Home Fashions, Inc., Santa Monica, Calif.

Filed Oct. 7, 1991, Ser. No. 773,843

Int. Cl.[5] B31F *1/00*

U.S. Cl. 156—465 **9 Claims**



1. In apparatus for mass producing one or more individual stacks of expandable tubular strips from each of which stack a number of expandable honeycomb panels of a variety of selected lengths can be formed; a first and a second reel support structure, one above the other, each for supporting a reel of unfolded web material from which strips are to be subsequently formed; web guiding means for receiving said web material unwinding from one of the reels supported on one of said support structures and to guide the web material for continuous movement along a given path; stacking apparatus for superimposing and adhering portions of said web material; and web moving means for continuously moving said web material over said path; the improvement comprising: a splicing table in said path of movement of said web in the vicinity of said support structures; a cutting slit on said splicing table; a first clamp for clamping the web material on said splicing table on the side of said slit remote from said reel support structures so that the web can be slit cleanly at the location of said slit and the web material unwound from an unused reel can be placed on said table adjacent to said slit; and a second clamp for clamping the latter web material unwound from the unused reel at the adjacent side of the slit web so that a splicing tab can be conveniently positioned over the adjacent ends of the webs on the opposite sides of said slit.

5,308,436

REPAIR INSERTER SEALER

George E. Walter, Tonawanda, and Rebecca L. Parker, Grand Island, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 3, 1993, Ser. No. 86,834

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—441.5 **25 Claims**

1. Apparatus for handling business forms comprising:

a first machine for handling business forms;

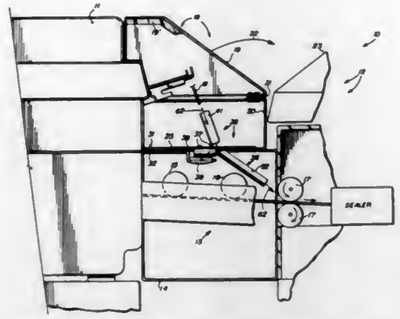
a second machine for handling business forms;

a conveyor disposed between said first and second machines for conveying business forms between them;

an outer movable cover component for said conveyor;

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an inner, normally stationary, cover for said conveyor disposed beneath said outer cover component; and



means mounted on said inner cover providing guided manual feeding of business forms through said inner cover directly into operative association with said conveyor.

5,308,437

BAND MEMBER FORMING APPARATUS

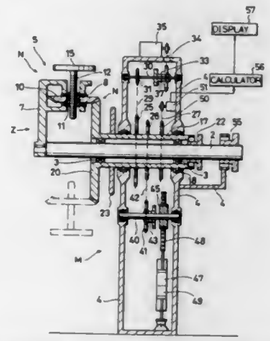
Masayuki Osa, Kobe, Japan, assignor to Sumitomo Rubber Industries Ltd., Kobe, Japan

PCT No. PCT/JP90/01399, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO92/07710, PCT Pub. Date May 14, 1992

PCT Filed Oct. 31, 1990, Ser. No. 861,896

Int. Cl.[5] B29D *30/24*

U.S. Cl. 156—417 **7 Claims**



1. A band member forming apparatus comprising:
a drum shaft;
a drum body integrally connected with the drum shaft;
a rotary member coaxially provided on the drum shaft, the rotary member including a large bevel gear;
driving means for rotating the rotary member;
changer means provided between the drum shaft and the rotary member, and adapted for selectively setting the drum shaft in a stationary state of being stationary or in a rotational state of rotating together with the rotary member; and
a plurality of drum segment devices carried on the drum body and arranged in a circumferential direction of the drum body, each said device including:
a drum segment for constituting a material application drum together with the drum segments of the other said devices;
a radially movable member carrying the drum segment, the radially movable member including a screw rod; and
a mechanical converter operationally associated with the rotary member, the mechanical converter including a small bevel gear rotatably mounted on the drum body, and meshed with the large bevel gear, and formed with a threaded hole in a center thereof, the screw rod extending through the threaded hole,
the mechanical converter converting the rotation of the rotary member into the radial movement of the radially movable member when the drum shaft is in the stationary state while not converting the rotation of the rotary member into the radial movement of the radially movable member when the drum shaft is in the rotational state.

5,308,438

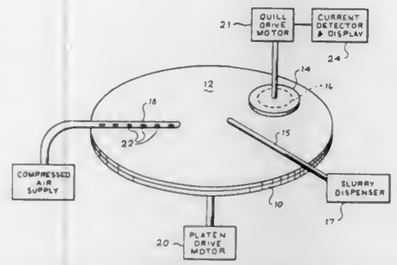
ENDPOINT DETECTION APPARATUS AND METHOD FOR CHEMICAL/MECHANICAL POLISHING

William J. Cote, Poughquag, N.Y.; John E. Cronin, Milton, Vt.; William R. Hill, Underhill, Vt., and Cheryl A. Hoffman, Colchester, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1992, Ser. No. 828,054

Int. Cl.[5] H01L *21/304*

U.S. Cl. 156—636 **14 Claims**



1. In a process of polishing of a layer of a first material requiring a chemical/mechanical removal process arranged over a layer of second material requiring only a mechanical removal process disposed on a surface of a workpiece wherein the workpiece is rotated by a first motor and is brought into contact with a polish wheel rotated by a second motor and having a polishing pad disposed thereon, the improvement comprising:
providing a chemical/mechanical slurry on said polishing pad wherein said polishing pad is coated with said slurry;
placing the workpiece on the polishing pad and rotating the workpiece and the polishing pad,
maintaining the rotational speed of the workpiece above the rotational speed of the polish wheel and applying pressure to the workpiece and;
monitoring the current drawn by the first motor.

5,308,439

LATERNAL FIELD EMMISSION DEVICES AND METHODS OF FABRICATION

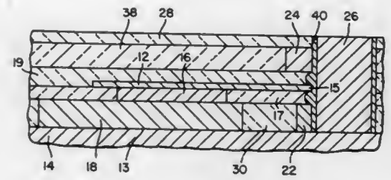
John E. Cronin, Milton; Kent E. Morrett, Essex Junction; Michael D. Potter, Grand Isle, and Timothy D. Sullivan, Underhill, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 722,768, Jun. 27, 1991, Pat. No. 5,233,263. This application Feb. 4, 1993, Ser. No. 13,607

Int. Cl.[5] B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/00*

U.S. Cl. 156—656 **7 Claims**

1. A method of fabricating a field emission device, said method comprising the steps of:
(a) disposing a first metallic layer relative to the upper surface of a substrate, said first metallic layer being disposed so as to extend parallel to the upper surface of said substrate and have a thickness of only several hundred angstroms;
(b) overlying a first insulating layer on said first metallic layer;
(c) providing an opening through said first metallic layer and said first insulating layer disposed thereon;
(d) disposing a conformal layer of material only on the walls of said said opening provided in step (c), said conformal layer being of predetermined thickness;



(e) filling said opening at least partially with a second metallic layer such that said conformal layer spaces said second metallic layer from said first metallic layer, said predetermined conformal layer thickness equaling a desired spatial distance between said first and second metallic layers; and
(f) providing means for applying an electrical bias voltage to said first metallic layer and to said second metallic layer, said bias voltage to be applied being sufficient to cause cold cathode emission of electrons from said first metallic layer to said second metallic layer.

5,308,440

METHOD OF MAKING SEMICONDUCTOR DEVICE WITH AIR-BRIDGE INTERCONNECTION

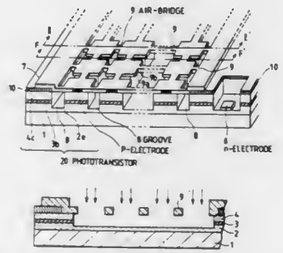
Toyoji Chino; Kenichi Matsuda, and Jun Shibata, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1992, Ser. No. 939,230

Claims priority, application Japan, Sep. 5, 1991, 3-225707

Int. Cl.[5] B44C *1/22*

U.S. Cl. 156—664 **12 Claims**



1. A method of producing a semiconductor device having an air-bridge interconnection comprising the steps of:
(a) forming a semiconductor material;
(b) forming a metal layer on a portion of said semiconductor material having a narrow portion in an intermediate portion thereof and end portions of larger width than said narrow portion and adjacent said narrow portion; and
(c) forming said air-bridge interconnection by etching said semiconductor material using said metal layer as a mask to cut said semiconductor material around said metal layer with side-etching controlled, a width of said narrow portion and widths of said end portions being determined such that cuts under said narrow portion on both sides of said narrow portion developed by said etching join together by said side-etching to remove a mass of said semiconductor material under said metal layer while leaving masses of said semiconductor material under said end portions.

5,308,441

PAPER SIZING METHOD AND PRODUCT

Nicholas T. Kern, Daleville, Va., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 957,160, Oct. 7, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 97,786

Int. Cl.[5] D21H *23/76*

U.S. Cl. 162—158 **9 Claims**

1. A paper sizing process comprising the steps of:
(a) blending a cellulosic fiber papermaking headbox furnish with an internal sizing formulation, said formulation comprising;
(1) about 1.0% by dry fiber weight of an anionic rosin and
(2) about 1.3 to 2.6% by dry fiber weight of alum; said blend being pH adjusted to a range of about 4.0 to 4.5;
(b) forming an internally sized paper web from said blend;
(c) drying said paper web to a moisture content of less than 10.0%;
(d) coating said paper web on at least one side thereof with a surface sizing formulation comprising;
(1) about 0.025 to 0.050% by dry fiber weight of a synthetic sizing compound and
(2) about 0.125 to 0.150% by dry fiber weight of sodium bicarbonate; and,
(e) drying said surface sized web to a moisture content of 7.0% or less to produce a paper product having a water extractable pH level of from about 4.0 to below 6.0.

5,308,442

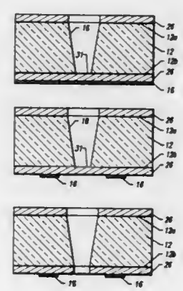
ANISOTROPICALLY ETCHED INK FILL SLOTS IN SILICON

Howard H. Taub, San Jose, and Joan P. Gallicano, Fremont, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 25, 1993, Ser. No. 9,181

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—644 **10 Claims**



1. A method for fabricating ink fill slots in thermal ink-jet printheads, comprising:
(a) providing a silicon substrate having a <100> or <110> crystallographic orientation and two opposed, substantially parallel major surfaces, defining a primary surface and a secondary surface;
(b) forming a passivating dielectric layer on both said major surfaces;
(c) exposing a portion of said secondary surface of said silicon substrate underlying said dielectric layer;

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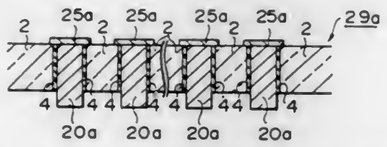
(d) anisotropically etching said exposed portion through said substrate to expose a portion of said dielectric layer on said primary surface to form said ink fill slot;
(e) forming and defining thin film resistor elements and conductive traces on said dielectric layer formed on said primary surface;
(f) removing said exposed portion of said dielectric layer on said primary surface overlying said ink fill slot; and
(g) forming a layer on the major surface of said dielectric material and defining openings therein to expose said resistor elements to define a drop ejection chamber and to provide an ink feed channel from said resistor elements to a terminus region, said terminus region fluidically communicating with said ink fill slot for introducing ink from a reservoir to said drop ejection chamber.

5,308,443

MICROPROBE PROVIDED CIRCUIT SUBSTRATE AND METHOD FOR PRODUCING THE SAME

Osamu Sugihara, Nagasaka, Japan, assignor to Hoya Corporation, Tokyo, Japan

Division of Ser. No. 620,861, Nov. 29, 1990, Pat. No. 5,160,779. This application Aug. 5, 1992, Ser. No. 924,966
Claims priority, application Japan, Nov. 30, 1989, 1-311887; Mar. 30, 1990, 2-83832; Mar. 30, 1990, 2-83833; Aug. 31, 1990, 2-231697
Int. Cl.[5] B44C *1/22;* **C03C** *15/00;* **C23F** *1/00;* **H01L** *21/306*
U.S. Cl. 156—644 **24 Claims**



1. A method of producing a microprobe-provided circuit substrate comprising the steps of:
providing fine through holes in a base made of an inorganic electrically-insulating material or a semiconductive material;
providing pillar-shaped conductors correspondingly respectively in said fine through holes;
etching a surface portion of said base after providing said pillar-shaped conductors in said base to make one end of each of said pillar-shaped conductors to project out of one surface of said base to thereby form microprobes; and
providing conductive portions on the other surface of said base, an end of each conductive portion being electrically connected to the other end of corresponding one of said pillar-shaped conductors or said microprobes.

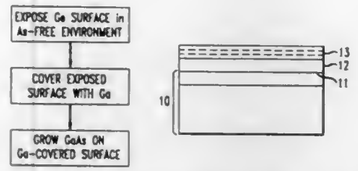
5,308,444

METHOD OF MAKING SEMICONDUCTOR HETEROSTRUCTURES OF GALLIUM ARSENIDE ON GERMANIUM

Eugene A. Fitzgerald, Jr., Bridgewater; Jenn-Ming Kuo, Edison; Paul J. Silverman, Short Hills, and Ya-Hong Xie, Flemington, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 28, 1993, Ser. No. 70,840
Int. Cl.[5] H01L *21/20*
U.S. Cl. 117—90 **6 Claims**

1. An improved method of making semiconductor heterostructure of gallium arsenide on germanium comprising the steps of:
exposing a surface comprising germanium in an environment having a partial pressure of arsenic less than 10^{-8} torr;
epitaxially growing a layer of gallium on the exposed surface; and



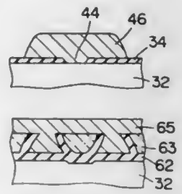
epitaxially growing a layer of gallium arsenide on the gallium covered surface.

5,308,445

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A SEMICONDUCTOR GROWTH LAYER COMPLETELY INSULATED FROM A SUBSTRATE

Hidemi Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 5, 1992, Ser. No. 957,514
Claims priority, application Japan, Oct. 23, 1991, 3-275740; Oct. 25, 1991, 3-279830
Int. Cl.[5] H01L *21/20*
U.S. Cl. 117—90 **32 Claims**



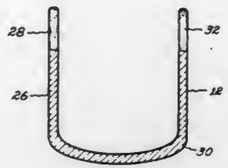
1. A method of manufacturing a semiconductor device, comprising the steps of:
(a) forming an insulation layer on a semiconductor substrate;
(b) forming an opening for seed crystal growth in said insulation layer;
(c) forming a seed crystalline layer in the opening, starting from the surface of the semiconductor substrate exposed by the opening, growing the seed crystalline layer until it is projected from the opening, and further growing the seed crystalline layer so as to extend in the lateral direction over a portion of the insulation layer in a vicinity of the opening without covering the insulation layer outside of the vicinity of the opening, by lateral growth;
(d) selectively oxidizing a portion of the seed crystalline layer, the selectively oxidized portion including at least a part of the seed crystalline layer above the opening so that a remaining portion of the seed crystalline layer required for crystal growth is left around the opening, and closing the opening by an oxide formed, to interrupt the connection between the seed crystalline layer which is left around the opening and the semiconductor substrate; and
(e) epitaxially growing the seed crystalline layer which is left around the opening after said step (d) to form a semiconductor growth layer covering the insulation layer outside the vicinity of the opening.

5,308,446

FUSED QUARTZ MEMBER FOR USE IN SEMICONDUCTOR MANUFACTURE

Peter P. Bihuniak, 3532 Norwood Rd., Shaker Heights, Ohio 44122; Gordon E. Dogunke, 4709 Burger Ave., Cleveland, Ohio 44109, and Robert D. Shelley, 10503 Cedar Rd., Chesterland, Ohio 44026

Continuation of Ser. No. 189,437, May 2, 1988, abandoned, which is a division of Ser. No. 889,142, Jul. 24, 1986, Pat. No. 4,911,896. This application Jun. 7, 1990, Ser. No. 535,233
Int. Cl.[5] G30B *15/10*
U.S. Cl. 117—13 **4 Claims**



1. A process for drawing single crystal silicon from a molten polysilicon mass at elevated temperature which comprises the steps of:
(a) introducing a polysilicon mass into a fused quartz crucible;
(b) applying heat to said polysilicon mass in said crucible in order to melt said polysilicon mass to a temperature suitable for drawing a silicon single crystal therefrom, at least a portion of said heat being in the form of infrared radiation which passes through at least a portion of said crucible to said polysilicon mass;
(c) drawing a silicon single crystal from said molten polysilicon mass while maintaining heat to said mass sufficient to keep same in a molten condition; and
(d) reducing the amount of radiant heat passing through into the interior of said crucible at that portion of said crucible above said molten polysilicon mass during said drawing of said silicon single crystal by means of a disperse phase of from about 25 ppm up to about 2000 ppm by weight of fine size, spherically-shaped silicon metal crystals uniformly distributed throughout said fused quartz crucible at that portion thereof above the level of said molten polysilicon mass so as to reduce infrared optical transmission through said portion to a room temperature value no greater than about 30% to a 3 mm sample thickness.

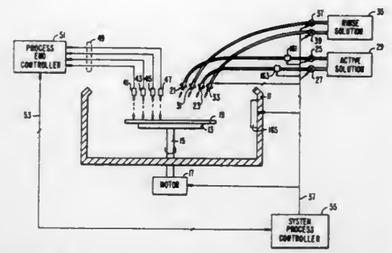
5,308,447

ENDPOINT AND UNIFORMITY DETERMINATIONS IN MATERIAL LAYER PROCESSING THROUGH MONITORING MULTIPLE SURFACE REGIONS ACROSS THE LAYER

Russell E. Lewis, Cupertino; Richard E. Howard, Pleasanton, and Herbert E. Litvak, Cupertino, all of Calif., assignors to Luxtron Corporation, Santa Clara, Calif.

Filed Jun. 9, 1992, Ser. No. 896,132
Int. Cl.[5] G01N *21/00*
U.S. Cl. 156—626 **34 Claims**

1. In a process of removing a layer of material across at least a portion of a surface thereof by contacting at least said surface portion with a material removing substance, a method of monitoring the material removal process, comprising the steps of:
separately monitoring removal of material from the layer in each of at least two separate regions across the layer surface,
separately determining when a breakthrough of the layer occurs in each of said regions, and



providing an indication when it is determined that breakthrough has occurred in a predetermined number of said regions.

5,308,448

PROCESS FOR THE FLOTATION OF FILLERS FROM DEINKED WASTE PAPER IN THE PRESENCE OF SURFACTANTS CONTAINING SULFONATE GROUPS

Ansgar Behler, Bottrop; Rainer Hoefer, Duesseldorf; Klaus Hornfeck, Hettmann, and Wolfgang von Rybinski, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 721,515, Jul. 12, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,280
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1989, 3900940
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—7 **4 Claims**

1. A process for the removal by flotation of fillers from deinked suspensions of fibers derived from waste paper, wherein after deinking said waste paper by flotation the improvement comprises adding to the suspensions of fibers from 0.1 to 8 g. per kilogram of air-dry paper stock, of one or more surfactants selected from the group consisting of:
a) α-sulfofatty acids and α-sulfofatty acid esters corresponding to general formula I:

$$R-\underset{\displaystyle SO_3M}{\underset{|}{CH}}-COOM^1$$

in which R is C_{6-20} alkyl; M is hydrogen, an alkali metal, or ammonium cation; and M^1 is hydrogen, an alkali metal, or ammonium cation or C_{1-4} alkyl; and
b) alkali, ammonium, and amine salts of sulfonated unsaturated C_{12-22} fatty acids; and
c) alkali, ammonium, and amine salts of sulfosuccinic acid mono- and di-esters and sulfosuccinic acid mono- and diamides; and
d) alkali, ammonium, and amine salts of secondary C_{11-17} alkane sulfonates; and then removing said fillers by flotation.

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5,308,449

METHOD FOR TREATING A PAPER PULP WITH AN ENZYME SOLUTION

Jean-Luc Fuentes, Villenave d'Ornon, and Michel Robert, Lacanau, both of France, assignors to La Cellulose du Pin, Bordeaux, France

Continuation of Ser. No. 769,349, Oct. 2, 1991, abandoned, which is a continuation of Ser. No. 443,439, Nov. 30, 1989, abandoned, which is a continuation of Ser. No. 99,786, Sep. 22, 1987, Pat. No. 4,923,565. This application Jul. 20, 1992, Ser. No. 915,879

Claims priority, application France, Sep. 22, 1986, 86 13208

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] D21H *17/21*

U.S. Cl. 162—72 **9 Claims**

1. A method for treating a papermaking pulp for use with a conventional paper machine to make a sheet of paper, with an enzyme preparation, comprising treating a homogeneous aqueous suspension of said papermaking pulp having a Schopper-Riegler degree (SR) determined in accordance with standard NFQ 50 003 of at least equal to 25 prior to treatment with an enzyme preparation containing an enzyme selected from the group consisting of cellulases, hemicellulases and mixtures thereof using a concentration of said enzyme suitable to thereby obtain a lowering of the SR degree and improve the suspension's drainability while at the same time having no undesirable effect on the mechanical characteristics of paper manufactured from such pulp.

5,308,450

PRESS SECTION OF A PAPERMAKING MACHINE

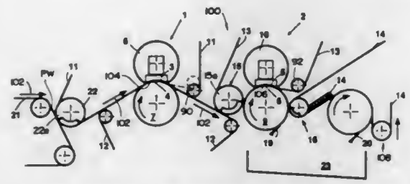
Heinz Braun, Ravensburg, and Peter Mirsberger, Berg, both of Fed. Rep. of Germany, assignors to Sulzer Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Apr. 15, 1992, Ser. No. 868,688

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1991, 4112355

Int. Cl.[5] D21F *3/04*

U.S. Cl. 162—360.2 **18 Claims**



1. A press section of a papermaking machine for dewatering a paper web, comprising:

means for providing two separate successively arranged press locations defining a first press location containing an extended nip and a second press location containing an extended nip through which travels a paper web in a predetermined direction of travel;

at least one separate felt provided for the first press location and guided in conjunction with the paper web through the first press location;

at least one separate felt provided for the second press location and guided in conjunction with the paper web through the second press location;

said means providing the second press location containing a substantially cylindrical counter roll which defines a lower counter roll extending beneath the second press location and an extended nip press roll extending above the second press location;

said extended nip press roll forming the extended nip of the second press location and being essentially accommodated to the contour of the counter roll;

a web removal device operated under vacuum conditions arranged downstream of the first press location and in contact with said lower counter roll via said at least one separate felt provided for the second press location, and transfers the paper web into contact with said lower counter roll of the second press location to practically preclude dropping of the paper web;

the paper web being guided from the first press location to said web removal device;

said at least one separate felt provided for the second press location defining an upper felt guided in conjunction with the paper web through the second press location; and

the paper web being contacted by said upper felt of the second press location and being transported by said upper felt from said web removal device to the second press location, while being practically precluded from dropping, due to the weight of the paper web, from said upper felt of the second press location, by said arrangement of said web removal device with respect to the second press location.

5,308,451

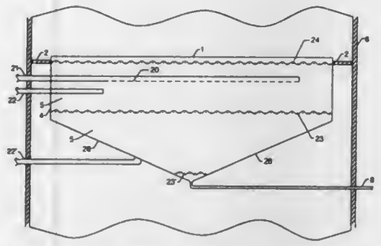
FRACTIONATION TRAY FOR CATALYTIC DISTILLATION

Robert J. Carland, Williamsville, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Nov. 2, 1992, Ser. No. 970,454

Int. Cl.[5] B01D *3/32*

U.S. Cl. 202—158 **10 Claims**



1. An apparatus for use in a vapor-liquid contacting process comprising:

a. a cylindrical outer vessel enclosed by a cylindrical sidewall and having an enclosed upper first end and an enclosed lower second end;

b. vapor-liquid contacting means arrayed between the first and second ends of the vessel; and,

c. at least one fractionation tray located intermediate said first and second ends and comprising:

i. a plurality of planar perforated vapor liquid contacting decks;

ii. a plurality of elongated trough shaped downcomers located between said contacting decks with the downcomers having substantially imperforate end walls and side walls which adjoin a lower seal plate having liquid sealable outlet means;

iii. at least one elongated trough shaped liquid collection device located between two of said contacting decks and comprising substantially imperforate end walls, sidewalls and lower seal plate; and,

iv. a liquid outlet conduit extending through the sidewall of the vessel from the interior of said liquid collection device to a point located outside the vessel.

10. An apparatus for use in a catalytic distillation process comprising:

a. a cylindrical outer vessel enclosed by a cylindrical sidewall and having an enclosed upper first end and an enclosed lower second end;

b. vapor liquid contacting means arrayed between the first and second ends of the vessel; and,

c. at least one fractionation tray located intermediate said first and second ends and comprising:

i. a plurality of planar perforated vapor liquid contacting decks;

ii. a plurality of elongated trough shaped downcomers located between said contacting decks, with the downcomers having substantially imperforate end walls and side walls which adjoin a lower seal plate having liquid sealable outlet means;

iii. at least one elongated trough shaped liquid collection device located between two of said contacting decks and comprising substantially imperforate end walls, sidewalls and a perforated lower seal plate;

iv. a bed of particulate catalyst retained within the liquid collection device; and,

v. a liquid inlet conduit extending through the sidewall of the vessel into the interior of said liquid collection device from a point located outside the vessel.

5,308,452

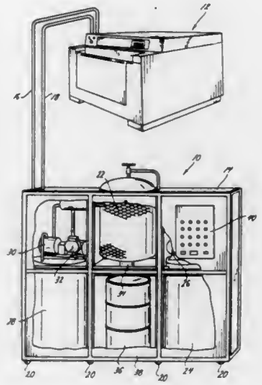
PHOTOPOLYMER WASHOUT FLUID SOLVENT DISTILLATION APPARATUS AND METHOD

Daniel B. Marks, and Donald G. Fluchel, both of St. Louis, Mo., assignors to Progressive Recovery, Inc., Dupo, Ill.

Filed Jan. 31, 1992, Ser. No. 829,752

Int. Cl.[5] B01D *3/10, 3/42*

U.S. Cl. 202—164 **20 Claims**



1. An apparatus for treating waste photopolymer plate washout fluid containing a first solvent, for recovering the first solvent from the waste fluid while maintaining the fluidity of the waste fluid, the apparatus comprising:

means for receiving and distilling the waste fluid;

means for supplying heat to the distilling means and to the waste fluid contained in the distilling means to distill the first solvent from the waste fluid and concentrate the waste fluid;

means for removing the first solvent distilled from the waste fluid from the distilling means; and,

means for supplying a second solvent different from the first solvent to the concentrated waste fluid contained in the distilling means to dilute the concentrated waste fluid and maintain the fluidity of the concentrated waste fluid.

12. An apparatus for treating waste photopolymer plate washout fluid for recovering a first solvent from the waste fluid while maintaining the fluidity of the waste fluid, the apparatus comprising:

a tank for receiving an distilling waste photopolymer plate washout fluid in an interior of the tank;

a heating assembly connected with the tank for supplying heat to the tank interior and to waste fluid contained in the tank interior to distill the first solvent from the waste fluid and thereby reduce the waste fluid to a concentrate;

a vacuum pump communicating with the tank interior for supplying vacuum pressure to the tank interior and to waste fluid contained in the tank interior to assist in distilling the first solvent from the waste fluid and thereby reduce the waste fluid to a concentrated, and to draw the first solvent out of the tank interior; and

a container of a second solvent different from the first solvent communicating with the tank interior for supplying the second solvent to the tank interior to replace distilled first solvent drawn out of the tank interior by the vacuum pump and to dilute waste concentrate contained in the tank interior.

5,308,453

Patent Not Issued For This Number

5,308,454

REACTOR PROCESS USING METAL OXIDE CERAMIC MEMBRANES

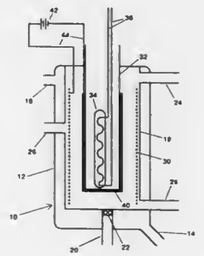
Marc A. Anderson, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 515,884, Apr. 27, 1990, Pat. No. 5,137,607. This application Aug. 11, 1992, Ser. No. 925,443

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[5] C25B *3/00*

U.S. Cl. 204—59 R **5 Claims**



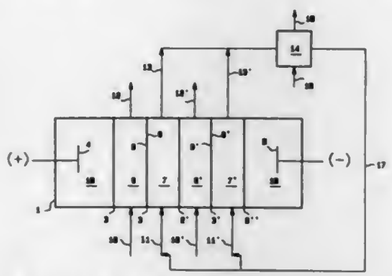
1. A method of utilizing a catalytic metal oxide ceramic membrane to perform photoelectrochemical processing comprising the steps of

providing a reaction vessel in which reactants are exposed to

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catalytic action by a transition metal element in a porous metal oxide ceramic membrane;
introducing reactants into the vessel to be catalyzed by the catalytic transition metal element in the membrane;
periodically removing reactant from the vessel; and
regenerating the membrane by removing any contaminants therefrom so that the catalytic transition metal element is exposed for further chemical processing.

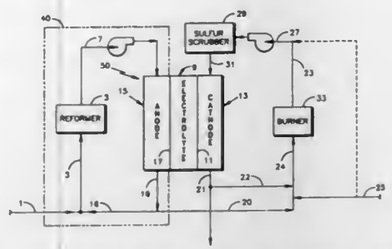
5,308,455
PROCESS FOR THE MANUFACTURE OF SODIUM HYDROXIDE
Louis Bourgeois, Brussels, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium
Filed Mar. 8, 1993, Ser. No. 28,540
Claims priority, application Belgium, Mar. 9, 1992, 09200235
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—98 **5 Claims**



1. A process for the manufacture of sodium hydroxide, comprising:
providing an electrodialysis cell comprising parallel, spaced alternating cationic and bipolar membranes defining chambers therebetween, said bipolar membranes having opposite cationic and anionic faces;
introducing aqueous sodium carbonate solution into first chambers of said electrodialysis cell defined by a cationic face of said bipolar membrane, and a cationic membrane, and maintaining the pH of said sodium carbonate solution in said first chambers sufficiently alkaline to avoid decomposition of sodium bicarbonate;
introducing water or an aqueous sodium hydroxide solution into second chambers of said electrodialysis cell defined by an anionic face of said bipolar membrane and a cationic membrane;
withdrawing aqueous sodium bicarbonate solution from said first chambers and decomposing said aqueous sodium bicarbonate solution to form an aqueous sodium carbonate solution and recycling said aqueous sodium carbonate solution into said first chambers; and
withdrawing aqueous sodium hydroxide from said second chambers of said electrodialysis cell.

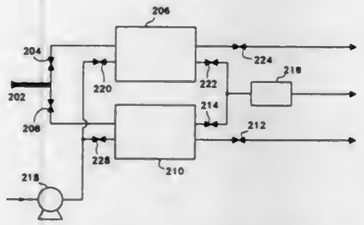
5,308,456
MOLTEN CARBONATE FUEL CELL SULFUR SCRUBBER AND METHOD USING SAME
Harold R. Kunz, Vernon; Richard A. Sederquist, Newington, and Ole L. Olesen, South Windsor, all of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.
Division of Ser. No. 814,520, Dec. 30, 1991, Pat. No. 5,213,912.
This application Jan. 25, 1993, Ser. No. 7,936
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—130 **18 Claims**

1. A method for removing sulfur from a molten carbonate fuel cell system, said system having a burner, a molten carbonate fuel cell, said molten carbonate fuel cell having an anode, a cathode, a molten carbonate electrolyte disposed therebetween, an anode chamber and a cathode chamber, which comprises the steps of:
a. introducing a fuel stream containing hydrogen to the anode chamber where said fuel system contacts said anode,
b. reacting said hydrogen at said anode with carbonate ions to form carbon dioxide, water and free electrons, where sulfur compounds in said fuel stream and on the anode react with hydrogen to form hydrogen sulfide;
c. removing the fuel stream, including the carbon dioxide, water, and any hydrogen sulfide from the anode chamber as anode exhaust,



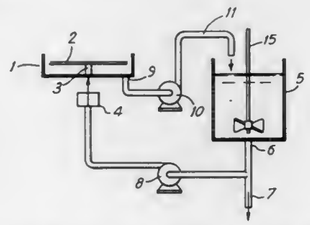
d. introducing an oxidant stream to a sulfur scrubber wherein said sulfur scrubber removes sulfur compounds from said oxidant stream to form a scrubbed stream;
e. introducing said scrubbed stream to the cathode chamber where said scrubbed stream contacts said cathode;
f. reacting carbon dioxide and O_2 in said scrubbed stream with said free electrons which passes from the anode to the cathode to produce carbonate ions which migrate across the molten carbonate electrolyte to the anode; and
g. removing said scrubbed stream from said cathode chamber as a cathode exhaust stream.

5,308,457
SELF-CONTAINED SYSTEM FOR CONTROLLING GASEOUS EMISSIONS FROM DILUTE ORGANIC SOURCES AND A PROCESS FOR USING THAT SYSTEM
Ralph A. Dalla Betta, Mountain View; James C. Schlatter, Sunnyvale; David R. Lane, San Jose, and Diana O. Durieux, Campbell, all of Calif., assignors to Catalytica, Inc., Mountain View, Calif.
Filed Apr. 5, 1991, Ser. No. 681,869
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—131 **24 Claims**



1. A volatile organic control device comprising:
a. an adsorber adapted to adsorb volatile organics from a gas steam passing through the adsorber comprising a first gas permeable, electrically conducting mass comprising a member selected from carbon, vitreous carbon, silicon carbide, or metals having thereon adsorbent suitable for adsorbing volatile organics at a relatively lower temperature and desorbing volatile organics at a relatively higher temperature when the electrically conducting mass has a current passing through it, and
b. an oxidation catalyst adapted to oxidize the volatile organics desorbed from the adsorber and comprising a second, gas permeable, electrically conducting mass comprising a member selected from carbon, vitreous carbon, silicon carbide, or metals having thereon a catalyst suitable for oxidizing the desorbed volatile organics when the electrically conducting mass has a current passing through it.

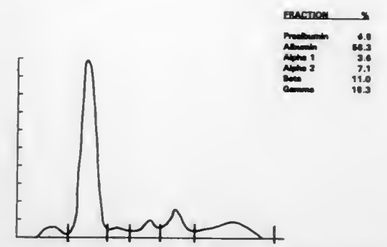
5,308,458
DESTRUCTION PROCESS
Donald Urwin, Middlebrough; Andrew T. Sayer, Stockton On Tees; Colin Howarth, Newcastle Upon Tyne, and Craig Wallis, Birmingham, all of England, assignors to Tioxide Group Services Limited, London, England
Filed Jan. 27, 1992, Ser. No. 826,466
Claims priority, application United Kingdom, Feb. 9, 1991, 9102766
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] C07B *63/00*
U.S. Cl. 204—157.6 **13 Claims**



1. A process for the oxidative decomposition of photocatalytically degradable organic material comprising exposing said organic material in fluid form to ultraviolet light and passing said organic material across a surface of a plate-like member which carries anatase titanium dioxide adhering to said surface, said member rotating about a central axis perpendicular to the radial plane of said member thereby accelerating said organic material radially outward of said axis across said surface of said member creating a high degree of turbulence and a mass transfer of atmospheric oxygen across the liquid/-gas phase interface on said surface.

5,308,459
BIOSYNTHETIC CEREBROSPINAL FLUID CONTROL AND METHOD OF USE
Kathryn D. Herring, Miami, Fla., assignor to Baxter Diagnostics Inc., Deerfield, Ill.
Division of Ser. No. 665,874, Mar. 7, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,653
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 **2 Claims**

1. An electrophoretic method to assess human cerebrospinal fluid comprising:
a) preparing a stable liquid human based cerebrospinal fluid control, wherein the control is made by the process comprising:
(i) combining a sufficient amount of lactic acid, chloride, glucose, serum, purified prealbumin, and potassium in a buffer to simulate normal human cerebrospinal fluid;
(ii) gassing said fluid with oxygen to obtain normal electrophoretic patter for human cerebrospinal fluid; and
(iii) filtering said fluids to remove all microbial contaminants;
b. obtaining an electrophoretic pattern of said control and a sample human cerebrospinal fluid; and

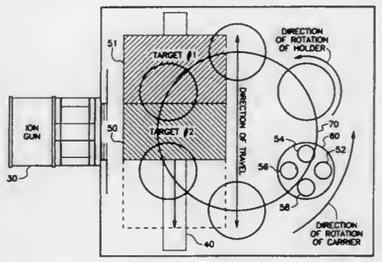


c. comparing the electrophoretic pattern of the control with the electrophoretic pattern of the sample.

5,308,460
RAPID SYNTHESIS AND ANALYSIS OF CARBOHYDRATES
M. Abdul Mazid, and John C. Klock, both of Novato, Calif., assignors to Glyko, Incorporated, Novato, Calif.
Filed Oct. 30, 1992, Ser. No. 968,980
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—180.1 **24 Claims**

1. A method for synthesizing a carbohydrate, said method comprising the steps:
mixing a first carbohydrate substrate with a second substrate and a first carbohydrate-modifying enzyme whereby a first reaction mixture is produced,
incubating said first reaction mixture, whereby a reaction product is produced,
separating said first reaction product from said first reaction mixture by fluorophore assisted electrophoresis, whereby a separated first reaction product is produced.

5,308,461
METHOD TO DEPOSIT MULTILAYER FILMS
Robert G. Abonen, Cedar, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 14, 1992, Ser. No. 820,714
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.11 **4 Claims**



1. A method to deposit multilayer films comprising the steps of:
a) attaching an ion beam gun to a vacuum chamber;
b) evacuating said vacuum chamber;
c) placing a pair of anode plates inside said ion beam gun near a first end of said ion beam gun;
d) placing a resonator inside said ion beam gun near a second end of said ion beam gun;
e) introducing an inert gas into said ion beam gun;

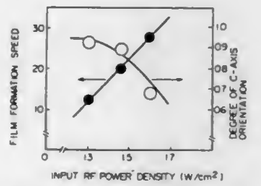
VOL 1162 ISS 1 MY 3 1994 UMI

f) exciting said ion beam gun with radio-frequency energy to ionize said gas into a plasma of positively charged ions;
g) containing said plasma inside said ion beam gun between said anodes and said resonator;
h) extracting said positively charged ions from said ion beam gun as an ion beam;
i) impacting a first target with said ion beam to sputter a first material off of said first target;
j) depositing said first material on a substrate to form a first layer of sputtered material on said substrate;
k) translating a second target into said ion beam;
l) impacting said second target with said ion beam to sputter a second material off of said second target; and
m) depositing said second material on said first layer to form a multilayer film.

5,308,462
PROCESS FOR PRODUCING A FERROELECTRIC FILM DEVICE

Kenji Iijima, Kyoto; Ryoichi Takayama, Sulta; Yoshihiro Tomita, Neyagawa, and Ichiro Ueda, Nishinomiya, all of Japan, assignors to Matsushita Electric Iodustrial Co., Ltd., Osaka, Japan

Division of Ser. No. 854,756, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 20,738, Mar. 2, 1987, abandoned. This application Sep. 1, 1992, Ser. No. 938,676
Claims priority, application Japan, Mar. 4, 1986, 61-46560
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.15 **8 Claims**



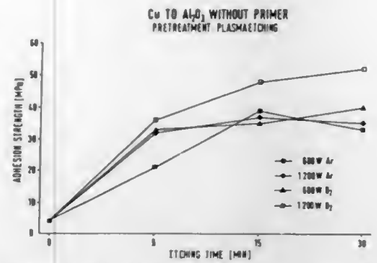
1. A process for producing a ferroelectric film device provided with a ferroelectric thin film in which spontaneous polarizations in said film are oriented in the same direction without any poling treatment being applied to said film, said film having a composition which is represented by the chemical formula $(Pb_xLa_y)(Ti_zZr_w)O_3$ and lies in a range selected from
(a) $0.70 \leqq x \leqq 1$, $0.9 \leqq x+y \leqq 1$, $0.95 \leqq x \leqq 1$, $w=0$,
(b) $x=1$, $y=0$, $0.45 \leqq x<1$, $x+w=1$, and
(c) $0.83 \leqq x<1$, $x+y=1$, $0.5 \leqq z<1$, $0.96 \leqq z+w \leqq 1$, characterized in that the ferroelectric film is formed on an MgO substrate by sputtering and the speed of film formation is less than 30 Å/min.

5,308,463
PREPARATION OF A FIRM BOND BETWEEN COPPER LAYERS AND ALUMINUM OXIDE CERAMIC WITHOUT USE OF COUPLING AGENTS

Bernhard Hoffmann, Bad Homburg, and Hartwig Gernoth, Viernheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,503
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130518
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.3 **13 Claims**

1. A process for preparing a firm bond between a copper layer applied by sputtering and aluminum oxide ceramic, comprising the steps of:
a) introducing the ceramic into a first vacuum chamber fitted with a plasma etching apparatus and evacuating the chamber down to 10^{-3} Pa;
b) introducing oxygen into the chamber so that the chamber comes to an equilibrium pressure of from 0.1 to 3 Pa;

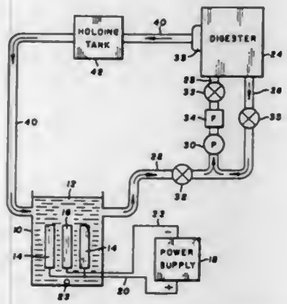


c) striking a high frequency gas discharge above the ceramic, thereby plasma etching its surface;
d) introducing immediately thereafter the plasma etched ceramic into a second vacuum chamber and plating the plasma etched surface with copper by sputtering.

5,308,464
LOW TEMPERATURE TIN-BISMUTH ELECTROPLATING SYSTEM

Timothy I. Murphy, Mahtomedi, and Brian R. Reynolds, Ramsey, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 772,513, Oct. 7, 1991, Pat. No. 5,227,046. This application Feb. 23, 1993, Ser. No. 21,397
Int. Cl.[5] C25D *17/00*
U.S. Cl. 204—222 **5 Claims**

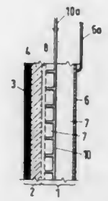


1. An electroplating system for the electrodeposition of a near eutectic tin-bismuth alloy on an electrically conductive substrate connected as a cathode to an electrical power source, the electroplating system comprising:
plating tank means for containing an aqueous electroplating bath and for supporting the electrically conductive substrate;
an aqueous electroplating bath contained in said plating tank means, said aqueous electroplating bath comprising a concentration of methane sulfonic acid, stannous ions and bismuth ions;
at lest one bismuth anode immersed in said aqueous electroplating bath, said at least one bismuth anode connected to the electrical power source;
container means for holding portions of said aqueous electroplating bath, said container means connected to said plating tank means by an inlet pipe and an outlet pipe;
pump means for transferring said aqueous electroplating bath from said plating tank means to said container means via said inlet pipe;
stannous ion replenishing means inserted into said container means for increasing the concentration of stannous ions in said aqueous electroplating bath;
bismuth ion removal means for decreasing the concentration of bismuth ions in said aqueous electroplating bath; and
shorting means coupled to said stannous ion replenishing means and said bismuth ion removal means for electrically connecting said stannous ion replenishing means to said bismuth ion removal means, whereby said concentration of said stannous ions and said bismuth ions is electrochemically maintained.

5,308,465
MEMBRANE FOR A GAS DIFFUSION ELECTRODE, PROCESS OF MANUFACTURING THE MEMBRANE, AND GAS DIFFUSION ELECTRODE PROVIDED WITH THE MEMBRANE

Eilhard Hillrichs, Büdingen, and Ulrich Sander, Friedrichsdorf, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 7, 1992, Ser. No. 986,275
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4140972
Int. Cl.[5] C25B *11/00*
U.S. Cl. 204—283 **9 Claims**



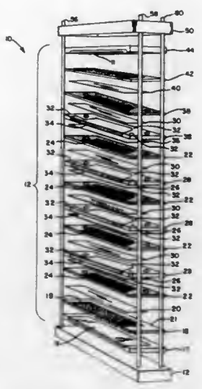
1. A gas diffusion electrode for use in an electrolyzer containing a liquid electrolyte, said electrode comprising an electrode body of an electrically conductive material and a water-absorptive membrane facing said liquid electrolyte and in contact therewith, said body being provided with passages for a gas, said passages being connected to a supply line for feeding said gas into said passages, said electrode body comprising a gas-permeable catalyst-layer, said membrane comprising a textile carrier layer and at least one gas-impermeable gas-sealing layer, said carrier layer being bonded to said gas-sealing layer, said gas-sealing layer being bonded to said catalyst layer, said gas-sealing layer containing an ion exchange material and a binder in a weight ratio of 10:1 to 1:2.

5,308,466
ELECTRODEIONIZATION APPARATUS

Gary C. Ganzi, Lexington; Frederick Wilkins, Pepperill; Anthony J. Giuffrida, Andover, and Christopher Griffin, Merrimack, all of Mass., assignors to IP Holding Company, Wilmington, Del.

Continuation-in-part of Ser. No. 628,338, Dec. 17, 1990, abandoned. This application Feb. 25, 1992, Ser. No. 841,021
Int. Cl.[5] B01D *61/44*; C02F *1/469*
U.S. Cl. 204—151 **22 Claims**

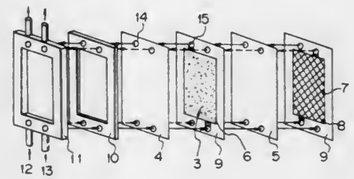
1. Electrodeionization apparatus comprising an ion exchange resin positioned between an anion exchange membrane and a cation exchange membrane, the membranes having a conductance, wherein at least one membrane comprises a material that, when subjected to an increase in voltage across the membrane causing an increase in electric current across the membrane on the order of two times or less, allows an increase in the transfer of large or highly charged ions across the membrane on an equivalent weight basis of 25% or more, the apparatus including at least one concentrating compartment, said concentrating compartment having an ion exchange resin contained therein.



5,308,467
ELECTRICALLY REGENERABLE DEMINERALIZING APPARATUS

Takanobu Sugo; Isao Ishigaki, both of Gunma; Kunio Fujiwara, Kanagawa; Hideaki Sekiguchi, Chiba; Hideo Kawazu, Kanagawa, and Takayuki Saito, Hiratsuka, all of Japan, assignors to Ebara Corporation and Atomic Energy Research Institute, both of Tokyo, Japan

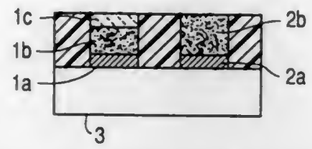
Filed Aug. 12, 1992, Ser. No. 850,263
Claims priority, application Japan, Mar. 13, 1991, 3-047951; Mar. 13, 1991, 3-047953; Mar. 13, 1991, 3-047954
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—301 **9 Claims**



1. In an electrically regenerable demineralizing apparatus having a demineralizing compartment between two ion exchange membranes for removing ions from a liquid, the improvement comprising:
at least one ion exchange material selected from the group consisting of monofilaments, woven fabric of monofilaments and nonwoven fabric of monofilaments wherein the length of said monofilament is longer than the distance between said ion exchange membranes, and wherein said at least one ion exchange material has disposed upon it ion exchange groups selected from the group consisting of anion exchange groups, cation exchange groups and alternating regions of anion and cation exchange groups, said ion exchange groups attached to said ion exchange material by radiation-initiated graft polymerization;
said at least one ion exchange material positioned within said demineralizing compartment to form alternating regions of anion exchange groups and cation exchange groups.

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5,308,468
ION SENSOR
Takashi Katoh, and Jun-ichi Tokumoto, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Continuation of Ser. No. 699,386, May 14, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,479
Claims priority, application Japan, May 14, 1990, 2-121138
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—419 **12 Claims**

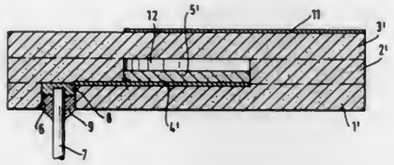


1. An ion sensor comprising in a single unit, an ion selective electrode and a reference electrode, each electrode being supported by an insulating substrate,

wherein said ion-selective electrode comprises, respectively, a solid electrolyte ceramic as an ion-sensitive membrane, a solid solution mixture of a halogenide of conducting ions of the solid electrolyte, and a halogenide of a metal of an internal electrode, and an internal electrode, in top to bottom order as viewed from the side of said ion-selective electrode to be contacted by ions under measurement, and

wherein said reference electrode comprises, respectively, a solid solution mixture of a halogenide of a metal of the group Ia or IIa of the International Periodic Table, and a halogenide of a metal of an internal electrode, and an internal electrode, in top to bottom order as viewed from the side of the reference electrode part to be contacted by ions under measurement.

5,308,469
OXYGEN SENSOR AND METHOD OF PRODUCING IT
Fritz Aldinger, Rodenbach; Harro Bestgen, Kelkheim; Christine Köstler, Bad Soden, and Andreas Roosen, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed May 6, 1992, Ser. No. 879,795
Claims priority, application Fed. Rep. of Germany, May 8, 1991, 4115023
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—426 **8 Claims**



1. A planar oxygen sensor based on zirconium dioxide for measuring the oxygen content in combustion furnaces or in the exhaust gases of internal combustion engines, which has an at least three-layer structure composed of two zirconium dioxide external layers and a zirconium dioxide central layer and has a noble-metal measuring electrode disposed on an external surface of a zirconium dioxide external layer and a reference electrode disposed entirely in the interior of said zirconium dioxide central layer and conductably connected to an external contact, wherein the zirconium dioxide external layer which does not carry an external electrode has an opening which is partially filled with a platinum mass which permits electrical connection between said reference electrode and said external contact formed of a platinum wire extending throughout said opening and outwardly of said external electrode, the remaining space of said opening being filled with a solder glass.

5,308,470
NON-CARCINOGENIC ASPHALTS AND ASPHALT BLENDING STOCKS
Gary R. Blackburn, Washington Crossing, Pa.; Carl R. Mackerer, Pennington, and Timothy A. Roy, Hopewell, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.
Continuation-in-part of Ser. No. 708,532, Jul. 22, 1991, Pat. No. 5,178,747, which is a division of Ser. No. 329,735, Mar. 28, 1989, Pat. No. 5,034,119. This application Dec. 23, 1992, Ser. No. 996,293
The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.
Int. Cl.[5] C10L *1/00*
U.S. Cl. 208—14 **16 Claims**

1. A process for the production of a substantially non-carcinogenic asphalt blending stock from a reduced hydrocarbon crude feedstock, comprising the steps of:

(a) establishing a functional relationship by regression between mutagenicity index and an asphalt blending stock physical property indicative of mutagenicity for an asphalt blending stock process stream;

(b) determining from said relationship a critical physical property level which, when achieved, an asphalt blending stock having a mutagenicity index of less than about 1.0 results, said critical property being the physical property which yields a value of mutagenicity index equal to 1.0;

(c) setting process conditions to produce an asphalt blending stock achieving said critical physical property level; and

(d) producing an asphalt blending stock, said deasphalted oil producing step comprising:

(i) passing the reduced feedstock into a vacuum distillation column wherein the feedstock is separated into at least one product of distillation and a vacuum residuum byproduct; and

(ii) passing at least a fraction of said residuum byproduct through a selective solvent deasphalting unit to produce a deasphalted raffinate and an asphaltenic extract, wherein said asphalt blending stock is substantially non-carcinogenic having a mutagenicity index of less than about 1.0.

5,308,471
HYDROCARBON UPGRADING PROCESS
Minas R. Apelian, Vincentown; David L. Fletcher, Turnersville; Michael S. Sarli, Haddonfield, and Stuart S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Jul. 20, 1992, Ser. No. 915,571
Int. Cl.[5] C10G *69/02*
U.S. Cl. 208—89 **44 Claims**

1. A process of upgrading a sulfur-containing feed fraction boiling in the gasoline boiling range which comprises:

contacting the sulfur-containing feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with a catalyst of acidic functionality comprising a zeolite having a reduced surface acidity, said zeolite having been contacted with dicarboxylic acid to effect a reduction in surface acidity without a substantial reduction in overall acid activity, to convert it to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

5,308,472
MILD HYDROCRACKING PROCESS USING CATALYSTS CONTAINING DEALUMINATED Y-ZEOLITES
Pei-Shing E. Dai; Charles N. Campbell, II, both of Port Arthur; Bobby R. Martin, and David E. Sherwood, Jr., both of Beaumont, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Jun. 11, 1992, Ser. No. 897,167
Int. Cl.[5] C10G *47/14*
U.S. Cl. 208—111 **6 Claims**

1. A process for mild hydrocracking of a hydrocarbon feedstock having a substantial proportion of components boiling below about 1000° F., said process comprising contacting said hydrocarbon feedstock under conditions of elevated temperature and a hydrogen pressure of less than about 1500 psig with a particulate catalyst comprising about 1.0 to about 6.0 wt. % of an oxide of a Group VIII metal; about 12.0 to about 25.0 wt. % of an oxide of molybdenum and 0.1 to about 3.0 wt. % of an oxide of phosphorus all supported on a porous support comprising (1) a matrix selected from the group consisting of precipitated alumina and silica-alumina containing about 1.0 to about 3.0 wt. % of silica and (2) about 5.0 to about 35 wt. %, based on the weight of the support, of hydrogen form, acidified, dealuminated Y-zeolite having a silica to alumina mole ratio of about 10–120, a secondary pore volume of about 0.14–0.20 cc/g, a unit cell size of about 24.23–24.33 Å, a secondary pore mode of about 115–145 Å, a secondary pore diameter of about 100–600 Å, a surface silicon to aluminum atom ratio of about 24–45, and an acid site density of about 1–5 cc NH_3/g of zeolite, in such a manner that the molybdenum gradient of the catalyst ranges from about 1 to about 20, said conditions being such as to yield about a 10 to about a 60 Vol % conversion of the hydrocarbon feedstock boiling above 650° F. to hydrocarbon products boiling at or below 650° F., wherein the said catalyst is characterized by having about 40 to about 65% of the total pore volume in pores of diameters from about 20 Å below the pore mode diameter to about 20 Å above the pore mode diameter and the pore mode diameter is in the range of about 80 to about 120 Å and wherein the said catalyst is further characterized by having a total surface area of about 200 to about 300 m^2/g and a total pore volume of about 0.55 to about 0.75 cc/g, with a pore volume distribution such that micropores having diameters less than 100 Å constitute less than 40%, pores having diameters of 100–160 Å constitute about 25 to about 50%, pores having diameters greater than 160 Å constitute about 25 to about 50% of the total pore volume of the catalyst, macropores having diameters greater than 250 Å constitute about 15 to about 40%, and macropores having diameters greater than 1500 Å constitute less than 10% of the total pore volume.

5,308,473
LOW NO_x FCC REGENERATION PROCESS AND APPARATUS
Catherine L. Markham, and Gregory P. Muldowney, both of Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Sep. 18, 1992, Ser. No. 946,700
Int. Cl.[5] C10G *11/18*
U.S. Cl. 208—113 **17 Claims**

1. A process for the catalytic cracking of a nitrogen containing hydrocarbon feed to lighter products comprising:

a. cracking said feed by contacting said feed with a supply of hot, regenerated cracking catalyst in a fluidized catalytic cracking (FCC) reactor means operating at catalytic cracking conditions to produce a mixture of cracked products and spent cracking catalyst containing coke and nitrogen compounds;

b. separating said cracked products and spent cracking catalyst containing coke and nitrogen compounds to produce a cracked product vapor phase which is charged to a fractionation means and a spent catalyst phase;

c. stripping said spent catalyst in a stripping means to produce a stripped catalyst phase containing coke and nitrogen compounds;

d. regenerating, in a dense phase fluidized bed said spent cracking catalyst in a catalyst regeneration means by contact with oxygen or an oxygen-containing gas at bubbling dense phase fluidized bed catalyst regeneration conditions sufficient to produce a flue gas containing NO_x and having a CO content of at least 1.0 mole % which is discharged up from said dense phase fluidized bed into a dilute phase region above, and said regeneration conditions include a superficial vapor velocity sufficient to entrain at least a portion of the catalyst in said fluidized bed into said dilute phase region;

e. afterburning CO in said dilute phase region by contact with an oxygen containing gas to produce CO_2 and heat, in an amount sufficient to superheat catalyst entrained in flue gas by direct contact heat exchange by at least 10 F, and wherein sufficient CO is burned so that the flue gas composition, after afterburning, has a CO_2/CO mole ratio of at least 10:1;

f. cyclonically separating, in a plurality of cyclone separation means having dipleg means, said superheated catalyst from said flue gas to produce a flue gas stream which is removed from said regenerator and a recovered superheated catalyst stream which is collected in said diplegs;

g. discharging at least a majority by weight of the superheated catalyst collected in said cyclone diplegs into a regenerated catalyst withdrawal means having a regenerated catalyst inlet associated with said regenerator vessel and a regenerated catalyst outlet connective with said FCC reactor, and wherein the NO_x content of the flue gas withdrawn from said cyclone separation means is reduced at least 10% as compared to operation wherein said cyclone diplegs discharge catalyst straight down into the dense phase fluidized bed.

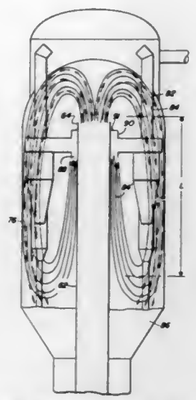
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5,308,474

PLUG FLOW VENTED RISER

Ismail B. Cetinkaya, Palatine, Ill., assignor to UOP, Des Plaines, Ill.

Filed Sep. 28, 1992, Ser. No. 952,124
Int. Cl.[5] C10G *11/00, 9/28*
U.S. Cl. 208—113 6 Claims



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

a) passing said FCC feedstock and regenerated catalyst particles to a lower section of a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby at least partially converting said feedstock to gaseous products and depositing coke on said regenerated catalyst particles to yield a mixture of coke containing catalyst and gaseous components;

b) discharging said mixture of coke containing catalyst and gaseous components upwardly from a discharge end of said riser into an upper portion of a reactor vessel;

c) cocurrently contacting coke containing catalyst and gaseous components discharged from said riser in said reactor vessel by circulating coke containing catalyst and gaseous components from the riser to the top of the reactor vessel and then downwardly through the reactor vessel;

d) recovering more than 50% of the gaseous components from said reactor through a downwardly oriented inlet that withdraws said gaseous components from below said discharge end of said riser; and

e) passing said gaseous components from said inlet to a separator, separating any entrained catalyst from said gaseous components and recovering a gaseous product stream from said separator.

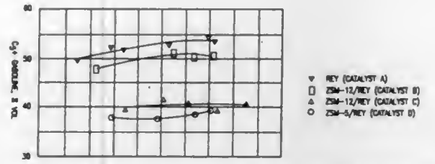
5,308,475

USE OF ZSM-12 IN CATALYTIC CRACKING FOR GASOLINE OCTANE IMPROVEMENT AND CO-PRODUCTION OF LIGHT OLEFINS

Thomas F. Degnan, Moorestown, N.J., and Terry E. Helton, Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 23, 1992, Ser. No. 979,963
Int. Cl.[5] C10G *11/05, 11/02, 11/00*
U.S. Cl. 208—120 16 Claims

1. A catalytic cracking process which comprises catalytically cracking a hydrocarbon feed in the absence of added hydrogen with a cracking catalyst comprising a zeolite having the structure of ZSM-12 and a large-pore, crystalline zeolite having a Constraint Index less than about 1, the weight ratio of the zeolite having the structure of ZSM-12 to the large-pore



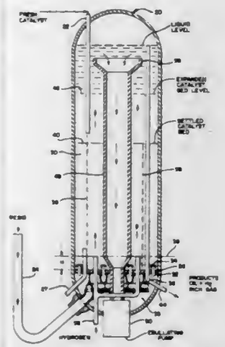
crystalline zeolite component being in the range of from about 1:10 to about 7:10.

5,308,476

REDUCED GAS HOLDUP IN AN EBULLATED BED REACTOR

Robert D. Buttke, Naperville, Ill.; Lawrence B. Peck, Houston, Tex., and Christos Nikolaides, Lombard, Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 523,990, May 16, 1990, abandoned. This application Nov. 4, 1991, Ser. No. 793,212
Int. Cl.[5] C10B *31/02*
U.S. Cl. 208—157 8 Claims



1. A process for reducing gas holdup in a three-phase ebullated bed reactor, said three phases being a mixture of oil, catalyst, and gas, said process comprising the following steps:

(a) ebullating a catalyst bed in a reactor;

)b) supporting said bed on a distributor plate displaced from a bottom of said reactor in order to form a plenum below the plate and within the reactor;

(c) introducing oil into the plenum;

(d) passing a liquid phase of said oil from said plenum through a plurality of riser pipes penetrating said distributor plate into a space above said distributor plate within said reactor which is occupied by said catalyst bed;

(e) introducing a hydrogen gas phase into said catalyst bed at a height above said distributor plate so that said gas phase enters the catalyst bed without passing through the plenum or the distributor plate, thereby reducing gas holdup of said ebullated bed; and

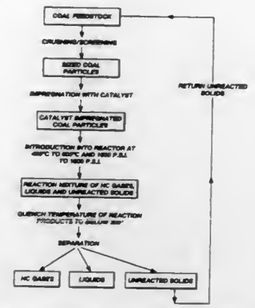
(f) draining a liquid from said reactor at a level above a top of said ebullated catalyst bed.

5,308,477

METHOD FOR COAL LIQUEFACTION

Wendell H. Wiser, Kaysville; Alex G. Oblad, and Joseph S. Shabtai, both of Salt Lake City, all of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Sep. 3, 1992, Ser. No. 939,772
Int. Cl.[5] C10G *1/00, 1/06*
U.S. Cl. 208—400 20 Claims



1. A method for converting more than 50% by weight coal to liquids wherein the ratio of liquids to hydrocarbon gases is greater than about 8:1, by weight comprising the steps of:

introducing finely divided particles of coal into a thermal cracking zone having a temperature of at least 400° C. and a pressure of at least of 1500 psi;

introducing a hydrogenation catalyst in intimate contact by way of impregnation with said coal particles into said thermal cracking zone and catalyst being substantially simulatenously introduced with said coal particles;

introducing hydrogen into said thermal cracking zone to react with said coal to form a reaction product;

maintaining said coal and hydrogen in said thermal cracking zone for a time period sufficiently short to yield a reaction product having a ratio of liquid to gaseous hydrocarbon products in excess of 8:1 by weight and a liquid content in excess of 50% of the weight of coal particles introduced into said cracking zone and unrelated coal; and

quenching rapidly the reaction products to a temperature significantly less than 400° C.

5,308,478

PREVENTION OF BACTERIAL GROWTH IN WATER TREATMENT SYSTEMS

William H. Harty, Daytona Beach, Fla., assignor to United States Foundry, Inc., Port Orange, Fla.

Filed Mar. 23, 1993, Ser. No. 35,639
Int. Cl.[5] B01D *35/02;* C02F *1/52*
U.S. Cl. 210—97 12 Claims

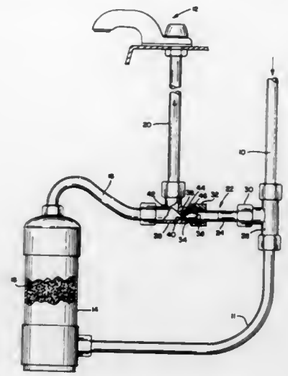
1. A water treatment system comprising:

a material for the removal of bactericide from the water;

a first conduit for communicating water containing the bactericide to the material;

a second conduit for discharging the water from which the bactericide has been removed from the material; and

cross connect means communicating said first conduit with said second conduit, said cross connect means blocking communication between said first and second conduits when water is flowing in said second conduit, but permitting diffusion of the bactericide from the water containing said bactericide in said first conduit to the water from which the bactericide has been removed in said second



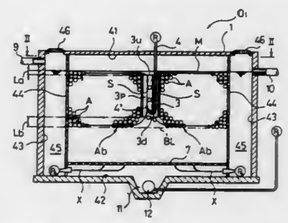
conduit when the flow of water in said second conduit ceases.

5,308,479

SEWAGE DISPOSAL APPARATUS EMPLOYING CIRCULATING FILTER MEDIA

Isamu Iwai, 12-14, Shimosueyoshi 1-cbome, Tsurumi-ku, Yokohama-shi, Kanagawa-ken 230, and Chikatsu Nirasawa, 13-7, Bunka 1-chome, Sumida-ku, Tokyo 131, both of Japan

Continuation of Ser. No. 646,733, Jan. 3, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,389
Claims priority, application Japan, May 26, 1989, 1-134314
Int. Cl.[5] C02F *3/08*
U.S. Cl. 210—151 13 Claims



1. A circulating filter type sewage disposal apparatus, comprising:

means defining a septic tank including an inflow connection and an outflow connection;

partition wall means positioned within said septic tank, said partition wall means having openings allowing sewage to flow there through, said openings having an opening dimension preventing elements larger than said opening dimension from flowing through;

a group of buoyant filter media dimensioned larger than said opening dimension, each of said filter media being in contact with the adjacent filter media to form a filter media body, said filter media body having an upper extent at a fluid surface level and having a lower extent and having sides conforming to walls of said septic tank and conforming to said partition means wherein adjacent filter media are maintained in substantially fixed relative position between said walls and on one side of said partition means;

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circulation passage means including a tube extending through said filter media body from a tube intake end wherein said filter media body surrounds said intake end and said filter media body extends below said intake end in a direction away from said intake end, to a discharge end wherein said filter media body surrounds said discharge end and said filter media body extends above said discharge end in a direction away from said discharge end, said tube isolating said circulation passage from said filter media body, said circulation passage means for providing communication between the interior of said filter media body adjacent one end of said filter media body and the interior of said filter media body adjacent another end of said filter media body; and,

sewage current generating means for generating flow current within said circulating passage for breaking individual ones of said filter media from said interior of said filter media body adjacent said intake end said filter media body having a remainder portion not adjacent said intake end, said remainder portion being maintained with individual filter media substantially static with respect to each other so as to not disturb mater adhered to said remainder portion, said sewage current generating means propelling said individual ones of said filter media from said intake end of said circulation passage means to said discharge end of said circulation passage means and freeing matter adhered to said individual one of said filter media and for urging said individual ones of said filter media into engagement with said interior of said filter media body adjacent said discharge end to join said individual ones of said filter media with said remainder portion of said filter media body.

5,308,480

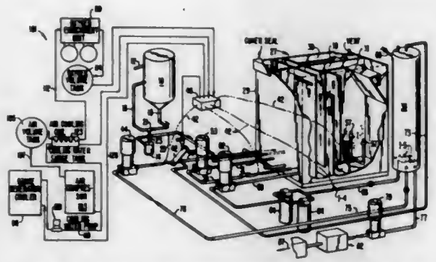
APPARATUS FOR REMOVAL OF SOLID, CHEMICAL AND BACTERIAL WASTE FROM WATER

Charles Hinson, Fresno, Calif., and Gaylen LaCrosse, Brussels, Wis., assignors to Envirozone Technologies, Inc., Tracy, Calif.

Division of Ser. No. 599,024, Oct. 17, 1990, Pat. No. 5,180,499. This application Aug. 4, 1992, Ser. No. 924,452

Int. Cl.[5] C02F *1/24, 1/32, 1/78*

U.S. Cl. 210—195.1 **7 Claims**



1. In a two-stage, multi-phase system for removal of solid, chemical and bacterial waste from a contaminated aqueous solution, comprising, in combination:

a first stage, including means defining a tank for initial removal of solid waste matter from a contaminated fluid;

a nozzle disposed in a lower portion of said tank for injecting a spray of contaminated aqueous solution therein,

oxidant generator means,

an oxidant injector connected to said oxidant generator in said tank in close proximity to said nozzle so as to permit bombardment of said spray with small bubbles of oxidant so as to cause flocculation of solids in said solution;

means in said tank about the top thereof for removing flocculated solids therefrom;

means defining a mixing tower, a fluid discharge line interconnecting said tank and said tower, a pump for moving fluid in said discharge line from said tank to said mixing tower, filter means disposed in said discharge line for removal of particulate,

a second oxidant injector, connected to said oxidant generator disposed down stream of said filter, in said line for injecting additional oxidant to a supersaturation level into the discharge from said tank in said line before arriving at said tower;

said mixing tower being at atmospheric pressure so that oxidant entrained in the discharge expands upon entry to form minute bubbles which contact and blend with said discharge therein to break down and destroy chemical and bacterial waste; and

means for continuous removal of a predetermined quantity of mixed fluid from said tower, a recirculation line connected to said tower for continuously recirculating the remainder of said mixed fluid to a location upstream of said tower, a fluid injector means in said recirculation line for introducing oxidant therein prior to returning to said first stage to repeat the process, and means for treating said predetermined quantity with ultraviolet light to complete purification thereof.

5,308,481

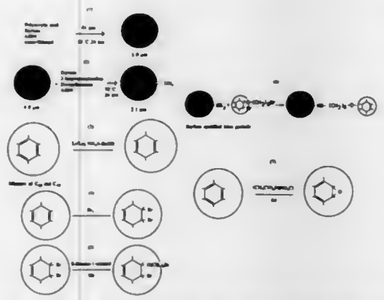
CHEMICALLY BOUND FULLERENES TO RESIN AND SILICA SUPPORTS AND THEIR USE AS STATIONARY PHASES FOR CHROMATOGRAPHY

David L. Stalling; Congyuan Guo; Kenneth C. Kuo; Kevin P. Kelly, and Said Saim, all of Columbia, Mo., assignors to Analytical Bio-Chemistry Laboratories, Inc., Columbia, Mo.

Filed Jun. 2, 1992, Ser. No. 892,307

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **13 Claims**



1. A support particle suitable for use in chromatographic separations having a buckminsterfullerene covalently bound thereto, said particle being porous or non-porous, having an average particle diameter between about 0.1 micron and about 100.0 microns and being either directly covalently, bonded to the buckminsterfullerene, or having one or more functional groups covalently bonded by reaction with one or more pendant reactive groups of said buckminsterfullerene to bond said buckminsterfullerene to said particle.

5,308,482

PORTABLE WATER-PURIFYING DEVICES

Robert J. Mead, Tunbridge Wells, Great Britain, assignor to Pre-Mac Kent Ltd., Tunbridge Wells, Great Britain

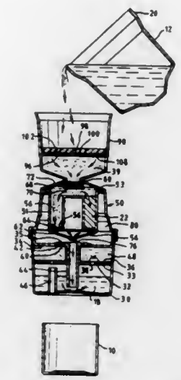
PCT No. PCT/GB89/00166, § 371 Date Oct. 18, 1990, § 102(e) Date Oct. 18, 1990, PCT Pub. No. WO89/08083, PCT Pub. Date Sep. 8, 1989

PCT Filed Feb. 22, 1989, Ser. No. 571,614

Claims priority, application United Kingdom, Feb. 29, 1988, 8804747

Int. Cl.[5] B01D *27/02*

U.S. Cl. 210—207 **17 Claims**



1. A portable water-purifying device comprising:

a first chamber;

a microbiocide in the form of a strong base anion ion-exchange resin adapted to be converted into the iodinated form and to release iodine into water, said microbiocide being contained within said first chamber, and said first chamber being adapted for flow of water into said first chamber and then through the microbiocide and then out of said first chamber;

means for directing the flow of the water through the microbiocide and for regulating the rate of the flow so as to provide sufficient contact time of the water with the microbiocide for causing the release of the iodine from the microbiocide into the water and for killing substantially all bacteria and most viruses in the water;

containment means for receiving and storing the iodine-containing water from the first chamber for at least a predetermined minimum time such that the iodine, in the event of a high concentration of viruses initially in the water, acts as a viricide for killing substantially all the remaining viruses in the water, whereby substantially complete disinfecting of the water is achieved, at least partly by flow of the water through and consequent contact of the water with the microbiocide and, in the event of a high concentration of viruses initially in the water, partly by storage of the iodine-containing water.

5,308,483

MICROPOROUS FILTRATION FUNNEL ASSEMBLY

Eric Sklar, Northville, and Tod Borton, Whitmore Lake, both of Mich., assignors to Gelman Sciences Inc., Ann Arbor, Mich.

Filed Aug. 27, 1992, Ser. No. 936,594

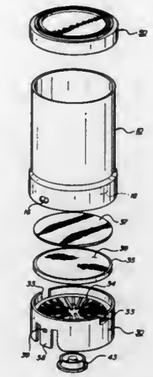
Int. Cl.[5] B01D *29/05, 35/02*

U.S. Cl. 210—232 **15 Claims**

1. A filtration funnel assembly comprising an open-ended upper body or reservoir for receiving liquid to be filtered and a lower body or base adapted to telescopically engage with a disengage from said upper body;

said upper body having a first rim portion defining an internal shoulder and a second rim portion defining an external shoulder having an inner wall surface;

said lower body serving as a conduit for leak-proof axial flow of filtered liquid therethrough comprising an outer wall or shell having an upper rim portion that is telescopically engaged between the internal and external shoulders of said upper body, a transverse filter support connected



to said lower body a filter pad supported on said filter support with an annular gasket around said pad, and a filter membrane located on said filter pad; and

the rim portion of said external shoulder having locking slot means and said outer wall having tab means with radially outward projection means that forms a lock fit with the locking slot means when the upper and lower bodies are aligned in telescopic engagement.

5,308,484

FILTERING APPARATUS FOR SYNTHETIC THERMOPLASTICS MATERIAL

Helmut Bacher, Bruck/Hauslelten 17; Helmuth Schulz, Badstrasse 20, both of St. Florian A-4490; Georg Wendelin, Waldbothenweg 84, Linz A 4033, and Gerhard Wendelin, Am Hartmayrgut 5, Linz-Urfahr A 4040, all of Austria

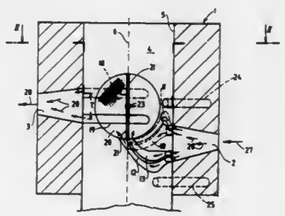
PCT No. PCT/AT91/00084, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/01500, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 11, 1991, Ser. No. 972,460

Claims priority, application Austria, Jul. 23, 1990, 1541/90

Int. Cl.[5] B01D *29/01, 39/12*

U.S. Cl. 210–232 **18 Claims**



1, Apparatus for filtering thermoplastic synthetic plastics comprising:

a housing having at least one supply channel for material to be filtered and at least one discharge channel for filtered material,

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a carrier body including a screen arrangement having at least two screen nests, said carrier body further including a separation wall between said screen nests, a distribution space disposed at an inflow side of each screen nest, a collection space disposed at an outflow side of each screen nest, and a backwashing channel which directly joins the collection spaces of said screen nests, said backwashing channel passing through said separation wall between said screen nests,

said carrier body being displaceably guided in said housing for movement between a filtration position and a different backwashing position for each of said screen nests,

said distribution spaces being joined to said supply channel by inflow channels and said collection spaces being joined to said discharge channel by outflow channels when said carrier body is in said filtration position,

said filtered material being supplied from the collection space of one screen nest to the collection space of another screen nest by said backwashing channel, said distribution space of said other screen nest discharging said contaminants from said apparatus, and said outflow channel of said other screen nest being closed when said carrier body is in one of said backwashing positions.

5,308,485

INTEGRATED COLLAR, FILTER BAG, CAGE AND LOCKING RING ASSEMBLY FOR BAGHOUSES

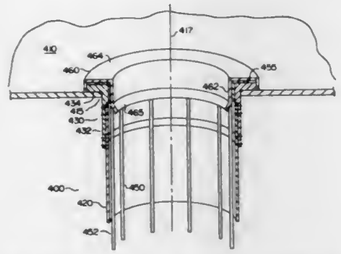
James W. Griffin, Graniteville, S.C.; James A. Lively, and Godfrey J. Davies, both of Brampton, Canada, assignors to Hosokawa Micron International Inc., New York, N.Y.

Continuation-in-part of Ser. No. 749,607, Aug. 26, 1991, Pat. No. 5,202,021. This application Jan. 15, 1993, Ser. No. 5,033

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] B01D *29/13*

U.S. Cl. 210—232 **14 Claims**



1. A filter assembly for use in a baghouse having a cell plate provided with openings, said filter assembly comprising:

a filter bag for filtering particulate material carried in gas or liquid passing through the baghouse, said filter bag extending below the cell plate;

a collar supporting said filter bag, said collar having a longitudinally extended portion and a flange portion, the longitudinally extended portion being affixed to said filter bag below the cell plate and the flange portion extending along the cell plate as a rim above a respective opening;

a tubular supporting cage structurally supporting said filter bag; and

a locking ring for locking an arrangement of said filter bag, collar and cage in place, said locking ring including an annular channel collar for protecting said arrangement from above the cell plate, an annular rim for locking at least said collar around the perimeter of a respective opening in the cell plate and an extended portion extending from the annular rim, which portion is integrally affixed to said tubular supporting cage.

5,308,486

MULTI-DECK FILTER

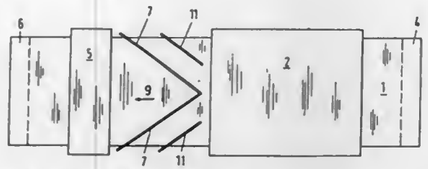
Burkhard Heintze, Issum, and Josef Triesch, Düsseldorf, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 18, 1992, Ser. No. 854,106

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 9103729

Int. Cl.[5] B01D *33/00*

U.S. Cl. 210—396 **7 Claims**



1. A multi-deck filter, comprising:

a plurality of filter plates (3) stacked horizontally on top of and parallel to one another, said filter plates having a width and a length;

a horizontally arranged filter belt (1) having a width substantially equal to the width of two adjacent filter plates (3), a length greater than the length of each of said two adjacent filter plates (3), an upper surface, a lower surface and two side edges, said filter belt being slidably mounted between two adjacent filter plates (3) and capable of sliding in a direction of travel parallel to the length of said filter belt (1);

a scraper (7) contacting and extending transversely and obliquely across at least a portion of the width of the upper surface of said filter belt (1), said portion being outside of said two adjacent filter plates (3), said scraper (7) having a V shape with two arms and being positioned on said filter belt (1) so that the vertex of said V shaped scraper (7) points toward said filter plates (3) and in a direction opposite to the direction of travel of said filter belt (1), the two arms of said V shaped scraper extending to the side edges of said filter belt (1); and

an abutment (8) contacting a portion of the lower surface of said filter belt (1) substantially beneath the portion of the upper surface of said filter belt (1) contacting said scraper (7).

5,308,487

DEVICE FOR SEPARATING LIQUID AND SOLID MATERIAL OUT OF A MIXTURE

Karel A. Thissen, Utrecht, Netherlands, assignor to Pannevis B.V., Utrecht, Netherlands

Filed Apr. 24, 1992, Ser. No. 874,072

Claims priority, application Netherlands, Apr. 29, 1991, 9100738

Int. Cl.[5] B01D *33/056*

U.S. Cl. 210—400 **16 Claims**

1. A device for separating liquid and solid material from a mixture comprising:

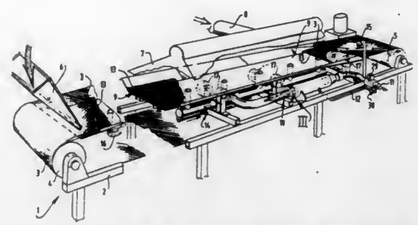
(a) an endless filter belt;

(b) means for suppling the mixture for separation on an upper side of said filter belt,

(c) at least one suction box located on an underside of said filter belt,

wherein said at least one suction box supports said filter belt and is reciprocally movable in a lengthwise direction of said filter belt and is connected to a vacuum device; and

wherein said at least one suction box is connected to said vacuum device over a telescopic connection system formed by a stationary cylindrical part connected to said vacuum device and a part connected to said at least one suction box and slidably movable in said stationary part.



5,308,488

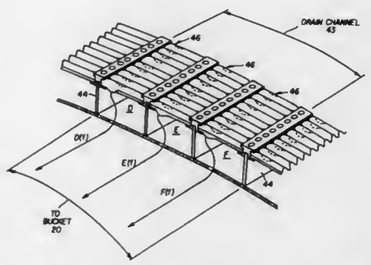
DRUM STRUCTURE FOR CORRUGATED TYPE ROTARY FILTERS

Philip N. Nelson, P.O. Box 958, West Monroe, La. 71294

Filed May 27, 1992, Ser. No. 888,617

Int. Cl.[5] B01D *33/067, 33/073*

U.S. Cl. 210—404 **2 Claims**



1. A drum structure for a rotary drum filter comprising: a cylindrical shell; a plurality of longitudinal bucket dividing grids located on an outer surface of a cylindrical shell, wherein each pair of adjacent longitudinal bucket dividing grids define a drain channel; at least one longitudinal solid grid located in the drain channel, wherein the longitudinal solid grid forms multiple sub-channels within the drain channel and prevents filtrate flow between the sub-channels; an outer surface comprising a corrugated material spaced from the outer surface of the cylindrical shell by the longitudinal bucket dividing grids, wherein the corrugated material has a drainage slot located above each sub-channel; and a single bucket coupled to the multiple sub-channels.

5,308,489

BLENDS OF POLYETHER COPOLYCARBONATES AND HIGH MOLECULAR WEIGHT FILM-FORMING THERMOPLASTICS

Rolf Dhein; Wolfgang Ebert, both of Krefeld; Herbert Hugl, Bergisch Gladbach, and Holger Ohst, Odenthal-Steinhaus, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 11, 1992, Ser. No. 989,143

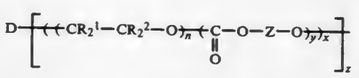
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 4142765

Int. Cl.[5] B01D *71/50;* **C08L** *69/00*

U.S. Cl. 210—500.4 **5 Claims**

1. Blends of

a) 5% by weight to 95% by weight of a segmented aliphatic-aromatic polyether copolycarbonate corresponding to general formula (I)



(I)

in which

R^1 and R^2 independently of one another represent H or C_{1-5} alkyl or form a cycloaliphatic ring containing 5 to 6 ring members,

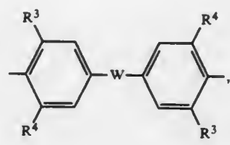
z=2 to 4,

n, x, y are selected so that the total molecular weight Mw is on average in the range from 10,000 to 350,000,

D is the deprotonated residue of a dihydric to tetrahydric C_{2-18} alcohol optionally containing aromatic constituents,

n is selected so that the molecular weight Mw (as determined by the light scattering method using a scattered light photometer of the optionally branched polyether block is in the range from 4,000 to 20,000,

Z is a diphenol residue corresponding to general formula (II)



(II)

where

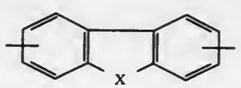
R^3 and R^4 independently of one another represent H, C_{1-5} alkyl, O—C_{1-5}-alkyl or halogen,

W is a single chemical bond,



O, SO_2 or SO,

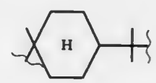
R^5 and R^6 independently of one another being hydrogen, C_{1-18} alkyl, phenyl, C_{7-19} alkaryl/aralkyl, in addition to which the substituents R^5 and R^6 may be closed to form a cycloalkyl group containing 4 to 18 ring members, or a group corresponding to the following formulae



(IIa)

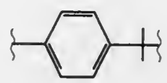
where

X=O, S, SO_2,



(IIb)

or



(IIc)

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the polyether copolycarbonate (I) having a weight average molecular weight Mw in the range from 10,000 to 350,000 (as determined by the light scattering method using a scattered light photometer) and a content of 10% by weight to 75% by weight aromatic carbonate structural units

$$(C-O-Z-O)_{\overset{\|}{O}}$$

and

b) 95% by weight to 5% by weight of an aromatic polycarbonate or a mixture of aromatic polycarbonates, the total polyether content of the blends resulting from component a) being ≧18% by weight.

5,308,490

SEWAGE DELIVERY FOR AN ACTIVATED SLUDGE PROCESS

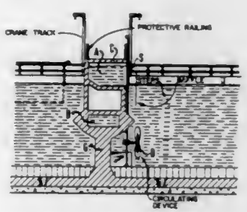
Markus Schroeder; Dietmar Loch; Bernhard Woeffen, all of Aachen; Joost Groeneweg, Kreuzau, and Carl J. Soeder, Dortmund, all of Fed. Rep. of Germany, assignors to Forschungzentrum Juelich GmbH, Juelich, Fed. Rep. of Germany

Continuation of Ser. No. 707,135, May 31, 1991. This application Nov. 27, 1992, Ser. No. 982,730

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017529

Int. Cl.[5] C02P *3/30*

U.S. Cl. 210—605 **22 Claims**



17. An activated sludge process for waste water purification by an activated sludge process having intermittent batchwise sewage supply in an urban waste processing installation, said process comprising the steps of:

a) aerating waste water and activated sludge contained in at least one of a plurality of separate activated sludge tanks;

b) monitoring the nitrate level within said activated sludge tanks;

c) introducing sewage into a delivery means, common to all of said tanks, comprising one or more elongated channels for selectively and alternately introducing sewage into each one of said tanks, wherein said common delivery means is arranged in an essentially horizontally extending manner essentially above a portion of each of said tanks and above the maximum liquid level which is attained in the tanks during said activated sludge process, and wherein said delivery means has a holding space for the sewage feed comprising an amount equal to about 5 to about 40% of the volume of one said tanks;

d) performing an intermittent denitrification process in a selected one of said tanks when said nitrate level increases in said selected tank above a first predetermined level, said denitrification processing comprising the steps of:

d1) discontinuing aeration within said selected tank; and

d2) intermittently emptying sewage from said delivery means directly into said selected one of said tanks by gravity when said nitrate level in said tank reaches a predetermined level, wherein said sewage is discharged directly into said tank in an amount equal to about 5% to 40% of the volume of one of said tanks over a period of a few minutes by means of a valve on said delivery means and located above said selected tank;

e) continuing said denitrification process until the nitrate level of said selected tank decreases below a second predetermined level;

f) resuming aeration in said selected tank; and

g) repeating steps (b) through (f).

5,308,491

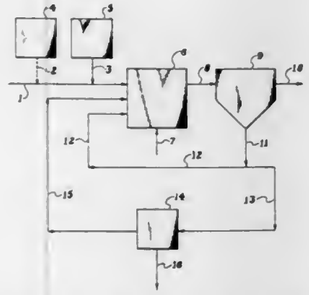
BIOLOGICAL WASTEWATER TREATMENT PROCESS

Henry F. Hauck, Jr., Baton Rouge; Lawrence J. Landry, Jr., Donaldsonville; Jen-Hsiang Kao, Baton Rouge; Sawnra W. Wade, Baton Rouge; M. Dales Mayes, Baton Rouge, and Stephen J. Caldwell, Baton Rouge, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 27, 1991, Ser. No. 767,284

Int. Cl.[5] C02F *3/12*

U.S. Cl. 210—614 **12 Claims**



1. In a biological wastewater treatment process wherein the accustomed average salt content of incoming wastewater to be treated is about 3 percent by weight or greater, as measured by silver nitrate titration, and including secondary clarification and the use of salt-tolerant microorganisms, the improvement comprising monitoring the salinity of the wastewater upstream of the secondary clarification and increasing the salt content of the wastewater upstream of the secondary clarification to a degree sufficient to maintain acceptable separation and sludge thickening in said secondary clarification step by adding a salt, when decreases in the salt content of the wastewater upstream of the secondary clarification step are observed.

5,308,492

PROCESS FOR THE PURIFICATION OF INDUSTRIAL WASTE-WATERS BY NANOFILTRATION

Richard Loew; Wolfgang Samhaber, both of Riehen, and Anton Wyss, Witterswil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 346,767, May 3, 1989, Pat. No. 5,039,416. This application Jun. 3, 1991, Ser. No. 709,865

Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815271

Int. Cl.[5] C02F *3/00*

U.S. Cl. 210—631 **15 Claims**

1. A process for purifying a waste-water stream of organic contaminants, comprising the steps of neutralization and biological treatment followed by an after-treatment which comprises:

contacting a waste-water feedstream with at least one nanofiltration membrane under conditions of pressure and temperature sufficient to form a permeated stream which has reduced organic carbon content relative to the feedstream, and recovering the permeated stream, said nanofiltration membrane being characterized by retention of organic substances with a molecular weight of about 500 Daltons or greater, and a retention coefficient for NaCl of about 0% and for Na_2SO_4 of about 20%.

5,308,493

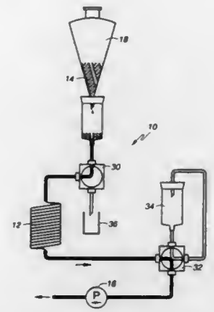
ORGANIC CONTAMINANT SEPARATOR

Peter D. Mar, Los Alamos, N. Mex., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 648,774, Jan. 31, 1991, abandoned, which is a division of Ser. No. 418,613, Oct. 10, 1989, Pat. No. 5,037,553. This application Jul. 13, 1992, Ser. No. 912,427

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **11 Claims**



1. A process of sample preparation and analysis of an organic contaminant in an aqueous medium comprising:

a. passing an initial aqueous medium including a minor amount of the organic contaminant through a composite tube including a polymeric base material selected from the group of polyolefins and polyfluorocarbons and particles of a carbon allotrope material adfixed to the inner wall of the polymeric base material, the composite tube having an internal diameter of from about 0.1 to about 2.0 millimeters and being of sufficient length to permit the organic contaminant to adhere to the composite tube;

b. passing a solvent through the composite tube, said solvent capable of removing the adhered organic contaminant from the composite tube; and

c. chromatographically analyzing said contaminant.

5,308,494

METHOD FOR IMPROVING FILTER EFFICIENCY

Steven C. Brandon, Central, S.C., and Roy Segars, Jr., Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1993, Ser. No. 36,562

Int. Cl.[5] B01D *69/14*

U.S. Cl. 210—639 **9 Claims**

1. A method for improving the filtration efficiency of any altered substrate filter element comprising a porous solid substrate having a pore size of 0.5–10 micrometers, the pores in one surface of which are impregnated to a depth of 30–100 micrometers with a sintered material having an average particle size of 5 to 500 nanometers, comprising treating the side of the filter element containing the sintered materials free of foulants, with a dilute suspension of non-agglomerated finely divided solid particles dispersed in an aqueous liquid medium, the size of the non-agglomerated particles being no greater than the size of the impregnated sintered solids, to effect separation of the finely divided solid particles from the aqueous liquid medium and deposition of the non-agglonerated, finely divided solid particles from the dilute suspension thereof on the sintered material particles in the pores of the porous solid substrate to a level of 1.08–54 g/m^2.

5,308,495

CHROMATOGRAPHY PROCESSES USING DOPED SOL GEL GLASSES AS CHROMATOGRAPHIC MEDIA

David Avnir; Michael Ottolenghi, and Ovadia Lev, all of Jerusalem, Israel, assignors to Yissum, Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 738,039, Jul. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 637,873, Jan. 8, 1991. This application Oct. 11, 1991, Ser. No. 774,104

Claims priority, application Israel, Jan. 23, 1990, 92134

Int. Cl.[5] B01D *15/08, 39/14;* C02F *1/28, 1/42*

U.S. Cl. 210—656 **9 Claims**

1. A process for qualitative or quantitative determination of a reactive chemical contained in a sample, comprising passing the sample containing the reactive chemical through a column or planar chromatography apparatus, the column or planar chromatography apparatus including packing or plates containing a porous doped sol gel glass, the doped sol gel glass being formed from a metal alkoxide by a gelling step conducted at room temperature and a drying step conducted at not greater than 41° C., and the doped sol-gel glass containing a compound encapsulated therein which is reactive with the reactive chemical in the pores of the doped sol gel glass.

5,308,496

RESIN REGENERATION PROCESS

Richard A. Pease, Bear, Del., and David J. Rodini, Midlothian, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1993, Ser. No. 39,565

Int. Cl.[5] B01J *49/00*

U.S. Cl. 210—674 **3 Claims**

1. A process for regenerating a bed of spent weakly basic anion exchange resin in the hydrogen chloride salt form and recovering regenerant solution comprising:

a) passing a regenerant solution comprising a tertiary amine in an amide solvent through the bed to regenerate the spent resin and form an amide solution of the hydrogen chloride salt of the tertiary amine;

b) treating the resulting solution with anhydrous ammonia to precipitate ammonium cloride and form a solution consisting of tertiary amine in the amide solvent; and

c) separating regenerant solution from the precipitate.

5,308,497

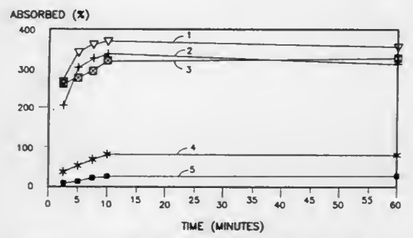
METHOD OF ABSORBING PETROLEUM-BASED PRODUCTS

Raymond T. O'Donnell, Lawtoo, and Melvin J. Schaub, Holland, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Aug. 31, 1992, Ser. No. 937,334

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—693 **12 Claims**



1. A method for adsorbing a petroleum-based product, comprising: intimately contacting the petroleum-based product with a sorbent such that said petroleum-based product is selectively adsorbed into said sorbent wherein said sorbent consists

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essentially of about 5 wt. % to about 70 wt. % cross-linked phenolic resin and about 30 wt. % to about 95 wt. % of a fibrous material comprising about 50% cellulose and about 40% polyester.

5,308,498

HYDROXAMIC ACID CONTAINING POLYMERS USED AS CORROSION INHIBITORS

Dodd W. Fong, and Binaifer S. Khambatta, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

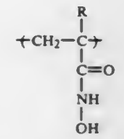
Continuation-in-part of Ser. No. 734,847, Jul. 24, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,859

Int. Cl.[5] C02F *5/14*

U.S. Cl. 210—697 **11 Claims**

1. A method of inhibiting corrosion of iron and steel alloys in contact with industrial waters containing hardness ions the method comprising the step of:

adding to said waters a corrosion inhibiting amount of water soluble polymer having from about 4.0 to about 30 mole percent of hydroxamic acid mer unit having the structure:



wherein R is selected from the group consisting of H, CH_3 and mixtures thereof, and from about 40 to about 96 mole percent acrylic acid mer unit, and wherein the polymer has a molecular weight ranging from about 2000 to about 50,000.

5,308,499

EFFLUENT TREATMENT

David R. Dixon, Blackburn, and Tiong C. Ha, East Kew, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australian Capital Territory, Australia

PCT No. PCT/AU90/00213, § 371 Date Jan. 7, 1992, § 102(e) Date Jan. 7, 1992, PCT Pub. No. WO90/14310, PCT Pub. Date Nov. 29, 1990

PCT Filed May 22, 1991, Ser. No. 773,943

Claims priority, application Australia, May 22, 1989, PJ4312/89

Int. Cl.[5] B03D *1/02*

U.S. Cl. 210—705 **8 Claims**

1. An effluent treatment process for an effluent containing organic material comprising the steps of:

(a) adding a coagulant to said effluent to concentrate said organic material therein into a concentrated organic material;

(b) pretreating said organic material or treating said concentrated organic material with a mixture of a cationic polymer or copolymer in the presence of an anionic surfactant, a nonionic surfactant or both; and

(c) separating said concentrated organic material from said effluent after step (a) and step (b) by flotation comprising passing air bubbles through the effluent.

5,308,500

REMOVAL FROM INDUSTRIAL WASTEWATERS OF METALS THAT FORM SPARINGLY SOLUBLE SULFIDES

Joerg Schwarzbach, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 26, 1992, Ser. No. 935,168

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1991, 4128353

Int. Cl.[5] C02F *1/62*

U.S. Cl. 210—716 **6 Claims**

1. A process for removing metals that form sulfides which precipitate from industrial wastewaters by adding a precipitant and subsequently separating off the resulting precipitate, which consists essentially of adding as precipitant a suspension having a pH ≧5, obtained by mixing sulfur, from 0.5 to 10 mol an iron(II) salt, for each mol of sulfur, water and a base, wherein iron(II) sulfide is present in said suspension in equilibrium with iron(II) hydroxides adjusting the wastewater pH to ≧4, to form a sulfidic precipitate containing said metals and separating off said sulfidic precipitate.

5,308,501

TREATMENT SYSTEM FOR ALKALINE OR ACIDIC SOLUTION CONTAINING HEAVY METALS

C. Edward Eckert, 260 Lynn Ann Dr., New Kensington, Pa. 15068

Filed Apr. 2, 1993, Ser. No. 41,981

Int. Cl.[5] C02F *1/62, 1/64*

U.S. Cl. 210—718 **52 Claims**



1. A method of continuously treating an alkaline solution containing heavy metal ions comprising hexavalent chromium and at least one metal ion selected from the group consisting of iron, nickel, zinc, and copper to lower the pH of the solution and reduce the amount of said heavy metal ions contained therein, comprising:

(a) providing a body of said aqueous solution;

(b) contacting the body with CO_2 gas to lower the pH thereof;

(c) maintaining said CO_2 gas in contact with said solution at a pressure in the range of 25 to 675 psig during said contacting;

(d) adding metal ions selected from the group consisting of Fe^{+2} and Mn to the solution having lowered pH to reduce said hexavalent chromium to trivalent chromium and to form metal hydroxide precipitates and chromium hydroxide; and

(e) separating the heavy metal hydroxide precipitates from the treated solution to provide a solution having a reduced amount of heavy metal ions contained therein and having a lowered pH.

5,308,502

METHOD FOR WASTE TREATMENT OF ORGANIC STRIPPERS CONTAINING METALS

James A. Brown, Layton, Utah, assignor to Tandy Coporation, Fort Worth, Tex.

Filed Dec. 17, 1992, Ser. No. 992,119

Int. Cl.[5] C02F *1/52, 1/62*

U.S. Cl. 210—724 **4 Claims**

1. A method of treating liquid wastes containing photoresist polymers and heavy metals, comprising the steps of:

treating said liquid wastes with an aqueous solution comprising a water soluble Me^{+3} salt wherein Me^{+3} is selected from the group consisting of Fe^{+3} and Al^{+3}, and wherein at least a portion of said Me^{+3} comprises Al^{+3}; and a water soluble Me^{+2} salt wherein Me^{+2} is selected from the group consisting of Mg^{+2} and Ca^{+2}; and an acid to result in a pH of said aqueous solution in the range of from about 0.1 to about 1.0; wherein the amount of said Me^{+3} to the amount of said Me^{+2} is in the ratio of from about 2 to about 3 moles Me^{+3} to from about 1 to about 3 moles Me^{+2};

wherein a precipitate is formed which contains said heavy metals and said photoresist polymers.

5,308,503

PURIFICATION OF INDUSTRIAL LUBRICATING AGENTS

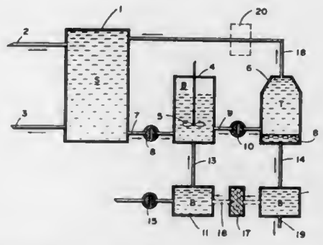
Gunnar Ström, Uppsala, Sweden, assignor to Pegasus Separation AB, Uppsala, Sweden

Continuation of Ser. No. 689,785, Jun. 6, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,909

Claims priority, application Sweden, Nov. 21, 1988, 8804206

Int. Cl.[5] B01D *21/01*

U.S. Cl. 210—728 **23 Claims**



1. A method for removing microbial contaminants from a lubricating agent which comprises:

1) mixing the contaminated lubricating agent with an aqueous two-phase system to form a mixture, said system being a composition containing two immiscible aqueous phases, one phase being a top phase containing a hydrophilic polymer dissolved in water and the other phase being a bottom phase, said bottom phase being an aqueous solution containing a component dissolved therein, said component being selected from the group consisting of:

(a) a bottom phase polymer which, when dissolved in water, forms an aqueous solution that is immiscible with the top phase; said bottom phase polymer having a molecular weight which is higher than the molecular weight of the hydrophilic polymer in the top phase; and

(b) a water-soluble inorganic salt which, when dissolved in water, forms an aqueous solution that is immiscible with the top phase;

2) allowing the mixture to stratify into said top phase containing the lubricating agent therein and said bottom phase containing at least a portion of the microbial contaminants therein, wherein a microbial enriched bottom phase is formed; and then

3) separating at least a major portion of the microbially enriched bottom phase from the top phase.

5,308,504

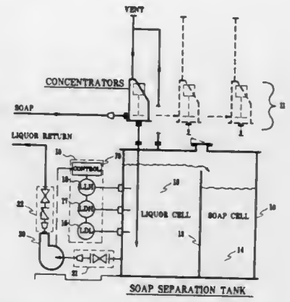
VISCOSITY BASED TANK LEVEL AND FLOW CONTROL SYSTEMS

Wilford W. Keyes, 609 Poinciana Dr., Gulf Breeze, Fla. 32561

Filed Jan. 26, 1993, Ser. No. 9,801

Int. Cl.[5] B01D *21/32;* D21C *11/00*

U.S. Cl. 210—744 **9 Claims**



5. A method of controlling tank levels in a storage tank, comprising the steps of:

storing a mixture of at least a heavy phase solution, having a known first viscosity range and a known first density range, and a light phase solution having a known second viscosity range and a known second density range;

forming from the mixture a top layer of substantially light phase solution and a bottom layer of substantially heavy phase solution;

detecting the viscosity of the solutions present at a predetermined first level in the tank;

transmitting a first signal to a control device corresponding to the viscosity detected at the predetermined first level in the tank;

detecting the viscosity of the solutions present at a predetermined second level in the tank, the second level being situated above the predetermined first level;

transmitting a second signal to the control device corresponding to the viscosity detected at the predetermined second level in the tank;

detecting the viscosity of the solutions present at a predetermined third level in the tank, the third level being situated above the predetermined second level;

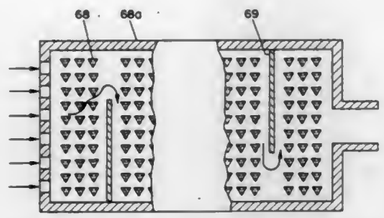
transmitting a third signal to the control device corresponding to the viscosity detected at the predetermined third level in the tank;

receiving the first, second and third signals in the control device; and

operating a pump to remove the bottom layer from the storage tank in dependence upon the viscosities detected at the first, second and third predetermined levels in the tank.

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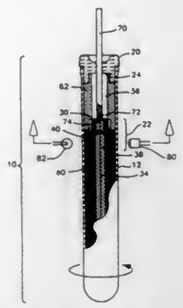
5,308,505
METHOD FOR KILLING BARNACLE LARVAE IN WATER
James M. Titus, East Lyme, and Bernard S. Ryskiewich, Pawcatuck, both of Conn., assignors to General Dynamics Corporation, Falls Church, Va.
Division of Ser. No. 773,102, Oct. 8, 1991. This application Nov. 5, 1992, Ser. No. 972,236
Int. Cl.[5] C02F *1/32*
U.S. Cl. 210—745 **2 Claims**



1. A method for prevention of marine biofouling comprising the steps of:
providing a biocidal chamber having a source of ultraviolet light;
passing water containing barnacle larvae through the chamber;
generating an ultraviolet light at an intensity of at least 4000 μwatts/cm^2 within the chamber, and
moving water through the chamber at a rate to provide a residence time of at least one minute wherein all barnacle larvae present in said water are killed by said ultraviolet radiation.

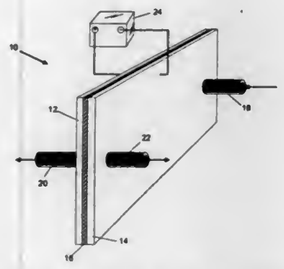
5,308,506
APPARATUS AND METHOD FOR SEPARATING A SAMPLE OF BLOOD
James A. McEwen, 10551 Bamberton Drive, Richmood, British Columbia, Canada V7A 1K6 ; William J. Godolphin, 827 West 24th Avenue, Vancouver, British Columbia, Canada V5Z 2C2 ; Martin L. Furse, 105 - 8020 Ryan Road, Richmond, British Columbia, Canada V7A 2E5 , and John C. Osborne, 1536 West 65th Avenue, Vancouver, British Columbia, Canada V6P 2R1
Continuation of Ser. No. 857,099, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 632,400, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 346,063, May 2, 1989, Pat. No. 5,030,341, which is a continuation of Ser. No. 192,847, May 11, 1988, abandoned, which is a continuation of Ser. No. 33,769, Apr. 3, 1987, Pat. No. 4,828,716. This application Dec. 31, 1992, Ser. No. 999,533
The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.
Int. Cl.[5] B01D *21/26*; G01N *21/00*
U.S. Cl. 210—745 **8 Claims**

8. A method for partitioning a sample of fluid that has first and second ordered phases of different densities, comprising the steps of:
containing the sample within a chamber having a longitudinal axis;
rotating the chamber so that the first and second phases are ordered about the longitudinal axis;
directing a portion of the first phase of the sample to the longitudinal axis of the rotating chamber; and



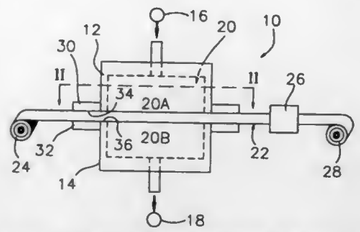
optically monitoring the portion of the first phase of the sample at the longitudinal axis of the chamber.

5,308,507
METHOD AND APPARATUS FOR REMOVING ORGANIC CONTAMINANTS
William M. Robson, Albuquerque, N. Mex., assignor to Los Alamos Technical Associates, Inc., Albuquerque, N. Mex.
Filed Aug. 4, 1992, Ser. No. 924,739
Int. Cl.[5] C02F *1/46*
U.S. Cl. 210—748 **8 Claims**



1. A method for destroying an organic compound, said method comprising the steps of:
generating an anode stream comprising a mixture of oxidants by passing a salt solution through an electrolytic cell comprising:
anode means comprising a first surface;
cathode means comprising a second surface, said second surface being parallel to said first surface;
means for maintaining an electrical potential between said first and second surfaces;
means for causing salt solution to flow between said first and second surfaces and to be subsequently divided into cathode and anode streams, said anode stream comprising the portion of said electrolytic solution that was caused to flow between said first and second surfaces adjacent to said first surface;
mixing a portion of said anode stream or said cathode stream with said organic compound; and
mixing a portion of the other of said anode stream of said cathode stream with said organic compound.

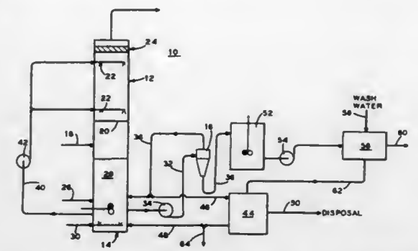
5,308,508
HIGH CAPACITY FILTER MEDIA, METHOD OF USE IN FILTRATION AND METHOD OF FORMATION
Thomas H. Womack, Novato, Calif., assignor to Womack International, Inc., Novato, Calif.
Filed May 15, 1992, Ser. No. 883,564
Int. Cl.[5] B01D *37/00, 33/00*
U.S. Cl. 210—767 **11 Claims**



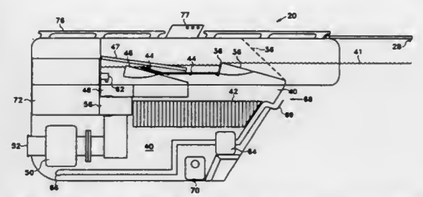
1. A method of depth filtration wherein a sheet of depth filter media is adapted for use in a filter press to separate a chamber into an inlet chamber and an outlet chamber and wherein fluid to be filtered is caused to flow from the inlet chamber to the outlet chamber through the depth filter media sheet, comprising the steps of
selecting the depth filter media sheet to include a filter septum layer adjacent a wet strength layer with one lateral surface of the depth filter media sheet formed by the filter septum layer and an opposite lateral surface of the depth filter media sheet formed by the wet strength layer, the filter septum layer being formed as a matrix from a furnish of both an initial fiber providing substantial loft and porosity throughout the thickness of the depth filter septum layer and a second relatively fine fiber for reducing pore size developed in the filter septum layer by the initial fiber and for structurally reinforcing the initial fiber,
arranging the depth filter media sheet between filter plates of the filter press with a lateral surface of the filter septum layer being substantially totally exposed to the inlet chamber so that the porous depth of the filter septum layer is available for receiving and capturing particulate solids from a fluid passing through the depth filter media from the inlet chamber to the outlet chamber, a lateral surface of the wet strength layer being exposed to the outlet chamber, and
initiating a depth filtration process with fluid flowing into the inlet chamber and contacting the totally exposed lateral surface of the filter septum layer so that particulate solids from the fluid are received and captured throughout the porous depth of the filter septum layer.

5,308,509
FGD PERFORMANCE ENHANCEMENT BY HYDROCLONE AND RECYCLING STEPS
Pervaje A. Bhat, North Canton, and Dennis W. Johnson, Barberton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Mar. 8, 1993, Ser. No. 28,895
Int. Cl.[5] B01D *17/038, 50/00*
U.S. Cl. 210—770 **16 Claims**

8. A method of flue gas desulfurization incorporating a scrubber tower containing a liquid bottoms product therein wherein the improvement comprises the steps of:
(a) oxidizing the liquid bottoms product generated in the scrubber tower in a reaction/oxidation tank;
(b) delivering the oxidized liquid bottoms product to a hydroclone assembly;
(c) separating the oxidized liquid bottoms product in said hydroclone into an overflow stream and an underflow steam, said overflow stream primarily comprising an aqueous slurry of fly ash, fines, organic acids and unused reagent while said underflow stream primarily comprising a gypsum slurry;
(d) transporting said underflow stream to a dewatering process where gypsum is recovered;
(e) recycling or returning contents of said reaction/oxidation tank back to said scrubber tower for subsequent spraying onto incoming flue gas; and,
(f) initially returning all or a portion of said overflow stream comprising at least recovered reagent and organic acids to said reaction/oxidation tank prior to recycling said stream to the tower.



5,308,510
OIL SPILL SKIMMER AND PROCESSOR
Douglas J. Gore, 5168 Brookside La., Concord, Calif. 94521
Continuation of Ser. No. 663,720, Mar. 4, 1991. This application Aug. 25, 1992, Ser. No. 935,454
Int. Cl.[5] E02B *15/04*
U.S. Cl. 210—776 **20 Claims**



1. An offshore oil spill skimmer vessel for removing oil from the surface of water and for separating oil from water taken aboard the vessel, comprising,
a vessel body with a front or inlet end and flotation means for preventing sinking even when the vessel is substantially full of water,
first floating weir means adjacent to the inlet end of the skimmer vessel, for receiving liquid from the open water outside the vessel, which liquid may contain oil and water, and for skimming a surface portion of the liquid to flow over the weir means,
a main liquid sump downstream of the first weir means, having a depth extending substantially down into the skimmer vessel, and such that a liquid surface in the sump lies a short distance below a tip of the first weir means,
the first floating weir means having sufficient flotation to support supercritical, laminar flow as the liquid passes over the first floating weir means and into the main liquid sump, thus being self-adjusting to flow rate over the weir means,
water eductor means for withdrawing liquid, virtually all water, from the main liquid sump and for returning it to the body of water surrounding the skimmer vessel, including means for withdrawing water at a rate sufficient to keep the sump sufficiently below the surrounding body of

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water to establish supercritical, laminar flow over the first floating weir means,

baffle means in the main liquid sump for stilling the liquid in the sump during sloshing and discouraging laminar flow of water and oil in the liquid sump,

second weir means at the downstream end of the liquid surface in the main liquid sump, for skimming a surface layer of liquid from the main liquid sump, the surface layer comprising substantially all oil when oil is present in the liquid sump, and

product outlet means for removing the material flowing over the second weir means, including discharge pump means for withdrawing the material and delivering it out of the vessel toward another location.

5,308,511

SOLVENT-BASED WATER- AND OIL-REPELLENT TREATING AGENT

Dirk Coppens, Antwerp, Belgium; Makoto Nagase, and Masahiro Ashizawa, both of Sagamihara, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 4, 1992, Ser. No. 985,307

Int. Cl.[5] D06M *10/08;* **C09D** *5/20;* **C08K** *5/34*

U.S. Cl. 252—8.6 **12 Claims**

1. A mineral spirits solution consisting essentially of components that are soluble in mineral spirits and comprising a fluorochemical water-and oil-repellent agent, zirconium carboxylic acid ester, and alkenyl succinic anhydride.

5,308,512

THIODIGLYCOL ALKOXYLATE DERIVATIVES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS FABRIC SOFTENERS

Gerhard Stoll, Korschenbroich; Peter Daute, Essen; Ingo Wegener, and Faize Berger, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01213, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO92/00959, PCT Pub. Date Jan. 23, 1992

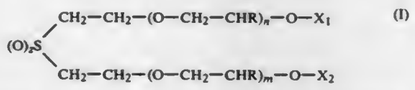
PCT Filed Jun. 28, 1991, Ser. No. 961,683

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1990, 4021694

Int. Cl.[5] D06M *10/08*

U.S. Cl. 252—8.7 **6 Claims**

1. A fabric-softening composition comprising (a) alkoxylated thiodiglycol sulfoxide derivataives or thiodiglycol sulfone derivatives corresponding to formula I



(I)

wherein X_1 and X_2 may be the same or different and represent a hydroxyl-substituted alkyl radical containing 8 to 30 carbon atoms, an acyl radical of an alkyl monocarboxylic acid containing 8 to 30 carbon atoms, and X_1 or X_2 may be hydrogen, R represents hydrogen or methyl, z is 1 to 2, n is 0 to 25 and m is 1 to 25 and (b) an anionic or nonionic surfactant or mixtures thereof.

5,308,513

WASH CYCLE OR RINSE CYCLE FABRIC CONDITIONING COMPOSITIONS

Subhash Harmalker, Somerset; Nagaraj S. Dixit, Plainsboro, and Kevin M. Kinscherf, Freehold, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 704,833, May 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 555,683, Jul. 20, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 21,392

Int. Cl.[5] C11D *3/22, 1/40, 1/65;* **D06M** *13/342*

U.S. Cl. 252—8.8 **22 Claims**

1. A wash cycle or rinse cycle-additive aqueous liquid emulsion for providing softness and anti-static properties to fabrics treated therewith in a laundry bath without adversely affected fabric cleaning comprising:

(A) from about 1 to 30%, by weight of a particulate fabric conditioning composition having a median particle diameter greater than about 10 and up to about 50 microns comprising:

(a) a fabric conditioning amount of a multi-functional carboxylic acid complex of a tertiary amine formed from the reaction of (i) and tertiary amine having the general formula:



wherein R_1 is methyl or ethyl, and R_2 and R_3 are each independently an aliphatic group having from 12 to 22 carbon atoms, and (ii) a multi-functional carboxylic acid selected from the group consisting of citric acid, and di and tri carboxylic acids having from 21 to 54 carbon atoms;

(b) unreacted tertiary amine having the general formula defined above, said unreacted amine being present in an amount of at least 0.2 times the stoichiometric amount of tertiary amine required to form the multi-functional carboxylic acid complex of (a); and

(c) a stabilizing amount from about 0.1 to 1% by weight of the aqueous liquid emulsion, of an alkyl cellulose ether to substantially prevent particle break-down of said particulate fabric conditioning composition, said alkyl cellulose ether being selected from the group consisting of methylcellulose, hydroxypropylmethyl cellulose and derivatives of hydroxyethyl cellulose wherein the terminal hydrogen of the hydroxyether group is replaced by an alkyl chain having from 10 to 24 carbon atoms, and mixtures thereof, said alkyl cellulose ether having a molecular weight of at least 25,000, the stabilizing amount of alkyl cellulose ether relative to the fabric conditioning amount of carboxylic acid complex of a tertiary amine defined in (a) being less than about 1:20, by weight, and 7hich stabilizing amount of cellulose ether provides no improved fabric softening performance for said fabric conditioning composition, the dispersed phase of the liquid emulsion being essentially comprised of said particles of fabric conditioning composition;

(B) from about 0.1 to 10%, by weight of one or more emulsifying agents; and

(C) the balance water.

5,308,514

SULFONATE GREASES

William D. Olson, Scarborough; Ronald J. Muir; Theo I. Eliades, both of West Hill, all of Canada, and Thomas Steib, Pittsburgh, Pa., assignors to Witco Corporation, New York, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,598

Int. Cl.[5] C10M *125/22*

U.S. Cl. 252—18 **14 Claims**

1. High performance overbased calcium sulfonate greases comprising up to about 28% by weight overbased calcium sulfonate, solid particles of colloidally dispersed calcium carbonate essentially in the form of calcite, a calcium soap of a fatty acid of twelve to twenty-four carbon atoms, and oleaginous vehicle wherein at a concentration of about 28% by weight overbased calcium sulfonate said greases have a worked cone penetration rating of less than about 295.

5,308,515

METHOD FOR LUBRICATING A COPIER OR PRINTER WITH A DRY LUBRICANT FORMULATION

Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322, and John P. Wagnon, Lafayette, La., assignors to Steven Bruce Michlin, West Bloomfield, Mich.

Filed Jul. 17, 1992, Ser. No. 914,530

Int. Cl.[5] G03G *21/00;* **C10M** *103/00*

U.S. Cl. 252—21 **17 Claims**

1. A method for minimizing wear and tear on the photoreceptor, wiper blade, and doctor blade of printing, copy and facsimile machines, said method comprising lubricating said photoreceptor, wiper blade and doctor blade with a padding powder made by mixing 90% by weight or more of a mica-group mineral and 10% by weight or less of calcium stearate to reduce static electricity created during operation of said machines.

5,308,516

FRICTION MODIFIERS

Kelvin S. Chiddick, North Vancouver, Canada, assignor to Century Oils, Inc., Langley, Canada

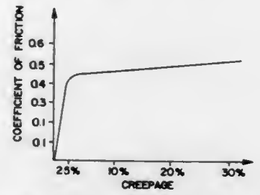
Continuation-in-part of Ser. No. 769,578, Oct. 2, 1991, Pat. No. 5,173,204, which is a continuation of Ser. No. 492,815, Mar. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 364,453, Jun. 8, 1989, abandoned. This application May 20, 1992, Ser. No. 886,615

Claims priority, application United Kingdom, May 21, 1991, 9110979

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] C10M *111/04, 169/04*

U.S. Cl. 252—30 **21 Claims**



1. A high positive friction modifier composition comprising:

(a) at least 20% by weight of a polymer resin media;

(b) at least 5% by weight of a solid lubricant

(c) at least 15% by weight of a friction enhancer.

wherein there is produced a coefficient of friction which increases to about 0.20 at creepage levels up to 2.5% between steel bodies in rolling-sliding contact lubricated using the said composition.

5,308,517

ASHLESS LUBE ADDITIVES CONTAINING COMPLEXES OF ALKOXYLATED AMINES, DIHYDROCARBYLDITHIOPHOSPHORIC ACID, AND ADENINE

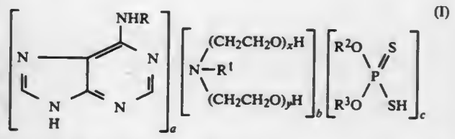
Jacob J. Habeeb, and Morton Beltzer, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 22, 1993, Ser. No. 21,296

Int. Cl.[5] C10M *105/72*

U.S. Cl. 252—32.7 R **10 Claims**

1. A composition of matter comprising a complex which is the reaction product of adenine, alkoxylated amine and dihydrocarbyldithiophosphoric acid, said complex having the formula



(I)

where R is hydrogen or a hydrocarbyl group of from 1 to 20 carbon atoms, R′ is a hydrocarbyl group of 2 to 22 carbon atoms, R^2 and R^3 are each independently hydrocarbyl groups having from 3 to 30 carbon atoms, x and y are each independently integers of from 1 to 15 with the proviso that the sum of x+y is from 2 to 20, and a, b and c are independent numbers from 1.0 to 3.0 wherein the ratios between a:b, a:c and b:c range from 1.0:3.0 to 3.0:1.0.

5,308,518

LUBRICANT COMPOSITION CONTAINING ALKOXYLATED AMINE SALT OF A DIHYDROCARBYLDITHIOBENZOIC ACID

Jacob J. Habeeb, and Morton Beltzer, both of Westfield, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 22, 1993, Ser. No. 21,509

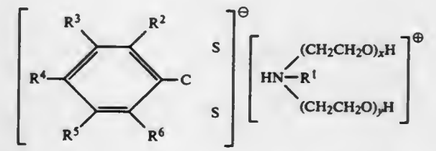
Int. Cl.[5] C10M *135/12*

U.S. Cl. 252—33.6 **8 Claims**

1. A lubricating oil composition comprising:

(a) a major amount of lubricating oil basestock, and

(b) A minor amount of an alkoxylated amine salt of a dihydrocarbyldithiobenzoic acid, said salt having the formula



where R^1 is a hydrocarbyl group having from 2 to 22 carbon atoms, R^2, R^3, R^4, R^5 and R^6 are each independently hydrogen, a hydrocarbyl group containing from 1 to 24 carbon atoms or a hydroxy group with the proviso that at least one of R^2 to R^5 is a hydrocarbyl group, and x and y are each independently integers of from 1 to 15 with the proviso that the sum of x+y is from 2 to 20.

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5,308,519

TUNGSTEN HEXALDIALKYLDITHIOCARBAMATES, PROCESS FOR THEIR PREPARATION AND OIL COMPOSITIONS CONTAINING THEM

Wolfram Spiess, Heinrich-Becker-Strasse 16; Friedrich Franke, Bitzenstrasse 22 A, both of, D-6718 Grünstadt; Rolf Himmelreich, deceased, late of D-6718 Grüstadt; by Margot M. C. Himmelreich, executor, Uhlandstrasse 9; by Petra Himmelreich, heir, Schlesingerstrasse 9, D-6718 all of Grünstadt, and by Ralf Himmelreich, heir, Augustastrasse 15, 6900 Heidelberg-Rohrbach, all of Fed. Rep. of Germany

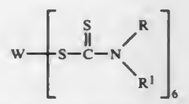
Filed Sep. 25, 1992, Ser. No. 950,676

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131921

Int. Cl.[5] C10M *135/18*

U.S. Cl. 252—46.4 **12 Claims**

1. A tungsten hexa(dialkyldithiocarbamate) of the formula I



I

wherein R and R^1 may be identical or different and are selected from the group consisting of branched or straight-chain, saturated or unsaturated alkyl radicals having 1–18 carbon atoms.

5,308,520

HETEROCYCLIC COMPOUNDS USEFUL AS ADDITIVES FOR LUBRICANT AND FUEL COMPOSITIONS

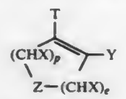
Joseph W. Pialet, Euclid, and Paul E. Adams, Willoughby, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 119,466, Nov. 10, 1987, abandoned, which is a division of Ser. No. 845,204, Mar. 27, 1986, Pat. No. 4,784,782. This application Jul. 31, 1989, Ser. No. 387,405

Int. Cl.[5] C10M *133/00*

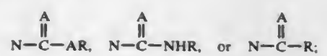
U.S. Cl. 252—47.005 **9 Claims**

1. A composition comprising at least one compound represented by the formula



wherein:

Z is S, NR,



T is NH_2, NHR, SH, OH or their tautomers, hydrocarbyl acyl or hydrocarbyl phenolate;

Y is,



COOH or CH_2NH_2;

each X is independently H, COOH, NH_2, $CONH_2$, $NHNH_2$, OR, COR, NHR, OH, SH or CN:

p is zero to 2;

e is zero to 2;

e+p is 2 to about 4;

A is O or S; and

R is H, alkyl, alkenyl, hydrocarbyl acyl, hydrocarbyl phenolate or $—(CH_2)_mQ$, wherein m is 1 to about 12 and Q is O-alkyl or N-alkyl.

5,308,521

LUBRICANT WITH IMPROVED ANTI-CORROSION PROPERTIES

Thomas B. Pavilon, Cleveland Heights; Brent R. Dohner, Concord Township, Cuyahoga County, and Jerry L. Rutter, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 910,490, Jul. 8, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,390

Int. Cl.[5] C10M *133/44, 155/00*

U.S. Cl. 252—49.6 **31 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity, a minor proportion of a multifunctional olefin copolymer viscosity index modifier, and a minor proportion of an additive composition comprising:

(a) about 0.001 to about 1 percent by weight of the lubricant composition of a benzotriazole substituted on a nitrogen atom by reacting the benzotriazole with an aldehyde and a primary or secondary amine or an alcohol and

(b) about 0.5 to about 5 percent by weight of the lubricant composition of the reaction product of a hydrocarbylsubstituted acylating agent, a polyamine, and a boron compound.

5,308,522

STRESS ACTIVATED HIGH LOAD ADDITIVES FOR LUBRICANT COMPOSITIONS

Manuel A. Francisco, Washington; Thomas L. Ashcraft, Scotch Plains, both of N.J., and Alan R. Katritzky, Gainesville, Fla., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 27, 1993, Ser. No. 97,476

Int. Cl.[5] C10M *105/74*

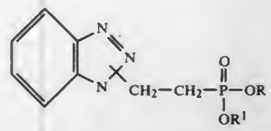
U.S. Cl. 252—49.9 **8 Claims**

1. A lubricant composition which comprises:

(a) a major amount of a lubricating oil basestock, and

(b) a minor amount of a benzotriazole of the formula

(I)



Where R and R^1 are independently hydrocarbyl groups having from 1 to 30 carbon atoms.

5,308,523

VI IMPROVER, DISPERSANT, AND ANTIOXIDANT ADDITIVE AND LUBRICATING OIL COMPOSITION

Thomas F. DeRosa, Passaic, N.J.; Ronald W. Von Allmen, Glenham, N.Y.; Benjamin J. Kaufman, Hopewell Junction, N.Y., and Rosemary J. Jennejahn, Nelsonville, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1990, Ser. No. 587,136

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

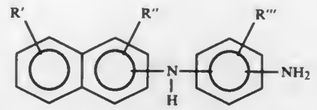
Int. Cl.[5] C10M *149/06*

U.S. Cl. 252—51.5 A **17 Claims**

1. An additive composition prepared by the steps comprising:

(a) reacting a styrene-ethylene butylene-styrene block copolymer having styrene-ethylene butylene-styrene molecular weight ratios, respectively, of 1:6:1 to 1:3:1 characterized in that unsaturation in the styrene blocks is equal to or greater than 50 percent and the ethylene butylene block is hydrogenated leaving no more than 10 percent unsaturation, with at least one olefinic carboxylic acid acylating agent to form one or more acylating reaction intermediates characterized by having a carboxylic acid acylating function within their structure, and

(b) reacting said reaction intermediate in (a) with a hydrocarbon substituted or unsubstituted N-naphthylphenylenediamine represented by the formula:



in which each of R', R'' and R''' represent hydrogen or an alkyl radical having from 1 to 5 carbon atoms.

5,308,524

LUBRICATING OIL COMPOSITION FOR 2 CYCLE OR ROTARY ENGINE

Tomomi Miyaji, and Takeshi Matsuoka, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,503

Claims priority, application Japan, Jul. 19, 1991, 3-179381

Int. Cl.[5] C10M *105/38*

U.S. Cl. 252—51.5 A **12 Claims**

1. A lubricating oil composition for a two-cycle or rotary engine, comprising (A) an ester of a hindered alcohol and a fatty acid having 5 to 14 carbon atoms, (B) at least one compound of a poly(oxyalkylene) aminocarbamate and an alkenylsuccinimide, and (C) at least one compound of a hydrogenated light mineral oil with a boiling point of 150° to 450° C. and an aromatic content of 2% or below, a polymer of ethylene, propylene or butene and a copolymer thereof, and an ether having an aromatic content of 2% or below and 6 to 20 carbon atoms as the essential component.

5,308,525

ELECTROVISCOUS FLUID COMPRISING A BASE NEUTRALIZED CARBOXYARYL GROUP-CONTAINING ORGANOPOLYSILOXANE POLYELECTROLYTE

Akihiko Koboyashi, and Takashi Nakamura, both of Ichihara, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

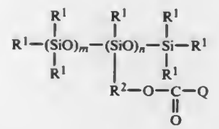
Filed Nov. 12, 1992, Ser. No. 975,039

Claims priority, application Japan, Nov. 20, 1991, 3-331401; Nov. 22, 1991, 3-334303

Int. Cl.[5] C10M *171/00, 169/04*

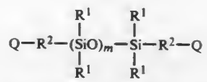
U.S. Cl. 252—78.3 **11 Claims**

1. An electroviscous fluid comprising a 0.1 to 50 weight percent dispersion in an electrical insulating fluid of microparticles that are comprised of a polyelectrolyte wherein said polyelectrolyte is comprised of a carboxyaryl group-containing organopolysiloxane that has been neutralized by a base containing a monovalent or a divalent metal wherein the carboxyaryl group-containing organopolysiloxanes are selected from the group consisting of organopolysiloxanes having the formulae:

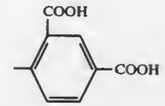


and

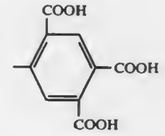
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wherein R^1 is an alkyl group, R^2 is an alkylene group, O is selected from the group consisting of



and



m is 0 or a positive integer and n is a positive integer.

5,308,526

LIQUID PERSONAL CLEANSER WITH MOISTURIZER

Luis C. Dias, Cincinnati; Mark L. Kacher, Mason; James R. Schwartz, West Chester, all of Ohio; Ronald S. Baur, Newport, Ky.; David W. Peter, and Efrain Torres, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 7, 1992, Ser. No. 909,834

Int. Cl.[5] C11D *17/08, 9/24, 9/48*

U.S. Cl. 252—125 **34 Claims**

1. A stable dispersoidal liquid soap cleansing and moisturizing composition, by weight, comprising:

(A) from about 5% to about 20% by weight of potassium C_8–C_{22} fatty acid soap;

(B) from about 0.1 to about 7% C_8–C_{22} free fatty acid;

(C) from about 35% to about 70% water; and

(D) from about 8% to about 35% of a polyol selected from the group consisting of: glycerin (glycerol), propylene glycol, polypropylene glycols, polyethylene glycols, ethyl hexanediol, hexylene glycols; and mixtures thereof;

(E) from about 0.5% to about 5% petrolatum wherein 20% to 80% of the petrolatum particles have a particle size of from about 10 microns to about 120 microns;

(F) from about 0.5 to about 5% glycol ester selected from the group consisting of glycol monoesters and diesters of fatty acids with a chain length from about 10 to about 22, and mixtures thereof; and

(G) from 0% to 20% of a synthetic surfactant; and

wherein said liquid composition has a viscosity of from about 500 cps to less than 60,000 cps at 27.6° C. (80° F.).

5,308,527

APROTIC POLAR SOLVENT/ETHER PAINT STRIPPING COMPOSITIONS

Jean-Pierre Lallier, Paris, and Patrick Marie, Houilles, both of France, assignors to Atochem, Puteaux, France

Filed Dec. 9, 1991, Ser. No. 803,532

Claims priority, application France, Dec. 7, 1990, 90 15344

Int. Cl.[5] C11D *7/50, 7/34, 7/26;* **C09D** *9/00*

U.S. Cl. 252—162 **13 Claims**

1. A process for the removal of paint from a substrate coated therewith comprising contacting an effective stripping amount of a composition, which comprises (a) from 1% to 20% by

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volume of dimethylsulfoxide and (b) from 99% to 80% by volume of an ether selected from among methyl-tert-butylether, tert-amylmethylether, tetrahydrofuran, dioxane and mixtures thereof, with said paint coated substrate; allowing said paint to swell, form blisters and become detached; and removing at least a portion of said paint from said substrate.

5,308,528

CLEANING COMPOSITION BASED ON 1,1-DICHLORO-1-FLUOROETHANE AND METHYL FORMATE

Daniel Desbiendras, Villetaneuse; Jean-Jacques Martin, Bois-Colombes, and Pascal Michaud, Saint-Gratien, both of France, assignors to Societe Atochem, France

Filed Feb. 7, 1991, Ser. No. 651,813
Claims priority, application France, Feb. 7, 1990, 90 01395
Int. Cl.[5] C11D *7/30, 7/50;* **C23G** *5/028;* **H05K** *3/26*
U.S. Cl. 252—171 **10 Claims**

1. Azeotropic cleaning composition consisting of 55 to 80% by weight of 1,1-dichloro-1-fluoroethane and 45 to 20% by weight of methyl formate in combination with 0 to 5% by weight of at least one stabilizer relative to the total weight of the mixture of 1,1-dichloro-1-fluoroethane and methyl formate, said composition having pseudoazeotropic behavior in that when being refluxed the composition is essentially the same in the vapor phase as in the liquid phase, said composition further forming an azeotrope whose boiling temperature is about 28.4° C. At atmospheric pressure.

5,308,529

SYSTEM FOR ENHANCING RELEASE OF ACIDS FROM ANHYDRIDE PRECURSORS USING ESTERASE CATALYSTS

Howard B. Kaiserman, Cliffside Park, and Michael T. Tallman, Edgewater, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Sep. 2, 1992, Ser. No. 939,259
Int. Cl.[5] C11D *1/00*
U.S. Cl. 252—174.12 **6 Claims**

1. A detergent composition comprising:

(1) 2 to 85% by weight of a surfactant selected from the group consisting nonionic surfactants, anionic surfactants, cationic surfactants, amphoteric surfactants, zwitterionic surfactants and mixtures thereof; and

(2) an acid release system for enhancing release of acids into said detergent composition comprising:

(a) an aromatic diacyl anhydride from which said acids are released; and

(b) an esterase enzyme;

wherein the esterase enzyme reacts with the aromatic diacyl anhydride to enhance rate of release of the acids from the aromatic diacyl anhydride.

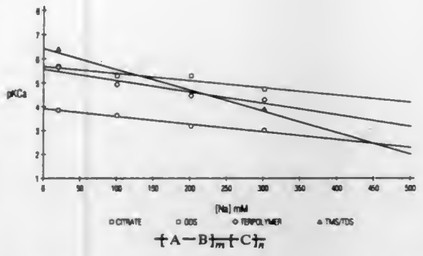
5,308,530

DETERGENT COMPOSITIONS CONTAINING POLYCARBOXYLATES AND CALCIUM-SENSITIVE ENZYMES

Michael P. Aronson, Nyack, N.Y.; Ingrid Brase, Cranbury, N.J.; David L. Elliott, Hawthorne, N.J.; John F. Hessel, Metuchen, N.J.; Carmine P. Iovine, Bridgewater, N.J.; John C. Leighton, Flanders, N.J., and J. Thomas McCown, Cresskill, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

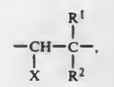
Filed Nov. 21, 1990, Ser. No. 616,504
Int. Cl.[5] C11D *3/37, 3/386*
U.S. Cl. 252—174.12 **35 Claims**

1. A detergent composition comprising (a) from 0.5 to 65% by weight of surfactant(s) and (b) from 1 to 80% by weight of builder(s), wherein at least one percent of the builder is an interpolymer comprising repeating units of the structure:

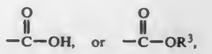


$$+A-B\frac{}{}_m+C\frac{}{}_n$$

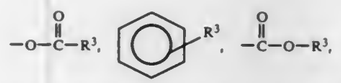
wherein m is a mole fraction from 0.70 to 0.95; n is a mole fraction from 0.05 to 0.30; A is derived from at least one ethylenically unsaturated mono or di-carboxylic acid monomer; B is derived from at least one ethylenically unsaturated mono or di-carboxylic acid monomer and B is not A; and C is:



wherein X is —H,



or a combination thereof, R^1 is —H, $—CH_3$, or $—(CH_2)_qCH_3$, or a combination thereof, and q is 1-5; R^2 is:



or R^3, or a combination thereof, and R^3 is a C_{8-C18} linear or branched alkyl chain; the interpolymer being prepared by polymerizing the monomers in a solvent system in which the monomers and interpolymer are soluble.

5,308,531

PINE-OIL CONTAINING HARD SURFACE CLEANING COMPOSITION

Allen D. Urfer, Lansdale, and Virginia L. Lazarowitz, Hatfield, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Aug. 31, 1992, Ser. No. 938,734
Int. Cl.[5] C11D *3/22, 1/04, 3/18, 17/00*
U.S. Cl. 252—174.17 **6 Claims**

1. A clear, single phase, hard surface cleaning composition consisting essentially of: (a) from about 1% to about 50% by weight of pine oil; (b) an alkyl polyglycoside of the formula I

$$R_4O(R_5O)_a(Z)_b$$

wherein R_4 is a monovalent organic radical having from about 6 to about 30 carbon atoms; R_5 is divalent alkylene radical having from 2 to 4 carbon atoms; Z is saccharide residue having 5 or 6 carbon atoms; a is a number having a value from 0 to about 12; b is a number having a value from 1 to about 6 wherein the weight ratio of alkyl polyglycoside: pine oil is equal to from about 1:10 to about 10:1; and (c) a dicarboxylic

acid having from about 3 to about 40 carbon atoms wherein the weight ratio of pine oil: dicarboxylic acid is equal to from about 1:10 to about 10:1.

5,308,532

AMINOACRYLOYL-CONTAINING TERPOLYMERS

David E. Adler, Dresher; Thomas F. McCallum, III, Philadelphia; Jan E. Shulman, Newtown, and Barry Weinstein, Dresher, all of Pa., assignors to Rohm and Haas Company, Phila., Pa.

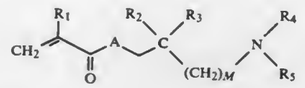
Filed Mar. 10, 1992, Ser. No. 848,802
Int. Cl.[5] C11D *3/37*
U.S. Cl. 252—174.23 **3 Claims**

1. A method of enhancing the properties of an automatic machine dishwashing composition comprising adding to said composition an effective amount to reduce spotting and filming of a water-soluble terpolymer, consisting essentially of polymerized units of

(a) from about 92 to about 30 percent by weight of one or more C_3–C_6 monoethylenically unsaturated carboxylic acids;

(b) from about 5 to about 50 percent by weight of one or more aminoacryloyl derivatives selected from the group of

i)



wherein:

R_1 is selected from the group consisting of hydrogen and methyl;

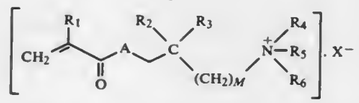
A is selected from the group consisting of O and NH;

R_2 and R_3 are either independently selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, t-butyl, and isobutyl; or R_2 and R_3, together with the carbon to which they are both attached, form a C_3–C_7 aliphatic ring;

M is equal to 0,1, or 2 with the proviso that when M is equal to 0, a C—N bond appears in place of the $(CH_2)_M$ group; and

R_4 and R_5 are either independently selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, t-butyl, and isobutyl; or R_4 and R_5, together with the nitrogen to which they are both attached, form a three to seven membered non-aromatic nitrogen heterocycle;

and ii)



wherein:

R_1, A, R_2, R_3, R_4, R_5 and M are as defined above;

R_6 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, t-butyl, and isobutyl;

and X is any suitable counterion such as a halogen, hydroxide, sulfate, hydrosulfate, phosphate, formate and acetate; and

(c) from about 3 to about 25 percent by weight of one or more monoethylenically unsaturated monomers polymerizable with (a) and (b) selected from the group consisting of C_1–C_4 alkyl esters of acrylic acid, C_1–C_4 alkyl esters of methacrylic acid, C_1–C_4 hydroxyalkyl esters of acrylic acid, C_1–C_4 hydroxyalkyl esters of methacrylic acid, acrylamide, alkyl substituted acrylamides, N,N-dialkyl substituted acrylamides, styrene, sulfonated styrene, sulfonated alkyl acrylamides, vinylsulfonates, vinylsulfonic acid, allylsulfonic acid, methallylsulfonic acid, vinylphosphonic acid, vinylacetate, allyl alcohols, sulfonated allyl alcohols, acrylonitrile, N-vinylpyrrolidone, N-vinylformamide, N-vinylimidazole, N-vinylpyridine, and N-vinyl-2-methylimidazoline;

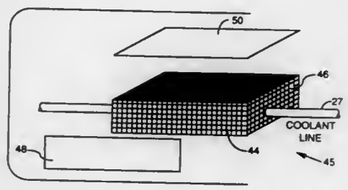
wherein (a) and (b) are in the molar ratio of from 2.5:1 to 90:1.

5,308,533

AEROGEL MESH GETTER

Steven P. Hotaling, Liverpool, N.Y., and Deidra A. Dykeman, Kent, Wash., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 800,817, Nov. 29, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 981,923
Int. Cl.[5] H01J *17/18*
U.S. Cl. 252—181.6 **9 Claims**



1. A decontamination system comprising a porous, light weight composite getter which collect particulate and molecular contaminates, said getter comprising a three-dimensional metal mesh matrix having a porosity of 5–100 pores per inch, said metal mesh matrix being completely coated on the exterior surfaces thereof with a low-density porous aerogel having a density of 1–500 mg/cc.

5,308,534

ALKALINE-EARTH BASED SORBENT FOR REMOVING EFFLUENT FROM A GAS STREAM

Domingo Rodriguez, Col. Carrizal; José Carrazza, San Antonio de los Altos; Alejandro Izquierdo, Los Teques; Cebers O. Gómez, San Antonio de los Altos, and Felix Silva, Merida, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Jun. 12, 1992, Ser. No. 897,917
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—189 **12 Claims**

7. An improved sorbent for removing effluents from a gas stream, said sorbent comprising an alkaline-earth sorbent material in hydroxide form having a mixture of iron and an organic compound incorporated within its bulk structure as promoting agents to form an organo-metallic complex of said iron and said organic compound wherein said iron and said organic compound are both present in a molar ratio to alkaline-earth sorbent material in an amount of greater than or equal to 0.005.

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5,308,535

ELECTRO-OPTICAL SYSTEM CONTAINING A COMPENSATING FILM

Bernhard Scheuble, Seebeim-Jugenheim; Bernhard Rieger, Münster-Altheim, and Dieter Dorsch, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/00897, § 371 Date Aug. 27, 1990, § 102(e) Date Aug. 27, 1990, PCT Pub. No. WO90/16005, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 8, 1990, Ser. No. 573,003

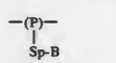
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1989, 3919397; Aug. 1, 1989, 3925382

Int. Cl.[5] C09K *19/52, 19/12;* **G02F** *1/13*

U.S. Cl. 252—299.01 **27 Claims**

1. In an electro-optical system comprising at least one addressable liquid-crystal layer and means for compensating for the optical path difference d·Δn of said at least one addressable liquid-crystal layer, the improvement wherein said compensating means comprises:

a liquid-crystalline side-chain polymer containing monomer units of formula I:



(I)

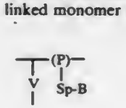
wherein

P is a polymer main-chain unit,

Sp is a bivalent spacer group connecting radical B to polymer main chain, and

B is an organic "rod-like" radical containing at least two six-membered groups, a "disc-like" radical or a "board-like" radical; or

a liquid crystal elastomer containing 3-dimensionally cross-linked monomer units of formula II:



(II)

wherein

P, Sp and B are as defined above, and

V is a crosslinking unit linking together two adjacent polymer chains.

5,308,536

OPTICALLY ACTIVE 4-MERCAPTOCINNAMIC ACID DERIVATIVES, PREPARATION METHOD THEREOF AND USE THEREOF

Shuichi Naijoh; Ayako Nishioka, and Chozo Inoue, all of Tokyo, Japan, assignors to Showa Denko K.K., Tokyo, Japan

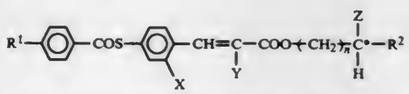
Filed Jul. 12, 1993, Ser. No. 89,551

Claims priority, application Japan, Jul. 10, 1992, 4-207150

Int. Cl.[5] C09K *19/52, 19/06;* **C07C** *327/16;* **G02F** *1/13*

U.S. Cl. 252—299.01 **8 Claims**

1. An optically active 4-mercaptocinnamic acid derivative represented by general formula (1)



(1)

wherein R^1 represents an alkyl group, an alkoxy group or an alkylthio group having 6 to 14 carbon atoms; X represents a hydrogen atom or a fluorine atom; Y represents a hydrogen atom or a methyl group; n is 0 or 1; Z represents a methyl group or a trifluoromethyl group; and R^2 represents an alkyl group having 2 to 8 carbon atoms.

5,308,537

MESOGENIC COMPOUNDS

David Coates, Dorset; Simon Greenfield, Poole; Ian C. Sage, Dorset, all of Great Britain; Volker Reiffenrath, Rossdorf, and Bernhard Rieger, Münster, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/00678, § 371 Date Jun. 27, 1990, § 102(e) Date Jun. 27, 1990, PCT Pub. No. WO90/13610, PCT Pub. Date Nov. 15, 1990

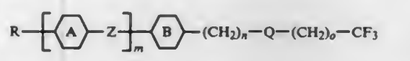
PCT Filed Apr. 27, 1990, Ser. No. 499,539

Claims priority, application United Kingdom, Apr. 28, 1989, 8909766; Oct. 5, 1989, 8922486

Int. Cl.[5] C09K *19/06, 19/12, 19/34;* **G02F** *1/13*

U.S. Cl. 252—299.60 **2 Claims**

1. In a nematic liquid crystalline medium, comprising at least two liquid crystalline compounds, the improvement wherein at least one compound is a mesogenic compound with a ω-CF_3-alkenyl or a ω-CF_3-alkynyl terminal group of formula I



wherein

R is an unsubstituted, a mono cyano or trifluoromethyl substituted or a mono-, oligo- or polyhalogeno-substituted alkyl or alkenyl residue having 1 to 15 carbon atoms, or such a residue wherein one or more CH_2 groups are each independently replaced by —O—, —CO—, —CO—O—, —O—CO— or —O—CO—O with the proviso that oxygen atoms are not directly attached to each other,

the rings A and B independently are

(a) a trans-1,4-cyclohexylene group, wherein one or more two non-adjacent CH_2 groups may also be replaced by at least one of —O— or —S— or one or two CH groups may be replaced by N,

(b) a 1,4-phenylene group, wherein one or two CH groups may be replaced by N,

(c) 1,4-bicyclo-(2,2,2-octylene, 1,4-cyclohexenylene, naphthalin-2,6-diyl or 1,3-cyclo-butylene,

groups (a) and (b) being optionally substituted by one or more of halogen, cyano or methyl,

Z is independently from each other —CO—O, —O—CO—, $-CH_2CH_2-$, $-CH_2O-$, $-OCH_3-$, —C≡C, —CH=N—, —N=CH— or a single bond,

Q is —C≡C or —CH=CH—,

m is 1, 2 or 3 and

n an o are independently from each other zero or integers from 1 to 10.

5,308,538

SUPERTWIST LIQUID-CRYSTAL DISPLAY

Georg Weber, Erzhausen; Joachim Rüger; Klaus-Peter Stahl, both of Darmstadt; Martina Schmidt, Münster; Detlef Pauluth, Ober-Ramstadt, and Michael Römer, Rodgau, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 6, 1991, Ser. No. 802,903

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039052; Apr. 12, 1991, 4111964; Jun. 12, 1991, 4119292

Int. Cl.[5] C09K *19/34, 19/52, 19/30, 19/12*

U.S. Cl. 252—299.61 **28 Claims**

1. A supertwist liquid-crystal display comprising:

two plane-parallel outer plates which, together with a frame, form a cell;

a nematic liquid-crystal mixture of positive dielectric anisotropy present in said cell;

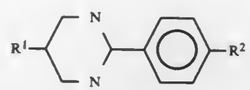
electrode layers with superposed alignment layers on the insides of said outer plates;

a pitch angle between the longitudinal axis of the molecules at the surface of said outer plates and the outer plates of 1–30 degrees; and

a twist angle of said liquid-crystal mixture in said cell from alignment layer to alignment layer with a value of 100°–600°,

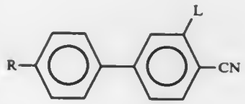
wherein said nematic liquid-crystal mixture

a) is based on component A, which contains one or more compounds of the formula IIa:

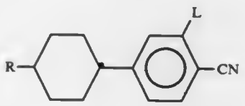


IIa

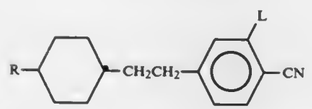
one or more compounds of the formulae IIc to IIe:



IIc

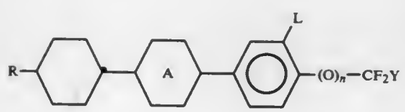


IId

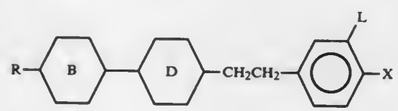


IIe

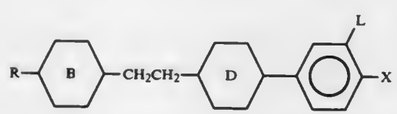
and one or more compounds of the formulae IIf to IIh:



IIf



IIg

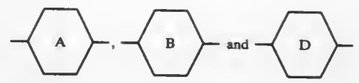


IIh

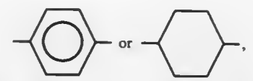
in which

R^1 and R^2 are each, independently, alkyl wherein the total number of carbon atoms in R^1 and R^2 together is 4–7,

R is, in each case, independently, n-alkyl, n-alkoxy or n-alkenyl having up to 9 carbon atoms,



are each independently

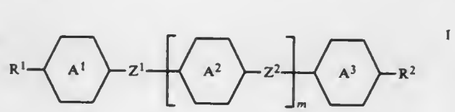


Y and L are each independently H or F,

X is F, Cl, $-CF_3$, $-CHF_2$, $-OCF_3$, $-OCHF_2$, $-OCF_2CF_2H$ or $-OC_2F_5$, and

n is 0 or 1;

b) contains 0–40% by weight of a liquid-crystalline component B, comprising one or more compounds having a dielectric anisotropy of −1.5 to +1.5 at 20° C., of formula I



I

wherein

R^1 and R^2 are each independently n-alkyl, n-alkoxy, n-oxaalkyl, straight-chain ω-fluoroalkyl or n-alkenyl having up to 9 carbon atoms,

A^1, A^2 and A^3 are each independently 1,4-phenylene, 2- or 3-fluoro-1,4-phenylene, trans-1,4-cyclohexylene or 1,4-cyclohexenylene,

Z^1 and Z^2 are each, independently of one another, $-CH_2CH_2-$, —C≡C— or a single bond, and

m is 0, 1 and 2;

c) contains 0–5% by weight of a liquid-crystalline component C, comprising one or more compounds having a dielectric anisotropy of below −1.5 at 20° C.; and

d) contains an optically active component D in such an amount that the ratio between the layer thickness and the natural pitch of the chiral nematic liquid-crystal mixture is 0.2 to 1.3; and

said nematic liquid-crystal mixture has a nematic phase range of at least 60° C., a viscosity of not more than 35 mPa·s at 20° C. and a dielectric anisotropy of at least +1 at 20° C.

5,308,539

FERROELECTRIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING THE SAME

Mitsuhiro Koden, Nara; Tomoaki Kuratate, Kote; Tohru Kitamura, Kyoto; Kazuhiko Sakaguchi, Toyonaka, and Yutaka Shiomi, Amagasaki, all of Japan, assignors to Sharp Kabushiki Kaisha and Daiso Co., Ltd., both of Osaka, Japan

Filed Jan. 17, 1992, Ser. No. 822,629

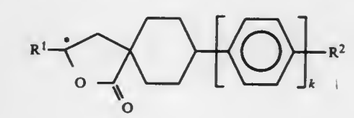
Claims priority, application Japan, Jan. 18, 1991, 3-19403

Int. Cl.[5] C09K *19/34, 19/32;* **C07D** *307/93;* **G02F** *1/13*

U.S. Cl. 252—299.61 **23 Claims**

1. A ferroelectric liquid crystal composition comprising:

at least one optically active compound of the formula (I):

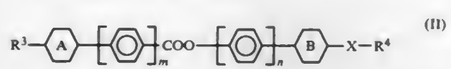


(I)

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where R^1 and R^2 are, the same or different, a straight or branched chain alkyl group having 1 to 15 carbon atoms, k represents an integer of 0 or 1, and * represents an asymmetric carbon atom;

at least one compound selected from the group consisting of: a compound of the formula (II):

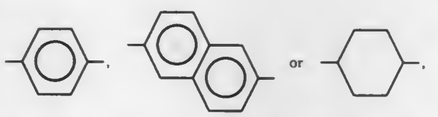


(II)

where R^3 and R^4 are a straight or branched chain alkyl or alkoxy group having 1–15 carbon atoms and

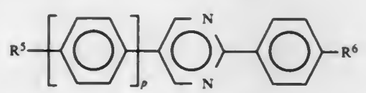


each represent



X represents —O—, —CO— or a single bond, m and n are independently an integer of 0 or 1; and

a compound of the formula (III):



(III)

where R^5 and R^6 are, the same or different, a straight or branched chain alkyl or alkoxy group having 1–15 carbon atoms, and p is an integer of 0 or 1;

said ferroelectric liquid crystal composition exhibiting at least nematic phase, smectic A phase and smectic C phase.

5,308,540

LIQUID CRYSTALLINE COMPOUNDS AND PROCESS FOR PRODUCTION THEREOF

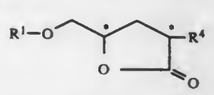
Kazuhiko Sakaguchi, Toyonaka; Naoya Kasai, Amagasaki; Yoshikazu Takehira, Itami; Tohru Kitamura, Kyoto, and Yutaka Shiomi, Amagasaki, all of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Continuation of Ser. No. 437,668, Nov. 17, 1989, abandoned, which is a division of Ser. No. 241,209, Sep. 7, 1988, Pat. No. 4,909,957. This application Jul. 16, 1992, Ser. No. 913,973

Int. Cl.[5] C09K *19/34;* **C07D** *239/02, 305/12*

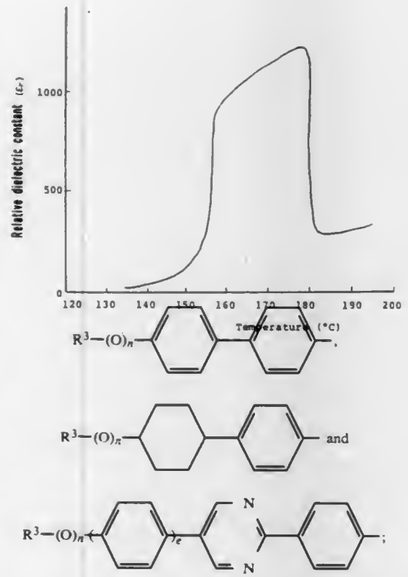
U.S. Cl. 252—299.61 **2 Claims**

1. A process for preparing a liquid crystalline compound having an optically active γ-lactone ring of the formula:

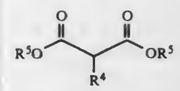


(A-2)

wherein R' is a group selected from the group consisting of



wherein R^1 and the symbol * are as defined above, with a malonate (C) of the formula:



(C)

wherein R^4 is as defined above, and R^5 is a lower alkyl group, in the presence of a base in an organic solvent, the ether (B) and the malonate (C) reacting to form the compound (A-2).

5,308,541

HALOGENATED BENZENE DERIVATIVES, AND A LIQUID-CRYSTALLINE MEDIUM

Reinhard Hittich, Modautal; Eike Poetsch, Mühltal; Volker Reiffenrath, Rossdorf; Bernhard Rieger, Münster-Altheim; Andreas Wachtler, Griesheim, all of Fed. Rep. of Germany; David Coates, Wimborne, Great Britain, and Herbert Plach, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/01437, § 371 Date Nov. 15, 1990, § 102(e) Date Nov. 15, 1990, PCT Pub. No. WO91/03445, PCT Pub. Date Mar. 21, 1991

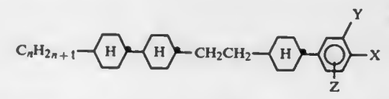
PCT Filed Aug. 30, 1990, Ser. No. 623,380

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1989, 3928656; Aug. 30, 1989, 3928657; United Kingdom, Jan. 22, 1990, 9001408; Fed. Rep. of Germany, Mar. 28, 1990, 4009928

Int. Cl.[5] C09K *19/30;* **C07C** *25/13;* **G02F** *1/13*

U.S. Cl. 252—299.63 **4 Claims**

1. A halogenated benzene compound of the formula Ibd



Ibd

wherein n is 1 to 7, X is F, Cl, —OCF_3, —CHF_2 or —$OCHF_2$, and Y and Z are each independently of one another, H or F, with the proviso that, if X is F or Cl, only Y or Z is fluorine.

5,308,542

4,4'-DISUBSTITUTED 2',3-DIFLUOROBISPHENYLS AND A LIQUID-CRYSTALLINE MEDIUM

Eike Poetsch, Mühltal; Volker Reiffenrath, Rossdorf; Reinhard Hittich, Modautal, all of Fed. Rep. of Germany, and Bernhard Rieger, Wacore-Tamagawagakuen, Japan, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/00411, § 371 Date May 20, 1991, § 102(e) Date May 20, 1991, PCT Pub. No. WO91/13850, PCT Pub. Date Sep. 19, 1991

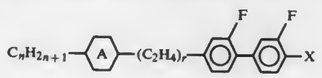
PCT Filed Mar. 5, 1991, Ser. No. 688,490

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1990, 4007863; Oct. 26, 1990, 4034124

Int. Cl.[5] C09K *19/30, 19/12;* **C07C** *25/13;* **G02F** *1/13*

U.S. Cl. 252—299.63 **10 Claims**

1. A 4,4'-disubstituted 2', 3-difluorobiphenyl of formula Ia



Ia

wherein



is trans-1,4-cyclohexylene or 1,4-phenylene,
n is 1-7,
r is 0, and
X is F, Cl or —CF_3.

5,308,543

NEMATIC LIQUID-CRYSTAL COMPOSITION FOR ACTIVE MATRIX APPLICATION

Kei Sasaki, Tenri; Masako Okada, Ikoma; Shuichi Kohzaki, Nara; Fumiaki Funada, Yamatokooriyama; Bernhard Rieger; Hiroshi Numata, both of Yokohama, all of Japan; Reinhard Hittich, Modautal, Fed. Rep. of Germany; Herbert Plach, Darmstadt, Fed. Rep. of Germany; Thomas Geelhaar, Mainz, Fed. Rep. of Germany; Eike Poetsch, Mühltal, Fed. Rep. of Germany, and Volker Reiffenrath, Rossdorf, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit besrankter Haftung, Darmstadt, Fed. Rep. of Germany and Sharp Corporation, Osaka, Japan

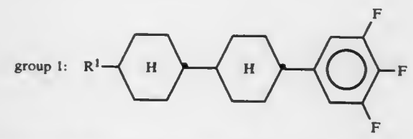
Filed Mar. 3, 1992, Ser. No. 845,110

Claims priority, application European Pat. Off., Mar. 4, 1991, 91103199.5

Int. Cl.[5] C09K *19/30, 19/52*

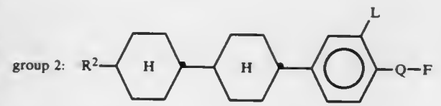
U.S. Cl. 252—299.63 **4 Claims**

1. A nematic liquid-crystal composition based on terminally and laterally fluorinated compounds, comprising about 8 to 60% by weight of one or more compounds from group 1:



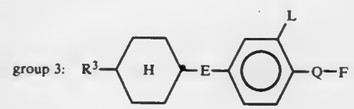
group 1:

wherein R^1 denotes a straight-chain alkyl group of 2 to 7 carbon atoms, about 8 to 60% by weight of one or more compounds from group 2:



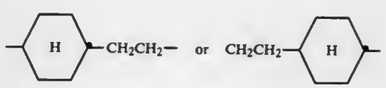
group 2:

wherein R^2 denotes a straight-chain alkyl group of 2 to 7 carbon atoms, L is H or F and Q is OCF_2, OCFH, OCFCl or a single bond, about 8 to 60% by weight of one or more compounds from group 3:



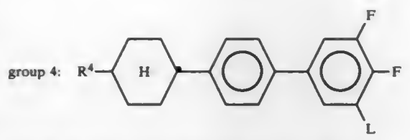
group 3:

wherein R^3denotes a straight-chain alkyl group of 2 to 7 carbon atoms, E is



and L and Q are as defined above, and 0 to 60% by weight of one or more compounds from group 4:

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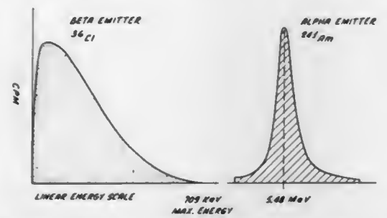
wherein R^4 denotes a straight-chain alkyl group of 2 to 7 carbon atoms and L is H or F.

5,308,544

LIQUID SCINTILLATION SOLUTION USEFUL FOR ALPHA PARTICLE EMISSION AND BETA PARTICLE EMISSION DISCRIMINATION

Charles L. Dodson, Orange, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 28, 1992, Ser. No. 843,707
Int. Cl.[5] C09K *11/06*
U.S. Cl. 252—301.17 **18 Claims**



1. A method for discriminating between alpha emissions and beta emissions in a sample, said method comprising the steps:

a) providing an alpha-beta discrimination sample solution comprising:

i) at least one naphthalene derivative, said derivative comprising naphthalene and at least two alkyl groups where the alkyl groups are co-planar with said naphthalene;

ii) at least one fluor; and

iii) radioactive analyte comprising at least one beta emitter and at least one alpha emitter;

(b) obtaining an emission spectrum of said beta emitter and said alpha emitter, wherein said emission spectrum provides information sufficient for quantitating said beta emitter and said alpha emitter.

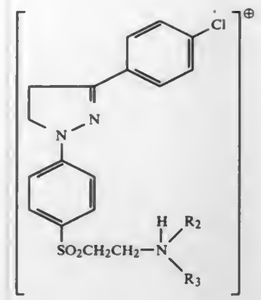
5,308,545

NOVEL PYRAZOLINE COMPOUNDS

Hans R. Meyer, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 825,675, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 630,710, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 282,537, Dec. 12, 1988, abandoned, which is a continuation of Ser. No. 935,911, Nov. 28, 1986, Pat. No. 4,816,590. This application Nov. 30, 1992, Ser. No. 983,343
Claims priority, application Switzerland, Dec. 4, 1985, 5163/85-5; Apr. 30, 1986, 1770/86-2
Int. Cl.[5] C09K *11/06*
U.S. Cl. 252—301.27 **17 Claims**

1. An aqueous solution of pyrazoline salts, which comprises a cation corresponding to one or more pyrazoline compounds of the formula



wherein R_2 and R_3 are each independently methyl, ethyl or hydroxyethyl; an anion derived from a stronger acid selected from the group consisting of formic, glycolic, C_1–C_4alkanephosphonic, C_1–C_4alkanesulfonic, phosphorus and sulfamic acids; and an anion derived from acetic acid.

5,308,546

PHOSPHORESCENT TOY GEL COMPOSITION AND METHODS OF MANUFACTURE

Gary L. Hansen; Richard E. Trapp, both of Salt Lake City, and Robert B. Clay, Bountiful, all of Utah, assignors to Glow-Tec, Sandy, Utah

Filed Dec. 9, 1991, Ser. No. 803,592
Int. Cl.[5] C09K *11/02*
U.S. Cl. 252—301.36 **38 Claims**

1. A method for formulating a phosphorescent toy gel composition, comprising the steps:

(a) providing a water-based solution with a borate ion-containing compound dissolved in the water;

(b) providing guar gum and phosphorescent particles suspended and dispersed in propylene glycol; and

(c) mixing the water-based solution with the propylene glycol dispersion in a proportion to provide a phosphorescent gel composition comprising from about 50 percent to about 90 percent water, from about 10 percent to about 30 percent propylene glycol, from about 1 percent to about 10 percent phosphorescent particles, and from about 2 percent to about 10 percent guar gum.

5,308,547

MIXED METAL LAYERED HYDROXIDE HYDROPHILIC ORGANIC MATERIAL AS THICKENERS FOR WATER AND OTHER HYDROPHYLIC FLUIDS

John L. Burba, III, Angleton, and Audrey L. Barnes, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 526,970, May 16, 1990, Pat. No. 5,094,778, which is a continuation of Ser. No. 282,445, Dec. 9, 1988, abandoned, which is a continuation of Ser. No. 47,800, May 19, 1987, Pat. No. 4,790,954, which is a continuation of Ser. No. 752,326, Jul. 5, 1985, Pat. No. 4,664,843. This application Nov. 15, 1991, Ser. No. 793,054
Int. Cl.[5] B01F *3/14*; B01J *13/00*
U.S. Cl. 252—315.2 **31 Claims**

1. A mixture comprising a hydrophilic organic material and at least one substantially crystalline; monolayer mixed metal hydroxide of the formula:

$$Li_mD_dT(OH)_{(m=2d+3+na)}(A^{-n})_a \cdot xH_2O, \text{ where}$$

m is an amount of Li in the range of zero to about 1;

D is a divalent metal ion, and d is an amount of D in the range of zero to about 4;

T is a trivalent metal ion;

A represents monovalent or polyvalent anions of valence −n, with a being the amount of A anions;

(m+d) is greater than zero and (m+2d+3+na) is equal to or greater than 3; and

x is zero or more representing excess waters of hydration,

said hydrophilic organic material being a quantity which causes the crystalline monolayered mixed metal hydroxide to be dispersible in aqueous media, the monolayers exhibiting thicknesses in the range of about 8 to about 16 angstroms.

15. The mixture of claim 1 wherein the value of x is large enough that the mixture is an aqueous gel.

5,308,548

PREPARING A DISPERSIBLE, SOL-FORMING CERIUM (IV) COMPOSITION

Jean-Yves Chane-Ching, Paris, France, assignor to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Division of Ser. No. 759,870, Sep. 16, 1991, Pat. No. 5,145,605, which is a continuation of Ser. No. 346,293, Apr. 28, 1989, abandoned, which is a continuation of Ser. No. 876,800, Jun. 20, 1986, abandoned. This application Jul. 8, 1992, Ser. No. 910,572
Claims priority, application France, Jun. 20, 1985, 85 09375
Int. Cl.[5] B01J *13/00*
U.S. Cl. 252—315.4 **20 Claims**

1. A process for the preparation of a cerium (IV) material selected from the group of materials having the general formula (I):

$$Ce(M)_t(CH_3[CH_2]_nCOO^-)_x(OH^-)_y(NO_3^-)_z \quad (I)$$

wherein M is an alkali metal or a quaternary ammonium radical; t ranges from 0.1 to 0.3; n is 0 or 1; x ranges from 0.1 to 0.7; y is a number such that $y=4+t-x-z$; and z ranges from 0.3 to 0.6, comprising (i) forming an admixture by admixing an aqueous solution of a cerium (IV) nitrate salt with acetic or propionic acid, (ii) forming a reaction medium by reacting the admixture with a base, (iii) heating the reaction medium and producing a precipitate of said cerium (IV) material, (iv) separating the precipitate, and (v) drying said precipitate.

5,308,549

STABILIZERS FOR THERMO PLASTIC MATERIALS

Stuart F. Laermer, Glen Rock, and Vincent J. Rizzo, North Arlington, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 791,744, Nov. 12, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 955,000
Int. Cl.[5] C09K *15/06*; C08K *5/15, 5/10, 5/05*
U.S. Cl. 252—399 **6 Claims**

1. A mixture for stabilizing a plastic material comprising:

a) from about 10 to about 50 percent by weight alphatocopherol;

b) from about 16 to about 20 percent by weight glycerin;

c) from about 16 to about 50 percent by weight PEG-300; and

d) from about 42 to about 50 percent by weight glyceryl monocaprylate-caprate.

5,308,550

CLEANING, WETTING AGENT AND SOLVENT

Edward E. Friloux, Lafayette, La., assignor to Delta Omega Technologies, Ltd., Lafayette, La.

Filed Sep. 5, 1991, Ser. No. 755,186
Int. Cl.[5] C11D *1/18*
U.S. Cl. 252—544 **9 Claims**

1. A composition of matter suitable for use as a cleaning, wetting solvent agent, consisting essentially of:

a mixture of between about 5% and 12% by total weight of dodecylbenzenesulfonic acid, between about 0.17% and 1.36% by total weight of ethoxylated nonyl phenol, between about 2.83% and 22.64% by total weight of lauric acid diethanolamide, between about 1.23% and 9.84% by total weight of diethanolamine and between about 1.23% and 9.84% by total weight of propylene glycol in water.

5,308,551

WASHING COMPOSITIONS BASED ON SILICONES AND PROCESS OF APPLICATION

Bernard Beauquey, Clichy, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Filed Sep. 3, 1991, Ser. No. 752,360
Claims priority, application France, Aug. 31, 1990, 90 10894
Int. Cl.[5] C11D *1/04, 1/755*
U.S. Cl. 252—548 **25 Claims**

1. Composition for washing and conditioning keratinous substances, in particular hair and the skin, characterised in that it contains in an aqueous medium

at least one detergent surface-active agent,

at least one insoluble silicone,

at least one myristate of a C_2–C_4 polyhydric alcohol,

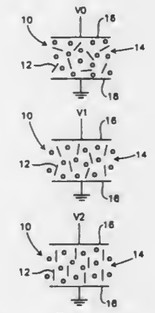
at least one (C_1–C_4)alkanolamide alkyl ether and/or C_8–C_{16} fatty acid (C_1–C_4) alkanolamide.

5,308,552

METHOD OF FABRICATING ANISOMETRIC METAL NEEDLES AND BIREFRINGENT SUSPENSION THEREOF IN DIELECTRIC FLUID

Chan S. Bak, Newbury Park; Leroy J. Miller, Canoga Park, and Camille I. Van Ast, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 674,987, Mar. 26, 1991. This application Jul. 10, 1992, Ser. No. 911,825
Int. Cl.[5] C10M *3/10*
U.S. Cl. 252—570 **14 Claims**



1. A birefringent fluid suspension system, comprising:

a dielectric fluid; and

a plurality of electrically conductive anisometric metal needles suspended in said dielectric fluid, each needle having a generally L-shaped cross-section, a length of between approximately 5,000–40,000 Angstroms, a width and a height each of between approximately 500–10,000 Angstroms, and a thickness of between approximately 200–3,000 Angstroms;

the metal needles constituting between approximately 0.01%–10% of the suspension by volume.

5,308,553

METAL HYDRIDE COMPOSITIONS AND METHODS

Ignacio L. Cisneros, Odessa, Tex., assignor to Swan Industries, Inc., Odessa, Tex.

Filed Aug. 14, 1991, Ser. No. 744,714
Int. Cl.[5] C09K *21/00*; B27N *9/00*
U.S. Cl. 252—601 **6 Claims**

1. A composition consisting essentially of a mixture of (a) a

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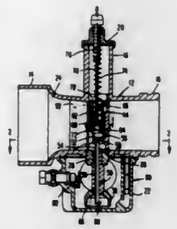
fire-retarding amount of a mixture of (i) from about 1 to about 10 parts, by molecular weight, of at least one metal selected from the group consisting of silicon, aluminum, tin and zinc, (ii) from about 1 to about 3 parts, by molecular weight, of an alkali metal hydroxide, and (iii) from about 5 to about 10 parts, by molecular weight, of water, all three said components (i)–(iii) being allowed to stand for a time sufficient to react to form a metal hydride, and subsequently adding (b) expanded perlite as filler and (c) at least one additional filler said perlite and said additional filler being present in an amount sufficient to provide a composition moldable to article form.

5,308,554

CARBURETOR

William H. Edmonston, 19215 Tonkawan Rd., Apple Valley, Calif. 92307

Filed Apr. 13, 1993, Ser. No. 45,388
Int. Cl.[5] F02M *9/06*
U.S. Cl. 261—44.3 **3 Claims**



1. A carburetor, comprising

(a) a body having an air inlet end, an air outlet end, and a throat extending therethrough from said inlet end to said outlet end;

(b) a fuel supply tube connected with said body and having an outlet in communication with said throat;

(c) a throttle slide member movably mounted within said body intermediate said inlet and outlet ends thereof for substantially transverse movement across said throat to vary an unblocked portion thereof; and

(d) a metering rod extending downwardly into said fuel supply tube to control the supply of fuel therethrough, said metering rod being of tapered configuration in transverse cross-section and having a pointed forward edge in the direction of said inlet end and side walls which taper outwardly and rearwardly from said forward edge thereby to streamline the flow of air from said inlet end around said metering rod to reduce turbulence and increase air velocity by compressing the air flow.

5,308,555

MOLDING OF OPTICAL COMPONENTS USING OPTICAL FIBERS TO FORM A MOLD

Lee L. Blyler, Jr., Basking Ridge, N.J., and Gary J. Grimes, Thornton, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 31, 1992, Ser. No. 922,893
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.5 **10 Claims**

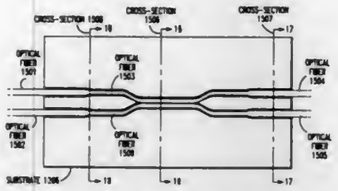
1. A method for fabricating optical components and each of said optical components having the capability for the interconnection of a first plurality of optical fibers, comprising the steps of:

attaching a second plurality of optical fibers to an optically finished substrate so that said second plurality of said optical fibers are in contact with each other within a predefined area of said substrate so that an optical mixing region will be formed within each of said optical components;

forming a mold by enclosing said substrate with walls;

casting a part of each of said optical components by injecting a cladding material into said mold;

removing said part of each of said optical components from said mold;



securing a lid onto said part of each of said optical components to form each of said optical components and said lid is fabricated from said cladding material and has an optically finished surface; and

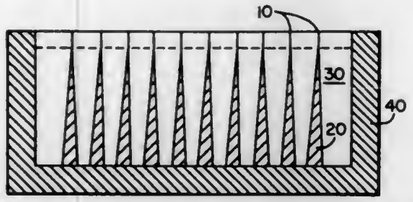
repeatedly performing said steps of casting, removing and securing whereby said optical components are fabricated.

5,308,556

METHOD OF MAKING EXTRUSION DIES FROM POWDERS

Rodney D. Bagley, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Feb. 23, 1993, Ser. No. 21,487
Int. Cl.[5] B29B *9/00*; B32B *18/00*; B29C *65/00*
U.S. Cl. 264—13 **29 Claims**



1. A method of forming an extrusion die from powders, the method comprising:

compounding solid state sinterable powders by pre-milling the powders with a dispersant and a solvent to form a mixture;

dissolving or dispersing a high molecular weight thermoplastic polymer in a wax component at a temperature above the melting temperature of the wax to form a molten wax/polymer binder;

adding the pre-milled powder mixture to the molten wax/-polymer binder at a temperature sufficient to blend the powder and molten binder;

volatilizing the solvent to produce a thermoplastic paste;

shaping the paste to form a green sinterable preform;

machining the green preform into the shape of an extrusion die; and

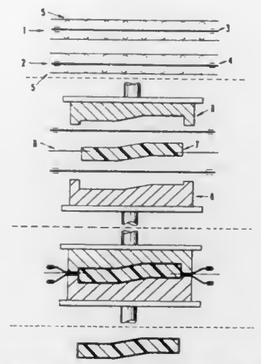
sintering the machined preform to form the die.

5,308,557

PROCESS FOR PREPARING THERMOINSULATING AND/OR STRUCTURAL DOUBLE-WALLED MOLDED BODIES

Antonio Addeo, Novara, and Annibale Vezzoli, Como, both of Italy, assignors to Centro Sviluppon Settori Impiego S.r.l., Milan, Italy

Filed Jun. 26, 1992, Ser. No. 904,832
Claims priority, application Italy, Jun. 28, 1991, MI91 A 001797
Int. Cl.[5] B05B *3/00*; B29C *67/20*
U.S. Cl. 264—28 **7 Claims**



1. A process for preparing thermoinsulating and/or structural double-walled molded bodies which comprises the following steps:

(a) heating two sheets made of thermoplastic polymer to a temperature equal to or slightly higher than their softening point;

(b) refrigerating a pre-mold made of an expanded polymeric material at a temperature lower than 5° C.;

(c) inserting between the two sheets the refrigerated pre-mold;

(d) thermoforming in a mold the two sheets on the refrigerated pre-mold, thus reducing the breakdown of the outer part of the expanded pre-mold when it comes into contact with the heated polymer; and

(e) soldering together the two sheets on their rims by means of pressure applied on them by the mold.

5,308,558

PROCESS FOR FOAMING THERMOPLASTIC POLYCARBONATES

Edwin Woldenberg; Klaus Kircher, both of Leverkusen; Klaus Horn, Krefeld; Johann Piontek, Dormagen; Burkhard Köhler, and Wolfgang Ebert, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 814,093, Dec. 26, 1991, abandoned. This application Aug. 13, 1993, Ser. No. 106,469
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1991, 4100201
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—45.3 **4 Claims**

1. A process for producing a foamed molded article consisting of:

(i) mixing a thermoplastic aromatic polycarbonate resin with about 0.01 to 10 percent by weight of $Al_2O_3(H_2O)_3$ to produce a blend and

(ii) extruding said blend at temperatures of from 220° C. to 320°C. without the application of vacuum to produce said article, or

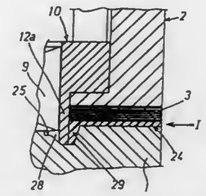
(iii) injection molding said blend at temperatures of from 290° to 330° C. without the application of vacuum to produce said article.

5,308,559

METHOD FOR MANUFACTURING AN AIR FILTER

Fabrizio Baracchi, Turin; Silvano Casalicchio, Bruino; Mauro Gallino, Grugliasco, and Luigi Tarditi, Pinerolo, all of Italy, assignors to Gilardini S.p.A., Turin, Italy

Filed Nov. 20, 1991, Ser. No. 795,316
Claims priority, application Italy, Nov. 20, 1990, 67905 A/90
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—46.4 **1 Claim**



1. A method for manufacturing an air filter for vehicle engines, comprising the steps of:

preparing a filtering element of pleated paper and positioning said filtering element in a mold having a cavity such that said filtering element abuts an expansion recess portion of said cavity;

forming an edge made of synthetic resin around said filtering element, wherein the forming step comprises the substeps of first injecting said resin in a plastic state into an injection recess portion of said cavity, the resin in said injection recess initially not being in contact with said filtering element by virtue of the positioning of a movable mold element which separates the injection recess from the expansion recess; and

then connecting the injection recess with the expansion recess by moving said movable mold element, thereby allowing said resin to expand until said resin contacts and adheres to said filtering element.

5,308,560

PROCESS FOR PRODUCING MOULDINGS FROM AN EXPANDED STYRENE POLYMER

Norman W. Bibby, and Oskar L. Willi, both of Northampton, United Kingdom, assignors to M. Y Trondex Limited, Northampton, United Kingdom

Continuation of Ser. No. 527,648, May 16, 1990, abandoned, which is a continuation of Ser. No. 314,389, Feb. 23, 1989, abandoned. This application May 29, 1992, Ser. No. 892,604
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—50 **13 Claims**

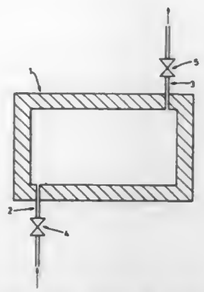
1. A non-calendering, non-compression molding, expansion process for producing a moulding from a pre-expanded styrene polymer, said process comprising:

applying gas pressure to particles of a pre-expanded styrene polymer substantially free of residual expanding agent sufficient to compress the particles to a volume of 90% of

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the original volume or less than 90% of the original volume;

introducing the particles into a mould; and



modifying the gas pressure inside the mould, without modifying mould volume, to allow said particles to expand in the mould and bond together to produce the moulding.

5,308,561

PROCESS FOR PRODUCTION OF A Si_3N_4 BASED MATERIAL

Gerhard Leimer, Roedental; Gerhard Wötting, Coburg, and Ernst Gugel, Roedental, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 822,722, Jan. 21, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 44,569

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1991, 4102628

Int. Cl.[5] C04B *35/65*

U.S. Cl. 264—65 **10 Claims**

1. A process for the production of high-strength Si_3N_4-based material with a narrow range spread of values for mechanical properties which comprises: molding a powder-form starting mixture consisting essentially of 5 to 20% by weight finely divided elemental silicon, 1 to 15% by weight of at least one sintering additive and 65–94% by weight powdered Si_3N_4, heat treating the starting mixture at a temperature equal to or below 1400° C. in a nitrogen atmosphere at atmospheric pressure until a complete reaction of the elemental silicon with the nitrogen gas to Si_3N_4 takes place, and continuing the heat treating of the mixture after all of the elemental silicon has been converted to Si_3N_4, at a temperature above 1400° C., to obtain a sintered molding very near the theoretical density of the material.

5,308,562

RECYCLING PROCESS AND APPARATUS FOR THE PRODUCTION OF POLYMER FROM THERMOPLASTIC POLYCONDENSATE

Hendrik Wohlfahrt-Laymann, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,621

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208099

Int. Cl.[5] B29C *47/40*

U.S. Cl. 264—101 **23 Claims**

1. A reprocessing process of producing polymer from plastic polycondensate comprising:

supplying polycondensate into a screw extruder having dual screws rotating in the same direction,

advancing the polycondensate through a first zone of the extruder,

heating the polycondensate in said first zone to a temperature below the melting point of the polycondensate,

removing water and gases from the polycondensate in said first zone,

conveying the polycondensate in the screw extruder into a second zone thereof downstream of said first zone,

heating the polycondensate in said second zone to a temperature above the melting point of said polycondensate to form a melt,

conveying the polycondensate through a sealed region in said second zone as the polycondensate is being advanced in the screw extruder,

removing further water components and volatile components from said melt in said sealed region while applying a vacuum thereto,

conveying said polycondensate through a third zone downstream of the sealed region of the second zone,

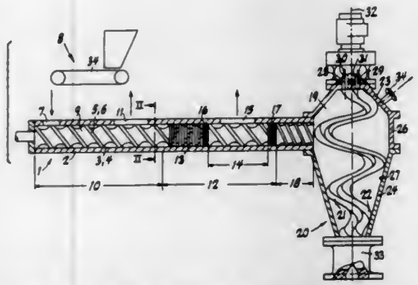
discharging the melt from said third zone of the screw extruder directly into a vertical mixing tank,

producing a vacuum in the mixing tank which is also established in said third zone,

conveying the melt in said mixing tank while mixing the melt during a residence period in said mixing tank to remove residual water and volatile components from the melt,

discharging the melt from said mixing tank.

7. Apparatus for producing polymer from plastic polycondensate comprising a dual screw extruder including a housing having overlapping longitudinal bores therein and two rotatable screws in said bores having threads tightly meshing with one another, said extruder having three successive zones arranged longitudinally thereof, the first of said zones being a conveyor zone having an inlet for plastic polycondensate, which is heated to a temperature in said first zone which is lower than the melting point of the polycondensate, said screws conveying the polycondensate through the three zones of the extruder, said housing having a degassing opening in said first zone, the polycondensate being heated in the second of said zones to a temperature above its melting point to produce a polymer melt, said conveyor screws including a first set of kneading disks in a region of said second zone to knead the polymer melt during its advance in the extruder, two further sets of kneading disks spaced longitudinally in said extruder in said second zone downstream of the first set of kneading disks, said further sets of kneading disks being arranged in said housing so as not to produce advance of said melt in said extruder, said housing having a degassing outlet between said further sets of kneading disks at which a vacuum is applied, the third of said zones being downstream of the second zone and having an outlet for discharge of the polymer melt from the extruder, and a mixing tank in direct communication with said extruder at the outlet of said third zone for receiving the polymer melt therefrom, said mixing tank comprising a vertical housing, rotatable, spiral mixing blades in said housing which engage one another and walls of said housing to clean the same of polymer melt, drive means for rotating said mixing blades in the housing of the mixing tank, and a melt pump connected to said housing of the mixing tank for pumping the melt from said housing of the mixing tank, said spiral mixing blades having a



direction of spiral winding and being driven by said drive means in a direction related to the direction of spiral winding to urge polymer in said mixing tank upwardly against the action of gravity, said housing of said mixing tank having a longitudinal axis, said spiral mixing blades being rotatable around respective axes of rotation offset from said longitudinal axis.

5,308,563

PROCESS FOR PRODUCING ANTISTATIC YARNS

John A. Hodan, Arden; Otto M. Ilg, Asheville, both of N.C.; Melvin R. Thompson, Anderson, S.C., and Donald B. Thompson, Memphis, Tenn., assignors to BASF Corporation, Parsippany, N.J.

Filed Aug. 31, 1992, Ser. No. 937,568

Int. Cl.[5] D01D *5/08*; D02G *1/10, 3/12*

U.S. Cl. 264—103 **20 Claims**

1. A process for producing a conductive supported yarn comprising:

melt spinning non-conductive nylon filaments to form a first set of filaments;

separating at least one of the filaments from the freshly spun first set into a second set of filaments;

providing the second set of filaments to a suffusion coating process wherein conductive material is suffused into the second set so that after said providing, the suffusion coated second set has a resistivity of between about 10^6 and about 10^9 Ω/cm; and

recombining the first set and the second set to form a conductive supported yarn.

5,308,564

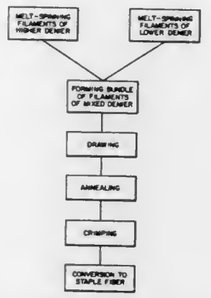
POLYESTER FIBER PROCESS

Teddy H. Grindstaff, Charleston, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 753,421, Aug. 30, 1991, Pat. No. 5,234,645, which is a continuation-in-part of Ser. No. 607,208, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 266,712, Nov. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 925,640, Oct. 31, 1986, abandoned, and a continuation-in-part of Ser. No. 368,844, Jun. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 266,712, Nov. 3, 1988, abandoned, and a continuation-in-part of Ser. No. 212,301, Jun. 27, 1988, abandoned, which is a division of Ser. No. 925,640, Oct. 31, 1986, abandoned. This application May 10, 1993, Ser. No. 27,907

Int. Cl.[5] D01D *5/26*; D02G *1/18*

U.S. Cl. 264—103 **4 Claims**



1. A process for preparing a tow of polyester filaments for conversion into polyester staple fiber, wherein the tow is a mixture of polyester filaments of intentionally different deniers, but having uniform shrinkage and having substantially the same natural draw ratio, such process comprising the steps of forming bundles of filaments of denier that differ as desired, but having uniform shrinkage and having substantially the same natural draw ratio, by cospinning each bundle from the same spinneret through capillaries at differing throughputs at the same spinning position, whereby such filaments of different denier are collected and mixed together in the same bundle, combining together such bundles into a tow, and subjecting the filaments of drawing and crimping operations in the form of such tow.

5,308,565

METHOD OF PREPARING MODIFIED POLYPHENYLENE OXIDE RESIN SYSTEMS FOR ELECTRICAL LAMINATES HAVING IMPROVED SOLDERABILITY AND SOLVENT RESISTANCE

Christian K. Weber, Elgin, Ill., and Michael G. Minnick, Fort Wayne, Ind., assignors to General Electric Company, Worthington, Ohio

Filed Feb. 5, 1993, Ser. No. 14,028

Int. Cl.[5] B29C *67/12*

U.S. Cl. 264—112 **19 Claims**

1. A method for making thermoset polyphenylene oxide/epoxy prepreg, which comprises the steps of:

(a) blending a polyphenylene oxide (PPO) powder with a liquid epoxy material at elevated temperature to make a PPO/epoxy upstaged product;

(b) granulating the resultant PPO/epoxy upstaged product into particulates;

(c) combining said particulates with one or more of reinforcing cloth or reinforcing fiber; and

(d) curing said combination of step (c) at elevated temperature and elevated pressure.

5,308,566

METHOD FOR PRODUCING FORMED BLANKS FROM THERMOPLASTICALLY WORKABLE COMPONENT MIXTURES

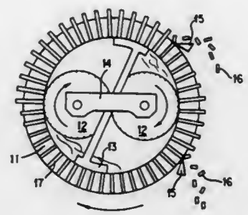
Marcel Huder, Cham, Switzerland, assignor to Naturalis AG, Switzerland

Filed Oct. 6, 1992, Ser. No. 958,910

Claims priority, application Switzerland, Oct. 7, 1991, 02941/91

Int. Cl.[5] B29B *9/00*

U.S. Cl. 264—118 **12 Claims**



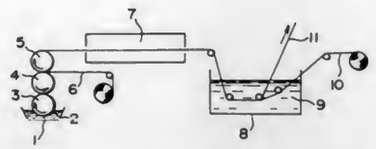
1. In a method for producing formed blanks from component mixtures which comprise raw vegetable materials with a starch component and which are put into final form by thermoplastic or duroplastic deformation in an extrusion molding machine, the improvement comprising the steps of: prior to final shaping, passing the premixed component mixture through a pellet mill with a feed device and a mixing device while adding moisture and providing heat, allowing only partial agglutination of the starch, and cooling and temporarily storing formed pellets for an arbitrary length of time.

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5,308,567
METHOD FOR THE PREPARATION OF A RESIN MEMBRANE

Meguru Kashida; Yoshihiro Kubota; Yoshihiko Nagata, and Hitoshi Noguchi, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 908,452
Claims priority, application Japan, Jul. 12, 1991, 3-198478
Int. Cl.[5] B29D *7/01*
U.S. Cl. 264—127 **8 Claims**

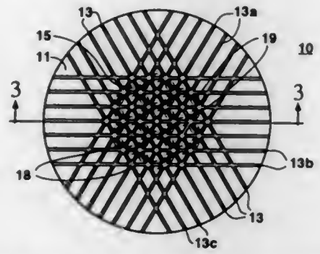


1. A method for the preparation of a membrane of a fluorocarbon resin as a pellicle for a photolithographic mask which comprises the successive steps of:
(a) coating the surface of a substrate with a solution of a fluorocarbon resin having film-formability in a solvent by using a roller coater to form a layer of the resin solution;
(b) evaporating the solvent from the coating layer of the resin solution to form a dry film of the resin on the substrate surface; and
(c) peeling the resin film from the substrate surface.

5,308,568
EXTRUSION DIE AND METHOD

G. Daniel Lipp, Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed May 20, 1993, Ser. No. 65,551
Int. Cl.[5] B29C *47/12*
U.S. Cl. 264—177.12 **9 Claims**



1. An extrusion die for extruding a honeycomb body, the die incorporating a feedhole portion bounded by an inlet face and a discharge slot portion bounded by an outlet face, the feedhole portion comprising multiple feedholes open at the inlet face and the discharge slot portion comprising multiple discharge slots communicating with the feedholes and open at the outlet face, wherein;
the discharge slots criss-cross on the outlet face to form an array of adjoining triangles, each triangle being bounded by three intersecting slot segments, and
wherein each triangle communicates directly with two feedholes, a shared feedhole which communicates with two of the slot segments at the intersection thereof and a single feedhole which communicates with the third slot segment at a location substantially centrally of the length thereof.

5,308,569
PROCESS FOR THE PREPARATION OF AROMATIC POLYIMIDE FILM

Toshikazu Hamamoto; Hiroshi Inoue; Yoshiyuki Miwa; Tetsuji Hirano, all of Osaka; Katsuo Imatani, Yamaguchi; Kenji Matsubara, Yamaguchi, and Takashi Kohno, Yamaguchi, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

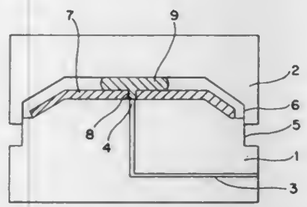
Filed Nov. 26, 1991, Ser. No. 798,532
Claims priority, application Japan, Nov. 27, 1990, 2-32658; Nov. 27, 1990, 2-326259
Int. Cl.[5] B29C *39/14*
U.S. Cl. 264—216 **6 Claims**

1. A process for the preparation of an aromatic polyimide film comprising the steps of:
casting a polyamide acid solution on a support in the form of a film, said polyamide acid solution comprising a polyamide acid obtained by the polymerization reaction of 3,4,3',4'-biphenyltetracarboxylic dianhydride and p-phenylenediamine in a polar organic solvent other than a nitrogen atom-containing heterocyclic compound having a resonance structure in the presence of an imidization agent selected from the group consisting of isoquinoline and a substituted pyridine, said imidization agent being used in an amount of 0.02 to 0.4 gram equivalent per 1 gram equivalent of an amide acid unit of the poly-amide acid and in the absence of a lower fatty acid anhydride;
heating the cast solution on the support at a temperature of 80° to 200° C. to obtain a self-supportable film;
peeling the self-supportable film from the support; and
heating the film at a temperature of not lower than 300° C.

5,308,570
PROCESS FOR PRODUCING MULTILAYER MOLDED ARTICLE

Takahisa Hara, Kawanishi; Masahito Matsumoto, Ibaraki; Nobuhiro Usui, Takatsuki, and Shigeyoshi Matsubara, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Dec. 20, 1991, Ser. No. 811,302
Claims priority, application Japan, Dec. 21, 1990, 2-404821
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—255 **12 Claims**

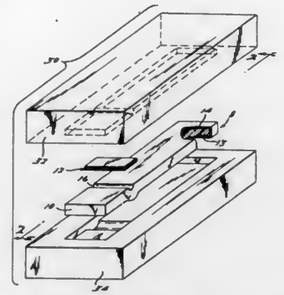


1. A process for producing a multilayer molded article comprising the steps of:
providing a preheated fiber-reinforced resin sheet between a pair of upper and lower molds,
supplying a resin melt of a thermoplastic resin between said upper mold and said fiber-reinforced resin sheet from a resin supplying opening provided in said lower mold through a hole made in said fiber-reinforced resin sheet, and
closing of the molds by moving the upper mold toward the lower mold during resin supply or as soon as the resin supply is finished to produce a multilayer molded article comprising said fiber-reinforced resin sheet and a skin layer of said thermoplastic resin which is integrally laminated on said resin sheet.

5,308,571
METHOD OF MOLDING AN ARTICLE WITH INTEGRAL HEAT SHIELD

Ernest D. Stiles, St. Clair Shores; Ronald K. Wlosinski, Sterling Heights, and Daniel Q. Houston, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 706,605, May 28, 1991, Pat. No. 5,188,981.
This application Sep. 28, 1992, Ser. No. 952,374
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—257 **1 Claim**

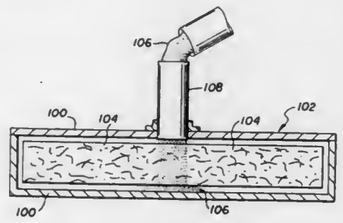


1. A method of making a molded body having an integrally molded heat shield comprising the steps of:
providing a preform having a non-porous inner core and a porous fibrous mat exterior surface;
placing one or more layers of heat shielding material adjacent said exterior surface, said heat shielding material being at least partially porous;
placing said preform and heat shielding material within a molding tool;
injecting resin into said tool, said resin impregnating said fibrous mat and partially impregnating said heat shielding material, whereby said heat shielding material is integrally molded within said body.

5,308,572
METHOD FOR MANUFACTURING A REINFORCED CEMENTITIOUS STRUCTURAL MEMBER

Lloyd E. Hackman, Worthington, Ohio, assignor to Ribbon Technology Corporation, Gahanna, Ohio

Filed Nov. 17, 1992, Ser. No. 977,815
Int. Cl.[5] B28B *1/00, 1/24;* B29C *43/02, 45/00*
U.S. Cl. 264—510 **16 Claims**

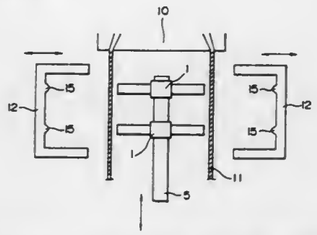


1. A method for manufacturing a reinforced cementitious structural member having a predetermined shape and size comprising:
providing a mold having a cavity which corresponds to said shape and size of said member and having a bottom;
placing at least one permeable fibrous mat into said cavity, said permeable fibrous mat corresponding in size and shape to said cavity;
introducing through at least one vertical stand pipe, a free flowing slurry of cementitious material directly toward said bottom of said mold, said slurry of cementitious material forming a stream of cementitious material which spreads through interstitial voids of said fibrous mat in a downward movement until all said interstitial voids are completely infiltrated to said bottom of said mold cavity, wherein said cementitious material then spreads outwardly and upwardly filling said cavity and infiltrating and encapsulating said fibrous mat to form a reinforced cementitious material;
curing said reinforced cementitious material to form said reinforced cementitious structural member; and
removing said cured reinforced cementitious structural member from said mold.

5,308,573
METHOD OF MOLDING A FUEL TANK HAVING BAFFLE PLATES

Sadamu Hirakawa, Ichihara, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP91/01694, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO92/10354, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 5, 1991, Ser. No. 917,106
Claims priority, application Japan, Dec. 6, 1990, 2-400622
Int. Cl.[5] B29C *49/20*
U.S. Cl. 264—516 **7 Claims**



1. A method of blow-molding a fuel tank comprising the steps of:
providing pre-molded baffle plates having a hollow tubular portion including an inner surface and plate portions extending outwardly from said tubular portion and the inner surface of said tubular portion having protuberances, and
providing a blow-pin having a tip and an outer surface including a plurality of grooves in said outer surface extending downwardly from said tip,
mounting a plurality of said pre-molded baffle plates on said blow-pin by having the protuberances on the baffle plates engage the grooves in the blow-pin;
inserting said blow-pin with the baffle plates in a molten parison of a thermoplastic resin; and
closing a split metal mold from outside of the molten parison at the time of feeding a pressurized fluid into the mold via the blow-pin so that the baffle plates melt-adhere onto an inner surface of the fuel tank to be molded.

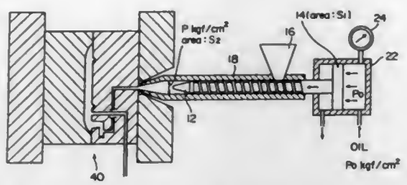
VOL 1162 ISS 1 MAY 3 1994 UMI

5,308,574

METHOD OF INJECTION MOLDING WITH AIR ASSIST FOR MAKING A HANDLE-SHAPED MOLDED ARTICLE

Kunio Yamazaki; Akimasa Kaneishi, both of Hiratsuka; Yoshiharu Ohtuki, Yokkaichi, and Akinori Toyota, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 1, 1992, Ser. No. 877,425
Claims priority, application Japan, May 8, 1991, 3-132010
Int. Cl.[5] B29C *45/18*
U.S. Cl. 264—572 **7 Claims**



1. A method for producing a handle-shaped molded article having a thick grip portion having a hollow structure and at least one thick fitting portion having a solid structure by injection molding by means of an injection molding apparatus equipped with a mold having a cavity, a resin gate provided where the fitting portion of the handle-shaped molded article is to be formed and a gas inlet provided where the grip portion of the handle-shaped molded article is to be formed, which comprises:

injecting a molten resin into the cavity through the resin gate, thereby filling molten resin in a fitting portion-forming cavity zone formed of that portion of the mold where the resin gate is provided and the fitting portion is to be formed and further filling molten resin in part of the rest of the cavity,

introducing a pressurized gas into the cavity through the gas inlet while maintaining an injection pressure, P, at a predetermined value, the injection pressure, P, being defined by

$$P = F/S$$

wherein F is an injection force and S is a cross-sectional area of a screw of the injection molding apparatus, and

maintaining the injection pressure for exerting a pressure on the resin in the fitting portion-forming cavity zone and a gas pressure in the gas inlet at predetermined values until the molten resin is cooled and solidified.

5,308,575

SINTERED DENSE LASER BLOCK

Carol M. Ford, Columbia Heights, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 27, 1991, Ser. No. 766,997
Int. Cl.[5] F27B *9/04, 9/10*; F27D *7/00, 19/00*
U.S. Cl. 419—37 **18 Claims**

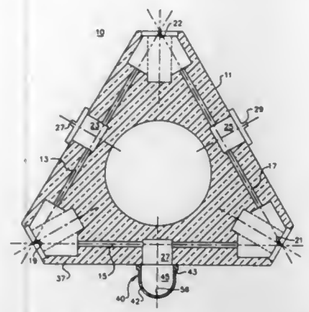
7. A method of constructing a ring laser gyro from a ceramic metal powder and binder, wherein the ring laser gyro comprises a thermally and mechanically stable block having a plurality of interconnected gas containing tunnels forming an optical closed-loop path cavity therein and at least one anode mount on said block and a cathode mount on said block, and wherein the method of constructing the ring laser gyro comprises the steps of:

(a) mixing a ceramic and metal powder and binder to yield a powder and binder combination;

(b) forming the powder and binder combination into the rough shape of the block;

(c) baking the block at a temperature hot enough to form a ceramic metal but not hot enough to bake off the metal mixed in the ceramic;

(d) electro-discharge machining the plurality of interconnected gas containing tunnels, anode mounts and cathode mounts; and



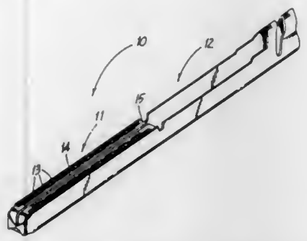
(e) baking the block in an oven at a temperature hot enough to drive off the metal mixed with the ceramic to create a block with a predetermined dielectric constant.

5,308,576

INJECTION MOLDED ANVILS

David T. Green, Westport, and Henry Bolanos, East Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 18, 1991, Ser. No. 779,071
Int. Cl.[5] B22F *3/10*
U.S. Cl. 419—38 **11 Claims**



1. A method for producing a metal injection molded medical device in the shape of a grasping member comprising:

a. melt blending a feedstock, comprising a hardenable metal with a thermoplastic binder material;

b. injection molding the feedstock in a mold configured and dimensioned to form a medical device;

c. removing a majority of the binder material; and

d. sintering the medical device.

5,308,577

AUSTENITIC, NON-MAGNETIC, STAINLESS STEEL ALLOY AND ARTICLES MADE THEREFROM

Bradford A. Duimaine; Theodore Kosa; John H. Magee, Jr., all of Reading, and Donald K. Schlosser, Shillington, all of Pa., assignors to CRS HOldings, Inc., Wilmington, Del.

PCT No. PCT/US91/02490, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992
Continuation-in-part of Ser. No. 508,222, Apr. 12, 1990, Pat. No. 5,094,812. This PCT application Apr. 11, 1991, Ser. No. 934,698
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] C22C *38/44*
U.S. Cl. 420—57 **9 Claims**

1. An austenitic, non-magnetic, stainless steel alloy, providing high yield strength and good stress corrosion cracking resistance in high chloride concentration environments, consisting essentially of, in weight percent, about

	w/o
C	0.08 max.
Mn	14–19
Si	1.0 max.
Cr	12–21
Ni	3.5 max.
Mo	0.5–4
Cu	2.0 max.
N	0.2–0.8

the balance essentially iron; wherein

$$w/o\ N \leq \frac{(w/o\ Mn + w/o\ Cr) - 21.9}{20};$$

$$w/o\ Ni + 2(w/o\ Cu) \leq \frac{w/o\ Cr + w/o\ Mo - 14.6}{1.5};$$

$w/o\ Mn < w/o\ Cr + w/o\ Mo$; and

said alloy is essentially ferrite-free.

5,308,578

FATIGUE RESISTANT LEAD-TIN EUTECTIC SOLDER

Boon Wong, Canoga Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 783,300, Oct. 28, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,875
Int. Cl.[5] C22C *13/00*
U.S. Cl. 420—558 **20 Claims**

1. A lead-tin eutectic solder for use in soldering metal surfaces together consisting of:

(a) a lead-tin eutectic solder which is free of silver gold and phosphorus; and

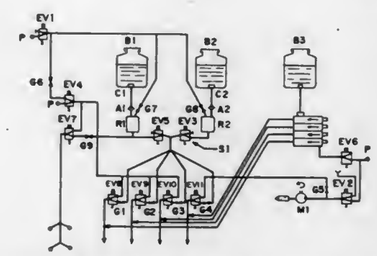
(b) about 0.1 to 0.8 weight percent of a dopant consisting of a member selected from the group consisting of a mixture of cadmium and indium, and a mixture of cadmium, indium, and antimony, wherein said solder with said dopant has improved fatigue resistance.

5,308,579

DEVICE FOR DISTRIBUTION OF THE LIQUIDS FOR AN APPARATUS FOR CLEANING, DISINFECTION AND LUBRICATION OF DENTISTRY HANDPIECES

Bernard Melon, Auxon Dessus, France, and Bernhard Guggenheim, Erlenbach, Switzerland, assignors to Micro Mega SA, Besancon, France

Filed Nov. 25, 1991, Ser. No. 798,295
Claims priority, application France, Nov. 23, 1990, 90 14843
Int. Cl.[5] B08B *3/02, 3/04*
U.S. Cl. 422—28 **33 Claims**



1. A device for distributing liquids in an apparatus for cleaning, disinfecting and lubricating dentistry handpieces, the device comprising:

a plurality of solenoid valve for sequentially opening at each of a plurality of stations according to a cycle wherein liquids are released from a source, for introduction into a conduit associated with each handpiece so that each liquid is conveyed under pressure and through each handpiece in actual liquid form and not in an atomized form; and

a conduit associated with each handpiece for receiving compressed air and for delivering the compressed air to the handpiece, which is separate from the conduit for receiving the liquid, for atomizing the liquid only in the handpiece;

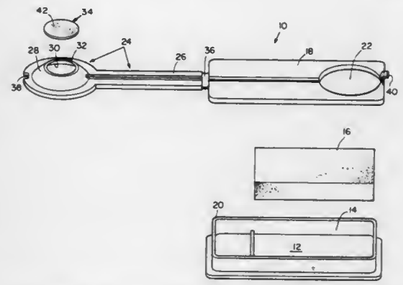
wherein the air conduit and the liquid conduit of each handpiece are connected by a single electrovalve associated with the handpiece, for selectively passing air and liquid depending upon the cycle of the distributing device.

5,308,580

SAMPLE COLLECTION AND ANALYTICAL DEVICE

Phillip Clark, Stoneham, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed May 19, 1992, Ser. No. 885,586
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—58 **6 Claims**



1. A collector apparatus for use in a ligand receptor assay which comprises:

a base having a hollow internal volume,

an absorbent for absorbing a liquid housed within said internal volume,

an opening in said base to expose said absorbent,

a sample collector comprising a handle and a well having two openings,

said well having a volume to retain a liquid sample,

said well being attached to said handle,

a porous member sealed to one of said openings in said well,

a receptor capable of binding a target ligand in a liquid sample, bound to a top surface of said porous member,

and means on said base and said well to retain said sample collector on said base so that said porous member either (a) is maintained in contact with said absorbent in said base thereby to pass liquid from said sample through said porous membrane to said absorbent by capillary action or (b) is separated from contact with said absorbent thereby to retain said sample within said well and in contact with said receptor.

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5,308,581

SUBSTANCE OF AN OPTICAL FLUORESCENCE MEASURING ARRANGEMENT FOR MEASURING THE PH OF A SAMPLE AND OPTICAL SENSOR WITH SUCH AN INDICATOR SUBSTANCE

Max Lippitsch; Marco J. Leiner, and Hellfried Karpf, all of Graz, Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

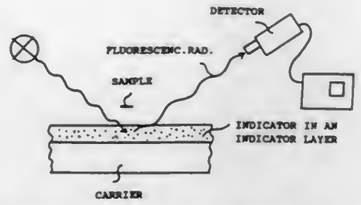
PCT No. PCT/AT91/00128, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO92/10739, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 12, 1991, Ser. No. 916,154

Claims priority, application Austria, Dec. 12, 1990, 2512/90

Int. Cl.[5] G02B *6/00;* **G01N** *33/94*

U.S. Cl. 422—82.08 **20 Claims**



1. A luminescence-optical indicating substance for continuous and reversible measurement of the pH value of a sample within a measuring range M of interest, said sample being at least in indirect contact with said indicating substance provided as a base $B^{\bullet}$, having a luminescence decay time τ depending on the pH value of said sample, comprising

a) a pK_g value, in an electric ground state as S_0, which lies in said measuring range M of interest;

b) a protonation rate k_p of said base $B^{\bullet}$ and a deprotonation rate k_{dp} of conjugate acid $BH^{+\bullet}$ in an excited state S_1 lower than a decay rate k_A of said excited state; and

c) luminescence decay times τ_S and τ_B of said conjugate acid $BH^{+\bullet}$ and said base $B^{\bullet}$ which differ from each other.

5,308,582

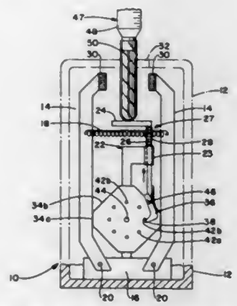
SYRINGE CAPPING AND UNCAPPING DEVICE

Louis M. Serra, 5599 Cardinal Dr., Mentor, Ohio 44060

Filed Feb. 11, 1993, Ser. No. 16,695

Int. Cl.[5] B01L *3/00*

U.S. Cl. 422—99 **16 Claims**



6. A syringe uncapping device comprising components including: at least two gripping arms for engaging a protective hypodermic syringe needle cap;

gripping arm biasing means for biasing said gripping arms toward each other;

camming means for positioning said gripping arms;

activating assembly means for adjusting said camming means; and

a housing for said components with an opening therein for inserting a hypodermic syringe needle cap,

wherein said activating means comprises:

a movable plunger shaft having two ends;

a needle cap contact surface located on one of said ends;

a camming means operating lever located on the other of said ends;

means for mounting said plunger shaft;

contact surface biasing means for urging said contact surface toward said opening; said mounting means being connected to said housing, and said activating assembly means being activated by pressure from said needle cap on said contact surface, and

wherein said camming means comprises a rotatable member with a plurality of projections extending therefrom, the engagement of said projections with said camming means operating lever causing said rotatable member to rotate, thereby desirably positioning said gripping arms.

5,308,583

LIQUID SUPPLYING DEVICE FOR USE IN PHYSICAL AND CHEMICAL APPARATUS

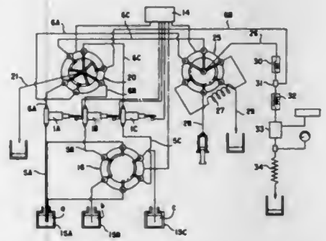
Sannosuke Sanuki, Tokyo, Japan, assignor to Sanuki Kogyo Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 906,868

Claims priority, application Japan, Jul. 4, 1991, 3-190588

Int. Cl.[5] B01L *3/02, 11/00*

U.S. Cl. 422—100 **3 Claims**



1. A liquid supplying device for use in physical and chemical apparatus, comprising:

a first liquid supplying piston pump having a cylinder connected to a first liquid intake passage and a first liquid outlet passage through respective check valves, a first piston which moves to and fro within said cylinder, and a driving mechanism for operating said first piston,

a second liquid supplying piston pump having a cylinder connected to a second liquid intake passage and a second liquid outlet passage through respective check valves, a second piston which moves to and fro within said cylinder, and a driving mechanism for operating said second piston,

a third liquid supplying piston pump having a cylinder connected to a third liquid intake passage and a third liquid outlet passage through respective check valves, a third piston which moves to and fro within said cylinder, and a driving mechanism for operating said third piston,

first, second and third chemical vessels each containing a liquid such as a solution and chemical,

a change-over valve disposed in said liquid intake passages of said piston pumps, which change-over valve assumes its first position for allowing said, second and third liquid intake passages of said, second and third piston pumps to be connected to said first chemical vessel, and its second position fro allowing said, second and third liquid intake passages of said second and third piston pumps to be connected to said second and third chemical vessels, respectively,

a liquid discharging change-over valve disposed in said liquid outlet passages of said piston pumps and having a drain passage, which liquid discharging change-over valve assumes its first position for allowing said first, second and third liquid outlet passages of said first, second and third piston pump to be connected to said drain passage, and its second position for allowing said first, second and third liquid outlet passages to be connected to the physical and chemical apparatus,

an automatic controller for controlling said driving mechanisms, change-over valve and liquid discharging change-over valve, and

said piston pumps being operated by turns to alternately send out the liquids from said chemical vessels to said apparatus.

5,308,584

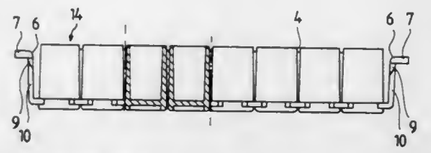
CUVETTE MATRIX TRAY

Kari Vauramo, Helsinki, Finland, assignor to Biohit Oy, Helsinki, Finland

Filed Sep. 9, 1992, Ser. No. 942,677

Int. Cl.[5] B01L *3/14*

U.S. Cl. 422—104 **3 Claims**



1. A cuvette matrix tray, comprising a frame (1) with two parallel carrying sides (2,3) having upper surfaces (8) and a plurality of strips (4) which are mounted between said carrying sides, each said strip (4) being a unitary row of microtitre wells (14), each strip having an undersurface, characterized in that on both carrying sides (2,3) of the frame (1) are formed inward projecting carrying shoulders (5), said carrying shoulders having undersides, and that on both ends of the strips is provided a locking member (6) comprising an outward projecting limiting member (7) disposed to rest against the upper surface (8) of the carrying side, and two locking shoulders (9) projecting at right angles relative to the longitudinal direction of the strip and in opposite directions to each other and disposed to be pressed in below two adjacent carrying shoulders and to rest against the undersides thereof when the strip is pushed from above between the carrying sides, said locking member further comprising a substantially vertical spring member (10), said limiting member (7) projecting outward therefrom, and said substantially vertical spring member being attached to said undersurface of said strip.

5,308,585

PROCESS AND APPARATUS FOR COOLING HOT SOLIDS COMING FROM A FLUIDIZED BED REACTOR

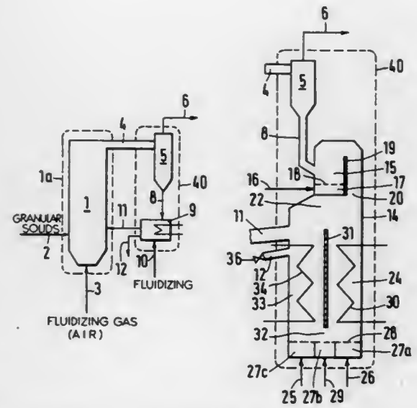
Michael Ströder, Neu-Anspach; Johannes Albrecht, Wöllstadt; Martin Hirsch, Friedrichsdorf; Rainer Reimert, Idstein; Wladyslaw Lewandowski, Schwalbach, and Rudolf Kral, Neu-Anspach, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 29, 1992, Ser. No. 997,089

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1992, 4200244

Int. Cl.[5] F27B *15/16;* **B01J** *8/28*

U.S. Cl. 422—142 **9 Claims**



1. A method of cooling solids from a fluidized bed reactor, comprising the steps of:

(a) providing a hot fluidized bed reactor and a housing in communication therewith having first, second and third fluidized beds therein, and feeding solids from said fluidized bed reactor to said first fluidized bed and fluidizing said solids therein;

(b) controlledly passing solids from said first fluidized bed over the top of a wall downwardly through a gas collecting space below the first fluidized bed to said second cooling fluidized bed, said second bed being spaced below said first fluidized bed and fluidizing and cooling said solids in said second cooling fluidized bed;

(c) at a lower end of said second cooling fluidized bed transferring cooled solids from said second cooling fluidized bed below said space into a lower end of said third cooling fluidized bed across a transition region beneath a wall separating said second and third fluidized beds;

(d) then cooling and fluidizing said cooled solids in said third cooling fluidized bed, whereby cooled solids rise in said third cooling fluidized bed;

(e) abstracting heat from fluidized solids by indirect heat exchange therewith in said second and third cooling fluidized beds;

(f) discharging at least part of the cooled solids rising in said third cooling fluidized bed at an upper portion thereof;

(g) withdrawing fluidizing gases from said cooling fluidized beds through a collecting space below said first cooling fluidized bed and above said second and third cooling fluidized beds; and

(h) passing a fluidizing gas through the solids transferred through said transition region.

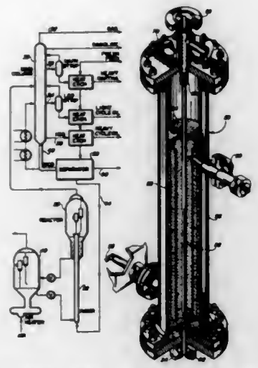
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5,308,586

ELECTROSTATIC SEPARATOR USING A BEAD BED

G. Ray Fritsche, Oceanside; Roko S. V. Bujas, Leucadia, both of Calif., and Giovanni C. Caprioglio, Praha, Czechoslovakia, assignors to General Atomics, San Diego, Calif.

Filed May 1, 1992, Ser. No. 877,330
Int. Cl.[5] B01J *8/18;* F27B *15/12*
U.S. Cl. 422—147 13 Claims



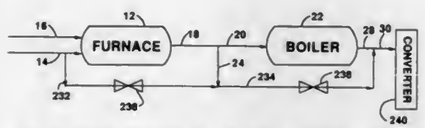
1. An electrostatic bead bed separator for separating suspended particles from oils having a resistivity of greater than about 1×10^6 ohm-cm comprising a hollow shell containing a plurality of glass beads arranged as a bed of glass beads, and a pair of electrodes for applying a potential gradient across said bead bed, said glass beads comprise at least about 50% silicon oxides, and at least about 5% potassium oxides.

5,308,587

COOLED SULPHUR FURNACE BYPASS SYSTEM

Gordon M. Cameron, 4 Wellesbourne Cres., Willowdale, Ontario, Canada M2H 1Y7

Filed Oct. 5, 1992, Ser. No. 956,298
Claims priority, application Canada, Nov. 11, 1991, 2055848
Int. Cl.[5] C01B *17/54*
U.S. Cl. 422—160 5 Claims



1. In an existing sulphuric acid facility in which sulphur and dry air are fed to a sulphur dioxide generating furnace to generate a sulphur dioxide containing gas and said generated sulphur dioxide is fed to a waste-heat boiler to produce a cooled sulphur dioxide product for a catalytic converter for the production of sulphur trioxide, said facility comprising:

a sulphur dioxide generating furnace to produce said generated sulphur dioxide-containing gas; said furnace having sulphur inlet means for feeding sulphur to said furnace and air inlet means for feeding a first dry air stream to said furnace; a waste heat boiler;

conduit means connecting said furnace to said boiler for feeding a first portion of said generated sulphur dioxide-containing gas from said furnace to said boiler to provide a cooled gaseous stream; the improvement comprising:

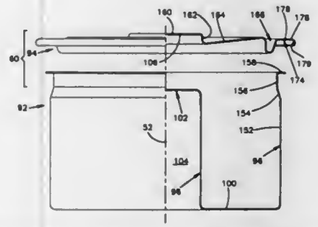
conduit means for combining a second portion of said generated sulphur dioxide-containing gas with a second dry air stream to provide a combined gaseous stream; and conduit means for combining said combined gaseous stream and said cooled gaseous stream to produce said cooled sulphur dioxide product.

5,308,588

HERMETICALLY SEALED CONTAINER FOR AIR BAG INFLATOR

Jerome W. Emery, Tempe; Timothy A. Swann; John P. O'Loughlin, both of Mesa, all of Ariz., and Michael F. Daly, Rochester Hills, Mich., assignors to TRW Inc., Lyndhurst, Ohio

Continuation of Ser. No. 629,141, Dec. 18, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 117,483
Int. Cl.[5] B01J *7/00*
U.S. Cl. 422—165 7 Claims



1. Apparatus for inflating a vehicle occupant restrain comprising:

a hermetically sealed canister having a chamber;

gas generating material in said chamber, said gas generating material when ignited generating gas for inflating a vehicle occupant restraint; and

an igniter for igniting said gas generating material to generate gas for inflating the vehicle occupant restraint;

said canister being made of only two parts;

said two parts of said canister comprising a canister lower section defining said chamber and a canister cover for closing said chamber, said gas generating material being located in said chamber in said canister lower section;

said canister cover comprising one single piece of metal including a circular central wall portion and a first projecting ring portion extending radially outwardly from the circular central wall portion;

said canister lower section comprising one piece of metal and including a cylindrical outer side wall having an upper end and a lower end, a projecting ring portion at said upper end of said outer side wall, a cylindrical inner side wall spaced radially inward of said outer side wall and having an upper end and a lower end, a ring-shaped lower wall interconnecting said lower ends of said inner and outer side walls, and a circular inner top wall extending radially inwardly from said upper end of said inner side wall and capping said inner side wall;

said projecting ring portion of said canister cover and said projecting ring portion of said canister lower section being crimped together to form an annular seal joining said two parts of said canister;

said two parts of said canister having only a single hermetic seal between them, said single hermetic seal comprising said annular seal joining said canister cover to said canister lower section;

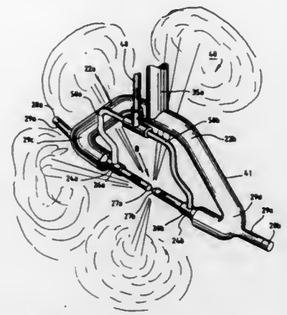
said cylindrical inner side wall of said canister lower section and said circular inner top wall of said canister lower section defining a central recess extending into said canister, said igniter being received in said recess and outside of said chamber of said canister.

5,308,589

ODOR CONTROL SYSTEM

Shui-Chow Yung, Encinitas, Calif., assignor to Calvert Environmental, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 690,672, Apr. 24, 1991, abandoned. This application Dec. 20, 1991, Ser. No. 811,833
Int. Cl.[5] B01D *50/00*
U.S. Cl. 422—169 12 Claims



1. A system for processing waste gas containing odoriferous contaminants comprising:

an elongated vertical chamer having an inlet, an outlet and an elongation axis, said inlet being disposed above the outlet, said chamber having means defining a treatment zone between the inlet and the outlet;

means for flowing a waste gas under pressure into the inlet of said chamer and for directing the flow of the gas under pressure toward the treatment zone;

means disposed at the treatment zone for spraying an additive under pressure into the treatment zone;

said means for spraying includes; first and second conduits for guiding the additive, each of said conduits having at least one discharge nozzle adjacent one end thereof, the discharge nozzle on the first conduit arranged in a spaced apart and directly opposed configuration with respect to the at least one discharge nozzle on the second conduit such that theflow path of the discharge from the first conduit directly intersects the flow path of the discharge from the second conduit thereby to produce a discharge cloud extending radially perpendicular to the elongation axis;

electrostatic precipitor means having a plurality of grounded electrode tubes mounted within said chamber, for ionizing chemical reation products for removal thereof from the gas under pressure flowing to the outlet wherein each of said tubes has a concentraically disposed electrode wherein the concentric electrode attracts the ionized products as the gas passes vertically, downwardly through the electrode tubes; and

means disposed at said outlet for discharging substantially odor free gas to the atmosphere.

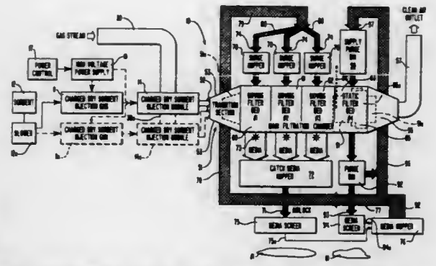
5,308,590

APPARATUS FOR REMOVING PARTICULATE MATTER AND GASES FROM A POLLUTED GAS STREAM

Larry M. Kersey, Scottsdale, Ariz., and Richard A. Steinke, Park City, Utah, assignors to Alanco Environmental Resources Corp., Salt Lake City, Utah

Filed Jun. 14, 1993, Ser. No. 75,957
Int. Cl.[5] B01D *50/00;* B01J *8/08*
U.S. Cl. 422—170 13 Claims

1. Apparatus for removing particulate matter and gaseous pollutants from a polluted gas stream comprising, a collection chamber housing that is open from end to end and provides for maintaining a plurality of essentially parallel filter beds each extending across said housing interior and spaced apart from one another, said housing including an inlet transition section secured across one end, opposite to a first filter bed of a plurality of filter beds, said inlet transition section having an open end that mounts to said housing end and slopes inwardly to connect to a polluted gas stream inlet line, and a vent opening arranged in said housing opposite end that connects to a gas vent line; means for providing and injecting a flow of electrostatically charged sorbent particles into a pipe carrying said polluted gas stream, upstream from said inlet transition section; at least said first filter bed of said plurality of filter beds is a moving bed that includes spaced apart parallel forward and backside plates that are punched to provide a number of openings for freely passing the gas stream therethrough; a supply of



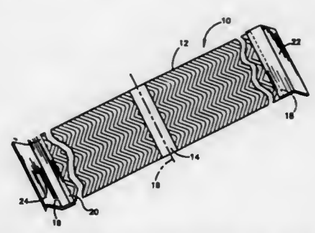
filter bed media material; inlet means for feeding said filter bed media material selected for its absorbed characteristics for removing agglomerized sorbent and pollution particles and gases from the polluted gas stream, said media material passed into the spaced between said forward and backside plates falling therethrough and is discharged from an outlet valve means, said outlet valve means for operating so as to maintain a pressure less than atmosphere within the housing and prevents the infiltration of outside air; means for sensing a pressure differential across said moving bed for controlling operation of said outlet valve means to change the media material in said moving filter bed; and a static filter bed arranged as a last filter bed in said plurality of filter beds and includes a bed of stationary media material maintained between forward and backside plates that include a number of holes formed therethrough.

5,308,591

CORE BODY FOR CATALYTIC CONVERTER

William A. Whittenberger, Hiram, Ohio, assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 9, 1992, Ser. No. 973,626
Int. Cl.[5] F01N *3/10*
U.S. Cl. 422—174 35 Claims



1. An oval thin metal honeycomb core body for a catalytic converter comprising in combination: (a) a plurality of spaced rigid metal pins; (b) a plurality of groups of corrugated thin metal strips each having a metal connector plate located at the

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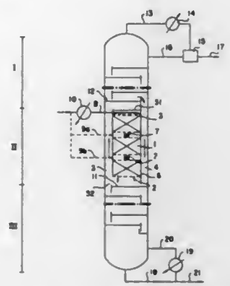
distal extremity thereof and said strips extending in parallel between said rigid metal pins and said metal connector plates; (c) said groups of corrugated thin metal strips being electrically isolated from each other and being bent in the same circular direction about a center intermediate said rigid metal pins; (d) the connector plates of each group of corrugated thin metal strips each defining a retaining shell portion about said core body in which the connector plates of each group of corrugated thin metal strips are connected together, said retaining shell portions being electrically isolated from one another; and (e) means for connecting said corrugated thin metal strips to a voltage source whereby an electrical current may flow through the corrugated thin metal strips selectively to effect heating thereof.

5,308,592

EQUIPMENT FOR MIXED PHASE REACTION DISTILLATION

Zongren Yang; Xingren Hao, and Jinshan Wang, all of Shandong, China, assignors to China Petrochemical Corporation (SINOPEC), Beijing, China

Continuation-in-part of Ser. No. 647,892, Jan. 30, 1991, abandoned. This application Jul. 14, 1992, Ser. No. 912,852
Claims priority, application China, Dec. 3, 1990, 91109526.5
Int. Cl.[5] B01J *8/04, 8/02;* **B01D** *11/02, 3/14*
U.S. Cl. 422—191 **13 Claims**



1. An equipment for mixed phase reaction distillation having a column with an upper part, a middle part and a lower part, the equipment comprising: a rectifying section I containing a plurality of distillation trays including a lowermost tray at the upper part, a reaction section II at the middle part, a stripping section III containing a plurality of distillation trays including an uppermost tray at the lower part, wherein said reaction section II comprises:

a) a plurality of superposed catalyst beds including an uppermost catalyst bed and a lowermost catalyst bed which are connected by at least one catalyst flow pipe disposed between each pair of adjacent catalyst beds:

b) a sealed cover above the uppermost catalyst bed of said plurality of catalyst beds in said reaction section II;

c) at least one means providing a vapor passageway disposed at one side in said reaction section II, and at least one means providing a liquid passageway disposed vertically at the opposite side in said reaction section II;

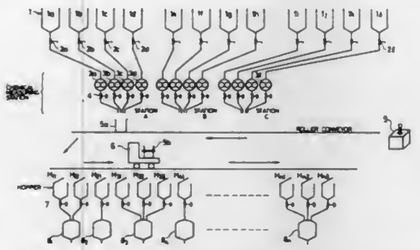
d) one feed inlet disposed between the uppermost catalyst bed and said sealed cover for introducing preheated feed from a preheater and at least one feed inlet disposed between each pair of said catalyst beds for introducing unpreheated feed.

5,308,593

PREPARATION DEVICE FOR PHOTOGRAPHIC LIQUID TO BE APPLIED

Chuzo Kobayashi; Yasunori Ichikawa, and Shigeru Yamaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 519,337, May 3, 1990, abandoned, which is a continuation of Ser. No. 188,344, May 4, 1988, abandoned. This application Nov. 2, 1992, Ser. No. 970,984
Claims priority, application Japan, May 7, 1987, 62-109689
Int. Cl.[5] B01D *17/00*
U.S. Cl. 422—243 **5 Claims**



1. A device for preparing photographic liquids comprising means for collecting said liquids and means for distributing said liquids, wherein said collecting means comprises:

a plurality of chemical storage tanks;

a plurality of flow meters, one of said flow meters being provided for each of said tanks, an inlet of each of said flow meters being connected to an outlet of a respective one of said tanks;

a plurality of control valves, one of said valves being provided for each of said tanks, an inlet of each of said control valves being connected to an outlet of a respective one of said flow meters;

a plurality of pipes divided into a plurality of groups, one of said pipes being provided for each of said tanks, an inlet of each of said pipes being connected to an outlet of a respective one of said control valves, outlets of said pipes within each of said groups being gathered at a respective station position;

at least one pot for receiving chemicals dispensed through said pipes; and

first conveying means for conveying said pot among said station positions, and wherein said distributing means comprises:

a plurality of hoppers for receiving said chemicals received in said pot;

a plurality of chemical preparation tanks to which at least one of said outlets of said hoppers is connected through a valve regulation; and

a second conveying means for conveying said pot to a position on which one of said hoppers is provided.

5,308,594

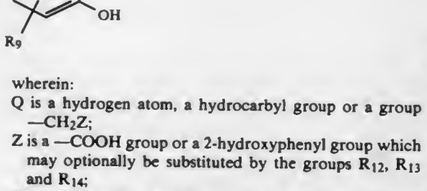
EDGE-HEAT-SINK TECHNIQUE FOR ZONE MELTING RECRYSTALLIZATION OF SEMICONDUCTOR-ON-INSULATOR FILMS

Chenson K. Chen, Weston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 238,311, Aug. 30, 1988, Pat. No. 5,160,575, which is a continuation-in-part of Ser. No. 124,346, Nov. 20, 1987, Pat. No. 4,889,583, which is a continuation of Ser. No. 805,117, Dec. 4, 1985, abandoned. This application Sep. 10, 1992, Ser. No. 943,257
Int. Cl.[5] C30B *13/32*
U.S. Cl. 117—222 **9 Claims**

1. An apparatus for dissipating heat about the periphery of a semiconductor wafer during Zone Melting Recrystallization (ZMR) comprising:

a platen; and



a substantially annular heat sink on said platen in contact with and supporting the periphery of the wafer to dissipate a buildup of excess heat from the periphery of the wafer during ZMR.

5,308,595

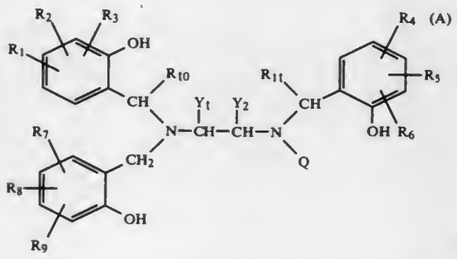
PROCESS FOR THE EXTRACTION OF GALLIUM

Peter M. Quan, Rochdale, and Stephen W. Leeming, Flixton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 884,230, May 11, 1992, Pat. No. 5,183,940, which is a continuation of Ser. No. 68,136, Jun. 29, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 976,395
Claims priority, application United Kingdom, Jul. 14, 1986, 8617118; Oct. 1, 1986, 8623570; May 15, 1987, 8711539
Int. Cl.[5] C22B *58/00;* **C01G** *15/00;* **C07C** *215/50;* **B01D** *11/04*
U.S. Cl. 423—112 **13 Claims**

1. A process for the extraction of gallium from a basic aqueous solution containing gallium comprising the steps of:

(a) contacting an aqueous solution containing gallium with a solution in a water immiscible solvent of at least one compound of the formula (A),



wherein:

Q is a hydrogen atom, a hydrocarbyl group or a group $—CH_2Z$;

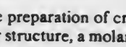
Z is a —COOH group or a 2-hydroxyphenyl group which may optionally be substituted by the groups R_{12}, R_{13} and R_{14};

R_1 to R_9, and R_{12} and R_{14}, which may be the same or different, are substituent groups selected from hydrogen, hydrocarbyl, alkoxy, halogen, hydrocarbyl, sulphonyl, acyl, amino, nitro and cyano or, when R_1 and R_2 and/or R_4 and R_5 are adjacent substituents they may complete a benzo ring and R_1 to R_9 and R_{12} to R_{14} are such that the substituents on at least one of the rings are different from the substituents on at least one other of the rings;

R_{10} And R_{11} are each, independently, a hydrogen atom or an alkyl group containing up to 20 carbon atoms;

Y_1 is a hydrogen atom, or an alkyl group containing up to 20 carbon atoms, or a phenyl group;

Y_2 is a hydrogen atom or an alkyl group containing up to 20 carbon atoms, or Y_1 and Y_2, together with the group



form saturated or unsaturated ring system; and

R_1 to R_{14}, Y_1 and Y_2 are the same or different and together contain in total from 10 to 60 saturated carbon atoms,

(b) separating the aqueous phase from the solvent phase which contains a gallium complex compound;

(c) contacting the solvent phase with an aqueous mineral acid or with an aqueous solution which is more strongly alkaline than the aqueous solution of steps (a) and (b); and

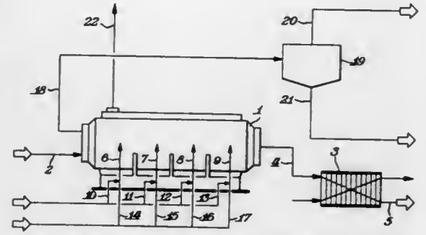
(d) separating the solvent phase from the aqueous phase containing metal in the form of a salt of the mineral acid or of an oxyanion.

5,308,596

PROCESS FOR THE PRODUCTION OF CRYSTALLINE SODIUM DISILICATE IN AN EXTERNALLY HEATED ROTARY KILN HAVING TEMPERATURE ZONES

Michael Kotzian; Günther Schimmel, both of Erftstadt; Alexander Tapper, Mönchengladbach, and Knut Bauer, Kelkheim-Hornau, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 8, 1992, Ser. No. 986,983
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142711
Int. Cl.[5] C01B *33/32*
U.S. Cl. 423—333 **5 Claims**



1. A process for the preparation of crystalline sodium disilicates having a laminar structure, a molar ratio of SiO_2 to Na_2O of (1.9 to 2.1) : 1 and a water content of less than 0.3% by weight, which comprises: reacting sand with sodium hydroxide solution in a molar ratio of SiO_2 to Na_2O of (2.0 to 2.3): 1 at temperature of 180° to 240° C. and pressures of 10 to 30 bar with formation of a water glass solution having at least 20% by weight of solids; spray-drying the water glass solution with hot air at 200° to 300° C. with the formation of a pulverulent amorphous sodium disilicate having a water content (determined at loss on heating at 700° C.) of 15 to 23% by weight and a bulk density of more than 300 g/l; grinding the spray-dried pulverulent amorphous sodium disilicate; introducing the ground sodium disilicate into a rotary kiln equipped with devices for moving solids, externally heated via the wall and having at least four different temperature zones in its interior, wherein in the first temperature zone adjacent to the entry opening 200° to 500° C. is maintained, in the second temperature zone 400° to 600° C. is maintained, in the third temperature zone 550° to 700° C. is maintained and in the fourth temperature zone adjacent to the discharge opening 650° to 800° C. is maintained; and treating the ground sodium disilicate in said externally heated rotary kiln for 1 to 60 minutes with formation of crystalline sodium disilicate.

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5,308,597

PRODUCTION OF HEAVY METAL CARBIDES OF HIGH SPECIFIC SURFACE AREA

Marc-Jacques Ledoux; Jean-Louis Guille; Cuong Pham-Huu, and Sophie Marin, all of Strasbourg, France, assignors to Pechiney Electrometallurgie, Courvevoie, France

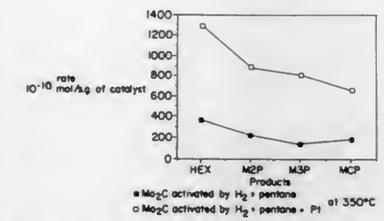
PCT No. PCT/FR90/00204, § 371 Date Nov. 27, 1990, § 102(e) Date Nov. 27, 1990, PCT Pub. No. WO90/11251, PCT Pub. Date Oct. 4, 1990

PCT Filed Mar. 26, 1990, Ser. No. 613,627

Claims priority, application France, Mar. 28, 1989, 89 04433; Oct. 19, 1989, 89 14084; Dec. 19, 1989, 89 17538

Int. Cl.[5] C01B *31/34*

U.S. Cl. 423—440 17 Claims



1. A method of producing a heavy metal carbide of high specific surface area, comprising reacting a gas consisting essentially of a compound of said heavy metal in a gaseous state with reactive carbon in the form of a solid consisting essentially of elemental carbon having a specific surface area at least equal to 200 m^2/g at a temperature between 900° to 1400° C.

5,308,598

PLEXIFILAMENTARY FIBERS FROM PITCH

Don M. Coates, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 613,099, Nov. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 473,683, Feb. 1, 1990, abandoned. This application Jan. 31, 1991, Ser. No. 648,767

Int. Cl.[5] C01B *31/04;* D01F *9/12*

U.S. Cl. 423—447.2 5 Claims

1. A process for preparing fibers from pitch comprising

forming a mixture comprising 7 to 22% by weight pitch, 0.3 to 3.5% polyethylene and 74.5 to 92.7% of organic liquid,

dispersing the polyethylene and pitch in the organic liquid,

heating the dispersed mixture to a temperature in the range of 130° to 225° C. while under pressure sufficient to prevent boiling,

adjusting the pressure to at least 7,000 kPa and

passing the mixture through an orifice into a region of lower temperature and much lower pressure to cause flash-evaporation of the solvent and formation of a flash-spun plexifilamentary fiber comprising at least 4 and no more than 20% by weight of polyethylene and 96 to 80% pitch.

5. A graphitized flash-spun plexifilamentary fiber.

5,308,599

PROCESS FOR PRODUCING PITCH-BASED CARBON FIBER

Toshifumi Kawamura, and Takashi Maeda, both of Ibaraki, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,850

Claims priority, application Japan, Jul. 18, 1991, 3-202130

Int. Cl.[5] D01F *9/12*

U.S. Cl. 423—447.4 6 Claims

1. A process for producing pitch-based carbon fiber which comprises the steps of melt spinning a raw material pitch to form pitch fiber; subjecting said pitch fiber to oxidative polymerization in a solvent selected from the group consisting of acetic acid, propionic acid and butyric acid in the present of a Lewis acid catalyst and a formaldehyde monomer source selected from the group consisting formalin, paraformaldehyde, trioxane and compounds each having a hydroxy methyl group to form infusibilized fiber under polymerization conditions comprising a polymerization temperature of 90°–150° C. and a polymerization time of 0.1–10 hours; and thereafter carbonizing said infusibilized fiber.

5,308,600

PROCESS FOR CONDITIONING WASTE SULFURIC ACID

Helmold von Plessen, Königstein/Taunus; Wolfram Fritsche-Lang, Bensheim, and Horst Lorke, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00329, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/13828, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 22, 1991, Ser. No. 924,037

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1990, 4006665

Int. Cl.[5] C01B *17/90*

U.S. Cl. 423—527 19 Claims

1. A process for conditioning waste sulfuric acid, which is prone to precipitation of tars or resins, which comprises adding a polyether as an emulsifier to the waste sulfuric acid.

5,308,601

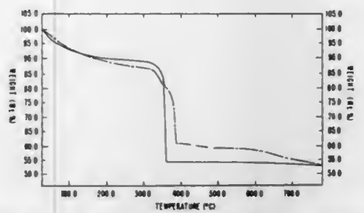
FORMATION OF CRYSTALLINE METAL OXIDES AT LOW TEMPERATURES

Mark Hampden-Smith, and Clive Chandler, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Sep. 18, 1992, Ser. No. 947,238

Int. Cl.[5] C01F *1/00*

U.S. Cl. 423—593 12 Claims



1. The method of preparing crystalline mixed metal oxide compounds for deposition or other purposes at temperatures below 400 degrees centigrade comprising the steps of:

a) preparing a metal hydroxycarboxylate compound which reacts with a metal alkoxide compound to form one or more soluble intermediate compounds devoid of alcohol, and

b) thermally decomposing said intermediate compound at a temperature of about 350 degrees centigrade in an O_2 environment, resulting in the formation of a crystalline mixed metal oxide compound.

5,308,602

SYNTHESIS OF CRYSTALLINE ULTRA-LARGE PORE OXIDE MATERIALS

David C. Calabro, Somerset, and John Hen, Skillman, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Oct. 13, 1992, Ser. No. 960,350

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C01B *33/26*

U.S. Cl. 423—705 17 Claims

1. A method for preparing a composition of matter comprising an inorganic, crystalline phase exhibiting an X-ray diffraction pattern with at least one peak at a position greater than about 18 Angstrom Units d-spacing with a relative intensity of 100, and a benzene adsorption capacity of greater than about 15 grams benzene per 100 grams anhydrous crystal at 50 torr and 25° C., said method comprising the steps of:

(a) forming a reaction mixture comprising an amphiphilic compound, a source of at least one oxide and water, wherein the molar ratio of amphiphilic compound to water is less than 0.004;

(b) maintaining said reaction mixture under sufficient conditions to form a crystalline oxide material; and

(c) recovering said crystalline oxide material.

5,308,603

METHOD TO DIRECTLY RADIOLABEL ANTIBODIES FOR DIAGNOSTIC IMAGING AND THERAPY

Mathew L. Thakur, Cherry Hill, N.J., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 499,790, Mar. 27, 1990, Pat. No. 5,011,676. This application Oct. 2, 1990, Ser. No. 591,964

Int. Cl.[5] A61K *49/02, 43/00*

U.S. Cl. 424—1.490 8 Claims

1. A kit suitable for directly labeling a protein with radionuclides for use in diagnostic imaging and therapy comprising a quantity of protein and a quantity of sodium ascorbate sufficient to reduce a controlled number of disolfide groups in the protein to sulfhydryls; and a quantity of sodium dithionite or stannous chloride sufficient to reduce the labeling radionuclide.

5,308,604

CONJUGATES FOR TUMOR LOCALIZATION AND/OR TUMOR THERAPY

Hansjörg Sinn, Wiesloch; Hans-Hermann Schrenk, Zeiskam; Wolfgang Maier-Borst, Dossenheim; Eckhard Friedrich, Ilbesheim; Georgi Graschew, Heidelberg, and Dieter Wörhle, Bremen, all of Fed. Rep. of Germany, assignors to Deutsches Krebsforschungsinstitut, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 734,123, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 509,810, Apr. 17, 1990, abandoned. This application Mar. 26, 1992, Ser. No. 859,273

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1989, 3912792

Int. Cl.[5] A61K *49/02, 43/00, 49/00*

U.S. Cl. 424—1.53 9 Claims

1. A conjugate comprising:

(a) at least one polyalcohol or a derivatized polyalcohol, wherein said polyalcohol(s) or derivatized polyalcohol(s) are not recognized by the defense system of an organism as exogenous and are sorbitol or derivatized sorbitol, with at least one OH group being replaced by ^{19}F, $C^{19}F_3$, mono- or poly-^{19}F-substituted C_1–C_4alkyl, mono-, di-, tri-, tetra or penta-^{19}F-substituted phenyl,

(b) at least one active agent,

(c) at least one linker, wherein said linker(s) are cyanuric chloride, and

(d) a protein, wherein said protein is autologous serum albumin,

said components being connected together covalently in the order (a)-(b)-(c)-(d).

5,308,605

DIAGNOSIS OF TUMORS WITH 5-RADIOIODO-2'-DEOXYURIDINE

Amin I. Kassis, Chestnut Hill, and S. James Adelstein, Waban, both of Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

Filed Aug. 27, 1992, Ser. No. 936,562

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] A61K *43/00*

U.S. Cl. 424—1.1 10 Claims

1. A method for the diagnosis of tumors in a live mammal comprising administering a diagnostic amount of a radiohalogenated pyrimidine nucleoside directly into a cavity containing a tumor affected site, and thereafter imaging the tumor affected site scintigraphically.

5,308,606

METHOD OF TREATING AND/OR DIAGNOSING SOFT TISSUE TUMORS

David A. Wilson, Richwood; R. Keith Frank; Joseph R. Garlich, both of Lake Jackson, and Jaime Simon, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 30, 1991, Ser. No. 648,663

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] A61K *43/00, 49/02*

U.S. Cl. 424—1.65 14 Claims

1. A method for the therapeutic and/or diagnostic treatment of a mammal having a non-calcific tissue tumor which comprises administering to said mammal an effective amount of a composition comprising: (1) a complex which comprises a ligand and a metal wherein the ligand is hydroxyethylethylenediaminetriacetic acid or a pharmaceutically acceptable salt thereof and wherein the metal ion is ^{153}Sm, ^{166}Ho, ^{90}Y, ^{165}Dy, ^{159}Gd, ^{177}Lu, ^{111}In, ^{115m}In, ^{175}Yb, ^{47}Sc, ^{52}Fe, ^{72}Ga, ^{67}Ga, or ^{68}Ga and the ligand to metal molar ratio is 100:1 to about 500:1, and (2) a physiologically acceptable liquid carrier.

5,308,607

COMPOSITIONS OF ALKYLBENZENES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT USING X-RAY CONTRAST

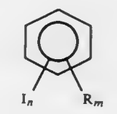
Kurt A. Josef, Clifton Park; Edward R. Bacon, East Greenbush; Kimberly G. Estep, Albany, all of N.Y.; Carl R. Illig, Phoenixville, and Brent D. Douty, Coatesville, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Feb. 4, 1993, Ser. No. 13,605

Int. Cl.[5] A61K *49/04;* C07C *45/00, 47/02*

U.S. Cl. 424—5 9 Claims

1. An orally or rectally administerable x-ray contrast composition for visualization of the gastrointestinal tract comprising a contrast agent having the formula, or a pharmaceutically acceptable salt thereof:



wherein

R is methyl, ethyl, n-propyl, C_4–C_{25} alkyl, cycloalkyl, unsaturated allyl or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy or lower-alkoxy carbonyl $(CR_1R_2)_p$—$(CR_3{=}CR_4)_m$Q, or $(CR_1R_2)_p$—C≡C—Q;

R_1, R_2, R_3 and R_4 are independently H, lower-alkyl optionally]substituted with halo;

n is 2–5;

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m is 2–5;
p is 1–10; and
Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl
in an aqueous, pharmaceutically acceptable carrier, said pharmaceutically acceptable carrier containing at least one surfactant selected from the group consisting of a zwitterionic surfactant, trimethylammonium bromide, sodium lauryl sulfate, sodium heptadecyl sulphate, alkyl benzenesulphonic acid, sodium butylnaphthalene sulfonate, sulphosuccinate, carboxylic esters, carboxylic amides, ethoxylated alkylphenols and ethoxylated aliphatic alcohols, sorbitan esters, polyoxyethylene alkyl ethers and polyoxyethylene sorbitan fatty acid esters.

5,308,608

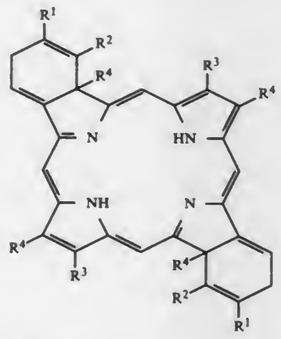
PHOTOSENSITIZING DIELS-ALDER PORPHYRIN DERIVATIVES

David Dolphin; Paul Y. Hin, and Tilak Wijesekera, all of Vancouver, Canada, assignors to University of British Columbia, Vancouver, Canada

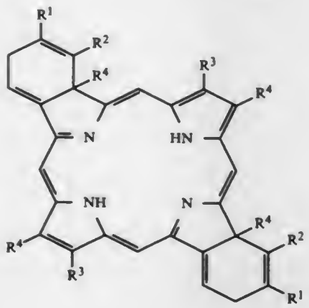
Division of Ser. No. 633,137, Feb. 28, 1991, Pat. No. 5,149,708, which is a continuation-in-part of Ser. No. 363,185, Jun. 7, 1989, abandoned. This application Sep. 4, 1992, Ser. No. 940,673
Int. Cl.[5] A61K *31/40*
U.S. Cl. 424—9 **4 Claims**

1. A method to detect, photosensitize, destroy or impair the functioning of target biological material, which comprises:
a. contacting said target with an effective amount of a composition having a light absorption maximum between 700–820 nm, and
b. irradiating said target with light that excites said composition;
wherein the composition comprises a compound selected from the group consisting of the structures 1-1 through 1-6 shown below or mixtures thereof,

1-1

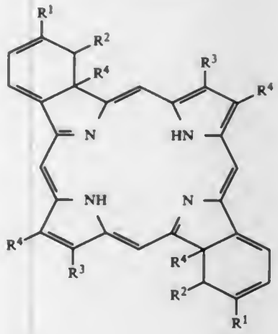


1-2

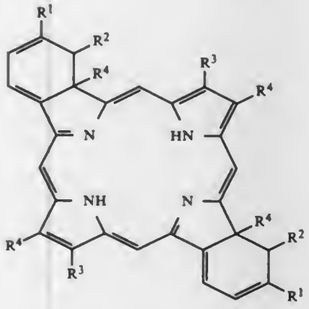


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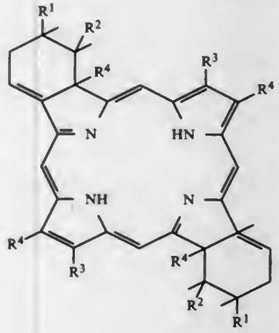
1-3



1-4

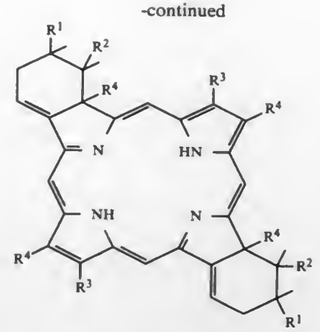


1-5



-continued

1-6



wherein at least one of R^1 and R^2 is selected from the group consisting of carbalkoxy (2-6C); aryl (6-10C); alkyl (1-6C) or aryl (6-10C) sulfonyl; cyano; and —CONR[5]CO—, wherein R^5 is aryl (6-10C) or alkyl (1-6C);
the other R^1 and R^2 is selected from the group consisting of the aforesaid substituents and H; and
each R^3 and R^4 is independently selected from the group consisting of substituted or unsubstituted alkyl (1-6C); and substituted or unsubstituted omega-carboxyalkyl (2-6C) and the esters, amides, and salts thereof.

5,308,609

PROPHYLAXIS FOR KERATINOUS MATERIALS

Robert W. Etheredge, III, 5 Oakhill Rd., Natick, Mass. 01760

Continuation-in-part of Ser. No. 832,898, Feb. 10, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 44,025
Int. Cl.[5] A61K *7/04*
U.S. Cl. 424—61 **25 Claims**

1. A prophylatic composition for permeating within keratinous body material to treat the keratinous material internally to protect and/or to restore it to a healthy state, the composition comprising effective amounts of the following ingredients:
(1) from about 10.00 to about 83.60 percent by weight of an oleophilic vehicle for permeating within the keratinous body material;
(2) from about 1.75 to about 30.00 percent by weight of reagent which when transported within the keratinous body material in the oleophilic vehicle will bond hydrophobically to the keratin in the keratinous body material, the reagent comprising at least one n-alkane compound having at least eighteen carbon atoms;
(3) from about 1.65 to about 6.70 percent by weight of long chain aliphatic compound of at least eight carbon atoms having hydrogen bonding or crosslinking sites at both ends;
(4) from about 0.00 to about 26.40 percent by weight of SD alcohol; and
(5) from about 0.00 to about 86.50 percent by weight of SD isopropanol.

5,308,610

ODOR CONTROL COMPOSITION AND METHOD OF USING SAME

Ronald W. Bowman; Robert R. Caycraft; L. C. Gramms, and E. P. Caballero, all of 5574-B Everglades St., Ventura, Calif. 93003

Filed Feb. 8, 1993, Ser. No. 14,869
Int. Cl.[5] C02F *11/00*
U.S. Cl. 424—76.5 **15 Claims**

1. A method of controlling odors from a hydrocarbon-containing sludge comprising the steps of:
mixing a benzalkonium chloride with water in an amount between 0.01 and 40% by volume of the water;
adding ethylene glycol monobutyl ether to the mixture of the benzalkonium chloride and water in an amount between 0.01 and 30% by volume of the mixture;
mixing a pH control agent to the mixture of benzalkonium chloride and water and ethylene glycol monobutyl ether, said pH control agent selected from the group consisting of: sodium hydroxide, ammonium hydroxide, and organo amine compounds; and
dispersing the mixture having the benzalkonium chloride and ethylene glycol monobutyl ether and pH control agent into the hydrocarbon-containing sludge.

5,308,611

ANTISEPTIC COMPOSITION

Cedric B. H. Thompson, Surrey, Canada, assignor to Stanley Pharmaceuticals Ltd., North Vancouver

Continuation of Ser. No. 493,191, Mar. 14, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,124
Int. Cl.[5] A61K *31/00*
U.S. Cl. 424—78.07 **20 Claims**

1. An antiseptic composition comprising a chlorhexidine cidal agent and a surfactant consisting of the alkyl phenyl macrogol ether nonoxinol 9, wherein the antiseptic composition comprises 5%–30% by weight nonoxinol 9 and 0.5%–10% by weight chlorhexidine, wherein a significant quantity of other nonionic or cationic surfactants are not present.

5,308,612

USES OF POLYSTYRENESULFONATE AND RELATED COMPOUNDS AS INHIBITORS OF TRANSACTIVATING TRANSCRIPTION FACTOR (TAT) AND AS THERAPEUTICS FOR HIV INFECTION AND AIDS

Jung J. Lee, Albany, N.Y., assignor to Blue Marble Research, Inc., Albany, N.Y.

Filed Aug. 12, 1992, Ser. No. 925,452
Int. Cl.[5] A01N *25/02;* **A61K** *31/74*
U.S. Cl. 424—78.35 **11 Claims**

1. The method of treating HIV retrovirus infected cells, comprising providing polystyrenesulfonate (PSS) to the patient and sequestering transactivating transcription factor (Tat) of human immunodeficiency virus (HIV) with said (PSS) in order to block replication of the HIV, and to block blocking viral adhesion and entry into not-yet-infected immune cells and tissues by said (HIV) virus.

5,308,613

INDIRECT APHID CONTROL WITH LOW CONCENTRATION OF EBF

Michael G. Banfield, Bend, Oreg., assignor to Consep Membranes, Inc., Bend, Oreg.

Continuation of Ser. No. 669,678, Mar. 14, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 945,841
Int. Cl.[5] A01N *27/00*
U.S. Cl. 424—84 **5 Claims**

1. A method of increasing the number of the aphid predator syrphid larvae or the aphid parasite *Lysiphlebus testaceipes* to combat aphids comprising maintaining in the vicinity of an area where said predator or parasite is present an effective amount of active ingredient comprising E-β-farnesene.

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5,308,614

METHODS FOR THE PRODUCTION OF ANTIBODIES AND INDUCTION OF IMMUNE RESPONSES TO TUMOR-ASSOCIATED GANGLIOSIDES BY IMMUNIZATION WITH GANGLIOSIDE LACTONES

Sen-Itiroh Hakomori, Mercer Island, Wash., assignor to The Biomembrane Institute, Seattle, Wash.

Continuation of Ser. No. 173,962, Mar. 28, 1988. This application Dec. 21, 1992, Ser. No. 996,509

Int. Cl.[5] A61K *31/70, 37/00, 39/00*

U.S. Cl. 424—88 5 Claims

1. A method for inducing an immune response to a tumor-associated ganglioside comprising administering to a subject a composition consisting essentially of:

(a) an immunogenically effective amount of an isolated lactone of a tumor-associated ganglioside; and

(b) a pharmaceutically acceptable carrier.

5,308,615

PROBIOTIC FOR CONTROL OF SALMONELLA

John R. DeLoach; Donald E. Corrier, both of College Station, Tex., and Arthur Hinton, Jr., Auburn, Ala., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 17, 1992, Ser. No. 822,505

Int. Cl.[5] C12N *1/20*

U.S. Cl. 424—93 C 39 Claims

1. A composition for inhibiting Salmonella colonization of fowl comprising:

(a) a culture of substantially pure Veillonella effective for fermenting lactic acid to volatile organic acids and

(b) a culture of at least two strains of anaerobic bacteria effective for fermenting carbohydrates to produce lactic acid, said strains of anaerobic bacteria effective to produce lactic acid being selected from the group consisting of *Streptococcus intermedius, Streptococcus morbillum, Enterococcus durans* and *Lactobacillus acidophilus.*

5,308,616

MUTANT STRAIN OF *BRADYRHIZOBIUM JAPONICUM*

Robert J. Maier, Ellicott City, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Aug. 6, 1990, Ser. No. 563,171

Int. Cl.[5] A01N *63/00*; C12N *1/00, 1/20*; C05F *11/08*

U.S. Cl. 424—93 D 6 Claims

1. A strain of *Bradyrhizobium japonicum* which is selected from the group consisting of *B. japonicum* ATCC 55447 and *B. japonicum* ATCC 55448, said *B. japonicum* strain has increased nitrogenase activity in the absence of Mo when compared with the wild-type parent strain and containing a single Tn5 insertion in an approximately 12–14 kb size fragment.

5,308,617

PROTEIN HEPARIN CONJUGATES

Albert P. Halluin, Danville, Calif., assignor to Halzyme Ltd., San Francisco, Calif.

Continuation-in-part of Ser. No. 363,908, May 24, 1989, Pat. No. 5,023,078. This application Jun. 10, 1991, Ser. No. 712,988

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] A61K *37/547, 31/725*; C12N *9/72, 7/64*

U.S. Cl. 424—94.64 14 Claims

1. A pharmaceutical composition comprising a non-toxic, inert, pharmaceutically acceptable carrier medium in which is dissolved a biologically active selectively conjugated fibrin-specific plasminogen activator wherein the fibrin-specific plasmogen activator is covalently conjugated via at least one of its lysine residues or amino-terminal amines to at least one heparin fragment having a terminal 2,5-anhydro-D-mannose residue through the aldehyde group of such residue, wherein the half-life of the plasminogen activator is prolonged.

5,308,618

DIETARY FIBER EXTRACTED FROM WHEAT BRAN PHARMACEUTICAL AND DIETARY COMPOSITIONS CONTAINING SAME

Tsutomu Konno, Tokyo; Kiro Asano, Inashiki, and Takuji Hosoi, Kawasaki, all of Japan, assignors to Kureha Kagaku Kogyo Kaubushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 694,205, May 3, 1991, abandoned. This application Apr. 27, 1992, Ser. No. 874,224

Claims priority, application Japan, May 15, 1990, 2-124853; Mar. 15, 1991, 3-75731

Int. Cl.[5] A61K *35/78, 31/715*; A23L *1/168*; C07H *1/06*

U.S. Cl. 424—195.1 5 Claims

1. A dietary fiber which is obtained by a process comprising the steps of:

(i) extracting, at least once, wheat bran with water at a temperature of 180° to 200° C., (ii) filtering and removing insoluble substances from the extracted solution, (iii) purifying the extracted solution by salting-out, dialysis, ultrafiltration, reverse osmosis, gel filtration or precipitation to remove substances having molecular weight not higher than 400, and (iv) freeze-drying the purified solution to obtain a solid dietary fiber, the resulting dietary fiber having the following properties:

(a) an average molecular weight of 5×10^2 to 1×10^5 measured by a GPC-Lalls method;

(b) a sugar content, determined by a color reaction of the phenol-sulfuric acid method, of 95.3 to 99.0% by weight and a protein content, determined by a color reaction of the Lowry-Folin method, of 0.1 to 3.0% by weight;

(c) contains 88.2 to 95.4 mol % glucose, 3.7 to 7.7 mol % xylose, 0.1 to 1.2 mol % galactose, 1.0 mol % or less fructose and 1.1 mol % or less arabinose;

(d) contains at least one amino acid selected from the group consisting of aspartic acid, threonine, serine, glutamic acid, proline, glycine, alanine, cysteine, valine, isoleucine, leucine, tyrosine, phenylalanine, hydroxylsine, lysine, histidine, and arginine;

(e) a molecular ratio between α-bound glucose and β-bound glucose in a glucose component of 1:40 to 1:80;

(f) a molar concentration of 1,4-glucose bond is 85 to 90% and a molar concentration of 1,3-glucose bond is 4 to 10%; and

(g) an analytical result of a sugar component thereof by the Southgate method is:

	% by weight
water soluble and hardly digestible polysaccharides	78 to 96
cellulose	1.0 to 5.7
hemicellulose	1.7 to 15
lignin	1.3 to 3.3.

5,308,619

PHARMACEUTICAL AND ITS USE FOR THE TREATMENT OF STATES OF AGITATION AND NERVOUS DYSFUNCTIONS

Werner Schneider, Koblenz; Erich F. Elstner, Gröbenzell, and Elisabeth Kleber, Oberschleissheim, all of Fed. Rep. of Germany, assignors to Steigerwald Arzneimittelwerk GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 7, 1992, Ser. No. 909,675

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1991, 4122706

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 13 Claims

1. A pharmaceutical composition comprising a combination of an extract of Corydalis and an extract of Escholtzia, wherein both extracts are obtained by alcohol extraction, wherein the ratio of active ingredients in said extracts to said extracts is 2.5:10, wherein the weight ratio of the extract of Escholtzia to the extract of Corydalis in said composition is in the range of from about 20:1 to 1:1, and wherein said composition may additionally contain a pharmaceutically acceptable carrier.

5,308,620

PROTEIN NANOMATRIXES AND METHOD OF PRODUCTION

Richard C. K. Yen, Glendora, Calif., assignor to Hemosbpere, Inc.

Continuation-in-part of Ser. No. 641,720, Jan. 15, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,560

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—484 5 Claims

1. A composition comprising stable porous and membraneless nanomatrixes for carrying medication for in vivo administration, where the nanomatrixes are typically larger than 1 micron but less than 4 microns in diameter, and stable against aggregation and re-solubilization in hypotonic 0.009% saline for at least 24 hours, the nanomatrixes consisting of hemoglobin and albumin, where the weight ratio of said hemoglobin and albumin is between approximately 57:43 and 92:8.

5,308,621

ASCORBIC ACID COMPOSITION AND TRANSDERMAL ADMINISTRATION METHOD

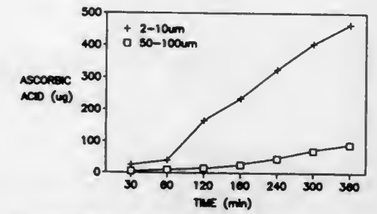
Reginald M. Taylor, Hawthorn, and David J. Wilson, Balmain, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

Filed Nov. 21, 1991, Ser. No. 795,499

Claims priority, application Australia, Feb. 18, 1991, PK4651; Aug. 19, 1991, PK7846

Int. Cl.[5] A61K *6/00*; A01N *43/08*

U.S. Cl. 424—401 7 Claims



1. A composition for use in transdermal administration of ascorbic acid to a subject; said composition comprising:

(a) a carrier of a composition effective for topical application of the composition to a subject, to achieve transdermal delivery of ascorbic acid; said carrier being selected from the group consisting essentially of: glycerol; propylene glycol; polypropylene glycol; polyethylene glycol; ethanol; isopropanol; petroleum jelly; lanolin and mixtures thereof; and,

(b) 1 to 60% by weight of ascorbic acid in suspension within the carrier; the ascorbic acid in suspension comprising:

(i) fine particles of ascorbic acid predominantly sized below 20 microns.

5,308,622

TREATMENT OF VASCULAR INJURY

Ward M. Casscells, La Jolla; Douglas A. Lappi, Del Mar, and J. Andrew Baird, San Diego, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 637,074, Jan. 3, 1991, abandoned. This application Jul. 16, 1992, Ser. No. 915,056

Int. Cl.[5] A61K *37/02*

U.S. Cl. 424—422 7 Claims

1. A method of preventing restenosis caused by smooth muscle cell proliferation in response to injury to the endothelial lining of blood vessel walls, which method comprises administering intravenously or locally an effective amount of a bFGF-saporin conjugate sufficient to prevent smooth muscle cell proliferation in the lumen of the blood vessel, while not inhibiting the regrowth of said endothelial lining.

5,308,623

RESORBABLE BONE WAX

Johann-Friedrich Fues, Greveubroich, and Wolfgang Ritter, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 385,138, Jul. 25, 1989, Pat. No. 5,143,730. This application Feb. 27, 1992, Ser. No. 842,823

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1988, 3825211

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] A61F *2/28, 2/02*

U.S. Cl. 424—426 24 Claims

1. A resorbable, body compatible viscous to solid wax for the mechanical staunching of blood on hard body tissue, comprising: at least one oligomer composition formed by the esterification of at least one acid selected from the group consisting of glycolic acid and lactic acid or such oligomers chain-terminated with at least one composition selected from the group consisting of monohydroxyl alcohols, polyhydroxyl alcohols and the corresponding carboxylic acids; and at least one body-compatible salt of an organic or an inorganic acid homogeneously distributed in the wax, the at least one oligomer composition being neutralized with a body-compatible salt forming composition.

5,308,624

OPHTHALMIC PRODUCT

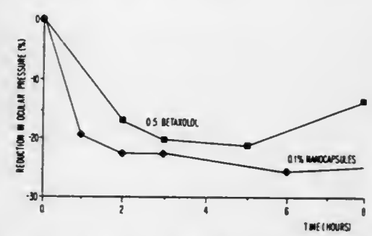
Philippe Maincent; Laurent Marchal-Heussler, both of Nancy, and Daniel Sirdat, Strasbourg, all of France, assignors to Laboratorios Cusi, S.A., El Masnou, Spain

Filed Mar. 29, 1991, Ser. No. 677,531

Claims priority, application France, Apr. 3, 1990, 90 04491

Int. Cl.[5] A61K *9/51*

U.S. Cl. 424—427 17 Claims



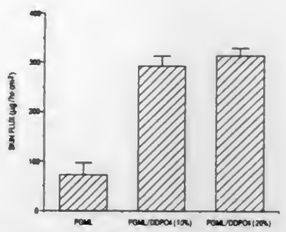
1. Composition for ophthalmic use comprising:

(a) nanocapsules comprising a vesicle comprising a lipid or oily core surrounded by a polymeric membrane said polymeric membrane comprising a polymer insoluble in water but soluble in an organic solvent, said nanocapsules releasably containing an active ingredient in nonionized form said active ingredient being dissolved within said core and assuming an ionized form when delivered to its use point; and

(b) physiologically acceptable carrier or vehicle.

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5,308,625
ENHANCEMENT OF TRANSDERMAL DRUG DELIVERY USING MONOALKYL PHOSPHATES AND OTHER ABSORPTION PROMOTERS
Ooi Wong, Fremont, and Thuytien N. Nguyen, Hayward, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.
Filed Sep. 2, 1992, Ser. No. 938,775
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—449 14 Claims



1. A transdermal drug delivery device, comprising:
a support base;
a therapeutically effective amount of a pharmaceutically active drug thereon; and
an absorption promoter in the form of a compound selected from the group consisting of monoalkyl phosphates containing 8 to 30 carbon atoms and pharmaceutically acceptable salts thereof.

5,308,626
LYMPHOKINE ACTIVATED EFFECTOR CELLS FOR ANTIBODY-DEPENDENT CELLULAR CYTOTOXICITY (ADCC) TREATMENT OF CANCER AND OTHER DISEASES
Gary R. Landucci, 216 Saybrook Ct., Costa Mesa, Calif. 92627, and Toni N. Mariani, 1924 E. River Ter., Minneapolis, Minn. 55414, assignors to Toni N. Mariani, Minneapolis, Minn. and Gary R. Landucci, Costa Mesa, Calif.
Continuation of Ser. No. 355,148, May 16, 1989, abandoned, which is a continuation of Ser. No. 50,292, Apr. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 750,091, Jun. 28, 1985, abandoned. This application Dec. 13, 1991, Ser. No. 808,958
Int. Cl.[5] A61K *45/05, 39/395, 37/66, 35/14*
U.S. Cl. 424—93 V 21 Claims

12. A process for increasing the antibody dependent cell-mediated cytotoxicity (ADCC) of leukocyte effector cells that express or have the potential to express Fc receptors for antibody comprising:
a) activating the effector cells in vitro by combining them with gamma interferon and interleukin-2, simultaneously or sequentially, or with gamma interferon alone for a sufficient period of time to increase the ADCC activity of said effector cells to at least 1.25 to 125 times that of effector cells that have not been activated; and
b) "arming" the activated effector cells in vitro with an antibody which is capable of ADCC mediation and which primarily immunoreacts with an antigen that is specific to a target cell that is susceptible to ADCC or that is present in higher densities on said target cell than on normal cells.

5,308,627
NUTRITIONAL SUPPLEMENT FOR OPTIMIZING CELLULAR HEALTH
Anthony J. Umbdenstock, Jr., 1081 Whitebridge La., Hanover Park, Ill. 60103-2671
Continnation of Ser. No. 564,131, Aug. 7, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,821
Int. Cl.[5] A61K *33/32, 35/78, 33/14, 33/06, 31/555, 31/595, 31/355, 31/34, 31/195, 31/07*
U.S. Cl. 424—639 1 Claim

1. A method of orally administering a nutritional supplement for utilization by cells to bring about health in a host in a recovering addict in an addicted state for controlling addictions selected from the group consisting of marijuana, cocaine, heroin, tobacco, sugar, coffee and colas and to reestablish normal cellular biochemistry comprising oral administration of the following nutrients on a daily basis for at least thirty days:
About 1500 IU to about 4500 IU Vitamin A
About 1500 IU to about 15000 IU Beta-carotene
About 1500 IU to about 300 IU Vitamin D
About 10 mg to about 30 mg Vitamin E
About 33 mg to about 100 mg Vitamin B1
About 10 mg to about 30 mg Vitamin B2
About 50 mg to about 150 mg Vitamin B6
About 30 mcg to about 90 mcg Vitamin B12
About 200 mcg to about 600 mcg Folic Acid
About 100 mcg to about 300 mcg Biotin
About 20 mg to about 60 mg Niacin
About 100 mg to about 300 mg Niacinamide
About 50 mg to about 150 mg Pantothenic Acid
About 200 mg to about 600 mg Vitamin C
About 70 mg to about 210 mg Choline
About 100 mg to about 300 mg Inositol
About 70 mg to about 210 mg Glutamic Acid
About 50 mg to about 150 mg L-Glutamine
About 50 mg to about 150 mg Magnesium
About 10 mg to about 30 mg Zinc
About 5 mg to about 15 mg Manganese
About 20 mcg to about 60 mcg Chromium
About 50 mg to about 150 mg Valerian Root.

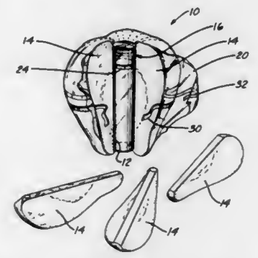
5,308,628
METHOD OF PREPARING A FROZEN DAIRY DESSERTS
Cor J. Schol, and Martinus M. G. M. van der Houven, both of Veghel, Netherlands, assignors to Campina Melkune, B.V., 's-Hertogenbosch, Netherlands
Continuation of Ser. No. 641,853, Jan. 16, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 924,403
Claims priority, application Netherlands, Jan. 16, 1990, 9000101
Int. Cl.[5] A23C *9/12*
U.S. Cl. 426—34 19 Claims

1. A method of preparing thickener-free consumption ice or frozen dairy dessert from a mixture of fermented milk constituents, including whey protein-rich products, sugars, and optionally emulsifying agents, flavoring material and other conventional components by mixing the ingredients and freezing the mixture under aeration in a conventional manner, which comprises starting from a mixture of milk constituents in which the ratio of whey proteins to casein proteins is at least 50:50, fermenting said mixture to a pH between pH 4.3 and pH 5.5 and, after mixing all ingredients, aerating the mix in said pH range and freezing it to form the frozen dairy dessert with an overrun of at least 80% by volume and wherein the mix is pasteurized before freezing and after fermentation.

5,308,629
METHOD AND PLANT FOR IMPROVING KEEPING QUALITIES OF FOOD PRODUCTS
Tommy Norén, Veberöd, Sweden, assignor to Alfa-Laval Food Engineering AB, Lund, Sweden
PCT No. PCT/SE91/00069, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO91/11894, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 3, 1991, Ser. No. 910,134
Claims priority, application Sweden, Jan. 31, 1990, 9000324; Jan. 23, 1991, 9100201
Int. Cl.[5] A23L *3/01;* B65B *55/08;* H05B *6/78*
U.S. Cl. 426—234 12 Claims

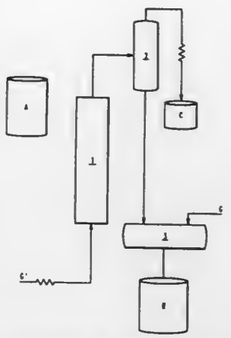
1. A method for improving the keeping quality of a food product which comprises packing the product in a plurality of packages formed of a material transparent to microwaves, providing a heat treatment zone having means for moving said packages along a path through said zone, said zone having a hollow elongated wave guide with a long axis transverse to said path, propagating microwaves in said wave guide in the direction of said long axis and moving said food packages through the microwaves in a direction transverse to the direction of propagation of said microwaves, each of said packages being passed in its entirety through said microwaves.

5,308,630
METHOD FOR PRESERVING SLICED, CORED FRUIT WITH COMPLEMENTARY FOOD CENTER
James D. Nordahl, 11035 Mt. Vista Cir. NW., Silverdale, Wash. 98383
Filed Jul. 26, 1991, Ser. No. 736,704
Int. Cl.[5] B65B *25/02;* A23B *7/00*
U.S. Cl. 426—270 9 Claims



1. A method for packaging and preserving a segmented whole fruit together with a complementary food, comprising the steps of:
(a) coring a whole fresh, juice-containing fruit to define a central passage, and radially slicing the fruit into a plurality of radial segments;
(b) assembling the fruit segments in the shape of the whole fruit around a moisture impermeable inner container containing a complementary food to be consumed with said fruit segments, wherein the inner container has approximately the same outer dimensions as the inner dimensions of the central passage within the fruit, so that the inner container substantially fills and excludes air from the central passage; and
(c) sealing the assembled fruit segments and the inner container within an outer container.

5,308,631
PROCESS OF MAKING ALCOHOL-FREE BEER AND BEER AROMA CONCENTRATES
Didier Anglerot, Lons, France, assignor to Ceca, S.A., France
Filed Oct. 16, 1991, Ser. No. 777,087
Claims priority, application France, Oct. 26, 1990, 90 13307
Int. Cl.[5] C12C *9/00*
U.S. Cl. 426—422 10 Claims



1. A process for obtaining alcohol-free beer from a naturally alcoholic beer, consisting of:
(a) bringing into contact an alcoholic beer with a solid adsorbent consisting of a hydrophobic zeolite to form an aqueous eluent phase and products adsorbed on said adsorbent;
(b) separating the aqueous eluent phase from the adsorbent;
(c) thermally desorbing said adsorbed products to form a desorbed phase;
(d) recovering the desorbed phase;
(e) separating the desorbed phase into an alcoholic phase and an aromatic aqueous phase; and
(f) reconstituting an alcohol-free beer by mixing the aqueous phases recovered at the end of (b) and (e).

5,308,632
SHELF-STABLE RICE PRODUCTS
John G. Howard; John Atherton; Eric S. Field, and Michael J. Hawkins, all of King's Lynn, United Kingdom, assignors to Mars Incorporated, McLean, Va.
Division of Ser. No. 678,984, Jun. 5, 1991. This application Aug. 10, 1992, Ser. No. 927,216
Claims priority, application United Kingdom, Sep. 1, 1989, 8919820
Int. Cl.[5] A23B *4/12*
U.S. Cl. 426—460 10 Claims

1. Acid-pasteurized rice, wherein the acidifying agent is a polymeric food acceptable acid, the pH of the rice is below 4.5, the rice is shelf-stable and the rice substantially lacks acid flavor notes.

5,308,633
METHOD FOR FORMING DOUGH SHEETS WITH LATTICE-WORK APPEARANCE
Thomas J. Gardner, State Rte. 41 and Lenox Rd., Richmond, Mass. 01254
Division of Ser. No. 923,262, Jul. 31, 1992, Pat. No. 5,244,374. This application May 12, 1993, Ser. No. 61,154
Int. Cl.[5] A21D *6/00;* A23P *1/00*
U.S. Cl. 426—503 4 Claims

1. A method of treating a sheet of pastry dough to cause it to have a woven, lattice-work appearance comprising the steps of:

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a) providing a sheet of pastry dough of relatively uniform thickness;

b) cutting a plurality of polygonal openings through the sheet in a predetermined pattern with sides of each opening being aligned with sides of adjacent openings to produce aligned rows of openings; and,



c) deforming the sheet in the portions remaining between the openings by depressing grooves aligned with sides of the openings into the sheet to make it appear that the sheet is comprised of overlapping dough strips.

5,308,634

ESTERIFIED POLYOXYALKYLENE BLOCK COPOLYMERS AS REDUCED CALORIE FAT SUBSTITUTES

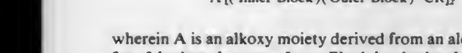
Charles F. Cooper, Paoli, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del.

Continuation of Ser. No. 597,908, Oct. 15, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,016

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—531 **17 Claims**

1. A food composition comprised of an edible oil component with reduced caloric availability and a food ingredient selected from carbohydrates, proteins, and vitamins, wherein the edible oil component comprises an amount of an esterified polyoxyalkylene block copolymer effective to reduce the caloric content of the food composition, the esterified polyoxyalkylene block copolymer having the structural formula:



wherein A is an alkoxy moiety derived from an alcohol having 2 or 3 hydroxyl groups, Inner Block is a hydrophilic polyoxyalkylene inner block comprised of oxyalkylene repeating units wherein at least 75 mole percent of said oxyalkylene repeating units are oxyethylene repeating units, Outer Block is a lipophilic polyoxylkylene outer block comprised of oxyalkylene repeating units derived from one or more C_3–C_{10} epoxides and not more than 25 mole percent oxyethylene repeating units and having an ester linkage to



which has an in vitro lipase hydrolysis rate value using porcine pancreatic lipase which is less than about 30% of the value of an olive oil standard, R is a $c_7$14 C_{23} hydrocarbon moiety, and Z corresponds to the number of hydroxyl groups on the alcohol.

5,308,635

GLU-D1 WHEAT FLOUR BLENDS

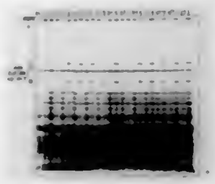
Peter I. Payne, and Julie A. Seekings, both of Cambridge, United Kingdom, assignors to Unilever Patent Holdings

Filed Jun. 11, 1992, Ser. No. 897,652

Claims priority, application United Kingdom, Jun. 11, 1991, 9112556

Int. Cl.[5] A01H *1/02, 5/00;* A21D *2/00, 13/06*

U.S. Cl. 426—549 **8 Claims**



1. A flour blend comprising a flour which has undesirably high viscoelastic properties and Glu-D1 double null wheat in an amount sufficient to lower the viscoelastic properties of dough made from the flour blend.

5,308,636

THICKENED AND GELLED SYSTEMS BASED ON STARCH AND GLUCOMANNAN

Richard J. Tye, Ramona, Calif.; Charles W. Bullens, Thomaston, and Marylou G. Llanto, Rockland, both of Mass., assignors to FMC Corporation, Philadelphia, Pa.

PCT No. PCT/US90/03178, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO90/15544, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 5, 1990, Ser. No. 778,862

Int. Cl.[5] A23L *1/0522, 1/05*

U.S. Cl. 426—573 **9 Claims**

1. A composition comprising a dry mixture of a linear starch and konjac in weight ratios of 8.5–9.5:1 of starch to konjac thereby providing a synergistic increase in viscosity when an aqueous dispersion of the mixture is heated to a temperature of 55° C. to 95° C.

5,308,637

METHOD FOR PROCESSING FAT-CONTAINING FOOD SAUCE

Theo D. Richards, Fullerton, Calif.; Susan Keegan, Glenview; Celso O. Bejarano-Wallens, Vernon Hills, both of Ill., and Edward J. Kelley, Jr., Marietta, Ga., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Jul. 2, 1992, Ser. No. 907,828

Int. Cl.[5] A23L *1/39*

U.S. Cl. 426—589 **14 Claims**

1. An improved method for preparing a fat-containing sauce for packaging, said sauce comprising an aqueous liquid and a fat component which solidifies at 60° F. or above, the process comprising: preparing a fat phase mixture comprising at least a portion of the fat component, as melted fat, and an emulsifier; incorporating aqueous liquid into said fat phase mixture; adding to the resulting mixture of aqueous liquid and fat phase mixture, a hydrophilic colloid premixed in a liquid vegetable oil, in amounts effective to reduce the tendency toward fat solidification on equipment surfaces at 55° F.; by heating the resulting mixture of ingredients with agitation to a temperature and for a time period effective to obtain a sauce with a uniform consistency and reduce the count of microbiological organisms to a predetermined level; and, thereafter, cooling the sauce to a temperature below 55° F.

5,308,638

PROCESS FOR PRODUCING A MALT BEVERAGE HAVING IMPROVED CARBONATION-RETAINING PROPERTIES AND PRODUCT PRODUCED THEREFROM

Joseph L. Owades, 2164 Hyde St., San Francisco, Calif. 94109

Filed Sep. 3, 1992, Ser. No. 939,994

Int. Cl.[5] A23L *1/185*

U.S. Cl. 426—592 **28 Claims**

1. A method of improving the CO_2 retaining properties of a malt-based beverage which comprises adding to the malt-based beverage prior to packaging about 0.1 to about 6.0 grams of a mint factor per barrel of beverage, wherein said mint factor is selected from the group consisting of at least one essential oil of the mint family, at least one volatile compound of the mint family, and mixtures thereof.

5,308,639

LOW CALORIE FAT SUBSTITUTE

Fu-Ning Fung, New London, Conn., assignor to Pfizer Inc, New York, N.Y.

Continuation of Ser. No. 475,576, Feb. 5, 1990, Pat. No. 5,082,684. This application Jan. 17, 1992, Ser. No. 823,800

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—602 **13 Claims**

1. A foodstuff having at least a portion of the normally present triglyceride replaced by a two-phase emulsion, said two-phase emulsion comprising:

(a) from about 1 to about 95 percent of an aqueous phase rendered non-flowable by the addition of a suitable amount of a gel-forming composition, and

(b) from about 5 to about 99 percent of an oil phase comprising an emulsifier and an edible oil selected from the group consisting of animal oils, vegetable oils and partially hydrogenated vegetable oils wherein the interaction between said non-flowable aqueous phase and said oil phase results in said two-phase emulsion being pourable.

5,308,640

LOW GREASINESS FRENCH FRIES AND METHODS FOR PREPARING SAME

John H. Baer, Cincinnati; Stephen P. Zimmerman, Wyoming, both of Ohio, and Robert A. Farrell, Covington, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 28, 1992, Ser. No. 936,978

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] A23L *1/29, 1/217*

U.S. Cl. 426—611 **22 Claims**

1. A high moisture, cooked food product of reduced greasiness, which product comprises an edible substrate and from about 3 to about 25% of a reduced calorie fat composition, at least a portion of which fat composition is coated on the surface of said food product; wherein

A) said reduced calorie fat composition comprises:

i) from about 10 to 100% of a nondigestible fat component comprising:

(a) a liquid nondigestible oil having a complete melting point below about 37° C.; and

(b) a nondigestible solid polyol fatty acid polyester which has a complete melting point above about 37° C. and which is present in an amount sufficient to control passive oil loss;

said nondigestible fat component having a Solid Fat Content profile slope between 70° F. and 98.6° F. of from 0 to about −0.75% solids/°F.; and

ii) from 0 to about 90% of a triglyceride fat or oil; and

B) said reduced calorie fat composition is formulated to have a fluid viscosity of from about 12 to about 105 centipoise at 60° C.

5,308,641

BIOCOMPATIBILITY OF SOLID SURFACES

Patrick T. Cahalan, Schepersgats; Michel Verhoeven, Maastricht; Marc Hendriks, Brunssum, and Linda Cahalan, Schepersgats, all of Netherlands, assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 19, 1993, Ser. No. 6,218

Int. Cl.[5] A61F *2/54*

U.S. Cl. 427—2 **19 Claims**

1. A method for making a spacer tor attaching a biomolecule to a solid surface comprising the steps of:

(a) aminating the solid surface by grafting acrylamide onto the solid surface;

(b) covalently bonding a polyalkylimine to the aminated surface; and

(c) applying a crosslinking agent which is at least difunctional in aldehyde groups to the covalently bonded polyalkylimine.

5,308,642

PROCESS FOR THE PRODUCTION OF STIFFENING MATERIALS CONTAINING HYDRAULIC BINDERS, IN PARTICULAR PLASTER BANDAGES

Wulf von Bonin, Odenthal, and Ulrich von Gizycki, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 788,628, Nov. 6, 1991, abandoned. This application May 26, 1993, Ser. No. 69,642

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1990, 4036200

Int. Cl.[5] A01N *1/02*

U.S. Cl. 427—2 **3 Claims**

1. A process for the production of stiffening materials containing hydraulic binders, in which:

a hydraulic binder is mixed in pulverulent form with a reactive binder, said reactive binder being a combination of one or more polyols and one or more polyisocyanates;

this mixture is applied to a flexible substrate; and

the reactive binder is then reacted to bind the hydraulic binder, in an unreacted state, to the flexible substrate whereby, when subsequently exposed to water, the water can penetrate the reacted binder to react and wet the hydraulic bind, and can cause the hydraulic binder to set and form a stiff material.

5,308,643

SELF-LATHER GENERATING SHAVING COMPOSITIONS

Lloyd I. Osipow, 9875 Harbour Lake Cir., Boynton Beach, Fla. 33437; Dorothea C. Marra, 107 Fernwood Rd., Summit, N.J. 07901, and J. George Spitzer, 184 Bradley Pl., Palm Beach, Fla. 33480

Filed Nov. 30, 1992, Ser. No. 983,179

Int. Cl.[5] A61K *7/15*

U.S. Cl. 424—73 **5 Claims**

1. A shaving composition boiling above about 50° C. that rapidly generates a stable lather when rubbed on the skin consisting of:

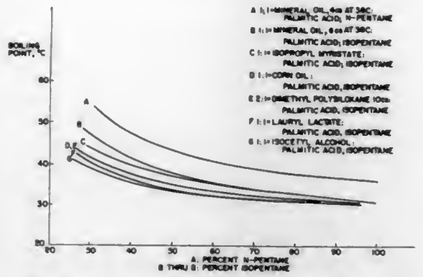
a) from about 85 to 96% by weight of an aqueous soap solution of a soap selected from the group consisting of triethanolamine soaps and diethanolamine soaps, said soap solution containing about 14 to about 20% by weight based on the total weight of the composition of fatty acids, where from about 50 to 85% of the fatty acids have been neutralized to form said soaps, and at least about 50% of the fatty acids are palmitic and/or stearic acid and the remainder are primarily lauric and/or myristic acid,

b) from about 2 to 8% by weight of a volatile organic liquid selected from the group consisting of isopentane, n-pentane and mixtures of the two,

c) from about 1 to 10% by weight of a nonvolatile, water insoluble organic liquid, and where (a) plus (b) plus (c)

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equal 100% by weight of the composition, and the boiling point of the volatile organic liquid is increased to above about 50° C., the increase being due in substantial part to



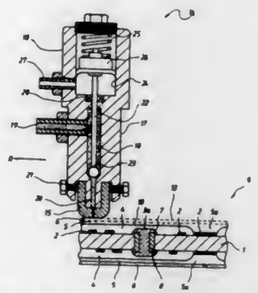
the aqueous soap solution, as well as to the presence of free fatty acids and nonvolatile organic liquid in the same liquid phase as the volatile organic liquid.

5,308,644

METHOD FOR MANUFACTURING A PRINTED WIRING BOARD HAVING A SHIELD LAYER

Shin Kawakami; Satoshi Haruyama, and Hirotaka Okonogi, all of Iruma, Japan, assignors to Nippon CMK Corp., Japan

Filed Aug. 2, 1991, Ser. No. 739,708
Claims priority, application Japan, Aug. 13, 1990, 2-214077
Int. Cl.[5] C23C *26/00*
U.S. Cl. 427—96 **1 Claim**



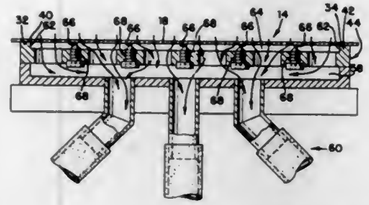
1. In a method for manufacturing a printed wiring board having a printed wiring circuit provided on one or both sides of an insulating board and a shield layer provided on the printed wiring circuit through an insulating layer, the steps of: forming a shield layer and an earth circuit by injecting a shield coating material under pressure on said insulating layer through a mask from a nozzle; and removing excess shield coating material from the printed wiring board by a squeegee attached to the nozzle.

5,308,645

METHOD AND APPARATUS FOR THROUGH HOLE SUBSTRATE PRINTING

Joseph M. Zachman; Donald E. Eagle, both of Greentown; Sherri L. Bernhard, Noblesville; Michael G. Coady, and Jeffery P. Somers, both of Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 7, 1992, Ser. No. 925,839
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—97 **16 Claims**



1. A combination comprising a non-conductive substrate and an apparatus for applying conductive material to the non-conductive substrate having first and second opposed surfaces, perimeter portions, and an interior portion having through holes extending between the first and second surfaces, and wherein the apparatus comprising:

a support for supporting a first perimeter portion of the substrate;

a printing nest plate having plurality of pointed pins constructed and arranged to support said substrate in a substantially flat and horizontal position during printing on the substrate; an applicator for applying conductive material to the substrate; and a vacuum device for drawing a vacuum through said substrate through holes.

5,308,646

METHOD OF SIMULATING NATURAL DESERT VARNISH

Carleton B. Moore, Tempe, Ariz., assignor to Arizona Board of Regents, Tempe, Ariz.

Filed Aug. 23, 1990, Ser. No. 572,194
Int. Cl.[5] B05D *1/02*; C09C *1/22*
U.S. Cl. 427—136 **10 Claims**

1. A method of simulating natural desert varnish comprising preparing a solution containing metallic ions selected from the group consisting of iron (II) and manganese (II), having a molarity from about 0.01 to 2, and acetate ions; applying said solution to a selected rock surface upon which it is desired to form an artificial coloration; and allowing said solution to dry and oxidize to form said coloration.

5,308,647

LIQUID SPRAY MASKING COMPOSITION AND METHOD

Larry R. Lappi, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 13, 1992, Ser. No. 959,563
Int. Cl.[5] B05D *1/32*
U.S. Cl. 427—154 **26 Claims**

19. A method of masking a painted surface, comprising: applying a masking composition to said surface, and then drying said surface at a temperature at or above room temperature, wherein said masking composition comprises an amount of an oligomeric polyglycerol material effective to retard swelling, blistering and spotting in said surface according to the formula:

$$H-[(OCH_2CHOHCH_2)_m(OCH(CH_2OH)CH_2)_m]-OH$$

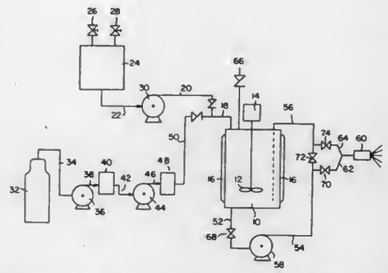
wherein m and n are each integers between 0 and 30, inclusive, provided that m + n is greater than or equal to 2.

5,308,648

SPRAY APPLICATION OF PLASTICS ADDITIVES TO POLYMERS

William D. Prince, Charleston; George E. Keller, II, S. Charleston, both of W. Va.; William A. Fraser, Mahopac, and Pak S. Leung, Highland Mills, both of N.Y., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Sep. 30, 1992, Ser. No. 954,391
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—212 **7 Claims**



1. A process for applying a polymer additive material to a polymeric substrate, comprising the following steps:

A) forming in a closed pressurized system a mixture comprising:

1) at least one polymer additive material which is a solid under standard conditions of temperature and pressure;

2) at least one liquid carrier material capable of dissolving, suspending, or dispersing said polymer additive material;

3) at least one viscosity reducing material which is:

i) a liquid under the pressure of said closed pressurized system,

ii) at least partially soluble in said liquid carrier material,

iii) present in said mixture in an amount which is effective to cause said mixture to have a viscosity which renders it sprayable, and

iv) volatile under standard conditions of temperature and pressure, and

B) spraying said mixture onto a polymeric substrate.

5,308,649

METHODS FOR EXTERNALLY TREATING A CONTAINER WITH APPLICATION OF INTERNAL BIAS GAS

Robert J. Babacz, Bethlehem, Pa., assignor to Polar Materials, Inc., North Martins Creek, Pa.

Filed Jun. 26, 1992, Ser. No. 904,974
Int. Cl.[5] B05D *7/22, 3/14*; C23C *16/02*
U.S. Cl. 427—562 **19 Claims**

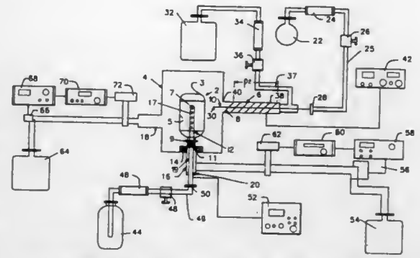
1. A method of treating a hollow article comprising the steps of:

(a) providing a first gas on the inside of said article so that said first gas substantially fills said article;

(b) providing a second gas including electrically charged species on the outside of said article while maintaining said second gas separate from said first gas;

(c) placing said first gas in an electrically conducting state and maintaining said first gas in an electrically conductive state; and

(d) applying a first electrical potential to a first electrode in contact with said first gas so that said first potential is applied at the interior surfaces of said article and said



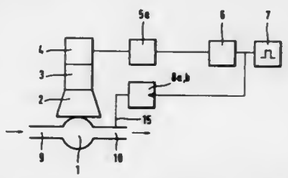
electrically charged species in said second gas interact with the exterior surfaces of said article under the influence of said potential.

5,308,650

PROCESS AND APPARATUS FOR THE IGNITION OF CVD PLASMAS

Harald Krummel, Mainz; Ewald Mörsen, Ingelheim; Volker Paquet, Mainz-Finthen; Helge Vogt, and Günther Weidmann, both of Armsheim, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jul. 6, 1992, Ser. No. 909,366
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122452
Int. Cl.[5] C23C *14/24*
U.S. Cl. 427—570 **14 Claims**



1. A process for the ignition of CVD plasmas in a reaction chamber having gas inlet and gas outlet sides for the cladding of substrates wherein reaction gas is passed through the reaction chamber, the plasma being stimulated therein, after ignition, by means of microwave pulses being maintained for a predetermined time span, wherein the plasma is ignited on the gas outlet side of the reaction chamber by means of a high voltage pulse.

5,308,651

PHOTOCHEMICAL VAPOR DEPOSITION PROCESS

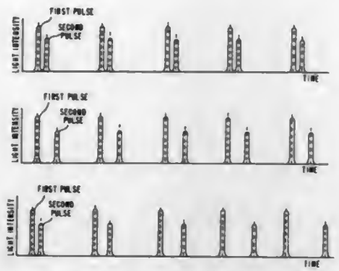
Tomohiro Ohta; Hiroaki Sasaki; Tohru Mitomo, and Naoki Kubota, all of Chiba, Japan, assignors to Kawasaki Steel Corp., Japan

Continuation of Ser. No. 665,598, Mar. 6, 1991, abandoned, which is a continuation of Ser. No. 204,552, Apr. 19, 1988, abandoned. This application Nov. 6, 1992, Ser. No. 973,058
Claims priority, application Japan, Dec. 25, 1986, 61-308049; Aug. 12, 1987, 62-199984; Aug. 12, 1987, 62-199985
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—582 **2 Claims**

1. A photochemical vapor deposition process using a plurality of pulsed laser beams having at least one wavelength, at least one of which wavelength is a wavelength that decomposes a source gas comprising:

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(a) introducing the source gas containing a component of a film to be formed on a substrate into a reaction vessel;
(b) introducing said substrate into said reaction vessel;
(c) irradiating said source gas in parallel to a surface of said substrate with pulses of a first laser beam to decompose said gas to produce radicals;
(d) irradiating said radicals in parallel to the surface of said substrate with pulses of at least one other laser beam; and



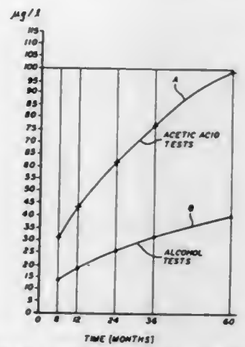
(e) forming the film by depositing the irradiated radicals of step (d);
wherein the plurality of pulsed laser beams have the same pulse interval, and a delaying time of a pulse of said at least one other laser beam from a corresponding pulse of said first laser beam is from 20 ns to 1 ms during which a successive reaction of said radicals produced by the irradiation with said pulse of said first leaser beam proceeds.

5,308,652

PROCESS FOR TREATING LEAD GLASS TO FORM A LEAD DIFFUSION BARRIER IN THE SURFACE THEREOF

Gérard Cornier, Sainte Marguerite, France, assignor to Compagnie Des Cristalleries de Baccarat, Baccarat, France

Continuation-in-part of Ser. No. 775,202, Oct. 11, 1991, Pat. No. 5,232,753, which is a division of Ser. No. 696,016, May 6, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,639
Claims priority, application European Pat. Off., May 23, 1990, 90440046.2
Int. Cl.[5] C03C *3/15*; B05D *3/02*
U.S. Cl. 427—600 **15 Claims**



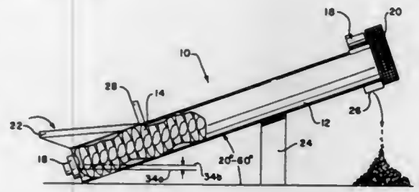
1. A process for treating the surface of an article made of a lead containing glass, comprising the step of forming a silico-aluminous layer in at least one surface of said article, wherein said silico-aluminous layer reduces, in comparison to said glass without said layer, migration of lead ions from said glass into a liquid placed in contact with said surface having said silico-aluminous layer, said liquid being capable of solubilizing lead from said glass, wherein the step of forming said silico-aluminous layer comprises the steps of:
(a) applying to at least one surface of said article a thixotropic slip capable of exchanging lead ions in said glass with ions other than lead in said slip; and
(b) heating said article with said slip thereon to a temperature and for a period of time sufficient to exchange at least a portion of said lead ions in said glass with ions other than lead in said slip.

5,308,653

METHOD FOR COLORING WOOD CHIPS USING A SCREW CONVEYOR

Greg Rondy, Barberton, Ohio, assignor to Kurtz Bros., Inc., Cuyahoga Hts., Ohio

Continuation-in-part of Ser. No. 749,141, Aug. 23, 1991, Pat. No. 5,192,587. This application Dec. 29, 1992, Ser. No. 997,891
Int. Cl.[5] B05D *7/06*
U.S. Cl. 427—212 **12 Claims**



1. A method of preparing a colored wood product, useful as mulch, comprising:
a) feeding comminuted wood into a screw conveyor having a first end and a second end, said screw conveyor further having a helical auger disposed axially and in a close fitting relation to the internal surface within a generally closed channel with a feed port near said first end and a discharge port near said second end, said helical auger capable of being rotated by a drive means, wherein the comminuted wood is fed through the feed port into said first end of said conveyor;
b) contacting said comminuted wood with an aqueous color-imparting solution containing at least one color-imparting agent therein for sufficient time to disperse said color-imparting solution upon the surfaces of said comminuted wood to create a colored wood product, said contact occurring at least at said feed port through a feed port nozzle means substantially traversing said feed port and providing a gravity feed sheet of said color imparting solution from a longitudinal slot formed therein:
c) rotating the auger so that said colored wood product is drawn from said first end toward said second end, during which process any excess said color-imparting solution drains away from said colored wood product, effectively drying said colored wood product into a moist colored wood product; and
d) discharging said moist colored wood product from said screw conveyor via said discharge chute and further drying said moist colored wood product, if necessary.

5,308,654

METHOD FOR LUBRICATING STEEL TUBING PRIOR TO COLD DRAWING

Yoshio Nagae, Osaka; Koji Kaburagi, and Koji Hetsugi, Kanagawa, all of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US91/03737, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992
PCT Filed May 29, 1991, Ser. No. 952,746
Claims priority, application Japan, May 30, 1990, 2-138590
Int. Cl.[5] B05D *7/22*
U.S. Cl. 427—239 **16 Claims**

1. A method for the lubrication treatment of carbon steel tubing prior to cold drawing, said method comprising steps of:
(A) contacting the exterior and interior surface of the tubing with a colloidal titanium containing liquid composition which has a pH in the range from 8 to 11 and which contains from 0.001 to 0.5 g/l, measured as titanium, of a colloidal titanium containing material formed as the product of reaction in aqueous solution of a water soluble titanium containing compound and a water soluble alkaline phosphate;
(B) thereafter drying the tubing; and
(C) subsequently applying to the thus treated exterior and interior surface of the dried tubing a liquid lubricating composition that has a viscosity at 20° C. in the range from 100 to 3,000 centipoises and that consists of:
(i) from 40 to 95% by weight of a first component selected from the group consisting of olefin/oil or olefin/fat compounds which contain from 23 to 30% by weight of sulfur and olefin/ester compounds which have 12–22 C atoms in the acid or alcohol residue and which contain from 23 to 30% by weight of sulfur, including mixtures of two or more chemical species meeting this description; and
(ii) from 5 to 50% by weight of a second component selected from the group consisting of oil soluble polymer compounds, fats and oils, synthetic oils, mineral oils, C_{12}–C_{22} fatty acids, and the amine salts of C_{12}–C_{22} fatty acids; and, optionally,
(iii) a phosporus containing extreme pressure additive component;
(iv) dispersed solid lubricant; and
(v) surfactants.

5,308,655

PROCESSING FOR FORMING LOW RESISTIVITY TITANIUM NITRIDE FILMS

Eric C. Eichman; Bruce A. Sommer, both of Phoenix, and Michael J. Churley, Tempe, all of Ariz., assignors to Materials Research Corporation, Orangeburg, N.Y.

Continuation-in-part of Ser. No. 746,667, Aug. 16, 1991. This application Feb. 10, 1992, Ser. No. 833,023
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] C23C *16/34*; B05D *3/04*
U.S. Cl. 427—248.1 **4 Claims**

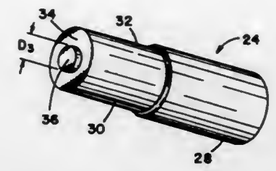
1. A process for forming low resistivity titanium nitride films on a silicon substrate by chemical vapor deposition, said process comprising in combination the steps of:
a. placing the silicon substrate in a reaction chamber;
b. heating the silicon substrate within the reaction chamber; and
c. passing NH_3 gas over the heated silicon substrate following deposition of the titanium nitride film to react with residual chlorine retained by the deposited titanium nitride film, thereby lowering the chlorine content of the film and reducing the film sheet resistivity;
wherein steps a., b. and c. occur in the same process chamber without removal of the substrate therefrom between the steps.

5,308,656

ELECTROFORMED MASK AND USE THEREFORE

David J. Emmons, Richfield, and Douglass H. Atwill, II, Eden Prairie, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Jul. 16, 1991, Ser. No. 730,734
Int. Cl.[5] B05D *1/32*
U.S. Cl. 427—282 **8 Claims**



1. A method of applying a fiber coating to a fiber end retained in a holder where said holder has a holder external geometry and where said fiber end is exposed at a location on said holder external geometry; said method comprising the steps of:
forming a master mold having a master external geometry substantially identical to said holder external geometry, said master mold being formed of a master material removable through a chemical process;
forming a mask on said master mold, with the mask in the form of a mask coating of a mask material having a hole formed in said mask material at said location, said mask formed of a mask material not removable by said chemical process;
removing said master mold from said mask by applying said chemical process to said master mold and said mask to remove the said master material while leaving said mask material;
placing said mask on said holder, with said hole exposing said fiber end;
applying said fiber coating through said hole and onto said fiber end; and
removing said mask from said holder.

5,308,657

PROTECTION OF FURNITURE EDGING

Peter H. Markusch, McMurray; Hans-Joachim Kogelnik, Pittsburgh; Jeffrey F. Dormish, Pittsburgh, and Norbert Adam, Pittsburgh, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

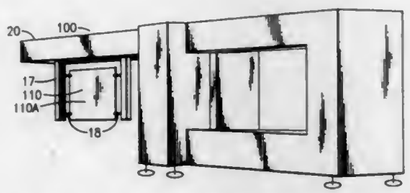
Filed Sep. 11, 1991, Ser. No. 757,779
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—284 **6 Claims**

1. A process for protecting the edges of a panel wherein said panel consists of wood or wood by-products, said process comprising:
a) applying a non-sagging polyurethane composition to the edges of said panel,
b) shaping said composition to the desired final shape or form, and
c) allowing said composition to cure,
wherein said non-sagging polyurethane composition is prepared by mixing:
1) a liquid polymethylene poly(phenyl isocyanate) having an isocyanate group content of from about 15 to 32% by weight and a viscosity of less than 15,000 mPa.s at 25° C, with
2) a liquid isocyanate reactive mixture comprising:
i) from 40 to 95 parts by weight of one or more hydroxyl group containing compounds containing from 2 to 8 hydroxyl groups and having a molecular weight of from about 450 to about 6000,
ii) from 1 to 10 parts by weight of one or more organic di- or polyamines,

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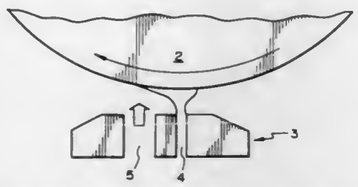
iii) from 0 to 50 parts by weight of one or more low molecular weight diols or triols having hydroxyl equivalent weights of about 100 or less,
and
iv) from 0 to 2.0 parts by weight of water,
wherein said parts by weight total 100, and wherein the amount of component 1) and component 2) are such that the equivalent ratio of isocyanate groups to hydroxyl and amine groups is from 0.8:1 to 2:1.

5,308,658
PROCESS AND APPARATUS FOR EFFICIENT SPRAY COATING
Gilbert V. Morris, Amherst, N.H., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Feb. 3, 1993, Ser. No. 13,058
Int. Cl.[5] B05D *1/02;* B05B *7/06*
U.S. Cl. 427—421 **12 Claims**



1. A process for spray coating the surface of a workpiece having at least one surface, said process comprising:
a. conveying said workpiece in a travel path past a plurality of linearly configured spraying means; and
b. directing a spray of liquid material from said plurality of linearly configured spraying means onto said surface, said spraying means being displaced from said surface by a distance D and being adapted to produce substantially identical elliptically-shaped spray patterns, each said elliptically-shaped pattern having a major axis height h, said patterns overlapping each other with an overlap factor F within a range of between 30 and 50 percent of said major axis height, and wherein said spray means is spaced from one another a spacing distance S which substantially satisfies a first relationship, $S=(1-F)/h$.

5,308,659
METHOD OF MOLTEN METAL PLATING WITH SLIT NOZZLE
Yashichi Oyagi, and Hirofumi Nakano, both of Chiba, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Apr. 10, 1992, Ser. No. 866,866
Claims priority, application Japan, Apr. 25, 1991, 3-95337; Apr. 25, 1991, 3-95338
Int. Cl.[5] B05D *1/28*
U.S. Cl. 427—428 **5 Claims**



1. A method of molten metal plating, comprising the steps of:
bring a travelling steel strip into contact with a revolving roll having a rolling surface coated with an oxide-, carbide- or nitride- base ceramic material having resistance to erosion by said molten metal, the temperature of the rolling surface being controlled at a temperature not higher than the melting point of said molten metal;
providing a nozzle having first and second openings, said nozzle being disposed so that the rolling surface is nearer a corner of said first opening, which corner is located downstream with respect to a roll revolution direction, than other corners of said first opening, said second opening being located downstream of said first opening with respect to the roll revolution;
applying a molten metal on said roll through said first opening;
transferring said applied molten metal from said roll to said steel strip by the revolution of the roll; and
ejection a non-oxidizing gas through said second opening toward said roll, said ejected gas acting upon a meniscus of said molten metal applied on said roll to prevent an ambient atmospheric gas dragged by said revolving roll from being engulfed by the molten metal meniscus, and thereby ensure that the molten metal meniscus continuously extends over a strip width.

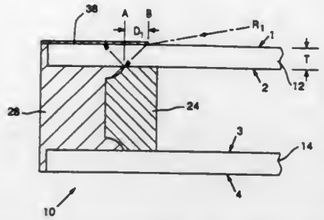
5,308,660
WELL DRILLING TOOL
Ronald J. Huval, Lafayette, La., assignor to Tri-City Services, Inc., Youngsville, La.
Filed Sep. 16, 1991, Ser. No. 760,178
Int. Cl.[5] C23C *26/00*
U.S. Cl. 427—443.1 **6 Claims**

1. A process for preventing well drilling fluids and solid particles present in a gumbo-rich subterranean formation from adhering to a well drilling tool, comprising the steps of:
providing a drilling tool having a ferrous core;
exposing the surface of the tool to an aqueous acid nickel-phosphorus solution in a concentration sufficient to cause autocatalytic nickel plating on the tool surface, said plating filling crevices on an exterior surface of the ferrous core, such that a non-adhesive coating is formed on the surface of the well drilling tool.

5,308,661
PRETREATMENT PROCESS FOR FORMING A SMOOTH SURFACE DIAMOND FILM ON A CARBON-COATED SUBSTRATE
Zhu Feng, Albany; Marilee Brewer, Goleta; Ian Brown, Berkeley, and Kyriakos Komvopoulos, Orinda, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Mar. 3, 1993, Ser. No. 25,433
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—535 **13 Claims**

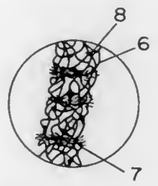
1. A process for forming a continuous layer of diamond having a smooth surface on a carbon-coated substrate, which comprises pretreating said carbon-coated substrate, without application of an electrical bias to the substrate, with a methane/hydrogen gas mixture having a concentration of methane of at least about 4% as measured by partial pressure, in a vacuum chamber in the presence of a plasma and at a pressure not exceeding about 30 Torr, and while maintaining said substrate at a temperature of from about 500° C. to about 600° C. during said pretreatment; and then depositing said continuous layer of diamond on the pretreated substrate.

5,308,662
WINDOW CONSTRUCTION WITH UV PROTECTING TREATMENT
F. Eugene Woodard, Los Altos, and Thomas G. Hood, San Francisco, both of Calif., assignors to Southwall Technologies Inc., Palo Alto, Calif.
Filed Jul. 16, 1991, Ser. No. 731,044
Int. Cl.[5] E06B *3/24;* E04C *2/54*
U.S. Cl. 428—34 **22 Claims**



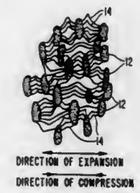
1. In a multiple-pane insulating window assembly having an exterior wall surface and an interior wall surface, said assembly comprising an outer first and an inner second sheet of transparent glazing, each having a perimeter edge surface and an inner surface and an outside surface, the outer first sheet having a sheet thickness with the sheets being held substantially parallel to one another and spaced from one another by an elongated spacer which abuts the inner surfaces of the two sheets at, but inset by a first set distance from, the periphery of the two sheets and extends inward to a second set distance from the periphery, such that the outer surface of the first sheet is the exterior wall surface and the outer surface of the second sheet is the interior wall surface, and a layer of an adherent conforming flexible sealant which sealably surrounds the outside of the spacer and the perimeter edge of the sheets and fills the first distance inset, the improvement comprising an opaque nonreflective light barrier applied directly onto the exterior wall surface and extending inward from the periphery of the first sheet to a position that is at least 0.89 times the sheet thickness past the first set distance.

5,308,663
BIODEGRADABLE NONWOVEN FABRIC AND ITS MOLDING VESSEL
Mutuo Nakagawa; Yasuo Nakagawa, both of Takarazuka; Masaaki Nishida, Amagasaki; Jun Hosokawa, Takamatsu; Masashi Nishiyama, Kan-onji; Takamasa Kubo, and Kazutoshi Yoshihara, both of Takamatsu, all of Japan, assignors to Kanai Juyo Kogyo Company Limited, Hyogo and Director, General of Agency of Industrial Science and Technology, Tokyo, both of Japan
Continuation-in-part of Ser. No. 537,628, Jun. 13, 1990. This application Oct. 23, 1991, Ser. No. 782,778
Claims priority, application Japan, Jun. 20, 1989, 1-157046
Int. Cl.[5] B27N *1/02;* D21F *11/00;* B01D *24/00;* B32B *3/26*
U.S. Cl. 428—34.2 **11 Claims**



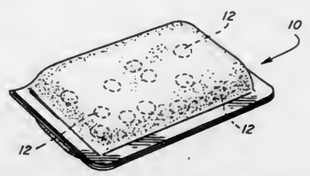
1. A biodegradable nonwoven fabric comprising a fiber web composed of at least one type of cellulose-based fiber selected from the group consisting of natural fibers, regenerated fibers, acetate fibers and mixtures thereof, said fiber web bonded with a binder of a fine cellulose-chitosan composition in amounts sufficient to impart biodegradability thereto, said fine cellulose being a beaten pulp of 20–1000 μm in length and less than 1 μm in thickness.

5,308,664
RAPIDLY RECOVERABLE PTFE AND PROCESS THEREFORE
Wayne D. House, Flagstaff, and David J. Myers, Camp Verde, both of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Continuation-in-part of Ser. No. 110,145, Oct. 19, 1987, Pat. No. 4,877,661. This application Sep. 23, 1988, Ser. No. 248,887
The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.
Int. Cl.[5] F16L *9/16;* B32B *27/32;* B29D *7/24*
U.S. Cl. 428—34.9 **2 Claims**



1. A porous shaped article consisting essentially of polytetrafluoroethylene, said article having a microstructure of nodes interconnected by fibrils, substantially all of said fibrils having a bent appearance and a V/H ratio of at least 0.15, said article at ambient temperature is capable of being stretched and then rapidly recovering more than 6.0% of its stretched length.

5,308,665
IMPURITY SCAVENGER PILLOW
Paul Sadek, Grand Rapids; Jim Pyzybytek, Fruitport, and James Westra, N. Muskegon, all of Mich., assignors to Baxter Diagnostics Inc., Deerfield, Ill.
Continuation of Ser. No. 478,056, Feb. 7, 1990, abandoned, which is a continuation of Ser. No. 316,747, Feb. 28, 1989, abandoned. This applicatioo Nov. 16, 1990, Ser. No. 617,310
Int. Cl.[5] B01D *50/00*
U.S. Cl. 428—35.2 **5 Claims**

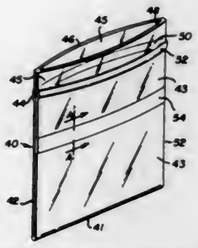


1. A method for removing water, keeping water levels low or for removing chemical impurities from solvent fluid or reagent fluid, with minimal particulate or chemical contamination of said fluids, comprising:
(a) adding an impurity scavenger to said fluid, said impurity scavenger consisting essentially of a porous bag containing molecular sieves for adsorbing water and chemical impurities in said fluid, said porous bag having pores sufficiently small to retain fluid borne particulate generated within said bag and sufficiently large to allow fluid to flow into said bag,

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(b) adbsorbing water and chemical impurities through said porous bag;
(c) retaining said adsorbed water and liquid chemical impurities in said molecular sieve.

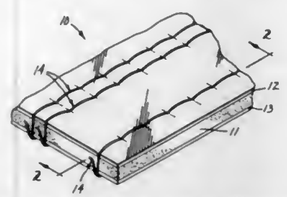
5,308,666
WRITE-ON FILM SURFACE AND BAGS HAVING A WRITE-ON STRIPE
Michael G. Borchardt, Lisle, Ill., assignor to First Brands Corporation, Danbury, Conn.
Continuation of Ser. No. 446,825, Dec. 6, 1989, abandoned. This application Oct. 16, 1992, Ser. No. 965,990
Int. Cl.[5] B32B *3/26, 7/02*
U.S. Cl. 428—35.2 **17 Claims**



1. A bag comprising a slip agent containing an extruded bag film for forming a bag body and an extruded write-on film bonded to said bag film wherein said write-on film surface comprises a surface treated write-on film wherein the write-on film comprises a physical mixture, without slip agent, of two substantially incompatible polymers, wherein a second polymer is substantially incompatible in a first polymer and wherein said write-on film is extruded and has a surface which is corona-discharge treated and wherein: (1) said bag film is an extruded polyethylene having a density between about 0.915 and about 0.930 grams per cubic centimeter containing between about 500 ppm and about 2500 ppm of a said slip agent; and (2) said extruded write-on film comprises a major amount of at lest one polymer selected from the group consisting of low density polyethylene, high density polyethylene and polypropylene, and a minor amount of at least one polymer or polymeric mixture selected from the group consisting of (1) polyisobutylene, (2) a mixture of polyisobutylene and polypropylene and (3) a mixture of polyisobutylene and high density polyethylene with the proviso that said write-on film as formed is substantially without slip agent and containing between about 3.0 wt. % and about 20 wt. % of a particulate material based on the total weight of the write-on composition.

5,308,667
ELECTRICALLY CONDUCTIVE ADHESIVE WEB
Clyde D. Calhoun, Grant Township, County of Washington; Maurice J. Fleming, Cottage Grove, and Miroslav Tochacek, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 16, 1992, Ser. No. 962,523
Int. Cl.[5] C09J *7/02, 9/02*
U.S. Cl. 428—40 **15 Claims**

1. An electrically conductive web having opposed parallel faces and being adhesive on at least one face, the web having a stiched pattern of continous electricaly conductive thread



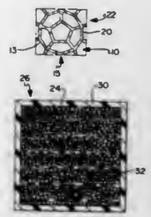
extending therethrough and lying along each face, said thread being exposed at both faces of the web.

5,308,668
MULTILAYER FILM MADE OF SYNTHETIC RESIN
Shigeru Tsuji, Toyonaka, Japan, assignor to Kuriron Kasei Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 698,777, May 13, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 86,377
Claims priority, application Japan, May 14, 1990, 2-124488
Int. Cl.[5] B32B *27/32;* **B65D** *65/28*
U.S. Cl. 428—43 **3 Claims**



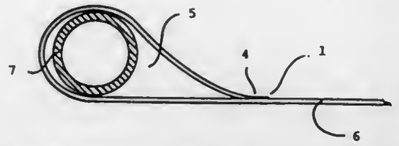
1. In a multilayer film comprising at least two resin layers which can be easily torn in one direction, the improvement wherein at least one of said two resin layers consists essentially of (a) polyolefin and (b) at least one member selected from the group consisting of nylon, polystyrene, polycarbonate and ethylene fluoride, which layer has a plurality of phases formed therein in a direction of said film being drawn out by extrusion to exhibit an easy-to-tear characteristic in the vertical direction, said resins (a) and (b), which make up at least one of the resin layers, having different melting points and being essentially incompatible when blended with each other.

5,308,669
CERAMICALLY REINFORCED STRUCTURAL MATERIALS AND METHOD OF MAKING SAME
Bryan Prucher, 52 N. Main, Clarkston, Mich. 48016
Filed Jun. 25, 1990, Ser. No. 542,778
Int. Cl.[5] B32B *3/12, 5/18, 7/34*
U.S. Cl. 428—72 **16 Claims**



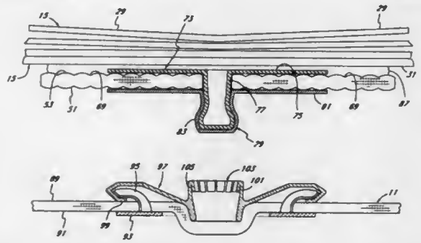
1. A ceramic foam reinforced structural material comprising: (a) an open-cell ceramic foam core having an exterior surface and having a three dimensional repeating structure with interconnecting solid legs and voids formed therebetween;
(b) a ductile material which is operatively attached to the ceramic foam core; and
wherein the ductile material forms a barrier covering the exterior surface of the foam.

5,308,670
FLOOR COVER WITH RAISED SIDES
Steven S. Saylor, P.O. Box 204, Dayton, Nev. 89403-0204
Filed Apr. 19, 1993, Ser. No. 19,623
Int. Cl.[5] F16N *31/00*
U.S. Cl. 428—81 **4 Claims**



1. A pad for positioning underneath a vehicle for collecting and retaining fluid and solid materials falling from the vehicle, comprising a flat and generally rectangular base of vinyl material having outer edge portions folded over and affixed to the base material thereby forming a hollow pocket extending along each edge of the base, and a tubular member inserted into and extending along a length of each of the edge pockets, thereby forming raised sides and creating, with a flat portion of the pad, a basin to contain the materials falling off the vehicle.

5,308,671
DECORATION SYSTEM
Sandra L. Wells, Laguna Hills, Calif., assignor to Sanjam Originals, Inc., Laguna Hills, Calif.
Filed May 21, 1992, Ser. No. 886,746
Int. Cl.[5] A44B *17/00;* **B32B** *3/06*
U.S. Cl. 428—99 **3 Claims**

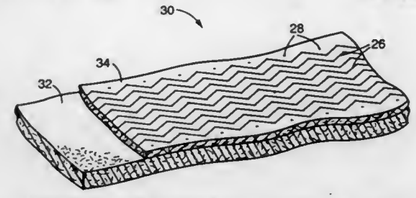


1. A detachable decoration system, comprising:
an article to be decorated, said article comprising fabric and defining a outer surface and a inner surface;
a first portion of a snap fastener extending through and permanently connected to said article;
a decoration, comprising:
a decorative bow having a center of gravity, a front face, a back face, a central intersecting portion, a first wing portion extending to a side of said central portion and a second wing portion extending to an opposing side of said central portion from said first wing portion, said central portion having a top and a bottom; and,
an ornament mounted on said front face;
a base defining a facing surface, a connecting surface, an upper portion, a lower portion, a first side portion and a second side portion and comprising strands of fibers woven such that said connecting surface of said base is uneven, said base being larger than the second portion of said snap fastener in at least one direction;
a second portion of a snap fastener extending through and permanently connected to said base;
said second portion of said snap fastener comprising back and front nipples;
said back nipple including a backing member and a central axially extending inner protuberance, said inner protuberance extending through said base between said strand of fibers such that said backing member is positioned against said connecting surface of said base;
said front nipple including a front member and a central axially extending outer protuberance, said outer protuberance defining an internal cavity, said inner protuberance of said back nipple being tightly secured within said internal cavity so as to permanently affix said front member against said facing surface of said base and said backing member against said connecting surface of said base, and
a layer of adhesive between said connecting surface of said base and said back face of said bow, said layer of adhesive securing said base to said decoration such that said upper portion of said base extends substantially to said top of said central portion, said lower portion of said base extends substantially to said bottom of said central portion said first side portion extends along said first wing portion and said second side portion extends along said second wing portion, so that said base and said adhesive provide structural support for said decoration, and said decoration covers said base, wherein said first portion of a snap fastener can be releasably locked with with said outer protuberance of said front nipple said second portion of a snap fastener extending from said facing surface of said base, so that said back face of said bow is facing said outer surface of said article and said front face of said bow is facing away from said outer surface of said article, and wherein, when said first portion of a snap fastener and said second portion of a snap fastener are unlocked, said decoration is wholly disconnected from said article.

5,308,672

Patent Not Issued For This Number

5,308,673
STITCHBONDED ABSORBENT ARTICLES AND METHOD OF MAKING SAME
Miroslav Tochacek, Woodbury, and Donald M. Courteau, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 7, 1992, Ser. No. 879,876
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—102 **16 Claims**

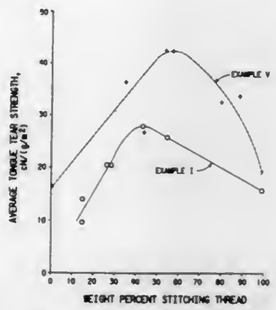


1. A stitchbonded absorbent article comprising a nonwoven batt consisting essentially of cellulosic pulp fibers bonded together by an adhesive binder, the batt having a basis weight of at least about 95 gsm per ply, the article stitchbonded by stitches of yarn, at a stitch density ranging from about 15 to about 35 st/10 cm, and stitch gauge ranging from about 10 to about 40, using a stitching yarn comprising at least two compositionally different fibers having different heat stability being at least partially melt-bonded together at points of mutual

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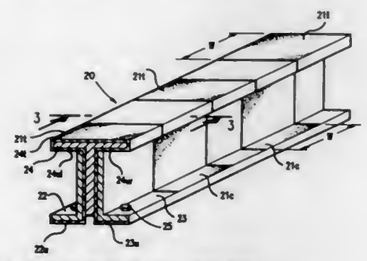
contact, at least a portion of the yarn being melt-bonded to external surfaces of the article.

5,308,674
TEAR-RESISTANT STITCHBONDED FABRIC
Dimitri P. Zafiroglu, Greenville, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 675,224, Mar. 26, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 979,008
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—102 **9 Claims**



1. An improved stitchbonded fabric having a fibrous layer that is multi-needle stitched with a bulkable non-elastomeric thread that forms spaced apart, interconnected rows of stitches, wherein the improvement comprises the fibrous layer comprising fibers or filaments of textile decitex, optionally containing woodpulp amounting to as much as 65% of the total weight of the fibrous layer, and the bulkable thread being a non-elastomeric yarn amounting to 25 to 65% of the total weight of the fabric.

5,308,675
FLEXIBLE HIGH DAMPING STRUCTURE
Roger M. Crane, Arnold, and Paul A. Coffin, Chesapeake Beach, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 15, 1992, Ser. No. 945,041
Int. Cl.[5] B32B *7/00, 7/02;* E04C *3/29*
U.S. Cl. 428—120 **27 Claims**

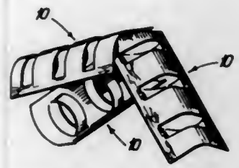


1. A load bearing structure comprising:
an I-beam formed by a T-shape, which is formed by a horizontal segment joined by a vertical segment at a substantially mid-section of said horizontal segment, sandwiched between a pair of L-shapes, each having a horizontal segment joined at one end to an end of a vertical segment; and
at least one flexible reinforcement comprising a flexible textile and a viscoelastic material for damping vibration and shock, said at least one flexible reinforcement being sandwiched between said vertical segment of said T-shape and said vertical segment of said L-shapes, such that said T-shape is isolated from said L-shapes and;
said flexible reinforcement wraps around said horizontal and vertical segments of said T-shape.

5,308,676
TORCHABLE ROLL ROOFING MEMBRANE
Richard Gelles; Mark A. Berggren, both of Houston, and Dennis W. Gilmore, Katy, all of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Sep. 20, 1991, Ser. No. 763,463
Int. Cl.[5] B32B *7/04*
U.S. Cl. 428—141 **10 Claims**

1. A torchable roll roofing membrane which comprises a reinforcing mat which is saturated with a first bituminous composition comprising a bituminous component and from 9 to 15 parts of an unhydrogenated block copolymer of a monoalkenyl aromatic hydrocarbon and a conjugated diolefin per 100 parts of said first bituminous composition, a second bituminous composition comprising a bituminous component and from 3 to 15 parts per hundred of the total bituminous composition of a hydrogenated block copolymer of a monoalkenyl aromatic hydrocarbon and a conjugated diolefin.

5,308,677
PACKAGE STUFFING
Douglas Renna, 131 Munro Blvd., Valley Stream, N.Y. 11581
Filed Sep. 4, 1992, Ser. No. 940,549
Int. Cl.[5] B32B *1/00*
U.S. Cl. 428—174 **4 Claims**

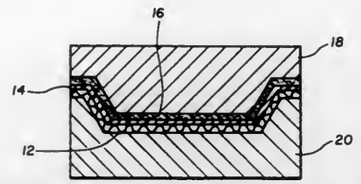


1. Package stuffing material comprising a plurality of discrete bodies of similar construction, each body being formed of adapted to fill a volume greater than the sum of rigid sheet material bent lengthwise to form a transversely shaped base, a plurality of spaced transverse projections having their ends integral with said base and extending away from said base in an opposite direction and in a conformingly transverse shape reverse to the shape of the base, each said body providing a substantially incompressible hollow form symmetrical about the orthogonal planes passing through the longitudinal central axis of said body, said plurality of bodies being capable of filling a volume greater than the sum of their individual volumes.

5,308,678
TRIM BOARD
Teruo Tsujimura; Mineo Kato, both of Gifu, and Hidehito Hashimoto, Aichi, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Oct. 15, 1992, Ser. No. 957,765
Claims priority, application Japan, Oct. 16, 1991, 3-298350
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—182 **10 Claims**

1. A trim board structure comprising:

a corrugated cardboard sheet impregnated with a resorcinol resin;
an inner trim member having inner and outer surfaces; and



a cushioning member disposed between one side of said impregnated corrugated sheet and the inner surface of said inner trim member.

5,308,679
RAVELING-PREVENTING AGENT FOR GLASS FIBER WOVEN FABRIC, AND GLASS FIBER WOVEN FABRIC TO WHICH THE AGENT IS APPLIED
Junichi Saito; Hirokazu Inoguchi, and Keiichi Kato, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan
Filed May 27, 1993, Ser. No. 67,971
Claims priority, application Japan, Jun. 16, 1992, 4-156430
Int. Cl.[5] B32B *23/02*
U.S. Cl. 428—193 **16 Claims**

1. A raveling-preventing agent for a glass fiber woven fabric, which contains as essential components a reaction product from an epoxy resin having an epoxy equivalent of 150 to 1,000 and a molecular weight of 500 to 2,000 and a hydroxyl group-containing amine compound, and an isocyanate curing agent.

5,308,680
ACCEPTOR SHEET USEFUL FOR MASS TRANSFER IMAGING
Robert C. Desjarlais, So. Hadley, and Robert C. Zawada, West Springfield, both of Mass., assignors to Rexham Graphics Inc., South Hadley, Mass.
Filed Oct. 22, 1991, Ser. No. 780,234
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 **19 Claims**

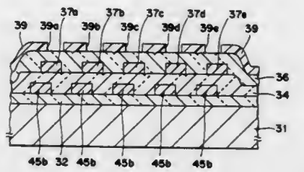


1. An acceptor sheet for receiving marking material in imagewise fashion by means of mass transfer printing, comprising a substrate having a coating with a microrough surface, wherein the coating comprises polymer particles which have not coalesced to form a uniform, continuous film.

5,308,681
THERMAL TRANSFER RECORDING SHEET
Tsutomu Taki, Tokyo, and Katsuhiko Kuroda, Yokohama, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Filed Jul. 10, 1992, Ser. No. 911,511
Claims priority, application Japan, Jul. 10, 1991, 3-170197
Int. Cl.[5] B32B *9/00*
U.S. Cl. 438—195 **9 Claims**

1. A thermal transfer recording sheet comprising a base film, a heat transferable ink layer formed on one side of the base film and a heat resistant lubricating layer formed on the other side of the base film, wherein the heat resistant lubricating layer is formed by coating on the base film a coating solution containing at least a binder resin and at least two mutually reactive modified silicone oils, which react and form chemical bonds with each other, and then reacting said silicone oils.

5,308,682
ALIGNMENT CHECK PATTERN FOR MULTI-LEVEL INTERCONNECTION
Takenori Morikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 1, 1992, Ser. No. 955,027
Claims priority, application Japan, Oct. 1, 1991, 3-253256
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **20 Claims**



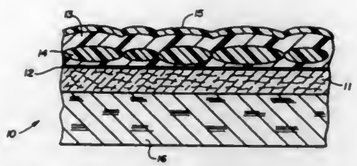
1. An alignment check pattern used for a multi-level interconnection having a first level wiring formed on a major surface of a first insulating film, a second insulating film formed to cover said major surface of said first insulating film and a surface of said first level wiring, a second level wiring formed on a surface of said second insulating film, and a third insulating film formed to cover a surface of said second insulating film and a surface of said second level wiring, said alignment check pattern comprising:
a plurality of dummy patterns formed apart from one another and between said first and said second insulating films, each of said dummy patterns having the same thickness as said first level wiring;
a regular scale pattern formed on said second insulating film and elongated to cross said plurality of dummy patterns in isolation therefrom by said second insulating film, said regular scale pattern having substantially the same thickness as said second level wiring; and
a vernier scale pattern formed on a surface of said third insulating film positioned directly over said regular scale pattern.

5,308,683
LAMINATE HAVING TEXTURED WEAR SURFACE AND PROCESS OF PREPARATION
Martin Dees, Jr., 779 Eastside Dr., Landisville, Pa. 17538; George A. Edelen, 2923 Marietta Ave., Lancaster, Pa. 17601; Beth M. Hess, 34 E. Main St., Mountville, Pa. 17554, and Barbara L. Laukhuff, 4094 Hilltop Dr., Mount Joy, Pa. 17552
Continuation of Ser. No. 615,274, Nov. 19, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,903
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **2 Claims**

1. A wear-resistant product having a textured surface comprising:
(a) a flexible substrate impregnated with polyvinyl chloride;
(b) a layer of a synthetic organic polymer or polyvinyl chloride superimposed on said substrate; and
(c) a plurality of chips of polyvinyl chloride having a K-value of 53–73 distributed throughout and embedded within said organic polymer layer, said chips of polyvinyl

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chloride having a higher K-value than the polyvinyl chloride of said layer of synthetic organic polymer having been stressed prior to embedding and having been relaxed after embedding to provide a textured, wear-resistant

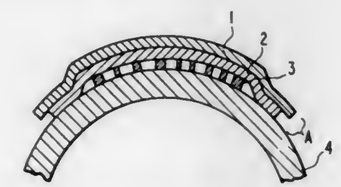


surface of said chips and recesses between chips, said surface being characterized by a polymeric covering of substantially uniform thickness over both said chips and said recesses.

5,308,684
BURNING PATTERN SHEET

Hiroshi Nakatsuka; Yozo Oishi; Kazuhiro Tajiri; Takafumi Sakuramoto; Takashi Tominaga, and Megumi Ashida, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Continuation of Ser. No. 433,861, Nov. 9, 1989, abandoned. This application Jan. 15, 1993, Ser. No. 5,161
Claims priority, application Japan, Nov. 11, 1988, 63-285204; Jan. 31, 1989, 1-21809
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—202 **7 Claims**



1. A burning pattern sheet consisting essentially of a tacky member comprising a flexible base material and an adhesive layer, the flexible base material having a pattern comprising a burning ink formed on the surface of the flexible base material opposite to the adhesive layer, wherein the adhesive layer consists essentially of at least one adhesive selected from the group consisting of rubber adhesives, acrylic adhesives and vinyl alkyl ether adhesives.

5,308,685
PROTECTIVE COATING FOR MACHINE-READABLE MARKINGS

James R. Froggatt, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 979,007, Nov. 13, 1992, which is a continuation-in-part of Ser. No. 819,692, Jan. 13, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 128,434
Int. Cl.[5] B32B *3/00, 5/16, 7/14*
U.S. Cl. 428—204 **4 Claims**

1. In a method of protecting a machine-readable marking on the surface of an article by applying to said surface a coating, the improvement of applying a coating of an amorphous fluoropolymer selected from:

A) copolymers of perfluoro(1,3-dioxole) with tertrafluoroethylene;

B) copolymers of perfluoro(2,2-dimethyl-1,3-dioxole) with at least one comonomer selected from the class consisting of

(a) tetrafluoroethylene,

(b) chlorotrifluoroethylene.

(c) vinylidene fluoride,

(d) hexafluoropropylene,

(e) trifluoroethylene,

(f) perfluoro(alkyl vinyl ethers) of the formula $CF_2=CFOR_f$, where R_f is a normal perfluoroalkyl radical having 1–3 carbon atoms,

(g) fluorovinyl ethers of the formula CF2=CFOQZ, where Q is a perfluorinated alkylene radical containing 0–5 ether oxygen atoms, wherein the sum of the C and O atoms in Q is from 2 to 10; and Z is a group selected from the class consisting of —COOR, —SO_2F, —CN, —COF, and —OCH_3, where R is a C_1–C_4 alkyl,

(h) vinyl fluoride, and

(i) (perfluoroalkyl)ethylene, $R_fCH=CH_2$; where R_f is a C_1–C_8 normal perfluoroalkyl radical; and

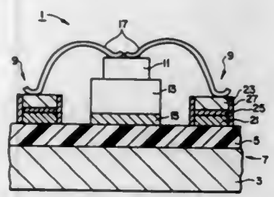
C) cyclic aliphatic homopolymers in which the repeating unit contains an aliphatic ring of 5–9 members, at least two of the ring members being carbon atoms independently substituted either by fluorine atoms or by perfluoromethyl groups, and at most two of the ring members being oxygen atoms, the remaining portions of the repeating units, when present, being perfluoromethylene groups,

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5,308,686
SUBSTRATE HAVING A MULTIPLE METAL PROTECTED CONDUCTIVE LAYER AND METHOD OF MANUFACTURING THE SAME

Takashi Nagasaka, Anjo, and Hideki Nakagawara, Towada, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 4, 1991, Ser. No. 802,229
Claims priority, application Japan, Dec. 28, 1990, 2-409363
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **11 Claims**



1. A substrate having a conductive layer, which comprises:

a substrate body having an insulating surface;

a conductive layer comprising at least two kinds of conductive metal sublayers of materials selected from the group consisting of zinc, aluminum, copper and alloys thereof, laminated together, a first surface of said conductive layer being formed on said insulating surface, and said conductive layer having sides which extend from said first surface to a second top surface thereof; and

a protective layer which restrains said conductive layer from ionizing and eluting, said protective layer being formed on said sides of said conductive layer to protect contact portions between said conductive metal sublayers.

5,308,687
FIBER ELEMENT CONTAINING TIN OXIDE HETEROPOLYCONDENSATES WITH ENHANCED ELECTRICAL CONDUCTIVITY

Sharon M. Melpolder, Hilton; Bradley K. Coltrain, Fairport, and Sylvia A. Gardner, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

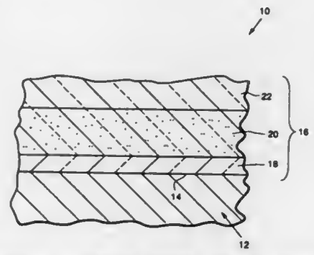
Continuation of Ser. No. 918,879, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 640,754, Jan. 14, 1991, abandoned, which is a continuation of Ser. No. 349,458, May 9, 1989, abandoned. This application Aug. 26, 1993, Ser. No. 112,868
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—411.1 **4 Claims**

1. A film comprising a substrate susceptible to degradation at a temperature of 400° C. having a transparent antistatic layer thereon comprising a sol-gel process derived heteropolycondensate having tin oxide and boron oxide in a three dimensional metal oxide network, in which tin oxide and boron oxide moieties are bonded together by bridging oxygens, and the boron oxide content is from about one to about thirty mole percent, said heteropolycondensate being further characterized by a process comprising subjecting a mixture of a hydrolyzable tin compound and a hydrolyzable boron compound, wherein the boron compound is in an amount of from about one to about thirty mole percent, to hydrolysis/condensation in an organic solvent using a stoichiometric or substantially stoichiometric amount of water, thereby forming a solution of said heteropolycondensate; and subsequently applying said solution of said condensate to said substrate, and removing the solvent at a temperature of from about 50° C. to about 150° C. to form said transparent antistatic layer of said heteropolycondensate on said substrate without subjecting said antistatic layer to temperatures exceeding about 400° C. in said process; said film being characterized by having a reduced resistivity conferred by said transparent antistatic layer formed at said temperature.

5,308,688
OXIDATION RESISTANT DIAMOND COMPOSITE AND METHOD OF FORMING THE SAME

Glenn A. Holmquist, Carlsbad, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Dec. 28, 1992, Ser. No. 997,389
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—216 **1 Claim**



1. An improved oxidation-resistant diamond composite, said composite comprising, in combination:

a) a diamond having a plurality of surfaces; and

b) an oxidation-resistant protective coating deposited on, and chemically bonded to, said diamond surfaces; said coating comprising:

i) a hafnium carbide layer not in excess of about 200 angstroms thick chemically bonded directly to said diamond surfaces,

ii) a hafnium oxy-carbide layer not in excess of about 600 angstroms thick chemically bonded to said hafnium carbide layer, and

iii) an oxidation-resistant hafnium oxide layer having an about one-quarterwavelength optical thickness chemically bonded to said hafnium oxy-carbide layer, whereby said coating is anti-reflective, transparent, tenaciously adherent to said diamond surfaces and resistant to oxidation at elevated temperatures.

5,308,689
SNAG-RESISTANT COMPOSITE FABRIC

Tsunehisa Shinkai; Toshikazu Sato, and Takashi Imai, all of Okayama, Japan, assignors to Junkosha Company, Ltd., Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 16,821
Int. Cl.[5] A41D *31/02;* B32B *5/24, 33/00*
U.S. Cl. 428—229 **6 Claims**

1. A waterproof water-vapor-permeable composite material comprising

(i) a waterproof water-vapor-permeable synthetic polymer coating or film laminated to

(ii) a layer of woven fabric of yarns of synthetic polymer having the combination wherein:

(a) said fabric has a cover factor of 2000 or more,

(b) said fabric has a thickness of 200 micrometers or more, and

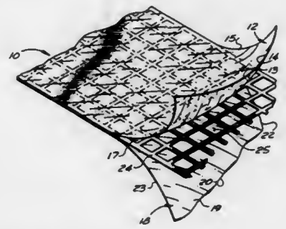
(c) said yarns are formed of monofilaments of 1.5 denier or less;

said combination causing the material to be resistant to snagging, puncturing, attachment or penetration by small sharp objects.

5,308,690
WRAPPING FILM

Duane S. Butcher, Jr., 150 Pine View Dr., Gillette, Wyo. 82716

Filed Sep. 8, 1992, Ser. No. 941,725
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—256 **11 Claims**



1. A wrapping film comprising:

a first transparent plastic film layer;

a second transparent plastic film layer fused to said first plastic film layer; and

a flattened formable stiffening layer captured between said first and second transparent plastic film layers.

5,308,691
CONTROLLED-POROSITY, CALENDERED SPUNBONDED/MELT BLOWN LAMINATES

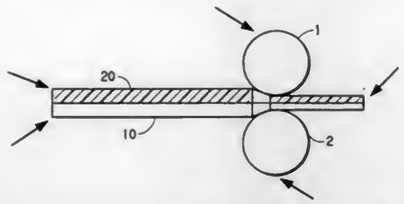
Hyun S. Lim, Chesterfield, Va., and Hyunkook Shin, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1993, Ser. No. 130,773
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—286 **13 Claims**

1. A high-strength, tear-resistant, calendered, composite sheet having an opacity, as determined by TAPPI test T-519 om-86, of at least 75%, having low air permeability expressed as Gurley-Hill porosity of 5–75 seconds, high water vapor

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transmission rate of at least 500 g/m^2 in 24 hours according to ASTM standard E96, method B, low liquid water permeability expressed by a hydrostatic head pressure of at least 0.75 m according to AATCC standard 127-1985, and barrier properties against bacteria that are significantly better than those of medical paper used for sterile packaging, which sheet comprises one melt-blown polypropylene fiber web and a spun-



bonded polypropylene fiber sheet laminated to at least one side thereof, the melt-blown fibers having an average diameter of 1–10 μm, the melt-blown fiber web itself having an average weight of about 17–40.7 g/m^2, and the fibers of the spunbonded sheet having an average diameter of at least 20 μm, the spunbonded sheet itself having an average weight of about 17–100 g/m^2.

5,308,692

FIRE RESISTANT MAT

Thomas D. Kennedy, Gresham; Michael O. Malarkey, Scappoose, both of Oreg., and Larry R. Graves, Puyallup, Wash., assignors to Herbert Malarkey Roofing Company, Portland, Oreg.

Filed Jun. 26, 1992, Ser. No. 905,116
Int. Cl.^{5} B32B *27/00*; B05D *3/02*
U.S. Cl. 428—290 14 Claims

1. A fire resistant fibrous mat comprising:

a non-woven blend of fibers including a first fibrous material comprising mineral fibers, and a second fibrous material comprising glass fibers, the mineral fibers comprising between fifty percent (50%) and ninety-five percent (95%) by weight of the blend; and

a fire resistant binder for bonding the fibers together, the binder comprising a stable mixture of a latex of a fire resistant, halogenated thermoplastic polymer and a modified urea-formaldehyde condensate prepared by reacting urea, an formaldehyde and a modifying agent selected from the group consisting of aqueous ammonia, an alkyl primary diamine and combinations thereof during the condensation reaction.

5,308,693

UNSTRETCHED SYNTHETIC PAPERS AND METHODS OF PRODUCING SAME

Thomas R. Ryle, Burlington, Ky.; Pai-Chuan Wu, Cincinnati, Ohio; Leopoldo V. Cancio, Cincinnati, Ohio, and Girish K. Sharma, Cincinnati, Ohio, assignors to Clopay Plastic Products Company, Inc., Cincinnati, Ohio

Filed Jun. 26, 1990, Ser. No. 543,690
Int. Cl.^{5} B32B *3/06*
U.S. Cl. 428—307.3 20 Claims

1. A synthetic paper substantially free of mechanically produced microvoids for writing and printing thereon, said synthetic paper consisting essentially of a continuous high density polyethylene matrix having uniformly dispersed therein an effective amount of filler particles having microvoids, said dispersed particles being exposed at a surface of said paper, said filler particles having microvoids at said surface for receiving and retaining ink or similar imaging material in the



microvoids thereby imparting writeability and printability to said synthetic paper.

5,308,694

BARRIER LAYER FOR FLOOR AND WALL COVERINGS

Tommy Andersson, Ronneby, Sweden, assignor to Tarkett AB, Ronneby, Sweden

Filed Jul. 31, 1992, Ser. No. 923,319
Int. Cl.^{5} B32B *5/16*
U.S. Cl. 428—331 11 Claims

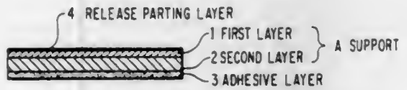
1. A barrier layer which inhibits the migration of underlying organic stain into the decorative portion of floor covering and wall covering materials, said barrier layer comprising an admixture of plastisol and sodium silicate, wherein the sodium silicate is in the form of an inorganic matrix with the plastisol, and wherein a component of the plastisol is a dispersing-suspension agent.

5,308,695

ADHESIVE TAPES FOR MEDICAL OR SANITARY USE

Masaaki Arakawa; Hidehiko Murata; Takaaki Moriyama, and Kazuo Suenaga, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Continuation of Ser. No. 785,869, Nov. 1, 1919, Pat. No. 5,264,281, which is a continuation of Ser. No. 423,286, Oct. 18, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 44,047
Claims priority, application Japan, Oct. 18, 1988, 63-135859; Apr. 6, 1989, 1-41040; Sep. 26, 1989, 1-249521
Int. Cl.^{5} B32B *7/12*
U.S. Cl. 428—354 1 Claim



1. A medical or sanitary adhesive tape comprising:

(a) a support having a laminate structure comprising:

(1) a first layer of an elastic film comprising one of or a mixture of at least two thermoplastic elastomers selected from the group consisting of: polyolefin elastomers having a hard segment of polyethylene or polypropylene and a soft segment of ethylenepropylene diene monomer or ethylenepropylene monomer; polystyrene elastomers having a hard segment of polystyrene and a soft segment of butadiene rubber, isoprene rubber, or hydrogenated butadiene rubber; polyester elastomers having a hard segment of polyester and a soft segment of polyether or polyester; and chlorinated polyethylene elastomers having a hard segment of block chlorinated polyethylene and a soft segment of randomly chlorinated polyethylene, wherein said thermoplastic elastomer used in the first layer has a permanent compression strain of 5 to 100% and a Shore hardness of not less than A20 and not more than D70;

(2) a second layer comprising a plastic film or a nonwoven fabric wherein the crosswise compression strength of said support is not greater than 200 g/mm^2; and

(b) an adhesive layer formed on at least one surface of said support.

5,308,696

CARBON FIBER-REINFORCED CEMENT MATERIAL AND METHOD FOR PREPARING SAME

Kazuhiko Hanashita; Koji Sakata; Shigeru Kanamaru; Toshiyuki Nawa, all of Kitakyushu; Kozo Toyama, Chofu; Yoshikazu Takei, Chofu; Tatsuo Suenaga, Chofu, and Yoshikazu Taniguchi, Chofu, all of Japan, assignors to Mitsui Mining Company and Limited and Kajima Corporation, both of Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 906,190
Claims priority, application Japan, Jun. 28, 1991, 3-184093
Int. Cl.^{5} C04B *19/04*; B32B *19/00*
U.S. Cl. 428—357 8 Claims

1. A method for preparing a carbon fiber-reinforced cement material containing a carbon fiber as a reinforcing material, which is characterized by comprising the steps of; subjecting the carbon fiber to a water replacement treatment wherein an amount of the gas captured by the fiber is reduced by replacing the gas with water; and uniformly incorporating the treated carbon fiber into a cement matrix.

8. A cement material obtained by the method for preparing the carbon fiber-reinforced cement material in claim 1 and characterized by the following physical properties:

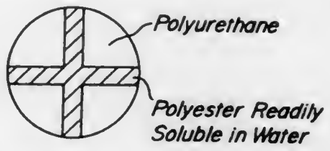
(1) carbon fiber content:	1 to 20% by volume
(2) bulk specific gravity:	0.9 to 2.5
(3) porosity:	1 to 15%
(4) bending strength:	6.8 to 29.4 MPa, and
(5) compression strength:	19 to 98 MPa.

5,308,697

POTENTIALLY ELASTIC CONJUGATE FIBER, PRODUCTION THEREOF, AND PRODUCTION OF FIBROUS STRUCTURE WITH ELASTICITY IN EXPANSION AND CONTRACTION

Yasuo Muramoto, Hofu; Susumu Tokura, Shinnanyo; Kiyoshi Yoshimoto, Hofu; Hiroshi Naito, Yamaguchi; Yoshimichi Ozawa, Hofu; Tamotsu Matsutomi, Yamaguchi; Masami Fujimoto, Kudamatsu, and Yoshiaki Morishige, Yamaguchi, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

PCT No. PCT/JP92/00624, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/20844, PCT Pub. Date Nov. 26, 1992
PCT Filed May 14, 1992, Ser. No. 962,230
Claims priority, application Japan, May 14, 1991, 3-139769; Dec. 27, 1991, 3-360463
Int. Cl.^{5} D02G *3/00, 3/04*
U.S. Cl. 428—373 11 Claims



1. A elastic composite filament characterized by a unitary filament wherein a crosslinked polyurethane having mainly an allophanate crosslinkage, with a Shore A hardness of 75–98, and a polyester readily soluble in water or an aqueous alkali solution are bonded together at a polyurethane/polyester conjugate ratio (cross-sectional area ratio) ranging from 1/1 to 90/1, extending uniformly along the length of the filament, said polyester being exposed on the surface of the filament and said polyurethane alone having a tensile strength of 1.0–5.5 g/d, an elongation at break of 350–1,200% and an excellent elastic recoverability.

5,308,698

FLUX FOR COATED WELDING ELECTRODE

Robert A. Bishel, and Evan B. Hinshaw, both of Huntington, W. Va., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed May 21, 1992, Ser. No. 887,195
Int. Cl.^{5} B32B *9/00*
U.S. Cl. 428—385 19 Claims

1. A coated electrode for producing a nickel-base weld deposit containing at least 12 weight percent chromium, the coated electrode including a flux surrounding a nickel-base core wire, said flux consisting essentially of, in parts by weight, 5 to 35 strontium carbonate with a total of 5 to 35 metal carbonate compound present in said flux, said strontium carbonate being for facilitating welding operability and especially for facilitating welding operability during overhead welding, said flux containing 5 to 20 parts by weight manganese when less than 0.5 weight percent manganese is present in said core wire and 0 to 20 parts by weight manganese when at least 0.5 weight percent manganese is present in the core wire, 10 to 40 fluoride compound, 5 to 45 oxide compound, and a binder for binding the flux to said core wire.

5,308,699

THERMOPLASTIC ELASTOMER POWDER FOR POWDER SLUSH MOLDING POWDER SLUSH MOLDING METHOD USING THE SAME AND MOLDED ARTICLE THEREOF

Tadashi Hikasa, Kimitsu; Hiroaki Mendori; Tatsuo Hamanaka, both of Ichihara; Toshio Igarashi, Kyoto, and Yuu Shida, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 636,277, Dec. 31, 1990, abandoned. This application Oct. 2, 1991, Ser. No. 769,733
Claims priority, application Japan, Oct. 3, 1990, 2-267298; Aug. 8, 1991, 3-199579
Int. Cl.^{5} C08L *23/26, 23/16*; C08J *3/24, 3/12*
U.S. Cl. 428—402 15 Claims

1. A thermoplastic elastomer powder for powder slush molding, comprising a partially crosslinked type elastomer composition comprising a mixture of an ethylene-α-olefin copolymer rubber and a polyolefin resin dynamically crosslinked in the presence of a crosslinking agent, wherein said elastomer composition has a complex dynamic viscosity $\eta^*(1)$ as measured at a frequency of 1 radian/sec. in a dynamic viscoelasticity measurement at 250° C., of 1.5×10^5 poise or less, a Newtonian viscosity index n calculated from the following formula by using the complex dynamic viscosity $\eta^*(1)$ at a frequency of 1 radian/sec. and the complex dynamic viscosity $\eta^*(100)$ at a frequency of 100 radian/sec. of 0.67 or less:

$$n=\{\log\eta^*(1)-\log\eta^*(100)\}/2.$$

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5,308,700

THERMOPLASTIC ELASTOMER POWDER FOR POWDER MOLDING, POWDER MOLDING METHOD USING THE SAME AND MOLDED ARTICLE THEREOF

Tadashi Hikasa, Kimitsu; Hiroaki Mendori; Tatsuo Hamanaka, both of Ichihara; Toshio Igarashi, Kyoto, and Yuu Shida, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 636,114, Dec. 31, 1990, abandoned. This application Oct. 2, 1991, Ser. No. 769,734
Claims priority, application Japan, Oct. 3, 1990, 2-267299; Aug. 8, 1991, 3-199589
Int. Cl.[5] C08L *23/26, 23/16*
U.S. Cl. 428—402 15 Claims

1. A thermoplastic elastomer powder for powder molding, comprising a partially crosslinked type elastomer composition comprising a mixture of an ethylene-α-olefin copolymer rubber and a polyolefin ethylene resin dynamically crosslinked in the presence of a crosslinking agent, wherein said elastomer composition has a complex dynamic viscosity $\eta^*(1)$ as measured at frequency of 1 radian/sec. in dynamic viscoelasticity measurement at 250° C., of 1.5×10^5 poise or less, a Newtonian viscosity index n calculated from the following formula by using the complex dynamic viscosity $\eta^*(1)$ at a frequency of 1 radian/sec. and the complex dynamic viscosity $\eta^*(100)$ at a frequency of 100 radian/sec. of 0.67 or less, and a hardness (shore D) of 45 or less:

$$n=\{\log\eta^*(1)-\log\eta^*(100)\}/2.$$

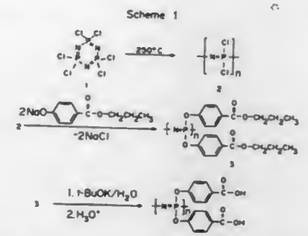
5,308,701

IONICALLY CROSS-LINKED POLYMERIC MICROCAPSULES

Smadar Cohen, 12 Tfuzoth Israel, Petach-Tickya, Israel 49581; Carmen Bano, Juardia Civil 23, esc. 5, 46020 Valencia, Spain; Karyn B. Visscher, 800-14 Stratford Dr., State College, Pa. 16801; Marie B. Chow, 5 Winchester St., Apt. 14, Brookline, Mass. 02146; Harry R. Allcock, 434 Kemmerer Rd., State College, Pa. 16801, and Robert S. Langer, 77 Lombard St., Newton, Mass. 02158

Division of Ser. No. 593,684, Oct. 5, 1990, Pat. No. 5,149,543. This application May 8, 1992, Ser. No. 880,248
Int. Cl.[5] B01J *13/02*
U.S. Cl. 428—402.22 14 Claims

Scheme 1



1. A composition prepared from an ionically crosslinkable synthetic polymer that is soluble in an aqueous solution prior to crosslinking and has charged side groups which are crosslinked by reaction of the side groups with multivalent ions of the opposite charge to form a gel, followed by reaction of the side groups with multivalent polyions of the opposite charge to form a semi-permeable membrane,

wherein the polymer is a polyelectrolyte selected from the group consisting of poly(phosphazenes), poly(acrylic acids), poly(methacrylic acids), copolymers of acrylic acid or methacrylic acid and polyvinyl ethers or poly(vinyl acetate), sulfonated polystyrene, poly(vinyl amines), poly(vinyl pyridine), poly(vinyl imidazole), imino substituted polyphosphazenes, ammonium or quaternary salts and copolymers thereof, is soluble in an aqueous solution selected from the group consisting of water, aqueous alcohol, and buffered aqueous salt solutions and has charged side groups which are crosslinked by reaction of the side groups with multivalent ions of the opposite charge,

wherein multivalent cations are selected from the group consisting of calcium, copper, aluminum, magnesium, strontium, barium, tin, organic cations, poly(amino acids), poly(ethyleneimine), poly(vinylamine), poly(allyl amine) and polysaccharides, and multivalent anions are selected from the group consisting of dicarboxylic acids, sulfate ions, carbonate ions, poly(acrylic acids), poly(methacrylic acids), copolymers of acrylic acid or methacrylic acid, sulfonated poly(styrene) and poly(styrene) with carboxylic acid groups,

wherein the gel is insoluble in an aqueous solution after crosslinking.

2. The composition of claim 1 wherein the gel is in the form of a microsphere.

3. The composition of claim 1 wherein the semi-permeable membrane forms a microcapsule and the gel is liquified within the microcapsule by removal of the multivalent ions.

5,308,702

IRON-BASED POWDER COMPOSITION FOR USE IN POWDER METALLURGY, PROCESS FOR ITS PRODUCTION AND PROCESS FOR PRODUCING IRON-BASE SINTERED MATERIAL

Osamu Furukimi; Koji Yano, both of Chiba, and Shigeaki Takajo, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Jan. 29, 1992, Ser. No. 827,343
Claims priority, application Japan, Sep. 5, 1991, 3-225443
Int. Cl.[5] B22F *1/00;* B32B *15/02*
U.S. Cl. 428—403 5 Claims

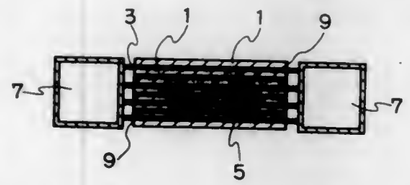
1. An iron-base powder composite for use in powder metallurgy in a form having an iron-based core, wherein particles of either an Fe-Ni alloy powder containing 5–70 wt % Ni or an Fe-Mo alloy powder containing 20–70 wt % Mo or both such alloy powders are bound to the surface of the iron-based core with a binder or binders, said Fe-Ni alloy powder and/or said Fe-Mo alloy powder being present in such an amount that the Ni and/or Mo contents of the resulting sintered parts are within the range of 1–10 wt % Ni and/or 0.5–10 wt % Mo.

5,308,703

ADSORBENT HAVING GOOD HEAT CONDUCTIVITY

Soichiro Tsujimoto, Takaishi; Katsuya Kitaba, Takarazuka; Yoshinobu Otake, Osaka; Masao Hirayama; Habikino, and Harushi Okabe, Amagasaki, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Nov. 25, 1991, Ser. No. 797,014
Claims priority, application Japan, Nov. 28, 1990, 2-331974
Int. Cl.[5] B32B *23/02, 5/16;* B01D *39/14*
U.S. Cl. 428—408 17 Claims



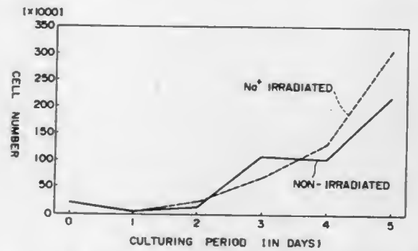
1. An assembly for adsorption comprising at least two sheet-like adsorbents arranged in layers so as to form a space between the adjacent two sheets, each of said sheet-like adsorbents comprising a heat conductive sheet and at least one adsorbing sheet containing an adsorbing agent and being provided on at least one surface of said heat conductive sheet in contact therewith, said adsorbing sheet being a sintered body of activated carbon and having a density of not less than 0.4 g/cm^3.

5,308,704

CELL ADHESIVE MATERIAL AND METHOD FOR PRODUCING SAME

Yoshiaki Suzuki, Tokyo; Masahiro Kusakabe, Kanagawa; Jae-Suk Lee, Hirosawa Wako; Makoto Kaibara, Hirosawa Wako; Masaya Iwaki, Hirosawa Wako, and Hiroyuki Sasabe, Hirosawa Wako, all of Japan, assignors to Sony Corporation, Tokyo and Rikagaku Kenkyusyo, Saitama, both of Japan

Filed Aug. 19, 1992, Ser. No. 933,358
Claims priority, application Japan, Aug. 20, 1991, 3-259550
Int. Cl.[5] B32B *17/00*
U.S. Cl. 428—410 10 Claims



1. A cell adhesive material comprising a polymer material containing carbon as a constituting element, the polymer having a surface which has been modified by ions implanted into the polymer surface by ion bombardment thereby causing cells to adhere to the modified surface.

5,308,705

WATER REPELLENT SURFACE TREATMENT

Helmut Franz, Pittsburgh, and George B. Goodwin, Mars, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 503,587, Apr. 3, 1990, Pat. No. 4,983,459. This application Sep. 28, 1990, Ser. No. 589,235
The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—421 10 Claims

1. An article comprising a substrate at least a portion of the surface of which is treated with a composition comprising:

a. a perfluoroalkyl alkyl silane; and

b. a fluorinated olefin telomer, wherein the substrate is uncoated or inorganic coated and selected from the group consisting of metals, polymers, ceramics and enamels.

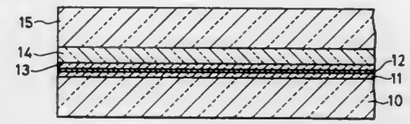
5,308,706

HEAT REFLECTING SANDWICH PLATE

Juo Kawaguchi, Yokohama; Tatsuya Hyodo, and Takaharu Miyazaki, both of Maizuru, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan

Continuation of Ser. No. 708,093, May 24, 1992, abandoned, which is a continuation of Ser. No. 384,559, Jul. 24, 1989, abandoned. This application Jan. 15, 1993, Ser. No. 6,173
Claims priority, application Japan, Jul. 27, 1988, 63-99449; Jul. 7, 1989, 1-176725
Int. Cl.[5] B32B *15/04, 17/06, 17/10*
U.S. Cl. 428—426 8 Claims

1. A heat reflecting sandwich plate, for use in a vehicle, consisting of a first and a second transparent plates bonded together with a transparent resin film and a heat reflecting film, characterized in that the first transparent plate is coated on the inside thereof with said heat reflecting film which intervenes between the first transparent plate and the transparent resin film, said heat reflecting film being a laminate consisting of a first metal oxide single-layer structure, a noble metal layer, and a second metal oxide single-layer structure formed consecutively on the inside of the first transparent plate, said first and second metal oxide layers each being made of any of tin oxide, indium oxide, tin oxide containing indium oxide, zinc oxide or antimony oxide, said first and second metal oxide layers each having a thickness in the range of 190 to 690 Å and each having a refractive index in the range of 1.9 to 2.1, and the first and second metal oxide layers having thicknesses controlled such that their total thickness is 500–900 Å and the



ratio of the thickness of the first metal oxide layer to the thickness of the second metal oxide layer or the ratio of the thickness of the second metal oxide layer to the thickness of the first metal oxide layer is in the range of 1.1 to 1.6,

the noble metal layer has a sheet resistance of 4–10 ohms/-square and is made of one or more than one member selected from gold, silver, copper, palladium and rhodium,

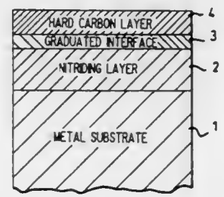
and the heat reflecting sandwich plate produces reflected rays which have a chromaticness specified by $-1\leqq a\leqq 1$ and $-1\leqq b\leqq 1$, where a and b denote the chromaticness indices of Hunter's color specification system, and having a visible light reflectivity lower than 10%.

5,308,707

TREATMENT PROCESS FOR DEPOSITING A LAYER OF CARBON IN VAPOUR PHASE ON THE SURFACE OF A METAL ARTICLE AND ARTICLE THUS OBTAINED

Francois Cellier, Firminy; Jean-Francois Nowak, and Patrick Choquet, both of Saint-Etienne, all of France, assignors to Nitruvid, Argenteuil, France

Filed Oct. 6, 1992, Ser. No. 956,982
Claims priority, application France, Oct. 7, 1991, 91 12322
Int. Cl.[5] B32B *15/04;* C23C *8/24, 16/02, 16/26*
U.S. Cl. 428—610 21 Claims



1. Treatment process for depositing a carbon layer, in vapor phase, in a vessel, on the face of a metal article to impart to this article a resistance to frictional wear, a corrosion resistance, and a color, characterised in that

a) the surface of the article is subjected to a thermochemical pretreatment under electric plasma in the vessel under an atmosphere containing reactive species and hydrogen, the

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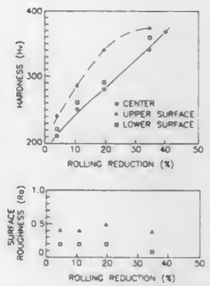
reactive species diffusing into and precipitating in the metal matrix of the article to form a diffusion sublayer, and

b) a layer of carbon is deposited in vapor phase on the surface thus treated, under electric plasma, in the same vessel, while gradually modifying the composition of the atmosphere of the pretreatment, on the one hand by introduction of a hydrocarbon and/or of a silane in the gaseous state and, on the other hand, by progressive reduction in the partial pressures of the reactive species employed during the pretreatment, and the maintenance of the hydrocarbon atmosphere for the carbon deposition.

5,308,708
CARTRIDGE SHUTTER AND MATERIAL FOR ITS PRODUCTION

Motohiko Takeda, Tokyo; Toshiaki Sanada, Hyogo, and Shuichi Kikuchi, Miyagi, all of Japan, assignors to Kawasaki Steel Corporation and Sony Corporation, both of Japan

Filed Dec. 8, 1992, Ser. No. 987,138
Claims priority, application Japan, Dec. 9, 1991, 3-324570
Int. Cl.[5] G11B *23/03*
U.S. Cl. 428—610 **5 Claims**



1. A shutter for a cartridge having excellent scratch resistance and dust-proofness, said shutter being composed of a nonmagnetic corrosion resistant steel sheet containing at least about 10% by weight of Cr, said shutter having a hardness (Hv) of not less than about 220 but not more than 350 in a thicknesswise central portion of the shutter and also having on the outer surface thereof a hardness (Hv) of not less than about 250 but not more than 400, the outer surface of said shutter having a roughness expressed as an average surface roughness (Ra) of not less than about 0.3 μm but not more than 1.0 μm, and the inner surface of said shutter having a roughness (Ra) of about 0.1 to 0.25 μm when said inner surface is finished as a dull surface, and wherein said inner surface has a roughness (Ra) of about 0.15 to 0.50 μm when said inner surface is finished by a grinding roll.

5,308,709
PROCESS FOR FORMING COMPOSITE FILM ON ALUMINUM OR ALUMINUM ALLOY ARTICLE SURFACE AND RESULTING PRODUCT

Takao Ogino; Ryoji Morita, and Shigeo Tanaka, all of Tokyo, Japan, assignors to Nihon Parkerizing Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,409
Claims priority, application Japan, Jan. 29, 1991, 3-009055
Int. Cl.[5] B32B *15/04, 15/08;* B05D *1/36*
U.S. Cl. 428—623 **10 Claims**

1. A process for forming a composite film on a surface of an aluminum or aluminum alloy material, said process comprising:

a) subjecting the surface of the material to treatment with liquid to form on the surface of the material a chromate film comprising chromium in an amount of about 10–150 mg/m^2, wherein the chromating liquid contains 0.4–10 g/l of chromic acid, 1.5–50 g/l phosphoric acid or 0.1–10 g/l of nitric acid, and 0.05–5 g/l of hydrofluoric acid, said treatment with the chromating liquid being followed by rinsing with water and drying;

b) coating the thus formed chromate film with an organic macromolecular resin composition, said resin composition consisting essentially of

i) urethane resin

ii) at least one resin selected from the group consisting of polyester resin and epoxy resin,

iii) a lubricating additive consisting of a wax having a saponification value of about 30 or less, and

iv) a silica sol, the urethane resin being present in the composition in an amount of about 30–95% by weight of all resins in the composition, said at least one resin being present in the composition in an amount of about 5–70% by weight of all resins in the composition, said lubricating additive being present in an amount of about 5–20% of all solids in the composition, said silica sol being present in an amount of about 5 to 30% of all solids in the composition; and

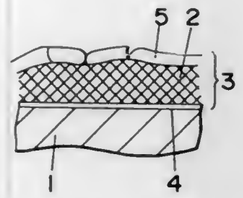
c) drying the organic macromolecular resin composition to form a film layer on the chromate film.

9. An article having a composite film produced by the process of claim 1.

5,308,710
AL-ZN-SI BASE ALLOY COATED PRODUCT

Masanori Takeda, Amagasaki; Youichiro Suzuki, Mizunami, and Kunio Hayakawa, Aichi, all of Japan, assignors to Daido Steel Sheet Corp., Hyogo and S-Tem Ltd., Nagoya, both of Japan

Filed Oct. 8, 1992, Ser. No. 957,868
Claims priority, application Japan, Nov. 29, 1991, 3-316918
Int. Cl.[5] B32B *15/18;* C23C *2/06, 2/12*
U.S. Cl. 428—653 **10 Claims**

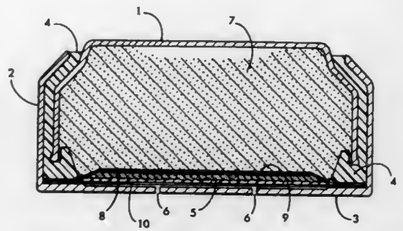


1. A corrosion resistant article comprising a ferrous base and an alloy covering the surface of the ferrous base, wherein the alloy comprises an interface layer disposed on the ferrous base and an intermediate layer disposed on the interface layer, and an outer layer disposed on the intermediate layer, the interface layer consists essentially of Fe, Zn, and at least one member of the group consisting of Al, Si, Mg, Ti, In, Tl, Sb, Nb, Co, Bi, Mn, Na, Ca, Ba, and Ni, the intermediate layer consists essentially of 55–65 wt % Al, 5–10 wt % Fe, 2–4 wt % Si, and 25–35 wt % Zn, and the outer layer consists essentially of Al, Zn, and Si and the intermediate layer has a cross-sectional area of 15 to 90% of the entire cross-sectional area of the alloy.

5,308,711
METAL-AIR CATHODE AND CELL HAVING CATALYTICALLY ACTIVE MANGANESE COMPOUNDS OF VALENCE STATE +2

Joseph L. Passaniti, and Robert B. Dopp, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed Feb. 9, 1993, Ser. No. 15,641
Int. Cl.[5] H01M *4/50, 4/00*
U.S. Cl. 429—29 **57 Claims**



1. An electrochemical cathode for a metal-air cell having a metal anode, comprising:

(a) a current collecting substrate capable of being connected to electrical circuitry;

(b) an active layer comprising an admixture of carbon and manganese compounds, the manganese compounds being substantially all of valence state +2, the active layer and current collecting substrate forming a current collecting sublaminate, the sublaminate having first and second sides;

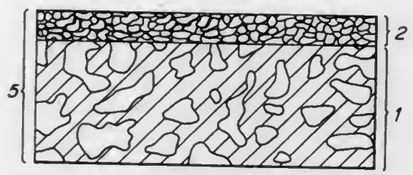
(c) a barrier layer disposed on the first side of the current collecting sublaminate, and

(d) an air diffusion layer disposed on the second side of the current collecting sublaminate.

5,308,712
AIR ELECTRODE AND SOLID ELECTROLYTE FUEL CELL HAVING THE SAME

Shoji Seike, and Hirotake Yamada, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 26, 1992, Ser. No. 858,031
Claims priority, application Japan, Mar. 28, 1991, 3-87351
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—30 **5 Claims**



1. An air electrode as a component of a solid electrolyte fuel cell, said air electrode comprising:

a first layer having an open porosity of 25% to 57%, pore diameters of 2.5 μm to 12 μm and a resistivity of less than 0.22 Ωcm; and

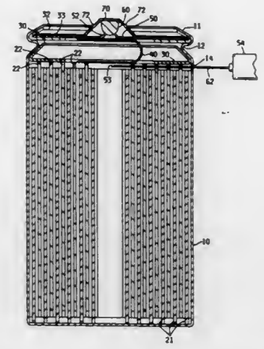
a second layer formed on said first layer and having an open porosity of 8% to 24% and pore diameters of 0.2 μm to 3 μm;

wherein a ratio of the thickness of the second layer to the thickness of the air electrode is 2% to 28%, a sum of the thickness of the first and second layers is 0.7 mm to 3.0 mm, and materials of the first and second layers have perovskite structures selected from the group consisting of lanthanum manganate, calcium manganate, lanthanum nickelate, lanthanum cobalate and lanthanum chromate.

5,308,713
PROCESS FOR THE REACTIVATING SEALED LIQUID ELECTROLYTE BATTERIES

William N. Mayer, White Bear Lake, and Stephen D. Tuomela, Fridley, both of Minn., assignors to Modern Controls, Inc., Minneapolis, Minn.

Filed Feb. 26, 1993, Ser. No. 24,151
Int. Cl.[5] H01M *10/42*
U.S. Cl. 429—49 **19 Claims**

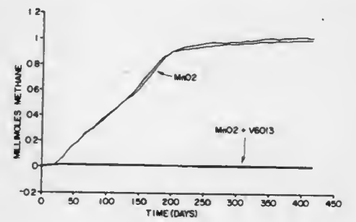


16. A method of reactivating a spent electrolyte battery cell having an outer case and an interior, comprising the steps of forming an opening into the cell interior; injecting a quantity of electrolyte liquid into the cell interior; absorbing the electrolyte liquid into the cell interior; repeatedly electrically charging and discharging the cell at substantially equal rates, and sealing the opening formed in the first step.

5,308,714
METHOD FOR PREVENTING GAS FORMATION IN ELECTROCHEMICAL CELLS

Ann M. Crespi, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 840,224, Feb. 24, 1992, Pat. No. 5,180,642. This application Jul. 21, 1992, Ser. No. 917,541
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] H01M *6/14*
U.S. Cl. 429—59 **9 Claims**



1. In a non-aqueous, hermetically sealed electrochemical cell having

(a) an active metal anode;

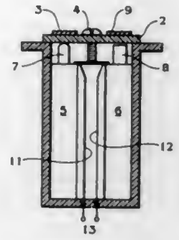
(b) an organic electrolyte; and

(c) a cathode having a reactive cathode material susceptible

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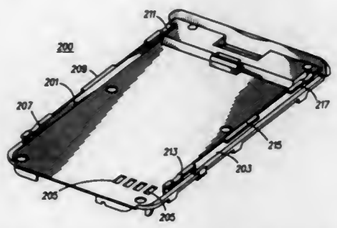
to gassing on discharge, wherein the improvement comprises an amount of V_6O_{13} in the range of about 15% up to about 40% of the cathode weight added to the reactive cathode material.

5,308,715
AIRCRAFT SYSTEM BATTERY PACK
Armand J. Aronne, South Massapequa, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Aug. 19, 1993, Ser. No. 109,216
Int. Cl.[5] H01M *10/48, 2/10*
U.S. Cl. 429—91 **13 Claims**



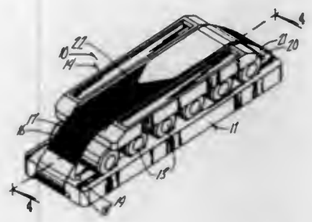
1. A battery pack, comprising
a housing;
at least a pair of batteries in said housing;
a lamp in said housing;
an output terminal;
a switch in said housing; and
electrical conductors electrically connecting said batteries in series and to provide a DC output voltage and electrical conductors electrically connecting said batteries in circuit, with said lamp and said switch in a manner whereby manual operation of said switch closes said circuit with said batteries and said lamp and said lamp indicates the power output condition of said batteries.

5,308,716
BATTERY PACK RETENTION APPARATUS
Michael L. Shababy, Stone Park, and Timothy P. McCormick, Gurnee, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 20, 1993, Ser. No. 123,815
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—97 **12 Claims**



1. A battery pack retaining device formed integrally with a first planar side of a housing of an electrical device and accepting a battery pack, said battery pack retaining device comprising:
a first rail coupled to the first planar side and having at least a first channel formed therein along a first portion of the first rail, the first channel being perpendicular to the first planar side; and
at least a first compliance guide bar integrally coupled to the first portion of the first rail and forming a top side of said first channel, the at least first compliance guide bar having a shape such that upon full insertion of the battery pack the guide bar is deflecting away from the first planar side by the battery pack and exerting a first predetermined force on the battery pack towards the first planar side.

5,308,717
BATTERY JIG
Patrick D. Gordin, Oskaloosa, Iowa, assignor to S & K Racing Products, Inc., Oskaloosa, Iowa
Filed Feb. 12, 1992, Ser. No. 835,132
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—99 **15 Claims**

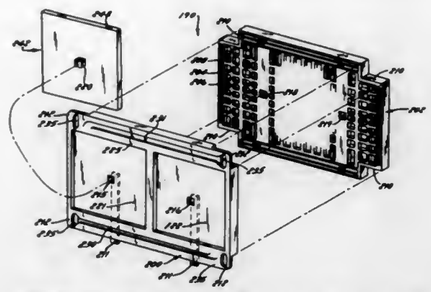


1. A battery jig for clamping in place a plurality of single cell cylindrical batteries having positive and negative electrical terminals at opposite ends in generally parallel relationship to facilitate unobstructed access to said opposite ends for installing and working on electrical connections between adjacent ends of opposite ends of certain of the batteries to create and maintain battery packs each comprising a plurality of said batteries having adjacent electrically connected electrical terminals comprising:
a first plate means including a battery clamping surface;
a second plate means including a battery clamping surface;
the first and second plate means having longitudinal axes extending between opposite ends and a plurality of recesses in the battery clamping surfaces generally equally spaced apart along and transverse to the longitudinal axes, the recesses being adapted to receive at least a portion of a battery without obstructing access to its electrical terminals;
adjustable securing means associated with the first and second plate means for bringing the first and second plate means towards one another and providing clamping pressure by the battery clamping surfaces against the plurality of batteries therebetween, while leaving said opposite ends of the batteries generally unobstructed.

5,308,718
END BLOCK CONSTRUCTIONS FOR BATTERIES
Phillip A. Eidler, Muskego; Wayne W. Blazek, Milwaukee, and John V. Berndt, Shorewood, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Filed Jan. 15, 1993, Ser. No. 5,484
Int. Cl.[5] H01M *2/00*
U.S. Cl. 429—152 **18 Claims**

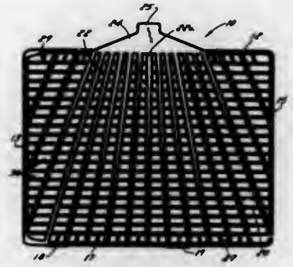
1. A battery comprising electrode elements and at least one end block comprising:
a first planar element having a first and a second surface and a plurality of ribs on the first surface defining a pattern;
a second planar element having a first and a second surface and a plurality of ribs on the first surface defining a pattern;

the ribs of the first and second elements having tops, the tops of the ribs of the first and second elements being joint to



one another, the ribs being formed integrally with the elements.

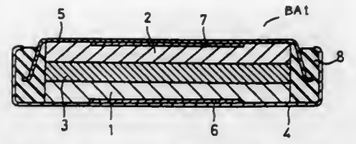
5,308,719
LEAD ACID BATTERIES CONTAINING CENTER LUG PLATES AND HIGH PERFORMANCE CAST-ON STRAPS
Edward N. Mrotek, Grafton; David A. Thuerk, Brookfield, and Wen-Hong Kao, Brown Deer, all of Wis., assignors to Globe-union Inc., Milwaukee, Wis.
Filed Sep. 21, 1992, Ser. No. 948,171
Int. Cl.[5] H01M *4/72*
U.S. Cl. 429—160 **15 Claims**



1. A grid for a lead acid battery, comprising:
a generally rectangular, electrically conductive grid body having opposed top and bottom frame elements and opposed side frame elements, the grid also including a current collector lug extending from the top frame element and being centered between the side elements and wherein a plurality of spaced apart conductive wires define a grid pattern at least a portion or the wires extending in a non-parallel pattern from the top element.

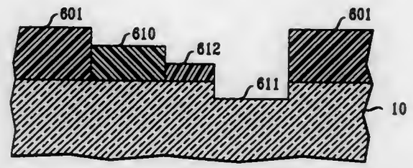
5,308,720
NON-AQUEOUS BATTERY HAVING A LITHIUM-NICKEL-OXYGEN CATHODE
Hiroshi Kurokawa; Toshiyuki Nohma; Yuuji Yamamoto; Mayumi Uehara; Koji Nishio, and Toshihiko Saitoh, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Aug. 5, 1993, Ser. No. 102,379
Claims priority, application Japan, Aug. 6, 1992, 4-232975
Int. Cl.[5] H01M *4/52*
U.S. Cl. 429—194 **24 Claims**

1. A non-aqueous battery, comprising:
a positive electrode having a composition essentially represented by a formula LixNiOy, where $0<x\leqq1.3$ and $1.8<y<2.2$, said formula having a ratio of I_{104} to I_{003} ranging from 0.35 to 0.68 when measured by an X-ray powder diffraction method using CuK_{82} as a target, said I_{104} representing a peak intensity of reflection of X-rays at an angle about $2\theta=44$ degrees with respect to a lattice plane (104) in the composition, and said I_{103} representing



another peak intensity of reflection of X-rays at an angle about $2\theta=19$ degrees with respect to a lattice plane (003) in the composition;
a negative electrode having a material which occludes and releases lithium reversibly; and
a non-aqueous electrolyte.

5,308,721
SELF-ALIGNED METHOD OF MAKING PHASE-SHIFTING LITHOGRAHIC MASKS HAVING THREE OR MORE PHASE-SHIFTS
Joseph G. Garofalo, South Orange, and Christophe Pierrat, Basking Ridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 29, 1992, Ser. No. 906,070
Int. Cl.[5] G03F *9/00*; G03C *5/00*
U.S. Cl. 430—5 **22 Claims**



1. A method of making a phase-shifting mask comprising the steps of
a) introducing first, second, and third mutually different dose levels of actinic radiation into respective first, second, and third regions of an original resist layer, having a uniform composition and a uniform thickness, located on a planar surface of a body that is transparent with respect to optical radiation of a prescribed wavelength, whereby the first, second, and third regions have mutually different rates of thickness reduction during step (b);
b) subjecting the original resist layer to a first treatment that reduces the thicknesses of the first, second, and third regions of the resist layer to mutually different amounts, and in particular that reduces the thickness of the first region to an amount that is less than those of the second and third regions;
c) subjecting the remaining resist layer and a first region of the body that underlies the first region of the original resist layer to a second treatment that etches the first region of the body down to a predetermined depth beneath its planar surface.

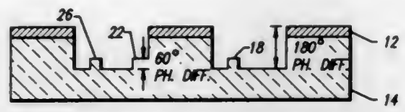
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5,308,722

VOTING TECHNIQUE FOR THE MANUFACTURE OF DEFECT-FREE PRINTING PHASE SHIFT LITHOGRAPHY

John L. Nistler, Martindale, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Sep. 24, 1992, Ser. No. 950,367
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **21 Claims**



1. A process for fabricating a defect-fee printing optically phase shifted mask for use in forming lithographic patterns comprising:

(a) forming an optically opaque layer on a major surface of a transparent substrate;

(b) patterning said opaque layer by photolithographic method to define a mask pattern in said opaque layer, thereby exposing portions of said underlying transparent substrate;

(c) coating said surface of said opaque layer and exposed transparent substrate with a resist material and exposing said resist material with appropriate electromagnetic energy to thereby define a first phase shifting pattern in said transparent substrate;

(d) partially etching said first phase shifting pattern into said exposed portions of said transparent substrate by an amount equivalent to a pre-selected partial phase shift angle given by 180°/n, where n is an integer ranging from 3 to 5; and

(e) striping said resist defining said first phase shifting pattern and recoating and repatterning resist on said transparent surface and said opaque surface, said pattern including said first phase shifting pattern, partially etching into said transparent substrate by said partial phase shift angle, and repeating this step until a full 180° phase shift is obtained, whereby any phase defects that are replicated in said exposed portions of said phase shifted mask are not printable on a semiconductor wafer due to such defects having a maximum phase error that is less than 180°.

5,308,723

THIN METALLIC SHEET FOR SHADOW MASK

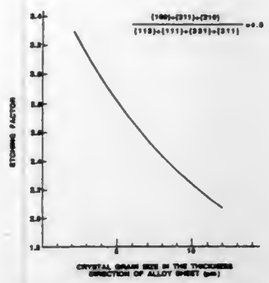
Tadashi Inoue; Hidekazu Yoshizawa; Kiyoshi Tsuru; Tomoyoshi Okita, and Yoshiaki Shimizu, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,802
Claims priority, application Japan, Jan. 24, 1992, 4-032939; Jan. 31, 1992, 4-040714
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—23 **16 Claims**

1. Thin metallic sheet for shadow mask comprising:

a Fe-Ni alloy sheet having Fe and Ni as major elements;

said alloy sheet having degrees of planes on a surface, the degree of {331} plane being 14% or less, the degree of {210} plane being 10% or less and the degree of {211} plane being 10% or less, each of said degrees of planes being calculated by means of dividing a relative X-ray intensity ratio of each of (331), (210) and (211) diffraction planes by a sum of relative X-ray intensity ratios of (111), (200), (220), (311), (331), (420) and (422) diffraction planes; and



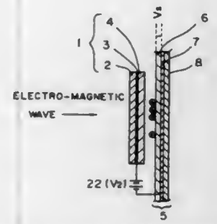
a ratio of degrees of planes, which is {210}/[{331}+{211}] being 0.2 to 1.

5,308,724

PHOTOSENSITIVE MEDIUM FOR RECORDING CHARGE LATENT IMAGE AND RECORDING METHOD THEREOF

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Fujisawa; Hirohiko Shinonaga; Tsutou Asakura, both of Yokohama; Masato Furuya, and Tetsuji Suzuki, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Division of Ser. No. 496,680, Mar. 21, 1990. This application Apr. 14, 1992, Ser. No. 869,884
Claims priority, application Japan, Mar. 24, 1989, 1-72637; Mar. 31, 1989, 1-83755
Int. Cl.[5] G03G *13/04*
U.S. Cl. 430—48 **2 Claims**



1. A method for recording a charge latent image on a recording medium, comprising the steps of:

arranging a photo-conductive layer and a charge holding layer to face each other through a gap, each layer having an electrode on a surface thereof and said gap having a predetermined size;

applying a predetermined voltage across said two layers through said two electrodes while substantially maintaining said gap at said predetermined size, the time constant of said predetermined voltage rising to generate a discharge across said two layers, said discharge having a time constant equal to or less than said time constant of said predetermined voltage;

applying an electro-magnetic wave corresponding to a charge latent image intended to be recorded to said photoconductive layer through said electrode thereof while said discharge is generating to vary impedance of said photoconductive layer, thus recording said charge latent image on said charge holding layer.

5,308,725

FLEXIBLE BELT SUPPORTED BY FLEXIBLE SUBSTRATE CARRIER SLEEVE

Robert C. U. Yu, Webster; Geoffrey M. T. Foley, Fairport; William G. Herbert, Williamson; William W. Limburg, Penfield; Satchidanand Mishra, Webster; Richard L. Post, Penfield, and Donald C. VonHoene, Fairfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1992, Ser. No. 953,038
Int. Cl.[5] G03G *15/00*
U.S. Cl. 430—56 **20 Claims**

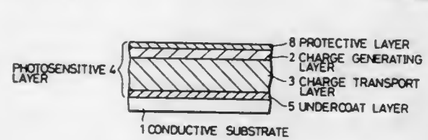
1. A method for supporting a preformed, continuous flexible belt comprising providing at least two support members maintained at a predetermined distance from each other, encircling said support members with at least one loosely hanging preformed flexible seamless carrier support sleeve having a predetermined outer circumference, encircling said seamless carrier support sleeve with a preformed, continuous flexible belt having an inner circumference substantially same as or less than said predetermined outer circumference of said seamless carrier support sleeve, and increasing said distance between said support members to stretch said flexible belt, the size of the inner circumference of said stretched flexible belt being substantially equal to the outer circumference of said seamless carrier support sleeve after stretching said flexible belt.

5,308,726

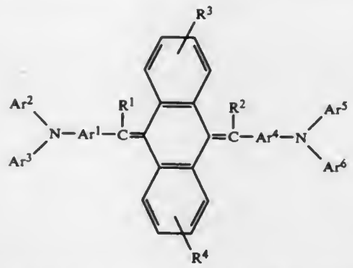
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE ELEMENT

Akira Hirano, and Eriko Tsuruoka, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 989,817
Claims priority, application Japan, Dec. 12, 1991, 3-350778
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—56 **3 Claims**



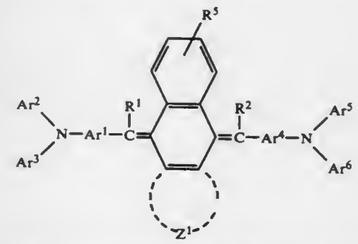
1. An electrophotographic photosensitive element comprising a conductive substrate and at least a photosensitive layer formed on the conductive substrate, said electrophotographic photosensitive element being characterized in that the photosensitive layer contains, as a charge transport material, a compound represented by the formula (1)



(1)

wherein each of Ar^1, Ar^2, Ar^3, Ar^4, Ar^5, and Ar^6 is a mono or disubstituted or non-substituted aromatic or heterocyclic group with the proviso that when simultaneously Ar^1 and Ar^4 are phenylene, simultaneously Ar^2, Ar^3, Ar^5, and Ar^6 are not all phenyl groups or phenylene groups; and each of R^1, R^2, R^3, and R^4 is a substituted or non-substituted aromatic or heterocyclic group, a hydrogen atom, a halogen atom, a hydroxyl group, a substituted or non-substituted amino group, a lower alkoxy group having 1 to 6 carbon atoms which may have a substituent, or a lower alkyl group having 1 to 6 carbon atoms which may have a substituent.

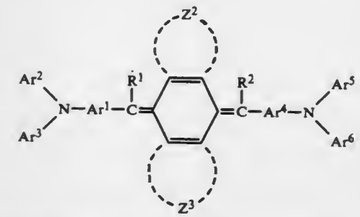
2. An electrophotographic photosensitive element comprising a conductive substrate and at least a photosensitive layer formed on the conductive substrate, said electrophotographic photosensitive element being characterized in that the photosensitive layer contains, as a charge transport material, a compound represented by the formula (2)



(2)

(wherein —Z^1— is two hydrogen atoms, or a disubstituted or non-substituted heterocyclic group; each of Ar^1, Ar^2, Ar^3, Ar^4, Ar^5 and Ar^6 is a mono or disubstituted or non-substituted aromatic or heterocyclic group; and each of R^1, R^2 and R^5 is a substituted or non-substituted aromatic or heterocyclic group, a hydrogen atom, a halogen atom, a hydroxyl group, a substituted or non-substituted amino group, a lower alkoxy group having 1 to 6 carbon atoms which may have a substituent, or a lower alkyl group having 1 to 6 carbon atoms which may have a substituent.

3. An electrophotographic photosensitive element comprising a conductive substrate and at least a photosensitive layer formed on the conductive substrate, said electrophotographic photosensitive element being characterized in that the photosensitive layer contains, as a charge transport material, a compound represented by the formula (3)

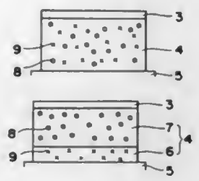


(3)

wherein each of —Z^2— and —Z^3— is a disubstituted or non-substituted heterocyclic group; each of Ar^1, Ar^2, Ar^3, Ar^4, Ar^5 and Ar^6 is a mono or disubstituted or non-substituted aromatic or heterocyclic group; and each of R^1 and R^2 is a substituted or non-substituted aromatic or heterocyclic group, a hydrogen atom, a halogen atom, a hydroxyl group, a substituted or non-substituted amino group, a lower alkoxy group having 1 to 6 carbon atoms which may have a substituent, or a lower alkyl group having 1 to 6 carbon atoms which may have a substituent.

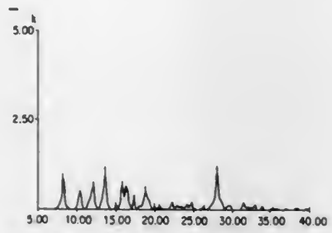
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,727
PHOTOSENSITIVE MEMBER EXCELLENT IN ANTIOXIDATION
Izumi Osawa, and Isao Doi, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 544,182, Jun. 26, 1990, Pat. No. 5,096,793. This application Sep. 27, 1991, Ser. No. 766,389
Claims priority, application Japan, Jun. 28, 1989, 1-166338; Jun. 28, 1989, 1-166339
Int. Cl.[5] G03G *5/047, 5/14*
U.S. Cl. 430—58 **12 Claims**



4. A electrophotographic photosensitive member comprising:
an electrically conductive substrate,
a surface protective layer,
a charge generating layer formed on the electrically conductive substrate, and
a charge transporting layer formed between the charge generating layer and the protective layer and including an antioxidant in such a manner that quantity of the antioxidant increases with being closer to the interface between the protective layer and the photosensitive layer.

5,308,728
DICHLOROTIN PHTHALOCYANINE CRYSTAL, PROCESS FOR PRODUCING THE SAME, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME
Akira Imai; Katsumi Nukada; Katsumi Daimon; Masakazu Iijima; Toru Ishii; Yasuo Sakaguchi, and Kiyokazu Mashimo, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Aug. 11, 1992, Ser. No. 927,961
Claims priority, application Japan, Aug. 16, 1991, 3-229690; Nov. 15, 1991, 3-326721
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—58 **8 Claims**



1. A dichlorotin phthalocyanine crystal showing, in X-ray diffractometry using a CuK_α ray, peaks at Bragg angles ($2\theta \pm 0.2°$) of 8.3°, 12.2°, 13.7°, and 28.2° with any other peak(s) observed at a Bragg angle(s) between 25° and 30° having an intensity of not more than 30% of that of the peak at 28.2°.

2. An electrophotographic photoreceptor comprising a conductive substrate having thereon a photosensitive layer containing a dichlorotin phthalocyanine crystal showing, in the X-ray diffractometry using a CuK_α ray, peaks at Bragg angles ($2\theta \pm 0.2°$) of 8.3°, 12.2°, 13.7°, and 28.2° with any other peak(s) observed at a Bragg angle(s) between 25° and 30° having an intensity of not more than 30% of that of the peak at 28.2°.

5,308,729
ELECTROPHOTOGRAPHIC LIQUID DEVELOPER WITH CHARGE DIRECTOR
Bradley L. Beach; Carla M. Butler; Terence E. Franey; Ashok Murthy; Pramod K. Sharma, and Ajay K. Suthar, all of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Apr. 30, 1992, Ser. No. 876,673
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—115 **15 Claims**

1. A liquid toner comprising mineral oil as a vehicle, resin particles comprising a thorough mixture of an ionomeric resin and the acid form of a resin otherwise of the same structural form of said ionomeric resin, said resins being in a ratio of about 6 parts by weight of said ionomeric resin to 4 parts by weight said acid resin, at least one pigment, and charge control materials.

5,308,730
LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY
Nobuo Suzuki; Yutaka Sakasai; Seiji Horie, and Eiichi Kato, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 26, 1992, Ser. No. 966,347
Claims priority, application Japan, Oct. 24, 1991, 3-277741
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—115 **20 Claims**

1. A liquid developer for electrostatic photography, which comprises, in a nonaqueous solvent having an electric resistance of at least 10^9 Ω.cm and a dielectric constant of up to 3.5, (a) a toner containing at least a resin, (b) a charge-controlling agent resin or a charge-controlling agent, and (c) an acid group-containing polymer soluble in said nonaqueous solvent;
wherein said charge-controlling agent resin is a copolymer comprising a reaction product of a polymer comprising maleic anhydride and at least one monomer that can be polymerized to form a polymer soluble in said nonaqueous solvent, with a primary amino compound or a mixture of a primary amino compound and a secondary amino compound, and comprising hemimaleic acid amide components and maleinimide components as repeating units.

5,308,731
LIQUID DEVELOPER COMPOSITIONS WITH ALUMINUM HYDROXYCARBOXYLIC ACIDS
James R. Larson, Fairport, and Bing R. Hsieh, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 25, 1993, Ser. No. 9,192
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—115 **28 Claims**

1. A negatively charged liquid developer comprised of a nonpolar liquid, thermoplastic resin particles, a nonploar liquid soluble ionic or zwitterionic charge director, and a charge adjuvant comprised of an aluminum hydroxycarboxylic acid, or mixtures thereof; and wherein said charge adjuvant is incorporated into said thermoplastic resin particles and said thermoplastic resin particles are dispersed in said nonpolar liquid and said liquid soluble charge director.

5,308,732
MAGNETIC BRUSH CLEANING PROCESSES
Richard W. Bigelow, Webster; Grace T. Brewington, Fairport; Kristen M. Natale, and Richard P. Germain, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 738,757, Aug. 1, 1991, Pat. No. 5,238,769. This application May 10, 1993, Ser. No. 58,188
Int. Cl.[5] G03G *13/22*
U.S. Cl. 430—125 **9 Claims**

1. An imaging process consisting essentially of (1) charging an imaging member in an imaging apparatus; (2) creating on the member a latent image comprising areas of high, intermediate, and low potential; (3) developing the low areas of potential with a first developer comprising carrier and a toner comprised of resin, pigment, and a charge enhancing additive; (4) developing the high areas of potential with a second developer comprising carrier and a second toner comprised of resin, pigment, and a charge enhancing additive; (5) transferring the resulting developed image to a substrate; (6) fixing the image thereto; and (7) cleaning residual toner from said imaging member and wherein there is selected for cleaning a magnetic brush consisting essentially of carrier particles, a magnetic roll, and biased detone roll with scraper, and wherein the carrier particles are treated with a metal oxide.

5,308,733
METHOD OF NON-ELECTROSTATICALLY TRANSFERRING SMALL ELECTROSTATOGRAPHIC TONER PARTICLES FROM AN ELEMENT TO A RECEIVER
Donald S. Rimai, Webster; Louis J. Sorriero, Rochester, and John M. McCabe, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 31, 1992, Ser. No. 999,021
Int. Cl.[5] G03G *13/16*
U.S. Cl. 430—126 **20 Claims**

1. A method of non-electrostatically transferring dry toner particles which comprise a toner binder and which have a particle size of 8 micrometers or less from an element to a receiver which comprises:
A. heating a receiver which comprises:
1. a substrate;
2. a coating of a semi-crystalline polyester on a surface of the substrate wherein said semi-crystalline polyester has a glass transition temperature of from approximately 5° C. to 80° C., a melting temperature of from approximately 40° C. to 200° C. a crystallinity of from approximately 5 to 25 percent by weight, based on the total weight of the polyester, a weight average molecular weight of from approximately 10,000 to 150,000, a number average molecular weight of from approximately 5,000 to 75,000 and a surface energy of from 44 dynes/cm to approximately 52 dynes/cm to a temperature of from approximately 70° C. to approximately 95° C.;
B. contracting said toner particles on said element with said semi-crystalline polyester coated receiver whereby virtually all of said toner particles are transferred from the surface of said element to said semi-crystalline polyester coating on said receiver; and
C. separating said receiver from said element.

5,308,734
TONER PROCESSES
Guerino G. Sacripante, Oakville, and Grazyna E. Kmiecik-Lawrynowicz, Burlington, both of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1992, Ser. No. 989,613
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—137 **29 Claims**

1. A process for the preparation of a toner composition which comprises dispersing toner fine particles having a volume average diameter of from about 1 to about 15 microns and comprising polymer resin and pigment in an aqueous solution containing ionic surfactant and nonionic surfactant to form a mixture, adding thereto a counterionic surfactant with a polarity opposite to that of said ionic surfactant, homogenizing and stirring said mixture, and heating to provide coalescence of said toner fine particles, and whereby said toner is formed.

5,308,735
PHOTOSENSITIVE DIAZO RESINS AND RESIN COMPOSITIONS FOR LITHOGRAPHIC PRINTING HAVING A QUATERNARY AMMONIUM SALT-CONTAINING GROUP
Kazunori Kanda, Yao; Edward Lam, Hirakata, and Osamu Nanba, Takarazuka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Oct. 29, 1992, Ser. No. 968,310
Claims priority, application Japan, Nov. 1, 1991, 3-287492
Int. Cl.[5] G03F *7/021*
U.S. Cl. 430—175 **4 Claims**

1. A photosensitive diazo resin for lithographic printing represented by the formula:

wherein X^- is a counter anion, Y is a divalent bonding group selected from the group consisting of —NH—, —S— and —O—, R_1, R_2 and R_3 are groups which are independently selected from the group consisting of hydrogen, an alkyl group and an alkoxy group, R_4 and R_5 are groups which are independently selected from the group consisting of hydrogen, an alkyl group and a phenyl group, 1 and m are integers which satisfy the relation:
$1+m=2$ to 100, $1/m=30$ to 99/1 to 70
and A is a quaternary ammonium salt-containing group represented by the formula:

wherein B is a straight or branched divalent $C_{1\text{-}10}$ alkyl group which bonds to an aromatic ring by a group selected from the group consisting of —CH_2—, —CO—, —O—, —S— and —N—, and R_6, R_7 and R_8 are groups which are independently selected from the group consisting of hydrogen and a $C_{1\text{-}20}$ alkyl group provided that at least two of R_6, R_7 and R_8 are alkyl groups.

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5,308,736

DYE-DONOR ELEMENT FOR USE ACCORDING TO THERMAL DYE SUBLIMATION TRANSFER

Geert H. Defieuw, Kessel-Lo; Herman J. Uytterhoeven, Bonheiden, both of Belgium; Rolf Wehrmann, and Wolfgang Ebert, both of Krefeld, Fed. Rep. of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 13, 1992, Ser. No. 928,735

Claims priority, application United Kingdom, Sep. 10, 1991, 91202308

Int. Cl.[5] B41M *5/035*

U.S. Cl. 430—200 10 Claims

1. Dye-donor element for use according to thermal dye sublimation transfer comprising a support having on one side thereof (i) a dye layer containing a dye and binder and (ii) a thermal solvent, said thermal solvent being a substituted di(-hetero)aryl carbonate.

5,308,737

LASER PROPULSION TRANSFER USING BLACK METAL COATED SUBSTRATES

Richard E. Bills; Hsin-hsin Chou, both if Woodbury; William V. Dower, St. Paul, and Martin B. Wolk, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 18, 1993, Ser. No. 33,112

Int. Cl.[5] G03C *5/54, 1/94*

U.S. Cl. 430—201 17 Claims

1. A thermal transfer donor element comprising a substrate, a black metal layer on one surface of said substrate, a gas generating polymer layer over said black metal layer, and a colorant in or over said gas generating polymer layer, wherein said black metal layer comprises a mixture of metal and metal oxide.

5,308,738

SILVER SALT DIFFUSING TRANSFER MATERIAL WITH LIGHT INSENSITIVE SILVER SALT LAYER

René M. De Keyzer, Waasmunster, and Johan J. Lamotte, Louvain, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 5, 1992, Ser. No. 894,451

Claims priority, application European Pat. Off., Jun. 20, 1991, 91201577.3

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—230 6 Claims

1. A photographic material comprising on a support an image-receiving layer containing physical development nuclei, a photosensitive silver halide emulsion layer, a substantially light insensitive layer containing silver salt, and an outermost hydrophilic layer being in water-permeable relationship with the image-receiving layer, said support being a film support or a paper support coated on one or both sides with an alpha olefin polymer characterized in that said photosensitive silver halide emulsion layer contains silver halide particles having an average diameter of at least 0.8 μm in an amount of not more than 1.5 g/m^2 of silver halide expressed as $AgNO_3$, said photosensitive silver halide emulsion layer being located between said image-receiving layer and said substantially light insensitive layer and said substantially light insensitive layer having a speed of at least a factor 10 less than said photosensitive silver halide emulsion layer.

5,308,739

IMAGING ELEMENT COMPRISING AN IMPERMEABLE BARRIER LAYER PROVIDED BETWEEN A PHOTOSENSITIVE LAYER AND A POROUS LAYER

Herman Uytterhoeven, Bonheiden, and Luc Bastiaens, Brasschaat, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 8, 1993, Ser. No. 14,518

Claims priority, application European Pat. Off., Feb. 29, 1992, 92200590.5

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—258 10 Claims

1. An imaging element comprising a support, a porous layer, a photosensitive layer containing a photopolymerizable composition and optionally a stripping layer characterized in that there is provided a barrier layer between said photosensitive layer and said porous layer said barrier layer being impermeable for the photopolymerizable composition at ambient temperature and capable of increasing its permeability with increasing temperature.

5,308,740

ELECTRICAL MEASUREMENT OF SIDEWALL ANGLE

Michael K. Templeton, Mountain View, and Subhash Gupta, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 18, 1992, Ser. No. 947,242

Int. Cl.[5] G03C *5/00*; B44C *1/22*

U.S. Cl. 430—311 10 Claims



1. A method for determining the sidewall angle of a structure supported on a surface of a substrate, comprising:

(a) forming an etchable conducting layer over said surface of said substrate;

(b) forming said structure on said etchable conducting layer;

(c) measuring a first linewidth on a first portion of said etchable conducting layer by a process comprising

(1) forming a patterned layer of lines having a given width in said structure on said conducting layer, leaving exposed portions thereof,

(2) performing a pattern transfer etch by removing said exposed portions to leave patterned areas in said conducting layer which replicate said patterned layer and which have a first linewidth equal to said given width, and

(3) electrically measuring said first linewidth;

(d) measuring a second linewidth on a second portion of said etchable conducting layer by a process comprising

(1) forming a patterned layer of lines having a given width on said conducting layer, leaving exposed portions thereof,

(2) performing a shape-altering etch that alters the shape of said patterned layer,

(3) performing a pattern transfer etch by removing said exposed portions to leave patterned areas in said conducting layer which replicate said patterned layer and which have a second linewidth equal to said given width, and

(4) electrically measuring said second linewidth; and

(e) calculating said sidewall angle by comparing said second linewidth t said first linewidth.

5,308,741

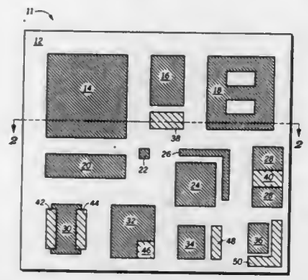
LITHOGRAPHIC METHOD USING DOUBLE EXPOSURE TECHNIQUES, MASK POSITION SHIFTING AND LIGHT PHASE SHIFTING

Kevin G. Kemp, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1992, Ser. No. 922,409

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—312 28 Claims



1. A method for forming masking features upon a substrate wherein the substrate has a top surface made of a masking layer, the method comprising the steps of:

positioning a first phase shifting mask in a first position in close proximity to the substrate, the first position masking a first surface area of the masking layer;

exposing the masking layer to radiation wherein the radiation is passed through the first phase shifting mask to form a first plurality of exposed regions of the masking layer;

positioning a second phase shifting mask in a second position in close proximity to the substrate, the second position masking a second surface area of the masking layer wherein the second surface area at least partially overlaps the first surface area; and

exposing the masking layer to radiation wherein the radiation is passed through the second phase shifting mask to form a second plurality of exposed regions of the masking layer, the second plurality of exposed regions being positioned differently from the first plurality of exposed regions but partially overlapping the first plurality of exposed regions, the first and second plurality of exposed regions being used to define said masking features.

5,308,742

METHOD OF ETCHING ANTI-REFLECTION COATING

Thuy B. Ta, Austin, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 3, 1992, Ser. No. 893,178

Int. Cl.[5] G03C *5/00*

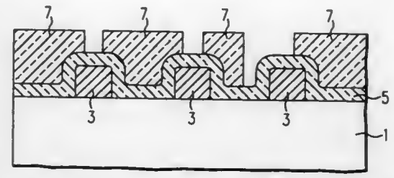
U.S. Cl. 430—313 6 Claims

1. A method of manufacturing an integrated circuit comprising the steps of:

depositing a layer of an organic polymer on a substrate, said polymer being an anti-reflection coating;

forming a layer of resist over the surface of said organic polymer;

exposing selected portions of said resist to radiation and removing portions of said resist to expose selected portions of said organic polymer; and



etching said selected portions of said organic polymer in a plasma comprising CHF_3, O_2 and a sputter component, said sputter component having a removal rate, to expose portions of said substrate.

5,308,743

POSITIVE IMAGE-FORMING PROCESS UTILIZING GLASS SUBSTRATE WITH OXIDE FILM OF INDIUM-TIN ALLOY, COATED WITH O-QUINONEDIAZIDE PHOTORESIST, WITH ETCHING OF THE OXIDE FILM IN THE IMAGEWISE EXPOSED AREAS

Kesanao Kobayashi, and Nobuaki Matsuda, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

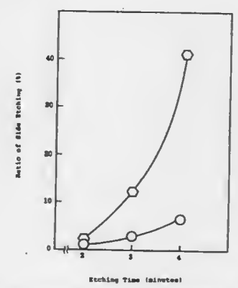
Continuation of Ser. No. 545,022, Jun. 28, 1990, abandoned.

This application Mar. 6, 1992, Ser. No. 845,833

Claims priority, application Japan, Jun. 29, 1989, 1-167973

Int. Cl.[5] G03F *7/30, 7/40*

U.S. Cl. 430—318 11 Claims

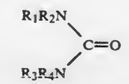


1. An image-forming process which comprises (a) applying a positive-type photoresist onto a board comprising an oxide film of an indium-tin alloy provided on a base board of glass, (b) image-wise exposing, (c) developing with a developing solution to remove the image-wise exposed areas of the positive-type photoresist, and (d) etching the oxide film of the indium-tin alloy in the developed photoresist areas with an etching solution, wherein said positive-type photoresist substantially comprises:

(A) an o-quinonediazide compound;

(B) an alkali-soluble phenol resin; and

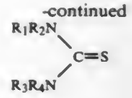
(C) at least one compound selected from the group consisting of urea compounds, thiourea compounds, arylamine compounds represented by the general formulae (I), (II) and (III), respectively:



(I)

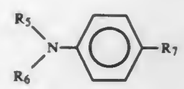
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(II)

wherein R_1, R_2, R_3, and R_4 each represents a hydrogen atom, an alkyl group, an aryl group or any two of R_1, R_2, R_3, and R_4 form at least one ring together;



(III)

wherein R_5, R_6, and R_7 each represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, a hydroxyalkyl group having from 1 to 8 carbon atoms, a phenyl group unsubstituted or substituted with halogen atom(s), or a naphthyl group unsubstituted or substituted with halogen atom(s); and said component (C) is present in an amount of from 0.02 to 5.0% by weight based on the total solid content of components (A) and (B).

5,308,744

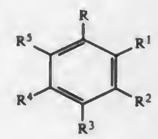
SOURCE OF PHOTOCHEMICALLY GENERATED ACIDS FROM DIAZONAPHTHOQUINONE SULFONATES OF NITROBENZYL DERIVATIVES

Thomas A. Koes, Riverside, Calif., assignor to Morton International, Inc., Chicago, Ill.

Filed Mar. 5, 1993, Ser. No. 26,923
Int. Cl.[5] G03F *7/23, 7/30*
U.S. Cl. 430—326 **12 Claims**

7. A photo acid generator having the structure:

Formula I



wherein

R=hydrogen, hydroxyl, or the —O—S(=O)$_2$—Q moiety;
R^1=$CH_2OS(=O)_2$—Q, or —NO_2;
R^2=$CH_2OS(=O)_2$—Q, or —NO_2;
R^3=lower alkyl or hydrogen;
R^4=hydrogen, —$CH_2OS(=O)_2$—Q, or —NO_2;
R^5=hydrogen, —$CH_2OS(=O)_2$—Q, or —NO_2; and
Q is a diazonaphthoquinone moiety; with the proviso that R^3 is lower alkyl when R^2 and R^4 are NO_2, and with the proviso that $R^1 \neq R^2$ and $R^4 \neq R^5$.

5,308,746

SILVER IMAGE BLEACHING SOLUTION AND PROCESS

Anthony M. Barnett, Bushey; Colin J. Gray; Jeffrey K. Green, both of Harrow; David A. Hallbery, Wembley, and Julie Baker, Rickmansworth, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/01883, § 371 Date Apr. 20, 1993, § 102(e) Date Apr. 20, 1993, PCT Pub. No. WO93/04401, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 18, 1992, Ser. No. 39,376
Claims priority, application United Kingdom, Aug. 21, 1991, 9118042
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—331 **6 Claims**

1. A deletion fluid for lithographic printing plates comprising a silver image formed by the silver salt diffusion transfer process, said deletion fluid comprising an aqueous solution containing 2 to 50 grams per liter of iodine, 50 to 250 grams per liter of iodide ions and from 1 to 10% by weight of a surfactant which comprises both polyalkyleneoxy units selected from ethylenoxy and propyleneoxy units and a quaternary ammonium group.

5,308,747

PHOTOGRAPHIC SILVER HALIDE MATERIAL COMPRISING TABULAR GRAINS AND POSITIONED ABSORBER DYES

Richard P. Szajewski; James P. Merrill, and Allan F. Sowinski, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,987
Int. Cl.[5] G03C *1/08*
U.S. Cl. 430—507 **11 Claims**

1. A color negative photographic recording material comprising a support bearing at least one photographic layer comprising a sensitized high aspect ratio tabular grain silver halide emulsion having an average aspect ratio of greater than 10 and at least one dye layer positioned between said silver halide layer and the upper surface of said recording material, said dye layer comprising a spatially fixed dye that absorbs light in the region of the spectrum to which the silver halide is sensitized, wherein said photographic material comprises a dye forming DIR coupler compound and colored masking couplers.

5,308,748

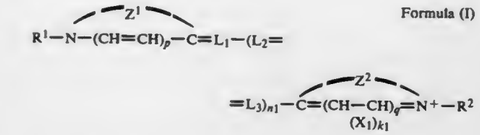
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akihiko Ikegawa; Masayuki Kuramitu, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 35,697
Claims priority, application Japan, Mar. 23, 1992, 4-94872
Int. Cl.[5] G03C *1/12, 1/29*
U.S. Cl. 430—574 **5 Claims**

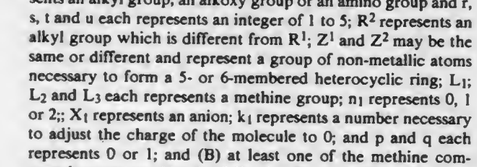
1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer containing (A) at least oneof the methine compounds represented by the following Formula (I):

Formula (I)



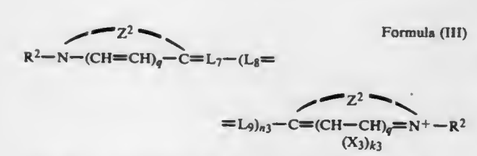
wherein R^1 represents —$(CH_2)_r$—$CONHSO_2$—R^3, —$(CH_2)_s$—SO_2NHCO—R^4, —$(CH_2)_t$—$CONHCO$—R^5, or —$(CH_2)_u$—SO_2NHSO_2—R^6, in which R^3, R^4, R^5 and R^6 each represents an alkyl group, an alkoxy group or an amino group and r, s, t and u each represents an integer of 1 to 5; R^2 represents an alkyl group which is different from R^1; Z^1 and Z^2 may be the same or different and represent a group of non-metallic atoms necessary to form a 5- or 6-membered heterocyclic ring; L_1; L_2 and L_3 each represents a methine group; n_1 represents 0, 1 or 2;; X_1 represents an anion; k_1 represents a number necessary to adjust the charge of the molecule to 0; and p and q each represents 0 or 1; and (B) at least one of the methine compounds represented by the following Formula (II) or Formula (III):

Formula (II)



wherein Z^1 represents the same non-metallic atoms as the non-metallic atoms of Z^1 in Formula (I); R^1 is the same substituent as R^1 in Formula (I); L_4, L_5 and L_6 have the same meaning as L_1, L_2 and L_3; X_2 has the same meaning as X_1; n_2 has the same meaning as n_1; and p has the same meaning as p in Formula (I);

Formula (III)



wherein Z^2 represents the same non-metallic atoms as the non-metallic atoms of Z^2 in Formula (I); R^2 is the same substituent as R^2 in Formula (I); L_7, L_8 and L_9 have the same meaning as L_1, L_2 and L_3; X_3 has the same meaning as X_1; n_3 has the same meaning as n_1; and q has the same meaning as q in Formula (I).

5,308,749

METHOD OF PREPARING BIOLOGICALLY ACTIVE REAGENTS FROM SUCCINIMIDE-CONTAINING POLYMERS, ANALYTICAL ELEMENT AND METHODS OF USE

Richard C. Sutton, Rochester; Ignazio S. Ponticello, Pittsford; Susan J. Danielson, and Marsha D. B. Oenick, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1991, Ser. No. 646,303
Int. Cl.[5] G01N *33/531, 33/543, 33/546*
U.S. Cl. 435—5 **11 Claims**

1. A method of preparing a biologically active reagent comprising the step of reacting:

(I) a water-insoluble, nonporous particle of a noncrosslinked copolymer having recurring units derived from:

(a) from 0 to about 99.9 mole percent of one or more ethylenically unsaturated polymerizable oleophilic monomers which provide hydrophobicity to said copolymer, provided that none of said monomers are crosslinking monomers,

(b) from about 0.1 to 100 mole percent of one or more ethylenically unsaturated polymerizable monomers having a succinimidoxycarbonyl group, and

(c) from 0 to about 10 mole percent of one or more other ethylenically unsaturated polymerizable monomers, with

(II) a biologically active substance to covalently attach said biologically active substance to said particle through an amide group by displacement of the succinimidoxy portion of said succinimidoxycarbonyl group.

5,308,750

MONOCLONAL ANTIBODIES TO PUTATIVE HCV E2/NS1 PROTEINS AND METHODS FOR USING SAME

Smriti U. Mehta, Libertyville; Jill E. Johnson, Waukegan; Stephen H. Dailey, Vernon Hills; Suresh M. Desai, Libertyville, and Sushil G. Devare, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 610,180, Nov. 7, 1990, abandoned, and Ser. No. 456,162, Dec. 22, 1989, abandoned.
This application Aug. 21, 1991, Ser. No. 748,292
Int. Cl.[5] C12N *5/00; C12Q 1/70*
U.S. Cl. 435—5 **13 Claims**

1. A monoclonal antibody which specifically binds to Hepatitis C Virus (HCV) E2/NS1 antigen, wherein said monoclonal antibody is the monoclonal antibody secreted by hybridoma cell line ATCC deposit No. HB 10856.

5,308,751

METHOD FOR SEQUENCING DOUBLE-STRANDED DNA

Tihiro Ohkawa, La Jolla, and Robert L. Miller, San Diego, both of Calif., assignors to General Atomics, San Diego, Calif.

Filed Mar. 23, 1992, Ser. No. 855,293
Int. Cl.[5] C12Q *1/68; G01N 33/50*
U.S. Cl. 435—6 **18 Claims**



1. A method for simultaneously sequencing both strands of a target double-stranded DNA fragment containing single strands a and b of lengths n and m, respectively, comprising:

(a) preparing shifted DNA from a portion of said target DNA, wherein:

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strand a is shifted by i bases compared to the a strand of the target DNA and strand b is shifted by k bases compared to the target DNA; and

$0 \leqq |i| < n$ and $0 \leqq |k| < m$, except that $k \neq i$;

(b) simultaneously sequencing both strands of the shifted DNA and simultaneously sequencing both strands of the target DNA to generate a data set g_0 of alternative base pairs for the target DNA and a data set g_1 of alternative base pairs for the shifted DNA, wherein:

the method of sequencing generates only two alternative bases for each position;

$b^-_{n+1+j}=a_j$;

$b^-_{n+1-i}=a^-_i$;

$g_0=\{\{a_1, a^-_n\}, \ldots \{a_n, a^-_1\}\}$;

$g_1=\{\{a_{i+1}, a^-_n\}, \ldots \{a_{i+m}, a^-_{n-m+1}\}\}$;

the jth elements of g_0 and g_1 are $g_{0j}=\{a_j, a^-_{n+1-j}\}$ and $g_{1j}=\{a_{i+j}, a^-_{n+1-k-j}\}$, respectively;

$j=1$ to n; and

(c) determining all or a portion of the nucleotide sequence of said target DNA by comparison of g_0 with g_1 to determine the identity of each a_j by:

(i) comparing g_{0j} with g^-_{0n+1-j} and, if $i+1 \leqq j \leqq i+m$, with g_{1j-i} and if $n-k \geqq j \geqq n-m-k+1$, with $g^-_{1n+1-j-k}$, to determine a_j, except where $a^-_{n+1-j}=a^-_{n+1-k-j+i}$, wherein:

$g_{0j}=\{a_j, a^-_{n+1-j}\}$;

$g^-_{0n+1-j}=\{a^-_{n+1-j}, a_j\}$;

$g_{1j-i}=\{a_j, a^-_{n+1-k-j+i}\}$; and

$g^-_{1n+1-j-k}=\{a^-_{n+1-k-j+i}, a_j\}$;

(ii) where $a^-_{n+1-j}=a^-_{n+1-k-j+i}$ the identity of a_j is determined by first determining the identity of a^-_{n+1-j} or $a^-_{n+1-j-k+i}$ and then performing step (i) to determine the identity of a_j, wherein:

the identity of a^-_{n+1-j} is determined by comparing g_{0j}, g^-_{0n+1-j}, g_{1j-k} and $g^-_{1n+1-j-k}$ where $g_{1j-k}=\{a_{1+j-k}, a^-_{n+1-j}\}$ and $g^-_{1n+1-j-i}=\{a^-_{n+1-j}, a_{1+j-k}\}$; and

the identity of $a^-_{n+1-j-k+i}$ is determined by comparing g_{0j+k-i}, $g^-_{0n+1-j-k+i}$, g_{1j-i}, $g^-_{1n+1-j-k}$, where $g_{0j+k-i}=\{a_{j+k-i}, a^-_{n+1-j-k+i}\}$ and $g_{0n+1-j-k+i}=\{a^-_{n+1-j-k+i}, a_{j+k-i}\}$; and

(iii) performing steps (i) and (ii) for $j=1$ up to n, and, wherein said portion includes more than the part of the target DNA than is included in the shifted DNA.

5,308,752

DIAGNOSIS OF AUTOSOMAL MUSCULAR DYSTROPHY

Kevin P. Campbell, and Kiichiro Matsumura, both of Iowa City, Iowa, assignors to Univ. of Iowa Research Foundation, Oakdale, Iowa

Continuation-in-part of Ser. No. 841,654, Feb. 20, 1992, Pat. No. 5,260,209, which is a continuation-in-part of Ser. No. 527,583, May 23, 1990, Pat. No. 5,187,063. This application Sep. 14, 1992, Ser. No. 946,234

Int. Cl.[5] G01N *33/567*

U.S. Cl. 435—7.21 **7 Claims**

1. A method for aiding in the diagnosis of severe childhood autosomal recessive muscular dystrophy comprising:

a) providing an experimental mammalian muscle tissue sample, treated if necessary to render components of the dystrophin-glycoprotein complex available for antibody binding;

b) contacting the experimental mammalian muscle tissue sample from step a) with a first antibody which specifically binds to the 50 kDa dystrophin-associated protein, and a second antibody which specifically binds to a component of the dystrophin-glycoprotein complex selected from the group consisting of dystrophin and dystrophin-associated proteins having molecular weights of about 25 kDa, 35 kDa, 43 kDa, 59 kDa and 156 kDa, under conditions appropriate for antibody binding;

c) detecting and characterizing the extent of binding of the antibodies to the experimental mammalian muscle tissue sample; and

d) comparing the extent of binding of the antibodies to the experimental mammalian muscle tissue sample, to the extent of binding determined for a normal mammalian muscle tissue sample treated as in steps a)–c), a substantial reduction in the extent of binding to the 50 kDa dystrophin-associated protein, in combination with detectable binding to the component of the dystrophin-glycoprotein complex selected from the group consisting of dystrophin and dystrophin-associated proteins having molecular weights of about 25 kDa, 35 kDa, 43 kDa, 59 kDa and 156 kDa, being indicative of severe childhood autosomal recessive muscular dystrophy.

5,308,753

METHODS FOR PURIFYING AND DETECTING IGM ANTIBODIES

David W. Dorward, Hamilton, Mont.; Edward D. Huguenel, Guilford; Gary Davis, Milford, both of Conn., and Claude F. Garon, Hamilton, Mont., assignors to The Government of the United States of America as represented by the Secretary of the Department of Health and Human Services, Md.

Filed Feb. 20, 1992, Ser. No. 837,892

Int. Cl.[5] G01N *33/53;* **C07K** *3/18*

U.S. Cl. 435—7.32 **15 Claims**

10. A method for detecting IgM in a fluid sample suspected of containing IgM, said fluid sample obtained from a test subject not previously exposed to *Borrelia burgdorferi* antigens which comprises:

a) contacting said fluid sample with a binding substance comprising an outer surface protein (Osp) of *Borrelia burgdorferi. Borrelia burgdorferi* cells, or cellular or extracellular components obtained or derived from said cells which contain said Osp, under conditions favorable to binding of IgM to said binding substance to form IgM-binding substance complexes, and

b) detecting said complexes formed by means of a label conjugated to said binding substance or by means of a labeled reagent that specifically binds to said complexes subsequent to their formation.

5,308,754

ELECTROGENERATED LUMINESCENCE IN SOLUTION

Jouko J. Kankare, Paljaspää 8 E 3, SF-20610 Turku 61, and Haapakka, Keijo E., Turku, both of Finland

Continuation-in-part of Ser. No. 323,768, Mar. 15, 1989, abandoned. This application Oct. 22, 1991, Ser. No. 780,364

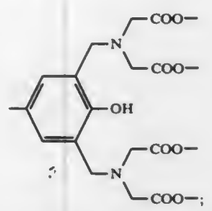
Claims priority, application Sweden, Mar. 21, 1988, 8801011-1

Int. Cl.[5] C12Q *1/00;* **G01N** *21/76, 33/553*

U.S. Cl. 435—7.4 **4 Claims**

1. A method of determining the amount of a chemical moiety containing terbium, said chemical moiety being in an aqueous solution, said chemical moiety having the formula Tb-Z- wherein:

Z has the formula:



consisting essentially of the steps of:

(a) contacting a sample containing said chemical moiety with two electrodes one of which is made of aluminum;

(b) applying an electrical pulse across said electrodes;

(c) measuring the emitted light originating from one of the said electrodes starting after a delay of 0.1 to 0.5 ms from the end of the said electrical pulse and extending the measurement up to ten milliseconds;

(d) measuring the amount of said chemical moiety on the basis of the light intensity emitted in step (c).

5,308,755

METHOD FOR MEASURING HEPARIN

Michael E. Nesbeim, Kingston, and Reginald P. Manuel, Sydenham, both of Canada, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Jun. 8, 1992, Ser. No. 895,078

Int. Cl.[5] C12Q *1/56*

U.S. Cl. 435—7.4 **4 Claims**

1. A method of measuring anti-coagulant activity of heparin in a plasma sample comprising:

(a) mixing a plasma sample containing heparin with a heparin dependent irreversible inhibitor, selected from the group consisting of antithrombin III and heparin co-factor II, and a selected coagulation serine protease enzyme and a substrate of the enzyme, selected from the group consisting of chromogenic and fluorogenic substrates;

(b) adding a limiting quantity of the enzyme so that is totally inactivated by said heparin dependent irreversible inhibitor in a finite time, during which time a portion of said substrate is converted to a determinable product; and

(c) determining the level of said product as a measure of heparin activity present in said plasma sample.

5,308,756

PROTEIN S CHROMOGENIC ASSAY

Piet van de Waart, Wünnewil, and Barry J. Woodhams, Fribourg, both of Switzerland, assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Filed Nov. 20, 1991, Ser. No. 796,032

Int. Cl.[5] C12Q *1/56;* **G01N** *33/86*

U.S. Cl. 435—13 **29 Claims**

1. A method for determining levels of free or functional Protein S in a Protein S containing sample the method comprising:

a. eliminating the effects of von Willebrands Factor;

b. incubating the sample with activated Protein C, Factor VIII, phospholipids and calcium;

c. incubating the mixture with factors IIa, IXa, and X;

d. adding to the incubation mixture a factor Xa specific substrate; and

e. determining the amount of indicator formed from cleavage of the substrate as a measure of functional Protein S.

5,308,757

BIOLOGICAL CELL TREATMENT METHOD AND APPARATUS

Yoshio Kawamura, Kokubunji; Yoshu Yoshiba, Ageo; Shinji Tanaka, Akishima; Kazuo Sato, Tokyo; Jiro Kikuchi, Yuki, and Kahoru Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 742,419

Claims priority, application Japan, Aug. 8, 1990, 2-208110

Int. Cl.[5] C12Q *1/02;* **C12N** *5/00;* **C12M** *1/00, 1/20*

U.S. Cl. 435—29 **42 Claims**

1. A method of testing the effect of a treatment on the viability of biological cells that are protoplasts of plant cells, comprising the steps of:

holding a plurality of the cells in a corresponding plurality of at least one hundred microchambers;

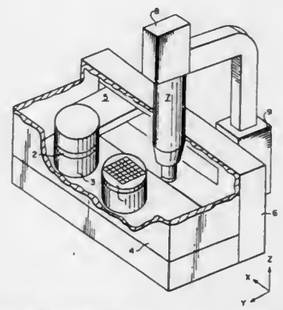
counting a number n_0 of the cells in the microchambers that have one of a broken and normal form indicative of viability;

treating the cells with a treatment, said treatment affecting degradation of viability of the cells, for a predetermined period of time t;

after said counting the number n_0 and during the time t, loading a plurality of cycles of mechanical stress on the cells sufficiently to accelerate the degradation of viability by alternating the application of hydrostatic pressurization and suction to the cells for each cycle;

after said loading and after the period of time t has elapsed, counting a number n of cells in the microchambers that have said one of the broken and normal form indicative of viability; and

calculating a value as a function of the counted numbers of cells n_0 and n and the time t, which value is useful in evaluating the degradation of viability effect of the treatment on the cells.



41. A biological cell viability evaluation apparatus, comprising:

means for isolating a plurality of biological cells that are protoplasts of plant cells in a corresponding plurality of microchambers for testing the affect of a treatment on degradation of viability of the cells;

means for alternately loading hydrostatic pressure and suction cyclically over a period of time t for providing mechanical stress on the cells sufficiently to accelerate the degradation of viability of the cells;

means for counting a number of cells n_0 prior to and a number of cells n after the loading by said means for loading that have one of a broken and a normal form indicative of viability; and

means for calculating the biological viability of the cells as a function of n, n_0 and t.

5,308,758

METHOD AND APPARATUS FOR STUDY OF GAS-PHASE AND GAS-BORNE AGENTS

Thomas A. Dahl, Boston, Mass., assignor to Tufts University, Boston, Mass.

Filed Oct. 9, 1992, Ser. No. 959,311

Int. Cl.[5] C12Q *1/24;* **C12M** *1/04*

U.S. Cl. 435—30 **14 Claims**

1. Method for exposing biological materials to gas-phase or gas-borne agents, comprising the steps of:

providing a chamber for supporting said biological materials, said chamber further comprising wicking means configured and arranged to hold said biological materials and provide said biological materials with a wetting medium while allowing said gas-phase or gas-borne agents to directly interact with said biological materials,

providing humidifying means for humidifying said chamber,

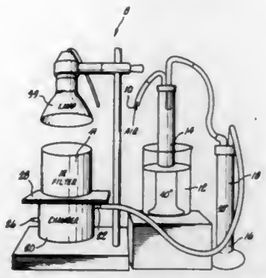
humidifying said chamber to a humidity between 95% and 100%, inclusive,

placing said biological materials in said chamber on said wicking means,

exposing said biological materials in said chamber to one or

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more said gas-phase or gas-borne agents while maintaining said humidity between 95% and 100%, inclusive, and



assessing the effect of said exposing on said biological materials.

5,308,759

PRODUCTION OF ZEAXANTHIN AND ZEAXANTHIN-CONTAINING COMPOSITIONS

Dennis L. Gierhart, High Ridge, Mo., assignor to Applied Food Biotechnology, Inc., Fenton, Mo.

Continuation of Ser. No. 400,396, Aug. 30, 1989, abandoned. This application Feb. 21, 1992, Ser. No. 841,193

Int. Cl.[5] C12P *23/00*; C12N *1/20*

U.S. Cl. 435—67 **19 Claims**

1. A process for the production of zeaxanthin comprising:

culturing a strain of pigmented *Flavobacterium multivorum* in a nutrient medium that comprises at least one assimilable carbon source, and at least one assimilable nitrogen source, and

recovering zeaxanthin from the culture.

5,308,760

CRYSTAL PROTEINS OF *BACILLUS THURINGIENSIS*, GENES ENCODING THEM, AND HOST EXPRESSING THEM

Kit L. Brown, Vallejo, Calif., and Helen R. Whiteley, deceased, late of Seattle, Wash. by Arthur H. Whiteley, administrator , assignors to Washington Research Foundation, Seattle, Wash.

Continuation-in-part of Ser. No. 817,915, Jan. 10, 1992, abandoned. This application Feb. 3, 1992, Ser. No. 828,700

Int. Cl.[5] C12P *21/06*; C12N *15/00*; C07H *15/00*

U.S. Cl. 435—69.1 **20 Claims**

1. An isolated DNA fragment having the nucleotide sequence

SEQ ID NO. 7,

or an equivalent nucleotide sequence coding for the following two amino acid sequences: SEQ ID NO: 8 and SEQ ID NO: 9.

5,308,761

PROCESS FOR ACETYLATING SEAWEED ALGINATE WITH *PSEUDOMONAS SYRINGAE* SUBSP. *PHASEOLIOCOLA*

Donal F. Day, and Jin W. Lee, both of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Sep. 11, 1992, Ser. No. 943,914

Int. Cl.[5] C12P *19/04*; C12N *1/20*

U.S. Cl. 435—101 **16 Claims**

1. A process for preparing an alginate which is acetylated to a desired degree, comprising the steps of:

(a) reacting seaweed alginate with bacteria comprising *Pseudomonas syringae* subsp. *phaseolicola*, or mutanto thereof, wherein the bacteria have the acetylation enzyme activity of the *Pseudomonas syringae* subsp. *phaseolicola* strain whose ATCC accession number is 19304, until the alginate has been acetylated to the desired degree; and

(b) recovering acetylated alginate.

5,308,762

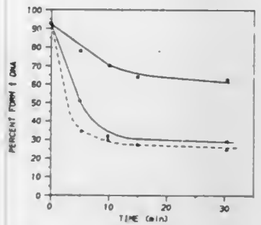
T4 ENDONUCLEASE V DNA REPAIR ENZYME HAVING SPECIFIC ACTIVITY AT LOW SALT CONCENTRATIONS

R. Stephen Lloyd, Nashville, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Continuation-in-part of Ser. No. 401,916, Sep. 1, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 827,506

Int. Cl.[5] C12N *9/22*

U.S. Cl. 435—199 **6 Claims**



1. A T4 endonuclease V DNA repair enzyme comprising: an amino acid sequence including a carboxyl terminal region for pyrimidine dimer binding of a specific activity, said region including polar, nonaromatic amino acids and aromatic amino acids between amino acid 128 to 137 positions; characterized by said terminal region including an aromatic amino acid substitution different and less polar than tyrosine at position 129.

5,308,763

METHOD OF MAKING PRIMARY CULTURE OF OLFACTORY NEURONS

Gabriele V. Ronnett, Baltimore; Lynda Hester, Towson, and Solomon H. Snyder, Baltimore, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 769,210, Oct. 1, 1991. This application Mar. 9, 1992, Ser. No. 848,687

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.21 **10 Claims**

1. A method of producing primary cultures of olfactory neurons substantially purified from sustentacular cells and basal cells, said neurons demonstrating responsiveness to physiologic levels of odorants, said neurons expressing vimentin, olfactory marker protein and neuron-specific enolase, said neurons not expressing glial fibrillary acidic protein, S-100 protein, keratin, or neurofilament protein, comprising the steps of:

providing olfactory epithelium of an animal;

enzymatically digesting the olfactory epithelium to dissociate neuronal cells of said olfactory epithelium;

passing said dissociated neuronal cells of said olfactory epithelium through a mesh filter having a pore size of between about 10 and 25 microns to separate cell aggregates which fail to pass through the mesh filter from said dissociated neuronal cells;

removing said cell aggregates from said dissociated neuronal cells;

plating said dissociated neuronal cells in a nutrient medium comprising D-valine, cytosine arabinoside, and NGG on a solid substrate to provide a primary culture of olfactory neurons substantially purified from sustentacular cells and basal cells, said neurons demonstrating responsiveness to physiologic levels of odorants, said neurons expressing vimentin, olfactory marker protein and neuron-specific enolase, said neurons not expressing glial fibrillary acidic protein, S-100 protein, keratin, or neurofilament protein.

5,308,764

MULTI-CELLULAR, THREE-DIMENSIONAL LIVING MAMMALIAN TISSUE

Thomas J. Goodwin, and David A. Wolf, both of Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 317,931, Mar. 2, 1989, Pat. No. 5,153,132, which is a continuation-in-part of Ser. No. 213,558, Jun. 30, 1988, Pat. No. 5,026,650, which is a continuation-in-part of Ser. No. 213,559, Jun. 30, 1988, Pat. No. 4,988,623. This application Sep. 3, 1992, Ser. No. 939,791

Int. Cl.[5] C12N *5/00, 5/02*; A01N *1/02*; C12M *3/02, 1/10*

U.S. Cl. 435—240.24 **22 Claims**

1. A multi-cellular, three-dimensional, differentiated, living mammalian tissue of at least two distinct originating cell types produced in vitro by:

providing a bioreactor having a culture chamber rotatable about an approximately horizontal longitudinal axis, means to controllably rotate said culture chamber, means to oxygenate said culture chamber and means to remove metabolic waste products therefrom;

filling said culture chamber completely with a fluid nutrient media, cell attachment substrates, and individually dispersed mammalian cells of at least two distinct types to establish a culturing environment;

rotating said culture chamber about its longitudinal axis, oxygenating the culturing environment within said culture chamber and removing metabolic waste products therefrom;

controlling the rotating of said culture chamber such that the culturing environment except during transient periods has the following simultaneous properties:

a. collocation of cells and attachment substrates with similar or differing sedimentation properties in a similar spatial region,

b. freedom for three-dimensional spatial orientation of tissues formed by the culturing of the cells, and

c. low shear and essentially no relative motion of said culturing environment with respect to the walls of the culture chamber; and

determining the trajectory of the tissues, in response to said determining step: increasing the speed of rotation of the culture chamber if the tissues fall excessively inward and downward on the downward side of the rotational cycle and excessively outward and insufficiently upward on the ongoing side of the rotational cycle to prevent wall impact; or decreasing the speed of rotation of the culture chamber in response to excessive accumulation of the tissues near the outer wall of the culture chamber so as not restrict three-dimensional assembly, and as the size of the tissues increase beyond the capability to fully satisfy the above three properties by further increase of the speed of rotation, selecting a rotational rate to visually obtain minimal collision frequency and intensity.

5,308,765

ESTERASE GENES, ESTERASE, RECOMBINANT PLASMIDS AND TRANSFORMANTS CONTAINING THE RECOMBINANT PLASMID AND METHODS OF PRODUCING OPTICALLY ACITVE CARBOXYLIC ACIDS AND THEIR ENANTIOMERIC ESTERS USING SAID TRANSFORMANTS

Eiji Ozaki; Akihiro Sakimae, both of Otake, and Ryozo Numazawa, Nagoya, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

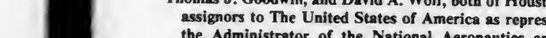
Filed May 13, 1992, Ser. No. 882,329

Claims priority, application Japan, May 15, 1991, 3-110628; May 15, 1991, 3-110629; Sep. 27, 1991, 3-249923; Oct. 15, 1991, 3-266136

Int. Cl.[5] C12A *15/00*

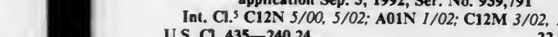
U.S. Cl. 435—252.3 **6 Claims**

1. Isolated and purified DNA consisting essentially of DNA that encodes the amino acid sequence of esterase as described in SEQ ID No. 2, said esterase asymmetrically hydrolyzing carboxylic acid esters represented by the formula (I):



(I)

(wherein R_1 is alkyl, aralkyl or aryl, R_2 and R_3 are alkyl, and n is 1 or 2) to give an optically active carboxylic acid represented by the formula (II)



(II)

(wherein R_1, R_2 and n have the same meaning as described above).

5,308,766

HYDROLYTIC ENZYME INHIBITORS/INACTIVATORS AND METHODS FOR USING SAME

Edward A. Dennis, LaJolla, Calif., and William N. Washburn, Titusville, N.J., assignors to The Regents of the University of California, Oakland, Calif.

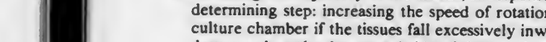
Continuation of Ser. No. 399,799, Aug. 29, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 713,116

Claims priority, application PCT Int'l Appl., Aug. 17, 1990, PCT/US90/04641

Int. Cl.[5] C12N *9/99, 9/14*; C12Q *1/34*

U.S. Cl. 435—184 **9 Claims**

1. A method of inactivating or inhibiting a phospholipase A enzyme, comprising administering to a subject susceptible to or experiencing a condition mediated by the activity of said enzyme an amount sufficient to inactivate or inhibit the activity of said enzyme of a pharmaceutically acceptable form of a compound of the formula:



AXCYCXB

wherein

R is oxygen or imino,

each X independently is oxygen, sulfur or imino,

A is a moiety recognized by phospholipase A enzyme such that said enzyme hydrolyses the bond linking AX with C(O)Y,

B is a physiologically acceptable leaving group,

Y is an alkylene or alkenylene or alkylene or alkenylene substituted with one or more lower alkyl groups.

5,308,767

METHOD FOR CONTROL OR CALIBRATION IN A CHEMICAL ANALYTICAL DETERMINATION

Masaaki Terashima, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 318,229, Mar. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 115,726, Nov. 2, 1987, abandoned. This application Jul. 20, 1992, Ser. No. 915,290

Claims priority, application Japan, Oct. 31, 1986, 61-259797; Nov. 18, 1986, 61-274919

Int. Cl.[5] G01N *31/00, 21/77*

U.S. Cl. 436—12 **17 Claims**

1. A method for control or calibration in a chemical analytical determination using a dry analysis element, said dry analysis element comprising at least one color-producing reagent and a porous layer, comprising the steps of:

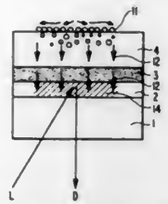
applying an aqueous dispersion onto the porous layer; and

measuring optical density of the color produced,

wherein the aqueous dispersion comprises a substance which

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is the same as or similar to an analyte to be determined and water-insoluble particles dispersed therein wherein said water-insoluble particles are solid particles or liquid particles, said solid particles being selected from the group



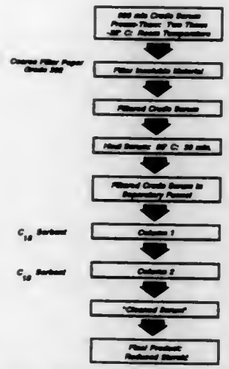
consisting of homopolymers and copolymers and said liquid particles being selected from the group consisting of adipates, sebacates, phthalates, trimellitates, phosphates, benzoates, amides, phenols, aliphatic esters, hydrocarbons, halogenated hydrocarbons, and natural polymers.

5,308,768

SERUM WITH REDUCED LEVELS OF STEROIDS

Gary L. Lensmeyer, Fitchburg, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 13, 1993, Ser. No. 46,681
Int. Cl.[5] G01N *33/78, 33/96*
U.S. Cl. 436—16 **4 Claims**



1. A blood serum sample useful as a calibration base-line comprising a natural blood matrix, wherein serum sample contains less than 5 ng/mL cortisol and wherein the sample is free of residual charcoal.

5,308,769

CANCER-RELATED HUMAN GALACTOSYLTRANSFERASE GT-II

Morito Uemura; Shinya Yoshida, and Takao Uejima, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 462,096, Jan. 8, 1990, abandoned, and Ser. No. 665,472, Mar. 6, 1991, abandoned. This application Jul. 9, 1992, Ser. No. 911,273
Claims priority, application Japan, Jan. 11, 1989, 1-4476; Mar. 6, 1990, 2-54567
Int. Cl.[5] C12N *9/10*; A61K *39/00*
U.S. Cl. 435—193 **5 Claims**

1. Essentially pure cancer-related human galactosyltransferase which has a molecular weight of about 50,000 as determined by SDS-polyacrylamide gel electrophoresis after treatment with 10 mM 2-mercaptoethanol, which has a reactivity with MAb4880 (FRI BP-1758) and has no reactivity with MAb3872 (ATCC HB8945) under native conditions, a part of the galactosyltransferase self-associates, the reactivity with MAb4880 and the degree of self-association are promoted by treatment with 10 mM 2-mercaptoethanol at 80° C. for three minutes so that a part of the galactosyltransferase is detected in a fraction of a molecular weight of not less than 200,000 to 1,000,000 by gel permeation chromatography.

5,308,770

CLONING AND OVEREXPRESSION OF GLUCOSE-6-PHOSPHATE DEHYDROGENASE FROM *LEUCONOSTOC DEXTRANICUS*

Michael Jarsch, Bad Heilbrunn, and Gunter Lang, Tutzing, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Division of Ser. No. 739,071, Jul. 30, 1991, Pat. No. 5,229,286. This application Feb. 25, 1993, Ser. No. 22,096
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1990, 4024158
Int. Cl.[5] C12P *21/06*; C12N *15/00*
U.S. Cl. 435—190 **17 Claims**

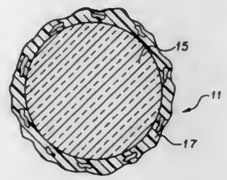
1. Isolated DNA, comprising the region of the nucleic acid sequence shown in SEQ ID NO:1 coding for a glucose-6-phosphate dehydrogenase enzyme or another nucleic acid sequence encoding the same enzyme.

5,308,771

CHEMICAL SENSORS

Quan Zhou, Newton Centre; Mary E. Tabacco, Brighton, and Bruce N. Nelson, South Boston, all of Mass., assignors to Geo-Centers, Inc., Newton Centre, Mass.

Filed Apr. 13, 1992, Ser. No. 868,028
Int. Cl.[5] G01N *21/00*
U.S. Cl. 436—39 **51 Claims**



1. A device for detecting the presence or concentration of an analyte comprising: a sensing element comprising at least one bead having an outer film layer of a polymer substrate, said polymer substrate being capable of receiving and discharging light, and said polymer substrate having a porous matrix and sensing reagent; said sensing reagent being entrapped within and chemically bound to the polymer substrate and having a first absorption spectra in the presence of analyte and a second absorption spectra in the absence of analyte; said porous matrix expanding the effective surface area of said polymer substrate for receiving analyte, said polymer substrate allowing said sensing reagent to alter the spectra of light passing through said polymer substrate in the presence of analyte; and said bead comprising a material for providing mechanical strength to the polymer substrate.

20. A method of detecting the presence or concentration of an analyte comprising the following steps:

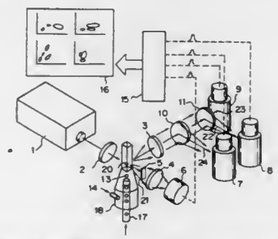
a) contacting a sample potentially containing analyte with a sensing element comprising at least one bead having an outer film layer of a polymer substrate, said polymer substrate being capable of receiving and discharging light, and said polymer substrate having a porous matrix and sensing reagent; said sensing reagent being chemically bound to the polymer substrate and having a first absorption spectra in the presence of analyte and a second absorption spectra in the absence of analyte; said porous matrix expanding the effective surface area of said polymer substrate for receiving analyte, said polymer substrate allowing said sensor reagent to alter the spectra of light passing through said polymer substrate in the presence of analyte; and said bead comprising the material for providing mechanical support to the polymer substrate.

5,308,772

METHOD FOR CLASSIFYING AND COUNTING LEUKOCYTES

Takashi Sakata, and Mitsue Ito, both of Hyogo, Japan, assignors to TOA Medical Electronics Co. Ltd., Japan

Filed Jun. 23, 1992, Ser. No. 903,238
Claims priority, application Japan, Jul. 29, 1991, 2-188925
Int. Cl.[5] G01N *33/48*
U.S. Cl. 436—63 **7 Claims**



2. A method for classifying and counting leukocytes into at least six groups including immature granulocytes by assaying a single specimen with a flow cytometer, which comprises the following steps:

(1) a step for eliminating influences of erythrocytes from a hematological sample without changing the leukocytes morphologically;
(2) a step for adjusting a pH value of said hematological sample to a level suitable for staining;
(3) a step for staining leukocytes contained in said hematological sample with a mixture of at least two dyes specified as follows:
  i) Astrazon Yellow 3G capable of staining at least basophils and immature granulocytes; and
  ii) Neutral Red capable of staining at least eosinophils; and
(4) a step for counting and classifying leucocyte with a flow cytometer.

5,308,773

NON-AZO 1,8-NAPHTHALIMIDE DYES FOR THE DETECTION AND QUANTITATION OF A PARAMAGNETIC METAL CATION IN A NON-AQUEOUS MEDIUM

David E. Lewis, Brookings; Ronald E. Utecht, Volga, both of S. Dak.; Millard M. Judy, and J. Lester Matthews, both of Dallas, Tex., assignors to MicroBioMed Corp., Dallas, Tex.

Filed Nov. 16, 1992, Ser. No. 977,508
Int. Cl.[5] G01N *33/20*; C07D *221/06*
U.S. Cl. 436—73 **18 Claims**

1. The method of using a non-azo 1,8-naphthalimide dye for the detection or quantitation of a paramagnetic metal cation in a non-aqueous medium comprising: bringing into contact the non-azo 1,8-naphthalimide dye with the paramagnetic metal cation in the non-aqueous medium to form a mixture;

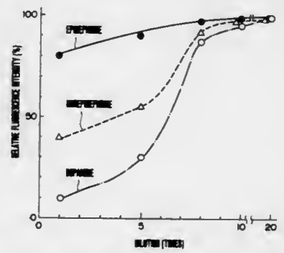
irradiating the mixture with a fluorescent light sufficient to cause the mixture to emit a detectable fluorescent emission spectrum;
detecting the fluorescent emission spectrum of the mixture; and,
comparing the detected fluorescent emission spectrum with standard fluorescent emission spectra generated by reacting the non-azo 1,8-naphthalimide dye with different known amounts of the paramagnetic metal cations, wherein differences between the fluorescent emission spectra compared are dependent upon the presence or amount of the paramagnetic metal cation present in the mixture.

5,308,774

LIQUID CHROMATOGRAPHIC METHOD AND APPARATUS FOR ANALYZING BIOLOGICAL SAMPLES

Junkichi Miura; Masahito Ito; Yoshio Fujii; Hiroshi Satake, all of Katsuta, and Kasumi Yoshida, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 11, 1990, Ser. No. 625,823
Claims priority, application Japan, Jan. 8, 1990, 2-510
Int. Cl.[5] G01N *30/14, 33/88*
U.S. Cl. 436—87 **37 Claims**

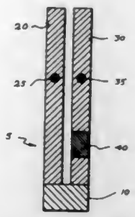


29. A chromatographic method for analyzing a biological sample, which comprises the steps of:

feeding the biological sample, containing blood or cerebrospinal fluid not subjected to deproteinization, a diluent and a reagent solution into a reaction vessel to effect a reaction for converting at least one of catecholamines and prostaglandins of the blood or cerebrospinal fluid to be analyzed and contained in the sample to their derivatives, which derivatives can be separated into individual components in a separating column, the at least one of catecholamines and prostaglandins being substances which can be converted to derivatives which can be separated in said separating column, an amount of the diluent fed being selected so as to be 8–20 times an amount of the biological sample; and
transferring the derivatives to a separating column to separate the derivatives into the individual components.

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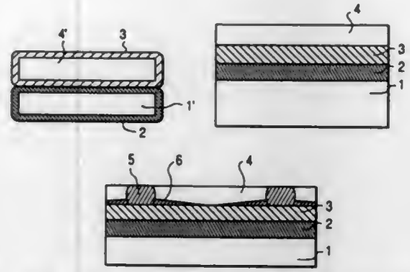
5,308,775
ASSAY DEVICES FOR CONCURRENTLY DETECTING AN ANALYTE AND CONFIRMING THE TEST RESULT
James J. Donovan, Waukegan, and Stephen W. Worobec, Evanston, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Sep. 15, 1992, Ser. No. 945,044
Int. Cl.[5] G01N *33/537, 33/538, 33/543, 33/558*
U.S. Cl. 436—518 **6 Claims**



1. A self-performing confirmatory assay device for assaying an analyte in a test sample and for confirming a positive assay result involving a sandwich assay format comprising:
a) a solid phase having at least a first and a second separate fluid-flow pathways, wherein said first pathway contains an assay capture site, and wherein said second pathway contains both a mobile confirmatory reagent and a confirming assay site located downstream from said mobile confirmatory reagent;
b) an optional application pad in fluid contact with said first and second fluid flow pathways;
c) a specific binding member, which directly or indirectly specifically binds a labelled analyte complex formed by direct or indirect specific binding of a labelled reagent with said analyte, wherein said labelled reagent is optionally incorporated either within said application pad or in said first and second pathways, and said specific binding member is immobilized both in said first pathway at said assay capture site and in said second pathway at said confirming assay site; and
d) said confirmatory reagent comprising an unlabelled specific binding member which becomes mobile when contacted with said test sample and specifically binds to said analyte and thereby inhibits the binding of said analyte or said labelled analyte complex with said specific binding member immobilized in said confirming assay site.

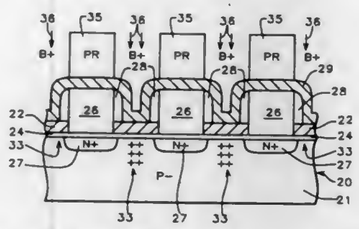
5,308,776
METHOD OF MANUFACTURING SOI SEMICONDUCTOR DEVICE
Hiroshi Goton, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 18, 1992, Ser. No. 837,265
Claims priority, application Japan, Feb. 20, 1991, 3-026510
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—21 G **13 Claims**

1. A method of manufacturing an SOI device having a conductive impurity layer; said method comprising the steps of:
(a) forming a non-single crystal silicon layer on the exterior of a first single crystal wafer and an insulating film on the exterior of a second single crystal wafer and thereafter bonding these first and second single crystal wafers with each other through said non-single crystal silicon layer and said insulating film;
(b) removing by polishing a part of said non-single crystal silicon layer and a part of said first single crystal wafer from an end surface on a side of said first single crystal wafer, leaving a part of said first single crystal wafer as an element forming layer having an interface with said non-single crystal silicon layer;
(c) selectively introducing impurity atoms into said element forming layer to provide a conductive impurity region at a first impurity concentration reaching said non-single crystal silicon layer;
(d) forming a conductive impurity diffused region, having a second concentration lower than the first concentration, in said element forming layer and substantially extending to the interface between said element forming layer and



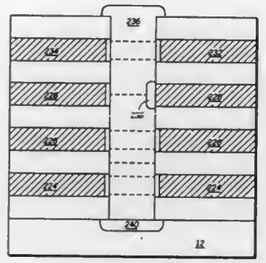
said non-single crystal silicon layer, said conductive impurity diffused region formed by impurity diffusion from said conductive impurity region through said non-single crystal silicon layer at least, by using heat treatment; and
(e) forming a transistor in a region between an exterior surface of said element forming layer and said conductive impurity diffused region.

5,308,777
MASK ROM PROCESS
Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jul. 28, 1993, Ser. No. 98,044
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **12 Claims**



1. A method of manufacturing a semiconductor device, which comprises the steps of
(a) forming a first conductivity type layer on one surface of a work piece comprising a semiconductor substrate,
(b) forming a gate oxide layer on the surface of said substrate,
(c) forming a first conductive structure having edges on said gate oxide layer,
(d) forming an insulating structure in contact with said first conductive structure,
(e) removing material from the surface of said first conductive structure to expose at least a portion of the surface beneath said first conductive structure, and
(f) forming on the remaining structure on said workpiece a second conductive structure in electrical contact with said first conductive structure,
whereby a compound conductive structure is provided on said work piece.

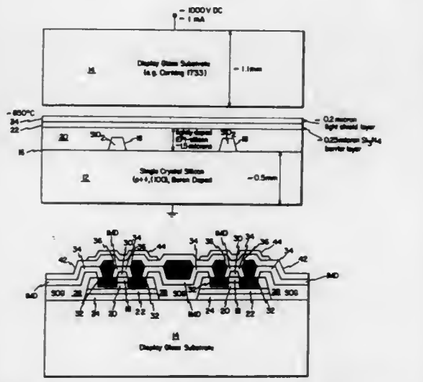
5,308,778
METHOD OF FORMATION OF TRANSISTOR AND LOGIC GATES
Jon T. Fitch; Carlos A. Mazuré, and Keith E. Witek, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 844,088, Mar. 2, 1992, abandoned. This application Jan. 11, 1993, Ser. No. 3,813
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—40 **33 Claims**



1. A method for forming at least one transistor, comprising the steps of:
providing a base layer having a surface;
forming a first dielectric layer overlying the base layer;
forming a control electrode conductive layer overlying the first dielectric layer;
forming a second dielectric layer overlying the control electrode conductive layer;
removing portions of each of the first dielectric layer, the control electrode conductive layer, and second dielectric layer to form an opening which exposes the surface of the base layer and to form N control electrodes from the control electrode conductive layer, where N is an integer, each of the N control electrodes having a sidewall;
forming a sidewall dielectric laterally adjacent each sidewall of the N control electrodes; and
forming a conductive region within the opening, the conductive region having a first portion which functions as a first current electrode, the first portion being laterally adjacent the first dielectric layer and overlying the base layer, the conductive region having a second portion functioning as a channel region, the second portion being laterally adjacent each sidewall dielectric of the N control electrodes, and overlying the first current electrodes, and the conductive region having a third portion functioning as a second current electrode, the third portion being laterally adjacent the second dielectric layer and overlying the channel region.

5,308,779
METHOD OF MAKING HIGH MOBILITY INTEGRATED DRIVERS FOR ACTIVE MATRIX DISPLAYS
Kalluri R. Sarma, Mesa, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 843,746, Feb. 28, 1992, abandoned, which is a division of Ser. No. 733,922, Jul. 22, 1991, Pat. No. 5,110,748, which is a division of Ser. No. 676,998, Mar. 28, 1991, abandoned. This application Aug. 13, 1993, Ser. No. 106,501
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—40 **9 Claims**

1. A method for fabricating high mobility thin film transistors as integrated drivers on a substrate, comprising:
growing a silicon dioxide layer on a silicon substrate;
etching the silicon dioxide layer to obtain a plurability of gate dielectric regions of silicon dioxide;
growing a epitaxial silicon layer on the silicon substrate and the gate dielectric regions;
depositing a barrier layer on the epitaxial silicon layer;
depositing a first light shield layer on the barrier layer;
bonding a glass substrate to the first light shield layer;
etching away the silicon substrate;
etching a portion of the epitaxial silicon layer and of the gate dielectric regions to form a plurability of islands situated on the glass substrate, wherein each island has the epitaxial silicon layer incorporating at least one gate dielectric region, the barrier layer and the first light shield layer;
coating a glass layer on the islands and exposed portions of the glass substrate on the same surface on which the islands are situated;
etching portions of the glass layer to expose at least the gate dielectric regions of each of the islands;
depositing a polysilicon layer on each gate dielectric region of each island;



etching a portion of the polysilicon layer and forming a polysilicon gate situated on each gate dielectric region;
implanting source and drain implantations into the exposed barrier layer on each island, at a thickness greater than the thickness of the gate dielectric region;
annealing the source and drain implantations;
depositing a silicon dioxide intermetal dielectric layer on the plurability of the islands and on remaining portions of the layer of glass;
etching contact vias through the silicon dioxide intermetal dielectric layer to the source and drain implantations on each island; and
depositing and etching source and drain metalizations to the source and drain implantations via the contact vias.

5,308,780
SURFACE COUNTER-DOPED N-LDD FOR HIGH HOT CARRIER RELIABILITY
Jih W. Chou; Joe Ko, and Chun Y. Chang, all of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jul. 22, 1993, Ser. No. 94,990
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—44 **19 Claims**

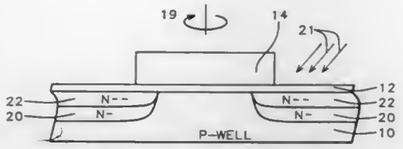
1. The method of forming a surface counter-doped lightly doped drain in the manufacture of an integrated circuit comprising:
forming a gate silicon oxide layer on the surface of a semiconductor substrate;
depositing a layer of polysilicon over said gate silicon oxide layer;
etching said polysilicon layer to said gate oxide layer to form a gate electrode structure;
performing a first ion implantation at a tilt angle to form lightly doped drain regions in said semiconductor sub-

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strate wherein said lightly doped drain regions are partially overlapped by said gate electrode structure;

performing a second ion implantation at a larger tilt angle and lower energy than said first ion implantation wherein said second ion implantation counter dopes the surface of said lightly doped drain regions to form a very lightly doped drain layer thus making said lightly doped drain regions buried regions;

depositing a thin layer of silicon oxide over the surface of said polysilicon gate electrode structure;



anisotropically etching said thin layer of silicon oxide to form ultra thin spacers on the sidewalls of said polysilicon gate electrode structure;

performing a third ion implantation to complete formation of said lightly doped drain; and

depositing and flowing a glasseous layer over all surfaces of said substrate and completing manufacture of said integrated circuit.

5,308,781

SEMICONDUCTOR MEMORY DEVICE

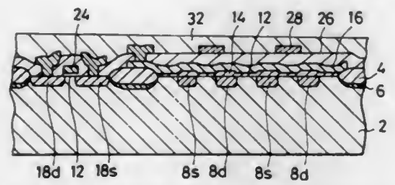
Yuichi Ando, Takarazuka; Koichi Sogawa, Minoo; Norio Yoshida, Ikeda, and Masao Kiyohara, Takarazuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 702,272, May 17, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 4,176

Claims priority, application Japan, May 21, 1990, 2-132058; Jul. 27, 1990, 2-199864; Feb. 25, 1991, 3-053920

Int. Cl.[5] H01L *21/265, 27/02*

U.S. Cl. 437—48 **6 Claims**



1. A method for producing a semiconductor memory device, said method comprising the steps of:

preparing a substrate;

forming longitudinal source diffusion layers for a plurality of memory transistor source regions continuously on said substrate;

forming longitudinal drain diffusion layers for a plurality of memory transistor drain regions continuously on said substrate in parallel to, alternately with and separately from said source diffusion layers;

forming gate oxide films on said substrate between said source and diffusion layers;

forming electrically insulating films on said source and drain diffusion layers at the same time as said step of forming gate oxide films, said electrically insulating films being thickened by an oxidation enhanced method to thereby be thicker than said gate oxide films; and

forming word lines crossing over said source and drain diffusion layers.

5,308,782

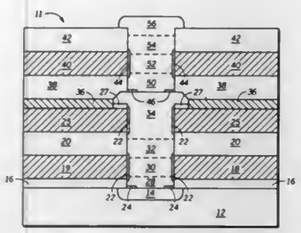
SEMICONDUCTOR MEMORY DEVICE AND METHOD OF FORMATION

Carlos A. Mazuré; Jon T. Fitch; James D. Hayden, and Keith E. Witek, all of Austin, Tex., assignors to Motorola, Schaumburg, Ill.

Continuation-in-part of Ser. No. 844,088, Mar. 2, 1992, abandoned. This application Oct. 26, 1992, Ser. No. 966,643

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **22 Claims**



1. A method for forming a semiconductor memory device comprising the steps of:

providing a substrate having a surface;

forming a first transistor at least partially overlying the surface of the substrate, the first transistor having a first current electrode, a second current electrode overlying the first current electrode, a channel region between the first and second current electrodes, and at least one gate electrode adjacent the channel region;

forming a second transistor overlying the first transistor, the second transistor having a first current electrode, a second current electrode overlying the first current electrode, a channel region between the first and second current electrodes, and at least one gate electrode adjacent the channel region, the second current electrode of the first transistor being coupled to the first current electrode of the second transistor to form a first memory node;

coupling the first memory node to an output conductor wherein the output conductor functions to provide a voltage of the first memory node external to the first and second transistors; and

electrically coupling the first transistor in series with the second transistor wherein a second memory node is formed by the first current electrode of the first transistor and a third memory node is formed by the second current electrode of the second transistor.

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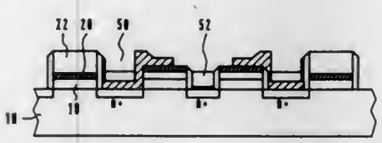
PROCESS FOR THE MANUFACTURE OF A HIGH DENSITY CELL ARRAY OF GAIN MEMORY CELLS

Wolfgang H. Krautschneider, Burlington, Vt., and Werner M. Klingenstein, Kirchheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 991,776

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **6 Claims**



1. A process for making an array of gain memory cells comprising an access transistor, a storage transistor and a diode, which comprises

a) defining active device regions in a semiconductor substrate by etching a plurality of shallow trenches in said substrate, filling said trenches with a dielectric material and planarizing the surface of said substrate;

b) forming a transistor gate stack by forming a thermal silicon oxide layer to form a transistor gate insulator and depositing a polysilicon layer thereover to form a gate conductor, forming a silicide layer thereover to minimize sheet resistance and depositing a layer of dielectric material thereover;

c) integrating a diode into the gate stack formed in step b) by forming an opening in said gate stack, depositing polysilicon of a conductivity type opposite to that of the polysilicon gate conductor in said opening, forming a silicide layer thereover, filling said opening with silicon oxide and planarizing said opening;

d) structuring the gate to form a plurality of gate stacks by etching through the gate stack layers to the surface of said substrate and depositing a spacer layer onto the sidewalls of the resultant gate stacks;

e) ion implanting source and drain regions between the gate stacks formed in step d), thereby completing a plurality of transistors;

f) forming a V_{DD} line to connect the transistors formed in step e) to the power supply by depositing a nitride layer, forming openings in said nitride layer to expose the drain regions in said substrate, ion implanting through said openings and forming a silicide layer over the drain regions;

g) forming a buried strap to connect the integrated diodes formed in step c) to the source regions of the storage transistors formed in step b) by depositing a barrier nitride layer and a first oxide layer thereover, planarizing said layers, forming openings in said first oxide and said nitride layers, depositing a low resistivity material in said openings as the buried strap material, and filling said openings with a second oxide layer;

h) restructuring the gate stacks formed in step b) by etching the oxide over a portion of the gate stacks, depositing a silicon oxide layer, passivating the resultant gain memory devices by depositing a layer of silicon oxide thereover and planarizing the resultant array of gain memory devices.

5,308,784

SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

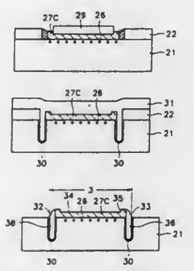
Yungi Kim, Kangwon-do; Byeongyeol Kim, Kyungki-do, and Soohan Choi, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 1, 1992, Ser. No. 955,108

Claims priority, application Rep. of Korea, Oct. 2, 1991, 91-17324; Oct. 2, 1991, 91-17326

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **11 Claims**



1. A method of making a semiconductor device comprising the step of

forming at least one layer of an insulating film on a surface of a semi-conductor substrate;

removing portions of said insulating film from said surface of the substrate to form a plurality of passive regions exposing said surface and a plurality of active regions with said insulating film thereon;

forming a pair of spacers of an etch rate different from the etch rate of said insulating film on said substrate surface and on opposite sides of at least one passive region;

forming a second layer of an insulating film on at least said surface of said substrate between said pair of spacers, said second layer having an etch rate different from said etch rate of said spacers;

etching said spacers from said substrate to expose said substrate surface thereat;

removing portions of the exposed substrate to form a pair of trenches in said substrate on opposite sides of said one passive region;

forming a third layer of a high-temperature insulating film over the remaining portions of said one layer, the remaining portions of said second layer of insulating film and each passive region while filling each trench with the material of said third layer; and

thereafter etching the high-temperature film and remaining portions of said one layer from the substrate to expose said active regions while retaining said remaining portions of said second layer and while retaining the material in said trenches as spacers in each passive region.

5,308,785

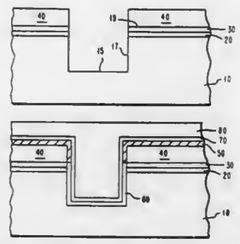
ISOLATION TECHNIQUE FOR SILICON GERMANIUM DEVICES

James H. Comfort, Yorktown Heights; David L. Harame, Mohegan Lake, and Scott R. Stiffler, Brooklyn, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 825,230, Jan. 24, 1992, Pat. No. 5,266,813. This application Sep. 1, 1993, Ser. No. 115,509

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **16 Claims**



1. A process for making a semiconductor device, comprising:

forming a silicon-germanium layer suitable for devices on a silicon substrate;

etching a trench through said silicon-germanium layer and into said silicon substrate and forming a sidewall in said substrate;

forming a first silicon layer on said sidewall; and

forming a dielectric layer over said silicon layer on said sidewall.

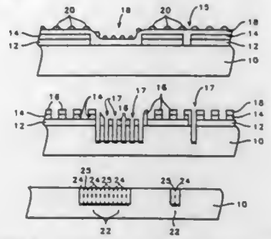
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,786

TRENCH ISOLATION FOR BOTH LARGE AND SMALL AREAS BY MEANS OF SILICON NODULES AFTER METAL ETCHING

Water Lur, Taipei; Jiunn Y. Wu, Dou-Lio, and Anna Su, Hsin-Chu, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 27, 1993, Ser. No. 127,052
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **43 Claims**



1. The method of forming device isolation regions of an integrated circuit by means of silicon nodules after metal etching comprising:

providing a first insulating layer over the surface of a silicon substrate;

depositing a polysilicon layer overlying said first insulating layer;

etching through portions of said polysilicon layer and said first insulating layer not covered by a mask pattern to said silicon substrate so as to provide a plurality of wide and narrow openings exposing portions of said silicon substrate that will form the said device isolation regions;

depositing a second insulating layer overlying said patterned polysilicon and first insulating layers;

depositing a layer of an aluminum-silicon alloy overlying said second insulating layer;

etching away said aluminum-silicon layer whereby silicon nodules are formed on the surface of said second insulating layer;

etching through said second insulating layer and said polysilicon layer to said first insulating layer where it exists and to said silicon substrate surface where said substrate is exposed within said wide and narrow openings using said silicon nodules as a mask;

etching a first set of narrow trenches into said exposed portions of said silicon substrate within said wide and narrow openings using said second insulating layer as a mask wherein said silicon nodules are also etched away;

selectively ion implanting channel-stops through said openings into said substrate underneath said first set of trenches;

removing remaining said first and second insulating layers;

depositing a third insulating layer over the surface of said substrate and within said first set of trenches;

ething back said third insulating layer to leave spacers on the sidewalls of said first set of trenches wherein said spacers fill said narrow first set of trenches;

covering the surface of said substrate with a layer of photoresist and patterning said photoresist using same said mask pattern;

etching a seocnd set of trenches into said silicon substrate not covered by said photoresist mask and said spacers wherein said second set of trenches are immediately contiguous with said first set of trenches and wherein said first and second sets of trenches together correspond to said wide and narrow openings;

removing said photoresist layer;

depositing a fourth insulating layer over the surface of said substrate and within said second set of trenches;

etching back said fourth insulating layer to leave a second set of spacers on the sidewalls of said second set of trenches wherein said spacers completely fill said trenches; and

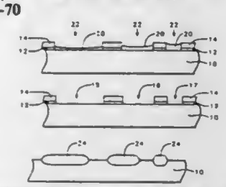
resulting in wide and narrow trenches filled with said third and fourth insulating layers completing said device isolation of said integrated circuit.

5,308,787

UNIFORM FIELD OXIDATION FOR LOCOS ISOLATION

Gary Hong; Cheng H. Huang, both of Hsin-chu, and Hong-Tsz Pan, Chang-hua City, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Oct. 22, 1993, Ser. No. 139,860
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 **20 Claims**



10. The method of local oxidation of an integrated circuit comprising:

forming a thin silicon oxide layer over the surface of a silicon substrate;

depositing a layer of silicon nitride overlying said silicon oxide layer;

patterning said silicon oxide and silicon nitride layers to provide openings exposing portions of said silicon substrate that will be oxidized in a subsequent process;

selectively implanting channel-stop ions into said silicon substrate through said openings;

covering said patterned surface of said substrate with a spin-on-glass material and baking said spin-on-glass material;

selectively implanting nitrogen ions into said silicon substrate through said spin-on-glass material within said openings;

removing said spin-on-glass material;

growing field oxide regions within said openings; and

removing said silicon nitride and said silicon oxide layers thereby completing local oxidation of said integrated circuit.

5,308,788

TEMPERATURE CONTROLLED PROCESS FOR THE EPITAXIAL GROWTH OF A FILM OF MATERIAL

Jon T. Fitch, Austin; Dean J. Denning, Del Valle, and Carlos A. Mazuré, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 759,376, Sep. 13, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,645
Int. Cl.[5] H01L *21/00, 21/02, 21/20, 21/36*
U.S. Cl. 437—81 **30 Claims**

1. A process for expitaxial growth of a film of material, comprising the steps of:

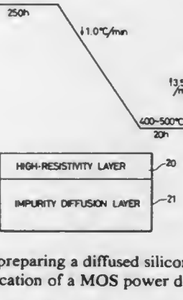
providing a pre-conditioned substrate material with a surface which is chemically passivated to retard native oxide growth;

introducing the substrate material into a process chamber at a first temperature;

removing oxygen from the process chamber to further avoid native oxide growth on the pre-conditioned substrate material;

introducing a process gas into the process chamber, the process gas having a quantity of a growth species and a quantity of a cleaning species, the cleaning species etching the substrate material and the growth species containing atoms which epitaxially gather on the surface of the substrate material; and

gradually elevating temperature during an amount of time within the process chamber to a temperature which is less than 900° C., the amount of time allowing the cleaning species to substantially clean the substrate material until the atoms which epitaxially gather on the surface of the



substrate material begin to epitaxially grow the substrate at a faster rate than a cleaning rate of the surface of the substrate, the faster rate forming said epitaxial growth of the film of material.

5,308,789

METHOD OF PREPARING DIFFUSED SILICON DEVICE SUBSTRATE

Yasushi Yoshimura; Takeshi Akatsuka, and Junichi Okada, all of Niigata, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 124,790
Claims priority, application Japan, Sep. 24, 1992, 4-254510
Int. Cl.[5] H01L *21/324*
U.S. Cl. 437—141 **2 Claims**

1. A method of preparing a diffused silicon device substrate for use in the fabrication of a MOS power device, comprising the steps of:

(a) effecting drive-in diffusion to thereby diffuse an impurity over a silicon device substrate;

(b) subsequently performing a thermal donor formation heat treatment by heating the silicon device substrate at a temperature from 400° to 500° C. for 1 to 20 hours and in a gas atmosphere containing oxygen gas; and

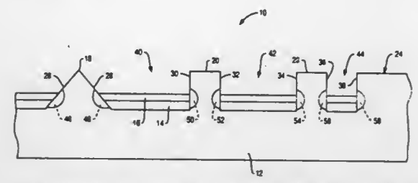
(c) thereafter effecting a thermal donor formation retarding heat treatment by heating the silicon device substrate at a temperature from 600° to 700° C. for 8 to 24 hours in a gas atmosphere containing oxygen gas.

5,308,790

SELECTIVE SIDEWALL DIFFUSION PROCESS USING DOPED SOG

Derryl D. J. Allman, and Gayle W. Miller, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 16, 1992, Ser. No. 961,967
Int. Cl.[5] H01L *21/225*
U.S. Cl. 437—164 **15 Claims**



1. A method for doping a sidewall of a raised portion of a semiconductor substrate comprising the steps of:

depositing an insulating layer only on the substrate adjacent the sidewall, the insulating layer having an end adjacent the sidewall;

depositing a layer of SOG containing a dopant only on the insulating layer adjacent the sidewall, the doped SOG layer having an end adjacent the sidewall; and

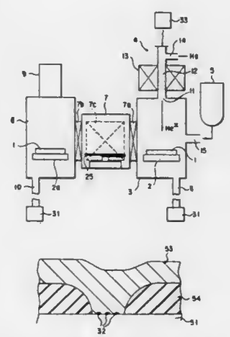
driving the dopant from the SOG layer only into the sidewall to form a junction area at the ends of the insulating layer and the SOG layer, the junction area having a depth less than the length of the sidewall.

5,308,791

METHOD AND APPARATUS FOR PROCESSING SURFACE OF SEMICONDUCTOR LAYER

Yasuhiro Horiike, 10-7-603, Hikarigaoka, Higashi-ku, Hiroshima-shi, Hiroshima-ken, and Kohei Kawamura, Tokyo, both of Japan, assignors to Tokyo Electron Limited, Tokyo and Yasuhiro Horiike, Hiroshima, Japan

Filed Mar. 9, 1992, Ser. No. 848,357
Claims priority, application Japan, Mar. 25, 1991, 3-82984
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—173 **7 Claims**



1. A method of processing that surface of a semi-conductor layer on a substrate where atoms of the semi-conductor layer are bonded to atoms of contaminants, comprising the steps of:

loading the substrate into a first chamber;

keeping the first chamber highly reduced in pressure while exhausting it;

irradiating the surface of said semiconductor layer with vacuum ultraviolet in the highly-reduced pressure in the

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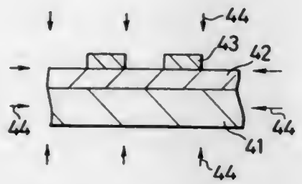
first chamber to allow the energy of said ultraviolet to cut bonds between the atoms of the surface of said semiconductor layer and the atoms of the contaminants; and

supplying ions of an inactive gas onto the surface of said semiconductor layer while irradiating it with the vacuum ultraviolet, thereby forming floating potential of said ions above the surface of said semiconductor layer and causing said ions to collide against the atoms of said contaminants to eliminate them from the surface of said semiconductor layer, carrying said substrate from said first chamber into a second chamber through a passage, pressures in said passage and said second chamber being highly reduced, and forming a film on the surface of said semiconductor layer.

5,308,792
METHOD FOR FABRICATING SEMICONDUCTOR DEVICE

Hidekazu Okabayashi, Tokyo, and Shoichi Endo, Kyoto, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,168
Claims priority, application Japan, Aug. 6, 1991, 3-196322; Aug. 6, 1991, 3-196323; Aug. 6, 1991, 3-196324
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—180 **21 Claims**

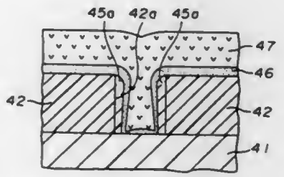


1. A method for fabricating a semiconductor device comprising the steps of depositing a metal film for forming interconnections or electrodes on an insulating film formed on a substrate and then applying a hydrostatic pressure exceeding atmospheric pressure to the surface of the deposited metal film to adhere said metal film to said insulating film.

5,308,793
METHOD FOR FORMING INTERCONNECTOR

Mitsuru Taguchi, Tokyo, and Hirofumi Sumi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,723
Claims priority, application Japan, Jul. 24, 1991, 3-206121
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—194 **22 Claims**



1. A method of forming an interconnector configuration comprising:

forming a through hole in a silicon oxide insulation membrane formed on a substratum interconnector layer, said substratum interconnector layer being formed on a base plate, so that said through hole extends to said substratum interconnector layer;

forming a silicon nitride layer on at least the wall surface of said through hole;

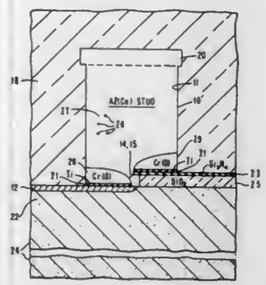
forming a second substratum layer on at least the side and bottom walls of said through hole;

forming an aluminum material layer on the second substratum layer to fill at least said through hole while heating the base plate.

5,308,794
ALUMINUM-GERMANIUM ALLOYS FOR VLSI METALLIZATION

King-Ning Tu, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 876,335, Apr. 30, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,781
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—194 **26 Claims**



1. A method for forming an interconnect through an opening in an insulation layer comprising the steps of:

depositing aluminum in said opening,

depositing germanium in said opening with said aluminum,

raising the temperature of said aluminum and said germanium to a first temperature which is below the melting point of aluminum for a first period of time to allow said germanium to diffuse through said aluminum to provide a volume of a first solid solution of germanium in said aluminum of greater than a first atomic percent number, and

lowering the temperature of said aluminum and said germanium to a second temperature for a second period of time to allow a portion of said germanium to precipitate out of said first solid solution whereby the total volume of said precipitated germanium and the remaining solid solution is larger than said volume of said first solid solution.

5,308,795
ABOVE VIA METAL-TO-METAL ANTIFUSE

Frank W. Hawley, Campbell, and Yen Yeouchung, San Jose, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Nov. 4, 1992, Ser. No. 971,734
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **18 Claims**

1. A method for fabricating a metal-to-metal antifuse comprising the steps of:

forming and defining a first metal interconnect layer;

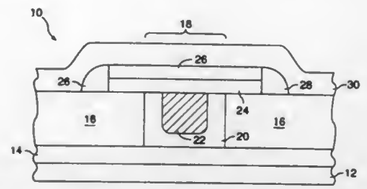
forming an interlayer dielectric layer, said interlayer dielectric layer having an upper surface;

forming an antifuse via in said interlayer dielectric layer to expose said first metal interconnect layer;

forming a metal layer in said antifuse via;

forming a substantially planar surface comprising said metal layer of conducting material, a planarizing material, and said upper surface of said interlayer dielectric layer;

forming an antifuse material layer over said substantially planar surface;

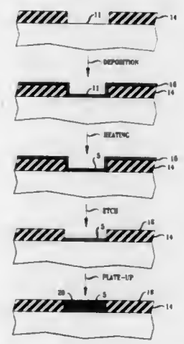


forming a metal capping layer over said antifuse material layer.

5,308,796
FABRICATION OF ELECTRONIC DEVICES BY ELECTROLESS PLATING OF COPPER ONTO A METAL SILICIDE

Leonard C. Feldman, Berkeley Heights; Gregg S. Higashi, Basking Ridge; Cecilia Y. Mak, Bedminster, and Barry Miller, Murray Hill, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 768,503, Sep. 30, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,840
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—200 **9 Claims**



1. A process for fabricating a device comprising the steps of forming a layer on a substrate, forming an opening through said layer to said substrate, forming a region of metal silicide on said substrate in the region positioned at the bottom of said opening and plating copper material onto said silicide using an electroless plating bath.

5,308,797
LEADS FOR SEMICONDUCTOR CHIP ASSEMBLY AND METHOD

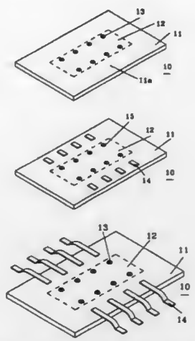
David R. Kee, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1992, Ser. No. 980,824
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **10 Claims**

1. A method of making a semiconductor device with leads formed directly on the semiconductor chip, comprising the steps of:

forming a semiconductor device with bond pads thereon in a central conductive area of a semiconductor chip leaving a peripheral area of non-conductive semiconductor material that is electrically separate from the semiconductor device;

forming a plurality of conductors on said non-conductive peripheral area around said centrally located semiconductor device, said conductors being electrically connected to said semiconductor device;



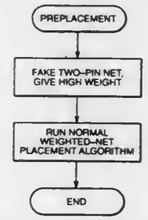
bonding and forming a lead wire from a continuous wire feed source to each of said conductors; and

cutting said formed lead wire to length.

5,308,798
PREPLACEMENT METHOD FOR WEIGHTED NET PLACEMENT INTEGRATED CIRCUIT DESIGN LAYOUT TOOLS

Daniel R. Brasen, Grenoble, France and Siu-Tong Hui, San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 12, 1992, Ser. No. 975,301
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—250 **1 Claim**



1. In a computer-assisted integrated circuit design layout process in which circuit entities are placed by a computer program on a layout of an integrated circuit stored in computer memory, a circuit to be laid out being represented in computer memory as circuit entities interconnected between pins on the circuit entities, a set of pins to be interconnected forming a net having a weight assigned thereto, a method of preplacing circuit entities whereby the computer program is caused to place a circuit entity at a different location on the integrated circuit layout than the computer program would otherwise place the circuit entity at, comprising the steps of:

defining a faked two-pin net, one pin being located within said circuit entity and another pin being located in a region of the integrated circuit, approximately the size of said circuit entry, in which the circuit is to be placed;

assigning a weight W_F to said faked two-pin net that is greater than weights assigned to other nets in the integrated circuit layout;

the computer program then placing said circuit entity at

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least partially within said region of said another pin in accordance with said weight W_F and said weights assigned other nets in the integrated circuit layout; and building the integrated circuit.

5,308,799

OXIDE SUPERCONDUCTOR AND PROCESS FOR PREPARATION THEREOF

Mitsuru Morita; Keiichi Kimura; Katsuyoshi Miyamoto; Kiyoshi Sawano; Seiki Takebayashi, and Masamoto Tanaka, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

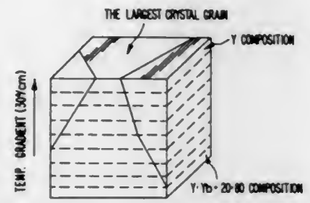
PCT No. PCT/JP91/00769, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/19029, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 7, 1991, Ser. No. 834,554

Claims priority, application Japan, Jun. 7, 1990, 2-147406; Nov. 6, 1990, 2-299025; Dec. 14, 1990, 2-402204; Feb. 12, 1991, 3-38911

Int. Cl.[5] **C01F** *11/02, 17/00;* **C01G** *3/02;* **H01L** *39/12*

U.S. Cl. 505—126 **16 Claims**



1. A superconductor comprising a composite oxide of at least two RE elements selected from the group consisting of Y, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb and Lu, and also Ba and Cu, wherein said superconductor comprises a micro structure comprised of a monocrystalline 123 phase of $REBa_2Cu_3O_{7-x}$ and a 211 phase of RE_2BaCuO_5 finely dispersed therein, said 123 phase being formed in a plurality of domains respectively for different RE compositions and wherein said domains are arranged on top of one another in a successively increasing or decreasing order of their respective 123 phase forming temperatures.

5,308,800

APPARATUS AND METHOD FOR FORMING TEXTURED BULK HIGH TEMPERATURE SUPERCONDUCTING MATERIALS

John P. Wehrle, Riverdale; Barbara F. Howell, and James G. Morris, III, both of Arnold, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1992, Ser. No. 858,363

Int. Cl.[5] **C30B** *11/02*

U.S. Cl. 505—400 **10 Claims**

6. A method for producing textured superconducting material, comprising:

forming a superconductor-solvent mixture;

placing said mixture in a furnace;

introducing a temperature gradient in said furnace; and

introducing a pressure gradient in said furnace;

said pressure gradient being substantially simultaneous with said temperature gradient;

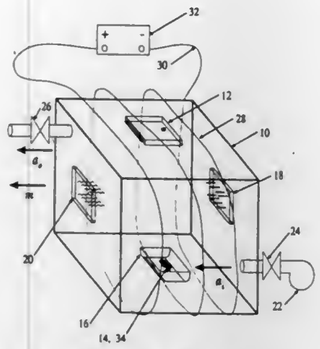
said step of introducing a temperature gradient including actuating a heater;

said step of introducing a pressure gradient including actuating compressor means, actuating inlet means, and actuating outlet means;

said compressor means being for pumping compressible fluid into said furnace;

said inlet means being for introducing said compressible fluid into said furnace in a first direction, thereby raising the pressure in said furnace;

said outlet means being for bleeding said compressible fluid out of said furnace, after said raising of said pressure in said furnace, in a second direction which is substantially parallel with said first direction;



said inlet means including an inlet valve;

said outlet means including an outlet valve;

said inlet valve and said outlet valve being located noncentrally and at substantially opposite sides of said furnace.

5,308,801

PROCESS FOR THE INCREASE IN CRITICAL TEMPERATURE OF HIGH T_c SUPERCONDUCTORS

F. Hadley Cocks, Durham; Nancy J. Bolinger, Chapel Hill, and Holly M. Hammarstrom, Durham, all of N.C., assignors to Duke University, Durham, N.C. and IBM Corporation, Armonk, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,556

Int. Cl.[5] **B05D** *5/12*

U.S. Cl. 505—310 **3 Claims**

1. A method for increasing the critical transition temperature of a high temperature superconducting material having three crystal axes, said method comprising the steps of:

(a) providing the high temperature superconducting material; and

(b) applying nonhydrostatic stressing to said superconducting material by providing tension in the direction of one crystal axis and compression in the direction of at least one of the other two crystal axes.

5,308,802

SOL-GEL PROCESS OF MAKING GLASS, PARTICULARY GRADIENT-INDEX GLASS

Niels Haun, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed Jun. 25, 1993, Ser. No. 83,644

Int. Cl.[5] **C03C** *3/04*

U.S. Cl. 501—12 **27 Claims**

1. A process for making glass comprising:

forming a mixture of a silicon alkoxide, at least two other metal alkoxides, and an alcohol in a solution sufficiently acidic to hydrolyze partially the silicon alkoxide;

adding water to the mixture to convert the metal alkoxides to a network of corresponding metal oxides suitable for gelation;

containing the mixture containing the network of metal oxides for sufficient time to form a gel;

removing substantially only one of the at least two other metal oxides from the gel;

fixing the gel in a liquid capable of arresting said removing; drying the fixed gel; and

sintering the dried gel to form a glass.

5,308,803

GLASS COMPOSITIONS

John F. Clifford, Sydenham; Ivan Wozniak, Stoke-on-Trent, and Peter J. Smith, Kidlington, all of United Kingdom, assignors to Cookson Group PLC, London, United Kingdom

Filed Jun. 10, 1992, Ser. No. 896,002

Claims priority, application United Kingdom, Jun. 14, 1991, 9112886; Aug. 29, 1991, 9118500

Int. Cl.[5] **C03C** *8/14*

U.S. Cl. 501—17 **19 Claims**

1. An on-glaze glass flux composition suitable for coating onto a glazed surface which is essentially free from lead and cadmium and which consists of the following components:

	Mole Percent
SiO_2	45–70
Bi_2O_3	0.5–4
Al_2O_3	0.1–10
B_2O_3	1–30
lanthanoid oxide	0–20
at least one of Li_2O, Na_2O, K_2O	5–30 (in total)
one or more of ZnO, MgO, CaO, SrO, BaO	0–10 (in total)
ZrO_2	0.1–10
TiO_2	0–5
WO_3	0–5
MoO_3	0–5
one or more of Y_2O_3, HfO_2, Nb_2O_5, SnO_2	0–10 (in total)

with the proviso that ZnO and BaO are each not contained in an amount of more than 2 mole percent.

5,308,804

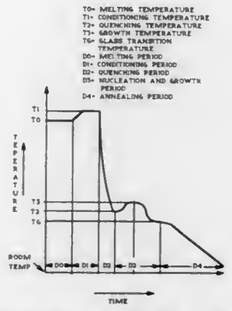
MOVING DISKS MADE OF SEMICONDUCTOR NANOCRYSTALLITE EMBEDDED GLASS

Huai-Chuan Lee, 1063 Cornell Ave., Albany, Calif. 94706

Filed Dec. 15, 1992, Ser. No. 991,490

Int. Cl.[5] **C03C** *8/14*

U.S. Cl. 501—17 **6 Claims**



1. A glass-ceramic article containing an embedded semiconductor nanocrystallite as the predominant crystal phase which can be prepared from a precursor glass capable of being melted at a temperature no higher than 1600° C., and which can be precipitated during cooling; said glass-ceramic article consisting essentially, expressed in terms of weight percent on the oxide basis, of 40–75% SiO_2, 0 to 50% B_2O_3, 0–15% Li_2O, 0–15% Na_2O and/or K_2O, 0–20% ZnO, and 0.0001–5.0% of said semiconductor nanocrystallite; and wherein the semiconductor nanocrystallite is selected from the group consisting of: ZnS_xSe_{1-x}, CdS_xSe_{1-x}, $CuCl_xBr_{1-x}$, ZnS_xTe_{1-x}, $ZnSe_xTe_{1-x}$, InP, $Al_xGa_{1-x}As$, GaInAsP, AlGaAsSb, InAsSbP, and AlGaInP, where $x=0$ to 1.

5,308,805

NEUTRAL, LOW TRANSMITTANCE GLASS

Rodney G. Baker, and Paige L. Higby, both of Maumee, Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio and Pilkington Plc, St. Helens, England

Filed May 5, 1993, Ser. No. 57,742

Int. Cl.[5] **C03C** *3/04*

U.S. Cl. 501—71 **24 Claims**

1. A soda-lime-silica glass having a base glass composition comprising on a weight percent basis: 68–75% SiO_2, 10–18% Na_2O, 5–15% CaO, 0–5% MgO, 0–5% Al_2O_3 and 0–5% K_2O, and colorants consisting essentially of from about 1.3 to 2 weight percent Fe_2O_3 (total iron), from about 0.01 to 0.05 weight percent NiO, from about 0.02 to 0.04 weight percent Co_3O_4 and from 0.0002 to 0.003 weight percent Se, and having a ferrous value in the range of 18 to 30 percent; the glass having a shading coefficient of no more than 0.53.

5,308,806

METHOD FOR IMPROVING REFRACTORY METAL FIBER REINFORCED MOLYBDENUM DISILICIDE COMPOSITES

Michael J. Maloney, Port St. Lucie, and Ralph J. Hecht, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 13, 1992, Ser. No. 819,559

Int. Cl.[5] **C04B** *35/58*

U.S. Cl. 501—95 **14 Claims**

1. A method for increasing the high temperature strength, creep resistance, toughness, and resistance to thermal cycling matrix cracking of refractory metal fiber reinforced molybdenum disilicide composites, said method comprising adding to the matrix of said composite sufficient particulate modifying agent selected from the group consisting of silicon nitride, silicon carbide, boron nitride, silica, and mixtures thereof to decrease the coefficient of thermal expansion of said matrix.

5,308,807

PRODUCTION OF LEAD ZIRCONATE TITANATES USING ZIRCONIA SOL AS A REACTANT

Kevin J. Moeggenborg, Aurora, Ill., and Stephen A. Matchett, Grand Haven, Mich., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 913,838, Jul. 15, 1992, abandoned. This application Jan. 26, 1993, Ser. No. 9,321

Int. Cl.[5] **C04B** *35/49*

U.S. Cl. 501—134 **7 Claims**

1. A method of manufacturing a lead zirconate titanate ceramic, which comprises:

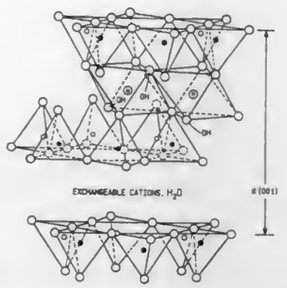
blending an aqueous zirconium oxide sol which contains zirconium oxide particles having an effective diameter smaller than about 90 nanometers with finely divided lead oxide and titanium oxide to create a slurry;

heating the slurry with constant stirring until sufficient water is evaporated from the slurry to produce a relatively viscous paste; and

drying and calcining the paste to produce a substantially homogeneous ceramic material.

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5,308,808
ORGANIC OR ORGANOMETALLIC TEMPLATE MEDIATED CLAY SYNTHESIS
Kathleen C. Gregar, Bolingbrook; Randall E. Winans, and Robert E. Botto, both of Downers Grove, all of Ill., assignors to United States Department of Energy, Washington, D.C.
Filed Feb. 19, 1992, Ser. No. 836,747
Int. Cl.[5] C04B *33/02, 33/04*
U.S. Cl. 501—146 **20 Claims**



1. A method of incorporating an organic or organometallic template in crystalline layer-silicate clays, comprising heating a silica gel and a hydroxide of Mg, Al or mixtures thereof and LiF and an organic or organometalli template material selected from the class consisting of photochemically active or electrochemically active or catalytically active materials, at a temperature and pressure and for a time sufficient to form a crystalline clay material containing an organic or organometallic templates.

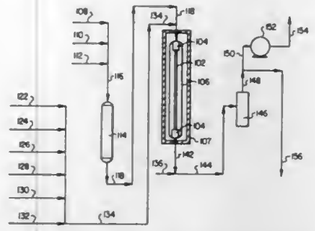
5,308,809
TRANSPARENT CERAMICS AND PRODUCTION PROCESS FOR THE SAME
Jean-Francois Baumard, Limoges; Marcel Boncoeur, Paris; Gilles Gasgnier, Limoges, and Louis Minjolle, Tarbes, all of France, assignors to Commissariat A L' Energie Atomique, France
Filed Jun. 2, 1992, Ser. No. 893,209
Claims priority, application France, Jun. 5, 1991, 91 06784
Int. Cl.[5] C04B *35/50*
U.S. Cl. 501—152 **15 Claims**

1. A ceramic consisting essentially of yttrium oxide and from about 0.01 to 2% by weight of titanium oxide, having a light transmission percentage of at least 20% in the wavelength range between 0.5 and 8 μm.

5,308,810
METHOD FOR TREATING CONTAMINATED CATALYST
Andrew P. Voss, Cerritos; William Murray, Orange, and Ruthjean Stager, Fullerton, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Dec. 28, 1992, Ser. No. 997,483
Int. Cl.[5] B01J *38/62, 23/22;* **C01B** *21/00*
U.S. Cl. 502—28 **26 Claims**

1. A method of treating spent selective catalytic reduction catalyst contaminated with platinum and having a reduced efficiency of removal of oxides of nitrogen comprising:

a. contacting said spent catalyst with a solution comprising a metal salt of a metal which catalyzes the reaction of ammonia and an oxide of nitrogen to nitrogen; and



b. heating said catalyst contact with said solution at a calcination temperature in the presence of oxygen.

5,308,811
CATALYST FOR POLYMERIZING AN OLEFIN AND METHOD FOR PRODUCING AN OLEFIN POLYMER
Yoshinori Suga, Machida; Yasuo Maruyama, Tokyo; Eiji Isobe, Kawasaki; Toru Suzuki, and Fumihiko Shimizu, both of Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Filed May 1, 1992, Ser. No. 877,112
Claims priority, application Japan, May 1, 1991, 3-100066; Feb. 27, 1992, 4-041453
Int. Cl.[5] C08F *4/648, 4/68, 4/69*
U.S. Cl. 502—62 **21 Claims**

1. A catalyst for polymerizing an olefin which consists essentially of a product obtained by contacting (A) a metallocene transition metal compound, (B) at least one member selected from the group consisting of ion exchanging layered compounds other than silicates and inorganic silicates, and (C) an organic aluminum compound of the formula $A1R^6_jX_{3-j}$ wherein R_6 is a C_{1-20} hydrocarbon group, X is hydrogen, halogen or an alkoxy group, and j is a number satisfying $0<j\leqq 3$.

5,308,812
TREATED PILLARED CLAYS AND ALKYLATION PROCESS USING SAME
George Salem, Cleveland Hts., and Wayne R. Kliewer, Solon, both of Ohio, assignors to BP America, Inc., Cleveland, Ohio
Filed Apr. 1, 1993, Ser. No. 40,460
Int. Cl.[5] B01J *20/16, 20/10*
U.S. Cl. 502—63 **14 Claims**

1. A treated pillared clay made by the process comprising the steps of:

(A) contacting at least one clay with an effective amount of at least one ammonium ion source to exchange sodium and/or calcium ions in said clay for ammonium ions to provide an ammonium-containing clay, said clay comprising metal oxides and hydroxides and having a lamellar structure with lamellar layers and interlamellar spaces disposed between the lamellar layers and exchangeable sodium and/or calcium ions occupying said interlamellar spaces;

(B) contacting said ammonium-containing clay with an effective amount of a source of fluorine to replace at least part of the hydroxyl groups in said clay with fluorine to provide a fluorine- and ammonium-containing clay;

(C) contacting said fluorine- and ammonium-containing clay with an effective amount of at least one pillaring agent to form an fluorine-containing pillared clay; and

(D) contacting said fluorine-containing pillared clay with an effective amount of at least one inorganic acid to impregnate and/or incorporate at least part of said acid on said clay.

5,308,813
SELECTIVE DEMETALLATION OF ZEOLITES AND RELATED MATERIALS
David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.
Filed Feb. 1, 1993, Ser. No. 11,915
Int. Cl.[5] B01J *29/02, 29/04*
U.S. Cl. 502—64 **8 Claims**

1. A method for demetallating crystalline molecular sieve materials comprising the steps of:

(a) obtaining a crystalline molecular sieve material having framework cation positions wherein a transition metal is contained in said framework cation positions.

(b) removing said transition metal from said framework cation positions of said crystalline molecular sieve material by contacting said transition metal containing crystalline molecular sieve material with a complexing agent having a pH above about 3 at a temperature of about 0° to about 300° C. to remove said transition metal from said crystalline molecular sieve material

(c) annealing said crystalline molecular sieve material having said transition metal removed therefrom wherein said annealing comprises solution phase annealing, vapor phase annealing, thermal annealing, hydrothermal annealing and combinations thereof.

2. A method according to claim 1 further comprising adding to said annealing step (c) a compound having a cation selected from the group consisting of silicon, zirconium, titanium, aluminum, boron, gallium, germanium, phosphorus, vanadium, manganese and mixture thereof.

5,308,814
DISTILLATE HYDROGENATION CATALYST
Simon G. Kukes, Naperville; Frederick T. Clark, Wheaton, and P. Donald Hopkins, St. Charles, all of Ill., assignors to Amoco Corporation, Chicago, Ill.
Division of Ser. No. 769,533, Oct. 1, 1991, Pat. No. 5,147,526. This application May 8, 1992, Ser. No. 880,492
Int. Cl.[5] B01J *29/10*
U.S. Cl. 502—66 **12 Claims**

1. A hydrogenation catalyst suitable for hydrogenation of a hydrocarbon feedstock comprising a support comprising zeolite Y and from about 0.1 percent to about 2.0 percent by weight each of palladium and platinum calculated as a percentage of said catalyst, said palladium and platinum incorporated onto said support comprising zeolite Y in a weight ratio ranging from about 5:1 to about 1:2 and said zeolite Y comprising sodium in an amount ranging from about 1.5 weight percent to about 6.0 weight percent as a percentage of said zeolite Y.

5,308,815
HETEROGENEOUS METHYLALUMINOXANE CATALYST SYSTEM
Samuel A. Sangokoya, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 736,416, Jul. 26, 1991, Pat. No. 5,157,137, and a continuation-in-part of Ser. No. 853,239, Mar. 18, 1992, Pat. No. 5,235,081. This application Sep. 1, 1992, Ser. No. 937,778
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—104 **8 Claims**

5. A process for making a heterogeneous catalyst composition comprising reacting a metallocene catalyst with a methylaluminoxane, at least about 10 percent but less than about 40 percent of the total aluminum value in said methylaluminoxane being soluble in toluene at 25° C., said methylaluminoxane being the partially soluble and insoluble methylaluminoxane materials prepared by the fractionation of a methylaluminoxane solution by adding an aliphatic solvent to a methylaluminoxane solution in an aromatic solvent so as to cause said partially soluble and insoluble methylaluminoxane materials to separate as a solid from said solution.

5,308,816
OLEFIN POLYMERIZATION SOLID CATALYST, OLEFIN POLYMERIZATION CATALYST AND OLEFIN POLYMERIZATION
Toshiyuki Tsutsui; Ken Yoshitsugu, and Kunio Yamamoto, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed May 29, 1992, Ser. No. 890,271
Claims priority, application Japan, May 31, 1991, 3-129247; May 31, 1991, 3-129248; Jul. 26, 1991, 3-187397; Jul. 26, 1991, 3-187398; Sep. 17, 1991, 3-236601; Sep. 17, 1991, 3-236602
Int. Cl.[5] C08F *4/60*
U.S. Cl. 502—108 **18 Claims**

1. An olefin polymerization solid catalyst which is a solid catalyst component (A-1) comprising

(a-1) a particulate carrier composed of (i) an oxide of at least one element selected from the group consisting of elements in the groups II, III and IV of the periodic table, and containing (ii) less than 1.0% by weight of water and (iii) at least 1.5% by weight of surface hydroxyl groups,

(a-2) organoaluminum oxy compound, and

(a-3) a transition metal compound of a metal selected from the group consisting of metals in the group IV B of the periodic table, and containing a ligand having a cyclopentadienyl skeleton,

wherein the organoaluminum oxy compound (a-2) and the transition metal compound (a-3) are supported on the particulate carrier (a-1).

5,308,817
METALLOCENE CATALYST COMPONENT WITH GOOD CATALYST EFFICIENCY AFTER AGING
Baireddy R. Reddy, Baytown, and Edwar S. Shamshoum, Houston, both of Tex., assignors to Fina Technology, Inc., Dallas, Tex.
Filed May 18, 1992, Ser. No. 885,104
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—117 **15 Claims**

1. A catalyst system for polymerizing olefins of three or more carbon atoms to produce a syndiotactic polyolefin having improved aging comprising:

a) a metallocene compound described by the general formula:

$$R''(C_5H_4)(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)MeQ_p$$

wherein (C_5H_4) is a cyclopentadienyl ring and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ is a fluorenyl radical; R' is a long chain alkene substituent having 5–20 carbon atoms on the fluorene ligand at C2 or C7 individually or both C2 and C7, each R' being the same or different; R'' is a structural bridge between the (C_5H_4) and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ rings to impart stereorigidity; Q is a hydrocarbon radical or a halogen; Me is a Group IIIB, IVB, VB, or VIB metal; m=0 or 1; n=1; and p is the valence of Me minus 2; and

b) an aluminoxane.

5,308,818
CATALYST SYSTEM FOR THE POLYMERIZATION OF OLEFINS
Edwar S. Shamshoum, Houston, and David J. Rauscher, Webster, both of Tex., assignors to Fina Technology, Inc., Dallas, Tex.
Filed Jun. 8, 1992, Ser. No. 895,534
Int. Cl.[5] C08F *4/656*
U.S. Cl. 502—127 **18 Claims**

1. In a system for the polymerization and copolymerization of olefins, the combination comprising:

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(a) a conventional Ziegler-Natta catalyst component wherein the conventional Ziegler-Natta catalyst component comprises: a solid catalyst component prepared by: (i) suspending a dialkoxy magnesium in an aromatic hydrocarbon that is liquid of normal temperatures, (ii) contacting the dialkoxy magnesium with a titanium halide and further contacting the resulting composition a second time with the titanium halide, and (iii) contacting the dialkoxy magnesium with a diester of an aromatic dicarboxylic acid at some point during the treatment with the titanium halide in (ii); and

(b) an electron donor described by the formula:



wherein R_1 is an alkyl or cycloalkyl group of 3 or 5 carbon atoms having mirror image symmetry containing a secondary carbon atom attached to the silicon atom; R_2 and R_3 are each independently an alkyl or aryl group; and R_4 is an alkyl or cycloalkyl group of 1–6 carbon atoms having mirror image symmetry with a secondary carbon atom attached to the silicon atom, R_1 and R_4 can be the same or different.

5,308,819

DIPHOSPHINES CONTAINING SILANE GROUPS, IMMOBILISED DIPHOSPHINES AND THE USE THEREOF AS HYDROGENATION CATALYSTS

Benoit Pugin, Münchenstein; Felix Spindler, Starrkirch-Wil, and Manfred Müller, Dagmersellen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 823,516, Jan. 21, 1992, Pat. No. 5,252,751. This application Jul. 14, 1993, Ser. No. 91,802

Claims priority, application Switzerland, Jan. 25, 1991, 218/91

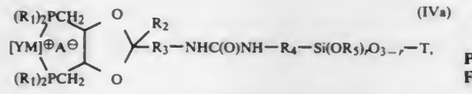
Int. Cl.[5] B01J *31/24; C07F 9/28*

U.S. Cl. 502—162 **9 Claims**

1. A solid carrier material which contains a diphosphine rhodium or iridium complex fixed on the surface thereof, which carrier material has the formula IV or IVa



(IV)



(IVa)

wherein Y denotes two monoolefin ligands or a diene ligand, M is Ir(I) or Rh(I), Z is —Cl, —Br or —I, $A^{\ominus}$ is the anion of an oxyacid or complex acid, T is a solid carrier material, r is 0, 1 or 2, R_1 denotes identical or different radicals and is linear or branched C_1–C_{12}alkyl, unsubstituted C_5–C_6cycoalkyl or C_5–C_6cycloalkyl which is substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or is phenyl or benzyl, or both substituents R_1 of a group $(R_1)_2P$ are o,o'-diphenylene, R_2 is hydrogen, linear or branched C_1–C_{12}alkyl, phenyl or benzyl, R_3 is C_1–C_{12}alkylene, R_4 is C_2–C_{18}alkylene, phenylene or benzylene, and R_5 is C_1–C_6alkyl or phenyl.

5,308,820

CATALYST FOR ASYMMETRIC INDUCTION

Atsunori Mori, and Sbohei Inoue, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

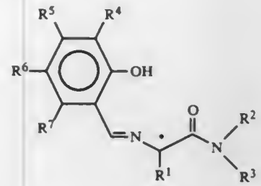
Filed Jan. 15, 1993, Ser. No. 5,117

Claims priority, application Japan, Mar. 18, 1992, 4-062249

Int. Cl.[5] B01J *31/02*

U.S. Cl. 502—167 **18 Claims**

1. A catalyst for asymmetric induction comprising the amino acid amide derivative defined below and a titanium (IV) alkoxide, said amino acid amide derivative being represented by the formula (I):



(I)

wherein R^1 represents an isopropyl group, an isobutyl group, a sec-butyl group, a tert-butyl group, a phenyl group or a benzyl group, R^2 and R^3 are the same or different and each represents a lower alkyl group, a C_3–C_8 cycloalkyl group, an unsubstituted or substituted phenyl group or a hydrogen atom or R^2 and R^3 may be combined to form a C_3–C_7 alkylene group, R^4 represents a chlorine atom, a bromine atom, an iodine atom, a lower alkyl group or an unsubstituted or substituted phenyl group, R^5, R^6 and R^7 are the same or different and each represents a hydrogen atom, a halogen atom, a methyl group or a methoxy group or R^5 and R^6 or R^6 and R^7 may be combined to form CH=CH—CH=CH or OCH_2O and • denotes an absolute configuration of S or R, wherein the substituted phenyl group of R^2, R^3 and R^4 each contains a substituent selected from the group consisting of a halogen atom, a C_1–C_4 alkyl group and a C_1–C_4 alkoxy group.

5,308,821

PACKING ADSORBENT PARTICLES FOR STORAGE OF NATURAL GAS

Chia-Hsiung Chang, Palatine, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 1, 1992, Ser. No. 906,993

Int. Cl.[5] B01J *21/18, 20/00*

U.S. Cl. 502—180 **10 Claims**

1. A method of increasing the packing density of particulate adsorbents in a bed of such particles comprising combining two uniform size particles having nominal diameters differing by a ratio of about 7/1, the larger particle being a pellet having a diameter/height ratio of about 1/1 and the smaller particle being a sphere.

5,308,822

PROCESS FOR ACTIVATING CATALYST PRECURSORS FOR THE DEHYDROGENATION OF C2–C5 PARAFFINS, AND A CATALYTIC COMPOSITION ACTIVATED BY THE PROCESS

Rodolfo Iezzi; Andrea Bartolini, and Franco Buonomo, all of San Donato Milanese, Italy, assignors to Snamprogetti S.p.A and Enitecerche S.p.A., both of Milan, Italy

Filed Mar. 8, 1993, Ser. No. 27,944

Claims priority, application Italy, Mar. 11, 1992, MI92A000558

Int. Cl.[5] B01J *21/08, 23/02*

U.S. Cl. 502—243 **7 Claims**

1. A process for activating a catalytic composition containing gallium, alumina, optionally silica and/or one or more alkaline or alkaline-earth metals, comprising thermal activation

in air at a temperature of between 450° and 1000° C., characterised in that said thermal activation is followed by post-activation effected by the following stages:

oxidation with air and/or oxygen or a mixture containing oxygen at least in a 5 vol % concentration in an inert gas, for a time of between 1 and 180 minutes, at a temperature of between 500° and 1000° C.;

purging with an inert gas for a time of between 1 and 10 minutes;

reduction with hydrogen or a mixture containing hydrogen in at least a 10 vol % concentration in an inert or reducing gas, for a time of between 1 and 120 minutes, at a temperature of between 450° and 800° C.

5,308,823

REVERSIBLE THERMOSENSITIVE RECORDING MATERIALS

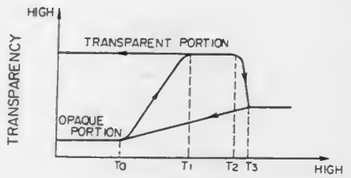
Yoshihiko Hotta, Numazu, and Keishi Kubo, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 595,244, Oct. 10, 1990, Pat. No. 5,116,803, which is a division of Ser. No. 361,801, May 30, 1989, Pat. No. 4,977,030, which is a continuation of Ser. No. 80,432, Jul. 30, 1987, abandoned. This application Mar. 13, 1992, Ser. No. 850,553

Claims priority, application Japan, Aug. 5, 1986, 61-182667; Oct. 22, 1986, 61-251234; Oct. 23, 1986, 61-253095; Nov. 21, 1986, 61-278102; Jan. 20, 1987, 62-9077; Jan. 21, 1987, 62-12971

Int. Cl.[5] B41M *5/26*

U.S. Cl. 503—209 **11 Claims**



1. A reversible thermosensitive recording material comprising a support with a thermosensitive layer whose transparency reversibly changes depending on the temperature, said layer consisting essentially of a resin matrix, an organic low molecular weight substance dispersed in the resin matrix and at least one additive selected from the group consisting of: a polyhydric alcohol higher fatty acid ester, a polyhydric alcohol higher alkylether, a lower olefin oxide addition product of a polyhydric alcohol higher fatty acid ester, a higher alcohol, a higher alkylphenol, a higher fatty acid, a higher alkylamine, a higher fatty acid amide, a fat, an oil, propylene glycol, acetylene glycol, a sodium salt of a higher alkylbenzenesulfonic acid, a calcium salt of a higher alkylbenzenesulfonic acid, a barium salt of a higher alkylbenzenesulfonic acid, a magnesium salt of a higher alkylbenzenesulfonic acid, a calcium salt of a higher fatty acid, a barium salt of a higher fatty acid, a magnesium salt of a higher fatty acid, an aromatic carboxylic acid, a higher aliphatic sulfonic acid, an aromatic sulfonic acid, a sulfuric mono-ester, a phosphoric mono-ester, a phosphoric diester, a lower sulfonated oil, a long-chain alkyl acrylate polymer, an acrylate oligomer, a long-chain alkyl methacrylate polymer, a long-chain alkyl methacrylate-amine copolymer, a styrene-maleic anhydride copolymer and an olefinmaleic anhydride copolymer.

5,308,824

RECORDING MATERIAL

Toshihiko Matsushita, and Sadao Morishita, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 765,242, Sep. 25, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 22,851

Claims priority, application Japan, Sep. 28, 1990, 2-259870; Sep. 29, 1990, 2-260680

Int. Cl.[5] B41M *5/40*

U.S. Cl. 503—226 **6 Claims**

1. A thermosensitive recording material comprising:

a support;

an undercoat layer formed on one side of said support, said undercoat layer comprising a binder, an absorbent, non-fluorescent pigment, and a white or light colored inorganic fluorescent pigment, said fluorescent pigment having an emission maximum in the 400–700 nm range when illuminated with ultra-violet light; and

a thermosensitive recording layer formed on said undercoat layer, said recording layer comprising a heat-meltable compound, a dye precursor, and a color developer, wherein unrecorded portions of said recording layer are opaque with respect to said undercoat layer, and further wherein when heat is applied to said recording layer, a portion of said heat-meltable compound is absorbed by said undercoat layer and said dye precursor and said color developer react to produce a color.

5,308,825

DESCRIPTION

Geert H. Defieuw, Kessel-Lo, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 24, 1992, Ser. No. 903,329

Claims priority, application European Pat. Off., Jul. 12, 1991, 91201826.4

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **10 Claims**

1. Thermal dye transfer printing method for obtaining high density black images comprising the steps of (1) imagewise heating a first area of a dye-donor element or an entire first dye-donor element comprising a support having thereon a dye layer containing a dye or a mixture of dyes thereby transferring a first dye image to a dye-receiving element comprising a support having thereon a dye image-receiving layer and (2) subsequently imagewise heating a second area of said dye-donor element or an entire second dye donor element thereby transferring in register with the first dye image a second dye image to said dye-receiving element wherein the superposition of the first transferred dye image and the second transferred dye image yield a black dye image, characterized in that the concentration of those essential composing dyes having a higher retransfer degree than the other essential composing dyes is higher in the second area or in the second dye-donor element than in the first area or first dye-donor element.

5,308,826

HERBICIDAL 4-SUBSTITUTED PYRIDYL-3-CARBINOLS

Hsiao-Ling M. Chin, Moraga; Yi Q. Wei, Pinole, and Nhan H. Nguyen, Richmond, all of Calif., assignors to Zeneca Limited, London, England

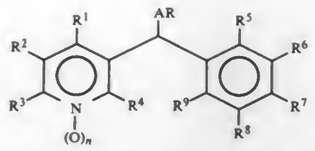
Filed Apr. 22, 1993, Ser. No. 51,490

Int. Cl.[5] C07D *213/16;* **A61K** *31/44*

U.S. Cl. 504—132 **51 Claims**

39. A method for controlling undesirable vegetation comprising applying to the area where control is desired an herbicidally effective amount of a compound of the formula:

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wherein:

R^1 and R^5 are each independently halogen, C_1–C_6 haloalkyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkoxy, (C_1–C_6)alkoxy-(C_1–C_6)alkyl, —$S(O)_m$—R^{10}, cyano, —OH, thiocyano, nitro or —$N(R^{11})(R^{12})$;

R^2, R^3 and R^4 are each independently hydrogen, C_1–C_6 alkyl, nitro, halogen, C_1–C_6 alkoxy, C_1–C_6 haloalkoxy, C_1–C_6 haloalkyl or —$S(O)_m$—R^{10};

R^6, R^7, and R^8 are each independently hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 alkenyl, C_1–C_6 alkynyl, nitro, —$N(R^{11})(R^{12})$, C_1–C_6 haloalkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkoxy, (C_1–C_6)alkoxy-(C_1–C_6)alkyl, halo(C_1–C_6)alkoxy-(C_1–C_6)alkyl, cyano, —C(X)—R^{10} or —$S(O)_m$—R^{10};

R^9 is hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkoxy, (C_1–C_6)alkoxy(C_1–C_6)alkyl, —$S(O)_m$—R^{10}, cyano, hydroxy, thiocyano, nitro or —$N(R^{11})(R^{12})$;

A is oxygen or sulfur;

n is 0 or 1;

R is hydrogen, hydrocarbyl, hydrocarbyl substituted with one or more of halogen or C_1–C_6 alkoxy or is of the formula —C(X)—R^{10}, —C(O)—C(O)—R^{10}, —$S(O)_2$—R^{10} or —P(X)(R^{15})(R^{16});

wherein:

X is O or S;

R^{10} is hydrocarbyl, substituted hydrocarbyl, hydrocarbyloxy, substituted hydrocarbyloxy, hydrocarbyl-S—, substituted hydrocarbyl-S— or is of the formula —$N(R^{11})(R^{12})$;

wherein R^{11} and R^{12} are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl, hydrocarbyloxy, substituted hydrocarbyloxy, pyridyl, furyl, thienyl, (C_1–C_6)alkoxycarbonyl(C_1–C_6)alkyl, hydroxycarbonyl(C_1–C_6)alkyl, or $N(R^{13})(R^{14})$ where R^{13} and R^{14} are each independently hydrogen, C_1–C_6 alkyl or phenyl;

or R^{11} and R^{12} together with the nitrogen to which they are bound form an aziridine, piperazine, morpholine, thiomorpholine, thiomorpholine sulfinyl, thiomorpholine sulfonyl, hexamethyleneimine, piperidine or pyrrolidine ring, any of which may be optionally substituted with C_1–C_6 alkyl;

R^{15} and R^{16} are each independently C_1–C_6 alkyl, C_1–C_6 alkylthio or C_1–C_6 alkoxy; and

m is 0, 1 or 2;

and agriculturally acceptable salts thereof.

5,308,827

HERBICIDAL FOAM COMPOSITION

Naoki Sakamoto; Osamu Sudo, both of Hiroshima; Tomoko Shomura, and Youko Inoue, both of Kanagawa, all of Japan, assignors to Fumakilla Limited and Meiji Seika Kaisha, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 798,935, Nov. 27, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 21,569

Claims priority, application Japan, Nov. 28, 1990, 2-322601; Nov. 1, 1991, 3-313116

Int. Cl.[5] A01N *57/04*

U.S. Cl. 504—206 **8 Claims**

1. A herbicidal foam composition comprising, on the basis of the total weight of the composition,

(a) about 0.05 to 20% of a herbicide selected from the group consisting of Bialaphos, Glufosinate, Glyphosate and a mixture thereof,

(b) about 0.1 to 10% of an anionic surfactant selected from the group consisting of alkylsulfosuccinate alkaline salts, polyoxyethylenealkylsulfate alkaline salts, polyoxyethylenealkylnaphtalenesulfonate alkaline salts and a mixture thereof,

(c) about 0.1 to 20% of a solvent selected from the group consisting of glycolethers and a mixture thereof,

(d) about 0.002 to 21% of a foam controlling agent selected from the group consisting of silicone oil, a C_1–C_{10} alcohol and a mixture thereof,

(e) up to about 90% of water as a diluent and

(f) up to about 50% of liquefied petroleum gas as a propellant,

the pH of said composition being adjusted to within about 3–11.

5,308,828

SALICYLALDEHYDE AND SALICYLIC ACID DERIVATIVES AND SULFUR ANALOGS THEREOF

Karl Eicken, Wachenheim; Joachim Rheinheimer; Uwe J. Vogelbacher, both of Ludwigshafen; Karl-Otto Westphalen, Speyer; Matthias Gerber, Mutterstadt, and Helmut Walter, Obrigheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

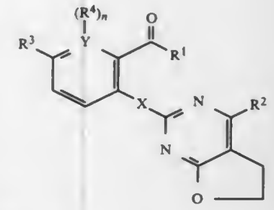
Filed Dec. 11, 1991, Ser. No. 805,211

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039940; Aug. 10, 1991, 4126935

Int. Cl.[5] C07D *491/048, 407/12;* A01N *43/54*

U.S. Cl. 504—241 **6 Claims**

1. A salicylaldehyde or salicylic acid derivative of the formula I



where

Y is nitrogen or carbon;

R^1 is (a) hydrogen;

(b) succinylimidooxy group;

(c) a 5-membered heteroaromatic structure with from two to three hetero nitrogen atoms and may carry from one to four halogen atoms or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

(d) a radical —OR^5, where

R^5 is hydrogen, an alkali metal cation, one equivalent of an alkaline earth metal cation, one equivalent of an alkaline earth metal cation or an organic ammonium ion;

C_3–C_{12}-cycloalkyl which may carry from one to three C_1–C_4-alkyl radicals;

C_1–C_{10}alkyl which may carry from one to five halogen atoms or one of the following radicals: C_1–C_4-alkoxy, C_1–C_4-alkylthio, cyano, C_1–C_8-alkylcarbonyl, C_1–C_8-alkoxycarbonyl, C_3–C_{12}-cycloalkyl, phenyl, phenoxy or phenylcarbonyl, where the aromatic radicals in turn may carry from one to five halogen atoms or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

(e) C_1–C_{10}-alkyl which may carry from one to five halogen atoms and carries one of the following radicals: a 5-membered heteroaromatic structure with as hetero atoms from one to three nitrogen atoms or one nitrogen atom and one

oxygen or sulfur atom and may carry from one to four halogen atoms or one or two of the following radicals: C_1—C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and or C_1–C_4-alkylthio;

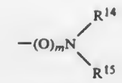
(f) C_2–C_6-alkyl which carries one of the following radicals in the 2-position: C_1–C_6-alkoximino, C_3–C_6-alkenyloximino, C_3–C_6-haloalkenyloximino or benzyloximino;

(g) C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these groups in turn may carry from one to five halogen atoms;

(h) phenyl which is unsubstituted or monosubstituted to trisubstituted by C_1–C_4-alkyl or C_1–C_4-alkoxy or monosubstituted to pentasubstituted by halogen;

(i) an unsubstituted or substituted 5-membered aromatic heteorcyclic structure which has from one to four nitrogen atoms in the ring and is bonded via a nitrogen atom;

(j) a group —$N{=}CR^6R^7$, where R^6 and R^7 are each C_1–C_{20}-alkyl which may carry phenyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio, or are each phenyl or together form a C_3–C_{12}-alkylene chain which may carry from one to three C_1–C_3-alkyl groups; a radical



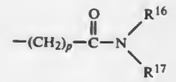
where m is 0 or 1 and R_{14} and R_{15} may be identical or different and have the following meanings:

hydrogen;

C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, where these radicals may each carry from one to five halogen atoms or one or two of the following groups: C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_1–C_6-alkylthio, C_3–C_6-alkenylthio, C_3–C_6-alkynylthio, C_1–C_6-haloalkoxy, cyano, C_1–C_6-alkylcarbonyl, C_3–C_6-alkenylcarbonyl, C_3–C_6-alkynylcarbonyl, C_1–C_6-alkoxycarbonyl, C_3–C_6-alkenyloxycarbonyl, C_3–C_6-alkynyloxycarbonyl, bis-C_1–C_6-dialkylamino, C_3–C_6-cycloalkyl or unsubstituted or substituted phenyl; unsubstituted or substituted C_3-14 C_6-cycloalkyl; unsubstituted or substituted phenyl;

R^{14} together with R^{15} form a pyrrolidinyl, 1-piperidyl, or 4-morpholinyl group which is unsubstituted or substituted;

(l) a group

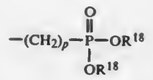


where R^{16} and R^{17} are each hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl or C_3- C_6-alkynyl and p is 1, 2, 3 or 4;

(m) or a group

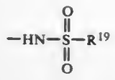
where R^{18} is C_1–C_6alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl, p is 1, 2, 3, or 4 and k is 0, 1 or 2;

(n) a radical OR^5, where R^5 is a group



where R^{18} and p have the above-mentioned meanings;

(o) or a radical

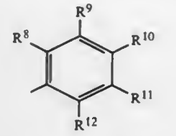


where R^{19} is C_1–C_6-alkyl or phenyl, which in turn may carry from one to four of the following substituents: halogen, nitro, cyano or C_1–C_6-alkyl;

R^2 is C_1–C_4-alkyl, C_1–C_4alkoxy, C_1–C_4-haloalkoxy or halogen;

R^3 is hydrogen, or together with R^4, is a group $CH_2{=}CH{-}CH{=}CH_2$ or $N{=}CH{-}CH{=}CH_2$;

R^4 is hydrogen, halogen, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, phenoxy or phenoxy substituted by methyl, fluorine, chlorine, or methoxy; C_1–C_4-haloalkyl, formyl or C_1–C_8-alkoxycarbonyl; an unsubstituted or monosubstituted to trisubstituted or, where halogen is a substitutent, monosubstituted to pentasubstituted phenyl radical



where R^8, R^9, R^{10}, R^{11} and R^{12} are each hydrogen, halogen, cyano or nitro;

C_3–C_6-alkenyl, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy or C_3–C_6-alkynyl, where these groups in turn may carry from one to five halogen atoms;

di-C_1–C_4-alkylamnio, C_3–C_8-cycloalkyl which may carry from one to three C_1–C_4-alkyl radicals;

C_1–C_{10}-alkoxycarbonyl, C_1–C_4-alkylthio;

phenoxy where the aromatic radical may carry from one to five halogen atoms and/or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkoxy or C_1–C_4-alkylthio;

C_1–C_{10}-alkyl or -alkoxy which may carry from one to five halogen atoms and/or one of the following radicals: C_1–C_4-alkoxy, C_1–C_4-alkylthio, phenyl or phenoxy, where the aromatic radicals in turn may carry from one to five halogen atoms and/or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

or R^4 is a 5-membered heteroaromatic structure having from one to four nitrogen atoms or one or two nitrogen atoms and in addition one sulfur or oxygen atom in the ring, or is a benzofused 5-membered heteroaromatic structure having from one to three nitrogen atoms or one nitrogen atom and in addition one oxygen or sulfur atom in the ring, which heteroaromatic structures may carry from one to three halogen atoms and/or from one to three of the following radicals: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or phenyl which is unsubstituted or substituted by from one to three halogen atoms and/or from one to three methyl groups;

a thienyl or benzothienyl radical which may carry from one to three halogen atoms and/or from one to three of the following radicals: C_1–C_4-alkyl, C^{1-} or C_2-haloalkyl or nitro;

an unsubstituted or substituted naphthyl or quinolyl radical;

or oxygen when Y is nitrogen and n is 1;

n is 1 when Y is carbon or when Y is nitrogen and R^4 is oxygen, and 0 when Y is nitrogen and R^4 is not oxygen;

X is oxygen or sulfur, and

Y is nitrogen when R^3 is hydrogen and n is 0 or when R^4 is oxygen an n is 1; carbon when R^3 and R^4 together from a group $CH_2{=}CH{-}CH{=}CH_2$ or $N{=}CH{-}CH{=}CH_2$ and carbon when R^3 is hydrogen and n is 1; wherein the term

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substituted means in each case that groups thus defined may carry from one to three substitutents selected from the group consisting of halogen, nitro, cyano, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy or C_1–C_6-alkylthio and environmentally compatible salts of the compounds I.

5,308,829

BENBZOFURAN DERIVATIVES AND THEIR USE AS HERBICIDES

Susumu Takemura, Takarazuka; Masayuki Enomoto, Nishinomiya; Toru Uekawa, Takarazuka; Masaharu Sakaki, Toyonaka, all of Japan; Ryo Sato, Durham, and Eiki Nagano, Raleigh, both of N.C., assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

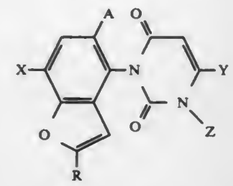
Filed Mar. 18, 1993, Ser. No. 38,564

Claims priority, application Japan, Mar. 18, 1992, 4-062251

Int. Cl.[5] A01N *43/54;* **C07D** *405/10*

U.S. Cl. 504—243 **14 Claims**

1. A compound of the formula:



(I)

7herein A is hydrogen, fluorine or chlorine; X is hydrogen, &,uorine, chlorine or bromine; Y is methyl optionally substituted 7ith halogen; Z is methyl or amino; R is halo(C_1–C_5)alkyl, (C_1–C_5)alkylthio(C_1–C_5)alkyl, amino(C_1–C_5)alkyl, (C_1–C_5)alkylamino(C_1–C_5)alkyl, (C_1–C_5)acylamino(C_1–C_5)alkyl, (C_1–C_5)alkylsulfonylamino(C_1–C_5)alkyl, C_1–C_5 acyl, hydroxy(C_1–C_5)alkyl, (C_1–C_5)alkoxy(C_1–C_5)alkyl, (C_1–C_5)alkoxy(C_1–C_5)alkoxy(C_1–C_5)alkyl, (C_1–C_5)acyloxy(C_1–C_5)alkyl, hydroxyimino(C_1–C_5)alkyl, (C_1–C_5)alkoxyimino(C_1–C_5)alkyl, cyano, hydrazono(C_1–C_5)alkyl, (C_1–C_5)alkylhydrazono(C_1–C_5)alkyl, phenylhydrazono(C_1–C_5)alkyl (7herein the phenyl is optionally substituted 7ith C_1–C_5 alkyl, C_1–C_5 alkoxy, halo(C_1–C_5)alkyl, halo(C_1–C_5)alkoxy, halogen, nitro, cyano or C_1–C_5 alkylthio), carboxy, C_1–C_5 alkoxycarbonyl, aminocarbonyl, C_1–C_5 alkylaminocarbonyl or phenylaminocarbonyl (7herein the phenyl is optionally substituted 7ith C_1–C_5 alkyl, C_1–C_5 alkoxy, halo(C_1–C_5)alkyl, halo(C_1–C_5)alkoxy, halogen, nitro, cyano or C_1–C_5 alkylthio).

5,308,830

TRIAZOLECARBOXAMIDE HERBICIDES

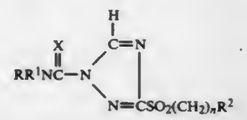
R. C. Gerardo Lopez, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 115,127, Oct. 30, 1987, abandoned, which is a continuation of Ser. No. 733,158, May 13, 1985, abandoned. This application Jul. 26, 1989, Ser. No. 385,858

Int. Cl.[5] A01N *43/653;* **C07D** *249/12*

U.S. Cl. 504—273 **13 Claims**

1. A compound of the formula:



wherein X is O or S; R and R^1 are substituted or unsubstituted (C_1–C_6)alkyl, (C_2–C_6)alkenyl, (C_2–C_6)alkynyl or (C_3–C_6)cycloalkyl wherein the substituent may be lower alkoxy or halo, or when R or R^1 are substituted (C_3–C_6)cycloalkyl the substituent may be lower alkyl, lower alkenyl or lower alkynyl; R^2 is substituted or unsubstituted (C_3–C_9)cycloalkyl wherein the substituent is selected from lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkoxyalkyl or halo; and n is 0, 1 or 2.

5,308,831

METHOD OF MAKING A CONNECTION BETWEEN A HIGH CRITICAL TEMPERATURE SUPERCONDUCTIVE CERAMIC AND A SUPERCONDUCTOR BASED ON NIOBIUM-TITANIUM

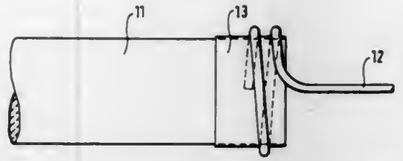
Alain Fevrier, Paris; Albert Leriche, Gif sur Yvette, and Peter Herrmann, Corbreuse, all of France, assignors to GEC Alsthom SA, Paris, France

Filed Jun. 26, 1992, Ser. No. 903,952

Claims priority, application France, Jun. 27, 1991, 91 07969

Int. Cl.[5] B23K *1/00, 1/19, 1/20*

U.S. Cl. 505—100 **2 Claims**



1. A method of connecting a high critical temperature superconductive ceramic part and a low critical temperature superconductor strand of niobium-titanium, said method comprising preparing a silver contact on said ceramic part as a ring on the outer surface of said ceramic part, soldering one end of said strand to said silver contact using an intermediate soldering material chosen from the group consisting of lead-tin alloys, silver alloys, cadmium alloys and WOOD's metal

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5,308,832

NUTRITIONAL PRODUCT FOR PERSONS HAVING A NEUROLOGICAL INJURY

Keith A. Garleb, Powell; Stephen J. DeMichele, Dublin; Linda S. Rausch, Blacklick; Martha K. Fuller, Columbus, and Stephen R. Behr, Westerville, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jul. 27, 1992, Ser. No. 920,087

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—2 **19 Claims**

1. An enteral nutritional product comprising a lipid blend having a ratio of n-6 to n-3fatty acids in the range of 1 to 6, about 15% to 30% of the calories provided by the nutritional product being supplied by protein, about 70% to 85% of the calories provided by the nutritional product being supplied by fat, and less than 5% of the calories provided by the nutritional product being supplied by carbohydrate.

5,308,833

METHOD FOR TREATING HEPATITIS B CARRIERS WITH MINIMAL DISEASE

Bruce F. Scharschmidt, and John D. Baxter, both of San Francisco, Calif., assignors to SciClone Pharmaceuticals, San Mateo, Calif.

Filed Feb. 6, 1992, Ser. No. 833,468

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **9 Claims**

1. A method for treating minimal disease hepatitis B infection comprising administering to a minimal disease hepatitis B carrier a therapeutically effective amount of at least one peptide selected from the group consisting of thymosin α-1, a biologically active fragment of thymosin α-1 and a biologically active analog of thymosin α-1, in a pharmaceutically acceptable vehicle.

5,308,834

TREATMENT OF ENDOTOXIN-ASSOCIATED SHOCK AND PREVENTION THEREOF USING A BPI PROTEIN

Randal W. Scott, Cupertino, and Marian N. Marra, San Mateo, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Division of Ser. No. 681,551, Apr. 5, 1991, Pat. No. 5,171,739, which is a continuation-in-part of Ser. No. 567,016, Aug. 13, 1990, which is a continuation-in-part of Ser. No. 468,696, Jan. 22, 1990, Pat. No. 5,089,274, which is a continuation-in-part of Ser. No. 310,842, Feb. 14, 1989, abandoned. This application Dec. 14, 1992, Ser. No. 990,662

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **3 Claims**

1. A method for preventing endotoxemia in a subject which comprises administering to the subject an amount of a BPI protein effective to prevent endotoxemia in the subject.

5,308,835

PRODUCTION OF THE *E. COLI* LT-B ENTEROTOXIN SUBUNIT

John D. Clements, New Orleans, La., assignor to Praxis Biologics, Inc., Rochester, N.Y.

Continuation of Ser. No. 936,426, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 846,173, Mar. 31, 1986, abandoned, which is a continuation of Ser. No. 628,873, Jul. 9, 1984, abandoned. This application Feb. 17, 1993, Ser. No. 18,652

Int. Cl.[5] A61K *39/108, 39/02;* **C07K** *15/04*

U.S. Cl. 514—12 **2 Claims**

1. A substantially pure, non-toxic LT-B subunit of the *E. coli* heat labile enterotoxin which has the immunological characteristics of the expression product of the DNA encoding said subunit that is contained in plasmid pJC217.

2. A vaccine formulation comprising the LT-B subunit of claim 1 and a compatible pharmaceutical carrier therefor.

5,308,836

PHARMACEUTICAL COMPOSITION OF STABILIZED [LEU[13]]-MOTILIN-HSE

Kiichi Sawai; Masayasu Kurono; Yasuaki Kondo; Makoto Sato, and Toshiyuki Kouzaki, all of Aichi, Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Aichi, Japan

Continuation of Ser. No. 863,251, Apr. 3, 1992. This application Sep. 7, 1993, Ser. No. 116,682

Claims priority, application Japan, Apr. 9, 1991, 3-076202; Mar. 12, 1992, 4-087484

Int. Cl.[5] A61K *37/24, 37/36*

U.S. Cl. 514—12 **14 Claims**

1. A method of stabilizing [Leu[13]]-motilin-[Hse[23]] comprising the steps of

adding a first stabilizer selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, tartaric acid, valeic acid, caproic acid, caprylic acid, capric acid, lactic acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, maleic acid, fumalic acid, citric acid and salts thereof, and

adjusting the pH to between 5.5–8.0.

5,308,837

5'-AMINE SUBSTITUTED ADENOSINE ANALOGS AS IMMUNOSUPPRESSANTS

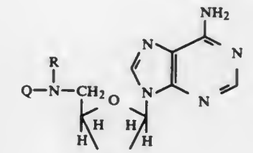
Terry L. Bowlin, Maineville, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 840,658, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 571,042, Aug. 22, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,211

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—46 **8 Claims**

1. A method of effecting immunosuppression in a patient in need thereof comprising administering to said patient an effective immunosuppressive amount of a compound of the formula

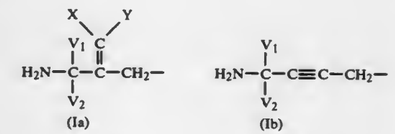


(I)

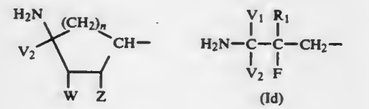
wherein

R represents H, methyl or ethyl and

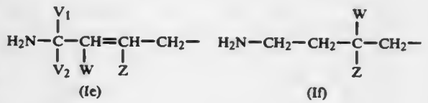
Q represents a radical of formulae Ia to If depicted as follows:



(Ia) (Ib)



(Ic) (Id)



(Ie) (If)

wherein

R_1 is H or F,

n is an integer 1 or 2,

V_1 is H or methyl,

V_2 is H or COOH, and

W, X, Y and Z are each independently H, F, Cl or Br;

or a pharmaceutically acceptable salt thereof.

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5,308,838

USES OF ALOE PRODUCTS

Bill H. McAnalley, Grand Prairie; Robert H. Carpenter, Bastrop, and Harley R. McDaniel, Dallas, all of Tex., assignors to Carrington Laboratories, Inc., Irving, Tex.

Division of Ser. No. 558,905, Jul. 27, 1990, Pat. No. 5,118,673, which is a continuation-in-part of Ser. No. 229,164, Aug. 5, 1988, Pat. No. 5,106,616, which is a continuation-in-part of Ser. No. 144,872, Jan. 14, 1988, Pat. No. 4,851,224, which is a continuation-in-part of Ser. No. 869,261, Jun. 5, 1986, Pat. No. 4,735,935, which is a continuation-in-part of Ser. No. 810,025, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 754,859, Jul. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 750,321, Jun. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 649,967, Sep. 12, 1984, abandoned, which is a continuation of Ser. No. 375,720, May 7, 1982, abandoned. This application Apr. 7, 1992, Ser. No. 864,583

Int. Cl.[5] A61K *31/715, 39/00, 39/12*

U.S. Cl. 514—54 **37 Claims**

1. A method for enhancing the therapeutic effect in an animal of a known pharmaceutic agent, comprising:

administering to said animal, in addition to the known pharmaceutic agent, an amount of an acetylated mannan derivative sufficient to enhance the immunocompetency of said animal, wherein said known pharmaceutic agent requires the aid of the immune system of said animal to achieve maximal drug efficacy.

5,308,839

COMPOSITION COMPRISING NON-STEROIDAL ANTI-INFLAMMATORY AGENT TENIDAP AND EFFECTIVELY NON-ANTIBACTERIAL TETRACYCLINE

Lorne M. Golub; Nangavarum S. Ramamurthy, both of Smithtown; Thomas F. McNamara, Port Jefferson, and Robert A. Greenwald, Melville, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 743,579, Aug. 12, 1991, which is a continuation of Ser. No. 445,410, Dec. 4, 1989, abandoned. This application Sep. 4, 1992, Ser. No. 940,540

Int. Cl.[5] A61K *31/65, 31/40*

U.S. Cl. 514—152 **8 Claims**

1. A method of effecting a reduction in bone loss in mammals resulting from tissue-destructive conditions associated with excess metalloproteinase activity, comprising;

administering to a mammal in combination an amount of 4-dedimethylaminotetracycline that is effectively anti-metalloproteinase, but which is not effectively antimicrobial, and an amount of a non-steroidal anti-inflammatory agent tenidap which, when combined with the effectively anti-metalloproteinase amount of 4-dedimethylaminotetracycline, results in a significant reduction of any one of tissue destruction and bone loss.

5,308,840

SUBSTITUTED OR UNSUBSTITUTED BENZHYDRYL HETEROALKYL-SUBSTITUTED AMINOPHENOL COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Naoki Sugiyama; Fumihiko Akaboshi; Haruko Yakumaru; Tomokazu Gotoh; Masanori Sugiura; Shigeki Kuwahara; Masahiko Kajii; Yoshiko Tanaka; Takao Kondoh, and Chikara Fukaya, all of Hirakata, Japan, assignors to Green Cross Corporation, Osaka, Japan

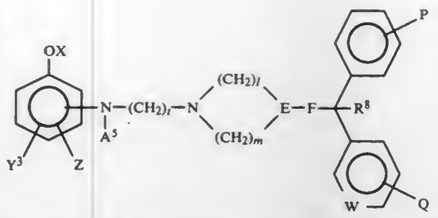
Filed Apr. 6, 1992, Ser. No. 863,752

Claims priority, application Japan, Apr. 8, 1991, 3-103886; Jul. 26, 1991, 3-209920

Int. Cl.[5] A61K *31/435, 31/495, 31/55;* **C07D** *295/13*

U.S. Cl. 514—212 **7 Claims**

1. An aminophenol derivative which is represented by the formula



wherein X is a hydrogen atom, Y^3 is a hydrogen atom or lower alkyl, Z is a hydrogen atom, lower alkyl, halogen atom or trifluoromethyl, A^5 is a hydrogen atom or lower alkyl, t is an integer of 1 to 5, l and m are each an integer of 2 or 3, with the sum of l and m being 4 or 5, E and W are the same or different and each is a nitrogen atom or CH, F is a direct bond or oxygen atom, P and Q are the same or different and each is a hydrogen atom, halogen atom, lower alkyl or lower alkoxy, and R^8 is a hydrogen atom, hydroxyl group or a hydroxy-protecting group, or its pharmacologically acceptable salt.

5,308,841

AMINO AND NITRO CONTAINING TRICYCLIC COMPOUNDS USEFUL AS INHIBITORS OF ACE

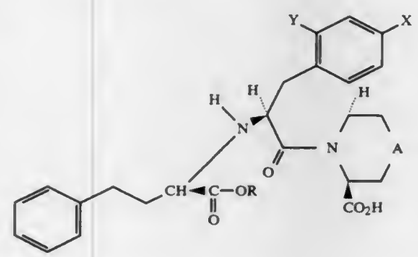
Gary A. Flynn, and Douglas W. Beight, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 979,029, Nov. 20, 1992, abandoned, which is a division of Ser. No. 905,494, Jun. 25, 1992, Pat. No. 5,208,230, which is a continuation of Ser. No. 777,625, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 633,572, Dec. 21, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 46,326

Int. Cl.[5] A61K *31/55;* **C07D** *498/04, 487/04, 513/04*

U.S. Cl. 514—215 **10 Claims**

1. A compound of the formula



wherein

A is oxygen;

R is hydrogen or a C_1–C_4 alkyl; and

X and Y are each independently hydrogen, nitro or amino, with the proviso that one of X and Y is hydrogen and one of X and Y is other than hydrogen; and

pharmaceutically acceptable salts thereof.

5,308,842

TRICYCLIC DERIVATIVES OF THE THIENODIAZOCINE AND THIENOTHIADIAZOCINE CLASSES OF COMPOUNDS

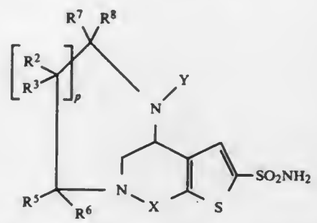
John J. Baldwin, Gwynedd Valley, and Gerald S. Ponticello, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 942,560, Sep. 9, 1992, abandoned. This application May 10, 1993, Ser. No. 59,793

Int. Cl.[5] C07D *495/18, 513/18;* **A61K** *31/54, 31/495*

U.S. Cl. 514—224.5 **5 Claims**

1. A compound of structural formula:



or an ophthalmologically acceptable salt thereof, wherein:

Y is —H or



R is hydrogen or C_{1-3} alkyl;

R^1 is

1) hydrogen,
2) C_{1-6} alkyl either unsubstituted or substituted with F, OH, C_{1-5} alkyl-$S(O)_m$, or C_{1-5} alkoxy;
3) C_{2-5} alkenyl;
4) phenyl or phenyl-C_{1-3} alkyl, where the phenyls are unsubstituted or substituted with C_{1-3} alkyl, C_l, Br, F, CF_3, OH or C_{1-3} alkoxy;

R^2, R^3 and R^5 are independently hydrogen or C_{1-4} alkyl;

R^6 is

(a) H,
(b) C_{1-4} alkyl,
(c) C_{2-4} alkenyl
(d) C_{1-4} alkyl substituted with
(1) hydroxy,
(2) C_{1-4} alkoxy,
(3) hydroxy-C_{1-4} alkoxy,
(4) C_{2-4} alkenyloxy,
(5) C_{1-4}-alkoxy-C_{1-4} alkoxy,
(6) hydroxy-C_{1-4} alkoxy-C_{1-4}-alkoxy,
(7) C_{1-4} alkylamino,
(8) di(C_{1-4} alkyl)amino,
(9) hydroxy-C_{1-4} alkylamino,
(10) C_{1-3} alkoxy-C_{1-4} alkylamino,
(11) hydroxy-C_{1-4} alkoxy-C_{1-4} alkylamino,
(12) C_{1-4} alkyl-$S(O)_m$-,
(13) hydroxy-C_{1-4} alkyl-$S(O)_m$,
(14) C_{1-4} alkoxy-C_{1-4} alkyl-S(O)m-,
(15) hydroxy-C_{1-4} alkoxy-C_{1-4} alkyl-$S(O)_m$-,
(16) C_{1-4}-alkyl-$S(O)_m$-C_{1-4} alkoxy,
(17) hydroxy-C_{1-4}-alkyl-$S(O)_m$-C_{1-4} alkoxy,
(18) C_{1-4} alkyl-S(O)m-C_{1-4} alkyl-$S(O)_m$,
(19) hydroxy-C_{1-4} alkyl-S(O)m-C_{1-4} alkyl-S(O)m or
(20) morpholino;

R^7 and R^8 are each hydrogen or together represent=O;

X is —$S(O)_2$— or —C(O)—;

m, is independently 0, 1 or 2; and p is 0 or 1.

5,308,843

METHOD OF INHIBITING MAMMALIAN TOPOISOMERASE II AND MALIGNANT CELL GROWTH IN MAMMALS, WITH SUBSTITUTED (S)-3-METHYL-7-OXO-2,3-DIHYDRO-7H-PYRIDO[1,2,3-DE][1,4]-BENZOXAZINE(AND-BENZOTHIAZINE)-6-CARBOXYLIC ACIDS

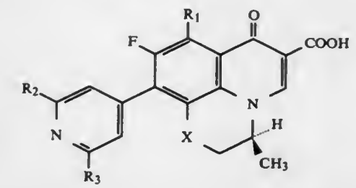
Susan Coughlin, Chatham, N.Y.; George Y. Lesher, deceased, late of Schodack, N.Y. by Louise Elliot Lesher, executor ; James B. Rake, Halfmoon, and Mark P. Wentland, Colonie, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 11, 1990, Ser. No. 580,732

Int. Cl.[5] A61K *31/535, 31/54;* **C07D** *279/18, 265/38*

U.S. Cl. 514—227.8 **7 Claims**

1. A method of inhibiting mammalian topoisomerase II in a mammal which comprises administering to the mammal a compound which is a (S)-3-methyl-7-oxo-2,3-dihydro-7H-pyrido[1,2,3-de][1,4]benzoxazine or -benzothiazine of the formula



I

wherein R_1 is hydrogen or fluoro, R_2 and R_3 each independently is hydrogen or alkyl having 1 to 4 carbon atoms, and X is O, S or S=O; a pharmaceutically acceptable acid-addition salt thereof; or a salt thereof with a pharmaceutically acceptable cation; the compound being administered in a therapeutic amount which is effective to inhibit the mammalian topoisomerase II.

5,308,844

SUBSTITUTED 3-PIPERAZINYLALKYL-2,3-DIHYDRO-4H-1,3-BENZOXAZIN-4-ONES AND THEIR USE IN THERAPY

Jean-Pierre Rieu, and Dennis Bigg, both of Castres, France, assignors to Pierre Fabre Medicament, Boulogne, France

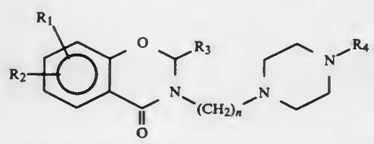
Filed Aug. 5, 1992, Ser. No. 925,493

Claims priority, application France, Aug. 5, 1991, 91 09946

Int. Cl.[5] A61K *31/535;* **C07D** *295/10*

U.S. Cl. 514—230.5 **11 Claims**

1. A derivative of 2,3-dihydro-4-(piperazinylalkyl)-4H-1,3-benzoxazin-4-one of formula I



I

in which the substituents are defined as follows:

R_1 and R_2, which are identical or different, represent a hydrogen, a lower alkyl group containing 1 to 6 carbons, which is branched or unbranched; a lower alkyloxy group containing 1 to 4 carbons; a hydroxyl; a nitro; an amino which is unsubstituted or substituted by an acyl group or one or two alkyls, each independently containing 1 to 4 carbons; a sulfonylamino group; a halogen;

R_3 represents a hydrogen, an aliphatic group which is branched or unbranched and saturated or unsaturated, containing 1 to 5 carbons;

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R_4 represents either:
- a phenyl group which can be unsubstituted or substituted by one or more identical or different radicals, chosen from amongst the following:
- a lower alkyl group containing 1 to 6 carbons, which is linear or branched,
- an alkyloxy group containing 1 to 6 carbons, which is linear or branched,
- a halogen,
- a trifluoromethyl,
- a nitro group,
- a hydroxy group,
- an amino which is unsubstituted or substituted by one or more alkyl groups, an acyl or a carboxylate, all three containing 1 to 4 carbons; a sulfonylamino group,
- a monocyclic heteroaryl group containing one or two nitrogen atoms selected from the class consisting of pyrridyl and pyrimidinyl groups;

n can assume the values 2 to 6; as well as the therapeutically acceptable inorganic or organic salts of I;

and also the racemates and the various enantiomers, or their mixtures when the compounds of the formula I contain an asymmetric carbon.

5,308,845

QUINOXALINE COMPOUNDS AND THEIR PREPARATION AND USE

Tage Honoré, Copenhagen; Poul Jacobsen, Rodovre; Flemming Nielsen, Virum, and Lars Naerum, Gentofte, all of Denmark, assignors to Novo Nordisk A/S, Novo Alle, Denmark

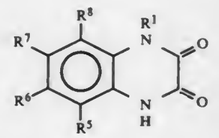
Division of Ser. No. 794,262, Nov. 15, 1991, Pat. No. 5,153,195, and a continuation-in-part of Ser. No. 451,382, Dec. 15, 1989, Pat. No. 5,081,123. This application Jul. 15, 1992, Ser. No. 914,274

Claims priority, application Denmark, Dec. 22, 1988, 7161/88

Int. Cl.[5] C07D *487/04;* A61K *31/495*

U.S. Cl. 514—250 **8 Claims**

1. A compound of formula I



wherein

R^1 is hydroxy; and

R^5 and R^6 together form a fused pyridyl ring which is optionally substituted with halogen or CN; and R^7 and R^8 independently are hydrogen, hydroxy, NO_2, halogen, CN, CF_3, C_{1-4}-alkoxy, $SO_2NR'R'$ or SO_2R', wherein R' is hydrogen or C_{1-4}-alkyl; or

R^5 and R^6 independently are hydrogen, hydroxy, NO_2, halogen, CN, CF_3, C_{1-4}-alkoxy, $SO_2NR'R'$ or SO_2R', wherein R' is hydrogen or C_{1-4}-alkyl; and R^7 and R^8 together form a fused pyridyl ring which is optionally substituted with halogen or CN.

5,308,846

QUINAZOLINONES

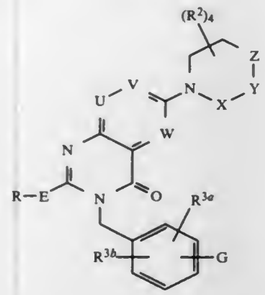
Eric E. Allen, Somerset, N.J., and Richard E. Olson, Wilmington, Del., assignors to Merck & Co., Inc., Rahway, N.J. and E. I. Du Pont de Nemours and Co., Wilmington, Del.

Continuation of Ser. No. 923,273, Jul. 31, 1992, Pat. No. 5,256,667, which is a continuation-in-part of Ser. No. 765,626, Sep. 25, 1991, Pat. No. 5,202,322. This application Jul. 22, 1993, Ser. No. 96,125

Int. Cl.[5] A61K *31/505;* C07D *413/12, 487/04, 471/04*

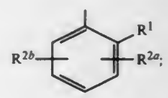
U.S. Cl. 514—259 **9 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

G is
- (1) R^1, or
- (2)



E is
- (1) a single bond,
- (2) —CH(OH)—,
- (3) —O—,
- (4) —CO—,
- (5) $—S(O)_x(CH_2)_s—$wherein x is 0, 1, or 2, and s is 0–5, or
- (6) $—NR^3(CH_2)_s—$wherein R^3 is
  - (a) —H,
  - (b) C_{2-4} alkanoyl,
  - (c) C_{1-6} alkyl,
  - (d) C_{2-6} alkenyl,
  - (e) C_{3-7} cycloalkyl,
  - (f) phenyl, or
  - (g) benzyl;

R is
- (1) aryl,
- (2) heteroaryl,
- (3) C_{3-7} cycloalkyl,
- (4) polyfluoro-C_{1-4} alkyl,
- (5) —H,
- (6) C_{2-6} alkenyl,
- (7) C_{2-6} alkynyl,
- (8) C_{1-6} alkyl, either unsubstituted or substituted with:
  - (a) aryl,
  - (b) C_{3-7} cycloalkyl,
  - (c) halo,
  - (d) $—NH_2$,
  - (e) $—NH(C_{1-4}$ alkyl),
  - (f) $—N(C_{1-4}$ alkyl)$_2$,
  - (g) $—OR^4$, wherein R^4 is
    - (i) —H,

    - (ii) aryl,
    - (iii) heteroaryl,
    - (iv) C_{1-6} alkyl,
    - (v) aryl-C_{1-6} alkyl, or
    - (vi) C_{3-7} cycloalkyl;
  - (h) $—COOR^4$,
  - (i) $—NHSO_2R^4$, or
  - (j) $—SO_2NHR^5$, wherein R^5 is
    - (i) —H,
    - (ii) C_{1-5} alkyl,
    - (iii) aryl, or
    - (iv) $—CH_2$-aryl;

R^1 is
- (1) $—SO_2NHCO_2R^7$, wherein R^7 is
  - (a) —H,
  - (b) aryl,
  - (c) heteroaryl,
  - (d) C_{3-7} cycloalkyl,
  - (e) polyfluoro-C_{1-4} alkyl, or
  - (f) C_{1-10} alkyl, either unsubstituted or substituted with:
    - (i) aryl,
    - (ii) heteroaryl,
    - (iii) —OH,
    - (iv) —SH,
    - (v) C_{1-4} alkoxy,
    - (vi) C_{1-4} alkylthio,
    - (vii) halo,
    - (viii) $—NO_2$,
    - (ix) $—CO_2R^{11}$, wherein R^{11} is —H or C_{1-4} alkyl,
    - (x) $—NH_2$,
    - (xi) $—NH(C_{1-4}$ alkyl),
    - (xii) $—N(C_{1-4}$ alkyl)$_2$,
    - (xiii) $—PO_3H_2$,
    - (xiv) $—P(O)(OH)(OC_{1-4}$ alkyl), or
    - (xv) $—P(O)(OR^4)(R^8)$, wherein R^8 is
      - (a) —H,
      - (b) $—C_{1-5}$ alkyl,
      - (c) —aryl,
      - (d) $—CH_2$-aryl, or
    - (xvi) C_{3-7} cycloalkyl;

R^9 is
- (a) —H,
- (b) C_{1-6} alkyl,
- (c) C_{2-4} alkenyl,
- (d) C_{1-4} alkoxy-C_{1-4} alkyl
- (e) benzyl, either unsubstituted or substituted with
  - (i) $—NO_2$,
  - (ii) $—NH_2$,
  - (iii) —OH, or
  - (iv) $—OCH_3$,

R^{10} is
- (a) —CN,
- (b) $—NO_2$,
- (c) $—CF_3$ or
- (d) $—CO_2R^4$;

R^2 is:
- (1) —H,
- (2) —CO-aryl,
- (3) C_{3-7} cycloalkyl,
- (4) halo,
- (5) —OH,
- (6) $—OR^7$
- (7) polyfluoro-C_{1-4} alkyl,
- (8) $—S(O)_xR^7$,
- (9) $—COOR^4$,
- (10) $—SO_2H$,
- (11) $—NR^4R^7$,
- (12) $—NHCOR^7$,
- (13) $—NHCO_2R^7$
- (14) $—SO_2NR^8R^{11}$, wherein R^{11} is
  - (a) —H or
  - (b) C_{1-4} alkyl,
- (15) $—NO_2$
- (16) $—NHSO_2R^7$
- (17) $—NHCONR^4R^7$,
- (18) $—OCONR^7R^8$,
- (19) aryl,
- (20) heteroaryl,
- (21) $—NHSO_2$polyfluorophenyl,
- (22) $—SO_2NH$-heteroaryl,
- (23) $—SO_2NHCOR^7$,
- (24) $—CONHSO_2R^7$,
- (25) $—PO(OR^4)_2$,
- (26) $—PO(OR^4)R^8$,
- (27) tetrazol-5-yl,
- (28) —CONH(tetrazol-5-yl),
- (29) $—COR^4$
- (30) $—SO_2NHCN$,
- (31) —CO-heteroaryl,
- (32) $—NHSO_2NR^7R^8$,
- (33) $—CON(R^5)_2$ wherein the R^5 groups are the same or different or
- (34) C_{1-6} alkyl, either unsubstituted or substituted with
  - (a) —OH,
  - (b) -guanidino,
  - (c) $—C_{1-4}$ alkoxy,
  - (d) $—N(R^4)_2$,
  - (e) $—CO_2R^4$,
  - (f) $—CON(R^4)_2$,
  - (g) $—O—COR^4$
  - (h) -aryl,
  - (i) -heteroaryl,
  - (j) $—S(O)_xR^7$
  - (k) -tetrazol-5-yl,
  - (l) $—CONHSO_2R^7$,
  - (m) $—SO_2NH$-heteroaryl,
  - (n) $—SO_2NHCOR^7$,
  - (o) $—PO(OR^4)_2$,
  - (p) $—PO(OR4)R^9$,
  - (q) $—SO_2$,NHCN,
  - (r) $—NR^{11}COOR^7$,
  - (s) -morpholino,
  - (t) $—N(C_{1-6}$ alkyl)piperazine or
  - (u) $—COR^4$,

  with the proviso that the R^2 groups can be the same or different; or two R^2 groups joined to the same carbon taken together represent
  - (a)=O,
  - (b)=S, or
  - (c) $—[(CH_2)_{2-6}]—$;

R^{2a}, R^{2b}, R^{3a} and R^{3b} independently represent
- (1) C_{1-5} alkyl,
- (2) polyfluoro-C_{1-5} alkyl,
- (3) halo,
- (4) hydroxy,
- (5) C_{1-5} alkoxy,
- (6) hydrogen or
- (7) COOH;

U, V and W are each —CH═;

Z is:
- (1) —O—,
- (2) $—S(O)_x—$,
- (3) $—N(R^{12})—$, wherein R^{12} is
  - (a) —H, or
  - (b) $—R^{13}$, wherein R^{13} is
    - (i) C_{1-4} alkyl,
    - (ii) C_{3-7} cycloalkyl,
    - (iii) aryl,
    - (iv) heteroaryl,
    - (v) polyfluoro-C_{1-4} alkyl,
    - (vi) polyfluoro-C_{3-7} cycloalkyl, or
    - (vii) polyfluoro-phenyl;
- (4) $—N(COR^{13})—$,
- (5) $—N(CONHR^{13})—$,
- (6) $—N(CON(R^{13})_2)—$,
- (7) $—N(CO_2R^{13})—$,
- (8) $—N(SO_2NHR^{13})—$,
- (9) $—N(SO_2N(R^{13})_2)—$,
- (10) $—N(SO_2R^{13})—$, or

X is

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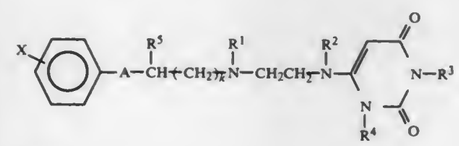
(1) a single bond,
(4) $-C(R^2)_2-$,
Y is
(3) $-C(R^2)_2-$.

5,308,847
METHODS OF INHIBITING TRANSPLANT REJECTION IN MAMMALS USING RAPAMYCIN AND DERIVATIVES AND PRODRUGS THEREOF
Sir Roy Calne, Cambridge, England CB2 2AS
Division of Ser. No. 738,960, Jul. 31, 1991, Pat. No. 5,212,155, which is a division of Ser. No. 362,354, Jun. 6, 1989, Pat. No. 5,100,899. This application Jan. 26, 1993, Ser. No. 9,570
Int. Cl.[5] A61K *31/52, 31/44*
U.S. Cl. 514—262 **10 Claims**

1. A method of inhibiting organ or tissue transplant rejection in a mammal in need thereof, comprising administering to said mammal, in combination rapamycin and azathioprine, said combination being administered in an amount effective to inhibit transplant rejection and including an effective amount of rapamycin and azathioprine.

5,308,848
PYRIMIDINEDIONE DERIVATIVES AND ANTIARRYTHMIC AGENTS CONTAINING THE SAME
Michihiko Miyamoto; Tsutomu Katakami; Nobuya Kawauchi; Tadahito Nobori; Joji Kamiya, and Masaaki Ishii, all of Mobara, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Continuation of Ser. No. 679,679, Apr. 4, 1991, abandoned, and a continuation-in-part of Ser. No. 425,730, Oct. 24, 1989, Pat. No. 5,008,267. This application Aug. 12, 1992, Ser. No. 927,738
Claims priority, application Japan, Apr. 13, 1990, 2-96497
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/505;* **C07D** *239/10*
U.S. Cl. 514—269 **4 Claims**

1. A pyrimidinedione derivative represented by the formula:



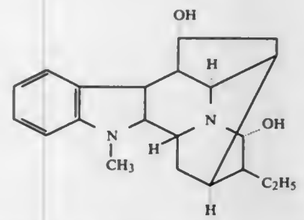
wherein
A is $-(CH_2)_n-$,



or $-O-(CH_2)_m-$;
each of R^1 and R^2 is independently a hydrogen atom or a lower alkyl group which may be substituted by a hydroxyl group, or R^1 and R^2 may be so lined with each other as to make an ethylene chain and thus form a six membered 1,4-diazine ring structure;
each of R^3 and R^4 is independently a hydrogen atom or a lower alkyl group;
R^5 is a halogen atom, a hydroxyl group, a lower alkoxycarbonyl group or a lower alkyl group which may be substituted by a hydroxyl group, or when R^1 is not linked to R^2, R^5 may be so linked with R^1 as to make an ethylene chain and thus form a piperidine structure;
X is a hydrogen atom, a halogen atom or a nitro group;
N is 0, 1, 2 and 3 provided that when R^5 is a hydroxyl group, $n \neq 0$;
m is 0, 1, 2 or 3; and
k is 0, 1, 2 or 3, provided that when R^5 is hydroxyl A is not $-O-(CH_2)_m-$.

5,308,849
METHOD OF REDUCING ELEVATED INTRAOCULAR PRESSURE
Hirohisa Miyazaki, Wakayama; Hitoshi Tanaka, Nara, and Katsuhiko Morisaki, Yamatokoriyama, all of Japan, assignors to Rohto Pharmaceutical Co., Ltd., Osaka, Japan
Filed Apr. 30, 1993, Ser. No. 55,014
Claims priority, application Japan, Dec. 3, 1992, 4-324126
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—279 **2 Claims**

1. A method of reducing intraocular pressure which comprises administering an effective amount of the compound of the formula (1):

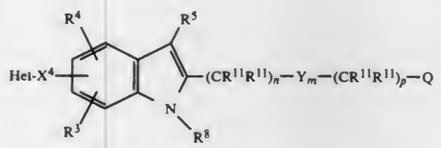


(1)

or a pharmaceutically acceptable salt thereof to patients suffering from elevated intraocular pressure.

5,308,850
(BICYCLIC-HETERO-ARYLMETHOXY)INDOLES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS
John W. Gillard, Baie d'Urfe; John H. Hutchinson, Montreal; Richard Frenette, and Michel Therien, both of Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada
Continuation-in-part of Ser. No. 768,127, Sep. 30, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,630
Int. Cl.[5] A61K *31/435, 31/425;* **C07D** *495/04, 275/04*
U.S. Cl. 514—301 **7 Claims**

1. A compound of the formula I:



I

wherein:
Het is ArR^1R^2;
Ar is a bicyclic aromatic ring containing 8 or 9 members, one of which is 0 or S, and 0–2 of which is N, and the N-oxides thereof;
R^1, R^2, R^3, R^4 and R^{10} are independently hydrogen, halogen, perhalo lower alkenyl, lower alkyl, lower alkenyl, lower alkynyl, $-CF_3$, $-CN$, $-NO_2$, $-N_3$, $-C(OH)R^{11}R^{11}$, $-CO_2R^{12}$, $-SR^{14}$, $-S(O)R^{14}$, $-S(O)_2R^{14}$, $-S(O)_2NR^{15}R^{15}$, $-OR^{15}$, $-NR^{15}R^{15}$, $-NR^{15}CONR^{15}R^{15}$, $-COR^{16}$, $CONR^{15}R^{15}$, or $-(CH_2)_rR^{21}$;
R^5 is hydrogen, $-CH_3$, CF_3, $-C(O)H$, X^1-R^6 or X^2-R^7;
R^6 and R^9 are independently alkyl, alkenyl, $-(CH_2)_uPh(R^{10})_2$ or $-(CH_2)_uTh(R^{10})_2$ wherein Ph is phenyl and Th is 2- or 3-thienyl;
R^7 is $-CF_3$ or R^6;

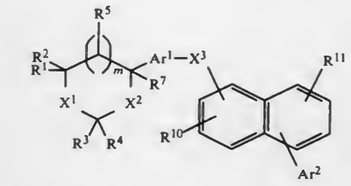
R^8 is hydrogen or X^3-R^9
each R^{11} is independently hydrogen or lower alkyl, or two R^{11}'s on same carbon atom are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;
R^{12} is hydrogen, lower alkyl or $-CH_2R^{21}$;
R^{13} is lower alkyl or $-(CH_2)_rR^{21}$;
R^{14} is $-CF_3$ or R^{13};
R^{15} is hydrogen, $-COR^{16}$, R^{13}, of two R^{15}'s on the same nitrogen may be joined to form a monocyclic heterocyclic ring of 4 to 6 atoms containing up to 2 heteroatoms chosen from O, S, or N;
R^{16} is hydrogen, $-CF_3$, lower alkyl, lower alkenyl, lower alkynyl or $-(CH_2)_rR^{21}$;
R^{17} is $-(CH_2)_s-C(R^{18}R^{18})-(CH_2)_s-R^{19}$ or $-CH_2CONR^{15}R^{15}$.
R^{18} is hydrogen or lower alkyl;
R^{19} is a) a monocyclic or bicyclic heterocyclic ring containing from 3 to 9 nuclear carbon atoms and 1 or 2 nuclear hetero-atoms selected from N, S or 0 and with each ring in the heterocyclic radical being formed of 5 or 6 atoms, or b) the radical $W-R^{20}$;
R^{20} is alkyl or $-COR^{23}$;
R^{21} is phenyl substituted with 1 or 2 R^{22} groups;
R^{22} is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylcarbonyl, $-CF_3$, $-CN$, $-NO_2$ or $-N_3$;
R^{23} is alkyl, cycloalkyl, or monocyclic monoheterocyclic ring;
R^{24} is the residual structure of a standard amino acid, or R^{18} and R^{24} attached to the same N can cyclize to form a proline residue;
m is 0 or 1;
n is 0 to 3;
p is 1 to 3 when m is 1;
p is 0 to 3 when m is 0;
r is 0 to 2;
s is 0 to 3;
t is 0 to 2;
u is 0 to 3;
W is 0, S or NR^{15};
X^1 is 0 or NR^{15};
X^2 is CO, $CR^{11}R^{11}$, S, S(O), or $S(O)_2$;
X^3 is CO, $CR^{11}R^{11}$, $S(O)_2$, or a bond;
X^4 is CH=CH, CH_2—yl, or Y^1—CH_2;
Y is X^1 or X^2;
Y^1 is O, S, $S(O)_2$, or CH_2;
Q is $-CO_2R^{12}$, $-CONHS(O)_2R^{14}$, $-NHS(O)_2R^{14}$, $-S(O)_2NHR^{15}$, $-CONR^{15}R^{15}$, $-CO_2R^{17}$, $-CONR^{18}R^{24}$, $-CR^{11}R^{11}OH$, or 1H- or 2H-tetrazol-5-yl;
or a pharmaceutically acceptable salt thereof.

5,308,851
BISPYRIDYL-CONTAINING HETEROCYCLES USEFUL FOR TREATING COGNITIVE DISORDERS
Christopher A. Teleha, New Castle, Del., and Matthew E. Voss, Lincoln University, Pa., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.
Filed Jun. 3, 1993, Ser. No. 70,826
Int. Cl.[5] A61K *31/435;* **C07D** *213/00*
U.S. Cl. 514—333 **12 Claims**

1. A compound selected from the group consisting essentially of 3-4-(4-Pyridinylmethyl)-4H- indeno[1,2-B]thien-4-ylmethyl-pyridine dihydrochloride; Bis-4,4'-[4H- indeno[1,2-B]-thiophen-4-ylidene-bis-(methylene)-pyridine; and 9,9-Bis(4-pyridinylmethyl)-9H-pyrrolo[1,2-A]indole, or a pharmaceutically acceptable salt thereof.

5,308,852
HETEROARYLNAPHTHALENES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS
Yves Girard, Ile Bizard; Daniel Delorme, St. Lazare; Rejean Fortin, Montreal-Nord; Daniel Dube, St. Lazare; Pierre Hamel, Vimont; Carol Lepine, Vimont Laval, and Yves Ducharme, Montreal, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada
Continuation-in-part of Ser. No. 906,067, Jun. 29, 1992, abandoned. This application Aug. 27, 1992, Ser. No. 936,807
Int. Cl.[5] A61K *31/445, 31/335;* **C07D** *309/10, 309/02*
U.S. Cl. 514—336 **11 Claims**

1. A compound of the Formula:



1

wherein:
R^1 and R^5 is each independently H, OH, lower alkyl, or lower alkoxy;
R^2 is H, lower alkyl, or together with R^1 forms a double bonded oxygen (=O);
R^3 is H, lower alkyl, hydroxy lower alkyl, or lower alkoxy lower alkyl, or R^1 and R^3 may join to form a mono-oxa, mono-carbon bridge;
R^4 is H or lower alkyl;
R^6 is H or lower alkyl;
R^7 is H, OH, lower alkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyloxy, or O—R^{15};
R^8 is H, halogen, lower alkyl, hydroxy, lower alkoxy, CF_3, CN, or COR^{13};
R^9 is H, lower alkyl, lower alkoxy, hydroxy lower alkyl, lower alkoxy lower alkyl, lower alkylthio lower alkyl, $(R^8)_2$-phenylthio lower alkyl, lower alkylthio lower alkylcarbonyl, CN, NO_2, CF_3, N_3, $N(R^{12})_2$, $NR^{12}COR^{13}$, $NR^{12}CON(R^{12})_2$, SR^{14}, $S(O)R^{14}$, $S(O)_2R^{14}$, $S(O)_2N(R^{12})_2$, COR^{13}, $CON(R^{12})_2$, CO_2R^{13}, $C(R^{13})_2OC(CR^{13})_2-CO_2R^{13}$, $C(R^{13})_2CN$, or halogen;
R^{10} and R^{11} is each independently H, lower alkyl, lower alkoxy, hydroxy lower alkyl, lower alkoxy, lower alkyl, lower alkylthio lower alkyl, $(R^8)_2$-phenylthio lower alkyl, lower alkylthio lower alkylcarbonyl, CN, NO_2, CF_3, N_3, $N(R^{16})_2$, $NR^{16}COR^{13}$, $NR^{16}CON(R^{16})_2$, SR^{14}, $S(O)R^{14}$, $S(O)_2R^{14}$, $S(O)_2N(R^{16})_2$, COR^{13}, $CON(R^{16})_2$, CO_2R^{13}, $C(R^{13})_2OC(CR^{13})_2-CO_2R^{13}$, $C(R^{13})_2CN$, halogen, $C(R^{13})_2NR^{16}COR^{13}$, or $C(R^{13})_2NR^{16}CON(R^{13})_2$;
R^{12} is H or lower alkyl, or two R^{12} groups attached to the same nitrogen may form a saturated ring of 5 or 6 members, optionally containing a second heteroatom chosen from O, S or NR^4;
R^{13} is H or lower alkyl;
R^{14} is lower alkyl, CF_3, or phenyl-$(R^8)_2$;
R^{15} is carboxy lower alkylcarbonyl, pyridylcarbonyl, hydroxy lower alkylcarbonyl, polyoxa lower alkylcarbonyl, a functionalized or unfunctionalized derivative of a standard amino acid, or a benzoyl group substituted by $CH_2N(R^{12})_2$;
R^{16} is H, lower alkyl, or OR^{13};
X^1 is O, or $C(R^6)_2$;
X^2 is O, or $(CR^6)_2$;
one but not both of X^1 or X^2 is O;
X^3 is $C(R^6)_2O$ or $OC(R^6)_2$;
Ar^1 is arylene-$(R^8)_2$, wherein arylene is phenylene, pyridylene or thiazylene;
Ar^2 is aryl-$(R^9)_2$ wherein aryl is a 5-membered aromatic ring wherein one carbon atom is replaced by O or S and 0–3

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carbon atoms are replaced by N; a 5-membered aromatic ring wherein 1–4 carbon atoms are replaced by N; a 6-membered aromatic ring wherein 0–3 carbon atoms are replaced by N; 2- or 4-pyranone; 2- or 4-pyridinone; or a bicyclic 8-, 9-, or 10-membered aromatic ring wherein 0–2 carbon atoms are replaced by either O or S or a combination thereof and 0–3 carbon atoms are replaced by N; with the proviso that Ar^2 is not phenyl when X^3 is $OC(R^6)_2$, Ar^1 is thiazylene, and R^7 is lower alkoxy; with the further proviso that Ar^2 is not phenyl when X^3 is $OC(R^6)_2$, and Ar^1 is phenylene or pyridylene;

Ar^2 is attached to either ring of the naphthalene ring system;

m is 1;

p is 0 to 6; and

q is 1 or 2;

or a pharmaceutically acceptable salt thereof.

5,308,853

SUBSTITUTED-5-METHYLIDENE HYDANTOINS WITH AT_1 RECEPTOR ANTAGONIST PROPERTIES

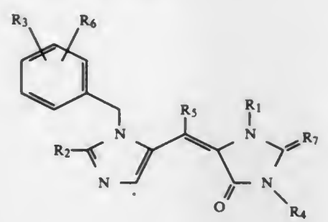
John C. Hodges, and Sylvester Klutchko, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 811,184, Dec. 20, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,650

Int. Cl.[5] A61K *31/415, 31/44;* **C07D** *233/72, 233/84, 401/06*

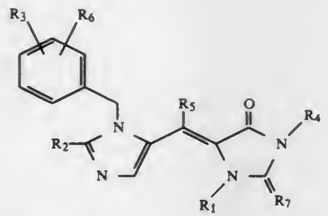
U.S. Cl. 514—336 **6 Claims**

1. A compound of formula



I

or



Ia

or a pharmaceutically salt thereof wherein:

R_1 is

hydrogen,

straight or branched alkyl or alkenyl from 1 to 8 carbon atoms;

alkyl as above substituted with HO, NO_2, CN, NH_2, CO_2CH_3, $CO_2C_2H_5$, or $CONH_2$;

$(CH_2)_n$aryl wherein n is an integer from 0 to 4 and aryl is Ph or Ph substituted with Cl, Br, I, F, CH_3, OCH_3, OH, NO_2, CF_3, CN, $CONH_2$, CO_2H, NH_2, $NHCH_3$, or $N(CH_3)_2$ groups, methylenedioxy;

$(CH_2)_n$heteroaryl wherein n is an integer from 0 to 3 and heteroaryl is 2-thienyl, 3-thienyl, 2-furanyl, 3-furanyl, 2-pyrrolyl, 3-pyrrolyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-thiazolyl, 2-oxazolyl, 2-imidazolyl, 4-thiazolyl, 4-oxazolyl, 4-imidazolyl, 5-thiazolyl, 5-oxazolyl, 5-tetrazole, 3-isoxazole, 4-isoxazole, or 5-isoxazole;

$(CH_2)_n$heteroaryl as above substituted with Me, Et, Pr, Butyl, Cl, Br, I, F, OMe, OH, NO_2, NH_2, NHMe, NMe_2, CO_2R, CO_2H, SO_2NHR, SO_3H, $CONR_2$, CN, CF_3.

$(CH_2)_m$ $X(CH_2)_nH$ wherein X is O, S, or N and m and n are each independently integral from 1 to 6 carbon atoms;

$(CH_2)_n$cycloalkyl wherein n is an integer from 0 to 3 and cycloalkyl is a saturated or unsaturated ring of 3 to 7 carbon atoms;

R_2 is

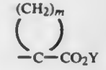
cycloalkyl of from 3 to 6 carbon atoms;

alkyl of from 1 to 6 carbon atoms,

alkenyl of from 2 to 6 carbon atoms, OC_1–C_5 alkyl, and SC_1–C_5 alkyl;

R_3 is

$(CH_2)_nCO_2Y$ or



wherein Y is hydrogen or lower alkyl, n is an integer of from 0 to 3, and m is an integer of from 2 to 7;

wherein R = C_1–C_8 alkyl,

CH_2SO_2NHCOR,

$NHSO_2NHCOR$,

$NHCONHSO_2R$,

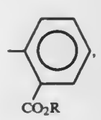
$PO(OR)_2$,

$CONHSO_2R$,

SO_3H,

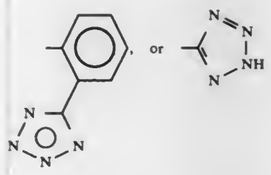
$B(OH)_2$,

SO_2NHCOR,



$SO_2NHCONHR$,

$NHSO_2CF_3$,



$R_4 = R_1$

R_5 is hydrogen or alkyl of from 1 to 4 carbon atoms;

R_6 is hydrogen, chlorine, bromine, fluorine, methyl, trifluoromethyl, or methoxy; and

R_7 is oxygen or sulfur.

5,308,854

INHIBITORS OF HIV REVERSE TRANSCRIPTASE

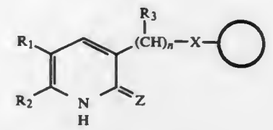
Jacob M. Hoffman, Jr., North Wales; Walfred S. Saari, Lansdale; Clarence S. Rooney, Worcester, and John S. Wai, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 799,915, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 539,681, Jun. 18, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,691

Int. Cl.[5] A61K *31/44;* **C07D** *413/12*

U.S. Cl. 514—338 **4 Claims**

1. A compound of the formula:



wherein:

X is NH, O, or S;

Z is O or S;

n is 1–4;

R_1 is

(i) C_{1-8} alkyl, unsubstituted or substituted with one or two of C_{1-3}alkoxy, halo, C_{1-4}alkylamino, C_{1-4}-dialkylamino, or C_{1-3} alkylthio;

(ii) C_{1-3} alkylthio;

(iii) C_{1-3} alkoxy; or

(iv) halo;

R_2 is H, methyl or ethyl, unsubstituted or substituted with one or two of methoxy, methylamino, dimethylamino or methylthio;

R_3 is H or C_{1-8} alkyl;

—◯ is 2-benzoxazolyl, unsubstituted or substituted with one or more of methyl, halogen or hydroxyl.

5,308,855

GUANIDINE DERIVATIVES

Shin-ichi Tsuboi; Koichi Moriya, both of Tochigi; Yumi Hattori; Shinzaburo Sone, both of Ibaragi, and Katsuhiko Shibuya, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem, Tokyo, Japan

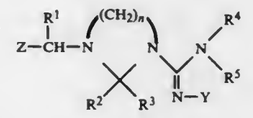
Filed Dec. 7, 1992, Ser. No. 987,513

Claims priority, application Japan, Dec. 19, 1991, 3-354053

Int. Cl.[5] A61K *31/44;* **C07D** *401/06*

U.S. Cl. 514—341 **9 Claims**

1. A guanidine compound of the formula



(I)

wherein

Z represents an optionally chlorine substituted pyridyl group,

R^1 represents hydrogen atoms or a C_{1-4} alkyl group,

R^2 and R^3 each independently represents hydrogen, C_{1-4} alkyl, C_{1-4} haloalkyl or optionally chlorine substituted phenyl,

R^4 and R^5 each independently represents hydrogen, C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, or optionally chlorine substituted benzyl,

n represents the integer 2, and

Y represents nitro or cyano.

5,308,856

THIAZOLIDINE-2,4-DIONE DERIVATIVES, SALTS AND PREPARATION PROCESSES THEREOF

Michiro Ohnota, Nogi; Kyuya Okamura; Yoshihiro Hirata, both of Ohmiya; Koji Murakami, Nogi, and Mitsuo Ohashi, Ohmiya, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00190, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO92/14730, PCT Pub. Date Sep. 3, 1992

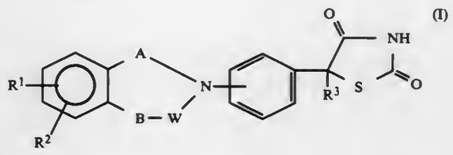
PCT Filed Feb. 24, 1992, Ser. No. 938,228

Claims priority, application Japan, Feb. 25, 1991, 3-53278

Int. Cl.[5] C07D *417/10;* **A61K** *31/435*

U.S. Cl. 514—369 **3 Claims**

1. Thiazolidine-2,4-dione derivatives represented by a general formula (I)



(I)

wherein R^1 and R^2 each identically represent hydrogen atoms, halogens, lower alkyl groups, hydroxyl groups, lower alkoxy groups, nitro groups or amino groups wherein said amino group may be substituted with lower alkyl group or lower alkanoyl group, R^3 denotes a hydrogen atom or lower alkyl group, A denotes a lower alkylene or carbonyl group, and B and W denote differently lower alkylenes, carbonyl groups or a bond, or their salts.

5,308,857

FURYLTHIAZOLE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Hisashi Takasugi, Osaka; Yousuke Katsura, Toyonaka; Yoshikazu Inoue, Amagasaki, and Tetsuo Tomishi, Minoo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

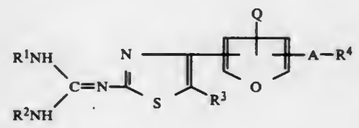
Continuation of Ser. No. 711,727, Jun. 10, 1991, abandoned, which is a continuation of Ser. No. 476,572, Feb. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 385,100, Jul. 16, 1989, abandoned. This application Jul. 6, 1992, Ser. No. 908,795

Claims priority, application United Kingdom, Aug. 15, 1988, 8819365; Mar. 14, 1989, 8905818

Int. Cl.[5] C07D *417/04;* **A61K** *31/425*

U.S. Cl. 514—370 **8 Claims**

1. A compound of the formula:



wherein

R^1 and R^2 are each hydrogen, furoyl or lower alkyl which may have halogen; or

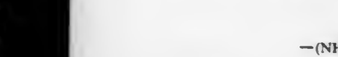
R^1 and R^2 are linked together to form lower alkylene,

R^3 is hydrogen or lower alkyl,

R^4 is amino, carbamoyl, aminocarbamoyl, guanidinocarbamoyl, lower alkylcarbamoyl, sulfamoylaminocarbonyl, lower alkoxycarbonyl, ureido, thioureidosulfamoylamino, lower alkanoylamino, lower alkoxycarbonylamino, lower

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alkylsulfonylamino, lower alkoxy(lower)alkanoylamino, protected hydroxy(lower)alkanoylamino, lower alkylthio(lower)alkanoylamino, C_6-C_{10} aroylamino optionally substituted by nitro, furoylamino, thenoylamino, nicrotinoylamino, 1-oxonicotinoylamino, morpholinocarbonylamino, lower alkylureido, lower alkylthioureido, lower alkanoylureido, lower alkenylureido, C_6-C_{10} aroylthioureido, furyl(lower)alkylthio(lower)alkanoylamino, furyl(lower)alkylsulfinyl(lower)alkanoylamino, mono or di (lower)-alkylsulfamoylamino, hydroxy(lower)alkylureido, lower alkylisothioureido, thiazolylamino substituted with lower alkyl, triazolylamino substituted with amino, triazolylamino substituted with amino and lower alkyl, benzoisothiazolylamino substituted with oxo, benzothiadiazinylamino substituted with oxo and halogen, pyrimidinyl substituted with oxo and lower alkyl, triazolyl substituted with amino, or a group of the formula:



wherein
n is 0 or 1,
X is =CH— or =N—,
R^5 is hydrogen, cyano, nitro, carbamoyl, lower alkoxycarbonyl, sulfamoyl, lower alkylsulfonyl, C_6-C_{10} arenesulfonyl, which is substituted with one or more substituent(s) selected from lower alkyl, lower alkoxy, halogen and amino, or mono or di(lower)alkylsulfamoyl,
R^6 is hydrogen, lower alkyl, lower alkylthio, lower alkoxy, amino, mono or di(lower)alkylamino, lower alkenylamino, lower alkynylamino, hydroxy(lower)alkylamino, lower alkoxy(lower)alkylamino, or mono or di(lower)alkylamino(lower)alkylamino;
A is lower alkylene or —CONH—; or
A—R^4 is imidazolyl substituted with lower alkyl or triazolyl substituted with amino, and
Q is hydrogen or lower alkyl.

5,308,858
USE OF ADDITIVES FOR PRESERVATIVE CARRIER OILS TO IMPROVE THEIR EFFICACY AGAINST WOOD DECAY

Darrell D. Nicolas, Starkville, Miss., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Dec. 5, 1991, Ser. No. 803,138
Int. Cl.[5] A01N *43/80*
U.S. Cl. 514—372 **10 Claims**

1. A composition for treatment and preservation of wood comprising Vinsol and a fungicidally or bactericidally effective amount of an isothiazolone in an inert carrier, said isothiazolone being selected from the group consisting of 4,5-dichloro-2-N-octyl-4-isothiazolone-3-one, 2-n-octyl-4-isothiazolone-3-one, and a mixture of 5-chloro-2-methyl-4-isothiazolone-3-one and 2-methyl-4-isothiazolone-3-one.

5,308,859
COMPOSITION FOR PRESERVATION OF WOOD AND WOOD-BASED MATERIALS

Wolfgang Metzner, and Rainer Gruening, both of Krefeld, Fed. Rep. of Germany, assignors to Deutsche Solvay-Werke GmbH, Solingen, Fed. Rep. of Germany

Continuation of Ser. No. 127,977, Dec. 3, 1987, abandoned. This application Oct. 21, 1991, Ser. No. 780,539
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1986, 3641555
Int. Cl.[5] A01N *43/64*
U.S. Cl. 514—383 **23 Claims**

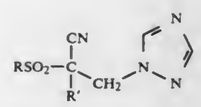
1. A composition for preservation of wood and wood-based materials comprising:
(a) from about 0.001% to 5%, based on the total weight of all components, of a compound 1-[[2-(2,4-dichlorophenyl)-1,3-dioxolan-2-yl]methyl]-1H-1,2,4-triazole,
(b) from about 0.001% to 3%, based on the total weight of all components, of at least one compound selected from the group consisting of
(i) cyano-(4-fluoro-3-phenoxyphenyl)-methyl-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropylcarboxylate, and
(ii) ((pentafluorophenl)methyl)-1R,3R-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropylcarboxylate, and
(c) a suspending agent selected from the group consisting of a diluent, an emulsifier, a wetting agent and mixtures thereof.

5,308,860
CYANOSULFONYLETHYLTRIAZOLES

Steven H. Saber, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 15, 1993, Ser. No. 6,015
Int. Cl.[5] A01N *43/653*; C07D *249/08*
U.S. Cl. 514—313 **7 Claims**

1. A compound of the formula



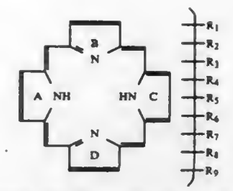
wherein R and R' are each independently (C_1-C_{12})alkyl or (C_1-C_{12})alkyl substituted with halo, (C_1-C_6)alkoxy or halo(C_1-C_6)alkoxy; (C_6-C_{10})aryl or (C_6-C_{10})ar(C_1-C_6)alkyl, both of which may be substituted on the aryl portion of the moiety with one or more substituents each independently selected from halo, (C_1-C_6)alkyl, halo(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkoxy, di(C_1-C_6)alkylamino, phenyl, phenoxy, or phenyl or phenoxy substituted with one or two substituents each independently selected from halo and (C_1-C_4)alkyl; or their salts, enantiomorphs and metal salt complexes.

5,308,861
THERAPEUTIC AGENT FOR TREATING ATHEROSCLEROSIS OF MAMMALS

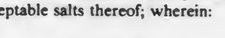
Katsuo Aizawa, Yokohama, and Yukari Kuroiwa, Urawa, both of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,367
Claims priority, application Japan, Apr. 30, 1991, 3-126608
Int. Cl.[5] A61K *31/40*
U.S. Cl. 514—410 **13 Claims**

1. A method for treating atherosclerosis in mammals which comprises administering to a mammal an atherosclerosis-inhibiting effective amount of a fluorescent tetrapyrrole compound that accumulates in an atherosclerotic lesion within said mammal and applying light of sufficient wavelength and intensity to produce a cytotoxic effect on said atherosclerotic lesion, wherein said compound is of the formula:



or a corresponding dihydrotetrapyrrole or tetrahydropyrrole carboxylic acid; or corresponding monoamides, diamides and polyamides of said tetrapyrrole carboxylic acid with an aminomonocarboxylic acid or a dicarboxylic acid; or pharmacologically acceptable salts thereof; wherein:
R_1 is methyl,



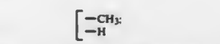
R_2 is H, vinyl, ethyl, —CH(OH)—CH_3, acetyl,



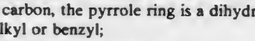
R_3 is methyl,

R_4 is H, vinyl, ethyl, —CH(OH)—CH_3, —CH_2—CH_2—COOH, =CHCHO, or

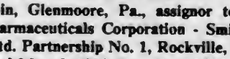
R_5 is methyl;
R_6 is H, —CH_2—CH_2—COOH, —CH_2—CH_2—COOR or COOH;
R_7 is —CH_2—CH_2—COOH, —CH_2—CH_2—COOR or



R_8 is m ethyl or



R_9 is H, —COOH, —CH_2—COOH or methyl; provided that when R_1, R_2, R_3, R_4, R_7 and R_8 are each two substituents or when R_1, R_2, R_3, R_7 and R_8 are divalent and attached to the same carbon, the pyrrole ring is a dihydropyrrole;
R is a lower alkyl or benzyl;
R_6 and R_9 when taken together are —CO—CH_2— or



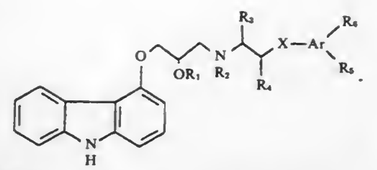
with the proviso that at least one of R_1 to R_9 is a free carboxyl group.

5,308,862
USE OF, AND METHOD OF TREATMENT USING, CARBAZOLYL-(4)-OXYPROPANOLAMINE COMPOUNDS FOR INHIBITION OF SMOOTH MUSCLE CELL PROLIFERATION

Eliot H. Ohlstein, Glenmoore, Pa., assignor to Boehringer Mannheim Pharmaceuticals Corporation - SmithKline Beecham Corp., Ltd. Partnership No. 1, Rockville, Md.

Filed Mar. 5, 1993, Ser. No. 26,892
Int. Cl.[5] A61K *31/40*
U.S. Cl. 514—411 **3 Claims**

1. A method of treatment for human patients surviving percutaneous transluminal coronary angioplasty (PTCA), comprising internally administering to a patient in need thereof an effective dose of a pharmaceutical composition comprising a compound selected from the group consisting of the compounds of Formula I:



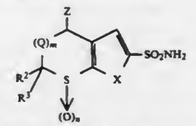
wherein:
R_1 is hydrogen, lower alkanoyl of up to 6 carbon atoms or aroyl selected from benzoyl and naphthoyl;
R_2 is hydrogen, lower alkyl of up to 6 carbon atoms or arylalkyl selected from benzyl, phenylethyl and phenylpropyl;
R_3 is hydrogen or lower alkyl of up to 6 carbon atoms;
R_4 is hydrogen or lower alkyl of up to 6 carbon atoms, or when X is oxygen. R_4 together with R_3 can represent —CH_2–O–;
X is a valency bond, —CH_2, is oxygen or sulfur;
Ar is selected from phenyl, naphthyl, indanyl and tetrahydronaphthyl;
R_5 and R_6 are individually selected from hydrogen, fluorine, chlorine, bromine, hydroxyl, lower alkyl of up to 6 carbon atoms, a-$CONH_2$- group, lower alkoxy of up to 6 carbon atoms, benzyloxy, lower alkylthio of up to 6 carbon atoms, lower alkysulphinyl of up to 6 carbon atoms and lower alkylsulphonyl of up to 6 carbon atoms; or
or a pharmaceutically acceptable salt thereof, said treatment preventing restenosis by angioplasty-induced neointimal proliferation in blood vessels following PTCA.

5,308,863
SUBSTITUTED AROMATIC SULFONAMIDES AS ANTIGLAUCOMA AGENTS

John J. Baldwin, Gwynedd Valley; Gerald S. Ponticello; Charles N. Habecker, both of Lansdale, and Harold G. Selnick, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 678,138, Apr. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 507,805, Apr. 12, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,413
Int. Cl.[5] A61K *31/38*; C07D *333/00*
U.S. Cl. 514—431 **15 Claims**

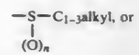
1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof
X is —S—,
m is 1 or 2;
n is 0, 1 or 2;
Z is
1) hydrogen,
2) —OR^4 wherein R^4 is
a) hydrogen, or
b) C_{1-5} alkyl, either unsubstituted or substituted with
i) —OH, or
ii) —NR^6R^7 wherein R^6 and R^7 are independently hydrogen, C_{1-3}alkyl, —CO—C_{1-3}alkyl,
3) =O, or
4) —NRR^1;
R is hydrogen or R^1;
R^1 is
1) C_{2-7}alkenyl,
2) C_{2-7}alkynyl, or
3) C_{1-6}alkyl, straight, branched or cyclic, either unsubstituted or substituted with 1, 2 or 3 substituents wherein the substituents are independently:

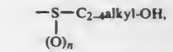
VOL 1162 ISS 1 MY 3 1994 UMI

a) halogen;
b) hydroxy;
c) C_{1-3}alkoxy;
d) $-NR^6R^7$;



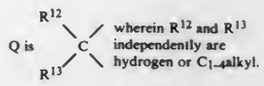
e)

f) —CN;
R^2 is hydrogen or C_{1-5}alkyl;
R^3 is
l) $-C_{1-5}$ alkyl substituted with one or more of
a) hydroxy,
b) $-NR^8R^9$, wherein R^8 is
i) hydrogen, or
ii) C_{1-3}alkyl; and
R^9 is
i) C_{1-3}alkoxy-C_{1-3}alkyl,
ii) hydroxy-C_{1-3}alkyl,
iii) benzyl either unsubstituted or substituted on the phenyl group with up to three of halo, hydroxy, C_{1-3}alkyl, C_{1-3}alkoxy, $-CH_2NR^{10}R^{11}$ or $-NR^{10}R^{11}$ wherein R^{10} and R^{11} are independently hydrogen, C_{1-3}alkyl, or C_{1-3}alkoxy-C_{1-3}alkyl, or
iv) —CO—C_{1-6}alkyl;
c) C_{1-5}alkoxy, either unsubstituted or substituted with one or more of:
i) hydroxy,
ii) C_{1-3} alkoxy,
iii) $NR^{10}R^{11}$,
iv) —CN,
v) phenyl, either unsubstituted or substituted with one or more of
A) hydroxy,
B) C_{1-3}alkoxy,
C) C_{1-5}alkyl-$NR^{10}R^{11}$, or
D) halo,
d) —SH,
e) —CN,



f)

g) phenyl, either unsubstituted or substituted with up to three of
i) hydroxy,
ii) C_{1-3} alkoxy, or
iii) C_{1-5}alkyl-$NR^{10}R^{11}$,
h) COR^{14} wherein R^{14} is
i) hydroxy,
ii) $—NH_2$, or
iii) C_{1-5} alkoxy, or
iv) $—NR^{12}R^{13}$ or
i) C_{2-5}alkenyloxy; and



Q is C with R^{12} and R^{13}; wherein R^{12} and R^{13} independently are hydrogen or C_{1-4}alkyl.

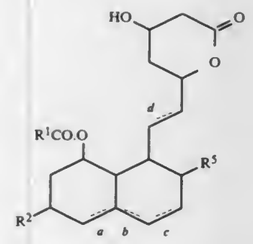
5,308,864

6-(HYDRONAPHTYL-1-ETHYL)-4-HYDROXY-3,4,5,6-TETRAHYDRO-2H-PYRAN-2-ONES AND THE CORRESPONDING HYDROXY ACIDS

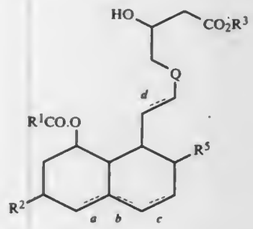
Christopher N. Lewis; Alan H. Davidson, both of Oxford; Christopher D. Floyd, and Jonathan P. Dickens, both of Buckinghamshire, all of England, assignors to British Bio-Technology Limited, Oxford, England

PCT No. PCT/GB90/01030, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO91/00280, PCT Pub. Date Jan. 10, 1991
PCT Filed Jul. 4, 1990, Ser. No. 773,657
Claims priority, application United Kingdom, Jul. 4, 1989, 8915280
Int. Cl.[5] A61K *31/35, 31/215, 31/225;* C07D *309/30*
U.S. Cl. 514—460 14 Claims

1. A compound of either of general formulae I and II



(I)



(II)

wherein:
R^1 represents a C_{1-8} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl (C_{1-8}) alkyl, C_{2-8} alkenyl, or C_{1-6} alkyl substituted phenyl group;
R^2 represents a C_{2-8} alkenyl, C_{2-8} alkynyl, group or C_{2-5} alkenyl, or C_{2-5} alkynyl group substituted with a phenyl or substituted phenyl group;
R^3 represents a hydrogen atom or a substituent R^4 or M;
R^4 represents a C_{1-5} alkyl group, or a C_{1-5} alkyl group substituted with a group chosen from substituted phenyl, dimethylamino and acetylamino; wherein substituted phenyl is phenyl substituted with C_{1-6} alkyl, C_{1-6} alkoxy, hydroxy, thiol amino, halo, trifluoromethyl or nitro;
R^5 represents a hydrogen atom or a methyl or ethyl group;
M represents a cation capable of forming a pharmaceutically acceptable salt;
Q represents C═O or CHOH; and each of a, b, c, and d is independently a single or double bond except that when a and c are double bonds then b is a single bond.

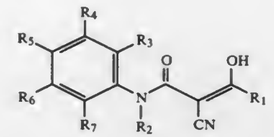
5,308,865

2-CYANO-3-HYDROXY-ENAMIDES

Robert R. Bartlett, Darmstadt, Fed. Rep. of Germany; David P. Kay; Elizabeth A. Kuo, both of Swindon, England; Rudolf Schleyerbach, Hofheim am Taunus, and Wilfried Schwab, Wiesbaden, both of Fed. Rep. of Germany, assignors to Roussel Uclaf, France

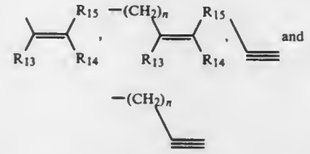
Filed Jan. 6, 1993, Ser. No. 1,564
Claims priority, application United Kingdom, Jan. 8, 1992, 9200275
Int. Cl.[5] C07C *255/36;* A61K *31/275*
U.S. Cl. 514—465 9 Claims

1. A compound selected from the group consisting of a compound of the formula



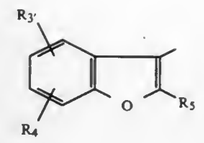
I

wherein R_1 is selected from the group consisting of



and

R_{13}, R_{14} and R_{15} are individually selected from the group consisting of hydrogen, halogen and alkyl of 1 to 3 carbon atoms, n is an integer from 1 to 3, R_2 is hydrogen or methyl, R_3, R_4, R_5, R_6 and R_7 are individually selected from the group consisting of hydrogen, or fluorine, chlorine, bromine, iodine, methyl, ethyl, t-butyl, methoxy, methlthio, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, pentafluoroethyl, bromodifluormethoxy, cyano, nitro, phenoxy, trifluoromethylphenoxy, or p-chlorophenoxy group or R_4 and R_5 together form —O—CH_2—O— and their non-toxic, pharmaceutically acceptable base addition salts.

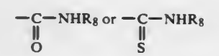


(V)

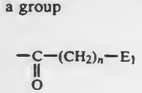
R_1 represents:
a group



in which R_7 represents unsubstituted or optionally substituted cycloalkyl, unsubstituted or optionally substituted cycloalkyl-(C_1–C_4)alkyl, or trifluoromethyl,
a group



in which R_8 represents linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, unsubstituted of optionally substituted cycloalkyl, unsubstituted or optionally substituted cycloalkyl-(C_1–C_4) alkyl unsubstituted or optionally substituted aryl, or unsubstituted or optionally substituted arylalkyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive, or
a group



in which
n represents 1 to 3 inclusive and E_1 represents a radical selected from:
morpholino and
piperazine which radical is unsubstituted or substituted by a radical $—(CH_2)_{n'}$-E_2 wherein n' represents an integer 1 to 4 inclusive and E_2 represents phenyl or naphthyl, each of which is unsubstituted or substituted by 1 to 3 radicals selected from: halogen, (C_1–C_4)alkyl, and (C_1–C_4)alkoxy;
R_2 represents hydrogen or linear or branched lower alkyl having 1 to 6 carbon atoms inclusive;
R_3 represents hydrogen, linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive unsubstituted or optionally substituted aryl, unsubstituted or optionally substituted arylalkyl or diarylalkyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive, or cycloalkyl or cycloalkylalkyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive,
R_3' represents hydrogen or a group —O—R_3 wherein R_3 is as defined above;
R_4 represents hydrogen, halogen, hydroxy, linear or branched alkoxy having 1 to 6 carbon atoms, inclusive, or linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive,
R_5 represents hydrogen, halogen, linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, unsubstituted or optionally substituted phenyl, or unsubstituted or optionally substituted phenylaklyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive, and

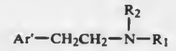
5,308,866

BENZOFURAN ETHYLAMINE COMPOUNDS

Daniel Lesieur, Gondecourt; Said Yous, Lille; Patrick Depreux, Armentieres; Jean Andrieux, Antony; Gérard Adam, Le Mesnil Le Roi; Daniel H. Caignard, Paris, and Béatrice Guardiola, Neuilly Sur Seine, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 931,574, Aug. 12, 1992. This application Jul. 19, 1993, Ser. No. 93,279
Claims priority, application France, Aug. 13, 1991, 91 10261
Int. Cl.[5] A61K *31/34;* C07D *307/81*
U.S. Cl. 514—469 5 Claims

1. A compound selected from those of the formula (I):



(I)

in which:
Ar' represents:
benzo[b]furan-3-yl of formula (V):

VOL 1162 ISS 1 MY 3 1994 UMI

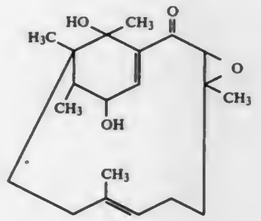
R_6 represents hydrogen, or linear or branched lower alkyl having from 1 to 6 carbon atoms, inclusive;
an optical isomer,
and an addition salt thereof with a pharmaceutically-acceptable acid or base,
with the proviso that:
Ar' may not represent 7-methoxybenzo[b]furan-3-yl when R_1 represents cyclopropylcarbonyl;
and wherein
the term "substituted" associated with the expressions "aryl", "arylalkyl", "diarylalkyl", "phenyl" and "phenylalkyl" means that the aromatic nucleus or nuclei may be substituted by one or more radicals selected from: linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, linear or branched lower alkoxy having from 1 to 6 carbon atoms, inclusive, hydroxy, halogen, nitro, and trifluoromethyl;
the term "substituted" associated with the expressions "cycloalkyl" and "cycloalkyl-(C_1–C_4)alkyl" means that the cyclic system may be substituted by one or more radicals selected from: halogen, linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, and linear or branched lower alkoxy having 1 to 6 carbon atoms, inclusive;
the term "cycloalkyl" designates a saturated or unsaturated cyclic system having 3 to 8 carbon atoms, inclusive, and
the expression "aryl group" means pyridyl, phenyl, naphthyl, thienyl, furyl, or pyrimidyl.

5,308,867
PLATELET ACTIVATING FACTOR ANTAGONISTS, NAMED "THE PHOMACTINS", THEIR PREPARATION AND USE

Aiya Sato; Michihiro Sugano; Kouhei Furuya; Takeshi Oshima; Harumitsu Kuwano; Tadashi Hata, and Hideyuki Haruyama, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 596,580, Oct. 10, 1990, Pat. No. 5,151,529, which is a continuation-in-part of Ser. No. 440,235, Nov. 22, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 927,847
Claims priority, application Japan, Nov. 28, 1988, 63-300278
Int. Cl.[5] A01N *43/20;* **A01K** *31/335;* **C07D** *303/00*
U.S. Cl. 514—475 **3 Claims**

1. The compound of formula (II):



(II)

5,308,868
TEAT DIP

Bruce Kefford, RMB 3085 Rule Road, Lardner, Vic 3820, Australia

Continuation of Ser. No. 585,087, Sep. 21, 1990, abandoned. This application Sep. 23, 1992, Ser. No. 949,368
Claims priority, application Australia, Mar. 21, 1989, P17342
Int. Cl.[5] A61K *31/20*
U.S. Cl. 514—560 **7 Claims**

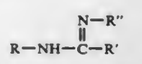
1. A method of reducing the effects of mastitis in cows which comprises applying to the teats of the cow an amount of a composition consisting essentially of an oil-in-water emulsion of linseed oil fatty acid as the active ingredient and a stabilizing amount of an essentially non-ionic surfactant.

5,308,869
SUBSTITUTED AMIDINES HAVING HIGH BINDING TO THE SIGMA RECEPTOR AND THE USE THEREOF

John F. W. Keana, Eugene, and Eckard Weber, Portland, both of Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting, Portland, Oreg.**

Continuation of Ser. No. 574,672, Aug. 30, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 860,571
Int. Cl.[5] A01N *37/52*
U.S. Cl. 514—637 **51 Claims**

1. A method for the treatment or prophylaxis of anxiety in an animal susceptible to anxiety comprising the administration to an animal exhibiting symptoms of anxiety or susceptible to anxiety, of an anxiolytic amount of an N,N'-disubstituted amidine having the formula:



where R and R'' are a cycloalkyl group of at least 5 carbon atoms, a carbocyclic aryl group of at least 6 carbon atoms, alkaryl or aralkyl of at least 6 carbon atoms and containing 1–3 separate or fused rings, or a heterocyclic ring, wherein each of R and R'' may be substituted in1–3 positions, or wherein R and R'' together with the amidine group form a saturated or unsaturated cyclic ring containing at least 2 carbon atoms exclusive of the amidine carbon atom, wherein said cyclic ring may be substituted with one or more alkyl groups of 1–6 carbon atoms, carbocyclic aryl groups of at least 6 carbon atoms, cycloalkyl groups of 3–12 carbon atoms, or 1–2 fused aromatic rings; and
R' is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, trifluoromethyl, or C_1–C_6 alkylsulfonyl.

5,308,870
RACTOPAMINE FOR PRE-AND PERIPUBERTAL FEMALE BOVIDAE

Deana L. Hancock, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 21, 1992, Ser. No. 994,034
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—653 **5 Claims**

1. A method of increasing the milk producing capability of a female bovidae which comprises administering to the bovidae, during its mammary glands' allometric growth phase preceding first conception, an effective amount of an active agent which is 1-(4-hydroxyphenyl)-2-(1-methyl-3-(4-hydroxyphenyl)propylamino)ethanol or a physiologically acceptable salt thereof.

5,308,871
METHOD OF KILLING YEAST OR FUNGI WITH DIHYDROCARVONE

Doyle E. Chastain, 137 Birch St., Titusville, Fla. 32780; W. Eugene Sanders, Jr., and Christine C. Sanders, both of Omaha, Nebr., assignors to Doyle E. Chastain, Titusville, Fla.

Filed Dec. 18, 1992, Ser. No. 993,026
Int. Cl.[5] A01N *35/00;* **A61K** *31/12*
U.S. Cl. 514—690 **3 Claims**

1. A method of killing fungi or yeast comprising treating fungi or yeast in their habitat with toxic concentrations of dihydrocarvone.

5,308,872
METHOD OF KILLING YEAST OR FUNGI WITH DIHYDROCARVEOL

Doyle E. Chastain, 137 Birch St., Titusville, Fla. 32780; W. Eugene Sanders, and Christine C. Sanders, both of Omaha, Nebr., assignors to Doyle E. Chastain, Titusville, Fla.

Filed Dec. 18, 1992, Ser. No. 993,017
Int. Cl.[5] A01N *31/00;* **A61K** *31/045*
U.S. Cl. 514—729 **3 Claims**

1. A method of killing fungi or yeast comprising treating fungi or yeast in their habitat with toxic concentrations of dihydrocarveol.

5,308,873
METHOD OF KILLING YEAST AND FUNGI WITH CARVEOL

Doyle E. Chastain, 137 Birch St., Titusville, Fla. 32780; W. Eugene Sanders, and Christine C. Sanders, both of Omaha, Nebr., assignors to Doyle E. Chastain, Titusville, Fla.

Filed Dec. 18, 1992, Ser. No. 993,018
Int. Cl.[5] A01N *31/00;* **A61K** *31/045*
U.S. Cl. 514—729 **3 Claims**

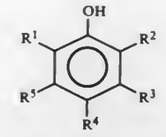
1. A method of killing fungi or yeast comprising treating fungi or yeast in their habitat with toxic concentrations of carveol.

5,308,874
AIRBORNE PROTECTANTS AGAINST OXIDATIVE TISSUE DAMAGE

Robert A. Sanchez, Carlsbad, and Sheldon S. Hendler, La Jolla, both of Calif., assignors to Vyrex Corporation, La Jolla, Calif.

Filed Jun. 26, 1992, Ser. No. 905,585
Int. Cl.[5] A61K *31/05*
U.S. Cl. 514—731 **7 Claims**

1. A method for preventing oxidative damage to respiratory tissue, said method comprising exposing the tissue to a phenolic antioxidant compound in vapor form, said compound having the formula:



wherein R^1 and R^2 are independently selected from the group consisting of lower (C_2–C_4) alkyls, with the proviso that the total number of carbon atoms in R^1 and R^2 sum to at least 4;
R^3, R^4, and R^5 are members independently selected from the group consisting of H, lower (C_1–C_6) alkyls, lower (C_1–C_4) alkoxys, and lower alkyls in which one or more of the atoms is replaced by a heteroatom selected from the group consisting of O, N, and S, with the proviso that the total number of carbons and heteroatoms in groups R^3, R^4 and R^5 does not exceed 5; and
wherein the antioxidant compound is a volatile substance incorporated into a tobacco smoking product.

5,308,875
THERAPEUTIC COOLANT FOR THE LOCAL TREATMENT OF BURN

Yutaka Ogawa, Kyoto, and Hideaki Doi, Yao, both of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 697,188, May 8, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 52,812
Claims priority, application Japan, May 8, 1990, 2-118069
Int. Cl.[5] A61K *31/01*
U.S. Cl. 514—762 **2 Claims**

1. A method of treating a burn by applying a therapeutic coolant cooled to a temperature range from −10° C. to −60° C., said coolant comprising squalene, squalane of mixtures thereof in am amount effective to treat a burn when applied to said burn at a temperature range from −10° C. to −60° C.

5,308,876
MATERIALS FOR REMOVING SUSPENDED IMPURITIES AND USE THEREOF

Hideo Kawazu; Masahiro Hagiwara, and Takeshi Izumi, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 600,809, Oct. 22, 1990, abandoned. This application May 28, 1992, Ser. No. 888,431
Claims priority, application Japan, Oct. 20, 1989, 1-271466
Int. Cl.[5] C08J *5/20*
U.S. Cl. 521—25 **4 Claims**

1. A regeneratable (H form) cation exchange resin which is a particulate organic polymeric adsorbent for adsorbing and removing suspended impurities present in trace amounts in the water to be treated and which are chiefly composed of metal oxides, said resin:
(a) having a dual structure with a skin layer being present to a depth of at least 0.1–10 μm from the surface,
(b) comprising particles in a true spherical form having a diameter of 0.2–1.2 mm and an effective specific surface area of 0.02–0.20 m m^2 per gram of dry resin, with the effective specific surface area being measured on the basis of the amount of adsorption of krypton and/or a gas equivalent to krypton;
(c) having such a surface layer structure that unit granules having a size of 0.1–1.0 μm are seen to bind with one another when examined under a scanning electron microscope in the field of view ranging from a magnification of 50 to 200.000, preferably from 1,000 to 10.000;
(d) having a honeycomb and/or scaly surface structure with grooves in the surface, unit honeycombs and/or scales each having a unit surface area of 1–50 μm^2 and agglomerating together to form an irregular surface structure and morphology, with the surface being such that the individual unit honeycombs and/or scales are adjacent to one another via grooves having a width of 0.1–5.0 μm and a depth of 0.1–5.0 μm, said grooves having an overall length of 100–1,000 mm/mm^2;
(e) having a crosslinking degree of from 3% to 8%;
(f) having a surface pH (the concentration of hydrogen ions at the solid surface) of 1.50–1.90 in a wet state; and
(g) having an interfacial electrokinetic potential (zeta potential) of −20 to −40 mV in a powder state in the range of about 50–100 μm (about 150–300 mesh) obtained by pulverizing said resin.

5,308,877
RESINS WITH HIGH SURFACE AREAS AND POROSITIES

Bruce E. Smart, and Owen W. Webster, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 472,997, Jan. 31, 1990. This application Nov. 16, 1990, Ser. No. 614,492
Int. Cl.[5] C08J *9/00*
U.S. Cl. 521—50 **15 Claims**

1. A composition comprising a crosslinked polymeric resin insoluble in common organic solvents and having a surface area of at least 100 m^2/g and a porosity of at least 20%, and wherein said resin contains less than 10 mole percent, based on the total amount of monomer, of flexibilizing groups.

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5,308,878

PROCESS FOR PRODUCING FOAMABLE PARTICLES OF STYRENIC POLYMERS, HAVING IMPROVED PROCESSABILITY AND MECHANICAL PROPERTIES

Francesco Anfuso; Roberto Lanfredi; Gianfranco Veroli, all of Mantova, and Italo Borghi, Ferrara, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed May 27, 1992, Ser. No. 888,616

Claims priority, application Italy, May 31, 1991, MI91A001502

Int. Cl.[5] C08G 9/18

U.S. Cl. 521—56 16 Claims

1. A process for producing foamable particles of styrenic polymers having improved processability and mechanical characteristics, said process consisting in

(i) coating said styrenic polymer particles, containing therein from 2 to 20% by weight of a foaming agent, with an antistatic agent in an amount of not more than 1% by weight based on the polymer particles; and

(ii) partially removing from said styrenic polymer particles not more than 60% by weight of the foaming agent, before the pre-forming, by treatment in oven and at a temperature lower than the glass transition temperature of said particles.

5,308,879

PROCESS FOR PREPARING BIODEGRADABLE RESIN FOAM

Yoshimi Akamatu, Amagasaki, and Masahiro Tomori, Mino, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 13, 1993, Ser. No. 105,681

Claims priority, application Japan, Sep. 7, 1992, 4-238116; Feb. 3, 1993, 5-040629; Mar. 19, 1993, 5-085802; Mar. 19, 1993, 5-085803; Mar. 19, 1993, 5-085806

Int. Cl.[5] C08J 9/12

U.S. Cl. 521—84.1 5 Claims

1. A process for producing a biodegradable resin foam, comprising the steps of mixing a starch polymer containing from 5% by weight to 30% by weight of water, a vinyl alcohol resin containing from 5% by weight to 30% by weight of water, a nonionic surfactant and an inorganic or organic filler; optionally adjusting the water content of the mixture, to prepare a composition having from 5% by weight to 30% by weight of water on the whole, based on the total weight of the composition; melting and expanding it to prepare a foam.

5,308,880

TIN CATALYSTS FOR USE IN RIM POLYOL BLENDS CONTAINING ACIDIC INTERNAL MOLD RELEASE AGENTS AND DIETHYLTOLUENEDIAMINE CHAIN EXTENDER

John E. Dewhurst, Macungie; James D. Nichols, Fogelsville, and Ann C. L. Savoca, Bernville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 20, 1993, Ser. No. 64,568

Int. Cl.[5] C08G 18/14

U.S. Cl. 521—110 17 Claims

1. In an active hydrogen-containing B-side composition for reaction with a polyisocyanate-containing A-side composition to make a polyurethane, polyurethaneurea and/or polyurea elastomer by reaction injection molding, which B-side composition also contains an acidic internal mold release composition and diethyltoluenediamine chain extender, the improvement which comprises a diorganotin dicarboxylate in which the carboxylate group contains at least one alpha-halogen atom.

5,308,881

SURFACTANT FOR POLYISOCYANURATE FOAMS MADE WITH ALTERNATIVE BLOWING AGENTS

Michael E. Londrigan, Clearwater, and Kenneth G. Trout, Tampa, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Oct. 25, 1993, Ser. No. 140,917

Int. Cl.[5] C08J 9/00

U.S. Cl. 521—112 20 Claims

1. A process for producing a closed cell, rigid polyisocyanurate foam which comprises bringing together under foam-foaming conditions a composition comprising a poly-isocyanate, a polyol, a hydrogen-containing blowing agent or a mixture of a hydrogen-containing blowing agent and at least one co-blowing agent, a trimerization catalyst, and a siloxane oxyalkylene copolymer as the surfactant, the siloxane oxyalkylene copolymer (i) having a weight average molecular weight below about 7500 and an oxyethylene portion containing greater than 60 weight percent of oxyethylene units and (ii) being prepared by the reaction of an organohydrogensiloxane with a polyoxyalkylene in an essentially solventless system or in the presence of a high boiling point polar polyol.

5,308,882

PREPARATION OF POLYURETHANE FOAM WITHOUT A TERTIARY AMINE CATALYST

Debra A. Washington, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

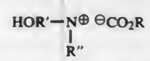
Filed Sep. 7, 1993, Ser. No. 117,273

Int. Cl.[5] C08G 18/14

U.S. Cl. 521—115 15 Claims

1. In a method of preparing a flexible foamed polyurethane product wherein a polyol, a polyisocyanate and water are mixed under reaction conditions, the improvement which comprises:

incorporating as the sole catalyst in the reaction a compound of the formula:



where R′ is an alkylene radical having from about 2 to 4 carbon atoms, R″ is H or OH and R is H or from about 1 to 6 carbon atoms wherein said compound is present in an amount ranging from about 0.05 to 2.00 weight percent based on the combined weight of the polyol and polyisocyanate.

5,308,883

CATALYST FOR POLYISOCYANURATE FOAMS MADE WITH ALTERNATIVE BLOWING AGENTS

Michael E. Londrigan, Clearwater, and Kenneth G. Trout, Tampa, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 971,105, Nov. 4, 1992, abandoned. This application May 18, 1993, Ser. No. 62,914

Int. Cl.[5] C08J 9/00

U.S. Cl. 521—125 23 Claims

1. A process for producing a closed cell, rigid polyisocyanurate foam which comprises bringing together a foam-forming composition comprising (1) a polyisocyanate and (2) a polyester polyol or a mixture of a polyester polyol and at least one other isocyanate-reactive compound int he presence of (a) a hydrogen-containing blowing agent or a mixture of a hydrogen-containing blowing agent and at least one co-blowing agent, and (b) a catalystically effective amount of a catalyst mixture comprising (i) a salt of a carboxylic acid selected from the group consisting of an alkali metal salt and an alkaline earth metal salt and mixtures thereof, (ii) a tertiary amine, and (iii) a quaternary ammonium carboxylate salt, wherein the equivalent ratio of carboxylate metal salt: tertiary amine is a value less than about 2:1, and the total equivalents of quaternary ammonium carboxylate salt are less than the combined equivalents of the carboxylate metal salt and the tertiary amine.

5,308,884

STABILIZED POLYETHER POLYOL AND POLYURETHANE FOAM OBTAINED THEREFROM

Uyen T. Tran, Naugatuck, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Division of Ser. No. 023,325, Feb. 26, 1993, Pat. No. 5,269,961. This application Sep. 17, 1993, Ser. No. 123,622

Int. Cl.[5] C08J 9/00

U.S. Cl. 521—128 4 Claims

1. A polyurethane foam obtained from a polyurethane foam-forming reaction mixture containing a liquid stabilizing composition comprising a mixture of 4-alpha,alpha-dimethylbenzyl diphenylamine and 4,41-bis-(alpha,alpha-dimethylbenzyl)diphenylamine.

5,308,885

HCFC BLOWN RIGID FOAMS WITH LOW THERMAL CONDUCTIVITY

Herman P. Doerge, Pittsburgh, Pa., assignor to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 67,322, May 25, 1993, Pat. No. 5,272,183, which is a continuation of Ser. No. 763,109, Sep. 20, 1991, Pat. No. 5,254,601. This application Sep. 28, 1993, Ser. No. 127,920

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] C08J 9/14

U.S. Cl. 521—128 16 Claims

1. A process for the production of a rigid polyurethane foam having a thermal conductivity of less than about 0.130 Btu-in/hr.ft^2.F comprising reacting

a) an organic polyisocyanate with

b) an organic material having at least two isocyanate-reactive hydrogen atoms and an OH value of from about 200 to about 650 which organic material has been prepared with an aromatic amine initiate selected from the group consisting of meta toluene diamine and methane diphenylamine in the presence of

c) from about 0.1 to about 1.0% by weight water and

d) 1,1-dichloro-2,2,2-trifluoroethane.

5,308,886

PHOTOSETTING RESIN FOR MAKING STRONG, TOUGH RESIN ARTICLES

Eiichi Masuhara, Tokyo; Sbigeo Komiya, Urawa, and Takeyuki Sawamoto, Tokyo, all of Japan, assignors to Japan Institute of Advanced Dentistry, Tokyo, Japan

PCT No. PCT/JP91/00451, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/16364, PCT Pub. Date Oct. 31, 1991

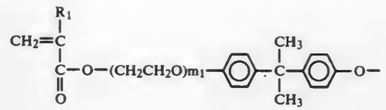
PCT Filed Apr. 19, 1991, Ser. No. 820,625

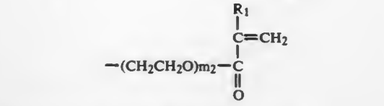
Claims priority, application Japan, Apr. 20, 1990, 2-104677

Int. Cl.[5] C08F 2/48, 220/26; C08K 3/22

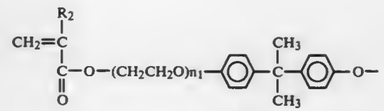
U.S. Cl. 522—81 3 Claims

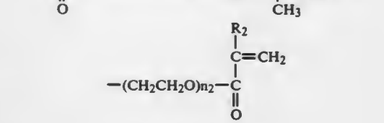
1. A photosetting resin comprising a liquid monomer composition and a photopolymerization initiator, said resin when cured having a minimum value of flexural breaking strain energy per volume of at least 0.14 kg f mm/mm^3, said monomer composition containing a compound represented by the following formula (1) and a compound represented by the following formula (2) in a weight ratio within a range of from 90:10 to 66:34:





(wherein R_1 is H or CH_3, and $0 \leqq m_1 + m_2 \leqq 4$)





(wherein R_2 is H or CH_3, and $5 \leqq n_1 + n_2 \leqq 12$).

5,308,887

PRESSURE-SENSITIVE ADHESIVES

Chan U. Ko, Woodbury; Mark D. Purgett, Oakdale; Kurt C. Melancon, St. Paul; Donald H. Lucast, North St. Paul, and Daniel K. McIntyre, St. Paul, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 23, 1991, Ser. No. 704,380

Int. Cl.[5] C08J 3/28; C08G 77/00; C08F 30/08; B32B 27/00

U.S. Cl. 522—148 29 Claims

1. A radiation curable pressure-sensitive adhesive composition comprising:

(a) from about 5 parts to about 95 parts by weight of acrylic monomer wherein said acrylic monomer comprises:

(i) from about 50 to about 100 parts by weight of alkyl acrylate monomer, the alkyl groups of which have an average of 4 to 12 carbon atoms; and

(ii) correspondingly from about 50 parts to about 0 parts by weight of a monoethylenically unsaturated copolymerizable modifier monomer;

wherein said amounts of (i) and (ii) are selected such that the total amount of (i) plus (ii) equals 100 parts by weight of said acrylic monomer;

(b) correspondingly from about 95 parts to about 5 parts by weight of silicon pressure-sensitive adhesive;

wherein the amounts of (a) and (b) are selected such that the total amount of (a) plus (b) equals 100 parts by weight;

(c) about 0 part to about 5 parts by weight of a photoinitiator based upon 100 parts by weight of said acrylic monomer; and

(d) about 0 to about 5 parts by weight of a crosslinker based upon 100 parts by weight of (a) plus (b); wherein the pressure-sensitive adhesive composition contains less than about 1 weight percent of a solvent based upon the total weight of the pressure-sensitive adhesive composition.

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5,308,888

FLUORINE-CONTAINING CURABLE RESIN COMPOSITION AND USE THEREOF

Shin Nishimura; Akira Nagai, both of Hitachi; Akio Takahashi, Hitachiota; Akio Mukoo, Mito; Tadashi Narita, Yokohama; Tokio Hagiwara; Hiroshi Hamana, both of Tokyo, and Junichi Katagiri, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

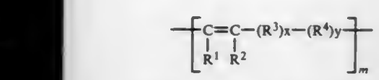
Continuation-in-part of Ser. No. 689,935, May 20, 1991. This application Feb. 22, 1993, Ser. No. 20,399

Claims priority, application Japan, Sep. 20, 1989, 1-242034

Int. Cl.[5] C08J *3/28*

U.S. Cl. 522—156 **7 Claims**

1. A fluorine-containing photo-setting resin composition comprising a polymer containing fluorine represented hy general formula:



(II)

wherein R^1 and R^2 are selected from the group consisting of H, F, CH_3 and CF_3 and at least one of R^1 and R^2 is F or CF_3; R^3 and R^4 are selected from the group consisting of CH_2 and CF_2; x and y represent 0 to 1, and m represents 30 to 1000, and a photopolymerization initiator, which is a solid at ambient temperature, melts between 100° and 150° C., has a melt viscosity of not greater than 10^6 poise and is photocurable.

5,308,889

DEHYDRATED COLLAGEN-POLYMER STRINGS

Woonza Rhee, Pal Alto; Louis Fries, Los Altos; Ramesh Damani, Mountain View; Kimberly McCullough, Hayward, and Frank DeLustro, Belmont, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 922,541, Jul. 30, 1992, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Dec. 2, 1992, Ser. No. 984,197

Int. Cl.[5] C08G *63/48, 63/91;* **A61F** *2/00*

U.S. Cl. 523—113 **23 Claims**

1. A dehydrated string having a circular cross-section and being in the form of an elongated cylinder and having a diameter in the range of about 0.25 mm to about 2.5 mm, the string comprising collagen chemically conjugated to a synthetic non-immunogenic hydrophilic polymer by a covalent bond and wherein the string is flexible, and wherein the covalent bond is selected from the group consisting of an ester linkage, a urethane linkage, and an ether linkage.

5,308,890

EMULSION POLYMER BLEND OF A MULTI-STAGE LATEX AND A NON-FILM FORMING LATEX

Barry S. Snyder, Dresher, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 26, 1993, Ser. No. 23,658

Int. Cl.[5] C08J *3/03;* **C08L** *51/06*

U.S. Cl. 523—201 **24 Claims**

1. An emulsion polymer blend comprising from about 95 to about 40 percent by weight of at least one first latex and from about 5 to about 60 percent by weight of at least one second latex, wherein the first latex is multi-stage comprising from about 95 to about 50 percent by weight of at least one soft stage polymer having a Tg less than 50° C. and from about 5 to about 50 percent by weight of at least one hard stage polymer having a Tg from about 20° C. to about 160° C., wherein the Tg of the soft stage polymer is lower than the Tg of the hard stage polymer, and wherein the second latex does not form a film at ambient temperature.

5,308,891

CEMENT BASED HEAT INSULATOR, METHOD OF MAKING SAME AND STRUCTURE HAVING SAME

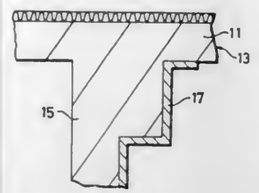
Yukuo Shinozaki, Kashiwa, Japan, assignor to Takenaka Corporation, Osaka, Japan

Continuation of Ser. No. 778,226, Dec. 11, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,876

Claims priority, application Japan, Apr. 25, 1990, 2-109546; Apr. 25, 1990, 2-109547

Int. Cl.[5] C08J *9/32*

U.S. Cl. 523—218 **6 Claims**



1. A strong, lightweight heat insulator comprising 3 to 50 parts by weight of synthetic resin emulsion in solid content equivalency, 1 to 20 parts by weight of organic microballoon, 0.3 to 5 parts by weight of carbon fiber and 10 to 200 parts by weight of inorganic microballoon with 100 parts by weight of cement, and having a specific gravity of approximately 0.1 to 0.3 and thermal conductivity of approximately 0.04 to 0.07 KCal/mhr°C.

5,308,892

PROCESS FOR THE PREPARATION OF POLYESTER-MASTERBATCH CONTAINING FINELY DIVIDED ADDITIVES

Dieter Zickler, Offenbach/Main, and Ulrich Thiele, Bruchkoebel, both of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 6, 1993, Ser. No. 58,874

Claims priority, applicatioo Fed. Rep. of Germany, Nov. 21, 1992, 4239260

Int. Cl.[5] C08G *63/16, 63/18, 63/88;* **B29C** *47/60*

U.S. Cl. 523—318 **9 Claims**

1. In a process for making a polyester masterbatch containing 2–70 weight % of finely divided solid additives in homogeneous and agglomerate-free distribution comprising providing a homogenizing extruder having a feed end and a discharge end, introducing a polyester into said feed end, said polyester having a predetermined intrinsic viscosity of at least 0.5 dl/g which includes the steps of

a) adding said additive in the downstream direction at a point along said extruder representing 15–40% of the residence time said polyester is in the extruder, the total residence time being equal to 100%,

b) adding separately from said additive, and in the downstream direction before the point of said additive addition, approximately 0.01 to 5.0 mol of a diol per mol of polyester to reduce said predetermined intrinsic viscosity by 1 to 70%, measured at said discharge end, said steps being performed in the absence of substances capable of reaction with said polyester, said diol or said additive.

5,308,893

GLASS-REINFORCED GRAFTED BRANCHED HIGHER ALPHA-OLEFIN POLYMERS

Mary J. Hagenson; Howard F. Efner, and Edwin Boudreaux, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 674,646, Mar. 22, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 967,300

Int. Cl.[5] C08K *3/20;* **C08L** *23/26*

U.S. Cl. 523—436 **6 Claims**

1. A composition comprising:

(a) a stereoregular polymer of branched, higher alpha-olefins which has been stabilized with at least one hindered phenol; which has been contacted with

(b) a grafting compound selected from the group consisting of vinyl-polymerizable, unsaturated, hydrolyzable silanes; carboxylic acids; carboxylic acid derivatives; carboxylic acid anhydrides; carboxylic acid anhydride derivatives; and mixtures thereof; in the presence of

(c) a free radical generator;

(d) glass;

(e) at least one epoxy resin;

(f) at least one epoxy-functional silane; and

(g) a hydroxy-functional compound capable of forming crosslinks and chosen from the group of polymeric and oligomeric hydroxy-functional compounds and mixtures thereof; said hydroxy-functional compound having a degree of polymerization of at least 2.

5,308,894

POLYCARBONATE/AROMATIC POLYESTER BLENDS CONTAINING AN OLEFINIC MODIFIER

Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 703,934, May 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 508,997, Apr. 12, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 2,365

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] C08L *69/00, 67/02*

U.S. Cl. 523—436 **45 Claims**

1. A composition of matter comprising, in admixture,

(a) an aromatic polycarbonate,

(b) an aromatic polyester,

(c) an epoxide-containing copolymer, having a glass transition temperature of less than 0° C., prepared from (i) one or more olefin monomers, a conjugated diene, or a mixture thereof; and (ii) at least one vinyl monomer carrying at least one epoxide group; and

(d) a block copolymer having a rigid "A" block of polyurethane and a rubbery "B" block of polyester, polyether or a mixture thereof.

13. A composition of matter comprising, in admixture,

(a) an aromatic polycarbonate

(b) an aromatic polyester,

(c) epoxide-containing copolymer, having a glass transition temperature of less than 0° C., prepared from (i) one or more olefin monomers, a conjugated diene, or a mixture thereof; and (ii) at least one vinyl monomer carrying at least one epoxide group; and

(d) a linear or radial block copolymer having a rigid block of polyester which has a glass transition temperature above 23° C., and a rubbery block of polyether which has a glass transition temperature below 25° C.

25. A composition of matter comprising, in admixture,

(a) an aromatic polycarbonate,

(b) an aromatic polyester,

(c) an epoxide-containing copolymer, having a glass transition temperature of less than 0° C., prepared from (i) one or more olefin monomers, a conjugated diene, or a mixture thereof; and (ii) at least one vinyl monomer carrying at least one epoxide group; and

(d) a polyether rubber.

5,308,895

CURE INHIBITED EPOXY RESIN COMPOSITIONS AND LAMINATES PREPARED FROM THE COMPOSITIONS

Joseph Gan, Strasbourg, France, and James L. Bertram, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 526,487, May 21, 1990, abandoned. This application Mar. 6, 1992, Ser. No. 848,499

Int. Cl.[5] C08K *3/38;* **C08L** *63/00*

U.S. Cl. 523—445 **7 Claims**

1. An epoxy resin composition comprising

(A) a polyepoxide;

(B) a cure inhibitor consisting essentially of boric acid in an amount from about 0.01 to about 2.0 parts per 100 parts of polyepoxide;

(C) optionally an epoxy resin catalyst; and

(D) optionally an epoxy resin curing agent which does not contain phenolic hydroxyl moieties.

5,308,896

PARTICLE BINDERS FOR HIGH BULK FIBERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 17, 1992, Ser. No. 931,284

Int. Cl.[5] C08J *5/04*

U.S. Cl. 524—13 **50 Claims**

1. A method of producing individualized high bulk fibers with adhered particles comprising:

providing individualized cellulose fibers that have hydrogen bonding functional sites, wherein the individualized fibers are cured in the presence of a crosslinking material at an elevated temperature to produce cured high bulk fibers with intrafiber covalent crosslinks while leaving hydrogen bonding functional sites available on the cured fibers for hydrogen bonding, and the fibers are fiberized to reduce interfiber bonding between the cured fibers;

adding particles to the fibers before, during or after the fibers are cured, wherein the particles have a hydrogen bonding or a coordinate covalent bonding functionality; and

applying a binder to the fibers before, during or after the fibers are cured or fiberized, wherein the binder binds the particles to the fibers by chemically bonding the particles to the fibers at the interface between the particle and fiber while the particle retains its individual particulate form on the surface of the fiber, wherein the particles are chemically bonded to the binder by hydrogen bonds or coordinate covalent bonds, and the binder that binds the particle is in turn bonded to the fibers by a hydrogen bond, the binder having a volatility less than water, the binder also having a functional group that forms the hydrogen bond or coordinate covalent bond with the particles, and a functional group that forms the hydrogen bond with the fibers, wherein at least 0.05% by weight of the fibers, binder and particles is particles bound to the binder by hydrogen bonds or coordinate covalent bonds, with the binder that binds the particle in turn to the individualized fibers by a hydrogen bond.

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5,308,897

DEGRADABLE PLASTICS

Hung-Yuan Hsu, Hsinchu; Shu-Chieh Liuo, Keelung; Shu-Fang Jiang, Hsinchu; Jian-Hong Chen, Hsinchu; Ho-May Lin, Hsinchu; Herng-Dar Hwu, Taoyuan; Muh-Lan Chen, Hsinchu; Mao-Song Lee, Hsinchu, and Teh Hu, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 14, 1993, Ser. No. 4,548

Int. Cl.[5] C08L *3/00*

U.S. Cl. 524—47 **22 Claims**

1. A composition of matter which comprises:

a polymeric material selected from the group consisting of (i) a plastic having carbon to carbon linkages and (ii) a binary blend of said plastic and starch, wherein said plastic is at least 25% by weight of said binary blend; and

an organic peracid compound having a first functional group —COOH dispersed in said polymeric material, the quantity of said peracid compound being 0.1 to 10% by weight of said polymeric material.

5,308,898

BITUMINOUS COMPOSITIONS INCLUDING RESIDUES OF THERMOPLASTIC POLYMERS WITH POLYURETHANE FOAMS AND THERMOSET RESIN, ETC.

Francois Dawans, Bougival, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Feb. 21, 1991, Ser. No. 658,613

Claims priority, application France, Feb. 21, 1990, 90 02136

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] C08L *95/00*

U.S. Cl. 524—59 **16 Claims**

1. In a process for obtaining a bituminous composition containing polymer waste, said process comprising mixing a bitumen or asphalt with a polymer waste, the improvement wherein said polymer waste consists essentially of thermoplastic polymers and sterile car waste having at least 4% by weight, based on the weight of said polymer waste, or polyurethane foams and at least 2% of thermoset resins other than polyurethane foams, wherein said sterile car waste is ground to a particle size of less than 10 mm and mixed, in an amount of 1–40% by weight based on the bitumen or asphalt, with molten bitumen or asphalt, adding to the mixture of the bitumen or asphalt and waste polymer 0.5 to 10% by weight of Lewis or Brönsted acid, based on the total weight of the polymers in the bitumen or asphalt, and wherein the mixture is heated at a temperature of 150°–300° C. for at least 5 minutes.

5,308,899

POLYETHER POLYOL AND POLYURETHANE COMPOSITIONS PROTECTED AGAINST OXIDATION AND CORE SCORCHING

Peter Michaelis, Freiburg, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,732

Claims priority, application Switzerland, Nov. 19, 1991, 3370/91-7

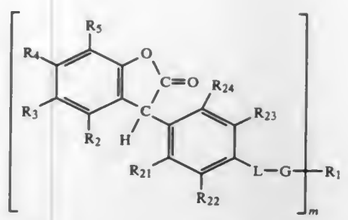
Int. Cl.[5] C08K *5/15, 5/34*

U.S. Cl. 524—109 **12 Claims**

1. A composition comprising

A) a polyether polyol or mixtures of such polyols,

B) at least one benzofuranone derivative of formula I



(I)

wherein

L is oxygen or, when G is a direct bond and R_1 is hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, does not exist,

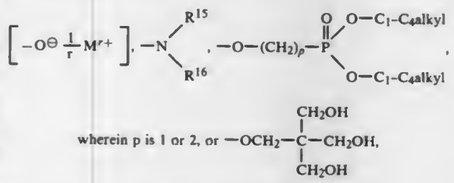
G is a direct bond or a group $—CR_{18}R_{19}—CO—$,

m is 1 or 2,

R_1, when m=1 and G is a direct bond, is hydrogen, C_1–C_{25}alkyl, C_3–C_{25}alkenyl, C_2–C_{18}alkanoyl, C_3–C_{25}alkenoyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl, C_3–C_{25}-alkyl, -alkanoyl or -alkenyl interrupted by oxygen, sulfur or by $>NR_{16}$, C_6–C_9cycloalkoxycarbonyl, benzoyl or C_1–C_{12}alkyl-substituted benzoyl, or

R_1, when m=2 and G is a direct bond, is $—CO—R_{17}—CO—$, or

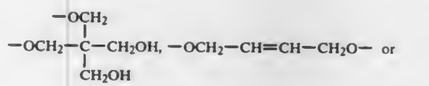
R_1, when m=1 and G is a group $—CR_{18}R_{19}—CO—$, is hydroxy, C_1–C_{30}alkoxy, C_3–C_{30}alkoxy interrupted by oxygen, sulfur or by $>NR_{13}$, C_7–C_9phenylalkoxy, C_5–C_{12}cycloalkoxy, C_2–C_{18}alkenyloxy, unsubstituted or C_1–C_{12}alkyl-substituted phenoxy,



wherein p is 1 or 2, or $—OCH_2—C(CH_2OH)_2—CH_2OH$,

or

R_1, when m=2 and G is a group $—CR_{18}R_{19}—CO—$, is C_2–C_{12}alkanedioxy, C_3–C_{25}alkanedioxy interrupted by oxygen, sulfur or by $>NR_{16}$,



$—OCH_2—C\equiv C—CH_2O—$,

R_2 and R_4 are each, independently of the other, hydrogen or C_1–C_6alkyl, R_3 and R_5 are each, independently of the other, hydrogen, C_1–C_{25}alkyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl, C_1–C_{18}alkoxy, hydroxy, C_1–C_{25}alkanoyloxy, C_3–C_{25}alkenoyloxy, C_3–C_{25}alkenyloxy interrupted by oxygen, sulfur or by $>NR_{16}$, C_6–C_9cycloalkylcarbonyloxy, benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy, or a radical of the formula $—(CH_2)_n—CO—OR_6$, $—(CH_2)_n—COR_{11}$ or $—(CH_2)_n—CO—N(R_7)_2$,

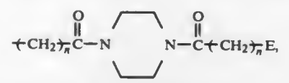
R_3, when m=1, is furthermore a radical of the formula

$—(CH_2)_n—CO—O—A^•—O—CO—(CH_2)_n—E$,

-continued

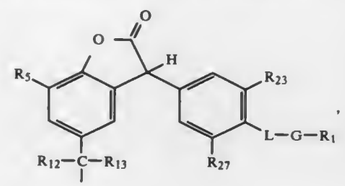
$—(CH_2)_n—CO—NR_8—A^•—NR_8—CO—(CH_2)_n—E$,

$—(CH_2)_n—CO—NR_8—A^•—O—CO—(CH_2)_n—E$,



$—CH_2—S—R_9$, $—CH(C_6H_5)—CO—R_6$ or

when m=1 and R_4, R_5, R_{21} R_{24} are hydrogen, R_3 in addition is a radical of the formula



R_2 together with R_3 or

R_4 together with R_5, in each case together with the carbon atoms to which they are bonded, form a phenyl ring,

R_6 is hydrogen, C_2–C_{18}alkyl, C_1–C_{18}alkyl interrupted by oxygen or by sulfur, C_3–C_{16}dialkylaminoalkyl, cyclohexyl, phenyl, or phenyl substituted by from 1 to 3 alkyl radicals together having a maximum of 18 carbon atoms,

n is 0, 1 or 2, the substituents

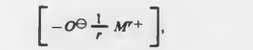
R_7 are each, independently of the other, hydrogen, C_1–C_{18}alkyl, cyclopentyl, cyclohexyl, phenyl, phenyl substituted by 1 or 2 alkyl radicals together having a maximum of 16 carbon atoms, a radical of the formula $—C_2H_4OH$, $—C_2H_4—O—C_qH_{2q+1}$ or $—C_2H_4—O—CO—R_{10}$, together with the nitrogen atom to which they are bonded, form a piperidine or morpholine radical, wherein q is 1 to 18,

R_8 is hydrogen, alkyl having from 1 to 18 carbon atoms, cyclopentyl, cyclohexyl, phenyl, benzyl, phenyl substituted by 1 or 2 alkyl radicals together having a maximum of 16 carbon atoms, or benzyl,

R_9 is alkyl having from 1 to 18 carbon atoms,

R_{10} is hydrogen, alkyl having from 1 to 22 carbon atoms or cycloalkyl having from 5 to 12 carbon atoms

R_{11} is hydroxy,



C_1–C_{18}alkoxy or $—NR_{14}R_{15}$,

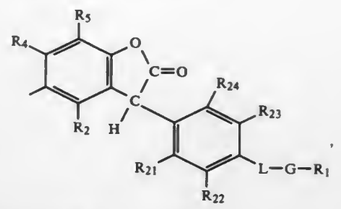
R_{12} and R_{13} are each, independently of the other, hydrogen, C_1–C_{12}alkyl or phenyl, or form together with the C-atom to which they are bound a C_5–C_7-alkylidene-ring which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl groups,

R_{14} and R_{15} are each, independently of the other, hydrogen or C_1–C_{18}alkyl, M is an r-valent metal cation and r is 1, 2 or 3,

$A^•$ is an alkylene radical having from 2 to 22 carbon atoms that may or may not be interrupted by nitrogen, oxygen or by sulfur,

Y is —O—, —S—, —SO—, $—SO_2—$ or $—C(R_{20})_2—$, wherein the substituents R_{20} are each, independently of the other, hydrogen, C_1–C_{16}alkyl, phenyl or a radical of the formula $—(CH_2)_n—CO—OR_6$ or $—(CH_2)_n—CO—N(R_7)_2$,

E is a radical of the formula



R_{16} is hydrogen or C_1–C_8alkyl,

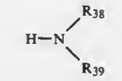
R_{17} is a direct bond, C_1–C_{18}alkylene, C_2–C_{18}alkylene interrupted by oxygen, sulfur or by $>NR_{16}$, C_2–C_8alkenylene, C_2–C_{20}alkylidene, C_7–C_{20}phenylalkylidene, C_5–C_8cycloalkylene, C_7–C_8bicycloalkylene or phenylene,

R_{18} and R_{19} are each, independently of the other, hydrogen, C_1–C_4alkyl or phenyl, and

R_{21}, R_{22}, R_{23} R_{24} are each, independently of the others, hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, provided that at least one of the radicals R_{21}, R_{22}, R_{23} and R_{24} is hydrogen,

C) at least one compound from the group of the phenolic anti-oxidants, and

D) at least one compound of formula III



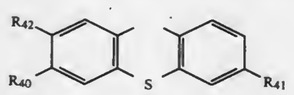
(III)

wherein

R_{38} is C_1–C_{18}alkyl, phenyl-C_1–C_4alkyl, C_5–C_{12}cycloalkyl, phenyl, naphthyl, or phenyl or naphthyl substituted by C_1–C_{12}alkyl or by C_1–C_{12}alkoxy,

R_{39} is phenyl, naphthyl, or phenyl or naphthyl substituted by C_1–C_{12}alkyl or by C_1–C_{12}alkoxy, or

R_{38} and R_{39} together form a radical of the formula IV



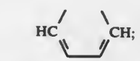
(IV)

wherein

R_{40} and R_{41} are hydrogen or C_1–C_{18}alkyl or

R_{41} is hydrogen or C_1–C_{18}alkyl and

R_{40} together with R_{42} forms a group of the formula



or, a composition comprising (A), (B) and (D).

5,308,900

POLYETHYLENE COMPOSITIONS

Kenneth W. Willcox, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 24, 1992, Ser. No. 980,401

Int. Cl.[5] C08K *5/527*

U.S. Cl. 524—120 **7 Claims**

1. A polyethylene composition comprising:

(a) bis(2,4-di-tert-butylphenyl)pentaerythritol diphosphite,

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in an amount that is at least about 0.001 parts but less than 0.3 parts per 100 parts by weight of said polyethylene; and (b) zinc stearate, in an amount that is from about 0.01 parts to 1 part per 100 parts by weight of said polyethylene.

5,308,901

3-9-DIPHOSPHASPIROUNDECANE-STABILIZED POLYMER COMPOSITIONS

Stephen J. Hobbs, Woodstock, Ill.; Kevin J. Sheehan, Parkersburg, W. Va., and William P. Enlow, Belpre, Ohio, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 872,218, Apr. 22, 1992, abandoned, which is a division of Ser. No. 765,409, Sep. 25, 1991, Pat. No. 5,137,950, which is a continuation of Ser. No. 223,319, Jul. 25, 1988, abandoned. This application Sep. 27, 1993, Ser. No. 126,744

Int. Cl.[5] C08K *5/52*

U.S. Cl. 524—120 **15 Claims**

1. A stabilized polymer composition a polymer and an effective amount of a bis-3,9-(2,6-di-t-alkyl-4-s-alkylphenoxy)-2,4,8,10-tetroxa-3,9-diphosphaspiro[5.5]undecane.

5,308,902

BIPHOSPHITES

Holger Andreas, Bensheim/Auerbach, Fed. Rep. of Germany; Alfred Renner, Muntelier, Switzerland, and Horst Zinke, Reichelsheim/Odw., Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

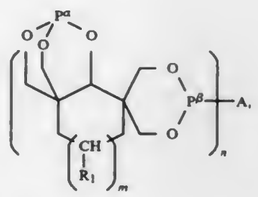
Filed May 14, 1992, Ser. No. 882,993

Claims priority, application Switzerland, May 16, 1991, 1462/91

Int. Cl.[5] C08K *5/52*; C07F *9/02*

U.S. Cl. 524—128 **20 Claims**

1. A compound of formula I



(I)

wherein

m is 0, 1 or 2,

n is 1 to 6,

R_1 is hydrogen or C_1–C_4alkyl and, if m=2, the radicals R_1 are identical or different, and

A is the radical of an at least n-hydric alcohol or phenol, which radical is attached to the P atom or atoms through the alcoholic or phenolic O atom or atoms.

5,308,903

POLYURETHANE SELF-PRIMING TOPCOATS

Charles R. Hegedus, Warrington, Pa.; Donald J. Hirst, Mt. Laurel, N.J., and Anthony T. Eng, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 936,983, Aug. 25, 1992, Pat. No. 5,290,839, which is a continuation-in-part of Ser. No. 812,174, Dec. 20, 1991, Pat. No. 5,236,983. This application May 14, 1993, Ser. No. 62,864

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—204 **5 Claims**

1. A process of preparing a corrosion-resistant self-priming urethane coating on a substrate which comprises forming the polyurethane coating by applying onto the substrate at ambient temperatures an organic film of 0.5 to 10 mils; said coating comprising from about 20 to 60 parts by weight of a polyurethane binder, 5 to 35 parts by weight of an alkaline-earth metal phosphate, 0.5 to 5.0 parts by weight of a zinc benzoate, 5 to 30 parts by weight of an alkaline earth metal molybdate-modified zinc phosphate, 5 to 35 parts by weight of a titanium dioxide pigment, 0 to 3.0 parts by weight of an oil soluble dispersing agent and 0 to 50 percent by weight of at least one organic solvent.

5,308,904

RESIN COMPOSITION, POROUS FILM OR SHEET

Toshio Fujii; Akihiko Sakai, and Tasuku Suzuki, all of Kurashiki, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 910,899

Claims priority, application Japan, Jul. 23, 1991, 3-182677

Int. Cl.[5] C08K *5/10, 5/20*

U.S. Cl. 524—232 **14 Claims**

1. A resin composition for a porous film or sheet, comprising:

100 parts by weight of a polyolefin (A) having a density of not more than 0.930 g/cm^3 and a melt index of not more than 2 g/10 min;

100 to 400 parts by weight of a filler (B);

1 to 100 parts by weight of a plasticizer (C) composed of a compound having an ester linkage or an amide linkage in its number average molecule, and having a molecular weight of not less than 100, a boiling point of not lower than 200° C. and a melting point of not higher than 100° C. under atmospheric pressure; and

0.0001 to 0.1 part by weight of a radical generator (D).

5,308,905

POLYVINYL CHLORIDE RESIN COMPOSITION AND SURFACE DELUSTERED ARTICLE

Tugio Mitani, Takatsuki; Masayuki Yoshihara, Toyonaka, and Hiroaki Maruyama, Nagoya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 810,884, Dec. 20, 1991, abandoned. This application Jan. 15, 1993, Ser. No. 5,173

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—310 **11 Claims**

11. A matte-finished article which is obtained by molding a vinyl chloride resin composition containing 0.002–0.02 mol of a zinc carboxylate per 100 g of a vinyl chloride resin and 0.3–5 mol of a compound having two or more alcoholic hydroxyl groups in one molecule per mol of the zinc carboxylate, the content of an alkaline earth metal carboxylate in said composition being less than 0.7 mol, and the content of each of tin compound, lead compound and alkali metal carboxylate in said composition being less than 0.3 mol per mol of the zinc carboxylate; and heat-treating the resulting molded product, after the molding, until said matte-finished article is produced.

5,308,906

EXTRUDABLE ELASTOMERIC COMPOSITION HAVING CONTROLLED RATE OF DEGRADATION

Jack D. Taylor, Roswell, and William B. Haffner, Kennesaw, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 11, 1991, Ser. No. 805,128

Int. Cl.[5] C08K *5/09, 5/14*; D06N *7/04*

U.S. Cl. 524—398 **28 Claims**

1. An extrudable elastomeric composition adapted to form a sheet which is degraded after less than about 30 days continuous exposure to a thermally oxidative environment, the composition comprising:

from about 60 to about 99 percent, by weight, of an elastomeric A-B-A' block copolymer where A and A' are each a thermoplastic polymer endblock and where B is a conjugated diene monomer unit having a low degree of residual ethylenic unsaturation;

from about 1 to about 40 percent, by weight, of a polyolefin; and

an effective amount of at least one transition metal compound which is substantially uniformly distributed in a blend of the polyolefin and block copolymer, said transition metal compound selected from salts and complexes of cobalt and manganese.

5,308,907

LOW SMOKE POWER CABLE SEALANT

Leonard Leibowitz, East Brunswick, N.J., and Robert A. Nosal, Doylestown, Pa., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Oct. 6, 1992, Ser. No. 957,203

Int. Cl.[5] C08J *5/10*; C08K *3/10*; C08L *25/08*

U.S. Cl. 524—436 **8 Claims**

1. A water tight, electrical power cable which includes a non-halogenated pumpable sealant composition consisting essentially of:

(a) 3 to 10% by weight of a styrene-containing hydrogenated diblock and/or triblock copolymer,

(b) 70 to 82% by weight of a smoke suppressant composition,

(c) 10 to 20% by weight of petrolatum or mineral oil,

(d) from 0 to about 3% by weight of an organic plasticizer for the block copolymer,

(e) from 0 to about 0.5% by weight of a stabilizer,

(f) from 0 to about 5% by weight of a smoke suppressant additive, wherein the smoke suppressant composition comprises a combination of alumina trihydrate and magnesium hydroxide in proportions of 4:1 to 1:4, and said sealant composition exhibits a smoke index of less than 45.

5,308,908

POLYPROPYLENE RESIN COMPOSITION

Osamu Fukui, Tokyo; Kouhei Ueno, Sakai; Yoshifumi Nakano, Sakai; Ikunori Sakai, Sakai; Takao Nomura, Toyota; Takeyoshi Nishio, Toyota, and Hisayuki Iwai, Toyota, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Aug. 28, 1992, Ser. No. 936,389

Claims priority, application Japan, Aug. 30, 1991, 3-244231; Oct. 9, 1991, 3-289412

Int. Cl.[5] C08L *53/00, 23/04*; C08K *3/34*

U.S. Cl. 524—451 **7 Claims**

1. A polypropylene resin composition comprising:

(A) 45 to 70% by weight of an ethylene-propylene block copolymer synthesized under the process comprising the steps of:

(a) polymerizing propylene with a Ziegler-Natta catalyst to obtain a highly crystalline polypropylene that contains not less than 97% by weight of a fraction insoluble in boiling n-heptane, and

(b) copolymerizing ethylene with the polypropylene polymerized in step (a),

wherein said component (A):

(a) contains 0.5 to 10% by weight ethylene,

(b) contains 5 to 20% by weight of a fraction which is soluble in p-xylene at room temperature and which has an intrinsic viscosity value of not less than 2 (measured in decalin at 135° C.),

(c) has a melt-flow index value of 30 to 100 g/10 min., and

(d) has a value of flexural modulus of not less than 18,000 kg/cm^2; and

(B) 10 to 20% by weight of an amorphous ethylene-propylene copolymer having:

(a) an ethylene content of 70 to 90% by weight,

(b) a Mooney viscosity value (ML_{1+4} at 100° C.) of 5 to 70,

(C) 5 to 15% by weight of an ultra low density ethylene-C4–C10-α-olefin copolymer having:

(a) an α-olefin content of 5 to 15% by mole,

(b) a specific gravity of not more than 0.91, and

(c) a melt-flow index value of 2.2 to 50 g/10 min. at 230° C.,

(D) 1 to 10% by weight of an amorphous ethylene-butene copolymer having:

(a) a butene content of 10 to 25% by weight, and

(b) a Mooney viscosity value (ML_{1+4}, at 100° C.) of 5 to 20,

(E) a positive amount up to not more than 15% by weight of a talc that

(a) has an average diameter D50 of from 1.0 to 3.0 μm, and

(b) does not contain a particle having a diameter of 10 μm or more,

wherein the component (B) is rubber reinforced by lamellae of components (C) and (D).

5,308,909

GLASS BUBBLE FILLED POLYBENZIMIDAZOLE

Paul N. Chen, Sr., Gillette; Victor C. Astone, Union; William M. Cooper, Clinton, and O. Richard Hughes, Chatham Township, all of N.J., assignors to Hoechst Celanese Corp, Somerville, N.J.

Continuation-in-part of Ser. No. 713,942, Jun. 12, 1992, Pat. No. 5,229,448. This application Feb. 19, 1993, Ser. No. 19,960

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] C08K *3/40*

U.S. Cl. 524—494 **12 Claims**

1. A moldable composition comprising polybenzimidazole and glass bubbles, said glass bubbles comprising at least about 10% by volume of said composition.

5,308,910

COMPOSITION, ADHESIVE AND AQUEOUS EMULSION

Ken Yuki, Osaka; Masato Nakamae; Hitoshi Maruyama, both of Kurashiki, and Tatsuaki Hattori, Tokyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jun. 24, 1992, Ser. No. 903,449

Claims priority, application Japan, Jun. 25, 1991, 3-153078

Int. Cl.[5] C08L *29/04*

U.S. Cl. 524—503 **4 Claims**

1. A composition which comprises an (A) aqueous emulsion and a (B) polyvalent isocyanate compound, wherein said (A) aqueous emulsion is selected from the group consisting of an (A-1) aqueous emulsion comprising a dispersoid which comprises a vinyl ester polymer (1) and a copolymer having a glass transition temperature of lower than 50° C. containing at least one member selected from the group consisting of methacrylic ester monomer unit and acrylic ester monomer unit; and a primary hydroxyl group-containing ethylenically unsaturated monomer unit (2), said polymer (1) being present principally in the central part of said dispersoid, said copolymer (2) being present principally in the peripheral part thereof, the ratio by weight of said polymer (1) to said copolymer (2) being in the range of 9:1 to 1:9; and a dispersant comprising a vinyl alcohol polymer and an (A-2) aqueous emulsion comprising a dispersoid which comprises a copolymer containing at least one hydrophobic unsaturated monomer unit selected from the group consisting of methacrylic ester monomer unit, acrylic ester monomer unit, styrene monomer unit, diene monomer unit and halogenated unsaturated monomer unit; and a primary hydroxyl group-containing ethylenically unsaturated monomer unit in an amount of 0.1 to 50% by weight based on said copolymer, wherein said (A-2) aqueous emulsion is obtained by emulsion polymerization in the presence of a dispersant comprising a vinyl alcohol polymer having a mercapto group at an end thereof.

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5,308,911

SECONDARY SUSPENDING AGENT FOR SUSPENSION POLYMERIZATION OF VINYL COMPOUND

Shigeki Takada; Hitoshi Maruyama; Naoki Fujiwara, and Kazutoshi Terada, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 9, 1993, Ser. No. 28,181

Claims priority, application Japan, Mar. 10, 1992, 4-051939

Int. Cl.[5] C08L *29/04;* **C08F** *2/00, 14/06*

U.S. Cl. 524—503 **4 Claims**

1. A secondary suspending agent for suspension polymerization of a vinyl compound which comprises an aqueous dispersion comprising as the dispersoid, a polyvinyl ester having a degree of hydrolysis of 60 mol% or less, an average degree of polymerization of 4000 or more and an average particle diameter of 100 μm or less.

5,308,912

POLYURETHANE COATING COMPOSITIONS CONTAINING POLYETHER POLYOLS AS ADDITIVES

Dieter Margotte, Krefeld, and Werner Kubitza, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,449

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137229

Int. Cl.[5] C08L *75/06*

U.S. Cl. 524—507 **8 Claims**

1. An aqueous coating composition comprising

a) an aqueous solution or dispersion of a polyol component containing at least one water-dilutable polyacrylate resin having hydroxyl groups and a molecular weight (M_n) 500 to 50,000,

b) a polyisocyanate component which has a viscosity of 50 to 10,000 mPa.s at 23° C. and is emulsified in component a), and

c) 0.5 to 6% by weight, based on the weight of component a), of a water-soluble polyether polyol having a molecular weight of 300 to 1000,

wherein the coating composition has an NCO/OH equivalent ratio of 0.5:1 to 5:1, based on the isocyanate groups of component b) and the alcoholic hydroxyl groups of components a) and c).

5,308,913

WHOLLY AROMATIC POLYESTER RESIN COMPOSITION AND OVENWARE OBTAINED BY MOLDING SAID COMPOSITION

Kuniaki Asai, Tsudabayashi; Tadayasu Kobayashi, and Mituo Maeda, both of Tsukuba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 2, 1992, Ser. No. 816,879

Claims priority, application Japan, Jan. 8, 1991, 3-000435

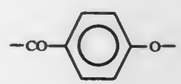
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] C08J *5/08;* **C08K** *3/22;* **C08L** *27/12*

U.S. Cl. 524—546 **16 Claims**

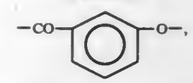
1. A wholly aromatic polyester resin composition comprising: (1) 40–79.5% by weight of a wholly aromatic polyester resin having:

(A) at least one repeating unit selected from the group consisting of:



and

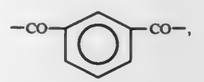
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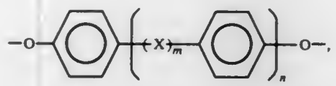
(B) at least one repeating unit selected from the group consisting of:

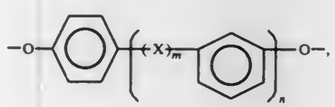


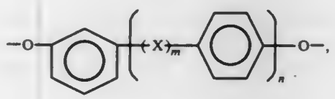
and



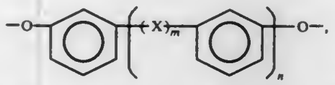
(C) at least one repeating unit selected from the group consisting of:







and



wherein X is —O—, —SO_2—, —S— or —CO—, m and n are independently 0 or 1,

wherein the numerical ratio of the repeating unit (A) to the repeating unit (B) ranges from 1:1 to 10:1, and the numerical ratio of the repeating unit (B) to the repeating unit (C) ranges from 9:10 to 10:9;

(2) 5–25% by weight of at least one fibrous reinforcing agent selected from the group consisting of a glass fiber and a silica-alumina fiber;

(3) 10–40% by weight of glass beads;

(4) 5–25% by weight of titanium oxide; and

(5) 0.5–10% by weight of fluorocarbon polymer with totally fluorinated terminals which polymer gives a flow temperature of 350° C. or below when the flow temperature is defined as a temperature at which the polymer melted by heating at a temperature elevation rate of 4° C./min gives a melt viscosity of 48,000 poises when extruded through a nozzle of 1 mm in inside diameter and 10 mm in length under a load of 100 kg/cm^2, using a capillary rheometer having said nozzle, the total content of the components (2) to (5) in the composition falling within the range of 20.5–60% by weight, provided that the wholly aromatic polyester resin composition is wollastonite-free.

5,308,914

AQUEOUS POLYURETHANE DISPERSIONS

Alexander Wallon, Hassloch; Lothar Maempel, Bruehl; Gerhard Auchter, Bad Durkheim, and Horst Seibert, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,949

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1991, 4137660

Int. Cl.[5] C08J *3/03;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **7 Claims**

1. An aqueous dispersion containing a polyurethane and from 5 to 60% by weight, based on the polyurethane, of an adhesion-improving polymer, wherein the polyurethane consists essentially of

(a) organic diisocyanates,

(b) dihydroxy compounds which have a molecular weight of from more than 500 to 5,000 and contain no ionic groups or groups convertible into ionic groups,

(c) compounds having one or two functional groups reactive toward isocyanate and at least one ionic group or group convertible into an ionic group and

(d) compounds having at least 3 isocyanate groups or at least 3 functional groups reactive toward isocyanate,

(e) with or without compounds which differ from (c) and have two functional groups reactive toward isocyanate and a molecular weight of from 60 to 500, and compounds (d) are used in amounts such that the functionality F of all components, which is defined by the quotient

$$F = \frac{\text{Number of moles of all isocyanate groups and functional groups reactive with isocyanate}}{\text{Number of moles of all components}}$$

is from 2.01 to 2.5, and the polyurethane or a prepolymer thereof is prepared in a water-miscible solvent boiling below 100° C. and, after addition of the adhesion-improving polymer, is dispersed in water and, in the case of the prepolymer, the further reaction to give the polyurethane is then carried out.

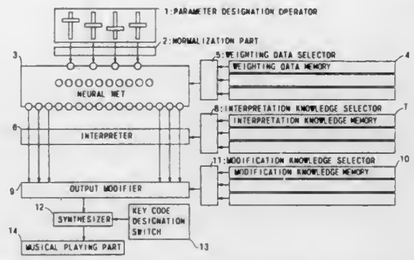
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5,308,915

ELECTRONIC MUSICAL INSTRUMENT UTILIZING NEURAL NET

Kenichi Ohya, and Hirofumi Mukaino, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 18, 1991, Ser. No. 779,110
Claims priority, application Japan, Oct. 19, 1990, 2-282854; Oct. 29, 1990, 2-293058
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—601 **33 Claims**



18. An electronic musical instrument utilizing neural nets, comprising:

parameter input means for providing a parameter;

a neural net device for utilizing the parameter provided by said parameter input means, said neural net device having a layer of output neurons for providing output data, said layer of output neurons comprising a plurality of output layer neurons respectively corresponding to tone generation timings of a set of musical tones to be generated;

change means for changing said output data from said neural net device into a musical pattern signal; and

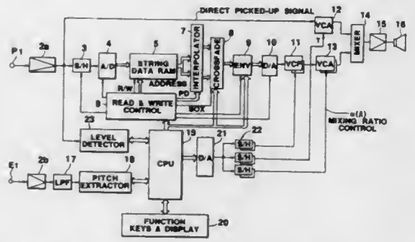
modification means for storing modification knowledge to modify said musical pattern signal, and for modifying said musical pattern signal using said modification knowledge so as to be musically acceptable.

5,308,916

ELECTRONIC STRINGED INSTRUMENT WITH DIGITAL SAMPLING FUNCTION

Yoshiyuki Murata, Ome, and Hajime Manabe, Higashiyamoto, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1990, Ser. No. 629,594
Claims priority, application Japan, Dec. 20, 1989, 1-328390
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—603 **11 Claims**



1. An electronic stringed instrument, comprising:

a plurality of strings;

a plurality of pick up means provided for respective ones of said plurality of strings, each of said pick up means converting mechanical string vibrations having a time varying amplitude into a corresponding analog picked-up signal;

analog-to-digital converter means for successively converting respective analog picked-up signals from said plurality of pick up means to corresponding digital picked-up signals in a multiplexed operation;

storing means for successively and time divisionally storing said respective digital picked-up signals from said analog to digital converter means;

reading means for successively and time divisionally reading stored digital picked-up signals from said storing means in synchronism with the storing operation of said storing means;

digital-to-analog converter means for successively converting read-out digital picked-up signals from said reading means to analog audio signals;

sound output means for outputting analog audio signals from said digital-to-analog converter means as sounds;

amplitude level detecting means for successively detecting respective amplitude levels of said analog picked-up signals from said plurality of pick up means and for finding a respective maximum amplitude level of said analog picked-up signals in said detected amplitude levels to thereby obtain numerical data for each of the strings corresponding to said maximum amplitude level and indicative of strength of said string vibrations; and

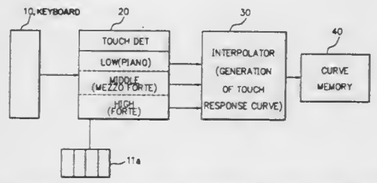
control means for controlling respective characteristics of the sounds to be outputted by said sound output means for each of the strings, based on the corresponding numerical data from said amplitude level detecting means.

5,308,917

KEYBOARD TOUCH RESPONSE SETTING APPARATUS

Mineo Kitamura, and Yutaka Washiyama, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Dec. 2, 1992, Ser. No. 984,519
Claims priority, application Japan, Dec. 3, 1991, 3-348029
Int. Cl.[5] G10H *1/18, 1/46*
U.S. Cl. 84—607 **7 Claims**



1. A keyboard touch response setting apparatus comprising:

a curve memory for storing conversion curve data defined by a polygonal line having at least low and high touch setting points, and outputting tone level data for tone generation in response to key touch data;

touch detection means, having a test mode for detecting a key depression strength, for, when said apparatus operates in said test mode, detecting key depression strength values obtained upon a plurality of depressions of a key on a keyboard by a player in correspondence with the touch setting points, and calculating average value data of the plurality of key depression strength values; and

interpolation means for determining an inclination of each segment of the polygonal line on the basis of the average value data and a predetermined tone level value of the corresponding touch setting point, calculating a correspondence between input and output values corresponding to a segmentation point on each segment by a linear interpolation, and storing the calculated correspondence as the conversion curve data in said curve memory.

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5,308,918

SIGNAL DELAY CIRCUIT, FIR FILTER AND MUSICAL TONE SYNTHESIZER EMPLOYING THE SAME

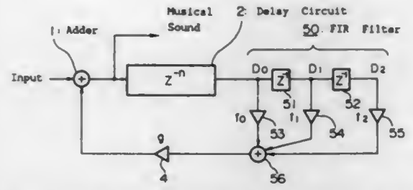
Akira Yamauchi; Toshifumi Kunimoto; Chifumi Takeuchi, and Iwao Higashi, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Division of Ser. No. 511,217, Apr. 19, 1990, abandoned. This application Apr. 16, 1992, Ser. No. 869,448

Claims priority, application Japan, Apr. 21, 1989, 1-102376; May 18, 1989, 1-125326

Int. Cl.[5] G10H *5/02*

U.S. Cl. 84—622 **4 Claims**



1. A musical sound synthesizer for synthesizing musical sounds, the synthesizer comprising:

resonance means for generating a resonance signal corresponding to a musical sound to be synthesized, the resonance signal generated in response to an input signal and a feedback signal;

signal delay means, forming a portion of the resonance means, for delaying a signal inputted thereto, by a time corresponding to a tone pitch of the musical sound; and

filter means, forming a portion of the resonance means, for variably changing a frequency characteristic of the resonance signal without changing a delay time encountered in the filter means, so that the tone pitch of the musical sound does not change when the frequency characteristic is changed by the filter means so as to change a tone color of the musical sound.

5,308,919

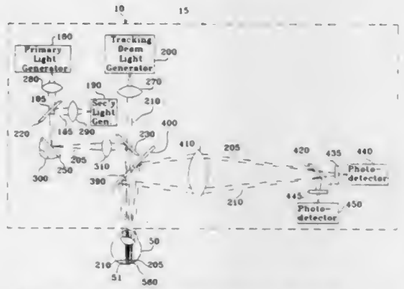
METHOD AND APPARATUS FOR MONITORING THE ARTERIOVENOUS OXYGEN DIFFERENCE FROM THE OCULAR FUNDUS

Thomas E. Minnich, 828 Summerhill Dr., Friendsville, Blount County, Tenn. 37737

Filed Apr. 27, 1992, Ser. No. 874,022

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **16 Claims**



1. An ocular fundus scanning system comprising:

targeting light beam generator means for emitting a targeting light beam having light of at least a first wavelength, said emitted light beam illuminating a portion of a fundus region of an eye including an optic disc, wherein said first wavelength reflects from said optic disc with greater intensity than from fundus tissue surrounding said optic disc;

targeting light beam focusing means for focusing said targeting light beam as a spot of illumination on said fundus region, said targeting light beam, reflecting from said fundus region thereby forming a reflected targeting beam, and for focusing said reflected targeting light beam;

targeting light beam detector means for detecting said reflected targeting light beam, said targeting light beam being associated with said targeting light beam focusing means;

eye scanner means for illuminating a plurality of points within said spot of illumination and for producing a signal proportional to the value of oxygen saturation of oxyhemoglobin in arterioles and venules of said optic disc;

signal processing means for detecting increased intensity of said reflected targeting light beam as said targeting light beam reflects from said optic disc, said signal processing means activating said eye scanner means when said increased intensity of said reflected targeting beam is detected, analyzing said signals proportional to oxygen saturation of oxyhemoglobin and determining a value of arteriovenous oxygen difference; and

display means for displaying information concerning said arteriovenous oxygen difference.

5,308,920

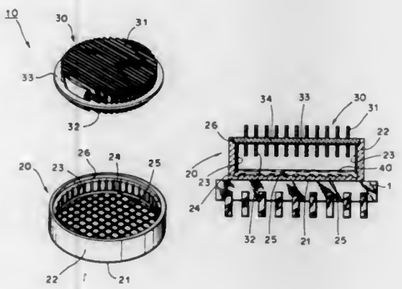
HEAT RADIATING DEVICE

Satomi Itoh, Hyogo, Japan, assignor to Itoh Research & Development Laboratory Co., Ltd., Osaka, Japan

Filed Jul. 31, 1992, Ser. No. 923,344

Int. Cl.[5] H05K *7/20*

U.S. Cl. 174—15.2 **12 Claims**



1. A heat radiating device, comprising: a container body having a flat bottom wall with a circular peripheral edge serving as a heat receiving portion and a cylindrical side wall extending upwardly from said circular peripheral edge of said bottom wall; a cap arranged at an upper end portion of said cylindrical side wall for tight-sealing an inner space in said container body; and a working fluid as a heat carrier kept in said inner space of said container body wherein evaporation and condensation are repeated; and wherein said container body comprises a capillary loop groove formed in and along a corner portion where an inner surface of said bottom wall and an inner surface of said cylindrical side wall meet, a plurality of first capillary grooves formed on said inner surface of said bottom wall, said first capillary grooves intersecting said capillary loop groove, a plurality of second capillary grooves formed on said inner surface of said cylindrical side wall to also intersect said capillary loop groove, and wherein said capillary loop groove, said first capillary grooves and said second capillary grooves form fluid paths for said working fluid by capillary action.

5,308,921

Patent Not Issued For This Number

5,308,922

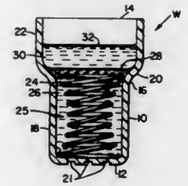
WIRE CONNECTOR AND METHOD OF MANUFACTURE

John S. Wallace, Birmingham, and Mark C. Thurber, Rochester Hills, both of Mich., assignors to Reactive Industries, Inc., Troy, Mich.

Filed Jun. 8, 1992, Ser. No. 894,909

Int. Cl.[5] H01R *4/22*

U.S. Cl. 174—87 **24 Claims**



1. A wire connector, comprising:

(a) a basket having a chamber with an open end and an opposite closed end and an inner surface extending between said ends;

(b) a coil disposed within said chamber and extending from said closed end to a point intermediate said open end, said coil having first and second ends and an area between said first and second ends, said area being spaced a distance from said inner surface at least at several points;

(c) a mixable fastener composition filled within a portion of said chamber and encapsulating said coil, said composition being substantially devoid of air and substantially free of air pockets and having an overlying rupturable skin for maintaining said composition within said chamber; and

(d) said portion of said chamber filled with said composition having substantially all of the atmosphere evacuated therefrom, prior to deposition of said composition.

10. The method of manufacturing a fastener assembly, comprising the steps of:

(a) providing a fastener housing having a chamber with an open end and a closed end;

(b) evacuating substantially all of the atmosphere from the chamber;

(c) filling at least a portion of the chamber with an adhesive system while the atmosphere is evacuated from the chamber; and

(d) securing the system within the chamber.

5,308,923

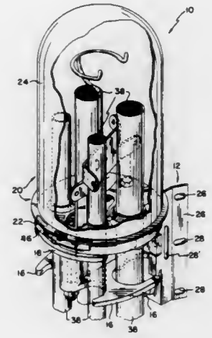
ENCLOSURE ASSEMBLY FOR TELECOMMUNICATION CABLES

Luis O. Puigcerver, Fuquay-Varina; Mark A. Harvell, Lillington; Barry W. Allen, Siler City, and William J. Rathbun, Raleigh, all of N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 16, 1992, Ser. No. 899,667

Int. Cl.[5] H02G *7/20*

U.S. Cl. 174—87 **21 Claims**



1. A reenterable enclosure assembly for telecommunication cable, comprising:

a base member having at least one cable passageway through which a cable extends;

a removable cover member overlying said base member;

a pair of cable strain-relieving members underlying said cable passageway of said base, said cable strain-relieving members being spaced vertically from each other, each of said strain-relieving members being of generally u-shaped configuration and having an open end through which said cable passes during lateral movement thereof into said strain-relieving member.

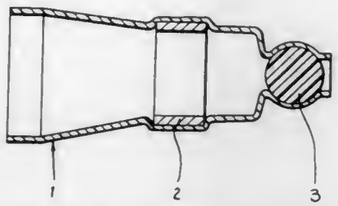
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5,308,924

DEVICE FOR FORMING SOLDER CONNECTIONS

Alain Lamome, Pierrelaye, France, assignor to Raychem SA, France

PCT No. PCT/GB91/00130, § 371 Date Sep. 18, 1992, § 102(e) Date Sep. 18, 1992, PCT Pub. No. WO91/11831, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 30, 1991, Ser. No. 917,035
Claims priority, application United Kingdom, Jan. 30, 1990, 9002093
Int. Cl.[5] H01R *4/22*
U.S. Cl. 174—87 **9 Claims**



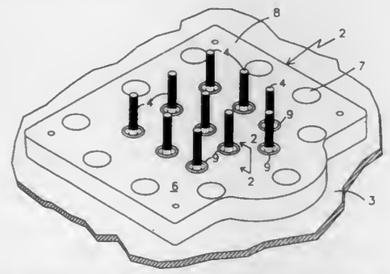
1. A device for forming a solder connection between a plurality of electrical conductors, which comprises a hollow, dimensionally heat-recoverable sleeve that contains a quantity of solder, the sleeve having a first end portion that is open to allow insertion of one or more electrical conductors and a second end portion that contains, and is closed by, a substantially spherical sealing insert.

5,308,925

CONDUCTIVE PIN ASSEMBLY FOR A MACHINE HOUSING

F. Dieter Paterek, Hamilton, and Martin S. Russell, Butler County, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 26, 1992, Ser. No. 904,946
Int. Cl.[5] H01B *17/30*
U.S. Cl. 174—152 GM **10 Claims**



1. A conductive pin assembly arrangement for a wall opening of a machine housing comprising: a sheet having at least one pin opening extending therethrough; said sheet being sized, shaped and configured for engaging in removably sealing relation along the peripheral edges of said wall opening in said housing to conform with and form a part of a machine housing wall defining said wall opening;

a preformed unitary sleeve member including inner and outer peripheral surfaces, said outer peripheral sleeve surface being sized to conform with and engage along the peripheral surface of said pin opening extending through said sheet;

a current conductive pin extending longitudinally through said sleeve in spaced relation to the inner peripheral surface thereof;

a first sealing means of preselected glass material cooperatively disposed between said current conducting pin and said inner peripheral surface of said sleeve to seal said pin in said sleeve; and,

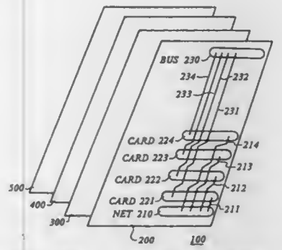
a second sealing means including a preselected insulated moldable material cooperatively disposed between said outer peripheral sleeve surface and the inner peripheral surface of said pin opening to mold and seal said engaging unitary sleeve thereto.

5,308,926

COMPACT ISOLATING BACKPLANE FOR ROUTING ELECTRONIC SIGNALS

Marcus J. Auerbuch, San Carlos, and Boris J. Auerbuch, Belmont, both of Calif., assignors to Premisys Communications, Inc., Pal Alto, Calif.

Filed Dec. 8, 1992, Ser. No. 988,410
Int. Cl.[5] H05K *1/11, 7/02*
U.S. Cl. 174—250 **18 Claims**



1. A backplane board for electronic apparatus, the backplane board providing a first set of connections between a first set of signal lines and a plurality of circuit cards, the backplane board also providing a second set of connections between a second set of signal lines and the plurality of circuit cards, the backplane board comprising:

a first connector for said first set of signal lines;

a second connector for said second set of signal lines;

a plurality of linearly-disposed circuit card connectors corresponding to said plurality of circuit cards;

a first set of traces leading from said first connector to said circuit card connectors; and

a second set of traces leading from said second connector to said circuit card connectors; said first and second sets of traces being disposed so that said first set of traces and said second set of traces are separated by a substantially uniform distance over a span defined by said plurality of linearly-disposed circuit card connectors.

5,308,927

WIRING BOARD AND A METHOD OF MANUFACTURING

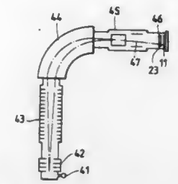
Norihiro Hosoi, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 800,066, Nov. 29, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 77,959
Int. Cl.[5] H05K *1/09*
U.S. Cl. 174—256 **12 Claims**

1. A wiring board, comprising:

an insulating substrate; and

a circuit pattern layered on a surface of said insulating substrate, said circuit pattern including a conductive layer and a mixed layer, said mixed layer being disposed on said conductive layer, a conductivity of said conductive layer being higher than that of said insulating substrate, and said mixed layer including a mixture of metal atoms and insulating substrate atoms and having a conductivity higher than that of said conductive layer.

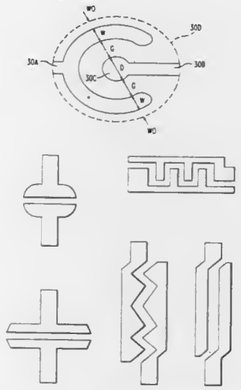


5,308,928

SOLDERING INTERCONNECTS FOR SELECTIVE LINE COUPLING

Anthony J. Parla, Charlotte, and Howard F. Tepper, Essex Junction, both of Vt., assignors to International Business Machines Corporatioo, Armonk, N.Y.

Division of Ser. No. 437,156, Nov. 8, 1989. This application Oct. 24, 1990, Ser. No. 602,844
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—261 **10 Claims**



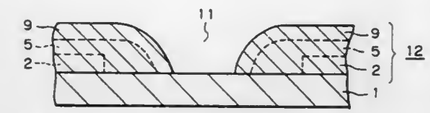
1. A structure for electrically coupling two interconnect lines formed on an insulative substrate to one another, comprising a first conductive pad member connected to one of the two interconnect lines, a second conductive pad member coupled to the other of the two interconnect lines, said first and second conductive pad members being comprised of copper and spaced from one another by a portion of the insulative substrate having a width of approximately 0.25 mm to both prevent spiking and promote solder bridging between said first and second conductive pad members, said first and second conductive pad members defining a total solder wetting space of a given area, and a solder fillet formed on said total solder wetting space, said solder fillet having sidewalls that form a dihedral angle of greater than 75° with respect to upper surfaces of said first and second conductive pad members, said solder fillet bridging said portion of said insulative material between said first and second conductive pad members.

5,308,929

VIA HOLE STRUCTURE AND PROCESS FOR FORMATION THEREOF

Motoaki Tani; Shoichi Miyahara; Makoto Sasaki; Eiji Horikoshi, and Isao Kawamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1992, Ser. No. 919,909
Claims priority, application Japan, Aug. 1, 1991, 3-192414
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—262 **18 Claims**



1. A multilayer structure having an improved via hole therethrough, comprising:

a support structure having a main surface;

a first resin film insulating layer formed on the main surface and having upper and lower surfaces and a first aperture extending therethrough of a first dimension and through which first aperture a corresponding first portion of the main surface of the support structure is exposed; and

a second resin film insulating layer formed on the upper surface of the first resin film insulating layer and having upper and lower surfaces, a portion of the second resin film insulating layer which corresponds to the first aperture extending into the first aperture and the corresponding lower surface portion thereof being formed on the exposed, first portion of the main surface of the support structure and the corresponding upper surface portion thereof defining a depression relative to the remaining, upper surface of the second insulating layer, the second resin film insulating layer further having a second aperture therein, aligned with the first aperture and being of a second dimension smaller than the first dimension of the first aperture, the second aperture being disposed within the depression in the upper surface of the second insulating layer and extending through the second insulating layer to the main surface of the support structure and through which second aperture a corresponding second portion, smaller than the first portion, of the main surface of the support structure is exposed, the depression in the second insulating layer and the second aperture thereby defining a smoothly tapered via hole extending through the multilayer structure of the first and second insulating layers and having a larger dimension at the upper surface of the second insulating layer than at the main surface of the support structure.

5,308,930

WEIGHING MACHINE WITH WEIGHT DETECTING CONVEYOR

Harunori Tokutu; Shoko Tajiiri, and Yukio Wakasa, Shiga, all of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 862,742, Jun. 26, 1992. This application Oct. 28, 1992, Ser. No. 967,824
Int. Cl.[5] G01G *19/22*
U.S. Cl. 177—25.13 **18 Claims**

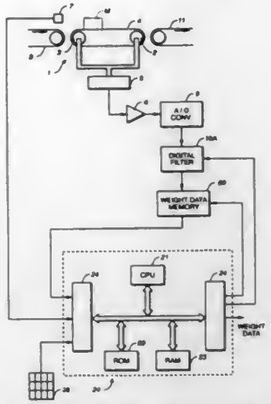
15. A weighing machine comprising:

a weighing conveyor having weight detecting means for detecting weight and a belt for transporting an object to be weighed, said belt being supported by said weight detecting means;

condition setting means for setting filtering conditions for

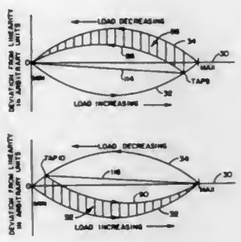
VOL 1162 ISS 1 MAY 3 1994 UMI

said object on a basis of a time length during which said object to be weighed is on said belt; and



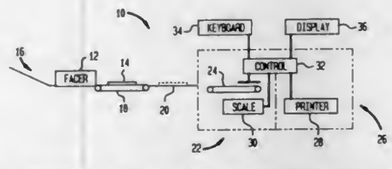
digital filter means for digitally filtering weight signals from said weight detecting means under said filtering conditions set by said condition setting means.

5,308,931
HYSTERESIS-COMPENSATED WEIGHING APPARATUS AND METHOD
Neil C. Griffen, Westerville, Ohio, assignor to Mettler-Toledo, Inc., Worthington, Ohio
Continuation of Ser. No. 523,908, May 16, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,350
Int. Cl.[5] G01G *19/40, 19/52*
U.S. Cl. 177—25.14 **19 Claims**



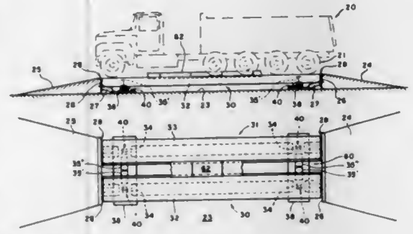
1. The method for correcting the output of an electronic weighing scale for hysteresis effects occurring between minimum and maximum loads applied thereto with a given load progression history comprising the steps of:
storing a derived polynomial expression representing the increasing linearity characteristic values of said scale extending from said minimum to said maximum loads;
storing a derived polynomial expression representing the decreasing linearity characteristic values of said scale extending from said maximum to said minimum loads;
storing an increasing weight correction expression incorporating said increasing linearity polynomial expression and representing an offset therefrom;
storing a decreasing weight correction expression incorporating said decreasing linearity polynomial expression and representing an offset therefrom;
obtaining a representation of value, R, of a load applied to said scale;
comparing said representation of value, R, with the previous such representation, PR;
determining said offset for said previous representation, PR, as a value WO, when said value, R, represents a reversal of said load progression;
deriving a correction value as an application of said values, R and WO, to one of said correction expressions;
adjusting said value, R, by the amount of said correction value; and
outputting said adjusted value.

5,308,932
MAIL PROCESSING SYSTEM FOR VERIFYING POSTAGE AMOUNT
Flavio M. Manduley, Woodbury, and Leon A. Pintsov, West Hartford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Sep. 25, 1992, Ser. No. 952,071
Int. Cl.[5] G01G *19/40, 19/52;* **G07B** *17/00*
U.S. Cl. 177—25.15 **26 Claims**



1. Apparatus for verifying postage paid comprising a facer means operative for orienting and presenting mailpieces for cancelling of postage affixed thereto; a weighing module for receiving a mailpiece having postage affixed thereon from the facer means and weighing said mailpiece; printing means; a transport means for transporting the mailpiece from the weighing module to the printing means; said printing means being operative for marking on said mailpiece a cancelling marking corresponding to correct postage for the mailpiece in correspondence with a determined rating and a weight as determined by the weighing means, whereby the marking enables comparison between postage affixed to the mailpiece and the actual value of required postage for delivery of the mailpiece.

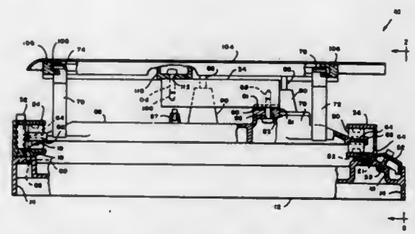
5,308,933
TRUCK SCALE
Nils G. Ahl, Vasteras, Sweden, assignor to Flintab AB, Vasteras, Sweden
Filed Feb. 7, 1992, Ser. No. 832,368
Int. Cl.[5] G01G *19/02*
U.S. Cl. 177—135 **15 Claims**



14. Truck scale, comprising:

(a) a pair of narrow beams;
(b) interconnecting means for rigidly spacing said narrow beams apart to form a weighbridge with a gap in the middle;
(c) a plurality of load cell devices arranged to directly support each narrow beam;
(d) foundation means for supporting said load cell devices; and
(e) cover means for removably closing said gap between the narrow beams.

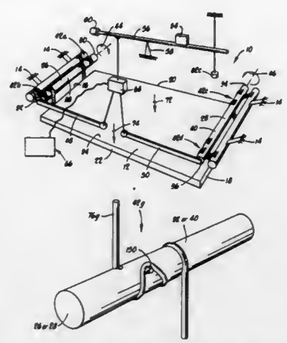
5,308,934
LOAD CELL SCALE MOUNTING DEVICE
Carl A. Miller, Fairfield, and Adonis A. Halaby, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 24, 1992, Ser. No. 996,274
Int. Cl.[5] G01G *21/28, 21/10*
U.S. Cl. 177—244 **4 Claims**



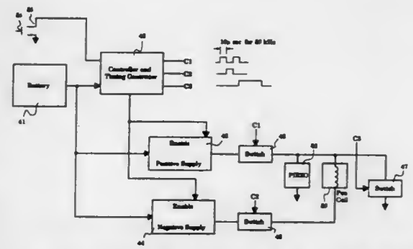
1. A load cell mounting device comprising:
a base,
a longitudinally extending bridge,
a longitudinally extending pair of arms extending from each end of said bridge, each of said pair of arms having outwardly extending edges,
a seat secured to said bridge for receiving a load cell,
a pair of generally U-shaped clamps, each having a pair of longitudinally extending arms, said edges being receivable by said pair of clamp arms,
a pair of bushings received at each location between an edge and a pair of arms of the U-shaped clamp, and
means for connecting said U-shaped clamps on opposite longitudinal ends of said base.

5,308,935
TORQUE BAR SUSPENSION SCALE WITH STRAP ASSEMBLIES
John Paul, and Adrian J. Paul, both of Duncan, Okla., assignors to Adrian J. Paul Company, Duncan, Okla.
Continuation of Ser. No. 975,030, Nov. 12, 1992, Pat. No. 5,230,395, which is a continuation of Ser. No. 731,558, Jul. 17, 1991, Pat. No. 5,205,370. This application Mar. 17, 1993, Ser. No. 32,088
Int. Cl.[5] G01G *21/24, 21/08, 21/07*
U.S. Cl. 177—256 **4 Claims**

1. A torque bar suspension scale for weighing an object comprising:
a frame;
a platform having a first end and a second end and an upper surface for supporting the objects to be weighed;
a torque bar having a first end and a second end, the torque bar being disposed near the platform;
a strap assembly connected to the platform and the torque bar and the frame for rotatingly supporting the torque bar whereby the torque bar is rotated in a direction in response to an object being disposed on the platform for weighing, the strap assembly comprising;
a strap having a rectangularly shaped cross section with a width and a thickness, the width of th strap being at least about two times the thickness of the strap, the strap having a substantially flat upper surface and a substantially flat lower surface, and the strap comprising a plurality of individual strands woven and interconnected to form the strap wherein the strands are constructed of a metal or plastic; and
a clamp assembly connecting the strap to one of the torque bar, the frame and the platform.



5,308,936
ULTRASONIC PEN-TYPE DATA INPUT DEVICE
Michael P. Biggs, Westlake Village; Takeo Z. O'Ishi, Los Angeles, both of Calif., and Mark S. Knighton, 1920 La Mesa Dr., Santa Monica, Calif. 90402, assignors to Mark S. Knighton, Santa Monica, Calif.
Filed Aug. 26, 1992, Ser. No. 935,838
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 **51 Claims**



1. A position indicating apparatus for use in an acoustic digitizer system for indicating a location of said position indicating apparatus comprising:
magnetic pulse generating means for emitting magnetic synchronization pulses at predetermined time intervals; and
sonic pulse generating means for emitting sonic pulses at said predetermined time intervals,
whereby said magnetic synchronization pulses and said sonic pulses are simultaneously emitted at said predetermined time intervals from the location of said position indicating apparatus at said predetermined time intervals.

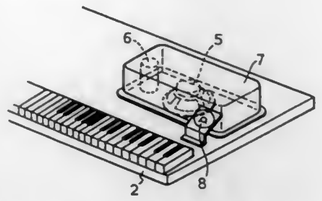
VOL 1162 ISS 1 MY 3 1994 UMI

5,308,937

LOUDSPEAKER APPARATUS FOR ELECTRONIC KEYBOARD MUSICAL INSTRUMENT

Katsuhiko Torii, Hamamatsu, Japan, assignor to Kabushiki Kashia Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Nov. 12, 1992, Ser. No. 974,433
Claims priority, application Japan, Mar. 24, 1992, 4-15308[U]
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—141 7 Claims



1. A loudspeaker apparatus for an electronic keyboard musical instrument, said apparatus comprising:

a shelf board constituting a casing of said musical instrument, said shelf board having a sound emission opening;

a first loudspeaker mounted on said shelf board in alignment with said sound emission opening; and

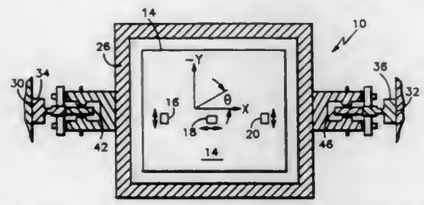
a speaker box mounted on said shelf board so as to fully enclose said first loudspeaker, wherein said loudspeaker apparatus includes said first loudspeaker responsive to lower acoustic frequencies and a second loudspeaker responsive to higher acoustic frequencies mounted on said shelf board outside and in close proximity to said speaker box.

5,308,938

ELEVATOR ACTIVE SUSPENSION SYSTEM

Randall K. Roberts; Richard L. Hollowell, both of Amston; Clement A. Skalski, Avon, and John K. Salmon, South Windsor, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 18, 1990, Ser. No. 555,132
Int. Cl.[5] B66B *1/44*
U.S. Cl. 187—115 37 Claims



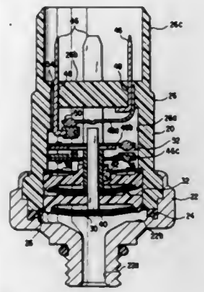
11. A method for reducing horizontal acceleration of an elevator cab, comprising the steps of sensing said acceleration, providing a sensed acceleration signal having a magnitude indicative thereof, providing a counteraction signal having a magnitude and phase selected according to said magnitude of said sensed acceleration signal and counteracting said sensed acceleration in response to said counteraction signal, wherein said magnitude of said counteraction signal is selected according to a compensation function having negative gain (dB) or less than unity gain below a first selected frequency ω_1 and also above a second selected frequency ω_2 and positive gain (dB) or gain greater than unity in between.

5,308,939

PRESSURE EQUALIZING MECHANISM FOR A PRESSURE SWITCH

Keiji Sasaki, Zama, Japan, assignor to Fuji Koki Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 973,879
Claims priority, application Japan, Jul. 21, 1992, 4-051157; Jul. 21, 1992, 4-051158
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 R 1 Claim



1. A pressure switch comprising:

an outer case which has a fluid inlet hole and a pressure equalizing hole being independent of the fluid inlet hole and being adapted to communicate with an outer space;

a diaphragm which partitions an inner space of the outer case into a fluid pressure operating chamber communicating with the fluid inlet hole and a reference pressure operating chamber communicating with the pressure equalizing hole;

electrical contact means, stored in the reference pressure operating chamber, for performing on/off-operation in accordance with deflection of the diaphragm caused by the pressure change of fluid flowed into the fluid pressure operating chamber through the fluid inlet hole; and

an outer connection electrical terminal which is supported by the outer case for the electrical contact means,

wherein the outer connection electrical terminal is supported by the outer case by being inserted into an outer connection electrical terminal insertion hole formed in the outer case, and the pressure equalizing hole is formed in the inner surface of the outer connection electrical terminal insertion hole of the outer case as a groove having a cross section with a smaller size than the minimum size of the cross section of the outer connection electrical terminal.

5,308,940

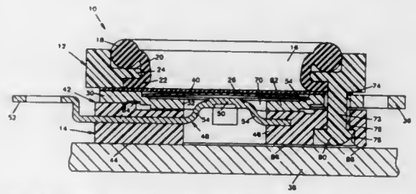
VENTED PRESSURE SWITCH APPARATUS

Edward F. O'Brien, West Warwick, and Gary A. Baker, North Scituate, both of R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 8, 1993, Ser. No. 73,924
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 P 9 Claims

1. A pressure responsive switch for use with hydraulic fluid of automotive transmission systems comprising first and second housing members connected to one another and being formed of electrically insulative material and an electrically conductive terminal member disposed between the first and second housing members, the terminal member formed with an opening therethrough and having a disc seat, an electrically conductive disc movable between concave and convex shaped configurations disposed on the disc seat, the first housing member having an hydraulic fluid receiving opening, the opening being in pressure communication with the disc, the second

housing member being generally circular in a top plan view and having an upper and lower surface, a first, generally annular bearing surface formed on the top surface adjacent the outer periphery thereof and lying in a first plane, a cavity formed in the upper surface centrally located therein, a second, generally annular bearing surface formed on the top surface adjacent the cavity, the second, annular bearing surface lying in a second plane parallel to the first plane and spaced a selected distance below the first plane, an electrically conductive stationary contact member mounted in the second housing and extending into the cavity, the disc adapted to move into and out of engagement with the stationary contact member, the cavity, the opening in the terminal member and the disc forming a switching chamber, a vent path to permit controlled flow of hydraulic fluid into the switching chamber comprising a first channel means formed in the first, annular bearing surface



from the outer periphery to the inner periphery thereof, a circular groove having a bottom surface disposed below the second plane and being in communication with the first channel means, and a second channel means in communication with the circular groove formed in the second, annular bearing surface from the outer periphery to the inner periphery thereof and being in communication with the switching chamber, the second channel means being angularly offset from the first channel means whereby any particles contained in the hydraulic fluid flowing into the switching chamber are restricted to a tortuous path comprising lateral movement in the first channel means, downward movement into the groove, circular movement in the groove and then lateral movement in the second channel means before arriving at the switching chamber, the tortuous path serving to reduce the size and quantity of particles reaching the switching chamber.

5,308,941

ROLLER CONTACT ASSEMBLY

Quah T. Hoh, Bayan Lepas, and Tan S. Hai, Taman Sri Nibong, both of Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.

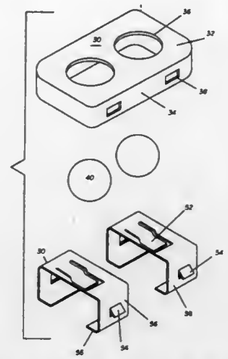
Filed Apr. 12, 1993, Ser. No. 45,348
Int. Cl.[5] H01H *1/16*
U.S. Cl. 200—277 7 Claims

1. An electrical contact assembly comprising:

a nonconductive housing having a top portion with at least one aperture;

at least one rotatable spherically shaped contact within said housing extending partially through said aperture in said housing;

at least one conductive retainer attachable to said housing supporting said contact within said housing; and



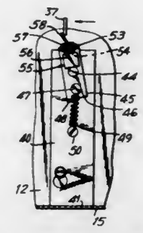
said housing having at least one depending sidewall with a notch and said retainer having an extension finger that snap fits into said notch.

5,308,942

SWITCH CONSTRUCTION FOR COIN OPERATED MACHINES

Leonard Mercurio, Dix Hills, N.Y., assignor to Set-O-Matic, Inc., Farmingdale, N.Y.

Filed Jul. 2, 1992, Ser. No. 909,073
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—332.1 2 Claims



1. In a coin operated vending device including a coin collection means having a manually operated coin slot element for initiation of a cycle of operation, said initiation including a closing of an electrical circuit by means of a switch activated by movement of said coin slide, the improvement comprising: a pivotally mounted link fixed for movement about an axis perpendicular to a path of movement of said coin slide, said switch including an exposed toggle member, said coin slide having a toggle engaging member thereon positioned to contact and displace said toggle member during movement in first and second opposite directions; said pivotally mounted link having a free end thereon, a resilient member, said resilient member engaging said free end of said link in such manner as to urge said link to an initial rotational position while permitting rotation in either rotational direction from said initial position; whereby, upon initial contact of said toggle engaging member with said toggle member of said switch, said link is pivoted in a first direction to result in displacing said toggle member out of the path of movement of said toggle engaging member as said toggle member is moved to actuate said switch; said link member being mounted upon said coin slide element.

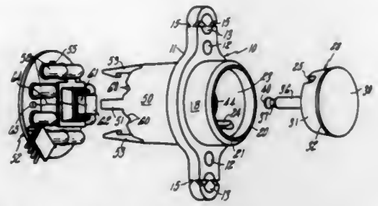
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5,308,943

CONVERTIBLE HYBRID TOUCH BUTTON SWITCH

Christopher P. Screven, Torrington, and Bruce P. Swaybill, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 28, 1992, Ser. No. 997,052
Int. Cl.[5] H01H *13/14*
U.S. Cl. 200—521 **4 Claims**



1. A hybrid touch button, comprising:

a generally cylindrical body having proximal and distal ends, and having a bore axially disposed between said ends;

an electrically conductive actuator having a touch pad at a proximal end and a stem at a distal end, said actuator disposed to slide within said body with said stem being located within said bore between a proximal position with said touch pad near said proximal end of said body and a distal position with said touch pad located inward of said proximal end of said body; and

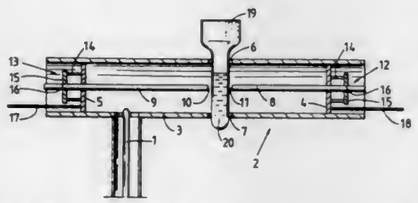
a circuit board having an electronic motionless switch circuit disposed thereon, and having a switch assembly disposed thereon, said switch assembly including a tactile switch with an electrically conductive switch actuating surface in contact with said actuator when said actuator is in any position to which it can slide, said tactile switch being operable by sliding said actuator to said distal position, said surface electrically connected with said circuit, whereby switching action is achieved by touching said touch pad or by sliding said actuator, or both.

5,308,944

APPARATUS AND METHOD FOR MICROWAVE TREATMENT OF PROCESS LIQUIDS

Sharon A. Stone-Elander, and Nils Elander, both of Västra Banvägen 23, S-182 46 Enebyberg, Sweden

PCT No. PCT/SE91/00426, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO91/20169, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 12, 1991, Ser. No. 952,542
Claims priority, application Sweden, Jun. 14, 1990, 9002117
Int. Cl.[5] H05B *6/70*
U.S. Cl. 219—687 **12 Claims**



1. A microwave device for treating process liquids, comprising

an elongated microwave cavity which is formed by a tube having a tubular wall and two opposing end-walls;

means coupled to said two opposing end walls for moving said two opposing end walls along a longitudinal axis of said tube;

an antenna for radiating a microwave field, said antenna extending into said elongated microwave cavity between said two opposing end walls;

a first opening and an opposite second opening each of which perforate the tubular wall and each of which is located above midway between one end of said tubular wall and an opposite end of said tubular wall;

two coaxial bars, each coaxial bar extending through a respective end-wall towards the center of the tube, said two coaxial bars being disposed centrally in the tube and having two mutually facing end surfaces,

a sample container which is intended to be filled with process liquid and to be inserted in said first opening and said opposite second opening to subject said process liquid to the influence of the microwave field in said elongated microwave cavity; and

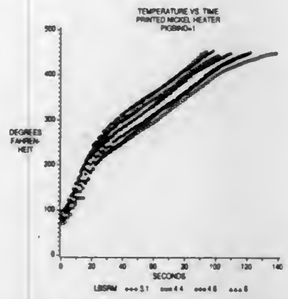
means for adjusting the distance between said mutually facing end surfaces of said two coaxial bars to concentrate said microwave field within said sample container.

5,308,945

MICROWAVE INTERACTIVE PRINTABLE COATINGS

Gerald J. VanHandel; Paul J. Ruthven, both of Neenah, and Scott W. Middleton, Appleton, all of Wis., assignors to James River Corporation, Richmond, Va.

Continuation of Ser. No. 196,797, May 17, 1988, abandoned, which is a division of Ser. No. 839,949, Mar. 17, 1986, abandoned. This application Sep. 11, 1990, Ser. No. 580,577
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—730 **5 Claims**



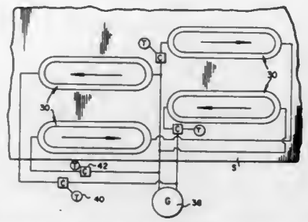
1. A food package for heating or cooking a food product accommodated therein in a microwave oven, the accommodated food product having at least one predetermined portion thereof requiring enhanced heat during the heating or cooking of the product, said package comprising a container for the food product formed of a heat resistant material pervious to the microwaves generated within the oven, said container having a surface area of the material in proximity to the predetermined portion of the accommodated food product, said area having printed directly on the material surface a metallized ink, the latter having a predetermined amount of metal particles suspended in an ink-like substance, whereby when said metallized ink is exposed to generated microwaves, the printed surface area produces the requirement enhanced heat for the one predetermined portion of the accommodated food product.

5,308,946

INDUCTION HEATING APPARATUS AND METHOD FOR HEATING METAL STRIPS AND SLABS

Glenn R. Mohr, P.O. Box 52, 710 Andover Rd., Linthicum, Md. 21090-0052

Filed Feb. 6, 1992, Ser. No. 831,820
Int. Cl.[5] H05B *5/06*
U.S. Cl. 219—645 **14 Claims**



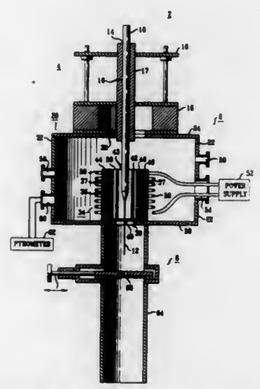
1. An apparatus for heating moving elongated metal members selectively in the form of a metal strip and slab, said apparatus comprising pairs of cooperating elongated electrical coils, said coil pairs being in spaced parallel relation to define a coil elongation, coils of each of said pairs being in spaced parallels relation to form a space therebetween, the space between soils of said pairs of coils defining a path for moving members between said coils extending longitudinally of the coil elongation, and said pairs of coils including a plurality of coil sets spaced longitudinally of one another, said coil sets including first and second coil sets with pairs of coils in each of said coil sets being spaced transversely of said path and pairs of coils in one of two longitudinally adjacent coil sets being transversely offset from pairs of coils in the other of said longitudinally adjacent coil sets, wherein said coils provide means for forming in a member moving longitudinally of said coils first transversely alternating heated and non-heated strip-like areas and then heating only said non-heated strip-like areas.

5,308,947

IRIDIUM FIBER DRAW INDUCTION FURNACE

James W. Fleming, Jr., Westfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 828,256, Jan. 30, 1992, abandoned. This application Feb. 25, 1993, Ser. No. 23,178
Int. Cl.[5] H05B *6/22*
U.S. Cl. 219—634 **6 Claims**



1. An induction furnace for heating a silica lightguide preform to a temperature in the range of approximately 1900° C. to 2200° C. in order to draw lightguide fiber therefrom, comprising:

a) a housing which includes a sidewall, a top and a base, each of said top and base having an aperture, said apertures being vertically aligned;

b) a tubular member having a top and bottom aperture in alignment with said housing apertures, said tubular member being supported on said housing base and enclosed by said housing sidewall, said tubular member comprises:

i) a beaker having a sidewall and a base, said base having an aperture which is in alignment with said housing apertures;

ii) a tubular susceptor having a circular bore of a diameter sufficient to receive therein a preform without said preform contacting said susceptor, said susceptor being supported and surrounded by said beaker;

iii) insulating solid material disposed between said susceptor and said beaker; and

c) an RF induction coil enclosed by said sidewall of said housing and surrounding said beaker; wherein

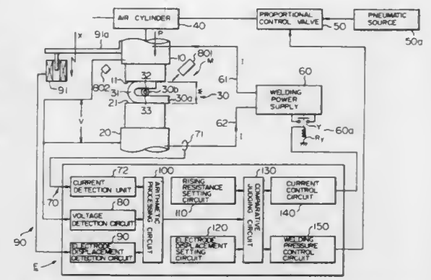
d) the tubular susceptor consists essentially of iridium.

5,308,948

METHOD FOR WELDING TOGETHER ELECTRICALLY CONDUCTIVE MEMBERS

Tadashi Kawagoe, Hekinan; Keizo Zyouko, Okazaki, and Shinzo Ito, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 27, 1993, Ser. No. 9,929
Claims priority, application Japan, Jan. 28, 1992, 4-012971; May 22, 1992, 4-130651
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—110 **44 Claims**



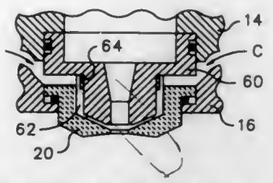
1. A method for welding together electrically conductive members, comprising the steps of:

a detecting step for detecting a removal of an electrically insulating member between a first electrically conductive member and a second electrically conductive member by detecting an increase in temperature of at least one of the first and second electrically conductive members, wherein the increase in temperature is measured from a temperature of a surface of the at least one of the first and second electrically conductive members, and

a welding step for welding together the first electrically conductive member and the second electrically conductive member by passing an electricity through them to fix said first and second conductive members to each other, after the removal of the electrically insulating member therebetween is detected.

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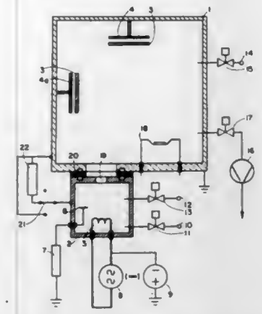
5,308,949
NOZZLE ASSEMBLY FOR PLASMA ARC CUTTING TORCH
E. Smith Reed, Jr., Hanover, and Richard G. Ellis, W. Lebanon, both of N.H., assignors to Centricut, Inc., West Labanon, N.H.
Filed Oct. 27, 1992, Ser. No. 966,973
Int. Cl.[5] B23K *9/00, 10/00*
U.S. Cl. 219—121.5 8 Claims



1. A plasma arc cutting torch comprising:
an electrically conductive nozzle base having a passage, extending along an axis, for the flow of plasma gas, said passage having an inlet end and an opposite outlet end, and the nozzle base having an end surface transverse to the axis of the passage and surrounding said outlet end;
an electrode located in proximity to the inlet end of the passage in the nozzle base; and
an electrical insulator having an interior space receiving a portion of said nozzle base, the interior space being defined by a substantially cylindrical interior wall of the insulator surrounding the nozzle base and coaxial with the axis of the passage of the nozzle base, and by an interior end wall extending transverse to said axis and facing said end surface of the nozzle base, the insulator having an orifice in said end wall for the flow of plasma gas, the orifice also being coaxial with said axis and aligned with the outlet end of the passage of the nozzle base; and
means, constituted by a first unitary part of said nozzle base, engaging said interior end wall of the insulator, and maintaining a narrow space between said interior end wall of the insulator and said transverse end surface of the nozzle base, for the flow of coolant through said narrow space toward said orifice.

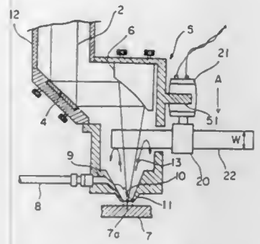
5,308,950
METHOD OF REMOVING MATERIAL FROM A SURFACE IN A VACUUM CHAMBER
Jürgen Ramm, Fläsch, Switzerland; Eugen Beck, Triesenberg, and Albert Zueger, Schaan, both of Liechtenstein, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein
Filed Apr. 20, 1992, Ser. No. 870,945
Claims priority, application Switzerland, Apr. 23, 1991, 01215/91
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.43 14 Claims

1. A method of removing material from a surface in a vacuum chamber, comprising:
admitting inert gas into a contaminant-free cathode chamber for use in striking a low-voltage arc;
striking a low-voltage arc for generating a plasma in the contaminant-free cathode chamber, using a hot emitting electrode in the cathode chamber, the cathode chamber communicating with the vacuum chamber and the plasma extending into the vacuum chamber;
supplying hydrogen gas into at least one of the vacuum chamber and the cathode chamber so that hydrogen is provided in the vacuum chamber; and
plasma-activating the hydrogen in the vacuum chamber using the low voltage arc and plasma from the cathode



chamber, to remove material from a surface in the vacuum chamber.

5,308,951
LASER BEAM MACHINE
Atsushi Mori, Minamitsuru, Japan, assignor to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP92/00499, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO92/18285, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 17, 1992, Ser. No. 952,907
Claims priority, application Japan, Apr. 23, 1991, 3-119506
Int. Cl.[5] B23K *26/16*
U.S. Cl. 219—121.84 6 Claims

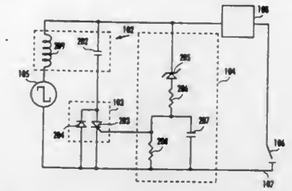


1. A laser beam machine for machining a workpiece with a laser beam irradiated thereto, comprising:
an optical part constituting a light guide passage for the laser beam; and
an impeller arranged between the optical part and the workpiece and rotated at a high speed.

5,308,952
WELDING ARC STABILIZER
Thomas A. Bunker, and Kenneth A. Stanzel, both of Appleton, Wis., assignors to Miller Electric Mfg. Co., Appleton, Wis.
Filed Feb. 25, 1993, Ser. No. 22,181
Int. Cl.[5] B23K *9/073*
U.S. Cl. 219—130.4 17 Claims

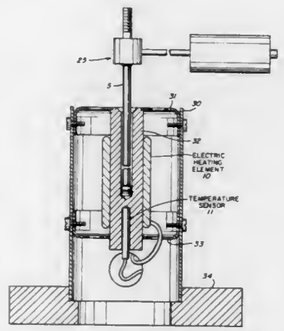
1. A welding arc stabilizer for an ac power supply capable of providing an arc drawn between an electrode and a workpiece, said arc having a plurality of positive and negative half cycles, comprising:
a source of high voltage disposed for application of high voltage to said arc in the event of its rectification, said high voltage derived from the ac power supply;

a switch in electrically operative association with said source of high voltage and at least one of said electrode and said workpiece, said switch including a control input; and
an arc sensing circuit in electrically operative association with the arc and the control input of the switch,



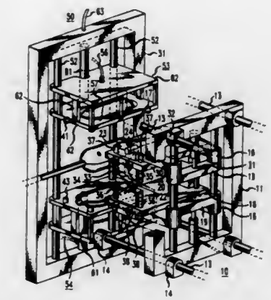
wherein, upon detection of arc rectification, said switch is closed within the completion of one-half cycle of the output and said high voltage is applied to said arc to stabilize it.

5,308,953
HEATER BLOCK HOLDER FOR A CAPILLARY RHEOMETER PLUNGER PRESSURE TRANSDUCER
Christopher P. Grudzien, Jr., Mansfield, Mass., and Robert Malloy, Londonderry, N.H., assignors to Dynisco, Inc., Sharon, Mass.
Division of Ser. No. 680,561, Apr. 4, 1991, Pat. No. 5,209,107. This application Nov. 2, 1992, Ser. No. 970,309
Int. Cl.[5] G01N *11/08;* H05B *1/00*
U.S. Cl. 219—242 3 Claims



1. In combination, a heater block holder and a capillary rheometer plunger, said heater block holder removably housing said capillary rheometer plunger, the holder comprising:
an outer shell having a first aperture defined therein;
a holder member disposed within said first aperture, said holder member having a second aperture defined therein removably housing said capillary rheometer plunger, the holder member including means for heating the plunger; and
a base for supporting said shell;
said capillary rheometer plunger including means defining a liquid-filled capillary passage extending within the plunger.

5,308,954
HEAT SEALING APPARATUS FOR SPLICE CASE HAVING TWO HALF SHELLS
John C. Manock, Budd Lake; Antoinette D. McBride, Milford; Boyd N. Park, Morristown, and Eric J. Schwab, Succasunna, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 769,653, Oct. 2, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,556
Int. Cl.[5] H05B *1/00, 3/02*
U.S. Cl. 219—243 6 Claims



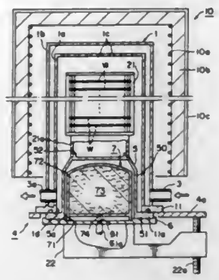
1. In a cable splice closure assembly including a plastic shell-pair closure adapted to surround a splice point on a plastic-jacketed underwater cable wherein said shells have peripheral flanges, the assembly comprising:
first means for mounting and positioning each of the two shells, comprising:
a cooperating pair of opposed gripping means for holding the respective said shells, with said flanges extending outside of said gripping means and facing each other; and
means for mounting said pair of gripping means for movement toward and away from each other;
second means for heating said flanges, comprising:
a cooperating pair of opposed two-sided heating units each comprising:
means on a first side of each unit for heating said flanges;
means for mounting said pair of heating units for movement toward and away from each other;
and means for selectively positioning said heating units into vertical alignment with said shell gripping means for heating said flanges, and thereafter out of the travel zone of said gripping means for joining said flanges;
whereby with said gripping means spaced way from each other, said heating units is inserted therebetween and clamped down onto said cable, and said gripping means are brought together to place said flanges into contact with said heating unit.

5,308,955
VERTICAL HEAT TREATMENT APPARATUS WITH VENTED HEAT INSULATION COVER MEANS
Shingo Watanabe, Kanagawa, Japan, assignor to Tokyo Electron Sagami Kabushiki Kaisha, Shiroyama, Japan
Filed Jul. 8, 1992, Ser. No. 910,579
Claims priority, application Japan, Jul. 11, 1991, 3-198433
Int. Cl.[5] H01L *21/00*
U.S. Cl. 219—390 10 Claims

1. A heat treatment apparatus, comprising:
a reaction chamber forming a heat treatment region, said reaction chamber having an opening at one end;
a heat retention portion formed of thermally insulating material;
a heat retention support plate, provided at said end of said reaction chamber for closing said opening and supporting

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said heat retention portion, said heat retention portion being in communication with an outside atmosphere; and



a heat retention cover provided around said heat retention portion so as to airtightly separate said heat retention portion from said heat treatment region.

5,308,956

APPLIANCE FOR THE PREPARATION OF MEAT OR SIMILAR PRODUCTS

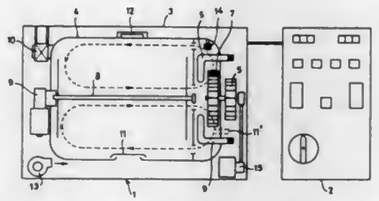
Marinus A. M. Halters, Bavel, and Adrianus S. Verwijmeren, Prinsenbeek, both of Netherlands, assignors to Fri-Jado B.V., Etten-Leur, Netherlands

Filed May 23, 1991, Ser. No. 704,447

Claims priority, application Netherlands, Jun. 27, 1990, 9001472

Int. Cl.[5] A21B *1/00*; F27D *7/04*

U.S. Cl. 219—400 **9 Claims**



1. An appliance for the preparation of meat or other food products, comprising

an outer casing,

an inner casing positioned within said outer casing so as to define a space therebetween,

air venting means which is movable between a closed position wherein said inner casing is substantially air tight and an open position wherein the interior of said inner casing is in communication with the environment outside of said outer casing,

means positioned in said inner casing for supporting a food product,

an air circulating fan rotatably mounted in said inner casing, and a drive motor for rotating said air circulating fan,

a heating element mounted in said inner casing, and

control mans for selectively

(1) moving said air venting means between said closed and open positions;

(2) controlling the operating speed of said drive motor between at least two predetermined operating speeds; and

(3) controlling the temperature of said heating means between at least two predetermined operating temperatures.

5,308,957

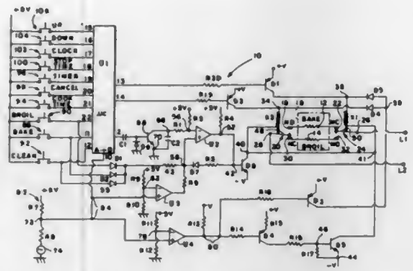
HEATER CONTROL SYSTEM

Jeff Huffington, Cary, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 27, 1992, Ser. No. 966,934

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—483 **4 Claims**



1. A control system for a first (bake) and a second (broil) heater, comprising:

(a) a first SPDT switch means having a first normally open (NO) and a first normally closed (NC) stationary contact and a transfer contact member movable between said NC and NO contacts, said transfer member connected to one side of a powerline;

(b) a second SPDT switch means having a second NO and second NC stationary contact and a transfer contact member movable between said NC and NO contacts, said transfer member connected to the opposite side of said powerline;

(c) a first (bake) heating element connected between the NO contact of said first switch means and the NC contact of said second switch means;

(d) a second (broil) heating element connected between said first NC contact of said first switch means and said second NO contact of said second switch means;

(e) a first circuit means including first relay means operable, upon energization and de-energization to move said transfer member between said first NC and said first NO contact of said first switch means;

(f) second circuit means including second relay means operable, upon energization and de-energization, to move said transfer member between said second NC and said second NO contact of said second switch means;

(g) means operable, when one of said relays is energized and current is flowing through one of said first and second elements, to sense an oven temperature condition and energize the other of said relays for switching the current off to said one element; and,

(h) user select circuit means including microcomputer means operable to energize said first and second relay means individually for normal operation of said heaters.

5,308,958

CIRCUIT FOR CONTROLLING ENERGIZING OF HEATING ELEMENTS

Kazuhito Gassho, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,398

Claims priority, application Japan, May 9, 1991, 3-104257; Feb. 24, 1992, 4-036612

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—486 **4 Claims**

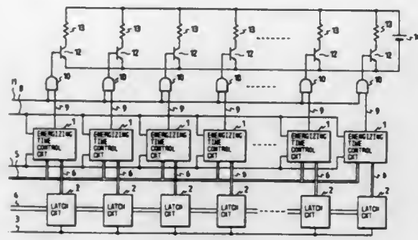
1. A circuit for controlling the energizing of heating elements, said circuit comprising:

a plurality of transistors for turning on or off respective ones

of a plurality of heating elements mounted in alignment on a thermal printing head,

a plurality of multi-bit latch circuits for storing energizing time values,

a plurality of energizing time counter circuits for effecting counting operations in accordance with the energizing time values stored in respective ones of said latch circuits, and



a plurality of energizing start time counter circuits for controlling a time until respective ones of said energizing time counter circuits start a timing operation, and

a plurality of subtraction circuits for subtracting $\frac{1}{2}$ of an energizing time value of a dot to be printed from $\frac{1}{2}$ of the maximum printable energizing time, an output of said subtraction circuits being applied as an input to said energizing start time counter circuits.

5,308,959

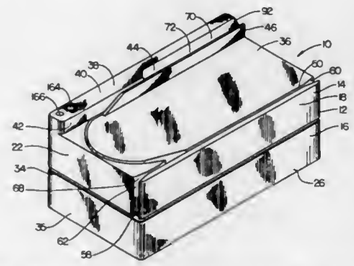
MAGNETIC STRIPE AND MAGNETIC INK CHARACTER RECOGNITION READER

John H. Cherry, Southlake, Tex., assignor to Optowand, Inc., Irving, Tex.

Filed Jan. 12, 1993, Ser. No. 3,489

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **17 Claims**



1. An apparatus for reading data embodied in magnetic ink characters and a magnetic stripe, comprising:

a housing having a generally rectangular configuration;

a first channel in a top surface of said housing sized to permit a medium bearing a magnetic stripe thereon to be manually swiped through said first channel, said first channel disposed to extend longitudinally from opposed, longitudinally spaced end faces of said housing;

a magnetic stripe read head disposed adjacent said first channel within said housing;

a second channel in said top surface of said housing sized to slidingly receive a medium bearing magnetic ink characters thereon, said second channel comprising:

a straight path portion disposed generally parallel to and spaced from said first channel and extending from one of said opposed end faces of said housing, and

a curved path portion disposed to interconnect said straight portion and said first channel at a location of said first channel intermediate ends of said first channel;

a magnetizing head and a magnetic ink character recognition read head disposed adjacent said second channel within said housing; and

a processor in communication with said magnetic stripe read head and said magnetic ink character recognition read head to process data read by said magnetic stripe read head and said magnetic ink character recognition read head.

5,308,960

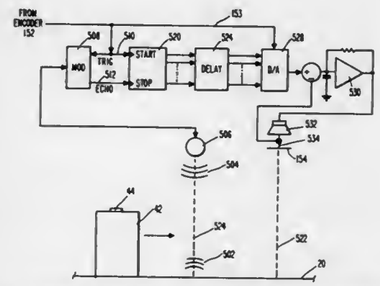
COMBINED CAMERA SYSTEM

Steven L. Smith, Oxford, and Joseph P. Mulligan, Fairfield, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed May 26, 1992, Ser. No. 889,028

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—454 **16 Claims**



1. A system for continuously focusing an optical scanning device upon a plurality of optically readable labels passing by said scanning device, said plurality of optically readable labels being affixed to a plurality of packages of differing height positioned upon a continuously moving belt, comprising:

height sensing means for continuously sensing information representative of the height of each of said optically readable labels above said continuously moving belt to provide a distance signal representative of said sensed height; and

belt speed encoding means for providing a belt speed signal in accordance with the speed of said continuously moving belt; and

focusing means, responsive to said belt speed signal, for receiving said distance signal and continuously focusing said optical scanning device upon said optically readable labels in accordance with said distance signal.

5,308,961

OPTICAL-CARD READER

Junichi Nishimura, Mukou, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Mar. 13, 1992, Ser. No. 851,694

Claims priority, application Japan, Mar. 15, 1991, 3-74194

Int. Cl.[5] G11B *20/10*

U.S. Cl. 235—454 **7 Claims**

1. An optical card reader comprising:

reading means for reading data recorded on a specified track of an optical card;

memory means for storing data read by said reading means;

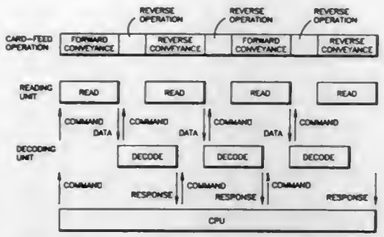
decoding means for decoding read data stored in said memory means; and

controlling means for initiating read operations from a specified track of said optical card, said controlling means, reading means, memory means and decoding means operating in response to a read command issued by said con-

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trolling means to cause said reading means to read data from one track of said optical card while said decoding means decodes previously read data stored in said memory means from another track of said optical card;

said decoding means including means responsive to a read command for reading a specified track issued by said



controlling means; means for determining if any previously read track data need to be decoded; means for determining if said reading means is currently reading data from said optical card if no previously read track data need to be decoded; and, means for sending a reading command for said specified track to said reading means if said reading means is not currently reading data.

5,308,962

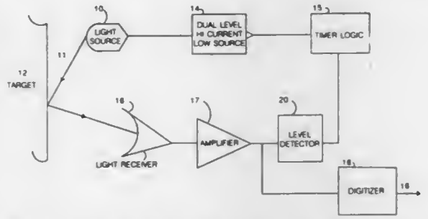
REDUCED POWER SCANNER FOR READING INDICIA

William H. Havens; Charles M. Hammond, Jr., and Andrew Longacre, Jr., all of Skaneateles, N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation of Ser. No. 786,575, Nov. 1, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 99,246

Int. Cl.[5] G06K *7/10, 7/04*

U.S. Cl. 235—455 **26 Claims**



26. A scanner for reading a target having reflectivity and containing indicia, such as bar code, comprising:

a light source means, having a level of illumination, said light source means emitting a beam of light, said light beam being projected out through the scanner so that the emitted light beam illuminates the target;

a light receiving means for detecting light reflected from the target, the reflected light having intensity indicative of the reflectivity of the target being illuminated, said light receiving means converting the reflected light into an electronic signal indicative of the intensity of said reflected light;

signal processing means for recognizing from said electronic signal the presence of a target having a region having reflectivity equal to or greater than some preset reflectivity;

means for modifying the level of illumination of said light source means, said level of illumination being modified from a continuously on, continuously low output state, insufficient for reading the indicia, to a continuously on high output state, sufficient for reading the indicia, upon recognition of the region having a reflectivity equal to or greater than some preset reflectivity; and being modified from the continuously on continuously high output state to the continuously on continuously low output state based upon predetermined criteria being met; and

means for reading the indicia so that recognition of the region having a reflectivity equal to or greater than some preset reflectivity and reading of indicia are performable in a single pass of the scanner with respect to the target.

5,308,963

GOODS SCANNING DEVICE FOR SALES OUTLETS

Günter Baitz, Berlin, Fed. Rep. of Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Fed. Rep. of Germany

PCT No. PCT/EP91/01931, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993

PCT Pub. No.: 92/06628

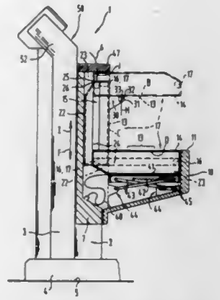
PCT Pub. Date: Apr. 30, 1992

PCT Filed Oct. 10, 1991, Ser. No. 30,378

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1990, 4032170

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **12 Claims**



1. A goods scanning device for sales outlets, comprising: a substantially horizontal goods conveying surface, forming a conveying path; an adjustable housing, into which a scanning device for scanning a goods marking is fitted, the housing being locatable in at least first and second horizontal positions parallel to the goods conveying surface, in said first horizontal position the housing being arranged above the goods conveying surface and at a distance therefrom, in said second horizontal position the housing being arranged in a region of the goods conveying surface, or in a third position vertical to the goods conveying surface; the housing having a goods scanning window which extends parallel to the goods conveying direction and through which the goods marking is scannable; the goods scanning window being part of the housing and adjusted together with the housing; in the vertical third position of the housing, the goods scanning window being vertically arranged beside the goods conveying surface; and in the second horizontal position, the goods scanning window being arranged in the region of the goods conveying surface level with the goods conveying surface.

5,308,964

VARIABLE RESOLUTION WAND

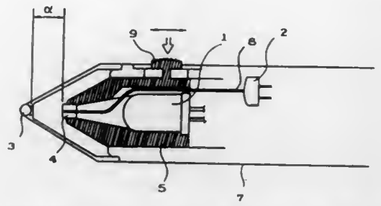
Young K. Kwon, 27-19, Bokwang-dong, Yongsan-ku, Seoul, Rep. of Korea

Filed Jan. 7, 1992, Ser. No. 817,727

Claims priority, application Rep. of Korea, Jul. 29, 1991, 1991-13054

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **2 Claims**



1. A variable resolution wand having a wand axis, said wand comprising:

a housing;

a sensor module including:

a light reflector having a front end and a rear end;

a high-brightness LED disposed in said rear end of said light reflector;

a spherical lens provided in said front end of said light reflector;

a detector; and

an optical fiber inserted between said detector and said spherical lens; and

a cap which is movable in a forward and a reverse direction along said wand axis, said cap having a central opening and including:

a ball lens provided in said central opening of said cap; and

means for movably connecting said cap to said housing so that said cap is movable in said forward and reverse directions.

5,308,965

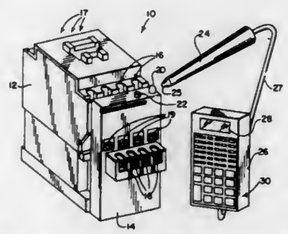
PILOT LIGHT INTERFACE FOR SMALL INDUSTRIAL CONTROLS

Christopher J. Wieloch, Brookfield, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 14, 1992, Ser. No. 944,684

Int. Cl.[5] G08K *7/10*

U.S. Cl. 235—472 **5 Claims**



1. A display device for an industrial control module, the industrial control module including a processor means for collecting primary data and auxiliary data as to the operation of the industrial control module, the display device comprising:

a lamp for being modulated in a first manner readable by the unaided human eye and a second manner readable by a photoelectric detector;

a first modulator modulating the lamp in the first manner under the control of the processor to convey the primary data concerning the operation of the control module so that the modulation is visible to the unaided human eye; and

a second modulator modulating the lamp in the second method under the control of the processor to convey the auxiliary data concerning the operation of the control module so that the modulation of the second method is not detectable by the unaided human eye and thus does not interfere with the perception of the primary data by a human observer.

5,308,966

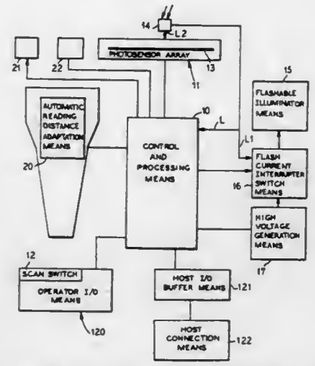
HAND-HELD INSTANT BAR CODE READER HAVING AUTOMATIC FOCUS CONTROL FOR OPERATION OVER A RANGE OF DISTANCES

Arvin D. Danielson, and Dennis A. Durbin, both of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 875,791, Apr. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 422,052, Oct. 16, 1989, abandoned, which is a division of Ser. No. 894,689, Aug. 8, 1986, Pat. No. 4,877,949. This application Sep. 16, 1992, Ser. No. 947,036

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **12 Claims**



1. In a bar code reader system, a hand-held bar code reader positionable by hand at varying distances from a bar code to be read and operable for reading bar codes at distances from said reader within a certain operative range, said reader comprising:

(a) bar code sensor means for generating an output signal in accordance with a bar code image incident thereon;

(b) distance measurement means for automated reading of distances of a bar code from the hand-held bar code reader over a certain measurement range which exceeds said certain operative range for reading of bar codes;

(b) reading distance adaptation means for automatically adapting the reader to the reading of a bar code at varying distances therefrom with the said operative range by causing an image of the bar code to be substantially focused at the image sensor means;

(c) enabling means for enabling a bar code reading operation, and control means coupled with said enabling means and said distance measuring means and operative in response to enabling of a bar code reading operation by said enabling means and in response to reading by said distance measurement means of distances within said operative range for automatically controlling the reading distance adaptation means during movement of the reader relative to a bar code within said operative range to tend to estab-

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lish and maintain a focused bar code image at the image sensor means;

(d) said reading distance adaptation means including optical path means providing a plurality of selectable paths to said image sensor means of different effective focal lengths; and

(e) said optical path means including lens means through which common portions of a plurality of said selectively usable paths extend, and mirror means for providing separate path portions of different effective focal lengths.

5,308,967

DATA CARRIER FOR IDENTIFICATION SYSTEMS

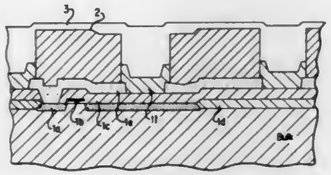
Reinhard Jurisch, Zschopauerstr. 3, 0-5067 Erfurt, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 861,859

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034225

Int. Cl.[5] G06K *19/06;* **H01L** *27/02*

U.S. Cl. 235—492 **5 Claims**



1. Data carrier chip for identification systems comprising at least one integrated circuit including active semiconductor areas and uppermost conductive path structures and one coil arrangement connected to said integrated circuit, said coil arrangement being substantially located above the active semiconductor areas of the data carrier chip on sections of the uppermost conductive path structures, the improvement wherein the windings of said coil arrangement include a low-ohmic portion that is exclusively and monolithically provided on the data carrier chip itself with a cross sectional thickness in a direction parallel to the normal of the chip being greater than 5 μm, said coil arrangement being aligned with said active semiconductor areas in said direction normal to said coil arrangement.

5,308,968

NON-CONTACT IC CARD WHICH ACTIVELY ATTENUATES ITS RESONANCE CIRCUIT AS IT RECEIVES DATA

Atsuo Yamaguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 575,807, Aug. 31, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 892,410

Claims priority, application Japan, Mar. 13, 1990, 2-59929

Int. Cl.[5] G06K *19/067;* **H01H** *36/00*

U.S. Cl. 235—492 **6 Claims**

1. A microcomputer receiving an external signal through a resonance circuit comprising:

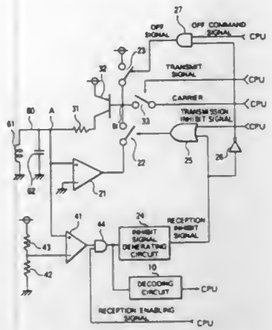
a CPU for processing data;

a resonance circuit for receiving the external signal and generating an input signal in response;

an input circuit connected to said resonance circuit for detecting the input signal;

a demodulating circuit connected to said input circuit for demodulating the input signal detected by said input circuit and outputting a demodulated signal of a predetermined length to said CPU when said input circuit detects the input signal;

an active attenuation circuit connected to said resonance circuit for actively attenuating oscillation of electrical signals in said resonance circuit when said resonance circuit receives an external data signal; and



an output circuit connected to said CPU and to said resonance circuit for outputting to said resonance circuit a transmit signal generated by said CPU.

5,308,969

IMAGE SENSOR

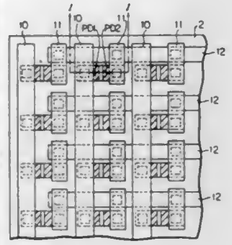
Junji Okada, and Hiroshi Fujimagari, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,003

Claims priority, application Japan, Oct. 15, 1991, 3-266091

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **5 Claims**



1. An image sensor comprising:

a transparent substrate;

a plurality of photoreceptor elements arranged in rows on the transparent substrate, each of said photoreceptor elements comprising:

a first photodiode, and

a second photodiode directly connected to said first photodiode in series, with opposition polarity,

wherein at least one of said first photodiode and said second photodiode has a multilayered photoelectric conversion region of hydrogenated amorphous silicon, said photoelectric conversion region including,

a first non-doped hydrogenated amorphous silicon layer, and

a second non-doped hydrogenated amorphous silicon layer;

a detecting circuit connected to said first photodiode of each of said photoreceptor elements; and

a pulse generating circuit connected to said second photodiode of each of said photoreceptor elements.

5,308,970

CHARGE-COUPLED DEVICE WITH BI-DIRECTIONAL READOUT THROUGH DUAL, MERGED READOUT REGISTERS

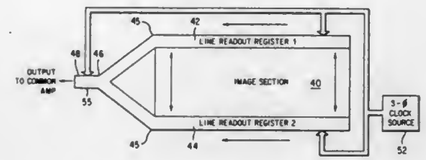
Peter J. Pool, Maldon, England, assignor to EEV Limited, Chelmsford, England

Filed Nov. 25, 1992, Ser. No. 982,661

Claims priority, application United Kingdom, Nov. 27, 1991, 9125232

Int. Cl.[5] H01J *40/14;* **H04N** *3/14*

U.S. Cl. 250—208.1 **9 Claims**



1. A charge-coupled device, for use in an imaging system, comprising an image section including a plurality of photosensitive elements arranged in columns, in which elements pockets of charge are produced by the incidence of light upon the device, the pockets of charge being displaceable along an axis parallel to the columns of elements, and two readout registers, situated at opposite ends of the columns of photosensitive elements, wherein the device is arranged so that the pockets of charge can be read out from the image section along either of the two readout registers, and the registers are merged, so that the device has one output common to both registers.

5,308,971

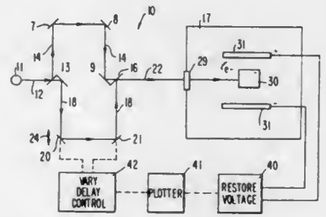
MEASUREMENT APPARATUS AND TECHNIQUES FOR ULTRASHORT EVENTS USING ELECTRON PHOTOEMISSION WITH A SUPERLINEAR PHOTOEMISSION ACTIVE ELEMENT

Martin Pope, and Alexandre Dourandin, both of Brooklyn, N.Y., assignors to New York University, New York, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,478

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **17 Claims**



1. A method of measuring characteristics of short duration light pulses from a light source comprising:

(a) providing an active element exhibiting superlinear photoemission when impacted by photons,

(b) impinging on the active element photons from first and second light pulses derived from the light source, the combination of said photons being capable of causing or increasing photoemission from said active element, thereby changing its charge state,

(c) measuring the changed charge state while varying the time delay between the first and second pulses to obtain an indication of the light pulses' characteristics.

5,308,972

MICROSCOPE USING PHOTOGRAPHING UNIT AND PHOTOMETER

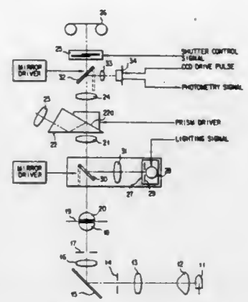
Takashi Nagano, and Toru Takahashi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,246

Claims priority, application Japan, Dec. 12, 1991, 3-328855

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—216 **16 Claims**



1. A photographing apparatus applied to a microscope having an objective lens to which an object light from a sample is input and an eyepiece for observing an image of the sample formed at a predetermined image formation position, said photographing apparatus being adapted for photographing the image of the sample observed through said eyepiece, comprising:

a film medium having a film surface on which the image of the sample is formed, said film surface being located at a position where the object light output from said objective lens is focused;

a photometry region designating means for generating an indicator light beam to designate a photometry region on the image of the sample, said photometry region designating means being movable in a plane perpendicular to a optical axis of the object light output from said objective lens;

a semi-transparent optical means for superimposing the indicator light beam on the object light, said semi-transparent optical means being removably inserted in a light path of the object light output from the objective lens and having a semi-transparent plane on which the object light and the indicator light beam are input in a state where said semi-transparent optical means is inserted in the light path;

an observing light path for guiding to said eyepiece the object light and the indicator light beam thereon superimposed by means of the semi-transparent plane of said semi-transparent optical means;

a photographing light path for guiding to said film medium the object light and the indicator light beam superimposed thereon by means of the semi-transparent plane of said semi-transparent optical means;

reflecting means, removably inserted in the photographing light path, for reflecting the object light and the indicator light beam passed through the photographing light path when the reflecting means is inserted in the photographing light path;

area sensor means, having a light receiving plane at a position where the object light reflected by said reflecting means is focused, for converting the image of the sample on which the indicator light beam is superimposed into an electrical photometry signal and outputting the photometry signal;

a photometry region determining means for reading the photometry signal from said area sensor means, storing the photometry signal in correspondence with a position

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on the light receiving plane, detecting the position on the light receiving plane on which the indicator light beam is projected, on the basis of the stored photometry signal, and determining a photometry region according to the detected position;

a photometry means for measuring the brightness of the photometry region determined by said photometry region determining means, thereby obtaining a photometry value; and

a photographing means for photographing the image of the sample based on the photometry value obtained by said photometry means.

5,308,973

METHOD AND DEVICE FOR THE MEASUREMENT OF FORCE BY A FIBER OPTICS SYSTEM BY EVALUATING PHASE SHIFT OF LIGHT WAVES

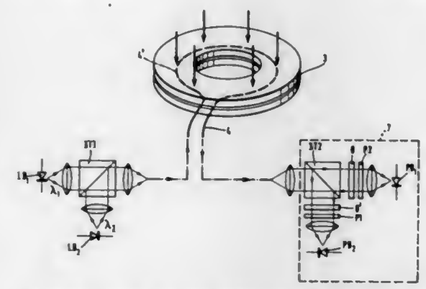
Walter Odoni, Schaan, Liechtenstein; René Dändliker, Neuchâtel, Switzerland; Hanspeter Schad, Grabs, Switzerland, and Edwin Schweizer, Sevelen, Switzerland, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Nov. 21, 1991, Ser. No. 795,725

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 4037077

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.17 **24 Claims**



1. A method for the absolute measurement of a force by fiber optics, based on the straininduced change in birefringence of a single-mode light waveguide wherein, in order to achieve unequivocal measurement results for said force:

two light waves having different wavelengths are beamed into one end of a light waveguide and the difference phase shifts of the two linear modes of said light exiting at an opposite end of said light waveguide, which is caused by the influence of force on said light waveguide and the consequent change in birefringence are detected photoelectrically, wherein the absolute values of said phase shifts are determined by means of phase comparison via a calibrated evaluating logic with an intermediate storage of said individual measurement values of said detected phase shifts, and further wherein said determined absolute value of at least one of said phase shifts is evaluated as a measurement for said force.

5,308,974

SCANNING PROBE MICROSCOPE USING STORED DATA FOR VERTICAL PROBE POSITIONING

Virgil B. Elings, and John A. Gurley, both of Santa Barbara, Calif., assignors to Digital Instruments, Inc., Santa Barbara, Calif.

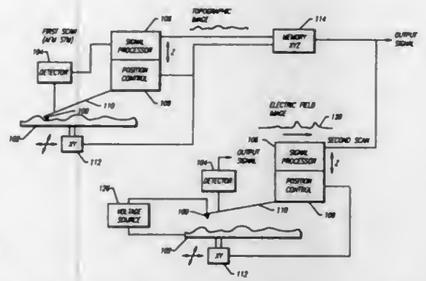
Filed Nov. 30, 1992, Ser. No. 982,871

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—234 **46 Claims**

1. In a scanning probe microscope including a probe positioned relative to a sample surface and having relative motion between the probe and the sample surface in the X and Y plane and controlled and sensed in the Z direction vertical to the surface to produce data responsive to the topography of the surface, a method for accurately measuring a parameter of the surface other than topography or performing a task related to topography including the following steps:

providing a first scan by the probe of the sample surface in the X and Y plane and controlling and sensing in the Z direction vertical to the surface to produce data representative of the topography of the surface,



storing the data representative of the topography of the surface,

providing at least a second scan by the probe of the sample surface in response to the stored data to control the probe in the X, Y and Z directions in accordance with the stored data, and

measuring a parameter of the surface other than topography or performing a task related to topography by the probe during the at least second scan.

5,308,975

OPTICAL INSTURMENT HAVING STAGE SUPPORT

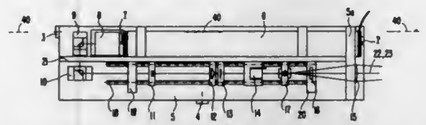
Volker Grebe, Bochum, Fed. Rep. of Germany, assignor to Mesacon GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 737,466, Jul. 30, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 26,186

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1990, 9011381[U]

Int. Cl.[5] H01J *5/02*

U.S. Cl. 250—239 **10 Claims**



1. An optical instrument for gauging the velocity of a travelling surface with the aid of a gauging light beam emitted by a laser and a detector receiving stray reflections of said light beam water a reflection on said surface, comprising a housing having a base plate,

at least one optical assembly enclosed by said housing and mounted on a stage plate, said stage plate being supported on said base plate by supporting means

which fixes (1) said stage plate at one first point inhibiting translation movement and allowing at least some rotational movement of said stage plate at said one point, (2) said stage plate at one second point inhibiting transactional movement except for movement along an axis through both of said first and second points and allowing

rotational movement of said stage late at said second point, and (3) said stage plate at one third point inhibiting transactional movement and allowing rotational movement of said stage plate at said third point,

thus preventing thermal, torsional or bending deformation of said stage plate irrespectively of a mechanical or thermal attack onto said housing.

5,308,976

METHOD FOR MULTI-BEAM MANIPULATION OF MICROPARTICLES

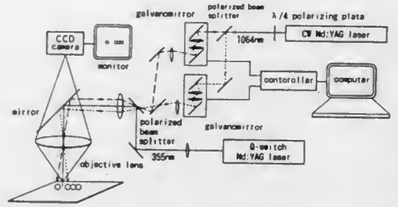
Hiroaki Misawa, Osaka; Keiji Sasaki, Kyoto, and Nobura Kitamura, Kyotoa, all of Japan, assignors to Research Development Corp. of Japan, Tokyo, Japan

Filed May 29, 1992, Ser. No. 891,175

Claims priority, application Japan, Jun. 1, 1991, 3-130106

Int. Cl.[5] H05H *3/04*

U.S. Cl. 250—251 **3 Claims**



1. A method for multi-beam manipulation of microparticles, which comprises the steps of

(a) a first step of irradiating a plurality of laser beams onto microparticles for individually trapping said microparticle(s),

(b) a second step of bringing the trapped microparticle(s) into contact with other trapped microparticle(s) by scanning the laser beams, and

(c) a third step of irradiating an excited laser beam onto the contact area of the trapped microparticles to cause photoreaction of the microparticles.

5,308,977

PLASMA MASS SPECTROMETER

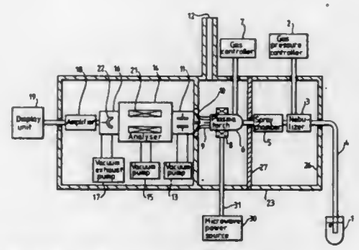
Konosuke Oishi, Mito; Masataka Koga, Katsuta; Hiromi Yamashita, Katsuta; Takashi Iino, Katsuta; Toyoharu Okumoto, Katsuta, and Tsuyoshi Nishitarumizu, Katsuta, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,139

Claims priority, application Japan, Mar. 4, 1992, 4-46648

Int. Cl.[5] H01J *49/36*

U.S. Cl. 250—288 **10 Claims**



1. A plasma mass spectrometer comprising:

generating means for generating an aerosol of a sample;

a plasma torch for receiving the aerosol from said generating means;

microwave output means mounted in proximity to said plasma torch for supplying microwave frequency power to said plasma torch, thereby to ionize said aerosol in said plasma torch to form a plasma of ions; and

means for analyzing said plasma by mass spectrometry;

wherein a shielding member is provided between said generating means and said microwave output means for shielding said generating means from microwave frequency power applied by said microwave output means to said plasma torch.

5,308,978

METHOD OF PREPARING A SAMPLE FOR ANALYSIS

John S. Cottrell, London, United Kingdom, and Kuldip K. Mock, Sunnyvale, Calif., assignors to Finnigan Mat Limited, United Kingdom

PCT No. PCT/GB90/00973, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992

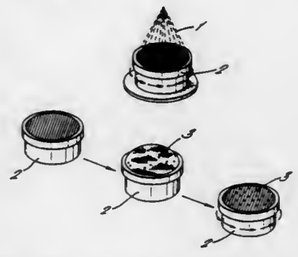
PCT No. W091/03068, Date Mar. 7, 1991

PCT Filed Jun. 25, 1990, Ser. No. 835,969

Claims priority, application United Kingdom, Aug. 23, 1989, 8919191

Int. Cl.[5] H01J *49/04*

U.S. Cl. 250—288 **3 Claims**



1. A method of preparing a sample for analysis by laser desorption mass spectrometry, comprising dissolving the sample material in a solvent and applying the solution to a matrix material, in which the matrix material is at least partially soluble in the solvent in which the sample material is dissolved, and in which the matrix material is applied to a target for a mass spectrometer prior to the application of the sample solution thereto.

5,308,979

ANALYSIS OF HYDROGEN ISOTOPE MIXTURES

Eliel Villa-Aleman, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 21, 1992, Ser. No. 933,145

Int. Cl.[5] H01J *49/04*

U.S. Cl. 250—288 **20 Claims**

1. An apparatus for preparing a sample for analysis by a mass spectrometer, said analysis being made of the concentrations of any isotopes of an element in said sample, apparatus comprising:

a first chamber having an interior;

a second chamber in fluid communication with an ionization chamber of said mass spectrometer, said second chamber having an interior;

a valve separating said first chamber from said second chamber, said valve having an open position and a closed position;

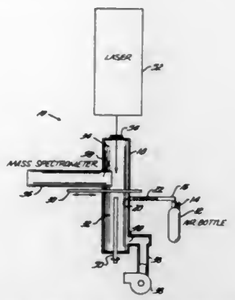
means for preferentially admitting said element into said first chamber;

means within said first chamber for collecting said element, said collecting means having a surface; and

means proximate to said surface for vaporizing at least a portion of said element from said surface so that said

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portion can enter said second chamber, said vaporizing means producing a pulse of molecules having substantially uniform kinetic energies, said molecules of a lighter isotope of said element having a greater velocity than said



molecules of a heavier isotope of said element so that, when said valve is in said open position, said molecules of said lighter isotope pass through said second chamber and reach said mass spectrometer before said molecules of said heavier isotope.

5,308,980

THERMAL MISMATCH ACCOMMODATED INFRARED DETECTOR HYBRID ARRAY

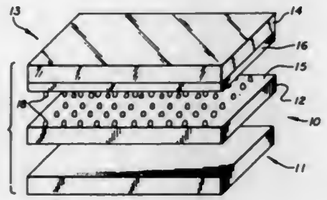
Jeffrey Barton, Goleta, Calif., assignor to Amber Engineering, Inc., Goleta, Calif.

Continuation-in-part of Ser. No. 658,985, Feb. 20, 1991, Pat. No. 5,264,699. This application Aug. 11, 1992, Ser. No. 928,955

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] G01J *5/20*; H01L *27/14, 31/18*

U.S. Cl. 250—338.4 **25 Claims**



1. A hybrid infrared detector array, comprising:

a readout circuit substrate, having an upper major surface;

a readout circuit chip rigidly bonded to the upper major surface of the readout circuit substrate so as to form a composite structure therewith; and

an infrared detector array portion including an active infrared detector layer formed on a transparent infrared substrate, said detector array portion being bonded to and electrically connected with, said readout circuit;

wherein the thermal coefficient of expansion of said composite structure is substantially the same as said detector array portion.

5,308,981

METHOD AND DEVICE FOR INFRARED ANALYSIS, ESPECIALLY WITH REGARD TO FOOD

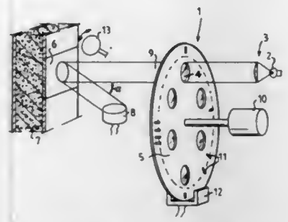
Peter Perten, Unt. Grundlistrasse 12, CH–6055 Alpnach Dorf, Switzerland

Filed Apr. 23, 1992, Ser. No. 872,693

Claims priority, application Sweden, Apr. 23, 1991, 9101220-3

Int. Cl.[5] G01N *21/35*

U.S. Cl. 250—339.01 **10 Claims**



1. A method of analyzing a sample (7) of grain comprising the steps of;

a) directing infrared light of certain wavelengths toward the sample,

b) detecting the infrared light by means of a photocell device (8) after interaction of the infrared light with the sample,

c) using the detected infrared light to determine the relative amount of certain substances in the sample, the improvement comprising;

d) directing infrared light within the interval of 1050–1400 nm toward a sample of unground grain,

e) detecting the infrared light which is reflected from the unground grain,

f) analyzing the sample is done by generating an analysis value as a mean value measurement wherein the results are obtained in measurements of at least 30 different sample configurations.

5,308,982

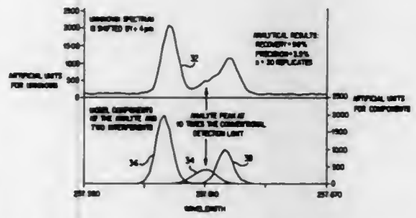
METHOD AND APPARATUS FOR COMPARING SPECTRA

Juan Ivaldi, Bridgeport; David H. Tracy, Norwalk; Robert Hoult, Bethel, all of Conn., and Richard Spragg, Buckinghamshire, England, assignors to Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 771,705, Oct. 4, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,519

Int. Cl.[5] G01N *21/25*; G01J *3/433*

U.S. Cl. 250—339.01 **22 Claims**



14. An apparatus for determining concentration of a selected analyte in a sample, the analyte having a characteristic spectral band in a selected spectral region within a range consisting of infrared, visible and ultraviolet radiation, the apparatus comprising:

means for generating an analyte spectrum of a selected analyte including the spectral band;

means for generating a sample spectrum of a sample for the spectral region;

means for computing a first derivative of the sample spectrum;

means for constructing a matrix model comprising as components the analyte spectrum and the first derivative of the sample spectrum; and

means for applying the matrix model to the sample spectrum so as to yield a parameter representing concentration of the selected analyte in the sample.

5,308,983

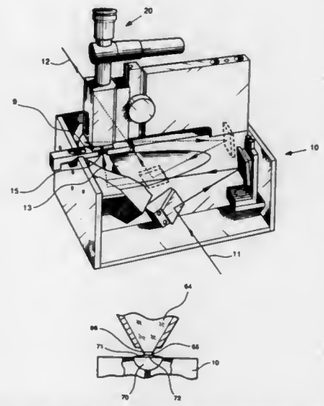
SPECTROSCOPIC ACCESSORY WITH MICROSCOPE ILLUMINATOR

Milan Milosevic, Fishkill; Nicolas J. Harrick, Ossining, and Craig R. Wisch, Croton on Hudson, all of N.Y., assignors to Harrick Scientific Corporation, Ossining, N.Y.

Filed Jul. 2, 1992, Ser. No. 907,629

Int. Cl.[5] G01N *21/17, 21/01*

U.S. Cl. 250—339.01 **31 Claims**



1. A spectroscopic accessory for sample analysis comprising:

(a) sample supporting means having an active sampling area,

(b) means for directing an analyzing radiation beam to the active sampling area,

(c) means for redirecting the analyzing radiation beam after interaction with a sample on the active sampling area,

(d) means including an optically-transparent element for applying pressure for pressing a desired area of the sample against the active sampling area,

(e) means for viewing under magnification through the optically-transparent element the desired area of the sample while the pressure is applied.

5,308,984

METHOD OF OPERATING A DUAL MODE TRACKING SYSTEM

Nathan Slawsby, Canton; Irving Goldstein, Sudbury, both of Mass., and Joseph W. DiBiaso, Nashua, N.H., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 6, 1987, Ser. No. 75,710

Int. Cl.[5] H01L *25/00*; G01J *5/00*; G01S *13/00*

U.S. Cl. 250—342 **3 Claims**

1. The method of processing signals in a detection system including a passive infrared sensor made up of a linear array of photovoltaic detectors that is rotated in azimuth and systematically interrogated to produce successive trains of signals, the signals in each one of the trains being correlated with a specific one of the photovoltaic detectors, such method comprising the steps of:

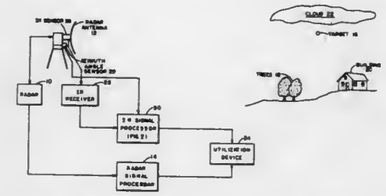
(a) storing, at a predetermined address in a storage medium, each one of the signals in a first train thereof to produce a record of the IR energy received by each one of the photovoltaic detectors from IR sources on a predetermined bearing;

(b) at a later time when the photovoltaic detectors are receiving IR energy from the IR sources on the predetermined bearing, sequentially interrogating such detectors to produce a second train of signals;

(c) subtracting each signal in the second train thereof from the corresponding stored signal in the first train to produce a third train of signals wherein the amplitude of each signal is indicative of a change in the IR energy received at different times by each photovoltaic detector from IR sources on the predetermined bearing;

(d) multiplying each one of the signals in the third train by a first selected factor to produce a fourth train of signals wherein the amplitude of each signal in the fourth train is an amplified version of the corresponding signal in the third train;

(e) comparing each signal in the fourth train with a first



reference signal having a first selected amplitude to produce a fifth train of signals wherein each signal in the fifth train is at a logic one level only when the amplitude of the corresponding signal in the fourth train is greater than the selected amplitude of the first reference signal;

(f) comparing each signal in the fifth train with the corresponding signal in the third train to produce a potential target signal having a logic one level only when the amplitudes of the corresponding pairs of signals in the third and fifth trains are equal;

(g) selecting a subset of the third train of signals, such subset being made up of a signal designated by "V" at a selected address and signals at the three immediately preceding addresses designated by "V"$_{+1}$, "V"$_{-2}$, "V"$_{-3}$ and signals at the three immediately following addresses designated by "V"$_{+1}$, "V"$_{+2}$, "V"$_{+3}$;

(h) determining an index number "A" in accordance with the equation

$$A=(V_{+3}-V_{+1})/V_{+2}-(V_{-1}-V_{-3})V_{-2}; \text{ and}$$

(i) comparing the amplitude $|A|$ of the index number A with the signal V to produce a first inhibiting signal only when $|A| \geqq V$.

5,308,985

WIDE-ANGLE PASSIVE INFRARED RADIATION DETECTOR

Wade Lee, Alamo, Calif., assignor to Intelectron Products Company, Hayward, Calif.

Continuation-in-part of Ser. No. 786,135, Oct. 31, 1991, abandoned. This application Mar. 16, 1992, Ser. No. 851,590

Int. Cl.[5] G01J *5/08*

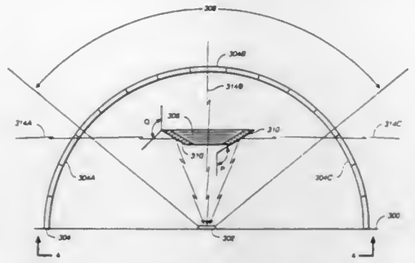
U.S. Cl. 250—353 **9 Claims**

1. In an infrared radiation detector having a housing and at least one sensor mounted within the housing for sensing infra-

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red radiation, the detector having a limited field of view, the improvement comprising:

a truncated conical mirror having a central aperture and having an exterior conical reflective surface, wherein said truncated conical mirror is disposed within the housing in front of the at least one sensor to reflect infrared radiation incident upon said reflective surface from outside the



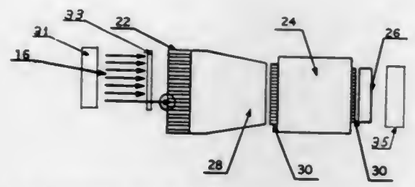
limited field of view of the detector directly to the at least one sensor, and said central aperture of said truncated conical mirror is disposed opposite the at least one sensor to permit infrared radiation to pass through said aperture directly to the at least one sensor, whereby the overall effective field of view of the detector is increased without loss of field of view directly in front of the at least one sensor.

5,308,986

HIGH EFFICIENCY, HIGH RESOLUTION, REAL-TIME RADIOGRAPHIC IMAGING SYSTEM

James K. Walker, Gainsville, Fla., assignor to Nanoptics Incorporated, Gainesville, Fla.

Filed Dec. 17, 1992, Ser. No. 992,140
Int. Cl.[5] G01T *1/203*
U.S. Cl. 250—370.11 **43 Claims**



1. A scintillating optical fiber comprising:

a) an inner plastic core fiber which is transparent in at least a portion of the visible radiation spectrum and which has an index of refraction of about 1.45 or greater, the inner plastic core fiber comprising;

1) a polymeric matrix material;

2) a metal moiety; and

3) an organic quench-resistant fluorescent material;

b) a plastic cladding material which surrounds the inner plastic core fiber and which has an index of refraction which is less than the index of refraction of the inner plastic core fiber by a difference of about 0.1 or more.

5,308,987

MICROGAP X-RAY DETECTOR

Craig R. Wuest, Danville; Richard M. Bionta, and Elden Ables, both of Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 1, 1993, Ser. No. 11,637
Int. Cl.[5] H01J *47/10*
U.S. Cl. 250—374 **27 Claims**



1. A microgap photon detector comprising:

a coplanar anode and cathode, said anode and said cathode being separated to form a gap therebetween, said gap having a width of 5–1000 microns, said cathode being composed of a layer of low atomic number material forming a window and a layer of high atomic number material which emits electrons when photons are incident upon it;

said layer of high atomic number material being in contact with said layer of low atomic number material;

a gas filling said gap between said anode and said cathode;

means for applying an electric potential between said anode and said cathode to produce a single electric field in said gap; and

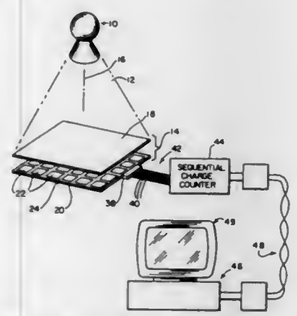
means connected directly to said anode for converting charge pulses on said anode to output pulses, whereby photons incident upon said cathode cause electrons to be emitted therefrom into said gas-filled gaps which are accelerated in the single electric field towards said anode causing collisions with other electrons in gas atoms of said gas to create an electron avalanche which results in charged pulses collected by said anode, with said charged pulses being converted to output pulses.

5,308,988

ANALYZER FOR RADIOTHERAPY RADIATION BEAM

Melvin P. Siedband, Madison, Wis., assignor to Radiation Measurements, Inc., Middleton, Wis.

Filed May 18, 1992, Ser. No. 883,984
Int. Cl.[5] G01T *1/185*; H01J *47/04*
U.S. Cl. 250—385.1 **9 Claims**



1. A radiation detector having a plurality of radiation sensitive cells for characterizing a radiation beam over an area, comprising:

charge generation means associated with each cell for generating an electrical charge related to the radiation received by the cell;

accumulating capacitor connected to each charge generation means for accumulating the generated electrical charge;

a charge-counter for receiving a charge and producing a magnitude signal indicating the amount of that charge, the charge counter including:

a voltage detector for detecting the presence of at least a predetermined amount of charge on an accumulating capacitor to produce a charge present signal;

a measuring capacitor for being connected to and disconnected from the accumulating capacitor;

an oscillator receiving the charge present signal and for repeatedly connecting and disconnecting the measuring capacitor to and from the connected accumulating capacitor, during a cycle, so that charge may move between the connected accumulating capacitor and the measuring capacitor when they are connected only so long as the charge present signal is present;

a bias means for restoring a substantially constant voltage difference between the accumulating capacitor and the measuring capacitor when the measuring capacitor is disconnected to provide a substantially constant amount of charge flow between the accumulating capacitor and the measuring capacitor each time they are connected; and

counter means connected to the oscillator and the voltage detector for counting the total number of connections and disconnections of the measuring capacitor during the charge present signal;

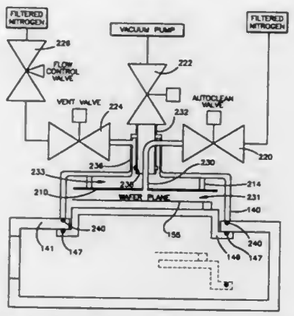
a multiplexer for connecting each accumulating capacitor in sequence to the charge-counter for sequentially measuring the charge accumulated on the accumulating capacitor to produce a magnitude signal associated with each accumulating capacitor.

5,308,989

FLUID FLOW CONTROL METHOD AND APPARATUS FOR AN ION IMPLANTER

Stephen R. Brubaker, Austin, Tex., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1992, Ser. No. 995,155
Int. Cl.[5] H01J *37/18*
U.S. Cl. 250—441.11 **18 Claims**



1. A system for treating one or more generally circular wafers comprising:

a) a chamber that defines a chamber interior having a wafer support onto which one or more wafers are moved prior to treatment; said chamber having cylindrical internal flow-defining surfaces that encircle an outer periphery of the wafer support;

b) means for inserting wafers into the chamber and placing them on the wafer support prior to treatment and removing the wafers from the chamber after they have been treated;

c) structure for venting fluid into the chamber through a first passageway and for evacuating the chamber by withdrawing fluid from the chamber through a second passageway;

d) a controller for adjusting fluid flow entering or exiting the chamber via the first and the second passageways; and

e) fluid flow distribution means mounted relative the wafer support within the chamber for providing radial fluid flow away from the cylindrical internal flow-defining surfaces to a region of the wafers during chamber venting and for providing radial fluid flow toward the cylindrical internal flow-defining surfaces from the region of the wafers during chamber evacuation to impede particle contamination of wafers within the chamber;

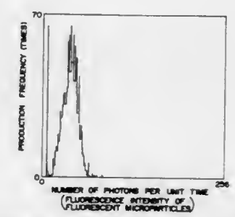
f) said cylindrical internal flow-defining surfaces and the flow distribution means defining a flow region through the chamber for promoting laminar fluid flow within the chamber.

5,308,990

METHOD FOR MEASURING MICROPARTICLES, QUANTITATIVE MEASURING METHOD THEREFOR AND INSTRUMENT FOR MEASURING MICROPARTICLES

Satoshi Takahashi, Kokubunji; Daizo Tokinaga, Hachioji, and Kazunori Okano, Shiki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 14, 1992, Ser. No. 882,954
Claims priority, application Japan, May 15, 1991, 3-110336
Int. Cl.[5] G01N *15/14*
U.S. Cl. 250—459.1 **8 Claims**



1. A microparticle measuring method for counting fluorescent microparticles to be analyzed, comprising the steps of:

leading fluorescent microparticles contained in a liquid to a narrow flow path and introducing said fluorescent microparticles substantially one after another into a position irradiated with excitation light in said narrow flow path said position being irradiated with excitation light for generating fluorescence from said fluorescent microparticles; or

leading an excitation light beam for generating fluorescence and having a width sufficiently narrow for where substantially one fluorescent microparticle among fluorescent microparticles bound to a solid phase can exist, to a position of said fluorescent microparticle while sweeping the beam successively;

irradiating said fluorescent microparticles contained in the liquid or said fluorescent microparticles bound to the solid phase with the excitation light;

taking out signal pulses produced by detection of a single photon of fluorescence generated by the irradiation with said excitation light;

counting the signal pulses with N ($N \geqq 2$) counters, a counting working time of each counter being equal to a predetermined standard period, a counting repetition period (T) of each counter being longer than said counting working time, phases of the counters being shifted by 1/N from each other, and a working interval between the n-th ($N \geqq n \geqq 2$) and (n−1)-th counters being equal to T/N;

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successively taking out count values of the counters at intervals of T/N;

obtaining a count value representing a number of the signal pulses per said predetermined standard period based on the successively taken out count values; and

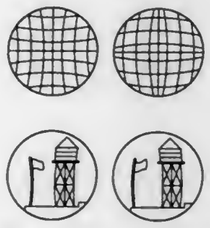
recognizing existence of said fluorescent microparticle based on the count value representing a number of signal pulses per said predetermined standard period.

5,308,991

METHOD AND APPARATUS FOR MAKING A PREDISTORTED RETICLE TO COMPENSATE FOR LENS DISTORTIONS

Shay Kaplan, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 2, 1992, Ser. No. 892,277
Int. Cl.[5] H01J *37/30*
U.S. Cl. 250—492.22 **17 Claims**



1. A method for producing predistorted masks or reticles which correct for lens field errors for use in the fabrication of integrated circuit devices, wherein the mask or reticle is produced by controlling the movement of a movable stage containing the mask or reticle, where the stage is disposed beneath a writing tool which writes pattern data to form the mask or reticle, the method comprising:

expressing a lens error in terms of lens distortion data;

converting the lens distortion data into correction terms, wherein the correction terms are a function of the location on the lens through which radiation passes; and

using the correction terms to control the positioning of the stage, thereby causing the stage to move so that when the writing tool writes pattern data which has not been corrected for the lens error, there is produced a mask or reticle which compensates for the lens error when it is used in conjunction with the lens to fabricate a semiconductor device.

5,308,992

CURRENCY PAPER AND BANKNOTE VERIFICATION DEVICE

Timothy T. Crane, Box 78, Dalton, Mass. 01226; Robert J. Danek, 84 Hendee Rd., Andover, Conn. 06232; Steven K. Harbaugh, 18725 Edwin Markham Dr., Castro Valley, Calif. 94552, and Richard A. Menelly, 87 Belden Rd., Burlington, Conn. 06013

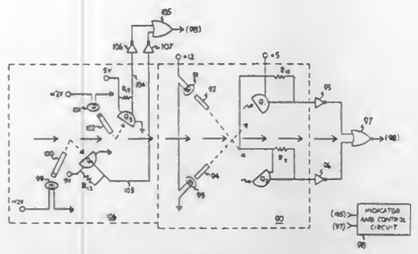
Filed Dec. 31, 1991, Ser. No. 814,824
Int. Cl.[5] G06K *5/00*
U.S. Cl. 250—556 **21 Claims**

1. A device for verifying authenticity of currency paper and banknotes comprising:

a currency receiver arranged for accepting at least one edge of a proferred currency paper;

transmitter means proximate said currency receiver providing a pair of electronic signals of opposite phase;

detector means intermediate said transmitter means adjustably balancing said electronic signals when a security thread comprising a metallized plastic strip is absent from said currency paper; and



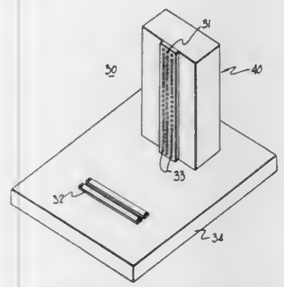
circuit means connected with said detector means determining an imbalance between said electronic signals when said security thread is within said currency paper.

5,308,993

SEMICONDUCTOR WAFER CASSETTE MAPPER HAVING DUAL VERTICAL COLUMN OF LIGHT EMITTING APERTURES AND A SINGLE VERTICAL COLUMN OF LIGHT RECEIVING APERTURES

George T. Holman, and Ronald E. Logan, both of Louisville, Colo., assignors to Avalon Engineering, Inc., Boulder, Colo.

Filed Mar. 28, 1993, Ser. No. 36,178
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—561 **5 Claims**



1. A wafer cassette mapper for detecting the presence or absence of a planar wafer in each of a plurality of corresponding pairs of slots along opposite sides of a wafer cassette, the wafer cassette mapper comprising:

a base member for supporting a wafer cassette having a plurality of corresponding evenly-spaced slots located along opposite sides of the wafer cassette, each of the corresponding evenly-spaced slots being adapted to receive and retain a single planar wafer, the base member including cassette engagement means for receiving said wafer cassette;

a transmitter/receiver module mounted on said base member adjacent a rear edge of said wafer cassette, said transmitter/receiver module including two vertical columns of light emitting apertures, horizontally aligned as pairs of light emitting apertures, and a light transmitter array coupled thereto, said transmitter/receiver module further including a single vertical column of light receiving apertures, positioned between said two vertical columns of light emitting apertures, and a light receiver array coupled thereto, each of the light receiving apertures being horizontally aligned with an associated pair of said light emitting apertures, each pair of light emitting apertures and the associated light receiving aperture being aligned with the plane of an associated wafer when positioned in its corresponding slots, each pair of light emitting apertures being positioned at an angle to each other such that beams of light emitted therefrom intersect at a focal point on a rear edge of the associated wafer; and

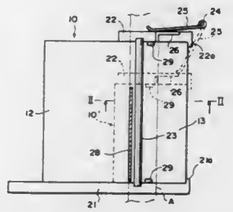
control means, coupled to said light transmitter array and said light receiver array, for selectively activating said light transmitter array for a predetermined period of time and for selectively interrogating said light receiver array during that period of time to obtain status information therefrom, said control means including logic means responsive to the status information obtained from said light receiver array for determining the presence or absence of a wafer in each of the plurality of corresponding pairs of slots of said wafer cassette.

5,308,994

CASSETTE SETTING DEVICE

Yasunori Ohta, and Sadami Yamada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1993, Ser. No. 47,287
Claims priority, application Japan, Apr. 17, 1992, 4-98177; Apr. 30, 1992, 4-111255
Int. Cl.[5] G03D *13/00*; **B65H** *5/00*
U.S. Cl. 260—589 **14 Claims**



1. A cassette setting device for setting a cassette at a predetermined position in a cassette utilizing apparatus, the cassette housing a sheet-shaped image recording medium therein and being provided with an opening, through which the image recording medium is to be fed into and out of the cassette, at one end, the cassette setting device setting the cassette such that the positions of two side ends of the cassette, which side ends are normal to the one end of the cassette provided with the opening, may be adjusted by a pair of guide members, and such that the other end portion of the cassette may be exposed to the exterior from a cassette setting port of the cassette utilizing apparatus,

wherein the improvement comprises constituting at least either one of the pair of the guide members as a movable guide such that the distance between the guide members may be changed, and providing:

i) a stationary light shielding member, which prevents external light from entering from the side of the other end portion of the cassette to the side of the one end of the cassette when the cassette is set, and

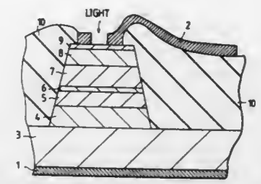
ii) a movable light shielding member, which is capable of moving so as not to obstruct the movement of said movable guide and which prevents external light from entering from the side outward from said movable guide to the side of the one end of the cassette.

5,308,995

SEMICONDUCTOR STRAINED SL APD APPARATUS

Shinji Tsuji, Hidaka, and Hitoshi Nakamura, Tsukui, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,480
Claims priority, application Japan, Jul. 12, 1991, 3-172176
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—17 **7 Claims**



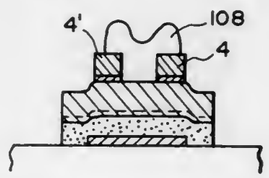
1. An avalanche photodiode having a multiplication layer, a light absorbing layer and a crystalline substrate, said multiplication layer comprising superlattice layers having a structure in which at least two types of semiconductors with different band gaps are laminated, wherein a tensile stress is applied to barrier layers among said superlattice layers.

5,308,996

TFT DEVICE

Satoshi Itabashi, Atsugi; Masaki Fukaya, Isehara; Toshiyuki Komatsu; Yoshiyuki Osada, both of Atsugi, and Ihachiro Gofuku, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 727,285, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 368,886, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 99,908, Sep. 22, 1987, abandoned. This application Jun. 29, 1993, Ser. No. 82,908
Claims priority, application Japan, Sep. 25, 1986, 61-227430; Sep. 26, 1986, 61-229268
Int. Cl.[5] H01L *31/10, 27/14*
U.S. Cl. 257—53 **19 Claims**



1. A photoelectric converter responsive to a light source comprising:

(i) a photosensor providing enhanced photocurrent and light response having:

(a) a semiconductor layer no greater than about 5000Å in thickness containing amorphous silicon, said semiconductor layer forming electrons and holes upon interception of incident light containing optical information;

(b) a pair of opposed main electrodes in electrical contact with said semiconductor layer;

(c) a gate electrode;

(d) an insulation film transparent to said incident light interposed between said semiconductor layer and said gate electrode; wherein said semiconductor layer having a region comprising silicon and at least one type of impurity selected from atoms belonging to Group V of the periodic table formed in said semiconductor layer at the vicinity of a first interface between said semiconductor layer and said insulation film; said first interface

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subject to accumulation of said holes upon said interception of said incident light; said region having a depth up to 1000 Å as measured from said interface and wherein from 0.1 to 1000 ppm of said impurity being present in said region; said region serving as (1) a barrier preventing said holes from moving said first interface in order to increase photocurrent gain and (2) storing said holes at a potential well at a second interface between said region and said semiconductor layer to enhance light response; and

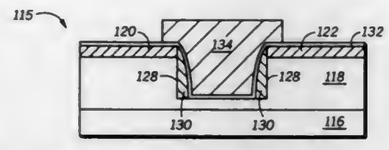
(ii) means for maintaining said gate electrode at an electrical potential lower than said main electrodes at least during a period in which an image signal, which corresponds to said optical information which has been subjected to photoelectric conversion, is read.

5,308,997

SELF-ALIGNED THIN FILM TRANSISTOR

Kent J. Cooper; Scott S. Roth; James D. Hayden, and Howard C. Kirsch, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 22, 1992, Ser. No. 902,216
Int. Cl.[5] H01L *29/04, 31/036, 27/01*
U.S. Cl. 257—57 **23 Claims**



16. A semiconductor device comprising:

a semiconductive sidewall spacer having a channel region formed therein, the semiconductive sidewall spacer being further characterized as an annular region;

a first electrode region self-aligned to the channel region;

a second electrode region self-aligned to the channel region;

a dielectric layer adjacent to the semiconductive sidewall spacer; and

a control electrode adjacent to the dielectric layer wherein the control electrode is electrically isolated from the first and the second electrode regions and the semiconductive sidewall spacer.

5,308,998

INSULATED GATE FIELD EFFECT SEMICONDUCTOR DEVICES HAVING A LDD REGION AND AN ANODIC OXIDE FILM OF A GATE ELECTRODE

Shunpei Yamazaki, Tokyo; Yasuhiko Takemura, and Hongyong Zhang, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1992, Ser. No. 933,810
Claims priority, application Japan, Aug. 26, 1991, 3-238713; Jan. 21, 1992, 4-30220
Int. Cl.[5] H01L *29/04, 31/036, 27/01, 29/76*
U.S. Cl. 257—57 **11 Claims**

3. An insulated gate field effect transistor comprising:

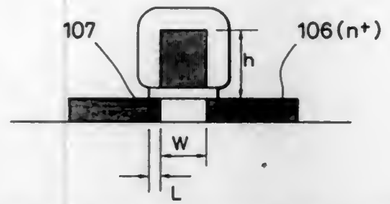
a semiconductor layer formed on a substrate;

source and drain regions formed within said semiconductor layer;

a channel region extending between said source and drain regions within said semiconductor layer;

a gate electrode formed on said channel region through a gate insulating layer therebetween; and

an anodic oxide film of said gate electrode covering a surface of said gate electrode



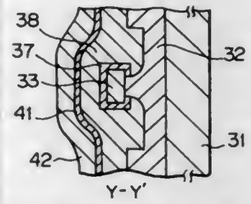
wherein at least a lightly doped region is formed between said channel and at least one of said source and drain regions.

5,308,999

MOS FET HAVING A THIN FILM SOI STRUCTURE

Hiroshi Gotou, Zama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 24, 1993, Ser. No. 21,857
Claims priority, application Japan, Feb. 27, 1992, 4-41039
Int. Cl.[5] H01L *29/04, 29/76*
U.S. Cl. 257—66 **6 Claims**



1. A MIS field effect transistor having an SOI structure, comprising:

an insulating layer;

an island of a semiconductor layer formed on the insulating layer, the island of the semiconductor layer having a channel region of one conductivity type at a center of the island and source and drain regions of the opposite conductivity type adjacent to and sandwiching the channel region, the channel region having a top surface, first and second side surfaces and bottom surface; and

a gate electrode formed on the top surface, the first and second side surfaces and the bottom surface of the channel region, the gate electrode having first and second portions under the bottom surface extending from the first and second side surfaces toward inside of the bottom surface of the channel region by predetermined distances but not contacting with each other.

5,309,000

DIAMOND FILMS WITH HEAT-RESISTING OHMIC ELECTRODES

Kimitsugu Saito; Koji Kobashi; Kozo Nishimura, and Koichi Miyata, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

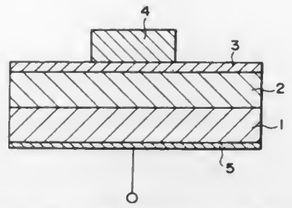
Filed Apr. 22, 1993, Ser. No. 50,614
Claims priority, application Japan, Apr. 23, 1992, 4-104766
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—076 **3 Claims**

1. A heat-resisting ohmic electrode on diamond film, comprising:

a p-type semiconducting diamond film;

a boron-doped diamond layer provided on said semiconducting diamond film; and

an electrode element made of a p-type Si selectively formed on said boron-doped layer;



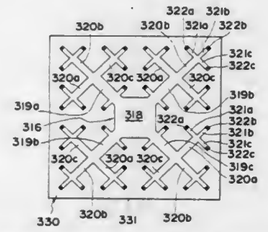
wherein boron is doped in said boron-doped diamond layer with a concentration from 1.0×10^{19} to 1.8×10^{23} cm^{-3}, and at least one impurity selected from the group consisting of B, Al and Ga is doped in said electrode element with a concentration from 1.0×10^{20} 5.0×10^{22} cm^{-3}.

5,309,001

LIGHT-EMITTING DIODE HAVING A SURFACE ELECTRODE OF A TREE-LIKE FORM

Masanori Watanabe, Nara; Mitsuhiro Matsumoto, Tenri; Hiroshi Nakatsu, Tenri; Tadashi Takeoka, Tenri; Osamu Yamamoto, Nara, and Kazuaki Sasaki, Yao, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1992, Ser. No. 980,666
Claims priority, application Japan, Nov. 25, 1991, 3-309071; Jun. 17, 1992, 4-157878; Jun. 18, 1992, 4-159242
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—99 **16 Claims**



1. A light-emitting diode comprising a semiconductor region, the semiconductor region including a light-emitting layer, stacked on a surface of a semiconductor substrate and a surface electrode stacked on the semiconductor region, and which further has a rear-face electrode on a rear face of the substrate, light emitted from the light-emitting layer being made to go out through a portion of the semiconductor layer that is not covered with the surface electrode, the surface electrode comprising at least:

a pad;

first-order branches linearly extending from the pad;

a plurality of second-order branches diverged and linearly extending from each of the first-order branches; and

a plurality of mth-order branches diverged and linearly extending from each $(m-1)$th-order branch, wherein m is a natural number greater than 2, each mth-order branch having a tip;

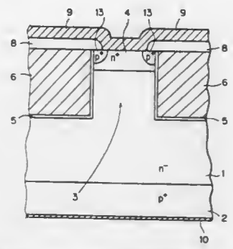
wherein no branch intersects any branch of lower or equal order except the branch from which it diverges and wherein the tips of the highest order branches do not intersect any other branch, the highest order being a natural number greater than 2.

5,309,002

SEMICONDUCTOR DEVICE WITH PROTRUDING PORTION

Tomohide Terashima, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,462
Claims priority, application Japan, Mar. 30, 1992, 4-073709
Int. Cl.[5] H01L *29/00*
U.S. Cl. 257—130 **18 Claims**



1. A semiconductor device comprising:

a first semiconductor layer of a first conductivity type having first and second major surfaces,

a second semiconductor layer of a second conductivity type formed on said first major surface of said first semiconductor layer,

said first semiconductor layer including a protruding portion selectively formed on said second major surface,

a first semiconductor region of the first conductivity type formed on the upper surface of said protruding portion and having a resistance lower than that of said first semiconductor layer,

a first insulating film formed on one side face of said protruding portion of said first semiconductor layer and said first semiconductor region,

a first control electrode formed on said first insulating film,

a second insulating film formed on the other side face of said protruding portion and said first semiconductor region opposed to said one side face,

a second control electrode formed on said second insulating film,

a second semiconductor region of the second conductivity type selectively formed in contact with said first insulating film in a surface of said first semiconductor region,

a third semiconductor region of the second conductivity type selectively formed in contact with said second insulating film in the surface of said first semiconductor region,

a first main electrode formed in contact with said first, second and third semiconductor regions independently of said first and second control electrodes, and

a second main electrode formed in contact with said second semiconductor layer.

5,309,003

ARTICLE COMPRISING A REAL SPACE TRANSFER SEMICONDUCTOR DEVICE, AND METHOD OF MAKING THE ARTICLE

Sergey Luryi, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 28, 1992, Ser. No. 843,654
Int. Cl.[5] H01L *29/161, 29/80*
U.S. Cl. 257—194 **10 Claims**

1. An article comprising a real space transfer (RST) semiconductor device, associated with the device is a longitudinal and a lateral direction and an active region, the device comprising, in sequence,

a) a first epitaxial semiconductor region comprising a layer having relatively low sheet carrier concentration, said

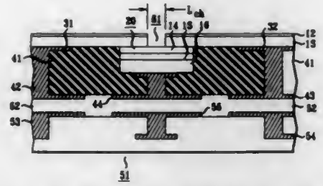
VOL 1162 ISS 1 MY 3 1994 UMI

layer to be referred to as the emitter layer, and further comprising a patterned semiconductor layer having relatively large sheet carrier concentration and being in contact with the emitter layer, said patterned semiconductor layer to be referred to as the emitter contact layer, the emitter layer having a width W in the lateral direction;

b) an essentially undoped second epitaxial semiconductor region comprising a semiconductor layer in contact with the emitter layer, said semiconductor layer to be referred to as the barrier layer;

c) a third epitaxial semiconductor region in contact with the barrier layer and comprising doped semiconductor material;

d) means for making electrical contact to the third semiconductor region; and



e) at least two spaced apart means for making electrical contact to the emitter contact layer, with each of the means of d) and e) comprising a contact metal region, the lateral distance between the at least two spaced apart contact metal regions being L_c;

f) the emitter contact layer is patterned such that a feature, of width L_{ch} in the lateral direction, separates two portions of the emitter contact layer, with $L_{ch} \leqq 5$ μm, each of said two portions of the emitter contact layer being associated with one of said at least two means of e), said feature to be referred to as the trench; and

g) the third semiconductor region comprises a layer of doped epitaxial semiconductor material, said layer to be referred to as the collector layer, the collector layer having a width in the lateral direction that is more than W, with W being at most 50 μm, the trench being directly opposite the collector layer.

5,309,004

HETEROSTRUCTURE ACOUSTIC CHARGE TRANSPORT DEVICE HAVING ELECTRON AND HOLE TRANSPORT

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 545,388, Jun. 27, 1990, abandoned. This application Oct. 8, 1991, Ser. No. 773,979

Int. Cl.[5] H01L *29/796, 29/205*

U.S. Cl. 257—216 **13 Claims**

1. An acoustic charge transport device comprising:

a transducer means fabricated on a surface of a gallium arsenide structure for launching along a propagation axis surface acoustic waves having a wavelength and characterized by maxima and minima of electrical potential which transport both electrons and electrical "holes" provided thereto;

a first electrode means for providing electrical "holes" to said gallium arsenide structure;

a second electrode means spaced from said first electrode means along said propagation axis approximately one half said surface acoustic wave wavelength, for providing electrons to said gallium arsenide structure

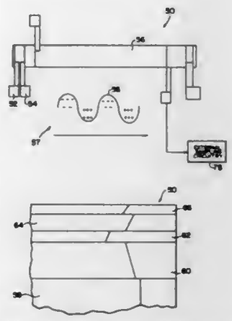
a transport channel in said gallium arsenide structure having a major dimension extending parallel to said propagation axis characterized by an intrinsic vertical electrical potential for providing lateral and vertical confinement of both electrons and electrical "holes" presented thereto for transport by said surface acoustic waves;

a third electrode means for providing signals to modulate said propagating electrons and electrical "holes";

a fourth electrode means configured with said transport channel at an end thereof distal to said transducer means for providing an electrical signal equivalent of said modulated propagating electrons and electrical "holes";

said gallium arsenide structure fabricated in accordance with the steps of

growing a first layer of aluminum gallium arsenide on a gallium arsenide substrate;



growing a first layer of gallium arsenide on said aluminum gallium arsenide layer;

growing a second layer of aluminum gallium arsenide on said first layer of gallium arsenide;

doping said second layer of aluminum gallium arsenide;

growing a cap layer on said second layer of aluminum gallium arsenide;

said second layer of aluminum gallium arsenide being doped to provide electrical charge to satisfy uncompensated surface states in said first gallium arsenide layer.

5,309,005

CHARGE TRANSFER DEVICE HAVING A BENT TRANSFER CHANNEL

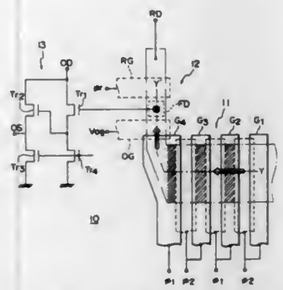
Tadashi Nagakawa, Nabari, and Kazuo Hashiguchi, Shiki, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1992, Ser. No. 964,934

Claims priority, application Japan, Feb. 6, 1992, 4-21090

Int. Cl.[5] H01L *29/796;* **G11C** *19/28*

U.S. Cl. 257—239 **5 Claims**



1. A charge transfer device having, on a substrate, a transfer section having a plurality of transfer gates for transferring a signal charge along a transfer channel in a specified direction,

and a pickup section operatively connected to the transfer gate of a final stage of the transfer section for converting the signal charge received from the transfer section to a voltage signal, characterized in that the transfer channel is bent generally at a right angle between the transfer section and the pickup section; wherein the transfer channel is narrowed in a position in which the transfer channel is bent so that a part of the transfer channel located in the pickup section has a width narrower than that of a part thereof located in the transfer section.

5,309,006

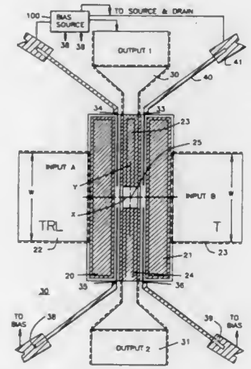
FET CROSSBAR SWITCH DEVICE PARTICULARLY USEFUL FOR MICROWAVE APPLICATIONS

David A. Willems, Salem, and Victor E. Steel, Troutville, both of Va., assignors to ITT Corporation, New York, N.Y.

Filed Nov. 5, 1991, Ser. No. 788,203

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—275 **20 Claims**



1. A crossbar switching device, comprising:

a semiconductor substrate having located thereon first and second FET source electrode areas, each of a relatively rectangular surface configuration and located on said substrate parallel to one another and spaced apart from each other;

first and second FET drain electrode areas, each of a relatively rectangular surface configuration and linearly positioned between said source electrodes, with said first drain electrode extending a predetermined distance between said source electrodes from a top side towards a bottom side, with said second drain electrode extending said predetermined distance between said source electrodes from a bottom side towards said top side, with said first and second drain electrodes as located between said source electrodes disposed about a common center line and parallel to said source electrodes, with each of said source electrodes spaced room said drain electrodes to form an FET channel;

first, second, third and fourth gate finger electrodes each of a given length and width and each located on said substrate and each adapted to receive an operating bias, with said first gate electrode located between said first source and said first drain, with said second gate electrode located between said first drain and said second source, with said third gate electrode located between said first drain and said second drain, with said fourth gate electrode located between said second source and said second drain, wherein a bias applied to a selected gate electrode will cause said FET channel to provide a low impedance path between a source electrode and a drain electrode;

a first transmission line located on said substrate and connected to said first source electrode area and adapted to receive a first input signal;

a second transmission line located on said substrate and connected to said second source electrode and adapted to receive a second input signal; and

wherein a biasing signal applied to said first gate electrode operates to cause said first input signal to couple to said first drain, with a biasing signal applied to said fourth gate electrode operative to cause said second input signal to couple to said second drain in a first state, and in a second state, a biasing signal applied to said third gate electrode operates to cause said first signal to couple to said second drain, with a biasing signal applied to said second gate electrode operative to cause said second signal to couple to said first drain thereby causing said device to operate as a crossbar switch.

5,309,007

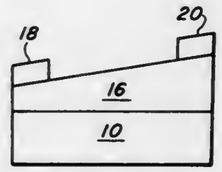
JUNCTION FIELD EFFECT TRANSISTOR WITH LATERAL GATE VOLTAGE SWING (GVS-JFET)

Galina Kelner, Potomac, Md., and Michael Shur, Charlottesville, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1991, Ser. No. 767,952

Int. Cl.[5] H01L *29/80, 31/112, 31/0312*

U.S. Cl. 257—286 **2 Claims**



1. A Field Effect Transistor comprising:

a gate layer of one conductivity type;

a conducting channel layer of a conductivity type opposite the conductivity type of said gate layer, wherein said gate layer and said channel layer have a common face;

a source and a drain on a face of said conducting channel layer opposite said common face; and

a leveling means to make the electric field within said conducting channel layer more uniform between said source and said drain so as to increase the electric field strength near said source and thus accelerate electrons near said source more rapidly to increase transconductance and reduce the average electron transit time;

wherein said gate layer is in epitaxial contact with said conducting channel layer; and

wherein said leveling means is an increasing thickness of said conducting channel layer such that said conducting channel layer is thinner near said source than near said drain.

5,309,008

SEMICONDUCTOR MEMORY DEVICE HAVING A TRENCH CAPACITOR

Toshiharu Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 25, 1993, Ser. No. 22,280

Claims priority, application Japan, Sep. 9, 1991, 3-229113

Int. Cl.[5] H01L *29/68, 29/78, 29/92*

U.S. Cl. 257—304 **12 Claims**

8. A semiconductor memory device comprising:

a first layer made of a semiconductor of a first conductivity type;

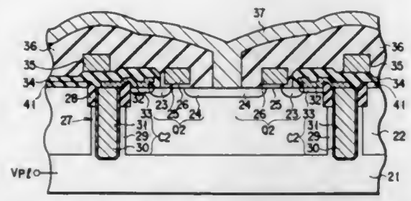
a second layer, on which said first layer is formed, made of

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a semiconductor of a second conductivity type and connected to a reference potential;

a trench formed in said first layer and extending from a top surface of said first layer substantially down to a top surface of said second layer, said trench comprising an upper trench portion including a bottom wall and a side wall, and a lower trench portion including a bottom wall and a side wall, said lower trench portion formed in said bottom wall of said upper trench portion and said upper trench portion having a diameter larger than a diameter of said lower trench portion;

a first insulating film covering said bottom wall and said side wall of said upper trench portion;



a second insulating film covering said bottom wall and said side wall of said lower trench portion and an inner surface of said first insulating film, said second insulating film having a thickness smaller than a thickness of said first insulating film;

an impurity diffusion layer of the second conductivity type formed in said first layer, said impurity diffusion layer completely surrounding said side wall of said lower trench portion, extending from said second layer to said bottom wall of said upper trench portion, and serving as a capacitor electrode; and

a conductive body contained in said trench and serving gas a storage electrode.

5,309,009

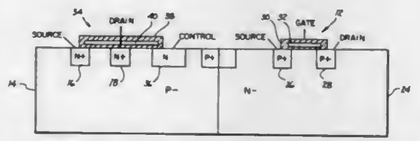
INTEGRATED ELECTRICALLY ADJUSTABLE ANALOG TRANSISTOR DEVICE

Robert L. Chao, 14555 Harvard Ct., Los Altos, Calif. 94022

Filed Sep. 14, 1992, Ser. No. 944,546

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—318 **2 Claims**



1. A CMOS integrated circuit comprising, in combination:

a semiconductor substrate having a planar top surface;

a first region of a first conductivity type located in said substrate and in contact with said planar top surface;

second and third regions of a second conductivity type opposite said first conductivity type located in said first region in said substrate and in contract with said planar top surface, said second and said third regions of said second conductivity type forming the source and the drain, respectively, of a first MOS transistor;

a separate fourth region of said second conductivity type located in said first region in said substrate and in contact with said planar top surface, said fourth region of said second conductivity type having a lower doping concentration than either of said second and third regions of said second conductivity type and forming a control junction;

a fifth region of said second conductivity type located in said substrate and in contact with said planar top surface, said fifth region having a lower doping concentration than said fourth region of said second conductivity type;

sixth and seventh regions of said first conductivity type located in said fifth region of said second conductivity type in said substrate and in contact with said planar top surface, said sixth and seventh regions of said first conductivity type forming the source and the drain respectively, of a second MOS transistor of complementary conductivity type to said first transistor;

an insulating gate layer of substantially uniform thickness over each of said first, second, third, fourth, fifth, sixth and seventh regions of said first and second conductivity types in said substrate;

conductive means connected to said fourth region of said second conductivity type for controlling the voltage on said control junction;

conductive gate means over said insulating gate layer and spanning over said first, second, third, and fourth regions of said first and second conductivity types for controlling the threshold of said first MOS transistor by the combination of voltage on said control junction and charge injected at said drain of said first MOS transistor.

5,309,010

SEMICONDUCTOR DEVICE HAVING IMPROVED THIN FILM TRANSISTORS

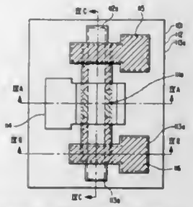
Hiroshi Kitajima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,806

Claims priority, application Japan, May 27, 1991, 3-120597

Int. Cl.[5] H01L *27/01, 27/12, 31/0392, 27/11*

U.S. Cl. 257—347 **8 Claims**



1. A semiconductor device comprising:

an insulating film formed over a semiconductor substrate, said insulating film including a ridge which has first and second side walls, each of said side walls having a first longitudinal part, a second longitudinal part and a third longitudinal part therebetween;

first and second semiconductor thin films formed on said first and second side walls, respectively, each of said first and second semiconductor thin films including a first area formed on and extended across said first longitudinal part of an associated one of said first and second side walls, a second area formed on and extended across said second longitudinal part of said associated one of said first and second side walls and a third area formed on said third longitudinal part of said associated one of said first and second side walls to interconnect said first and second areas to each other; and

a thin film transistor comprising a source region composed of the first longitudinal parts of said first and second semiconductor thin films, a drain region composed of the second longitudinal parts of said first and second semiconductor thin films, and a channel region composed of the third longitudinal parts of said first and second semiconductor thin films.

5,309,011

WAFER SCALE OR FULL WAFER MEMORY SYSTEM, PACKAGING METHOD THEREOF, AND WAFER PROCESSING METHOD EMPLOYED THEREIN

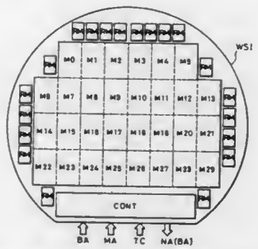
Masanori Tazunoki, Tokyo; Hiromitsu Mishimagi, Akishima; Makoto Homma, Tokyo; Toshiyuki Sakuta, Hamura; Hisashi Nakamura, Ohme; Keiji Sasaki, Musashino; Minoru Enomoto, Tokorozawa; Toshihiko Satoh, Sayama; Kunizo Sahara, Tokyo; Shigeo Kuroda, Ohme; Kanji Otsuka, Higashiyamato; Masao Kawamura, Fuchu; Hinoko Kurosawa, Hino, and Kazuya Ito, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 627,881, Dec. 13, 1990, Pat. No. 5,191,224, which is a continuation of Ser. No. 184,871, Apr. 22, 1988, abandoned. This application Oct. 14, 1992, Ser. No. 960,848

Claims priority, application Japan, Apr. 22, 1987, 62-97326; Apr. 22, 1987, 62-97329; Apr. 22, 1987, 62-97330; Apr. 22, 1987, 62-97331; Apr. 24, 1987, 62-99779

Int. Cl.[5] H01L *27/02, 27/10, 27/15*

U.S. Cl. 257—390 **25 Claims**



1. A wafer-scale semiconductor integrated circuit device, comprising:

a wafer scale semiconductor having a main surface including a central portion and peripheral portion, wherein the main surface of the wafer-scale semiconductor substrate has substantially a circular shape;

a plurality of memory blocks being formed on the main surface of the wafer-scale semiconductor substrate and each having substantially a same area size on the main surface, wherein the memory blocks are substantially provided at the central portion of the main surface; and

a plurality of preliminary memory circuits formed at the peripheral portion of the main surface of the wafer-scale semiconductor substrate, wherein each of the preliminary memory circuits occupies a smaller area than that of a memory block, the preliminary memory circuits being used for relieving defects in the memory blocks by storing data in the preliminary memory circuits instead of in the memory blocks.

5,309,012

PROTECTED ERASE VOLTAGE DISCHARGE TRANSISTOR IN A NONVOLATILE SEMICONDUCTOR MEMORY

Jerry G. Jex, Forest Grove, Oreg., and Neal R. Mielke, Los Altos Hills, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 3, 1992, Ser. No. 971,074

Int. Cl.[5] H01L *29/68, 27/02*

U.S. Cl. 257—401 **9 Claims**

1. A semiconductor memory comprising:

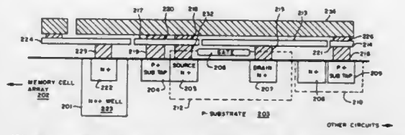
(A) a memory cell for storing a bit of information;

(B) a means for erasing the bit of information stored by the memory cell;

(C) a transistor coupled to the source of the memory cell for grounding the source to verify that the memory cell has been erased, wherein a charge stored by parasitic capacitance associated with the memory cell is discharged through the transistor, and wherein the transistor comprises:

(1) a polysilicon gate coupled to a control means for switching the transistor on and off;

(2) a drain diffusion region coupled to the source of the memory cell;



(3) a source diffusion region coupled to ground, wherein the source diffusion region resides closer to the memory cell than the drain diffusion region;

(D) a first substrate tap placed between the memory cell and the source diffusion region of the transistor for coupling the source of the memory cell to ground, wherein a diffusion distance between the transistor and the memory cell is minimized.

5,309,013

PHOTOELECTRIC CONVERSION DEVICE

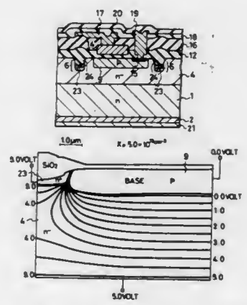
Toshiji Suzuki, Machida, and Shigeyuki Matsumoto, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 698,323, May 6, 1991, abandoned, which is a continuation of Ser. No. 281,968, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 854,863, Apr. 23, 1986, abandoned. This application Oct. 13, 1992, Ser. No. 960,290

Claims priority, application Japan, Apr. 30, 1985, 60-91133

Int. Cl.[5] H01L *29/72, 31/10*

U.S. Cl. 257—446 **2 Claims**



1. A photoelectric conversion device comprising:

a plurality of phototransistors each comprising:

a base region comprising a semiconductor of a first conductivity type;

an emitter region comprising a semiconductor of a second conductivity type different from the first conductivity type; and

a collector comprising semiconductor of the second conductivity type, wherein

a photo-excited carrier is stored in said base region in a floating state,

a junction between said emitter and base regions is forwardly biased, thereby reading a signal into the emitter side in a floating state,

a junction between said emitter and base regions is forwardly biased for refreshment while said emitter is held at a reference potential, and

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based on the carriers stored in said base region, a current flowing between said emitter and collector regions is controlled, and

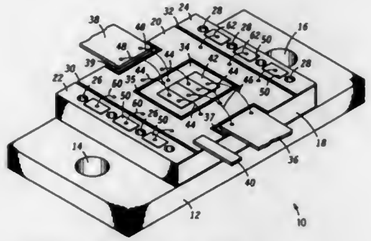
wherein said device comprises a common substrate common to said plurality of phototransistors, a first region provided on a major surface of the common substrate, said first region having an impurity concentration lower than that of said common substrate, and a second region, provided between said plurality of base regions and on said first region, said second region having an impurity concentration higher than that of said common substrate, a part of said first region being sandwiched between said common substrate and said second region, and wherein a first potential is applied to an electrode in contact with a back side surface of said common substrate and a second potential is applied to another electrode in contact with said second region, the first and second potentials being equal to each other.

5,309,014

TRANSISTOR PACKAGE

Lance G. Wilson, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 2, 1992, Ser. No. 862,106
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—584 **10 Claims**



1. A transistor package, comprising:

a base flange member;

an insulating substrate having top and bottom substantially planar surfaces, said lower surface being electrically conductively mounted to said flange base member, said top surface having a predetermined metalization pattern formed thereon including selective opposing edges thereof being metalized to provide conductive contact to said bottom surface, said selective edges being electrically isolated from the metalized center portion of said top surface of said substrate, a metalized pad formed in said center portion and being insulated from the surrounding area of said metalized center portion and first and second metalized bonding pads formed opposite one another in said metalized center portion and being insulated therefrom; and

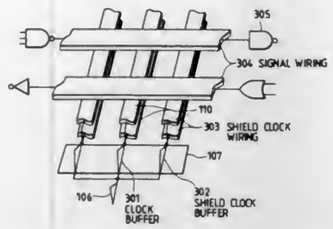
a lead frame mounted to said substrate including first and second opposing leads which contact said first and second bonding pads respectively while being isolated from said center portion and a third lead contacting said metalized center portion and being substantially parallel to said first lead.

5,309,015

CLOCK WIRING AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING THE SAME

Makoto Kuwata, Ohme, and Nobuaki Kitamura, Iruma, both of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,801
Claims priority, application Japan, Nov. 14, 1991, 3-298900
Int. Cl.[5] H01L *27/10, 27/15, 23/48*
U.S. Cl. 257—659 **10 Claims**



1. A semiconductor integrated circuit device comprising:

a clock wiring;

a shield clock wiring;

a first clock driver connected with said clock wiring;

a second clock driver connected with said shield clock wiring; and

a clock pulse generator for feeding a clock signal to said first clock driver and said second clock driver,

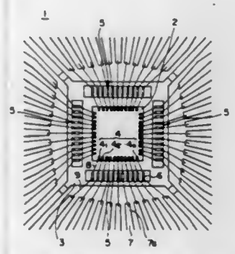
wherein said clock wiring is arrayed close to said shield clock wiring in its whole or partial length.

5,309,016

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING TERMINAL MEMBERS PROVIDED BETWEEN SEMICONDUCTOR ELEMENT AND LEADS

Junichi Kasai; Michio Sono, and Tosiyuki Honda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed May 29, 1992, Ser. No. 889,954
Int. Cl.[5] H01L *23/48, 23/44, 29/52, 29/60*
U.S. Cl. 257—666 **18 Claims**



1. A semiconductor integrated circuit device comprising:

an integrated circuit chip having pads;

a lead frame stage having first and second areas, the integrated circuit chip being mounted on the first area;

a plurality of terminal members mounted on the second area of the lead frame stage, the terminal members respectively having electrically conductive patterns and being made of a material identical to a material of which the integrated circuit chip is made;

inner leads spaced apart from the lead frame stage;

a first group of bonding members connecting the pads of the integrated circuit chip and the electrically conductive patterns of the terminal members to each other; and

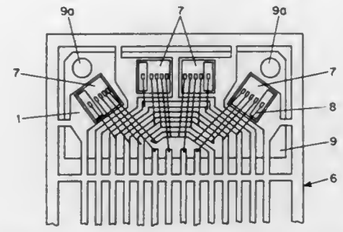
a second group of bonding members connecting the electrically conductive patterns of the terminal members and the inner leads to each other.

5,309,017

ASSEMBLY LEAD FRAME WITH COMMON LEAD ARRANGEMENT FOR SEMICONDUCTOR DEVICES

Atsushi Maruyama, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 21, 1993, Ser. No. 6,657
Claims priority, application Japan, Jan. 30, 1992, 4-14382
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—666 **4 Claims**



1. A lead frame for facilitating assembly and interconnection of a plurality of integrated circuit chips to form a module, said lead frame comprising a pattern of planar conductors comprising:

a plurality of common leads disposed in a semicircular pattern, each common lead being adapted for common connection to selected electrodes of said plurality of chips;

a plurality of chip mount conductive areas, each for mounting one of said plurality of chips, disposed along the curved periphery of said semicircular pattern of common leads;

a surrounding outer connecting strip having an open end and a closed end, said closed end connected to each of said plurality of chip mount conductive area be respective tie bars;

a chip mount lead extending from each of said chip mount conductive areas;

a first plurality of parallel external leads drawn out from said common leads; and

a second plurality of parallel external leads drawn out form said chip mount leads, said first and second pluralities of external leads arranged in a row and all temporarily connected together and to said outer connecting strip by a common tie bar extending across the open end of said outer connecting strip.

5,309,018

LEAD FRAME HAVING DEFORMABLE SUPPORTS

Kazutaka Shibata, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 12, 1993, Ser. No. 30,854
Claims priority, application Japan, Apr. 28, 1992, 4-110046
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 **2 Claims**

1. A lead frame comprising:

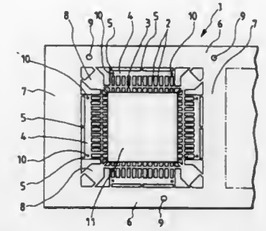
(a) a central die pad arranged to receive a semiconductor chip;

(b) an array of closely-spaced leads arranged around the die pad;

(c) a plurality of tie bars connecting the leads to one another;

(d) a plurality of coupling bars connecting the ends of the leads to one another; and

(e) a plurality of narrow supports connecting the coupling bars laterally to surrounding frame members and permitting the coupling bars to shift lengthwise with respect to the surrounding frame members;



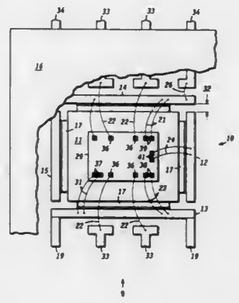
(f) the coupling bars having positioning holes to position the lead frame when the tie bars are cut out.

5,309,019

LOW INDUCTANCE LEAD FRAME FOR A SEMICONDUCTOR PACKAGE

Daniel D. Moline, and Bernard E. Weir, III, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1993, Ser. No. 23,407
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—670 **12 Claims**



1. A low inductance lead frame for a semiconductor package comprising:

a substantially rectangular flag having sides;

a plurality of substantially planar intermediate connection bars wherein the intermediate connection bars are substantially parallel to the sides of the flag and are in a plane that is both substantially parallel to a plane of the flag and displaced perpendicularly from the plane of the flag, and wherein ends of each intermediate connection bar are separated from ends of other intermediate connection bars of the plurality of substantially planar connection bars;

a support extending from each side of the flag to each intermediate connection bar; and

a plurality of leads substantially coplanar with each intermediate connection bar wherein at least one lead of the plurality of leads is connected to at least one intermediate connection bar by a bonding wire.

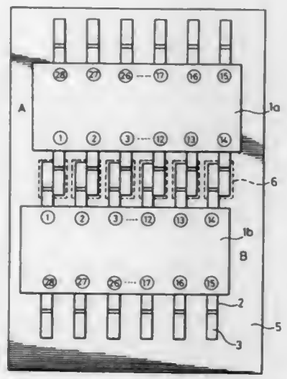
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5,309,020

PACKAGED SEMICONDUCTOR DEVICE ASSEMBLY INCLUDING TWO INTERCONNECTED PACKAGED SEMICONDUCTOR DEVICES MOUNTED ON A COMMON SUBSTRATE

Yasuhiro Murasawa; Syuniti Uemura, and Hajime Maeda, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,878
Claims priority, application Japan, Oct. 30, 1990, 2-296638
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[5] H01L *23/16, 23/02, 23/12*
U.S. Cl. 257—685 **2 Claims**



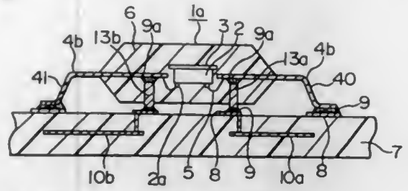
1. A semiconductor device assembly comprising:
a first packaged semiconductor device having a package with first and second opposed package surfaces and a plurality of external lead terminals extending from the package and arranged in a predetermined configuration, said external lead terminals being bent toward the first package surface;
a second packaged semiconductor device identical to the first packaged semiconductor device so that each external lead terminal of said first packaged semiconductor device has a corresponding external lead terminal in said second packaged semiconductor device except that the external lead terminals of said second packaged semiconductor device are bent toward the second package surface;
a substrate having a first surface including a plurality of spaced apart, electrically conducting mount pads disposed on the first surface of said substrate wherein said first packaged semiconductor device is mounted on the first surface of said substrate with the second package surface of said first packaged semiconductor device facing the first surface of said substrate and with respective external lead terminals of said first packaged semiconductor device mounted on corresponding mount pads and said second packaged semiconductor device is mounted on the first surface of said substrate with the first package surface of said second packaged semiconductor device facing the first surface of said substrate and with respective external lead terminals of said second packaged semiconductor device mounted on corresponding mount pads, corresponding external lead terminals of said first and second packaged semiconductor devices being respectively mounted on the same mount pads, thereby interconnecting corresponding external lead terminals of said first and second packaged semiconductor devices.

5,309,021

SEMICONDUCTOR DEVICE HAVING PARTICULAR POWER DISTRIBUTION INTERCONNECTION ARRANGEMENT

Haruo Shimamoto; Jun Shibata; Toru Tachikawa; Tetsuya Ueda, and Hiroshi Seki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,352
Claims priority, application Japan, Oct. 16, 1991, 3-267649
Int. Cl.[5] H01L *39/02, 23/58, 23/12, 23/48*
U.S. Cl. 257—691 **13 Claims**



1. A semiconductor device comprising;
a semiconductor chip having a main surface and a plurality of electrodes on the main surface;
electrical connection means including a plurality of electrically conductive connections disposed around the semiconductor chip electrically connecting respective electrodes of the semiconductor chip for receiving external signals including I/O signals, a power supply voltage, and a grounding voltage;
power supply/grounding voltage connection means including at least one metal post on one of the conductive connections for conducting one of a power supply voltage and a grounding voltage, the metal post being electrically connected at one end to one of the conductive connections close to the semiconductor chip and extending nearly perpendicular to the conductive connection;
at least one common plane conductor for the power supply voltage and a common plane conductor for the grounding voltage extending over and parallel to the plurality of electrically conductive connections to which the plurality of electrically conductive connections for one of the power supply voltage and the grounding voltage are commonly connected; and
a molding resin encapsulating the semiconductor chip, part of the electrical connection means, and part of the power supply/grounding voltage connection means, part of the metal post being exposed outside the molding resin.

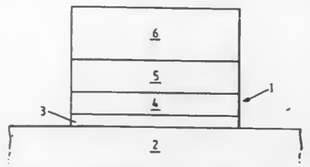
5,309,022

NI-GE-AU OHMIC CONTACTS FOR GAAS AND GAALAS

Sukhdev S. Gill, West Midlands; Mark A. Crouch, and John R. Dawsey, both of Worcs, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB90/01382, § 371 Date Feb. 14, 1992, § 102(e) Date Feb. 14, 1992, PCT Pub. No. WO91/04578, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 7, 1990, Ser. No. 834,561
Claims priority, application United Kingdom, Sep. 15, 1989, 8921004
Int. Cl.[5] H01L *29/46*
U.S. Cl. 257—743 **4 Claims**

1. A low resistance ohmic contact for n-type GaAs and n-type GaAlAs comprising:
multiple layers of Ni-Ge-Au contacts on an n-type GaAs substrate or an n-type GaAlAs substrate with a thin buffer GaAs contact layer,
characterised by said contact comprising
a first layer of Ni of thickness between 40 Å and 200 Å deposited on on the substrate, a second layer of Ge of thickness between 150 Å and 400 Å and third layer of Au



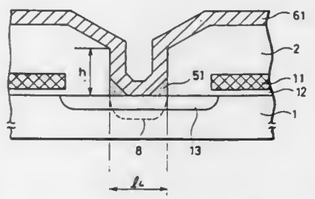
of thickness greater than 4000 Å, and said layers being annealed.

5,309,023

CONTACT STRUCTURE FOR INTERCONNECTION IN SEMICONDUCTOR DEVICES AND MANUFACTURING METHOD THEREOF

Kaoru Motonami, and Katumi Suizu, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 609,561, Nov. 6, 1990, abandoned. This application May 26, 1992, Ser. No. 888,323
Claims priority, application Japan, Nov. 14, 1989, 1-296832; Oct. 4, 1990, 2-268230
Int. Cl.[5] H01L *23/48, 21/44*
U.S. Cl. 257—773 **23 Claims**



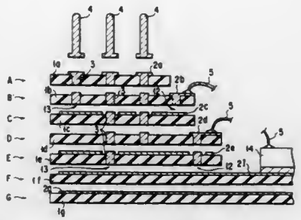
1. A contact structure for interconnection in FET devices, comprising:
a semiconductor substrate having a main surface;
a conductive region formed in said semiconductor substrate;
an insulating layer formed on the main surface of said semiconductor substrate and having a contact hole formed therethrough to reach a surface of said conductive region;
a gate electrode formed within said insulating layer;
an interconnection layer formed on the surface of said conductive region and over said insulating layer and comprising a high melting point material as a main material; and
means for restraining an impurity diffusion region caused by interaction between said interconnection layer and said conductive region from extending laterally from said contact hole into said semiconductor substrate, said means for restraining having a higher resistivity to interaction with said conductive region than said interconnection layer, being formed as a distinct structure from said interconnection layer and being arranged on said conductive region between said interconnection layer and said conductive region entirely within said contact hole as defined by said insulating layer.

5,309,024

MULTILAYER PACKAGE

Naohiko Hirano, Yokobama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 4, 1992, Ser. No. 893,807
Claims priority, application Japan, Jun. 6, 1991, 3-134613; May 29, 1992, 4-139006
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—773 **21 Claims**



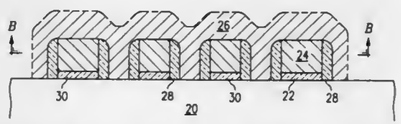
1. A multilayer package, comprising:
a semiconductor device;
a conductive layer applying a power voltage V_{DD} or a ground voltage V_{SS} to said semiconductor device;
a plurality of inner leads having one end connected to said conductive layer at the inner portion of said conductive layer and other end connected to said semiconductor device; and
a plurality of outer leads having one end connected to said conductive layer at the outer portion of said conductive layer, wherein a first contact point between said conductive layer and each inner lead and a second contact point between said conductive layer and each outer lead are arranged to satisfy at least the following relationship:
both (C_1/h) and (C_2/h) are ($\frac{3}{2}$) or less where a distance between nearest neighboring two first contact points is C_1 and a distance between nearest neighboring two second contact points is C_2, and the shortest distance from the first contact point to the second contact point is h.

5,309,025

SEMICONDUCTOR BOND PAD STRUCTURE AND METHOD

Frank R. Bryant, Denton, Tex., and Fusen E. Chen, Milpitas, Calif., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 27, 1992, Ser. No. 919,949
Int. Cl.[5] H01L *23/29, 23/48, 29/46, 29/54*
U.S. Cl. 257—784 **12 Claims**

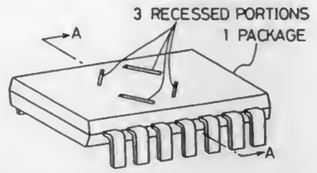


1. A bond pad structure in an integrated circuit, comprising:
a semiconductor device having an underlying region;
at least one barrier layer deposited over the underlying region, wherein a portion of the underlying region is exposed;
a first conductive layer deposited over the at least one barrier layer to form a conductive region, wherein the exposed portion of the underlying region remains exposed; and
a second conductive layer deposited over the first conduc-

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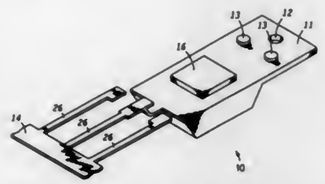
tive layer and the exposed portion of the underlying region.

5,309,026
INTEGRATED CIRCUIT PACKAGE HAVING STRESS REDUCING RECESSES
Kazuhiro Matsumoto, Tokyo, Japan, assignor to Nippon Precision Circuits Ltd., Tokyo, Japan
Filed Nov. 2, 1992, Ser. No. 970,366
Claims priority, application Japan, Nov. 19, 1991, 3-303445
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—787 **1 Claim**



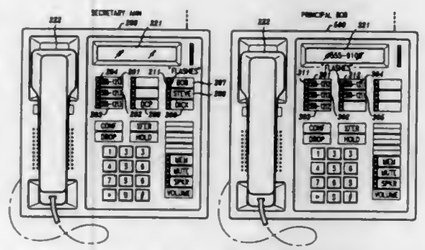
1. An integrated circuit device wherein an IC chip is molded in a resin package and extends in a given plane in said resin package, the resin package being formed of a resin having a coefficient of contraction that is different than that of the IC chip, the IC chip having corners, the resin package having an external surface extending parallel to said plane, at least one recess in said external surface, the bottom of said recess being positioned between said given plane and said external surface of said package, said recess being positioned to reduce stress concentration at said corners of said IC chip resulting from said different coefficients of contraction, said recess having a depth of from 0.1 mm to 0.2 mm and a width of from 0.1 mm to 2.0 mm.

5,309,027
ENCAPSULATED SEMICONDUCTOR PACKAGE HAVING PROTECTANT CIRCULAR INSULATORS
James P. Letterman, Jr., Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 15, 1992, Ser. No. 898,641
Int. Cl.[5] H01L *23/48, 23/28, 39/02, 23/02*
U.S. Cl. 257—796 **14 Claims**



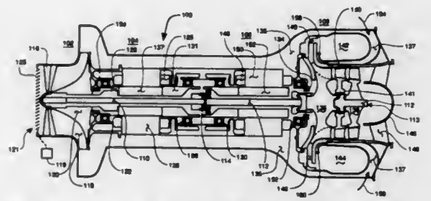
1. An insulated semiconductor package comprising:
a leadframe having a flag wherein the flag has a surface;
a semiconductor die attached to the surface of the flag;
an opening through the flag, the opening having a diameter;
a plurality of circular insulators attached to the surface of the flag and positioned between the opening and the semiconductor die wherein the plurality of circular insulators are attached by an adhesive film, the plurality of the circular insulators having a diameter;
a body encapsulating the leadframe;
a mounting hole through the body wherein the mounting hole is concentric with the opening and has a diameter that is smaller than the diameter of the opening;
an alignment hole extending from a surface of the body to one of the plurality of circular insulators, the alignment hole having a diameter that is smaller than the diameter of the plurality of circular insulators so that the body overlaps the one of the plurality of circular insulators and exposes a portion of the one of the plurality of circular insulators;
an environmental seal at a junction of the body and the one of the plurality of circular insulators wherein the environmental seal seals the leadframe from an environment external to the body; and
a plurality of leads extending from an edge of the body wherein the edge of the body is opposite an edge near the mounting hole.

5,309,028
CALL COVERAGE ARRANGEMENT IN AN ISDN SWITCHING SYSTEM
Louis D. Brown, Clarendon, and Jeffery M. Dement, Hoffman Estates, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 14, 1992, Ser. No. 913,561
Int. Cl.[5] H04M *3/42, 1/00, 3/00;* **H04Q** *11/04*
U.S. Cl. 379—201 **2 Claims**



2. In an arrangement for providing call coverage by a covering terminal for a plurality of covered terminals, each of said plurality of covered terminals having a plurality of call appearances, said arrangement comprising an integrated services digital network (ISDN) switching system connected to said covering terminal and each of said plurality of covered terminals by respective ISDN lines, where said plurality of covered terminals have a plurality of call appearances none of which is shared with any call appearance of said covering terminal, said covering and covered terminals being interconnected only via said switching system, a call coverage method for use by a switching system, said method comprising:
in response to an incoming call to any of the plurality of covered terminals, said switching system causing an audible alerting signal at each of the plurality of covered terminals called and determining for each covered terminal called whether the collective status of said plurality of call appearances thereof is ringing while idle or ringing while busy,
when the determined collective status for any of the plurality of covered terminals is ringing while idle, said switching system causing an audible alerting signal and a first visual signal on a unique visual indicator assigned to a specific covered party at said covering terminal, both of which signals are contemporaneous with said audible alerting signal at the respective covered terminal called,
when the determined collective status for any of the plurality of covered terminals is ringing while busy, said switching system causing an audible alerting signal and a second visual signal at said covering terminal, both of which signals are contemporaneous with said audible alerting signal at the respective covered terminal called, said second visual signal being distinctive from said first visual signal, and
said switching system completing said incoming call to the first one of the called covered and covering terminals to answer said incoming call, where said covering terminal answers an incoming call for each of the plurality of covered terminals by invoking a respective call pickup feature therefor.

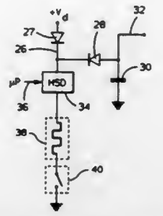
5,309,029
AIRCRAFT POWER UNIT WITH ELECTIVE MECHANICAL COUPLING
Earl M. Gregory, Centerville, and James S. Tschantz, Bellbrook, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio
Filed Jun. 18, 1993, Ser. No. 77,804
Int. Cl.[5] B64D *41/00*
U.S. Cl. 290—1 R **20 Claims**



11. The method of achieving efficient high and low altitude operation in an aircraft power unit comprising the steps of:
supporting inlet port compressor fan and outlet port turbine fan elements of said aircraft power unit on clutch-coupleable rotationally segregated inlet and outlet shafts in said power unit;
coupling an energizing flow of hot gasses from an oxidizable fuel burning combustion chamber apparatus to said outlet port turbine fan elements during high and low altitude operation of said aircraft power unit;
selecting compressor fan pressurized ambient air as an oxidizing element for said oxidizable fuel during low altitude dense air operation of said aircraft power unit and choosing a stored supply of oxidant material for oxidizing element use during high altitude thin air operation of said aircraft power unit;
said selecting step including clutch coupling of said inlet and outlet shafts, with said turbine fan energizing said compressor fan and supplying said ambient air oxidizing material to said combustion chamber apparatus during said low altitude dense air operation of said aircraft power unit and
said selecting step also including clutch decoupling of said inlet and outlet shafts, and an attending de-energizing of said compressor fan during said high altitude thin air operation of said aircraft power unit;
generating an electrical energy output of said aircraft power unit from turbine fan derived rotational mechanical energy received via said outlet shaft.

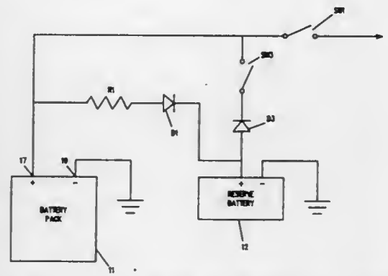
5,309,030
CURRENT SOURCE FOR A SUPPLEMENTAL INFLATABLE RESTRAINT SYSTEM
Frederich H. Schultz, Santa Barbara, Calif., assignor to Delco Electronics Corporation, Kokomo, Ind.
Filed Oct. 19, 1992, Ser. No. 963,182
Int. Cl.[5] B60R *21/32*
U.S. Cl. 307—10.1 **3 Claims**

1. Deployment apparatus for a supplemental inflatable restraint, comprising:
a sense element;
a switch device coupled to the sense element;
a squib coupled to the switch device, wherein the sense element, switch device and squib are coupled in a series circuit between a power source and a ground.
a deploy control circuit coupled to the switch device for forward biasing the switch device in response to a deploy command, allowing an electric current to flow through



the sense element, switch device and squib to deploy the supplemental inflatable restraint; and
a current control circuit, coupled to the sense element and switch device, which responds to said electric current in the sense element and regulates the switch device to limit said electric current to a predetermined value.

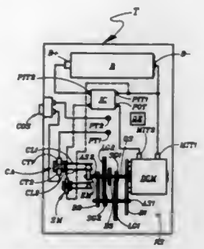
5,309,031
BATTERY REPLACEMENT SYSTEM FOR BATTERY-POWERED DIGITAL DATA HANDLING DEVICES
Gregory N. Stewart, and John P. Busch, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.
Continuation-in-part of Ser. No. 338,267, Apr. 14, 1989, Pat. No. 5,028,806. This application Apr. 22, 1991, Ser. No. 689,419
The portion of the term of this patent subsequent to Jul. 2, 2091, has been disclaimed.
Int. Cl.[5] H02J *9/04*
U.S. Cl. 307—66 **6 Claims**



1. A battery-powered digital data handling device comprising:
(a) a main battery for supplying power to the device circuitry;
(b) a reserve battery for selectively supplying power to the device circuitry;
(c) a switch, connected to the device circuitry for switching to the reserve battery prior to removal of the main battery, to continuously maintain power to the device circuitry; and
(d) a charging circuit connected from the main battery to the reserve battery for maintaining the reserve battery in a charged state.

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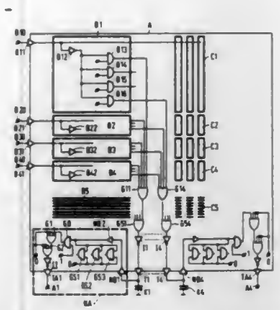
5,309,032
WALL SWITCH TIMER
Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010
Continuation of Ser. No. 420,695, Oct. 11, 1989, which is a continuation of Ser. No. 728,678, Apr. 29, 1985, abandoned. This application Jan. 22, 1990, Ser. No. 468,160
Int. Cl.[5] H01H *3/26, 3/34, 7/00, 7/08*
U.S. Cl. 307—140 **49 Claims**



1. An arrangement comprising:
a wall switch box into which is coming a pair of first conductor means; the first conductor means being: (i) connected with a load and the power line voltage of an ordinary electric utility power line; and (ii) operative, when electrically short-circuited together, to cause said power line voltage to be applied across the load;
a face plate covering the wall switch box; the face plate having an aperture; and
a programmable timer means mounted outside of the face plate; the timer means having a pair of second conductor means connected by way of said aperture with the pair of first conductor means; the timer means being operative periodically to cause a short circuit to occur between the pair of second conductor means, thereby correspondingly: (i) to cause a short circuit periodically to occur between the pair of first conductor means, and (ii) periodically to energize said load; the programmable timer means being operative as stated without having to be connected with terminals having the power line voltage provided thereacross;
the arrangement being further characterized by having no parts exhibiting movement between a first point in time at which such a short circuit is caused to occur and a second point in time at which this short circuit cease to exist.

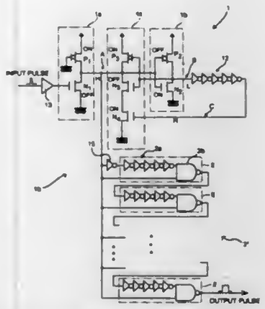
5,309,033
CIRCUIT ARRANGEMENT WHICH COMPENSATES FOR PULSE-DURATION CHANGES IN A BINARY SIGNAL
Michael Behrens, Nurnberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 614,334, Nov. 15, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 951,373
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1989, 3938459
Int. Cl.[5] G06G *7/10;* **H03K** *5/01*
U.S. Cl. 307—265 **4 Claims**

1. A circuit arrangement for compensating for changes in pulse duration in a binary signal which are the consequence of parasitic reactances in a multi-stage signal path, comprising an input inverter (I1) having an input coupled to the output of said signal path and an output, a circuit (NA) comprising a copy of the multi-stage signal path having the same parasitic reactances as said multi-stage signal path and having an input coupled to the output of said input inverter (I1) and an output, and an output inverter (I1) having an input coupled to the output of



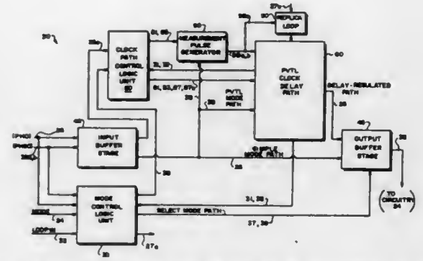
said circuit (NA) and an output for providing a compensated signal.

5,309,034
TIMER CIRCUIT FOR STRETCHING THE DURATION OF AN INPUT PULSE
Kenji Ishibashi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 850,912, Mar. 13, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,531
Claims priority, application Japan, May 28, 1991, 3-123349
Int. Cl.[5] H03K *5/04, 3/017*
U.S. Cl. 307—267 **14 Claims**



14. A timer apparatus comprising:
a self-holding means for providing an output pulse in response to an active transistion of an input pulse, said self-holding means including latching means for providing said output pulse with a predetermined fixed duration in the event said input pulse has a duration which does not exceed a predetermined minimum duration, and for providing said output pulse with a duration substantially equal to said input pulse duration in the event said input pulse duration exceeds said predetermined minimum duration; and
pulse stretching means for stretching the duration of said output pulse provided by said self-holding means to a prescribed value, wherein an output state of self-holding means is inverted before an output state of said pulse stretching means.

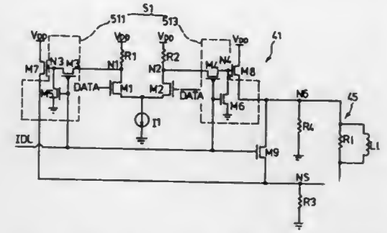
5,309,035
METHOD AND APPARATUS FOR CLOCK SKEW REDUCTION THROUGH ABSOLUTE DELAY REGULATION
Richard B. Watson, Jr., Harvard; Hansel A. Collins, Clinton, and Russell Iknaian, Groton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 764,517, Sep. 23, 1991, Pat. No. 5,272,390. This application Apr. 30, 1993, Ser. No. 56,100
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] H03L *7/00;* **H03K** *5/13*
U.S. Cl. 307—269 **26 Claims**



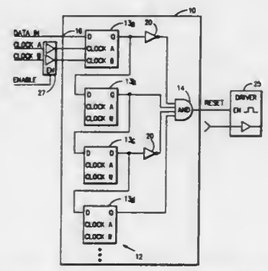
1. In a clock repeater chip having signal processing circuit components configured to receive periodic input clock signals and distribute processed output clock signals, a delay regulator for maintaining a fixed-phase relationship between said processed output clock signals and said input clock signals, said delay regulator comprising:
means for generating a measurement pulse signal in response to one of said input signals, said measurement pulse signal having a leading edge and a trailing edge, and having a duration of an integral number of periods of said input signals;
means for replicating a propagation delay of said input clock signals through said signal processing circuit components by using logic circuits configured to simulate the propagation delays of said signal processing components, said generating means being connected to apply said measurement pulse signal to an input end of said replicating means;
means, connected to an output end of said replicating means, for measuring said replicated propagation delay in response to said trailing edge of said measurement pulse signal; and
means responding to said measured propagation delay for adding a controlled amount of signal delay to the processed output clock signals provided by said signal processing circuitry, to allow said processed output clock signals to maintain said fixed-phase relationship with said input clock signals.

5,309,036
DRIVER CIRCUIT FOR AN ATTACHMENT UNIT INTERFACE USED IN A NETWORK SYSTEM
Tsen-Shau Yang, and Wei-Shang Chu, both of Hsinchu City, Taiwan, assignors to Myson Technology Inc., Hsinchu City, Taiwan
Filed May 28, 1993, Ser. No. 68,976
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—270 **7 Claims**

1. A driver circuit for an attachment unit interface used in a network system, said network system providing complementary data signals and an enable signal to said driver circuit, the driver circuit comprising:
a constant current source;
a differential transistor pair including a pair of differential transistors and a pair of load resistors, each of said differential transistors having a gate terminal which receives one of said complementary data signals, a drain terminal which is connected to one of said load resistors, and a source terminal which is connected to said constant current source;
a switch network connected to said drain terminal of said differential transistors and activated by said enable signal so as to generate a differential voltage output;
a pair of source followers, each having a gate terminal connected to said switch network and a source terminal, said source followers receiving said differential voltage output from said switch network; and
a switching transistor having a gate terminal which receives said enable signal, and source and drain terminals which are connected to said source terminal of a respective one of said source followers and which are further connected to a respective external pull-down load resistor, said source and drain terminals of said switching transistor to be connected to said attachment unit interface.



5,309,037
POWER-ON RESET CIRCUIT WITH ARBITRARY OUTPUT PREVENTION
Lawrence D. Curley, Endwell, and Matthew J. Mitchell, Jr., Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 8, 1992, Ser. No. 910,194
Int. Cl.[5] G06F *11/00*
U.S. Cl. 307—272.3 **18 Claims**



1. A circuit for generating a power-on reset signal to initialize a system component upon power-on, said circuit comprising:
digital circuit means for exhibiting a multiplicity of uncertain output levels upon power-on and exhibiting a multiplicity of predetermined output levels when subsequently set;
power-on reset means, coupled to receive the multiplicity of outputs of said digital circuit means for generating a first digital output when all of the outputs of said digital circuit means exhibit said predetermined levels and generating a second digital output when any of the outputs of said

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digital circuit means does not exhibit its predetermined level;

means for using the second digital output of said power-on reset means as a power-on reset signal to initialize said system component upon power-on; and

means for setting said digital circuit means subsequent to power-on to exhibit said predetermined output levels and thereby cause said power-on reset means to generate said first digital output and enable or condition said system component for normal operation; and wherein

the digital circuit means inverts some but not all of its outputs prior to input to said power-on reset means.

5,309,038

SUPERCONDUCTING TOGGLE FLIP-FLOP CIRCUIT AND COUNTER CIRCUIT

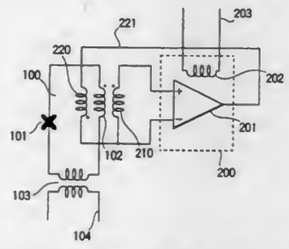
Yutaka Harada, 2196-416, Honode-Machi Hirai, Nishitama-gun, Tokyo, and Hioe Willy, Tokyo, both of Japan, assignors to Research Development Corporation of Japan and Yutaka Harada, both of Tokyo, Japan, a part interest

Filed Mar. 11, 1992, Ser. No. 851,007

Claims priority, application Japan, Mar. 14, 1991, 3-49333

Int. Cl.[5] H03K *3/38*

U.S. Cl. 307—277 **5 Claims**



1. A superconducting toggle flip-flop circuit comprising:

an rf-SQUID having a Josephson junction and first and second inductors,

a first winding for supplying magnetic flux to the first inductor of said rf-SQUID, and

a current amplifier and a third inductor magnetically coupled with the second inductor of said rf-SQUID, said third inductor being operable to detect a circulating current flowing around said rf-SQUID and feed input current to said current amplifier, said current amplifier being operable to transfer an output current through an output line, and a fourth inductor magnetically coupled in an out-of-phase mode with said second inductor of said rf-SQUID and connected to the output line for receiving the output current, the fourth inductor operable to induce a further current of a same direction as the circulating current in the rf-SQUID such that the further current and circulating current together form a further circulating current and the direction of the further circulating current is inverted from the direction of the circulating current.

5,309,039

POWER SUPPLY DEPENDENT INPUT BUFFER

Hamed Ghassemi, and Perry H. Pelley, III, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1992, Ser. No. 953,153

Int. Cl.[5] H03K *3/01, 17/60, 19/02;* **G06G** *7/12*

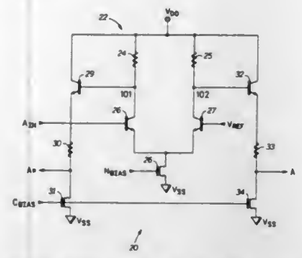
U.S. Cl. 307—296.1 **13 Claims**

1. A power supply dependent input buffer, comprising:

differential amplifier means for receiving an ECL level signal referenced to a first power supply voltage, and in response, providing first and second differential signals;

an emitter-follower circuit, coupled to said differential amplifier, for receiving said first differential signal, and in response, providing a first level shifted signal;

a first resistor, coupled to said emitter-follower circuit, for receiving said first level shifted signal, and in response, providing a second level shifted buffered signal, said second level shifted buffered signal referenced to a second power supply voltage; and



current source means, coupled to said first resistor, for receiving a bias voltage, said bias voltage referenced to said first power supply voltage, said current source means providing a current for said first resistor, said current being proportional to said first power supply voltage.

5,309,040

VOLTAGE REDUCING CIRCUIT

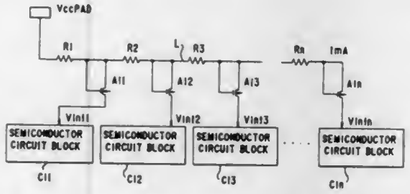
Tomio Nakano, Tajimi; Yoshiharu Kato, and Hidenori Nomura, both of Kasugai, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Continuation of Ser. No. 957,055, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 721,433, Jul. 5, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,308

Claims priority, application Japan, Nov. 7, 1989, 1-289118

Int. Cl.[5] H03K *3/01;* **G05F** *3/16;* **G05B** *24/02*

U.S. Cl. 307—303.2 **8 Claims**



1. A semiconductor integrated circuit for receiving an external power source voltage from outside of a semiconductor chip, comprising:

an external power source terminal (VccPAD) for supplying said external power source voltage as an internal power source voltage into said semiconductor chip;

a voltage dropping means (A) within said semiconductor chip for dropping said external power source voltage, wherein said voltage dropping means comprises a plurality of voltage dropping means (A1 through An) for connecting said external power source terminal (VccPAD) within said semiconductor chip and for changing said external power source voltage to a desired internal power source voltage; and

a plurality of semiconductor circuit blocks (C11 through C1n) within said semiconductor chip respectively coupled to said voltage dropping means (A1 through An),

wherein the voltage dropping means (A1 through An) for each of said semiconductor circuit blocks (C11 through C1n) includes at least 1 MOS transistor (A11 through A1n), and

wherein drains of said respective MOS transistors (A11 through A1n) are connected in common through a first common line for connection to said external power source terminal (VccPAD), and gates of respective MOS transistors (A11 through A1n) are also connected to said first common line.

5,309,041

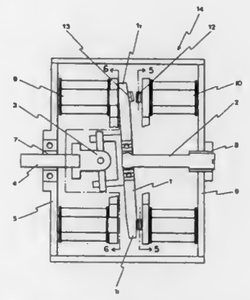
NUTATING STEP MOTOR

Teruo Kawai, 4-3905, Nishi-kamata 7-chome, Ota-ku, Tokyo 144, and Tsutomu Asai, 5-19, Yahara 6-chome, Nerima-ku, Tokyo 177, both of Japan, assignors to Nihon Riken Kabushiki Kaisha; Teruo Kawai, both of Tokyo; Keiichiro Asaoka, Kanagawa and Tsutomu Asai, Saitama, all of Japan

Filed May 4, 1993, Ser. No. 57,694

Int. Cl.[5] H02K *7/06*

U.S. Cl. 310—82 **4 Claims**



1. A step motor comprising:

a frame;

a first plurality of annularly arranged electromagnets disposed within said frame;

a second plurality of annularly arranged electromagnets disposed within said frame and coaxially spacedapart from said first plurality of electromagnets, each of said first and second pluralities of electromagnets having therein a magnetically permeable armature;

a wobble disc coaxially arranged between said first and second pluralities of electromagnets, said wobble disc formed of a magnetic material;

a supporting shaft pivotally and rotatably coupled to a central portion of said wobble disc and fixedly coupled to a bearing disposed on a first wall of said frame, said supporting shaft extending along a longitudinal axis of said frame concentrically within said first plurality of electromagnets;

a universal joint fixedly coupled to said central portion of said wobble disc on a side thereof remote from said supporting shaft;

an output shaft fixedly coupled to said universal joint and rotatably supported by a bearing portion disposed on a second wall of said frame, said second wall being axially disposed from said first wall, said output shaft extending along said longitudinal axis and concentrically disposed within said second plurality of electromagnets;

a first annular crown gear fixedly arranged on the magnetically permeable armatures of said first plurality of electromagnets and having a first predetermined number of gear teeth; and

a second annular crown gear fixedly arranged on a side of said wobble disc adjacent said first plurality of electromagnets, said second annular crown gear disposed coaxially adjacent said first annular crown gear on an outer circumferential edge portion of said wobble disk, said second crown gear having a second predetermined number of gear teeth different than said first predetermined number of gear teeth.

5,309,042

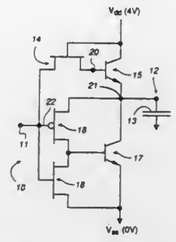
FULL SWING BICMOS AMPLIFIER

Robert Joly, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 8, 1993, Ser. No. 14,986

Int. Cl.[5] H03K *19/01*

U.S. Cl. 307—446 **9 Claims**



1. A full swing BiCMOS amplifier, comprising:

a pull-up bipolar transistor and a pull-down bipolar transistor coupled as a totem pole pair between a voltage source V_{dd} and a voltage sink V_{ss};

a first MOS transistor connected to said pull-down bipolar transistor to extend conduction of the pull-down bipolar transistor and thereby enable a fast output downswing from V_{dd} to V_{ss}; and

a a zero volt threshold (0 V_{be}) transistor connected said pull-up transistor to extend conduction of the pull-up transistor by injecting carriers into a base terminal of the pull-up transistor and thereby enable a fast output upswing from V_{ss} to V_{dd}.

5,309,043

COMPOUND LOGIC CIRCUIT HAVING NAND AND NOR GATE OUTPUTS AND TWO TRANSISTORS CONNECTED WITHIN BOTH GATE CIRCUITS

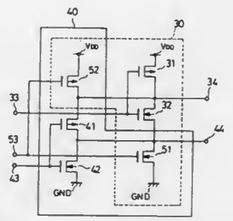
Shunichi Murahashi, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1991, Ser. No. 722,475

Claims priority, application Japan, Jul. 11, 1990, 2-183521

Int. Cl.[5] H03K *19/094, 19/20*

U.S. Cl. 307—451 **16 Claims**



1. A compound logic circuit comprising:

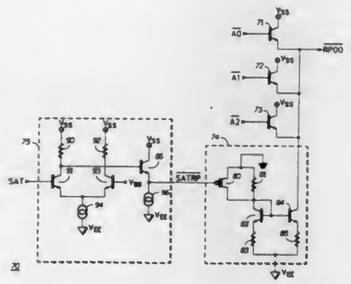
a NAND gate and a NOR gate, wherein said NAND gate includes:

a first p-channel transistor having one terminal connected to a first electric potential, a gate connected to a first input terminal of said compound logic circuit, and the other

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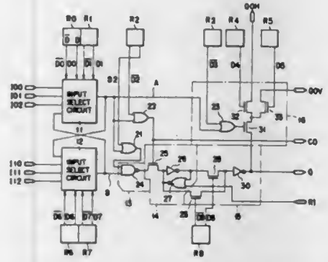
terminal connected to a first output terminal of said compound logic circuit;
a first n-channel transistor having one terminal connected to said first output terminal, a gate connected to said first input terminal, and the other terminal connected to a second output terminal of said compound logic circuit;
a second n-channel transistor having one terminal connected to said second output terminal, a gate connected to a second input terminal of said compound logic circuit and the other terminal connected to a second electric potential; and
a second p-channel transistor having one terminal connected to said first electric potential, a gate connected to said second input terminal, and the other terminal connected to said first output terminal, and
said NOR gate includes:
said second p-channel transistor;
said second n-channel transistor;
a third p-channel transistor having one terminal connected to said first output terminal, a gate connected to a third input terminal of said compound logic circuit, and the other terminal connected to said second output terminal; and
a third n-channel transistor having one terminal connected to said second output terminal, a gate connected to said third input terminal, and the other terminal connected to said second electric potential.

5,309,044
MODIFIED WIDLAR SOURCE AND LOGIC CIRCUIT USING SAME
Karl L. Wang, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 633,889, Dec. 26, 1990. This application Mar. 8, 1993, Ser. No. 28,067
Int. Cl.[5] H03K *19/013;* **G05F** *3/04*
U.S. Cl. 307—454 **11 Claims**



1. A current source comprising:
a first transistor having a collector for providing a first terminal of the current source, a base, and an emitter-;
a first resistor having a first terminal coupled to said emitter of said first transistor, and a second terminal providing a second terminal of the current source;
a second resistor having a first terminal coupled to a power supply voltage terminal, and a second terminal coupled to said base of said first transistor;
a second transistor having a collector coupled to said second terminal of said second resistor, a base coupled to said second terminal of said second resistor, and an emitter;
a third resistor having a first terminal coupled to said emitter of said second transistor, and a second terminal coupled to said second terminal of said first resistor; and
means coupled to said power supply voltage terminal and to said second terminal of said second resistor, for selectively reducing a resistance between said power supply voltage terminal and said second terminal of said resistor in response to a control signal.

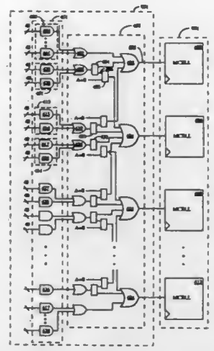
5,309,045
CONFIGURABLE LOGIC ELEMENT WITH INDEPENDENTLY CLOCKED OUTPUTS AND NODE OBSERVATION CIRCUITRY
Yukihiro Saeki; Hiroki Muroga; Tomohisa Shigematsu; Toshio Hibi; Yasuo Kawahara; Kazunao Maru, all of Tokyo, Japan; Kenneth Austin, Northwich, England; Gordon S. Work, and Darren M. Wedgwood, both of Warrington, England, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan and Pilkington Micro-electronics, Ltd., Cheshire, England
Filed May 8, 1992, Ser. No. 880,591
Claims priority, application Japan, May 10, 1991, 3-105567
Int. Cl.[5] H03K *19/177, 19/096*
U.S. Cl. 307—465 **19 Claims**



1. A programmable logic unit circuit of a gate array circuit comprising:
a combinational logic circuit which is supplied with at least a first input signal and a second input signal and which produces a particular logic output signal from those input signals;
at least a first select circuit and a second input select circuit, the first and second input select circuits respectively producing the first and second input signals based on first selecting data, the first selecting data including first part data and second part data, the first input signal being produced by selecting a signal from a first plurality of signals based on the first part data, the second input signal being produced by selecting a signal from a second plurality of signals based on the second part data, the first input signal being supplied to the second input select circuit as one signal of the second plurality of signals;
a clock-synchronized circuit which latches the particular logic output signal from said combinational logic circuit upon receipt of a clock signal and outputs a latched output signal;
a 3-state-output type output select circuit for selectively supplying one of the particular logic output signal of said combinational logic circuit and the latched output signal of said clock-synchronized circuit based on second selecting data; and
a data memory circuit for storing at least said first and second selecting data.

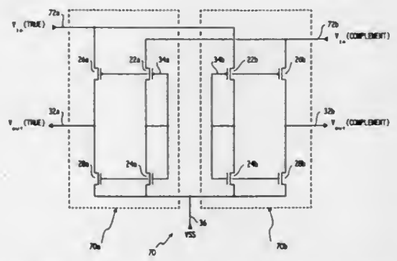
5,309,046
APPARATUS AND METHOD FOR PRODUCT TERM ALLOCATION IN PROGRAMMABLE LOGIC
Randy C. Steele, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Sep. 30, 1992, Ser. No. 954,308
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **20 Claims**

1. In a field programmable gate array chip having a plurality of gates capable of being programmed according to a plurality of product terms for performing a particular logic function, an input means for inputting a signal, a means for processing said signal according to said logic function, a plurality of output means for outputting said signal after said signal has been processed, an apparatus for allocating said plurality of product terms to said plurality of output means comprising:
a means for selecting one of said plurality of output means;



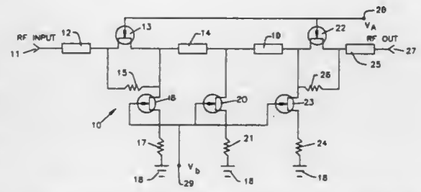
a means for steering at least one of said product terms to a selected output means;
a means for assigning a number of said product terms to a particular predetermined output means, wherein a maximum number of product terms assignable to said particular predetermined output means is more than twice an average number of product terms available for one of said output means.

5,309,047
DIFFERENTIAL SENSE AMPLIFIER WITH CROSS CONNECTED REFERENCE CIRCUITS
John W. Tiede, and Albert S. Weiner, both of Colorado Springs, Colo., assignors to Simtek Corporation, Colorado Springs, Colo.
Filed Feb. 21, 1992, Ser. No. 839,910
Int. Cl.[5] H03F *3/45;* **H03K** *3/26*
U.S. Cl. 307—530 **27 Claims**



1. A differential sense amplifier receptive of a differential input signal that is defined by a first input signal and a second input signal which is different than the first input signal, and for supplying an amplified differential output signal that is defined by a first output signal and a second output signal which is different than the first output signal, comprising:
a first amplifying portion that includes a first input terminal for receiving the first input signal, a first reference branch for providing a first reference signal at a first reference node, a first amplifying branch that uses said first reference signal in amplifying the first input signal to produce the first output signal, and a first output terminal for outputting the first output signal provided by said first amplifying branch, wherein said first amplifying branch includes a first upper transistor and a first lower transistor, said first output terminal is located between and operatively connected to said first upper transistor and said first lower transistor, and said first reference node provides said first reference signal to both said first upper transistor and said first lower transistor;
a second amplifying portion that includes a second input terminal for receiving the second input signal, a second reference branch for providing a second reference signal at a second reference node, a second amplifying branch that uses said second reference signal in amplifying the second input signal to produce the second output signal, and a second output terminal for outputting the second output signal provided by said second amplifying branch, wherein said second amplifying branch includes a second upper transistor and a second lower transistor, said second output terminal is located between and operatively connected to said second upper transistor and said second lower transistor, and said second reference node provides said second reference signal to both said second upper transistor and said second lower transistor; and
means for use in causing said first reference signal to be different than said second reference signal to increase the gain of the differential sense amplifier.

5,309,048
DISTRIBUTED DIGITAL ATTENUATOR
R. Brian Khabbaz, Belleville, N.J., assignor to ITT Corporation, New York, N.Y.
Filed Sep. 24, 1992, Ser. No. 950,480
Int. Cl.[5] H03H *11/24*
U.S. Cl. 307—542 **26 Claims**



1. A digital attenuator circuit for attenuating RF signals, said attenuator circuit comprising:
an input terminal for receiving an input signal to be attenuated;
an output terminal for outputting the attenuated output signal;
impedance means extending between said input and output terminals;
first active device means coupled to said impedance means and having a control terminal;
a second active device means coupled to said impedance means and having a control terminal; and
a third active device means coupled to said impedance means and having a control terminal, said active device means controllable jointly to switch between a non-conducting and a conducting state when a given potential is applied to said control terminals, wherein said attenuator circuit is at a state of maximum attenuation when said active device means are in said conducting state and is at a state of minimum attenuation when said active device means are in said non-conducting state, and wherein said first, second, and third active device means have an impedance matched by said impedance means when in said non-conducting state whereby said input signal may prop-

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agate through said attenuator circuit with relatively little loss in signal strength.

5,309,049

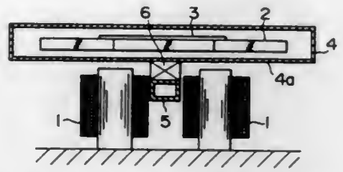
ALTERNATING CURRENT MAGNETIC LEVITATION TRANSPORT SYSTEM

Noriyuki Kawada; Shigeki Morii; Motomi Nakashima, and Jin Yamada, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 740,154, Aug. 5, 1991. This application Apr. 26, 1993, Ser. No. 53,300

Int. Cl.[5] H02K *41/00*

U.S. Cl. 310—12 **2 Claims**



1. An alternating current magnetic levitation transport system, comprising:

(a) a series of alternating current electromagnets;

(b) supply means for supplying alternating current to said alternating current electromagnets to create an alternating electromagnetic field;

(c) a tubular passage of at least one material selected from the group consisting of nonmetallic material and paramagnetic metallic material, positioned over said electromagnets;

(d) a floating body of a material selected from the group consisting of conductive paramagnetic metallic material and conductive nonmagnetic metallic material, within said tubular passage being repelled, levitated and transported by said electromagnetic field; and,

(e) cooling means for cooling the interior of said tubular passage, wherein said cooling means comprises a conjoined body of thermoelectric cooling thermodule and a liquid-cooled heat exchanger.

5,309,050

FERROMAGNETIC WIRE ELECTROMAGNETIC ACTUATOR

Fernando B. Morinigo, Los Angeles, and Keith O. Stuart, Cypress, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 855,771, Mar. 23, 1992, Pat. No. 5,187,398, which is a continuation-in-part of Ser. No. 499,046, Mar. 26, 1990, Pat. No. 5,099,158, which is a continuation-in-part of Ser. No. 319,956, Mar. 7, 1989, Pat. No. 4,912,343, which is a continuation-in-part of Ser. No. 238,925, Aug. 31, 1988, abandoned. This application Nov. 16, 1992, Ser. No. 976,699

Int. Cl.[5] H02K *41/00*

U.S. Cl. 310—14 **23 Claims**

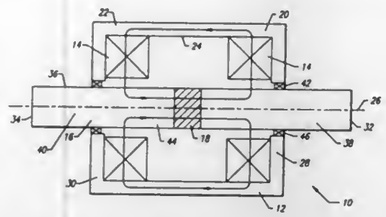
1. A ferromagnetic wire actuator comprising:

a case, said case having a first end, a second end, and an inner wall extending from said first end to said second end, and further defining a central axis;

a core, said core being disposed within said case coaxial to said central axis and having a first core portion, a second core portion, a central core portion, and an outer wall;

at least one magnetic flux developing element mounted coaxial with said central axis; and

at least one electrical current conductor coil, said coil being disposed intermediate said core and said case, said coil further being fabricated from a ferromagnetic material and being coaxial with said core, wherein said coil has a cross-sectional length in a direction perpendicular to the central axis and a width of insulating space between the turns of the coil in a direction parallel to the central axis,



said length and width being selected such that the reluctance of the width of the insulating space is greater than the reluctance of the cross-sectional length of the coil wire adjacent the insulating space.

5,309,051

STEPPING MOTOR WITH DETENT TORQUE ELIMINATION

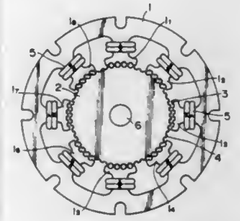
Masaru Kobori, Kashiwa, Japan, assignor to Oriental Motor Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,988

Claims priority, application Japan, Jun. 24, 1992, 4-190065

Int. Cl.[5] H02K *37/00, 1/12*

U.S. Cl. 310—49 R **6 Claims**



1. In a stepping motor having a stator and rotor, said stator having a number P of salient poles facing said rotor and in which each stator has a number of teeth k each disposed on a surface of a salient pole at equal pitches τ_S, said rotor having a number of teeth each disposed at equal pitches τ_R the improvement comprising that said P stator salient poles comprise n sets of poles each differing in phase and that said stator teeth are each disposed so that their pitch $\tau_S = \tau_R \times \{1 \pm 1/(n \times k)\}$, wherein n, P and k are integers, so as to eliminate the detent torque.

5,309,052

CIRCUIT FOR SHIELDING ELECTRO-MAGNETIC WAVE NOISE RADIATED AND CONDUCTED FROM WIPER MOTOR

Kwi-Ju Kim, Kwangju, Rep. of Korea, assignor to Asia Motors Co., Inc., Seoul, Rep. of Korea

Filed May 21, 1993, Ser. No. 65,340

Claims priority, application Rep. of Korea, Jun. 8, 1992, 1992-9901

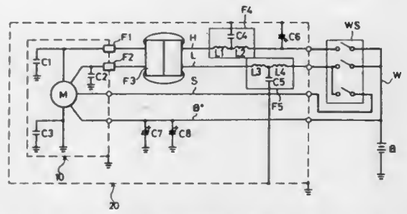
Int. Cl.[5] H02K *5/24;* H05K *9/00*

U.S. Cl. 310—51 **2 Claims**

1. A circuit for shielding an electro-magnetic wave noise radiated from or conducted by a wiper motor (M), comprising:

a wiper motor case (**10**) for shielding and absorbing electromagnetic wave noise radiated and conducted from said wiper motor (M) therein, said motor case (**10**) being grounded, a first wire drawing hole in said motor case for drawing conductive wires from said wiper motor (M), a residue space of said first wire drawing bole after drawing said wires being sealed with a noise absorbing material such as a ferrite sealing bond or an elastomer sealing gasket;

a shielding case (**20**) for shielding and absorbing electromagnetic wave noise radiated and conducted from said wiper motor case (**10**), a second wire drawing hole in said shielding case, a residue space of said second wire drawing hole being sealed with a noise absorbing material such as a ferrite sealing bond or an elastomer sealing gasket; and



a wire filter wire (W) including a set of copper core wires (**30**) for damping the conducting electro-magnetic wave noise and connected to the respective conductive wires drawn from said shielding case (**2**), and incombustible Teflon cladding materials (**40** and **40'**) and an noise absorbing member (**50**) surrounding said core wires (**30**), wherein said wiper motor case (**10**) which shields and absorbs the electro-magnetic wave noise includes:

a plurality of ceramic capacitors (C1–C3) connected to respective brushes of said wiper motor for absorbing for the first time the conducted electro-magnetic noise of the microwave band to convert the noise to a thermal energy; and ferrite beads (F1 and F2) for shielding a part of the conducted electro-magnetic wave noise to convert it to a thermal energy.

5,309,053

CONDUCTOR EMBEDDED IN AN INJECTION MOLDED COMPONENT FOR THE COVER OF AN ELECTRIC MOTOR

Rolf Ade, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to SWF Auto-Electric GmbH, Fed. Rep. of Germany

PCT No. PCT/EP91/02271, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO92/13381, PCT Pub. Date Aug. 6, 1992

PCT Filed Dec. 2, 1991, Ser. No. 923,995

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 4101368

Int. Cl.[5] H02K *11/00, 5/00*

U.S. Cl. 310—71 **14 Claims**

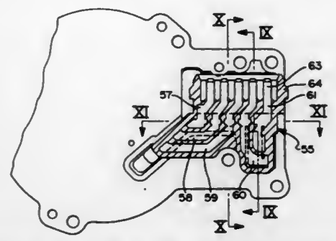
1. An electric motor comprising:

a gear pot;

a metal cover generally covering the gear pot, the cover having an outside and an inside, the inside in general alignment with a plane and facing inside of the gear pot, and the cover having an edge defining an aperture in the cover, the aperture communicating between the outside and the inside;

a plastic component being made of plastic material which is injection-molded substantially onto the outside of the cover and into said aperture, the plastic component having at least one recess open to the inside of the cover;

at least one conductive strip substantially juxtaposed to the outside of the cover, the at least one conductive strip having at least one blade terminal that is aligned in a plane substantially parallel to the plane in which the inside of the cover is aligned, said recess extending generally perpendicularly to said at least one blade terminal, through said



aperture, and to said at least one conductive strip and, the at least one conductive strip being embedded in the plastic component, said recess extending from inside the gear pot to the at least one conductive strip.

5,309,054

LEADING-OUT DEVICE FOR A LEAD WIRE OF A DC MOTOR AND A METHOD OF LEADING OUT A LEAD WIRE

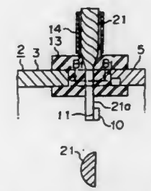
Kyohei Yamamoto, and Shuzou Isozumi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,676

Claims priority, application Japan, Jan. 31, 1992, 4-045898; May 12, 1992, 4-146321

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—71 **19 Claims**



1. A lead-out arrangement for passing an electrical conductor of a DC starter motor of an internal combustion engine through a generally cylindrical housing thereof, comprising:

a) a resilient grommet disposed in an aperture in a side of the housing,

b) an electrical conductor composed of a plurality of twisted wires, said wires being metallurgically bonded together to form a solid, unitary lead at an end portion of the conductor extending through the grommet and into an interior of the housing, perpendicular thereto,

c) said end portion defining, in cross-section, a generally flattened shape having a larger, width dimension oriented perpendicular to an axis of the housing and a smaller, thickness dimension oriented parallel to the housing axis,

d) an inner conductor of the motor disposed within the housing at a terminus of the end portion, and

e) a weld establishing electrical connection between said inner conductor and said terminus.

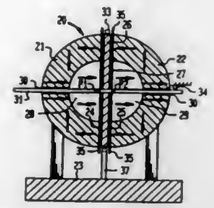
VOL 1162 ISS 1 MY 3 1994 UMI

5,309,055

HIGH-POWER ELECTRICAL MACHINERY

Herbert A. Leupold, Eatontown, N.J., and John T. Rehberg, Orefield, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 654,476, Feb. 13, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 33,654
Int. Cl.[5] H02K *31/00*
U.S. Cl. 310—178 4 Claims



1. A homopolar motor comprising:

a permanent magnet structure having two circular magnet shells which are U-shaped in cross section end hemispherical in shape, the permanent magnet structure having a hollow central cavity such that when the circular magnet shells are placed together the permanent magnet structure is a hollow sphere having a spherical gap between the two shells, said shells being magnetized such that an orientation of their magnetization α varies over the cross section of said shells by the equation: $\alpha=2\theta$, where θ is an axial angle, and such that a transverse magnetic field is generated in said hollow central cavity;

an electrically conductive disc, rotatably and coaxially mounted with respect to said shells of said hemispherical shape within said spherical gap and lying in said transverse magnetic field;

an electrical source; and

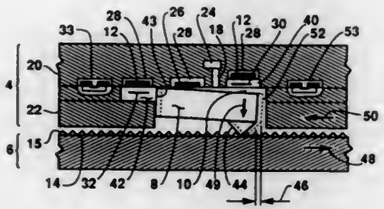
conductive brushes connecting the electrical source of the conductive disk.

5,309,056

ENTROPIC ELECTROTHERMAL ACTUATOR WITH WALKING FEET

Gordon W. Culp, Van Nuys, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 1, 1992, Ser. No. 891,030
Int. Cl.[5] H02N *10/00*; F01B *29/08*; F01K *25/04*
U.S. Cl. 310—306 32 Claims



1. An electrothermal actuator comprising,

a substrate having a plurality of sockets containing fluid,

an object bounding the fluid proximate the sockets,

each socket containing a foot, the foot bounded by the socket and the object,

each socket having at least one heater for creating pressure pulses in the fluid to position the foot relative the object,

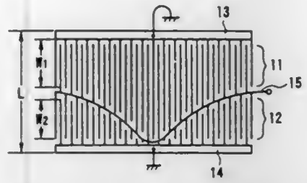
a means of activating the heaters thereby moving the object.

5,309,057

WEIGHTED TRANSDUCER FOR SURFACE ACOUSTIC WAVE FILTER

Yasushi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 29, 1992, Ser. No. 921,921
Claims priority, application Japan, Aug. 19, 1991, 3-230824
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 C 3 Claims



1. A weighted transducer for a surface acoustic wave filter, comprising:

first overlap transducer fingers formed lengthwise on a surface of a piezoelectric substrate and having overlap widths which are continuously changed in a propagation direction of a surface acoustic wave; and

second overlap transducer fingers which are formed lengthwise and alternatively arranged adjacent to said first overlap transducer fingers in a longitudinal direction of said first overlap transducer fingers, said second overlapped fingers being formed on the surface of said piezoelectric substrate and being electrically connected to each other in parallel and reverse-biased, overlapped widths of said second overlap transducer fingers being continuously changed in the propagation direction of the surface acoustic wave,

said first and second overlap transducer being in the same relative positions to transmit a surface acoustic wave in a direction which is perpendicular to the lengthwise direction of the overlap transducer fingers,

a sum of the overlap widths of said first and second overlap transducer fingers always being constant in the propagation direction of the surface acoustic wave.

5,309,058

SEAL CONSTRUCTION ARRANGEMENT FOR AN ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP

Raymond A. Heindl, Euclid; Lawrence T. Mazza, Mayfield Heights; Gene I. Thomasson, Chesterland, and Edward V. Parillo, South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1992, Ser. No. 845,415
Int. Cl.[5] H01J *65/04*
U.S. Cl. 313—25 12 Claims

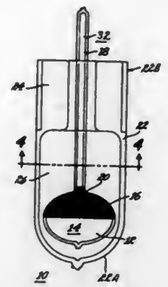
1. An electrodeless discharge lamp comprising:

an arc tube having a gas fill disposed therein, said gas fill being excitable to a discharge state;

a starting aid stem connected to said arc tube and extending outwardly therefrom, said starting aid stem having a second gas fill disposed therein, said second gas fill being excitable to a discharge state;

an outer jacket disposed in a non-supporting surrounding relation to said arc tube and further being disposed in surrounding relation to at least a portion of said starting aid stem, said outer jacket having an opening through which a second portion of said starting aid stem extends; and

sealing means formed on said outer jacket adjacent said opening and effective for sealing a space formed between said outer jacket and said arc tube, said sealing means being further effective for gripping said starting aid stem as said starting aid stem exits said outer jacket and supporting said starting aid stem and arc tube in a fixed position within said outer jacket thereby.

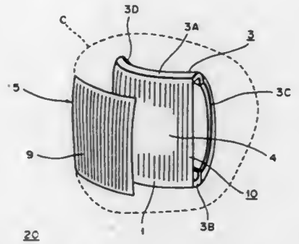


5,309,059

COLOR CATHODE RAY TUBE

Hisao Kume, and Mitsuhiro Kawase, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP91/00746, § 371 Date Feb. 5, 1992, § 102(e) Date Feb. 5, 1992
PCT Filed Jun. 4, 1991, Ser. No. 828,934
Claims priority, application Japan, Jun. 5, 1990, 2-147031; Nov. 30, 1990, 2-338353
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—402 6 Claims



1. A color cathode ray tube screen and grill assembly comprising:

a color fluorescent screen having a plurality of respective color fluorescent strips arranged in a predetermined order in parallel on the fluorescent screen;

an aperture grill adjacent to and spaced from the screen having a frame including first and second frame side members, and a thin high purity iron plate stretched on the frame, said thin high purity iron plate being connected to and extending between the first and second frame side members at a predetermined tension;

said thin high purity iron plate having band-shaped portions defining a plurality of slits, each of which slits extends continuously without interruption from the first frame side member to the second frame side member, said slits running parallel with the fluorescent stripes; and

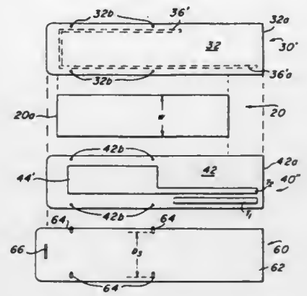
said thin high purity iron plate having a thickness of equal to or less than 0.05 mm so that a natural resonance frequency of the plate band-shaped portions is in a region which does not respond to sound and impulse vibrations.

5,309,060

ELECTROLUMINESCENT LAMP

Edward N. Sharpless, Somerville, N.J., and Eugene W. McManus, Downingtown, Pa., assignors to Electroluminescent Technologies Corporation, Horsham, Pa.

Division of Ser. No. 601,827, Nov. 1, 1990, Pat. No. 5,184,969.
This application Nov. 23, 1992, Ser. No. 980,596
Int. Cl.[5] H05B *33/02*
U.S. Cl. 313—511 11 Claims



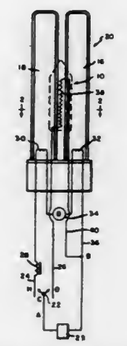
1. A laminated flexible electroluminescent lamp assembly, comprising a plurality of elongated spaced back electrodes disposed on a first elongated flexible sheet; a plurality of elongated spaced busbars disposed on a second elongated flexible sheet; an electroluminescent layer containing an electroluminescent material sandwiched between a dielectric layer and a light-transmissive conductive layer; alignment means comprising alignment holes or an registration mark for assisting in aligning at least said first and second elongated sheets during lamination; said electroluminescent layer being substantially registered and laminated between said first and second elongated flexible sheets to provide a laminated structure comprising a plurality of flexible electroluminescent lamps.

5,309,061

COMPACT FLUORESCENT LAMP HAVING INCANDESCENT LAMP STARTING AID

Andre C. Bouchard; Scott M. Hardenstine, both of Peabody, and Peter R. Gagnon, Topsfield, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 22, 1992, Ser. No. 995,115
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—47 11 Claims



1. A fluorescent lamp assembly comprising:

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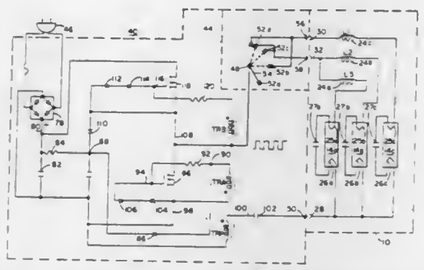
a fluorescent lamp;
an incandescent lamp located within or in close proximity to the fluorescent lamp; and
a thermal switch, in thermal contact with the incandescent lamp and the fluorescent lamp, for applying power to the incandescent lamp initially when the lamp assembly is energized and, when the thermal switch is heated to a predetermined temperature by the incandescent lamp, deenergizing the incandescent lamp and applying power to the fluorescent lamp.

5,309,062

THREE-WAY COMPACT FLUORESCENT LAMP SYSTEM UTILIZING AN ELECTRONIC BALLAST HAVING A VARIABLE FREQUENCY OSCILLATOR

Rick A. Perkins, and Brian P. Geary, both of Holland, Mich., assignors to Progressive Technology in Lighting, Inc., Holland, Mich.

Filed May 20, 1992, Ser. No. 886,507
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—53 **12 Claims**



1. A compact low-pressure gas discharge lamp system comprising:
a lamp assembly including a plurality of low-pressure gas discharge light generating elements each of said light generating elements capable of being individually energized and supply means for making electrical connection to each of said light generating elements;
a ballast circuit adapted to supplying electrical energy to a selective number of said light generating elements; and
a switch assembly adapted to connecting said ballast circuit selectively to particular ones of said light generating elements through said supply means, wherein said ballast circuit includes an oscillator that oscillates at a frequency that varies as a function of the number of light generating elements connected by said switch assembly and said supply means to said ballast circuit.

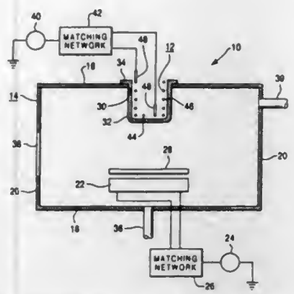
5,309,063

INDUCTIVE COIL FOR INDUCTIVELY COUPLED PLASMA PRODUCTION APPARATUS

Bawa Singh, Vorhees, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Mar. 4, 1993, Ser. No. 26,400
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.51 **16 Claims**

1 An induction coil comprising a flat coil portion having a plurality of turns and a tubular coil portion extending from the outer edge of the flat coil portion, the axis of the tubular coil



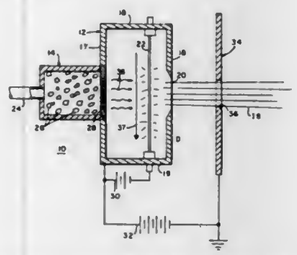
portion being substantially perpendicular to the flat coil portion.

5,309,064

ION SOURCE GENERATOR AUXILIARY DEVICE

Anthony J. Armini, 19A Desmond Ave., Manchester, Mass. 01944

Filed Mar. 22, 1993, Ser. No. 34,250
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.81 **9 Claims**



1. An ion source for producing an ion beam from a feed gas comprising:
an arc chamber having an inlet orifice and an outlet orifice;
an auxiliary chamber in fluid communication with said arc chamber;
a feed gas input line into said auxiliary chamber;
a filament for generating electrons in said arc chamber, together with a power source for heating and biasing said filament; and
a metal chip reactant contained in said auxiliary chamber which provides a reduction reaction of the feed gas passing therethrough.

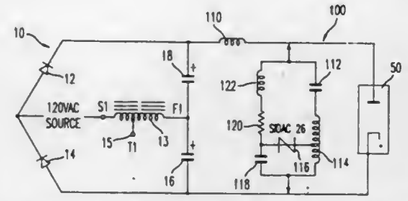
7. A method of generating an ion beam from an arc chamber, comprising the steps of:
attaching an auxiliary chamber to a wall of the arc chamber, with an orifice providing fluid communication therebetween;
providing a reactant material of metal chips in said auxiliary chamber;
heating said arc chamber up to a temperature of about 900° C. to about 1000° C. with an energizable electron emitting filament thereacross:
passing a feed gas under pressure through said metal chips in said auxiliary chamber so as to form a stable solid fluoride compound therein;
emitting an ion beam from an exit orifice in said heated arc chamber.

5,309,065

VOLTAGE DOUBLER BALLAST SYSTEM EMPLOYING RESONANT COMBINATION TUNED TO BETWEEN THE SECOND AND THIRD HARMONIC OF THE AC SOURCE

Joe A. Nuckolls, Blacksburg, Va., and Yan Wang, Northbrook, Ill., assignors to Hubbell Incorporated, Orange, Conn.

Filed Feb. 26, 1992, Ser. No. 841,844
Int. Cl.[5] H05B *37/00, 39/00*
U.S. Cl. 315—205 **12 Claims**



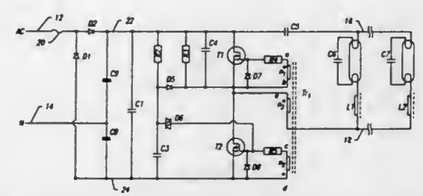
1. A low loss ballast circuit system for operating a high voltage discharge lamp, comprising:
alternating current voltage source input means:
inductance means connected to said input means for receiving said alternating current voltage;
rectifying means including capacitance means connected to said inductance means wherein the output of said rectifying means is an open circuit DC voltage substantially equal to twice the peak value of said alternating current source voltage and wherein the value of said inductance means and said capacitance means is chosen so that a resonant frequency of a combination of said inductance means and said capacitance means is at a value between and spaced from each of second and third harmonics of said alternating current source voltage; and
ignitor means connected to receive said open circuit voltage and provide a high voltage ignition pulse to start said lamp and including a means for forcing said started lamp to a low impedance state thereby allow continued operation of said lamp by said open circuit DC voltage.

5,309,066

SOLID STATE BALLAST FOR FLUORESCENT LAMPS

Claes Ditlevsen, Silkeborg, Denmark, assignor to Jorck & Larsen A/S, Them, Denmark

Filed May 29, 1992, Ser. No. 887,788
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—205 **12 Claims**



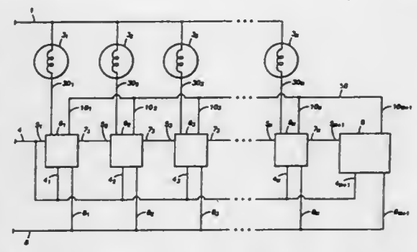
1. A refrigeration unit containing a fluorescent lamp and a ballast circuit for driving the fluorescent lamp, the refrigeration unit comprising:
a unit defining an enclosure and maintained at or below approximately seven degrees Centigrade;
a fluorescent lamp in the unit for lighting part of the unit;
a ballast circuit provided in association with the unit for supplying current to the lamp;
an input terminal for the ballast circuit for receiving an input voltage;
an output terminal for the ballast circuit and coupled to the lamp for delivering an output current to the fluorescent lamp;
a voltage doubler circuit connected to the input terminal and supplying voltage to the remainder of the ballast circuit;
an inductance device connected in series with said output terminal, said inductance device including saturable magnetic material and feedback windings around the magnetic material;
a plurality of switch elements between the input terminal and the inductance device controlled by electric voltages induced in the feedback windings through magnetization of the saturable magnetic material and wherein the switch elements include activation means coupled to the feedback windings; and
a start network connected to at least one of said activation means.

5,309,067

CASCADE LIGHTING SYSTEM

Weston W. Haskell, Fulshear, Tex., assignor to Vinalhaven, Inc., Fulshear, Tex.

Filed Mar. 3, 1993, Ser. No. 25,980
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—360 **4 Claims**



1. A cascade lighting system comprising two or more incandescent lamps, each of said incandescent lamps being electrically connected to:
an electrical power source;
a timer/driver circuit which comprises:
a semiconductor timing circuit which produces a high output when said timing circuit has received an input trigger, and said output stays high until said timing circuit has received a reset signal, at which time said timing circuit produces a low output until said timing circuit has received another input trigger, and
a driver circuit, whose input is electrically connected to the output of said timing circuit, which acts as a closed switch electrically connecting said incandescent lamp with the power supply return when the input to said driver circuit semiconductor timing circuit is high; and
a reset circuit which comprises:
a semiconductor timing circuit which produces a reset signal when said timing circuit has received an input trigger, and said output stays low until said timing circuit has received a reset signal, at which time said timing circuit produces a high output until said timing circuit has received another input trigger;
wherein three or more of said timer/driver circuits are electrically connected such that the output of each of said timer/driver circuits, save one, connects to the input of just one of the other of said timer/driver circuits, none of said timer/driver circuits has more than one input, the output of one of said timer/driver circuits connects to the input of said reset circuit, the output of said reset circuit connects to the reset input of all of said timer/driver circuits and of said reset circuit, and the input of just one

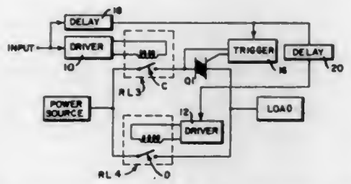
VOL 1162 ISS 1 MY 3 1994 UMI

of said timer/driver circuits is electrically connected to a constant high input signal.

5,309,068
TWO RELAY SWITCHING CIRCUIT FOR FLUORESCENT LIGHTING CONTROLLER

Simo P. Hakkarainen, Bethlebem; David G. Luchaco, Macungie, and Scott McConnell, Coopersburg, all of Pa., assignors to Latron Electronics Co. Inc., Coopersburg, Pa.

Filed Feb. 19, 1993, Ser. No. 20,034
Int. Cl.[5] H05B *41/14*
U.S. Cl. 315—362 **24 Claims**

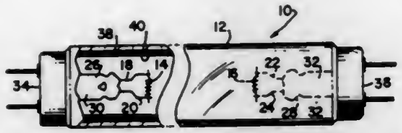


1. A power-switching circuit for selectively switching power between a power source and a load, said power-switching circuit comprising:
(a) first and third electrically-controllable switches connected in parallel between said power source and load;
(b) a second switch connected in series with said first switch, said second switch being electrically controllable; and
(c) means for sequentially closing said first, second and third switches in that order.

5,309,069
PHOSPHORS WITH IMPROVED LUMEN OUTPUT AND LAMPS MADE THEREFROM

A. Gary Sigai, Lexington, and Keith A. Klinedinst, Marlboro, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Continuation-in-part of Ser. No. 667,772, Mar. 11, 1991, Pat. No. 5,113,118, which is a division of Ser. No. 468,432, Jan. 22, 1990, Pat. No. 5,051,277. This application Mar. 31, 1992, Ser. No. 860,824
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] H01J *63/04, 1/62*
U.S. Cl. 313—486 **4 Claims**

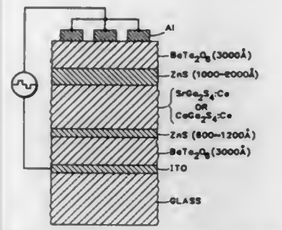


1. A fluorescent lamp comprising a hermetically sealed tubular glass envelope coated with an alkaline earth halophosphate phosphor, bases at each end of said tubular glass envelope, electrodes, support electrical leads connected to said electrodes, said electrodes coated with an electron-emission promoting material, and a mercury droplet within said tubular glass envelope; said phosphor having a bilayer coating comprising a coating of alumina surrounding a coating of silica which surrounds the phosphor.

5,309,070
AC TFEL DEVICE HAVING BLUE LIGHT EMITTING THIOGALLATE-PHOSPHOR

Sey-Shing Sun, 6667 SW. 153rd Ave., Beaverton, Oreg. 97007; Richard T. Tuenge, Rte. 2, Box 1018, Hillsboro, Oreg. 97123; James Kane, 32 Royal Oak Rd., Lawrenceville, N.J. 08648; Christopher N. King, 5345 SW. Thomas, Portland, Oreg. 97221, and P. Niel Yocom, 307 Shadybrook La., Princeton, N.J. 08540

Filed Mar. 12, 1991, Ser. No. 668,201
Int. Cl.[5] H01J *1/63*
U.S. Cl. 313—503 **16 Claims**



1. An AC TFEL device comprising a front electrode set deposited on a transparent substrate, a rear electrode set, and a thin film laminate sandwiched between said front and rear electrode sets, said thin film laminate including at least a pair of insulating layers sandwiching a thiogallate phosphor layer having the chemical formula:

MGa_2S_4:RE,

where M is taken from the group calcium, strontium, zinc or barium, and RE comprises a rare earth activator dopant.

5,309,071
ZINC SULFIDE ELECTROLUMINESCENT PHOSPHOR PARTICLES AND ELECTROLUMINESCENT LAMP MADE THEREFROM

Ronald E. Karam, Towanda, Pa., and Aaron Wold, East Greenwich, R.I., assignors to Osram Sylvania Inc., Danvers, Mass.

Division of Ser. No. 999,241, Dec. 31, 1992, Pat. No. 5,273,774. This application Oct. 12, 1993, Ser. No. 135,044
Int. Cl.[5] H01J *1/63*
U.S. Cl. 313—509 **3 Claims**

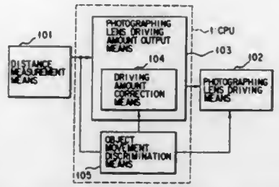
1. A copper- and/or manganese-activated zinc sulfide electroluminescent phosphor consisting essentially of particles of platelet-type ferroelectric material the surfaces which are coated with a layer of copper- and/or manganese-activated zinc sulfide electroluminescent phosphor of a thickness less than about 0.5 micrometers.

3. An electroluminescent lamp comprising a pair of conductive electrodes separated by two layers of dielectric material in one of which are embedded particles of a ferroelectric material and in the other particles of an electroluminescent phosphor, said phosphor consisting essentially of particles of a platelet-type ferroelectric material the surface of which are coated with a layer of copper- and/or manganese-activated zinc sulfide electroluminescent phosphor of a thickness less than about 0.5 micrometers.

5,309,072
DISTANCE MEASUREMENT APPARATUS FOR CAMERA, AND DISTANCE MEASUREMENT METHOD

Keiji Kunishige, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 889,450
Claims priority, application Japan, Jun. 5, 1991, 3-134433
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **19 Claims**

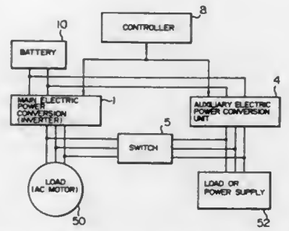


1. An auto-focus apparatus for a camera, comprising:
distance measurement means for projecting infrared light toward an object, receiving the infrared light reflected by the object, and outputting a signal according to an object distance;
control means for operating said distance measurement means twice at a predetermined time interval;
discrimination means for discriminating on the basis of two output signals output from said distance measurement means operated by said control means whether or not the object is moving to a near distance side by an amount not less than a predetermined amount;
arithmetic means for converting the output signals from said distance measurement means into an extension amount of a photographing lens, said arithmetic means including means for, when said discrimination means discriminates that the object is moving to the near distance side, adding a predetermined value to the extension amount; and
driving means for driving said photographing lens from an initial position to a position based on a conversion output from said arithmetic means.

5,309,073
ELECTRIC VEHICLE CONTROL DEVICE

Satoru Kaneko; Ryoso Masaki, both of Hitachi; Sanshiro Obara, Ibaraki; Tsutomu Ohmae; Yuusuke Takamoto, both of Hitachi, and Hirohisa Yamamura, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,765
Claims priority, application Japan, Oct. 21, 1991, 3-272324; Oct. 21, 1991, 3-272328
Int. Cl.[5] H02J *11/00*
U.S. Cl. 318—500 **21 Claims**

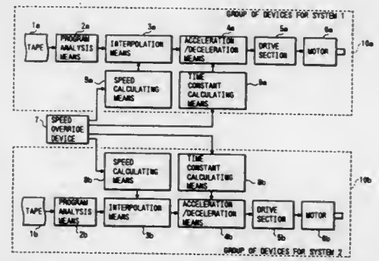


1. An electric vehicle control device comprising:
an AC motor for driving a vehicle;
a main electric power conversion unit for supplying an AC voltage to said AC motor;
a battery for supplying a DC voltage to said main electric power conversion unit;
an auxiliary electric power conversion unit connected to said battery and adapted to be connected to a load or a power supply;
a controller for controlling the main and auxiliary electric power conversion units so as to act selectively as an inverter or a converter; and
switching means for applying the AC voltage to said AC motor selectively from one of said main and auxiliary electric power conversion units under control of said controller.

5,309,074
NUMERICAL CONTROL DEVICE WITH SPEED OVERRIDE CONTROL

Yuji Mizukami, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,961
Claims priority, application Japan, May 18, 1992, 4-124581
Int. Cl.[5] G05B *11/18*
U.S. Cl. 318—571 **19 Claims**



1. A numerical control device for a machine tool comprising:
a plurality of controlled systems, the operation of at least a first and second of said systems being synchronized and being represented by respective acceleration/deceleration time constants;
a speed override input for inputting a speed override command;
an interpolation processor for reading a machining program and outputting resultant drive signals;
a time-constant processor that modifies said respective acceleration/deceleration time constants for said first and second systems in response to said speed override command and in accordance with a predetermined functional relationship, and that outputs acceleration and deceleration control signals based on the modified time constants and the drive signals;
wherein said functional relationship substantially maintains the synchronized operation of said first and second systems.

5,309,075
DIGITAL SERVO-CONTROL APPARATUS FOR PREVENTING TORQUE VARIATIONS

Isamu Yokoe, Obu; Toshio Kohno, Nagoya, and Yasunori Masegi, Anjo, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 22, 1991, Ser. No. 673,384
Claims priority, application Japan, Mar. 23, 1990, 2-074047; Mar. 27, 1990, 2-079157; Mar. 28, 1990, 2-081980
Int. Cl.[5] G05B *1/03, 13/02*
U.S. Cl. 318—608 **4 Claims**

1. A digital servo-control apparatus having a current feedback loop for sampling a load current to an AC servomotor of

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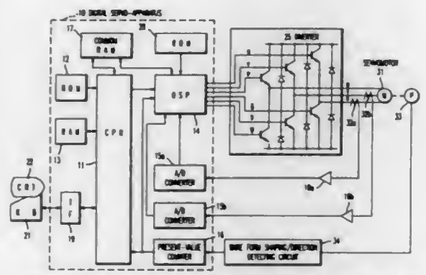
three-phase type at a predetermined control interval thereby obtaining a current feedback value and digitally controlling said load current according to said current feedback value and a target value of said load current, wherein said digital servo-control apparatus comprises:

current detection means for detecting, as said load current, load currents of at least two phases;

amplifiers for amplifying output values of said current detection means;

detected current transformation means for obtaining as said feedback value, from output values of said amplifiers, a d-axis component representing a reactive current component and a q-axis component representing an active current component in a dq-coordinate system;

parameter calculation means for sampling, during calibration of said servo-control apparatus, said output values of



said amplifiers at a plurality of points of time during a predetermined period and determining, according to time-dependent characteristics of said d-axis component and said q-axis component obtained by said detected current transformation means, parameters related to amplification factors and offset values of current detection systems formed of said current detection means and said amplifiers; and

correction means for correcting, according to said parameters calculated by said parameter calculation means, said output values of said amplifiers on a real-time basis while said servo-control apparatus is being driven during normal operation,

wherein said parameters are determined so that fluctuations of said d-axis component and q-axis component are eliminated.

5,309,076

DRIVE AND CONTROL CIRCUIT FOR A BRUSHLESS DC MOTOR

Elmer W. Madsen, Bristol, and Phep X. Nguyen, Windsor Locks, both of Conn., assignors to Nidec Corporation, Torrington, Conn.

Filed Jun. 2, 1992, Ser. No. 892,192
Int. Cl.[5] H02P *1/26*
U.S. Cl. 318—782 **7 Claims**

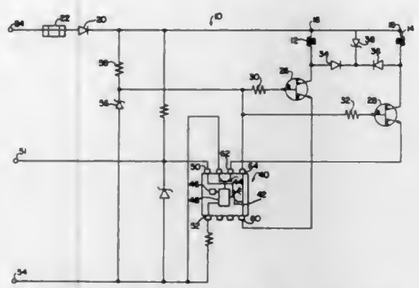
1. A drive and control circuit for a brushless DC motor having at least one stator winding and a permanent magnet rotor, said drive and control circuit comprising:

at least one conductively biased power transistor having a collector to emitter current flow path connected in series to said at least one stator winding;

an integrated circuit (IC) having an IC maximum rated voltage which is less than the maximum net voltage of the drive and control circuit, said IC including at least one internal switching transistor, and a Hall sensor with control and commutation logic circuits, said at least one internal switching transistor having a collector to emitter current flow path connected in series at least one current drive output pin of the IC to said collector to emitter flow path of said at least one power transistor by means of connecting the collector of said at least one switching transistor to the emitter of said at least one of said power transistors;

a DC power supply for the drive and control circuit which forward and conductively biases said power transistors at or below said IC maximum rated voltage, and said DC power supply supplies the IC with a voltage potential at or below said maximum IC rated voltage;

wherein when the IC's said at least one internal switching transistor is switched on by means of said conventional



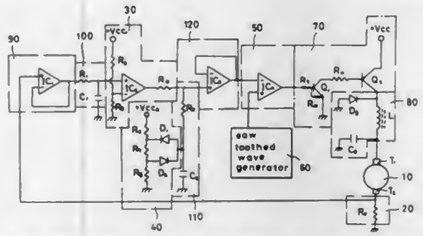
hall sensor with said control and commutation logic circuits included in the IC, a path to ground via the collector and the emitter of said at least one switching transistor is established so that current flows through said at least one conductively biased power transistor so that said at least one stator winding is excited, the voltage potential at the emitter of said at least one power transistor and said at least one current drive output pin of the IC being held at or below the IC maximum rated voltage for safe operation since the bias voltage to said at least one power transistor is at or below the IC maximum rated voltage.

5,309,077

APPARATUS AND METHOD FOR LOADING A CASSETTE TAPE IN A VIDEO EQUIPMENT

Joon H. Choi, Kyungki, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 25, 1992, Ser. No. 950,610
Claims priority, application Rep. of Korea, Sep. 27, 1991, 16932/1991
Int. Cl.[5] H02P *1/22*
U.S. Cl. 318—799 **17 Claims**



1. An apparatus for loading a cassette tape in video equipment, comprising:

a DC motor for loading and unloading the cassette tape in the video equipment;

rotation speed detecting means for detecting a voltage signal corresponding to a rotation speed of said DC motor;

amplifying means for amplifying the detected voltage signal

from said rotation speed detecting means by a predetermined amplification degree;

limiting means for inputting an output signal from said amplifying means and passing only signal components between predetermined maximum and minimum values;

reference signal generating means for generating a reference signal;

comparison means for comparing an output signal from said limiting means with the reference signal and outputting a logical signal in accordance with the compared result;

pulse width modulation (PWM) signal generating means for outputting a PWM signal of a desired duty ratio in accordance with the logic signal from said comparison means; and

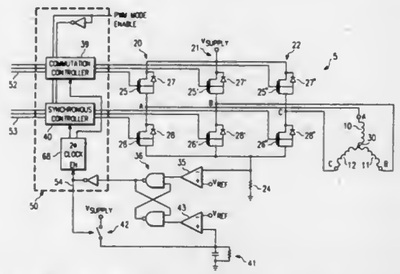
smoothing means for smoothing the PWM signal from said PWM signal generating means and outputting the smoothed signal as a drive signal to said DC motor to compensate for variations in tape windings of the cassette tape to prevent damage to the tape.

5,309,078

SYNCHRONOUS RECTIFICATION METHOD FOR REDUCING POWER DISSIPATION IN MOTOR DRIVERS IN PWM MODE

Scott W. Cameron, Milpitas, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 11, 1991, Ser. No. 728,597
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—811 **19 Claims**



6. A system for driving a polyphase motor having a plurality driving coils, comprising:

a plurality of sets of top and bottom switches, the top switch of each set being connected on one side to a supply voltage, and the bottom switch of each set being connected on one side to another side of the top switch of its respective set, and to a respective one of said driving coils, and being connected on another side to a reference potential;

a plurality of diodes in parallel with respective top and bottom switches;

a commutation controller for controlling said top and bottom switches, whereby said coils are switched in commutation sequences in which current flows through two coils in each commutation sequence, and one of said two coils is selected to be included in a next succeeding commutation sequence; and

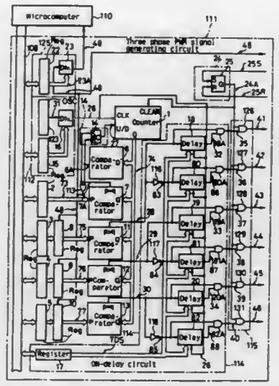
a circuit connected to operate said bottom switches, wherein when a top switch is shut off in a PWM mode, the bottom switches in the set of switches of the current sequence and in the set of switches of the next succeeding sequence are turned on.

5,309,079

DIGITAL THREE-PHASE PWM SIGNAL

Kazuyuki Takada, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 828,451, Jan. 31, 1992, abandoned. This application May 20, 1993, Ser. No. 63,065
Claims priority, application Japan, Apr. 10, 1991, 3-77552
Int. Cl.[5] H02P *5/40*; H02M *5/42*
U.S. Cl. 318—811 **8 Claims**



1. A digital three phase PWM signal generator comprising:

a clock signal generating circuit for generating a clock signal of pulse having a predetermined period,

an UP/DOWN counter for counting up said clock signal up to a predetermined number of pulses and for counting down from said predetermined number of pulses counted in the counting up operation, and for outputting counted value data during counting up operation and counting down operation,

a first digital comparator for outputting a coincidence signal in coincidence of said counted value data in said UP/-DOWN counter with zero,

a first register for storing a peak value data representing the maximum counted value data in said UP/DOWN counter,

a second digital comparator for comparing said counted value data in said UP/DOWN counter with said peak value data in said first register, and for outputting a coincidence signal in coincidence of said counted value data and said peak value data,

a counting function switching circuit for switching said UP/DOWN counter to said counting up operation by receipt of said coincidence signal form said first digital comparator and for switching to said counting down operation by receipt of said coincidence signal from said second digital comparator,

a second register for storing a threshold value data for generating a PWM signal for a first phase of a three-phase motor,

a third register for storing a threshold value data for generating a PWM signal for a second phase of said three-phase motor,

a fourth register for storing a threshold value data for generating a PWM signal for a third phase of said three-phase motor,

a fifth register for storing the data in said second register by receipt of at least one of said coincidence signal from said first digital comparator and said coincidence signal from said second digital comparator,

a sixth register for storing the data in said third register by receipt of at least one of said coincidence signal from said first digital comparator and said coincidence signal from said second digital comparator,

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a seventh register for storing the data in said fourth register by receipt of at least one of said coincidence signal from said first digital comparator and said coincidence signal from said second digital comparator,

a third digital comparator for comparing the data of said fifth register with the data of said UP/DOWN counter, and for generating an output signal when the data of said fifth register is larger than the data of said UP/DOWN counter,

a fourth digital comparator for comparing the data of said sixth register with the data of said UP/DOWN counter, and for generating an output signal when said data of said sixth register is larger than the data of said UP/DOWN counter, and

a fifth digital comparator for comparing the data of said seventh register with the data of said UP/DOWN counter, and for generating and output signal when said data of said seventh register is larger than said data of said UP/DOWN counter.

5,309,080

CONTROL UNIT FOR BATTERY-OPERATED DEVICE

Alfred Odendahl, Waldenbuch, and Armin Fiebig, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

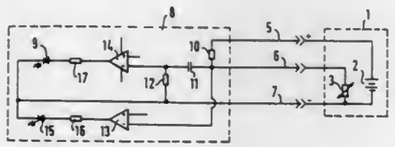
PCT No. PCT/DE90/00745, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO91/07801, PCT Pub. Date May 30, 1991

PCT Filed Sep. 29, 1990, Ser. No. 856,060

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1989, 3937158

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—35 **20 Claims**



1. A control unit for a battery-operated device (**20**) having a rechargeable battery (**2**) with two terminals; and

a temperature-dependent sensor (**3**) which is thermally coupled to the rechargeable battery (**2**), monitors the temperature of the rechargeable battery (**2**) during operation of the battery-operated device (**20**), and generates an output signal;

wherein, in accordance with the invention,

said temperature-dependent sensor has first and second connection leads;

said first connection lead of the sensor is connected to one of said battery terminals, and said second connection lead of the sensor acts as a control connection (**6**) to transmit said output signal; characterized in that

an evaluation circuit (**8**) is provided, having an input connected to said control connection (**6**) of the sensor during battery operation of the device (**20**), said evaluation circuit having means to detect a temperature gradient of the battery (**2**) during operation and to compare the temperature gradient to a predetermined limit value to monitor load on the device.

5,309,081

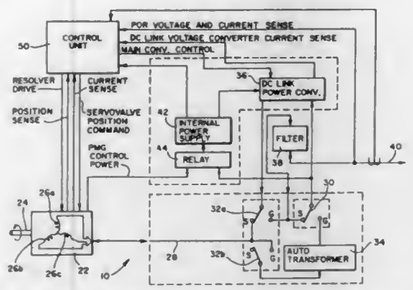
POWER CONVERSION SYSTEM WITH DUAL PERMANENT MAGNET GENERATOR HAVING PRIME MOVER START CAPABILITY

Mahesh J. Shah, Rockford, and Alexander Cook, Machesney, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 18, 1992, Ser. No. 931,636

Int. Cl.[5] F02N *11/04*

U.S. Cl. 322—10 **17 Claims**



1. A starting/generating system operable in a starting mode and in a generating mode, comprising:

a dual permanent magnet generator (DPMG) having a motive power shaft and an armature winding;

a power converter having an input and an output;

relays operable in the starting mode to connect the output of the power converter to the DPMG armature winding and operable in the generating mode to connect the input of the power converter to the DPMG armature winding;

means operable in the starting mode for controlling the power converter whereby the DPMG is operated as a motor to produce motive power at the motive power shaft; and

means operable in the generating mode for controlling the power converter whereby electrical power developed in the DPMG armature winding is converted into output power.

5,309,082

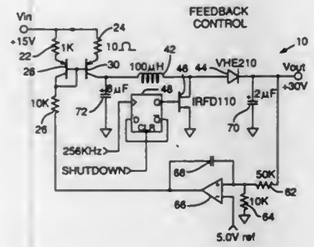
HYBRID LINEAR-SWITCHING POWER SUPPLY

Dean A. Payne, Seattle, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 10, 1992, Ser. No. 911,858

Int. Cl.[5] G05F *1/563*

U.S. Cl. 323—270 **11 Claims**



1. A power supply system comprising a switching power supply serially cascaded after a linear power supply;

the linear power supply including a linear regulating device, said linear regulating device presenting a linearly variable impedance through which energy is controllably passed and dissipated as heat to effect regulation;

the switching power supply including a switching element and a reactive element, said elements cooperating to store energy in association with the reactive element during a first part of a switching cycle, and to deliver energy from the reactive element during a second part of the switching cycle;

the linear power supply being connected to a power supply system input;

the switching power supply being cascaded between the linear power supply and a power supply system output;

the system further including a control loop for controlling the linear power supply from a feedback signal derived from the switching power supply output.

5,309,083

CIRCUIT FOR GENERATING A REFERENCE VOLTAGE THAT VARIES AS A FUNCTION OF TEMPERATURE, IN PARTICULAR FOR REGULATING THE VOLTAGE AT WHICH A BATTERY IS CHARGED BY AN ALTERNATOR

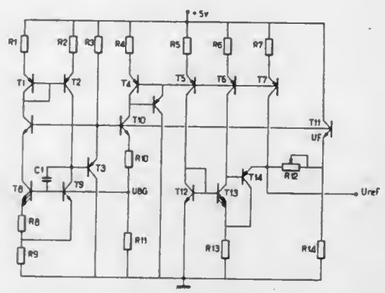
Jean-Marie Pierret, Paris, and Didier Canitrot, Saint-Maur Des Fosses, both of France, assignors to Valeo Equipements Electriques Moteur, Creteil, France

Filed Feb. 6, 1992, Ser. No. 832,015

Claims priority, application France, Feb. 7, 1991, 91 01377

Int. Cl.[5] G05F *3/30*

U.S. Cl. 323—313 **9 Claims**



1. A circuit for generating a reference voltage that varies with the temperature at least in a selected temperature range, in particular for regulating the voltage at which a battery is charged by an alternator, wherein said circuit comprises:

a source of voltage that is fixed regardless of temperature;

a pair of first and second bipolar transistors provided in an integrated circuit, the bases of which are interconnected and the number of emitters of which are different from each other so as to have different temperature behaviors of the base-emitter junctions,

a pair of current sources for applying constant currents to said pair of bipolar transistors, respectively,

a first resistor connected between the emitters of said pair of bipolar transistors, so that the current through said first resistor varies as a function of the temperature to which said pair of bipolar transistors are exposed,

a second resistor connected between said source of fixed voltage and an output for said reference voltage, and through which a shifting current may flow,

a third transistor connected between said output for said reference voltage and one terminal of said first resistor, and through which said shifting current may flow, said shifting current being equal to the current required in addition to the current supplied by one of said current sources when the current through said first resistor increases due to an increase of the temperature to which said pair of bipolar transistors are exposed above a selected critical temperature,

whereby said reference voltage is shifted from said fixed voltage by a value equal to the voltage drop caused by said shifting current in said second resistor and varies as a function of said temperature.

5,309,084

ELECTRONIC SWITCH WITH ON/OFF FADING

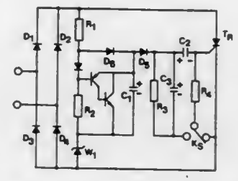
Zigang Jiang, No. 516 Building 951, Zhongguancun, Beijing 100080, China

Filed Jul. 2, 1992, Ser. No. 909,070

Claims priority, application China, Jul. 4, 1991, 91106745.0

Int. Cl.[5] G05F *1/56*

U.S. Cl. 323—321 **7 Claims**



1. An electronic switch with on/off fading comprising:

a main circuit including a rectifying bridge circuit and a thyristor,

a thyristor triggering circuit having a trigger pulse integrator which includes a series branch of a first diode and a first capacitor, said trigger pulse integrator is connected between the anode and the control terminal of the thyristor,

a control branch formed by a parallel network consisting of a first resistor and a second capacitor connected in parallel,

a fast—discharging synchronic integrator, connected between the anode and cathode of the thyristor and comprising a sample circuit formed by second and third resistors, a integrating circuit consisting of the second resistor, a second diode, and a third capacitor, and a fast—discharging circuit formed by multiple transistors

a single pole, double throw switch with two contacts, an on contact connected to the parallel network and an off contact, wherein when said single pole, double throw switch is connected to the off contact, the control and cathode of the thyristor are serially connected with a fourth resistor, and

wherein one side of the first capacitor of the trigger pulse integrator is connected to the control terminal of the thyristor and wherein said series branch is connected between the positive side of the third capacitor in the synchronic integrator and the control terminal of the thyristor.

5,309,085

MEASURING CIRCUIT WITH A BIOSENSOR UTILIZING ION SENSITIVE FIELD EFFECT TRANSISTORS

Byung K. Sohn, 425-4, Chung-dong, Suseong-ku, Taegu, Rep. of Korea

Continuation of Ser. No. 746,738, Aug. 19, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 982,002

Claims priority, application Rep. of Korea, Aug. 21, 1990, 1990-12885

Int. Cl.[5] G01N *27/00*

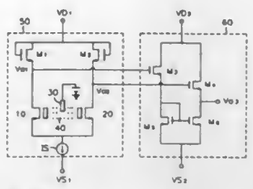
U.S. Cl. 324—71.5 **29 Claims**

1. A measuring circuit with a biosensor utilizing ion sensitive field effect transistors, comprising:

two input devices composed of ion sensitive field effect

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transistors, wherein one of said ion sensitive field effect transistors is an enzyme field effect transistor having an enzyme sensing membrane on a gate surface and another one of said ion sensitive field effect transistors is a reference field effect transistor having no enzyme sensing membrane; and



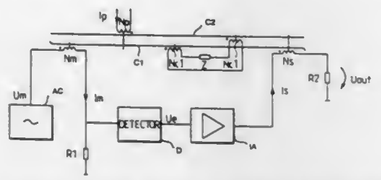
differential amplifier means coupled to receive output signals of said ion sensitive field effect transistors, for providing gain differentiated signals, said differential amplifier means having at least two metal-oxide-semiconductor field effect transistors, each of said metal-oxide-semiconductor field effect transistors having the same-type channel as said enzyme field effect transistor and said reference field effect transistor.

5,309,086

CURRENT MEASURING TRANSDUCER OPERATING ON THE COMPENSATION PRINCIPLE

Kai Johansson, Västerskog; Matti Lounila, Espoo, and Juha Kokkonen, Vantaa, all of Finland, assignors to ABB Stromberg Drives OY, Helsinki, Finland

Filed Mar. 25, 1993, Ser. No. 36,688
Claims priority, application Finland, Apr. 2, 1992, 921460
Int. Cl.[5] G01R *33/00*
U.S. Cl. 324—117 R **1 Claim**



1. Current measuring transducer operating on the compensation principle, comprising

a first magnetic core with a window, a first winding for a current to be measured and a second winding for a compensation current being wound on said magnetic core;

second magnetic core with a window, the first winding and the second winding being also wound about said second magnetic core;

means for generating the compensation current and adjusting the magnitude thereof so that a magnetic flux generated in the first magnetic core by the compensation current compensates for a magnetic flux generated in the first magnetic core by the current to be measured, said means for generating and adjusting the compensation current comprising a third winding arranged to magnetize the first core by a magnetizing current;

a fourth winding wound on the first magnetic core; and

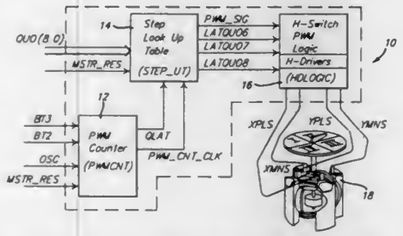
a fifth winding wound on the second magnetic core, the fourth and the fifth winding having an equal number of turns and being series-connected in a closed loop through an impedance the value of which at the frequency of the magnetizing current is so low that the magnetic flux caused by the fifth winding in the second magnetic core is at least substantially equal but opposite in direction to the magnetic flux acting in the first magnetic core, said impedance being frequency-dependent and having such a high value at the frequency of the AC component of the current to be measured that it prevents the flow of an excessive current of said frequency through the fourth and the fifth winding.

5,309,087

AIR CORE GAUGE, MULTI-FREQUENCY PULSE WIDTH MODULATOR SYSTEM THEREFOR

Paul A. Markow, Huntsville; Kevin R. Hammond, Harvest, and Donald E. Hutchings, Decatur, all of Ala., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 8, 1992, Ser. No. 941,622
Int. Cl.[5] G01R *5/16, 23/00*
U.S. Cl. 324—146 **17 Claims**



12. A gauge driver system for driving a variety of air core gauges in response to digitally coded data representing magnitudes and polarities of varying measurands from a measurand sensing device, the driver system comprising:

(a) clock means arranged to receive a fixed clock oscillator signal and for dividing the oscillator signal into a selected number of different PWM clock signals of selected frequencies relative to the oscillator signal, each of the different PWM clock signals having an accompanying quotient latch signal that develops after the occurrence of a chosen multiple of the number of pulses in the selected PWM clock signal;

(b) PWM current controller means connected to the clock means and to the measurand sensing device for receiving the varying measurands as bytes of coded data and then using one of the different PWM clock signals and the coded data to form PWM and polarity signals of durations and polarity proportional to the varying magnitudes and polarities of the varying measurand sensed by the measurand sensing device, the quotient latch signal being used to control receipt of each byte of coded data into the PWM current controller means; and

(c) driver means for driving one stator coil of the gauge with PWM and polarity signals for durations and polarities in proportion to the magnitudes and polarities of the measurand while driving another stator coil with a fixed voltage of a chosen polarity to position a needle connected to a rotor to a dial position proportional to the magnitude of the measurand.

5,309,088

MEASUREMENT OF SEMICONDUCTOR PARAMETERS AT CRYOGENIC TEMPERATURES USING A SPRING CONTACT PROBE

Men-Chee Chen, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 10, 1990, Ser. No. 565,581
Int. Cl.[5] G01R *31/26, 31/28*
U.S. Cl. 324—158 D **6 Claims**

1. A method for determining the properties of semiconductor material which includes the steps of:

(a) providing an enclosed chamber;

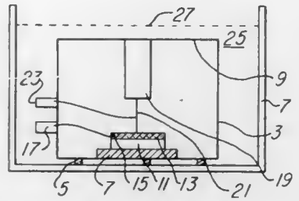
(b) providing a sample of as-grown semiconductor material;

(c) polishing a surface portion of said semiconductor material;

(d) providing an insulator layer over said polished surface portion;

(e) supporting said sample of (d) in said chamber;

(f) impinging a spring probe disposed within said chamber against said insulator layer with a predetermined force, said spring probe, to provide and MIS device with said insulator layer and semiconductor material;



(g) providing a first contact contacting a surface portion of said semiconductor material under test;

(h) providing a pair of contact elements disposed external to said chamber, each of said pair of contacts coupled to a different one of said first contact and said spring probe for injecting a signal into said sample and receiving an output therefrom responsive to said injecting a signal; and

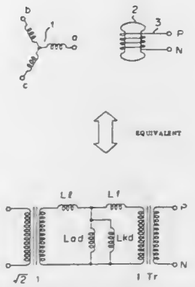
(i) supporting said chamber in a cryogenic material surrounding said chamber.

5,309,089

METHOD OF MEASURING UNSATURATED INDUCTANCES OF AN EQUIVALENT CIRCUIT OF A SYNCHRONOUS MACHINE

Mitsuhiro Kawamura, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,347
Claims priority, application Japan, Nov. 12, 1991, 3-322436
Int. Cl.[5] G01R *31/34*
U.S. Cl. 324—158 MG **1 Claim**



1. A method of measuring unsaturated inductances of an equivalent circuit of a synchronous machine comprising:

measuring a no-load saturation characteristic of a synchronous machine;

measuring a three-phase short-circuit characteristic of the synchronous machine;

measuring currents and voltages of an armature and a field when an armature coil and a field coil are in a positional relationship wherein a magnetomotive force by flowing current to the armature coil of the synchronous machine becomes a direct-axis magnetomotive force and both when the field coil is in an open-circuit state and when the field coil is in a short-circuit state by direct-axis Dalton-Cameron method; and

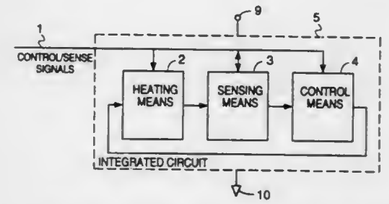
solving simultaneous equations concerning a direct-axis equivalent circuit of the synchronous machine by using results of the measuring the no-load saturation characteristic, the measuring the three-phase short-circuit characteristic and the measuring by the direct-axis Dalton-Cameron method, thereby obtaining unsaturated inductances constituting the direct-axis equivalent circuit.

5,309,090

APPARATUS FOR HEATING AND CONTROLLING TEMPERATURE IN AN INTEGRATED CIRCUIT CHIP

Robert J. Lipp, 15881 Rose Ave., Los Gatos, Calif. 95030

Filed Sep. 6, 1990, Ser. No. 579,770
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **4 Claims**



1. An apparatus for quality, reliability or diagnostic testing in an integrated circuit die, comprising:

means for receiving one or more control signals; and

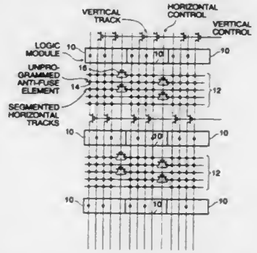
a plurality of means for heating said integrated circuit die in response to said one or more control signals, wherein said plurality of means for heating are embedded in said integrated circuit, said plurality of means for heating encircling the interior of said integrated circuit die, such that said integrated circuit die is heated substantially evenly.

5,309,091

TESTABILITY ARCHITECTURE AND TECHNIQUES FOR PROGRAMMABLE INTERCONNECT ARCHITECTURE

Khaled A. El-Ayat, and Jia-Hwang Chang, both of Cupertino, Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 375,799, Jul. 5, 1989, Pat. No. 5,083,083, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application Jan. 14, 1992, Ser. No. 822,490
Int. Cl.[5] G01R *31/02, 31/28*
U.S. Cl. 324—158 R **3 Claims**



1. In a user-configurable integrated circuit including a plurality of conductors which may be connected to one another,

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to functional circuit blocks having first connection modes for inputs and outputs thereto, and to input/output circuit blocks having second connection modes for inputs and outputs thereto, by programming user-programmable elements to form electronic circuits, at least one of said conductors comprising one of said first and second connection nodes, apparatus for testing for connectivity defects in the form of breaks in the electrical continuity of individual ones of said conductors prior to formation of said electronic circuits by a user, including:

means, responsive to signals provided to said integrated circuit from an external source, for temporarily connecting together in series during a first time period selected ones of said conductors to form a series circuit having a first end conductor and a second end conductor;

means for placing an electrical charge on said first end conductor during a second time period within said first time period such that a selected dynamic voltage is placed on said first end conductor;

means for driving said second end conductor to a voltage different from said selected dynamic voltage during a third time period subsequent to said second time period and within said first time period;

means for sensing the voltage on said first end conductor at a predetermined time after the start of said third time period and within said first time period;

means for storing a signal related to the voltage on said first end conductor at said predetermined time after the start of said third time period; and

means for communicating said signal to an input/output pad of said integrated circuit.

5,309,092

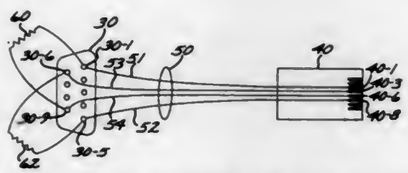
TOKEN RING TEST SIMULATION METHOD AND DEVICE

David Kuntz; Bharat Singh, both of Roseville; Kittur Nagesh, Sacramento, and Ronald McBride, Auburn, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 27, 1993, Ser. No. 9,523

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 R **11 Claims**



1. A multi-purpose Token Ring loopback connector system for permitting Token Ring local area network (LAN) components to be tested without connecting the component to-be-tested into said LAN, the components to-be-tested including either a first type of multi-pin electrical connector or a second type of multi-pin electrical connector for connecting said component into said LAN, wherein said system comprising:

first compatible connector means for connecting to said first type of electrical connector, said connector means including a pin pattern for mating with said first type of connector;

second compatible connector means for connecting to said second type of electrical connector, said connector means including a pin pattern for mating with said second type of connector;

means for electrically connecting corresponding first and second pin pairs of said first and second connector means; and

load simulating means connected to said corresponding first and second pin pairs for simulating the nominal load presented to said network component to-be-tested when said component is connected into said Token Ring network, wherein said connector system may be used in the testing of a LAN component having either said first connector type or said second connector type.

5,309,093

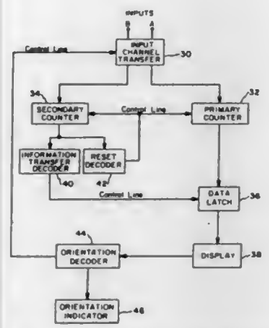
ELECTRONIC SPEED SIGNAL RATIO MEASURING APPARATUS FOR CONTROLLING OPERATIONS

Daniel O. Aderhold, 3024 Turkeyfoot Rd., Akron, Ohio 44311

Filed Mar. 16, 1992, Ser. No. 851,860

Int. Cl.[5] G01P *3/56*

U.S. Cl. 324—161 **14 Claims**



1. An electronic signal ratio measuring apparatus, comprising,

a measuring circuit means having at least two digital frequency signals input thereto, said measuring circuit adapted to measure the ratio of the frequencies of said at least two signals,

said measuring circuit means comprising a channel transfer means adapted to couple said at least two input signals to at least a primary counter means and a secondary counter means, wherein said channel transfer means enables the lower frequency signal of said at least two signals to be coupled to said secondary counter means with the remaining input signal(s) coupled to said primary counter means,

said secondary counter means being adapted to count predetermined numbers of digital pulses corresponding to the frequency of said lower frequency signal and to generate output signals indicating counting of said predetermined numbers, such that said lower frequency signal provides a basis for ratio measurement between said at least two input signals,

said primary counter means being adapted to count the digital pulses corresponding to the frequency of the other of said at least two input signals, said primary counter being coupled to a data latch means, wherein upon said secondary counter reaching a first predetermined count, a first output signal from said secondary counter will operate to latch the count of said primary counter means to said data latch means, said data latch means being coupled to an indicating means to provide ratio information being an indication of the ratio of the count of said primary counter means relative to said first predetermined count of said secondary counter means,

said secondary counter also adapted to generate a second output signal upon said secondary counter means reaching a second predetermined count, said second output signal coupled to both the primary and secondary counter means to affect resetting thereof for continuous monitoring of said at least two input signals.

5,309,094

BEARING ROTARY SPEED SENSOR WITH CONCENTRIC MULTIPOLE MAGNETIC RINGS AXIALLY ALIGNED WITH COLLECTOR BRANCHES

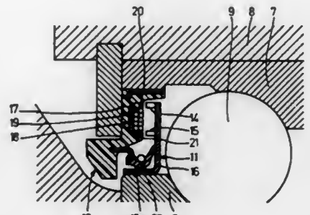
Christian Rigaux, Artannes sur Indre, and Pascal Lhote, Saint Cyr sur Loire, both of France, assignors to SKF France, Clamart Cedex, France

Filed Jul. 6, 1992, Ser. No. 908,415

Claims priority, application France, Jul. 5, 1991, 91 08463

Int. Cl.[5] G01P *3/48, 3/54*

U.S. Cl. 324—174 **17 Claims**



1. A sensor device for sensing a speed of rotation of a rotating member mounted by a roller bearing on a non-rotating member, said roller bearing including a non-rotating race and a rotating race, said device comprising:

a coder element which is rigid with said rotating race of the bearing, said coder element having two axially magnetized concentric multipole rings which are means for producing an alternating magnetic field while rotating, and

a sensor element which is rigid with said non-rotating race of the bearing, said sensor element having a magnetic flux concentrator and an induction coil which is coaxial with the multipole rings, said magnetic flux concentrator having two collector branches for concentrating magnetic flux generated by the multipole rings to the induction coil, said collector branches having diameters which are substantially the same as their respective multipole rings, said collector branches each axially facing a respective one of said multipole rings and being spaced therefrom by an air gap.

5,309,095

COMPACT MAGNETOMETER PROBE AND AN ARRAY OF THEM COVERING THE WHOLE HUMAN SKULL FOR MEASUREMENT OF MAGNETIC FIELDS ARISING FROM THE ACTIVITY OF THE BRAIN

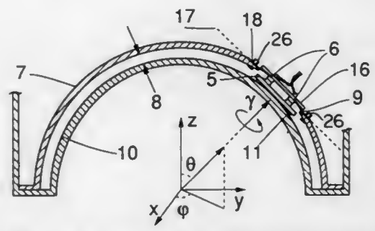
Antti I. Ahonen; Jukka E. T. Knuutila; Juha T. A. Simola, and Visa A. Vilkman, all of Helsinki, Finland, assignors to Neuromag Oy, Finland

Filed Dec. 13, 1991, Ser. No. 807,122

Claims priority, application Finland, Dec. 21, 1990, 1906342

Int. Cl.[5] G01R *33/035;* **A61B** *5/04, 5/05*

U.S. Cl. 324—248 **23 Claims**



1. A device for sensing time and space dependent magnetic fields arising from neural activity in the human brain, said device being suitable for use in a vessel containing a cryogenic liquid and having a curved wall portion configured to embrace the human cranium, said device comprising; a plurality of SQUID magnetic field sensing means for sensing the magnetic fields, said plurality of SQUID means being coupled to a support structure positionable within said vessel (7) for locating said SQUID means at selected locations on said vessel wall portion, each of said SQUID means having a generally planar base element (2) and foot means (11) extending from said base element for positioning said SQUID means on said vessel wall portion (10) in a predetermined orientation with respect thereto.

5,309,096

MAGNETIC FIELD DETECTOR FOR A MEDICAL DEVICE IMPLANTABLE IN THE BODY OF A PATIENT

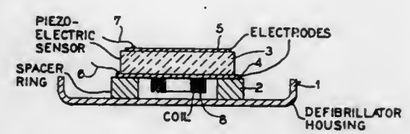
Kurt Hoegnelid, Vaesterhaninge, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 933,736

Claims priority, application European Pat. Off., Aug. 26, 1991, 91114252.9

Int. Cl.[5] G01R *33/02, 33/028;* **A61N** *1/08, 1/37*

U.S. Cl. 324—256 **7 Claims**



1. A magnetic field detector for a medical device implantable in the body of a patient, comprising:

a housing having a shape and size for implantation in the body of a patient;

a force-sensitive sensor, which generates a sensor signal, and an electric coil mechanically attached together and mounted as a unitary assembly in said housing;

current source means for supplying current to said coil so that a force is exerted on said coil in the presence of a magnetic field, said force being transmitted to said sensor;

control means for generating a control signal for switching said current source means on and off at prescribed points in time and thereby modifying said sensor signal for defining said sensor signal as a detection signal for a magnetic field when said current source means is switched on and for defining said sensor signal as an activity signal corresponding to the physical activity of said patient when said current source means is switched off; and

evaluation means, activated by said control signal, for evaluating said sensor signal dependent on whether said sensor signal is defined as a detection signal for a magnetic field or as an activity signal.

5,309,097

VIDEO DISPLAY TERMINAL MAGNETIC FIELD DETECTOR

Richard Bill, Allegan, Mich.; Enrique Rodriguez, 3140 44th St. S.E., Kentwood, Mich. 49512, assignors to Enrique Rodriguez, Grand Rapids, Mich.

Filed Apr. 15, 1992, Ser. No. 869,464

Int. Cl.[5] G01R *33/02, 29/08, 33/06;* **G08B** *21/00*

U.S. Cl. 324—258 **1 Claim**

1. An apparatus for use in combination with a video display terminal and adapted to provide a warning of a harmful level of a certain magnetic field emanating from said terminal, said apparatus comprising:

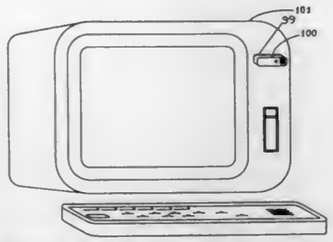
a generally rectangular casing including mounting means for affixing said casing to a surface, said casing being mounted

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upon the surface of said video display terminal and having a grilled surface through which said certain magnetic field is receivably passed;

sensing means positioned within said casing for receiving said certain magnetic field and for producing a current only when said field has a frequency of about 5 Hz to about 400,000 Hz;

amplification means positioned within said casing and electrically coupled to said sensing means for amplifying said current and for outputting the amplified current;



comparison means, positioned within said casing and electrically coupled to said amplification means, for comparing said amplified current with a predetermined value and for producing a signal only when said amplified current exceeds said predetermined value; and

indication means, electrically coupled to said comparison means, for producing an indication when said amplified current exceeds said predetermined value, thereby warning of a harmful level of said certain magnetic field.

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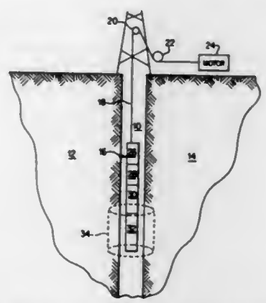
NUCLEAR MAGNETIC RESONANCE DETECTION OF GEOLOGIC STRUCTURES

George R. Coates; Melvin N. Miller, and John C. Bouton, all of Malvern, Pa., assignors to Numar Corporation, Malvern, Pa.

Continuation-in-part of Ser. No. 701,516, May 16, 1991. This application Nov. 27, 1991, Ser. No. 800,599

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—303 **9 Claims**



1. A method for determining the optimum sampling interval for measurement of parameters related to the composition of a geologic structure, comprising the steps of:

(a) imparting a polarizing magnetic field to a geologic structure for a predetermined period of time;

(b) repeatedly exciting the nuclei of a population of particles in said geologic structure with an RF field;

(c) measuring repeatedly during a first time interval nuclear magnetic resonance echo signals of said population of particles in said geologic structure so as to acquire a chain of echo signals; and

(d) determining from said chain of echo signals an optimum sampling interval for obtaining a plurality of subsequent data measurements relating to said geologic structure.

5,309,099

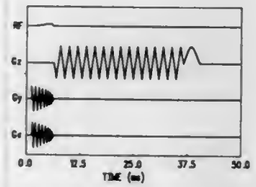
METHOD OF DETERMINING REAL-TIME SPATIALLY LOCALIZED VELOCITY DISTRIBUTION USING MAGNETIC RESONANCE MEASUREMENTS

Pablo Irarrazabal, Stanford; Bob S. Hu, Menlo Park, and John Pauly, San Francisco, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, The, Stanford, Calif.

Filed Aug. 7, 1992, Ser. No. 926,982

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—306 **21 Claims**



1. A method of measuring real-time spatially localized velocity distribution in a region of a body comprising the steps of:

(a) placing said body in a static magnetic field along a first axis (z),

(b) applying magnetic gradient pulses along two orthogonal axes (x,y) and an RF excitation pulse to selectively excite said region,

(c) applying a magnetic gradient along a read-out axis,

(d) sampling a magnetic resonance signal while applying said read-out gradient, said magnetic resonance signal including velocity distribution along a spatial dimension on said read-out axis, and

(e) obtaining a velocity distribution along said spatial dimension.

5,309,100

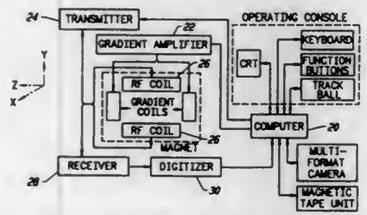
FLOW MEASUREMENT OF INCOMPRESSIBLE FLUID USING DIVERGENCE-FREE CONSTRAINT

Samuel M. Song, San Mateo; Sandy A. Napel, Menlo Park, and Norbert J. Pelc, Los Altos, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Oct. 30, 1992, Ser. No. 968,754

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—306 **29 Claims**



1. A method of enhancing a measured velocity field with non-zero divergence comprising the steps of:

(a) defining a space of divergence-free velocity fields;

(b) projecting said measured velocity field onto said space of divergence-free fields to find the divergence-free field which is closest to the measured velocity field.

5,309,101

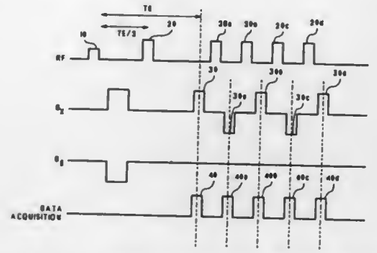
MAGNETIC RESONANCE IMAGING IN AN INHOMOGENEOUS MAGNETIC FIELD

Jae K. Kim; Donald B. Plewes, and Ross M. Henkelman, all of Toronto, Canada, assignors to General Electric Company, Milwaukee, Wis.

Filed Jan. 8, 1993, Ser. No. 1,967

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **21 Claims**



1. In an MR imaging system having an inhomogeneous magnetic field, a method for acquiring a K-space data set, having coordinates Kx, Ky and Kz, substantially without inhomogeneity induced artifacts, the method comprising:

(a) applying an inhomogeneous magnetic field to a region of interest;

(b) applying an RF excitation pulse to the region of interest to create a spin-state;

(c) subsequently applying a predetermined sequence of RF refocusing pulses to repeatedly refocus the spin-state, allowing a data acquisition from a segment of a K-space line after each RF refocusing pulse, wherein each segment comprises more than one K-space data point and each data point is symmetrically arranged around a center of the refocused spin-state, such that the K-space line is acquired in a predetermined series of segments, wherein a complete set of segments is acquired from a predetermined number of K-space lines after applying the RF excitation pulse; and

(d) repeating the initial RF excitation pulse and a corresponding predetermined sequence of RF refocusing pulses while varying the data acquisition along Kx and Ky to obtain a complete two-dimensional K-space data set.

5,309,102

FREQUENCY CALIBRATION FOR MRI SCANNER

Todd W. Deckard, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed May 7, 1993, Ser. No. 60,435

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—314 **5 Claims**

1. A method for automatically adjusting the RF frequency of a transceiver in an NMR system, which comprises:

performing an NMR measurement in which an NMR signal is produced and acquired;

transforming the acquired NMR signal to the frequency domain;

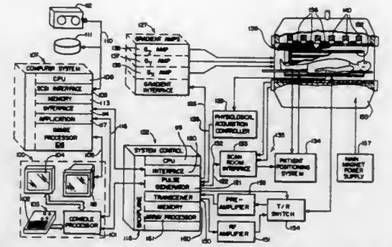
defining a correlation model which depicts expected fat and water peaks;

correlating the correlation model with the transformed NMR signal to produce a correlation frequency (f_{cor});

locating the peaks in the transformed NMR signal;

selecting one of the located peaks positioned to one side of the correlation frequency (f_{cor}) as the Larmor frequency of water;

selecting one of the located peaks positioned to the other side of the correlation frequency (f_{cor}) as the Larmor frequency of fat; and



outputting to the transceiver on the NMR system an RF frequency command (CF) which is based on the determined water or fat Larmor frequency.

5,309,103

APPARATUS TO EXCITE AND/OR TO DETECT MAGNETIC RESONANCE

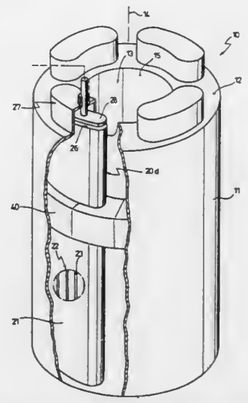
Helmut Friedburg, Waldbronn, Fed. Rep. of Germany, assignor to Bruker Medizintechnik GmbH, Fed. Rep. of Germany

Filed Apr. 9, 1992, Ser. No. 865,481

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111508

Int. Cl.[5] G01R *33/00*

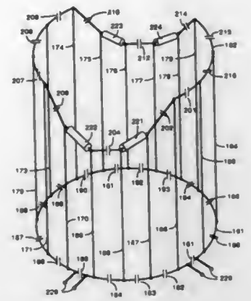
U.S. Cl. 324—318 **21 Claims**



1. Apparatus to excite and detect magnetic resonance, the apparatus having a hollow probehead with an interior space and employing high frequency system elements to create and detect a high frequency magnetic field of a predetermined frequency in the interior space as well as gradient coils to create a magnetic field of predetermined inhomogeneity in the interior space and in which the high frequency system elements are combined with the gradient coils to form an integrated structure, characterized in that the integrated structure comprises a plurality of hollow tubular elements, each of the plurality of tubular elements having conductive walls, the tubular elements containing the gradient coils and the conductive walls forming the high frequency system elements.

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5,309,104
ASYMMETRIC RADIO FREQUENCY COIL FOR MAGNETIC RESONANCE IMAGING
Perry S. Frederick, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.
Filed May 22, 1992, Ser. No. 887,634
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **9 Claims**



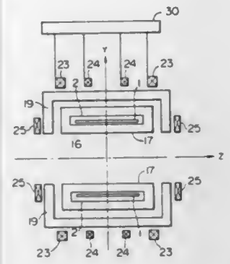
1. A radio frequency NMR coil comprising:
a first end loop comprising a first plurality of reactive devices coupled in a series with a separate node between adjacent reactive devices of the series;
a second end loop comprising a second plurality of reactive devices coupled in a series with a separate node between adjacent ones of the second plurality of reactive devices, wherein each of said second plurality of reactive devices has a reactance which is dependent upon where that respective reactive device is located in said second end loop; and
a plurality of conductive elements electrically connected between nodes of said first and second end loops, and at least some of said plurality of conductive elements having different lengths than other ones of said plurality of conductive elements.

5,309,105
VIBRATION REDUCTION SYSTEM FOR MAGNETIC-RESONANCE IMAGING APPARATUS
Taichi Sato, Ishioka; Yoshiharu Mohri, Chiyoda; Kihachiro Tanaka, Ushiku; Takao Hommei, Katsuta; Masayuki Otsuka, Katsuta, and Masashi Wada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 8, 1992, Ser. No. 910,543
Claims priority, application Japan, Jul. 10, 1991, 3-169617
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **17 Claims**



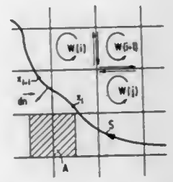
13. A magnetic resonance imaging apparatus having:
magnetic field generation means;
a support member for supporting said magnetic field generation means in a predetermined position, said support member including a rigid connection attached to said generation means and including at least one shallow portion therein,; and
particulate material disposed within at least one hollow portion of said support member so as to be movable within said hollow portion.

5,309,106
MAGNETIC FIELD GENERATOR
Goh Miyajima, Katsuta; Takao Takahashi, Hitachi, and Takehiko Konno, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instrument Engineering Co., Ltd., Katsuta, both of Japan
Filed Oct. 23, 1992, Ser. No. 965,424
Claims priority, application Japan, Oct. 24, 1991, 3-277454
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **17 Claims**



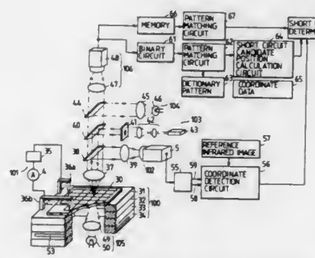
1. A magnetic field generating system comprising:
means for generating a static magnetic field in a predetermined direction inside a predetermined space;
a magnetic shield encircling said predetermined space to constrain the static magnetic field; and
means for generating a cancelling magnetic field encircling said magnetic shield to cancel leakage magnetic field resulting from the static magnetic field escaping from said magnetic shield.

5,309,107
METHOD FOR CONSTRUCTING A TRANSVERSAL GRADIENT COIL IN A MAGNETIC RESONANCE IMAGING SYSTEM
Guenther Pausch, Effeltrich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 5, 1993, Ser. No. 14,220
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203582
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **8 Claims**



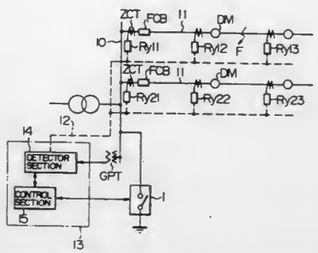
1. A method for constructing a transversal gradient coil formed by a conductor for producing a target field distribution with a prescribed current in a magnetic resonance imaging system, said method comprising the steps of:
subdividing a surface of a carrier on which said coil is to be disposed by means of a grid mesh network placed over said carrier, said network having grid openings and mesh branches;
occupying each grid opening in said network with a modeled elementary coil in the form of a closed turn, each elementary coil generating a respective magnetic field;
calculating the magnetic field generated by each of said elementary coils;
defining a number of ampere-turns for each elementary coil using a fit algorithm based on said target field distribution;
calculating a number of ampere-turns for each mesh branch by superimposing the ampere-turns for all of the elementary coils elements adjacent each mesh branch and thereby obtaining an ampere-turn density distribution over said network;
successively integrating said ampere-turn density distribution over whole-numbers of turns along an integration path based on said prescribed current to obtain a plurality of points on said carrier; and
positioning said conductor on said carrier in a configuration conforming to said points.

5,309,108
METHOD OF INSPECTING THIN FILM TRANSISTOR LIQUID CRYSTAL SUBSTRATE AND APPARATUS THEREFOR
Shunji Maeda, Yokohama; Hitoshi Kubota, Fujisawa, and Makoto Ono, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 30, 1992, Ser. No. 921,583
Claims priority, application Japan, Jul. 30, 1991, 3-189994; Nov. 1, 1991, 3-287560; Mar. 3, 1992, 4-045627
Int. Cl.[5] G01R *31/02*; G06K *9/00*
U.S. Cl. 324—501 **9 Claims**



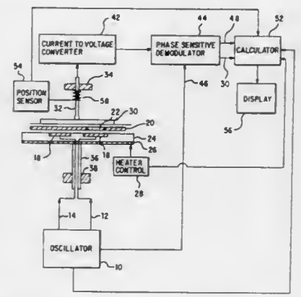
7. A method of inspecting a thin film transistor liquid crystal substrate comprising the steps of:
connecting a plurality of scan lines and a plurality of signal lines electrically in common at respective terminals;
detecting an infrared image of the scan lines and the signal lines outside a pixel area of the thin film transistor liquid crystal substrate after lapse of a prescribed time from a time point of applying voltage between said scan lines and said signal lines;
detecting an infrared image of the scan lines and the signal lines outside the pixel area after lapse of a prescribed time from a time point of stopping the voltage application;
detecting scan lines and signal lines exhibiting variation of a heating state from a differential infrared image obtained by taking one of a difference and a quotient between the infrared image at the voltage applying state and the infrared image at the stopping state of a voltage application, so that a pixel address with a short circuit defect occurring is specified,
wherein if an image part being equal to at least a set threshold value does not exist in the differential infrared image at the pixel address, a wiring pattern position at the pixel address is detected from a visible image at the pixel address and a wiring pattern at the pixel address is compared with a wiring pattern at a neighboring address to detect a short circuit defect position.

5,309,109
FORCIBLE GROUNDING GENERATION EQUIPMENT AND GROUNDING OCCURRENCE DETECTION EQUIPMENT USING THE SAME
Terunobu Miyazaki, Ibaraki, and Kazuo Nishijima, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 5, 1992, Ser. No. 846,680
Claims priority, application Japan, Mar. 7, 1991, 3-041569
Int. Cl.[5] G01R *31/14*
U.S. Cl. 324—509 **5 Claims**



1. Grounding generation equipment for use with a three-phase power distribution system including at least one three-phase power distribution line, said equipment comprising: a series circuit of an impedance, a grounding switch and a first transformer, grounding phase select means for selecting one of three phases of the three-phase power distribution line and connecting said series circuit between the selected one phase of the distribution line under live wire condition and a ground potential, a second transformer connected to output three voltages corresponding to three line-to-line voltages of the three-phase distribution line and means for selecting one of the three voltages outputted from said second transformer and applying the selected one voltage to said first transformer.

5,309,110
DIFFERENTIAL DIELECTRIC ANALYZER
Michael J. O'Neill, Ridgefield, and Kerry McKinley, New Fairfield, both of Conn., assignors to The Perkin Elmer Corporation, Norwalk, Conn.
Filed Mar. 4, 1992, Ser. No. 845,994
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—674 **14 Claims**



1. An apparatus for analyzing the dielectric properties of a sample comprising:
a substrate;
a first bottom electrode mounted on said substrate;
a second bottom electrode mounted on said substrate;
a top electrode;
oscillator means, coupled to said first and second bottom

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electrodes, for driving said first and second bottom electrodes, said second electrode being driven out of phase relative to said first electrode;

demodulator means, coupled to said top electrode, for extracting a signal representative of the conductance of the sample and a signal representative of the susceptance of the sample;

calculator means, coupled to said oscillator means and said demodulator means, for calculating desired dielectric properties of the sample; and

display means, coupled to said calculator means, for displaying desired dielectric properties of the sample.

5,309,111

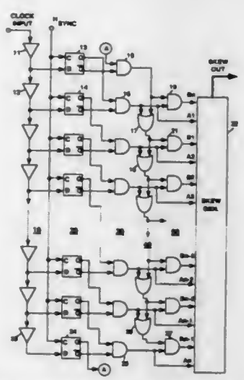
APPARATUS FOR MEASURING SKEW TIMING ERRORS

David L. McNeely, and Greg A. Kranawetter, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Indianapolis, Ind.

Filed Jun. 26, 1992, Ser. No. 904,632

Int. Cl.[5] G01R *25/00*; H03K *9/00*

U.S. Cl. 328—133 **10 Claims**



1. Apparatus for measuring skew between a predetermined transition of a clock signal and a predetermined transition of a further signal, comprising:

a source of said clock signal, and a source of said further signal;

a non-clocked analog delay line, coupled to receive said source of clock signal, and having a plurality of taps for providing a plurality of delayed replicas of said clock signal delayed by substantially equal increments;

means, responsive to said predetermined transition of said further signal, for simultaneously storing said delayed replicas exhibited at each of said taps;

means, coupled to said means for storing, for determining the location, in units of delay, of said predetermined transition of said clock signal in said means for storing; and

means, responsive to said location, for generating said skew value.

5,309,112

SWITCHED-CAPACITOR CIRCUIT POWER DOWN TECHNIQUE

King F. Lee, Ft. Lauderdale, and Norman T. Rollins, Sonrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

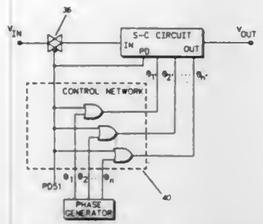
Filed Jul. 16, 1992, Ser. No. 914,907

Int. Cl.[5] H03K *5/01*

U.S. Cl. 328—151 **16 Claims**

1. A method for reducing settling time of a switched-capacitor circuit having at least one capacitor and one switch, said at least one capacitor having at least one terminal connected to said switch, the method comprising the steps of:

clocking said switched-capacitor circuit with non-overlapping switching signals; and



biasing said at least one terminal of said capacitor to a reference voltage potential, in response to a control signal and said non-overlapping switching signals.

5,309,113

FSK DATA DEMODULATOR

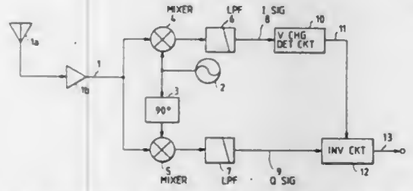
Masahiro Mimura; Makoto Hasegawa, both of Tokyo; Kazunori Watanabe, Yokohama, and Hiroyuki Harada, Kanazawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 28, 1992, Ser. No. 952,657

Claims priority, application Japan, Sep. 27, 1991, 3-248819; Jul. 29, 1992, 4-202168

Int. Cl.[5] H03D *3/00*

U.S. Cl. 329—302 **28 Claims**



1. A demodulator for demodulating first and second baseband signals obtained from a received frequency shift keying signal, said first and second baseband signals having a quadrature relation therebetween, a lead and lag relation between said first and second baseband signals being changed in accordance with frequency shift from a carrier frequency of said frequency shift keying signal, comprising:

(a) voltage change judging means for judging whether a magnitude of said first baseband signal increases or decreases within a time interval; and

(b) inverting means responsive to an output of said voltage change judging means and said second baseband signal for outputting a demodulated signal produced by inverting said second baseband signal in accordance with said output of said voltage change judging means.

5,309,114

PULSE STEP MODULATOR

Hilmer I. Swanson, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1993, Ser. No. 86,183

Int. Cl.[5] H03F *3/38*

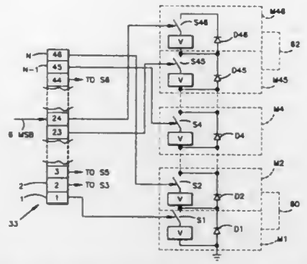
U.S. Cl. 330—10 **13 Claims**

1. A pulse step modulator comprising:

a plurality of series connected unit step modules each including a DC voltage source and an associated actuatable switching means for, when actuated, turning on said associated module to provide a unit step voltage of a given magnitude;

an output circuit connected to said modules for providing an output voltage to a load wherein the magnitude of said output voltage is a multiple of said unit step voltage in dependence upon the number of said modules that are turned on;

each said module exhibiting the characteristic of dissipating



heat when turned on with the amount of heat dissipated being a function of the time duration that said module is turned on; and,

means for equalizing the thermal loading of said modules including means for thermally coupling selected ones of said modules together as a group with the said modules of each said group being selected such that the average amount of heat dissipated by each said group is essentially equalized.

5,309,115

BURST CONTROL CIRCUIT FOR USE IN TDMA COMMUNICATIONS SYSTEM

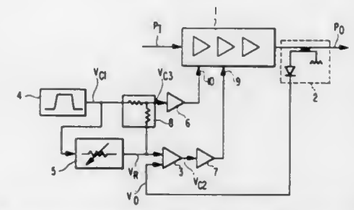
Kazuya Hashimoto, and Daiji Horikoshi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,865

Claims priority, application Japan, Oct. 14, 1991, 3-293736

Int. Cl.[5] H03G *3/20*

U.S. Cl. 330—133 **7 Claims**



6. A method of controlling a burst signal, comprising the steps of:

generating a level control signal on the basis of a signal representing a difference between the level of a reference signal and the level of an output burst signal;

generating a waveform control signal having a predetermined waveform and an amplitude which is a function of the amplitude of said reference signal; and

amplifying an input radio signal to produce said output burst signal in accordance with said level and waveform control signals.

5,309,116

MULTIMODE CRYSTAL OSCILLATOR

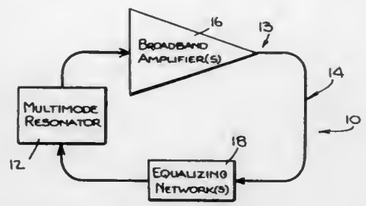
Charles S. Stone, Cedar Park, Tex., assignor to Frequency Electronics, Inc., Mitchel Field, N.Y.

Continuation of Ser. No. 581,672, Sep. 13, 1990, Pat. No. 5,160,901. This application Nov. 2, 1992, Ser. No. 970,701

The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.

Int. Cl.[5] H03B *5/36, 21/01, 25/00*

U.S. Cl. 331—37 **15 Claims**



1. A multimode oscillator comprising:

a crystal resonator capable of being excited in at least first and second wanted modes simultaneously while suppressing excitation in at least another unwanted mode;

a circuit coupled to said resonator for exciting said resonator in said first and second modes simultaneously, said circuit including elements coupled in a single gain loop coupled to said resonator for causing said oscillator to oscillate at a first frequency corresponding to said first mode and at a second frequency corresponding to said second mode simultaneously;

either said multimode resonator or said circuit suppressing oscillations at unwanted frequencies in modes other than said first and second modes;

said circuit permitting substantially separate control of oscillations at said first frequency and at said second frequency.

5,309,117

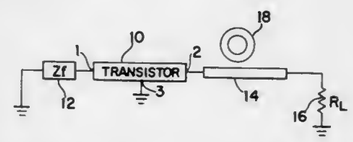
SUPERCONDUCTING RING RESONATOR MICROWAVE OSCILLATOR FOR OPERATING AS A REMOTE TEMPERATURE SENSOR

Roland Cadotte, Jr., Freehold; Michael Cummings, Howell, both of N.J.; Adam Rachlin, Germantown, Md., and Richard W. Babbitt, Fair Haven, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 19, 1993, Ser. No. 5,692

Int. Cl.[5] H03B *5/18*; G01K *7/00*

U.S. Cl. 331—66 **15 Claims**



1. A ring oscillator circuit for operating as a temperature sensor, comprising:

a transistor including a control electrode and a pair of current conducting electrodes; and

circuit means coupled to said control electrode and said current conducting electrodes for implementing an oscillator circuit;

said circuit means including a superconducting ring resonator having a predetermined transition temperature and operating below the transition temperature and further having a resonance characteristic which is temperature

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sensitive and which shifts the output frequency of said oscillator circuit with changes in temperature for temperature sensing.

5,309,118

HYPERFREQUENCY GENERATOR WITH SOURCE ELEMENT LOCATED IN THE RESONANT CAVITY

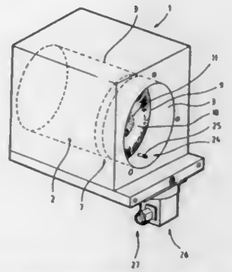
Victor Ringeisen, Riedseltz, and Laurent Martinache, Haguenau, both of France, assignors to Sadis Bruker Spectrospin Societe Anonyme de Diffusion de l'Instrumentation Scientifique Bruker Spectrospin (Soclete Anonyme a Directoire), Wissembourg, France

Filed May 29, 1992, Ser. No. 890,133

Claims priority, application France, May 29, 1991, 91 06630

Int. Cl.[5] H03B *7/14*

U.S. Cl. 331—96 **17 Claims**



1. In a hyperfrequency generator of the type comprising a source element (5) of negative resistance adjacent to a cylindrical resonant cavity (2) closed at opposite ends by two transverse closure plates (4, 7) movable toward and away from each other for the purpose of tuning over a frequency band; the improvement wherein the source element (5) is installed in a notch in a wall of the resonant cavity (2) below an open upper end of the notch and extending between side walls of the notch such that there is a direct physical and electrical coupling between said source element (5) and said side walls of said notch, said source element receiving its bias through a said side wall of said notch.

5,309,119

OSCILLATING CIRCUIT WITH A RING SHAPED RESONATOR OF SUPERCONDUCTING MATERIAL COUPLED THERETO

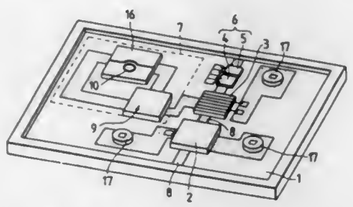
Nobuo Shiga, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 14, 1992, Ser. No. 913,030

Claims priority, application Japan, Jul. 15, 1991, 3-174190; Jul. 15, 1991, 3-174191

Int. Cl.[5] H03B *5/18*

U.S. Cl. 331—99 **2 Claims**



1. An oscillating circuit comprising:

a field effect transistor (FET) provided on a semi-insulating substrate;

a ring-shaped thin film resonator; and

a micro strip line of feedback circuit wiring connected to said FET,

wherein said ring-shaped thin film resonator is positioned at a given close position to said micro strip line, and

wherein apart of said micro strip line is formed so that the part, which is positioned closest to said resonator, forms approximately a 90-degree circular arc in parallel with an upper circumference of said resonator.

5,309,120

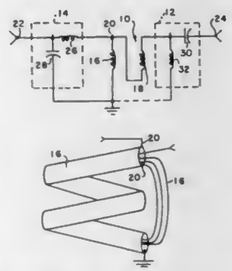
RF HIGH POWER, HIGH FREQUENCY, NON-INTEGER TURNS RATIO BANDPASS AUTO-TRANSFORMER AND METHOD

Floyd A. Koontz, Holcomb, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 24, 1992, Ser. No. 981,119

Int. Cl.[5] H03H *7/38*

U.S. Cl. 333—32 **22 Claims**



1. A high power, high frequency, air core, non-integer turns ratio transformer comprising:

first and second input/output terminals;

an electrically conductive coiled tube connected at one end to ground reference and at the other end to said first input/output terminal;

an insulated electrically conductive wire disposed internally of said coiled tube so as to have an integer turns ratio between said coiled tube and said wire and so as to create an apparent inductance, said wire being connected at one end to the other end of said coiled tube and at the other end to said second input/output terminal; and

tuning means connected between said input/output terminals, said tuning means comprising with said apparent inductance both a high pass section and a low pass section to thereby modify the integer turns ratio of the transformer to a non-integer turns ratio.

5,309,121

SIGNAL TRANSFER LINE HAVING A DIN CONNECTOR

Yuji Kobayashi, and Tetsuro Nakata, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 14, 1991, Ser. No. 699,493

Claims priority, application Japan, May 14, 1990, 2-50127[U]

Int. Cl.[5] H01P *5/00*

U.S. Cl. 333—33 **3 Claims**

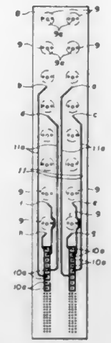
1. A signal transfer line for performing signal transfer between a coaxial cable having a characteristic impedance and a circuit board in an electrical equipment, said signal transfer line comprising:

a connector board;

a DIN connector mounted to said connector board and comprising a plurality of pins including at least one signal pin;

a BNC connector mounted to said connector board and including a signal pin;

a conductive line pattern portion disposed on said connector board and electrically connecting the signal pin of said BNC connector and the signal pin of said DIN connector;



said conductive line pattern portion having a characteristic impedance which matches said characteristic impedance of said coaxial cable, and said DIN connector having a characteristic impedance which matches said characteristic impedance of said coaxial cable electrically connecting at least one pin of said plurality of pins of said DIN connector to electrical ground.

5,309,122

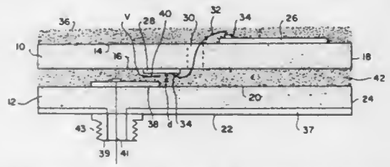
MULTIPLE-LAYER MICROSTRIP ASSEMBLY WITH INTER-LAYER CONNECTIONS

Brian J. Cox, Louisville; Russell W. Johnson, and Patrick Westfeldt, Jr., both of Boulder, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 28, 1992, Ser. No. 967,828

Int. Cl.[5] H01P *5/18, 3/18*

U.S. Cl. 333—116 **52 Claims**



1. A method of constructing a multiple-layer microstrip assembly adapted to transition electrical signals between analogous surfaces of two layers thereof, comprising the steps of:

attaching an electrical connection member to each of a first op circuitry disposed on a first top surface of a first layer and a first bottom circuitry disposed on a separate first bottom surface of the first layer, wherein the first bottom surface is substantially parallel to the first top surface, thereby forming an electrical connection between the first top circuitry and the first bottom circuitry;

providing a second layer that has a second top surface, a separate second bottom surface which is substantially parallel to the second top surface, and second top circuitry that is disposed on the second top surface;

providing a ground plane;

arranging each of the first top circuitry, the first bottom circuitry, the second top circuitry, and the ground plane so that the second top circuitry of said second layer is located between the first bottom surface of the first layer and the second bottom surface of the second layer, such that said ground plane underlies said first top circuitry, first bottom circuitry, and said second top circuitry, such that a surface area of the first top circuitry does not overlap with a combined surface area of the first bottom circuitry and the second top circuitry relative to said ground plane and such that substantially only dielectric material is located between said first top circuitry and said ground plane and between said second top circuitry and said ground plane; and

binding the first bottom surface of the first layer to the second top surface of the second layer to hold the first bottom circuitry sufficiently adjacent and overlapping the second top circuitry disposed on the second top surface of the second layer to form an electrical connection between the first bottom circuitry and the second top circuitry, thereby forming an electrical connection between the first top circuitry and the second top circuitry.

5,309,123

DEVICE FOR CONNECTING A DATA COMMUNICATION NETWORK TO A PLURALITY OF SUBSCRIBERS

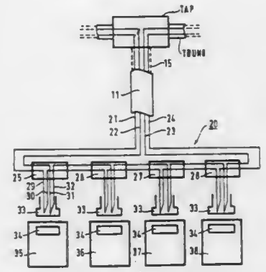
Claude Gelin, Creteil, France, assignor to Cegelec, Levallois Perret, France

Filed Aug. 21, 1992, Ser. No. 933,307

Claims priority, application France, Aug. 22, 1991, 91 10521

Int. Cl.[5] H03H *7/48*

U.S. Cl. 333—124 **12 Claims**

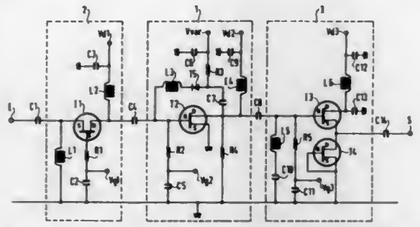


1. A device for connecting a data communication field network to a plurality of subscribers in parallel, each subscriber having a high input impedance as compared with the characteristic impedance of said network, said network comprising a main bus into which are inserted first drop and insert devices to constitute secondary buses each comprising two first branches, said connecting device comprising:

a cable assembly comprising at least two second drop and insert devices inserted into one of said first branches, each second drop and insert device providing a tertiary bus comprising two second branches, each tertiary bus being adapted to connect one subscriber and said second branches of said tertiary bus being interconnected at the subscriber connection so as to ensure continuity of said field network and to maintain impedance matching throughou: said network.

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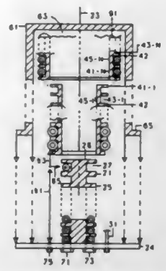
5,309,124
ANALOG VARIABLE PHASE SHIFTER WITH ACTIVE MATCHING CIRCUITS
Jean-Louis Cazaux, Toulouse, and Robert-Alain Perichon, Toulouse, both of France, assignors to Alcatel Espace, Courbevoie, France
Filed Feb. 5, 1992, Ser. No. 831,445
Claims priority, application France, Feb. 6, 1991, 91 01314
Int. Cl.[5] H03H *11/20*
U.S. Cl. 333—139 **19 Claims**



1. An analog variable phase shifter for microwave signals, said phase shifter comprising:
a phase shift circuit having an input and output and including a first transistor having negative feedback via a variable reactance, together with active inlet and outlet matching circuits coupled to said input and output, respectively, of said phase shift circuit and providing such matching over the entire range of variation of said variable reactance, wherein the active outlet matching circuit comprises an outlet transistor having first and second transfer electrodes and an outlet control electrode and conducting between said first and second transfer electrodes in accordance with a signal at said control electrode, said control electrode being connected to an input of said outlet matching circuit to receive a signal from said first transistor, said first transfer electrode providing an output of said analog variable phase shifter and being coupled to ground via an active load having very low DC impedance and very high microwave impedance and said second transfer electrode being coupled to a reference potential.

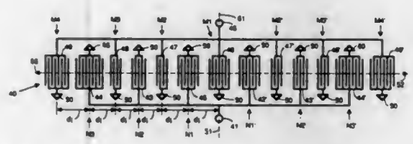
5,309,125
COMPACT DELAY LINE FORMED OF CONCENTRICALLY STACKED, HELICALLY GROOVED, CYLINDRICAL CHANNEL-LINE STRUCTURE
Gilbert R. Perkins, Palm Bay, and Douglas Heckaman, Indialantic, both of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Sep. 23, 1992, Ser. No. 950,071
Int. Cl.[5] H01P *9/02*
U.S. Cl. 333—160 **23 Claims**

1. A delay line device comprising:
a first body element having an outer, generally cylindrical surface in which a helical groove is formed, said helical groove having an electrically conductive surface;
a second body element having a generally cylindrical bore therethrough, into which bore said first body element is inserted, so that said second body element surrounds said first body element, said generally cylindrical bore having an electrically conductive surface; and
a helically wound length of conductor which is clad with a dielectric jacket which extends continuously along said helically wound length of conductor, said helically wound length of dielectric jacket clad conductor being supported within said helical groove in a manner so as to be electrically insulated by the dielectric jacket extending continuously along said helically wound length of conductor



from the electrically conductive surfaces of said helical groove and said generally cylindrical bore.

5,309,126
SPATIALLY VARYING MULTIPLE ELECTRODE ACOUSTIC WAVE FILTER AND METHOD THEREFOR
Donald E. Allen, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 18, 1991, Ser. No. 793,925
Int. Cl.[5] H03H *9/145, 9/64*
U.S. Cl. 333—193 **34 Claims**

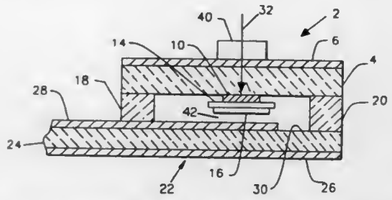


1. An electronic apparatus comprising:
a surface acoustic wave filter including a substrate for propagating surface acoustic waves on which transducers are arrayed in a direction in which surface acoustic waves travel to form an array, the transducers comprising a plurality of input and a plurality of output transducers, each input and output transducer having a number of electrodes, wherein at least one of the input transducers located near an end of the array has a greater number of electrodes as compared to another input transducer located more centrally in the array, or at least one of the output transducers located near an end of the array has a greater number of electrodes as compared to another output transducer located more centrally in the array, wherein a centerline-to-centerline separation of an adjacent pair of transducers differs from a centerline-to-centerline separation of another adjacent pair of transducers by a non-integral number of wavelengths of the surface acoustic wave, wherein a centerline of a transducer is located half way between outer edges of outer-most electrodes of that transducer.

5,309,127
PLANAR TUNABLE YIG FILTER
Elio A. Mariani, Hamilton Square, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 11, 1992, Ser. No. 991,558
Int. Cl.[5] H01P *1/218*
U.S. Cl. 333—202 **5 Claims**

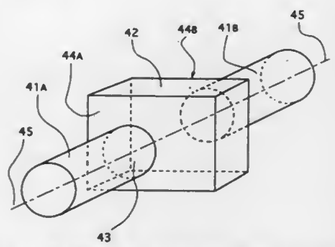
1. A first substrate of dielectric material having a conductive ground plane extending over a first side thereof and a first strip conductor on a second side thereof;

a second substrate of dielectric material having conductive material extending over a first side thereof to form a ground plane and a second strip conductor on a second side thereof;
a first and a second dielectric spacer adhered to and between said second sides of said substrates in such manner that said first and second strip conductors are spaced vertically from each other with said first strip conductor being



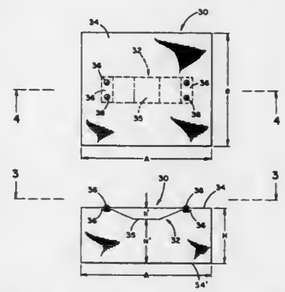
interposed between said first and second dielectric spacers;
a third dielectric spacer attached to said first conductor;
means for establishing a magnetic field perpendicular to said first conductor; and
a YIG disc attached to said third dielectric spacer, whereby RF energy in one of said strip conductors is coupled to the other of said strip conductors.

5,309,128
DEVICE FOR THE FILTERING OF ELECTROMAGNETIC WAVES PROPAGATING IN A ROTATIONAL SYMMETRICAL WAVEGUIDE, WITH INSERTED RECTANGULAR FILTERING WAVEGUIDE SECTIONS
M. Christian Sebatier, Nice, France, assignor to France Telecom, Paris, France
Filed Jun. 25, 1992, Ser. No. 904,348
Claims priority, application France, Jun. 26, 1991, 91 08137
Int. Cl.[5] H01P *1/20*
U.S. Cl. 333—208 **9 Claims**



1. A device for filtering electromagnetic waves comprising:
an input circular waveguide element having an axis of symmetry perpendicular to a first circular end, wherein the input circular waveguide element receives electromagnetic waves;
a rectangular waveguide element connected to the input circular waveguide element having a first and a second rectangular end perpendicular to the axis of symmetry;
an output circular waveguide element connected to a side of the rectangular waveguide element opposite the input circular waveguide element, the output circular waveguide element having a second circular end perpendicular to the axis of symmetry, where the output circular waveguide element receives filtered electromagnetic waves;
wherein the first rectangular end of the rectangular waveguide element is closed with a first metal wall and the second rectangular end of the rectangular waveguide element is closed with a second metal wall;
wherein the first and second circular ends correspond to circular openings made in the first and second metal walls; and
wherein a diameter of the input circular waveguide element is equal to a diameter of the output circular waveguide element.

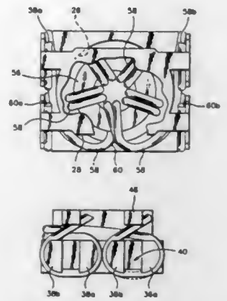
5,309,129
APPARATUS AND METHOD FOR PROVIDING TEMPERATURE COMPENSATION IN TE_{101} MODE AND TM_{010} MODE CAVITY RESONATORS
Pitt W. Arnold, Phoenix, and Tage V. Jensen, Tempe, both of Ariz., assignors to Radio Frequency Systems, Inc., Phoenix, Ariz.
Filed Aug. 20, 1992, Ser. No. 932,651
Int. Cl.[5] H01P *1/30, 7/06*
U.S. Cl. 333—229 **25 Claims**



1. An apparatus for providing temperature compensation in a high frequency cavity resonator, said apparatus comprising in combination:
a cavity resonator housing having a high conductivity interior surface enclosing a region wherein electromagnetic fields may freely propagate, said housing being fabricated from a material having a specific coefficient of expansion, said fabricated housing having a natural resonant frequency;
coupling means for providing an input and an output connection to said enclosed region of said cavity resonator housing; and
temperature compensation means in the form of a truss having a center section and a plurality of limbs extending therefrom, said temperature compensation means being physically secured to and electrically contacted with said interior surface of said cavity resonator housing at the end of each of said plurality of limbs, said temperature compensation means being fabricated from a material having a lesser specific coefficient of expansion than said cavity resonator housing material, said lesser specific coefficient of expansion resulting in a lesser thermal expansion or contraction of said temperature compensation means material than said cavity resonator housing material, said lesser thermal expansion or contraction resulting in a forced relative movement of said temperature compensation means with respect to said cavity resonator housing, said forced relative movement resulting in a first variation in said natural resonant frequency, such that said first variation in said natural resonant frequency compensates for a second variation in said natural resonant frequency caused by a thermal expansion or contraction of said cavity resonator housing material.

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5,309,130
SELF LEADED SURFACE MOUNT COIL LEAD FORM
James D. Lint, San Diego, Calif., assignor to Pulse Engineering, Inc., San Diego, Calif.
Filed Oct. 26, 1992, Ser. No. 968,035
Int. Cl.[5] H01F *15/02*
U.S. Cl. 336—65 **20 Claims**



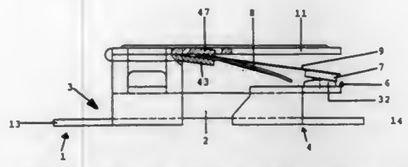
1. A self leaded holder for surface mounting of a circuit element to a PC board, comprising:
- a unitary support body having a cavity for supporting a circuit element and for mounting said circuit element on a PC board, said body having a top and a base, the base terminating in a base place;
- a lead support member integral with and extending outward from each side of said support body adjacent said base and positioned for supporting a lead in a common plane spaced below said base plane for surface engagement and bonding to a PC board;
- a lead and vent passage in a side of said body;
- a circuit element mounted in said support body; and
- a terminal end of a lead wire extending from said circuit element via said passage and wound at least partially around said lead support member and having a portion disposed at said common plane parallel to and below said base plane for engagement and surface bonding to a PC board.

5,309,131
THERMAL SWITCH
Peter Hofsäss, deceased, late of Pforzheim by Ulrika Hofsäss, adminstratrix, Marcel P. Hofsäss, Denise P. Hofsäss, heirs ; by Henrik P. Hofsäss, heir, Münster; by Carola R. Hofsäss, heir; by Benjamin M. Hofsäss, heir, both of Pforzheim; Jens Radbruch, Neulingen, and Guenter Kruck, Pforzheim, all of Fed. Rep. of Germany, assignors to Ulrika Hofsäss; Marcel P. Hofsäss; Denis P. Hofsäss; Henrik P. Hofsäss; Carola R. Hofsäss and Benjamin M. Hofsäss, all of Strietweg, Fed. Rep. of Germany
Filed Mar. 1, 1993, Ser. No. 24,458
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206157
Int. Cl.[5] H01H *61/02, 71/16*
U.S. Cl. 337—102 **20 Claims**

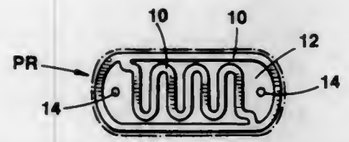
1. A thermal switch comprising:
- a switching unit and two connecting parts, the switching unit having a movable contact and a bimetallic element, the movable contact being switched by the bimetallic element;
- a support part with the support part being a PTC resistor having a shape of one of a block or a parallelepipedic with an outside surface of the PTC resistor frictionally engaging the connecting parts; and wherein

one connecting part has a fixed contact of the switching unit and the other connecting part is electrically connected to the movable contact; and

the PTC-resistor is connected in electrical parallel with the switching unit to heat the PTC resistor causing the bimetallic element when in the open position of the movable contact to be held in a high-temperature position causing the bimetallic element to continuously hold the movable contact open.



5,309,132
TECHNIQUE FOR TRIMMING PHOTORESISTORS AND TRIMMED PHOTORESISTORS
Nathan A. Mitchell, and Philip J. McKenzie, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Apr. 2, 1993, Ser. No. 41,551
Int. Cl.[5] H01L *31/08*
U.S. Cl. 338—15 **14 Claims**

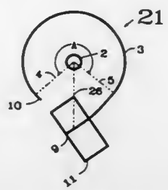


1. A technique for trimming photoresistors comprising:
- determining a target resistance by exposing a plurality of photoresistors to a calibrated level and color temperature of light; and
- blocking out a portion of a photo-active area of each of a plurality of photoresistors so that each trimmed photoresistor has a measured resistance within a predetermined tolerance of the target resistance when exposed to the calibrated level and color temperature of light, the predetermined tolerance being less than an untrimmed parts tolerance.

5,309,133
TEMPERATURE SENSOR
Siegbert Berger, Bretten; Volker Brennenstuhl, Zaberfeld; Gerhard Goessler, Oberderdingen; Hans Mohr, Sulzfeld; Wilfried Schilling, Kraichtal-Mue; Juergen Schwackenhofer, Sulzfeld, and Eugen Wilde, Knittlingen, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany
Filed Feb. 7, 1992, Ser. No. 832,433
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1991, 4103642
Int. Cl.[5] H01C *7/10, 3/04*
U.S. Cl. 338—22 R **19 Claims**

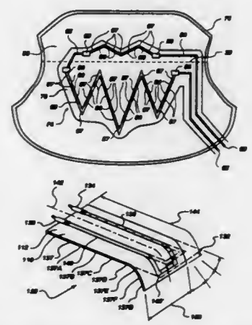
1. A temperature sensor (1) for sensing a temperature of a medium, comprising:
- a sensing arm (7) having at least one arm leg (9) and a free arm end (12), said arm leg (9) having an outer circumferential surface;
- said sensing arm (7) having a casing tube (15) made of electrically conducting material, said casing tube (15) providing first and second tube ends (20, 40) and a tube interior surface (32), said outer circumferential surface defining an external sensor width extension;
- an electrical sensing resistor wire (24) located in and along said casing tube (15), said sensing resistor wire (24) being a resistor coil (26) provided by a resistor wire (25), said resistor wire (25) providing first and second connecting ends (29, 41) for electrical connection of said sensing resistor wire (24);
- an insulating material (30) embedding and insulating said sensing resistor wire (24) with respect to said casing tube (15), said first connecting end (29) being provided within said insulating material (30), said insulating material (30) connecting to said tube interior surface (32);
- at least one terminal pin (21) having inner and outer pin ends (22, 23), said inner pin end (22) being electrically conductively connected to said first connecting end (29) within said insulating material (30);
- first and second closures (16, 44) sealingly closing said first and second tube ends (20, 40), said first closure (16) being sealingly traversed by said terminal pin (21);
- a flange (8) for mounting said temperature sensor (1) to a wall, said flange (8) having flange faces including an inside flange face and an outside flange face, said inside flange face and said outside flange face being remote from each other, thereby defining flange sides including a flange inside and a flange outside respectively, said temperature sensor (1) having specified sections including a temperature detecting section from said flange inside to said free arm end (12, 40) and a non-detecting section from said flange outside and extending in a direction opposite said temperature detecting section, said detecting section (13) being provided to be exposed to the medium, said sensing arm (7) freely projecting past said flange inside,
- said outer pin end (23) and said first tube end (20) being provided on said flange outside, said flange (8) being traversed by at least one boro (11) closely adapted to said arm leg (9) and sealingly traversed by said arm leg (9),
- said outer circumferential surface being fixed to said flange (8),
- said first and second connecting ends (29) being provided commonly on a single one of said specified sections (13),
- between said flange inside and said arm end (12), said casing tube (15) defining an overall tube length extension (13) provided to be in contact with the medium, said resistor coil (26) defining an overall coil length extension, wherein said coil length extension extends substantially entirely over said tube length extension (13);
- at least in said detecting section (13), said resistor coil (26) being sealingly encapsulated to provide gas-tight and liquid-tight sealing of said resistor coil, said first closure (16) being sealingly traversed by said terminal pin (21) to provide a gas-tight and liquid-tight seal.

5,309,134
SENSOR WITH SLOPED TERMINATION FOR REDUCED ELEMENT BEND
Larry D. Ridge, West Henrietta, N.Y., assignor to CTS Corporation, Elkhart, Ind.
Filed Oct. 15, 1992, Ser. No. 961,247
Int. Cl.[5] H01C *3/06, 10/32*
U.S. Cl. 338—210 **2 Claims**



1. A flexible element rotary variable resistor comprising:
- a flexible element including a resistor;
- off-axis termination means for electrically interconnecting said resistor to other electrical components;
- a rotor means for rotating about a rotor axis and affecting a change in resistance between two of said terminations;
- said element wrapped in a generally cylindrical configuration about said rotor axis at a first radial distance therefrom;
- said terminations electrically interconnecting to said element at an extension of said element;
- said extension having a tangent thereto, said tangent being non-perpendicular to a radial axis extending perpendicular to said rotor axis;
- said termination structure and said extension of said element located from a second radial distance from said rotor axis and beyond said second radial distance, said second radial distance substantially similar to said first radial distance.

5,309,135
FLEXIBLE POTENTIOMETER IN A HORN CONTROL SYSTEM
Gordon B. Langford, 11193 S. Star Cir., Sandy, Utah 84092
Continuation-in-part of Ser. No. 963,855, Oct. 20, 1992, which is a continuation of Ser. No. 552,575, Jul. 13, 1990, Pat. No. 5,157,372. This application May 10, 1993, Ser. No. 60,346
Int. Cl.[5] H01C *3/06, 13/00*
U.S. Cl. 338—211 **5 Claims**



1. A flexible potentiometer horn actuator for use in an automobile horn control system of an automobile having an airbag between a steering wheel hub and a hub cover, the automobile including a horn control circuit that selectively activates a

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horn upon receiving an input signal, the flexible potentiometer horn actuator comprising:

a conductor connected to the horn control circuit;

a flexible substrate adhered to the hub cover;

a conductive material connected to the conductor and adhered to the flexible substrate in a preselected pattern, the conductive material having a resistance that changes as the conductive material is bent, whereby as a driver presses against the hub cover, the flexible substrate and conductive material are bent changing the resistance of the conductive material and creating the input signal.

5,309,136

ELECTRICAL CIRCUIT SUCH AS A WHEATSTONE BRIDGE WITH A RESISTANCE-ADJUSTING PORTION

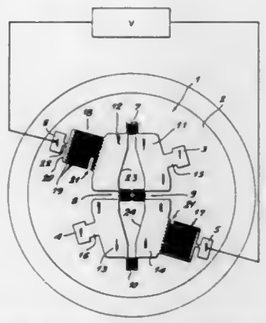
Fadhel Rezgui, Paris, France, and Luc M. Petitjean, Danbury, Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 23, 1992, Ser. No. 918,188

Claims priority, application France, Jul. 26, 1991, 91 09479

Int. Cl.[5] H01C *7/22*; G01L *1/22*

U.S. Cl. 338—295 **10 Claims**



1. An electrical circuit comprising a conductive strip extending between a current input terminal and a current output terminal said conductive strip including two resistors having a connecting part therebetween, a conductive segment extending between said connecting part and a measuring terminal, said connecting part being formed as a wider portion of said conductive segment in the direction of said measuring terminal, said conductive segment having an adjusting portion between connecting part and said measuring terminal.

5,309,137

MOTOR CAR TRAVELING CONTROL DEVICE

Yasuya Kajiwara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,411

Claims priority, application Japan, Feb. 26, 1991, 3-030606; Apr. 2, 1991, 3-069847

Int. Cl.[5] G08G *1/16*; B60Q *1/00*; H04N *7/18*

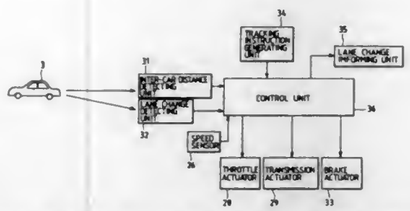
U.S. Cl. 340—436 **3 Claims**

1. A motor car traveling control device comprising:

inter-car distance detecting means for detecting the distance between a first car and a second car ahead of said first car while tracking said second car;

lane change detecting means for detecting when said second car changes a traveling lane; and

vehicle speed controlling and lane change informing means which automatically controls a speed of said first car according to an output of said inter-car distance detecting means to maintain a safe distance between said first and second cars, and which, in response to a detection signal from said lane change detecting means, operates to cause said first car to maintain a present speed, and informs the



driver of said first car that said second car has changed traveling lane.

5,309,138

VEHICLE COLLISION DETECTING METHOD EMPLOYING AN ACCELERATION SENSOR

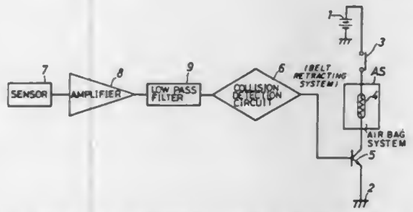
Shigeo Tobbaru, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,629

Claims priority, application Japan, Mar. 19, 1991, 3-055138; Sep. 3, 1991, 3-222611

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—436 **18 Claims**



1. A method for detecting a collision of a vehicle body on the basis of an acceleration signal produced by an acceleration sensor and for starting a collision safety device based on a detected collision of said vehicle body, said method comprising the steps of:

detecting the acceleration signal by the acceleration sensor;

estimating a reduction in the amount of speed of the vehicle body due to a collision at a first time point by the acceleration signal from said acceleration sensor and a rate of time variation in the acceleration signal at a second time point earlier than said first time point;

detecting the collision of the vehicle body when said reduction in the amount of speed exceeds a predetermined value, wherein said detecting step includes the steps of inputting into a comparator said reduction in the amount of speed and comparing thereof within said comparator with said predetermined value; and

starting a safety collision device based on the detected collision.

5,309,139

VEHICLE MONITORING SYSTEM

Charles W. Austin, 751 Quail Dr., Punta Gorda, Fla. 33982

Continuation of Ser. No. 562,334, Aug. 3, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,342

Int. Cl.[5] B60Q *9/00*

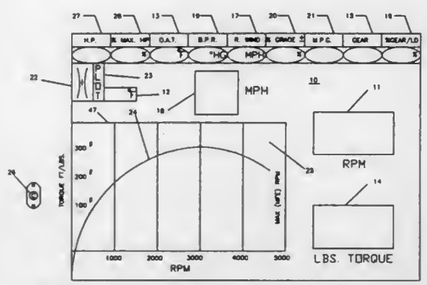
U.S. Cl. 340—462 **2 Claims**

1. An on-board, dash mounted, vehicle monitoring system for real-time monitoring of a plurality of functions and conditions effecting a vehicle's performance and providing a graphic presentation and recordation of torque, RPM, and horse-

power, and reporting transmission torque, inclination, headwind, barometric pressure, and ambient temperature effecting a vehicle's performance, said vehicle including a plurality of internal and external sensor means for producing sensor signals corresponding to said plurality of functions and conditions, said monitoring system comprising:

processing means responsive to said sensor signals for producing display signals corresponding to said functions and conditions, converting said functions and conditions to torque and horsepower, controlling digital and graphic displays, and concurrently producing and displaying signals corresponding to manufacturer established design upper limits comprising, maximum intended torque, maximum intended RPM, and percentage of horsepower being used,

digital display means mounted in said dashboard for presenting a first group of functions and conditions effecting a



vehicle's performance, and the percentage of horsepower being used,

graphic display means mounted in said dashboard for presenting and recording concurrently, a second group comprising torque output, revolutions per minute, system status, horsepower effecting said vehicle's performance, and manufacturer established design upper limits, comprising, maximum intended torque, maximum intended RPM and percentage of horsepower being used,

throttle open switch means for activating said processing means to provide vehicle and horsepower plotting sensor signals to selected graphic display means when torque plotting conditions are met, and

switch means for clearing said graphic display means after torque, horsepower, and manufacturer established design upper limits, comprising maximum intended torque, maximum intended RPM, and percentage of horsepower used, plotting has occurred.

5,309,140

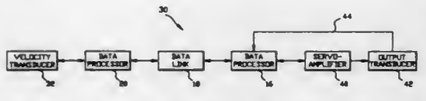
FEEDBACK SYSTEM FOR REMOTELY OPERATED VEHICLES

Hobart R. Everett, Jr., and Judy M. Nieusma, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1991, Ser. No. 800,341

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—466 **12 Claims**



1. A system for providing an output corresponding to the speed of a remote vehicle, comprising:

speed transducer means mounted on the vehicle for providing a first output corresponding to the speed of the vehicle;

first data processor means operably coupled to receive said first output from said speed transducer means for providing a digitally encoded second output representing the first output;

second data processor means operably coupled to receive said second output from said first data processor means for providing a transducer control output; and

output transducer means operably coupled to receive said transducer control output from said second data processor for providing a transducer output having an amplitude proportional to the speed of the vehicle.

5,309,141

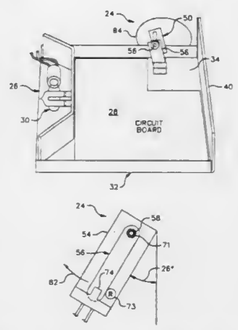
EMERGENCY DECELERATION WARNING DEVICE

Christopher C. Mason, 4345 Zurich Dr., Colorado Springs, Colo. 80920; George A. Swift, 17703 NE. 34th, Redmond, Wash. 98052, and James A. Edwards, 240 SW. Francis La., Issaquah, Wash. 98027

Filed Feb. 27, 1992, Ser. No. 843,397

Int. Cl.[5] B60Q *1/50*

U.S. Cl. 340—467 **14 Claims**



1. An emergency deceleration warning device comprising: a decelerometer for measuring the deceleration of a vehicle equipped with said warning device; transducer means for outputting a circuit enabling signal for a duration of period in which, and only in which, the deceleration of the vehicle as measured by said decelerometer is at or above a threshold level; a visual warning display; and circuit means enabled by the signal outputted from said transducer means for turning said visual display on and off at a rapid, selected rate for so long as said circuit means remains enabled, said decelerometer comprising an inclined plane and an element which is effective to roll up said plane a distance proportional to the level and duration of the deceleration of said vehicle and said device further comprising: a source of visible or infrared radiation, said radiation source and said transducer means being located on opposite sides of said inclined plane and so constructed and interrelated that said element is effective upon its reaching a position along said inclined plane corresponding to said threshold level of deceleration, or a position beyond the aforesaid position, to intercept the visible or infrared radiation emitted from said source toward said transducer means and thereby make said transducer means capable of outputting said enabling signal; and thermal protection means for disenabling said circuit means if the temperature reached by a protected component of said circuit means exceeds a preselected level and for maintaining the circuit means in a disenable state until the protected component cools to said preselected level, said circuit means comprising a switching regulator which is required to be turned on for said visual warning display to be

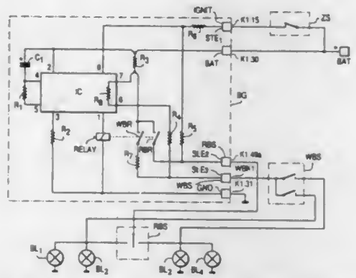
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turned on and off as aforesaid and said thermal protection means comprising a heat sensitive voltage regulating means: (a) which is connected to a terminal of said switching regulator; (b) which is disposed in heat transfer relationship to said switching regulator; and (c) which is effective upon reaching a selected temperature to so alter the voltage at a switching regulator terminal as to turn off said switching regulator.

5,309,142
ELECTRONIC FLASHER UNIT

Andreas Fritz, Brackenheim, Fed. Rep. of Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 841,415
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 4113455
Int. Cl.[5] B60Q *1/52*
U.S. Cl. 340—471 **16 Claims**

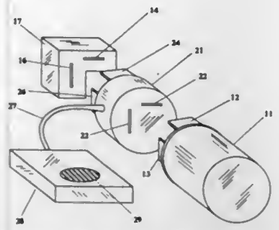


1. An electronic flasher unit for controlling a plurality of flashing lamps and connectable to a battery, an ignition switch connected to the battery, a turn indicator switch, a hazard warning flasher switch, and a grounding point, said electronic flasher unit comprising:
a battery terminal connectable to the battery;
a ground terminal connectable to the grounding point;
at least a first, a second, and a third control input terminal connectable respectively to the ignition switch, the turn indicator switch, and the hazard warning flasher switch;
a flashing relay having a plurality of relay contacts that are connected respectively to said second and said third control input terminals;
an integrated circuit which has a first connecting pin which controls said flashing relay, a second connecting pin which is a measuring input and is connected to said plurality of relay contacts and is also connected, via a measuring resistor, to said battery terminal, a third connecting pin which is a hazard warning flasher input and is connected, via an inner resistor which is inside said integrated circuit, to said second connecting pin and is also connected, via a first resistor, to said third control input terminal, and a fourth connecting pin which is a turn indicator input and is connected, via a second resistor, to said second control input terminal;
a plurality of resistors coupled to said first, said second, and said third control input terminals, wherein said plurality of resistors output a plurality of voltage drops in response to the input of at least a first, a second, and a third switch setting signal from said first, said second, and said third control input terminals, respectively; and
a switching means, within said integrated circuit, coupled to said plurality of resistors via a plurality of connecting pins of said integrated circuit, to change the operating state of said integrated circuit in response to said plurality of voltage drops from said plurality of resistors.

5,309,143
VEHICLE TURN SIGNAL MALFUNCTION WARNING SYSTEM

Albert W. Brown, Albuquerque, N. Mex., and Donald W. Adkins, P.O. Box 87, Mill Valley, Calif. 94942-0087, assignors to Donald Adkins, Mill Valley, Calif.

Filed May 18, 1992, Ser. No. 884,926
Int. Cl.[5] B60Q *1/34*
U.S. Cl. 340—475 **4 Claims**



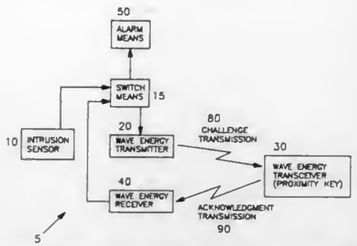
1. In combination with a vehicle having a turn signal system which includes a turn signal flasher module to intermittently pulse at least one turn signal lamp, a warning apparatus for alerting a vehicle operator to prolonged turn signal operation, including;
first time base circuit means for receiving a first pulse from the turn signal flasher module and switching on said warning apparatus and sustaining operation of said warning apparatus for a period longer than the period of the intermittent pulses of the turn signal system;
second time base circuit means for receiving the intermittent pulses from the turn signal flasher module and generating an output signal after a predetermined number of said intermittent pulses from said turn signal flasher module, said second time base circuit being switched on by actuation of said first time base circuit means;
audio writing means for emitting an audible warning to the vehicle operator;
gate means for receiving said output signal from said second time base circuit means and switching on said audio warning means in response to said output signal;
rectifier means connected parallel to said turn signal flasher module for providing said intermittent pulses to said first and second time base circuit means and for providing operating power to said warning means;
said first time base circuit means including a parallel RC network charged by said rectifier means, said parallel RC network having a discharge time constant greater than the period of the intermittent pulses of said turn signal flasher module;
said first time base circuit means including a depletion J-FET switch connected to said parallel RC network, said depletion J-FET switch being switched off by the charge on said parallel RC network.

5,309,144
PROXIMITY SENSING SECURITY SYSTEM

David K. Lacombe, 11917 Marbel St., Downey, Calif. 90242; George J. Seelman, 5116 Sereno Dr., Apt. A, Temple City, Calif. 91780, and Michael C. Scofield, 151 W. Naomi Ave., Arcadia, Calif. 91007

Continuation-in-part of Ser. No. 510,933, Apr. 19, 1990, abandoned. This application Jan. 14, 1991, Ser. No. 640,926
Int. Cl.[5] G08B *1/08*
U.S. Cl. 340—539 **11 Claims**

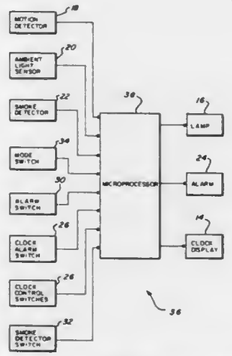
1. A security system comprising a switch means, said switch means capable of assuming either an alert state or a standby state, at least one intrusion sensor for responding to an intrusion by switching said switch means to an alert state, a wave energy transmitter for responding to said alert state by emitting a challenge transmission, a portable remote transceiver for receiving said challenge transmission and responding with an acknowledgment wave energy transmission, a receiver for receiving said acknowledgment transmission and responding by switching said switch means to a standby state thereby inhibiting said challenge transmission, and an alarm means for producing after a fixed delay time period an alarm action in response to said switch means taking said alert state.



5,309,145
TRAVEL CONVENIENCE AND SECURITY DEVICE

Allan C. Branch, South Hobart, Australia; Gregory W. O'Connor, Littleton, and Barbara A. Thurston, Westminster, both of Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed May 1, 1992, Ser. No. 877,403
Int. Cl.[5] G08B *13/18, 17/10, 23/00*
U.S. Cl. 340—540 **35 Claims**

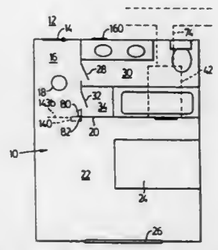


7. An apparatus comprising the combination of:
clock means for counting time;
clock display means for displaying information describing the time counted by the clock means;
alarm means for selectively delivering an alarm indication in an ambient environment generally surrounding said apparatus, the alarm means including a source of illumination and an audible alarm device;
condition detecting means for detecting a predetermined condition in the ambient environment generally surrounding said apparatus including a motion detector for detecting motion in the ambient environment generally surrounding said apparatus; and
means interconnecting the clock means, the clock display means, the alarm means and the condition detecting means and operative for activating the alarm means upon the condition detecting means detecting the predetermined condition, for activating the alarm means upon the clock means counting to a predetermined time, for activating the clock display means, and for activating one of the audible alarm device for the illumination source upon detection of the motion by the motion detector.

5,309,146
ROOM OCCUPANCY INDICATOR MEANS AND METHOD

Ran Kenet, Thornhill, Canada, assignor to Electronic Environmental Controls Inc., Downsview, Canada

Continuation of Ser. No. 470,294, Jan. 25, 1990, Pat. No. 5,165,465, which is a continuation-in-part of Ser. No. 259,904, Oct. 19, 1988, abandoned. This application Sep. 24, 1992, Ser. No. 950,363
Int. Cl.[5] 08B *13/28, 22/00*
U.S. Cl. 340—540 **22 Claims**

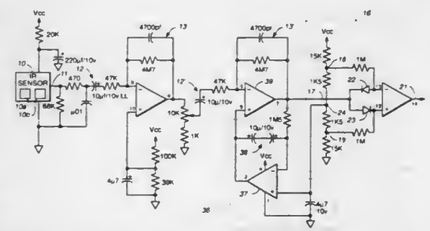


1. A method of indicating the presence or absence of a person in a room having a door, a wall outside the room, presence sensing means in said room to sense the presence or absence of a person in the room, said method comprising providing indicating means on said wall outside said room, said indicating means being coupled to said sensing means, and operating said indicating means from outside said room to display thereon, for use by a person outside the room, the presence or absence of a person in the room, such operation of said indicating means comprising the step of flashing a light of said indicating means to indicate presence and operating another light of said indicating means steadily to indicate absence.

5,309,147
MOTION DETECTOR WITH IMPROVED SIGNAL DISCRIMINATION

Wade P. Lee, Lafayette, and Scott T. Evans, LaVerne, both of Calif., assignors to Intelectron Products Company, Hayward, Calif.

Filed May 21, 1992, Ser. No. 886,994
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—567 **10 Claims**



1. In an infrared motion detection device for detecting the presence of a target object, said device including at least one infrared detector providing an electrical signal responsive to

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infrared radiation incident thereon, filter circuitry for processing said electrical signal, said filter circuitry receiving said electrical signal and providing a derivative signal representative of said incident infrared radiation, and comparator circuitry defining a threshold, said comparator circuitry receiving said derivative signal and providing an output signal in response thereto only when said derivative signal exceeds said threshold, said output signal being used to trigger a signal for energizing a light or alarm in response to the presence of said target object, the improvement comprising:

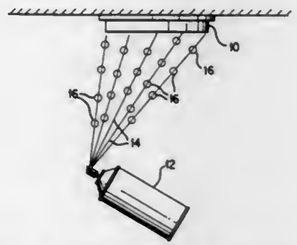
coupling means coupling said filter circuitry with said comparator circuitry for matching the baseline level of said derivative signal with the baseline level of said comparator threshold.

5,309,148

APPARATUS AND METHOD FOR TESTING SMOKE DETECTOR OPERATION

David M. Birk, 8871 Willowwood Way, Jessup, Md. 20794

Filed Dec. 18, 1992, Ser. No. 992,731
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—628 **19 Claims**



1. A smoke detection test system for actuating an alarm signal of a conventional smoke detector including a dispenser containing a liquid suspension which when actuated provides an atomized spray of a predetermined composition for impinging said conventional smoke detector, where the improvement comprises:

said atomized spray predetermined composition including substantially uniformly sized latex particulates in liquid suspension and mixtures thereof, said latex particulates being in said liquid suspension prior to said atomized spray being produced.

5,309,149

SMART ACCELEROMETER

Richard J. Bozeman, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 12, 1992, Ser. No. 834,451
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—683 **12 Claims**

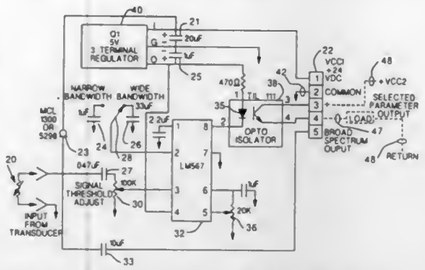
1. A machinery vibration monitoring apparatus, comprising:

a housing defining an interior;

a transducer physically disposed with said interior of said housing and responsive to vibration in machinery operative to produce an electrical transducer signal functionally related to the magnitude and frequency of said vibration;

a decoding circuit physically disposed within said housing and responsive to said electrical transducer signal greater than a predetermined magnitude within a selected frequency band to produce a first fault signal;

a single power source supplying power to both said transducer and said decoding circuit, said power source further providing a common ground connected to both said transducer and said decoding circuit; and



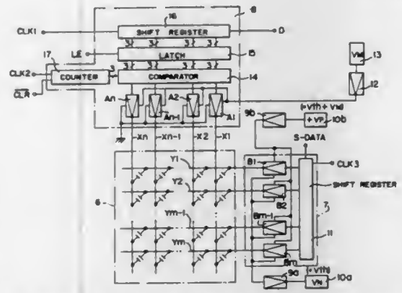
isolating circuitry responsive to said first fault signal operative to produce a second fault signal for nullifying ground shift effects with respect to said common ground.

5,309,150

METHOD AND APPARATUS FOR DRIVING DISPLAY APPARATUS

Toshihiro Obba; Atsushi Sakamoto, both of Nara; Yoshiyuki Kokuhata, Yamatokoriyama; Hiroshi Kishishita, Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1989, Ser. No. 457,509
Claims priority, application Japan, Dec. 28, 1988, 63-335126
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—76 **14 Claims**



1. A method for driving a display apparatus including a dielectric layer interposed between a plurality of scanning electrodes and a plurality of data electrodes, the method comprising the steps of:

(a) applying writing voltage of alternately varying polarity to consecutive scanning electrodes in each of a plurality of predetermined scanning periods; and

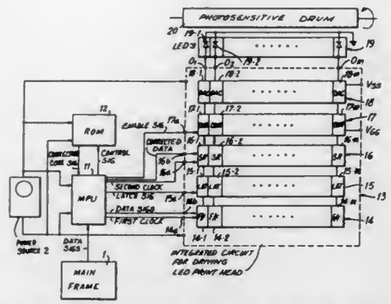
(b) generating only one pulse of modulation voltage during two consecutive scanning periods, said pulse having a pulse width encompassing a portion of said two consecutive scanning periods, said pulse including an adjustable pulse duration rise time and an adjustable pulse duration fall time, each separately adjustable to separately vary an amount of the pulse width in each of said two consecutive scanning periods, respectively.

5,309,151

CURRENT-SUPPLYING INTEGRATED CIRCUIT

Kanji Aoki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 430,174, Nov. 1, 1989, abandoned. This application Feb. 18, 1992, Ser. No. 839,058
Claims priority, application Japan, Nov. 1, 1988, 63-276622; Nov. 1, 1988, 63-276623; Nov. 1, 1988, 63-276624; Sep. 29, 1989, 1-253861
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—211 **70 Claims**



1. A current supplying integrated circuit having multi-output for controlling current supply from a current source to a plurality of elements to be driven, comprising a plurality of switching means for controllably supplying the current from said source to the corresponding element to be driven, each of said switching means comprising N unit switching elements arranged to be connected in parallel to each other to form a current synthesizing circuit, each of said unit switch elements being switchable from a first condition wherein no current flows therethrough to a second condition wherein a predetermined essentially constant current flows therethrough, each of said unit switching elements including at least one field effect transistor for providing essentially constant current, said at least one field effect transistor operating in the saturation region of the characteristic curve when in the second condition, said switching means supplying an essentially constant current to the associated element to be driven equal to at least the sum of the predetermined essential constant currents flowing through those of the unit switching elements thereof in said second condition.

5,309,152

SECURITY SYSTEM WITH MEMBRANE SWITCHES TO DETECT BINARY CODE ON MECHANICAL KEY

Darwin Krucoff, 2820-B Alta View Dr., San Diego, Calif. 92139

Filed Mar. 18, 1991, Ser. No. 670,731
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.31 **1 Claim**

1. Security system for access control of vehicle doors, chamber doors, and enclosed areas, and further providing vehicle ignition circuit control and in car door and trunk control, said system comprising:

(a) a key the same in all respects as a conventional key with the exception that all cuts are of the same depth and all connecting slopes are alike, wherein said cuts are on both serrated edges and represent binary bits of a digital code;

(b) a mating structure configured to receive said key, said structure containing tumblers actuated by the insertion of said key;

(c) switches mounted adjacent to and operated by said tumblers through a deformable elastic membrane seal, said switches providing a pattern of ON and OFF positions which translate the said key code into its electrical equivalent;

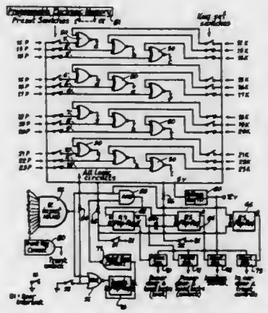
(d) digital logic circuits which recognize said digital code by comparison with a preset code and output a control signal upon said recognition, said preset code formed by a set of mechanical switches or a programmable electronic memory;

(e) additional logic and output circuits responsive to said output control signal that provide electrical locking, unlocking, vehicle ignition circuit control and in car door and trunk control;

(f) said membrane seal which serves to totally enclose the contacts of said switches for protection against outside contamination;

(g) each of said switches adjacent to said tumblers operably connected to the first input of a first digital logic circuit, with a second input of said first digital logic circuit connected to a logic one or zero as determined by said preset code, and with an output of said first digital logic circuit when the two inputs are the same;

(h) a second digital logic circuit having inputs that are all of the outputs of the said first digital logic circuit, said second digital logic circuit providing a summation of the said inputs and producing an output that indicates said key recognition when all of the code positions of the said key match the corresponding binary code bits of the said preset code;



(i) a master key, capable of unlocking and enabling of the ignition circuit and in car door and trunk controls, cut to one binary code, which can alternately enable and disable a second key, referred to as a valet key, said valet key cut to a different binary code, and capable of unlocking and ignition circuit control only;

(j) a said first digital logic circuit with preset code matched to said master key and a said second digital logic circuit;

(k) a said first digital logic circuit with present code matched to said valet key and a said second digital logic circuit;

(l) a switch used simultaneously with insertion of said master key to cause the alternate enabling and disabling of said valet key;

(m) a NOR digital logic circuit inputting the output of said second digital logic circuit of said master key and said switch and outputting a signal, when both inputs are present, to a toggle flip-flop circuit which alternately turns ON and OFF the digital logic circuits of the said valet key; and

(n) an AND digital logic circuit inputting the output of either said second digital logic circuit of said valet key or said second digital logic circuit of said master key and outputting a signal to flip-flop circuits that cause unlocking and ignition circuit enabling for either the said master key or the said valet key, but only the said master key has a bypass of said AND circuit that enables the in car door and trunk controls.

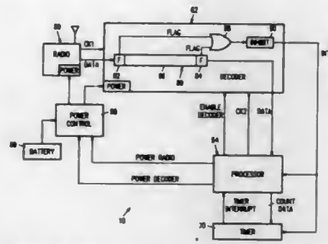
VOL 1162 ISS 1 MY 3 1994 UMI

5,309,153

ADAPTIVE ON-OFF CONTROL FOR RADIO RECEIVER

Garold B. Gaskill, Tualatin, and Daniel J. Park, Portland, both of Oreg., assignors to Seiko Corp. and Seiko Epson Corp., Japan

Continuation of Ser. No. 422,825, Oct. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 356,630, May 22, 1989, Pat. No. 5,159,713, which is a continuation of Ser. No. 101,137, Sep. 24, 1987, abandoned, which is a division of Ser. No. 802,844, Nov. 27, 1985, Pat. No. 4,713,808. This application Mar. 13, 1991, Ser. No. 668,389
Int. Cl.[5] H04Q 1/00
U.S. Cl. 340—825.44 5 Claims



1. A radio paging receiver for a paging system which transmits signals from a transmitter to said paging receiver according to a time slot protocol, said radio paging receiver including,

periodically active radio circuit means which is periodically active for short periods of time to receive signals from said transmitter,

an internal timing reference in said radio circuit for generating an internal timing reference signal,

means for generating first timing signals from said internal timing reference signals,

means responsive to said first timing signals for controlling the interval during which said radio circuit means is active and the interval during which said radio circuit means is inactive,

means for deriving a second timing signal each time said radio circuit means is active, said second timing signal being derived from said signal transmitted by said transmitter,

means for modifying the relationship between said internal timing reference and said first timing signals if the sum of sequentially accruing active and inactive periods of said radio circuit means do not equal the time interval between sequential ones of said second timing signals,

whereby the activation of said radio circuit means in said paging receiver is synchronized with the transmission from said transmitter.

5,309,154

SELECTIVE CALL RECEIVER WITH A UNIVERSAL SYNCHRONIZATION CODE OPERATING MODE

Kyung T. Mun, Mesa, Ariz.; Charles J. Ganucheau, Jr., and Leonard E. Nelson, both of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

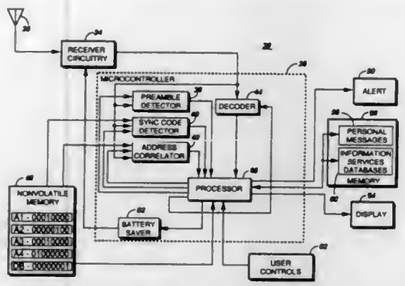
Filed May 8, 1992, Ser. No. 880,277
Int. Cl.[5] H04B 7/00
U.S. Cl. 340—825.44 11 Claims

1. A method for power conservation in a selective call receiver having a plurality of addresses assigned thereto, each of the plurality of addresses having one of a plurality of frame bytes associated therewith, the selective call receiver having receiver circuitry for receiving a signal comprising at least one batch, each of the at least one batch comprising a plurality of frames, each of the plurality of frames comprising one of a number of predetermined synchronization codes, the method comprising the steps of:

(a) receiving the signal;

(b) detecting the one of a number of predetermined synchronization codes;

(c) combining ones of the plurality of frame bytes in a predetermined manner to form a frame process byte comprising a plurality of bits, each of the plurality of bits corresponding to one of the plurality of frames and having a value of one or zero, the ones of the plurality of frame bytes determined in response to the one of a number of predetermined synchronization codes; and



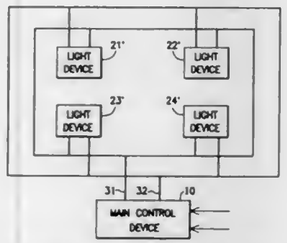
(d) conserving power by activating or deactivating the receiver circuitry during reception of one of the plurality of frames in response to the value of the one of the plurality of bits.

5,309,155

CONTROL APPARATUS FOR NETWORK TRAFFIC LIGHT

Chien-Hsing Hsien; Eric Han; Jin-Chyuan Hung, and Hwei-Shong Chun, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Jul. 7, 1992, Ser. No. 909,656
Int. Cl.[5] G08G 1/095
U.S. Cl. 340—907 10 Claims



1. A control apparatus for a network traffic light comprising:

a main control device, a plurality of lamp control devices each adapted to be connected with a plurality of lamps having on and off states, and a pair of power transmission lines connected between said lamp control devices and said main control device to permit them to communicate with each other;

said main control device includes:

first single-chip microprocessor capable of making control decisions for controlling the on and off states of said lamps and encoding and decoding a communication signal;

first power line carrier communication circuit coupled between said first microprocessor and said power transmission lines for receiving an output communication signal from said first microprocessor and then loading it onto said power transmission lines; and for unloading an input communication signal from said power transmission lines and then inputting it into said first microprocessor;

a display device and key-in circuit coupled to said first microprocessor for displaying the operation states of said network traffic light and for inputting a set signal keyed in by a user into said microprocessor; and

a power line filter coupled to said power transmission lines to avoid power line harmonic interference; and

each lamp control device including:

second single-chip microprocessor capable of controlling the on and off states of said lamps, and encoding and decoding a communication signal;

second power line carrier communication circuit coupled between said second microprocessor and said power transmission lines for receiving an output communication signal from said second microprocessor and then loading it onto said power transmission lines; and for unloading an input communication signal from said power transmission lines and then inputting it into said second microprocessor;

a plurality of solid-state relays coupled between said second microprocessor and said lamps respectively, and being actuated by said second microprocessor to turn on/off said lamps; and

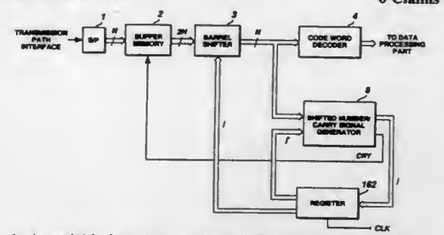
a plurality of lamp fail detecting circuits coupled between said second microprocessor and said lamps respectively for detecting fail conditions of said lamps.

5,309,156

VARIABLE-LENGTH CODE DECODING DEVICE

Takehiko Fujiyama, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Feb. 10, 1992, Ser. No. 833,375
Claims priority, application Japan, Feb. 13, 1991, 3-019691
Int. Cl.[5] H03M 7/40
U.S. Cl. 341—067 6 Claims



1. A variable-length code decoding device comprising:

converter means for converting serial data into parallel data for every N bits where N is an integer, said serial data including consecutive data pieces having variable data lengths;

buffer memory means, coupled to said converter means, for storing the parallel data which is sequentially read out therefrom for every N bits and which is shifted by N bits in a high-order-bit direction in response to a carry signal;

register means for storing a shifted number "j" which is read out therefrom in response to a clock signal, said shifted number "j" indicating the number of bits to be shifted;

barrel shifter means, coupled to said buffer memory means, for receiving the parallel data from the buffer memory means and for shifting, by the shifted number "j", the parallel data in the high-order-bit direction so that N-bit parallel data having a starting bit which corresponds to an (j+1)th bit of the parallel data from a most significant bit thereof is output from said barrel shifter means; and

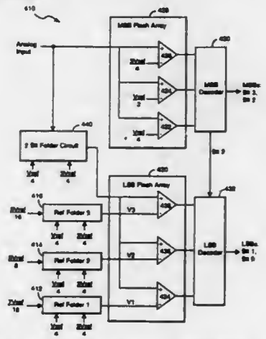
shifted number/carry signal generator means, coupled to said barrel shifter means and said register means, for generating, on the basis of a code length of effective data contained in said N-bit parallel data and the shifted number stored in the register means, an updated shifted number and said carry signal, said shifted number stored in the register means being updated by said updated shifted number, said shifted number/carry signal generator including memory means for storing combinations of the updated shifted number and the carry signal corresponding to all combinations of data lengths of possible effective data and the shifted number and wherein the code length of the effective data contained in said N-bit parallel data and the shifted number stored in the register means are input, as an address signal, to said memory means.

5,309,157

ANALOG TO DIGITAL CONVERTER USING FOLDER REFERENCE CIRCUITS

Philip W. Yee, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 972,763
Int. Cl.[5] H03M 1/14
U.S. Cl. 341—156 5 Claims



1. An analog to digital converter comprising:

a primary folder circuit for mapping an analog input voltage to a folder output voltage;

a voltage reference circuit for generating a plurality of reference voltages;

a reference folder circuit for converting one of said plurality of reference voltages into a comparison voltage;

a comparator having a first input to which is applied said folder output voltage and a second input held at said comparison voltage, wherein output of said comparator corresponds to a digital representation of said analog input voltage.

5,309,158

Patent Not Issued For This Number

5,309,159

METHOD AND SYSTEM FOR MOVING OBJECT DETECTION

Nahum Shahaf, Ramat Gan, and Moshe Meidan, Ramat Hasharon, both of Israel, assignors to Israel Aircraft Industries Ltd., Lod, Israel

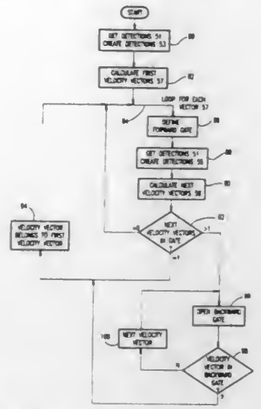
Filed Feb. 19, 1992, Ser. No. 838,363
Claims priority, application Israel, Feb. 19, 1991, 97290
Int. Cl.[5] G01S 13/66
U.S. Cl. 342—90 15 Claims

1. A method of scanning a scene for the purpose of classifying a plurality of moving objects located in the scene and having an average distance between them, the method comprising the steps of:

performing a sweep of said scene in steps defining portions of said scene;

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during each step, producing a multiplicity of images of at least one portion of said scene at a rate such that a distance traveled by said moving objects between images is small with respect to said average distance; and

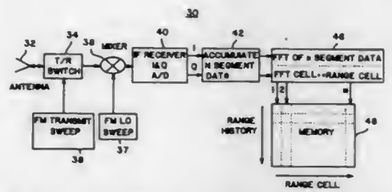


calculating, from the difference between said multiple images, two-dimensional motion information for at least some of said moving objects.

5,309,160
RADAR SYSTEM AND METHOD HAVING VARIABLE TRACKING RANGE

Norman F. Powell, Catonsville, and Carl E. Nothnick, Pasadena, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 4, 1993, Ser. No. 360
Int. Cl.[5] G01S *13/34*
U.S. Cl. 342—128 **13 Claims**



8. A radar system having a variable target tracking range, the system comprising:

means for generating during successive transmit cycles frequency modulated linear RP stretch waveforms having a predetermined bandwidth and duration

wherein the generating means includes segmenting the generated waveforms into a plurality of successive waveform segments and delaying commencement of each waveform segment a predetermined time interval subsequent to cessation of each preceding waveform segment, each segment having a duration and frequency corresponding to a specific portion of the respective generated waveform;

means for receiving target returns of the waveform segments during the successive predetermined time intervals;

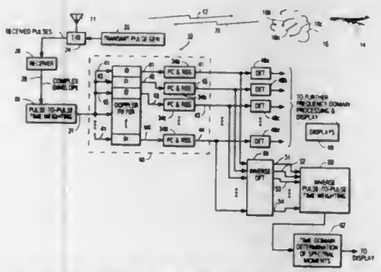
means for combining the target returns of the waveform segments of a respective waveform to correspond to a target return having a duration corresponding to the respective waveform; and

means for determining the range of the target return of the combined waveform segments.

5,309,161
RADAR WITH DOPPLER TOLERANT RANGE SIDELOBE SUPPRESSION AND TIME DOMAIN SIGNAL PROCESSING

Harry Urkowitz, Philadelphia, Pa.; John J. Gallagher, Turnersville; Jerald D. Nespor, Mt. Laurel, both of N.J., and Sheldon L. Katz, Southampton, Pa., assignors to General Electric Co., Moorestown, N.J.

Filed Dec. 10, 1992, Ser. No. 988,706
Int. Cl.[5] G01S *13/28*
U.S. Cl. 342—132 **11 Claims**



1. A ranging system for transmitting dispersed signals through a medium toward a target, and for receiving echoes of said signals, comprising:

transmitting means for transmitting dispersed signal pulses, having a predetermined duration, toward said target;

receiving means for receiving echo signals from said target for forming received pulse signals;

a bank of a first plurality of pulse-to-pulse doppler filter channels;

a plurality, equal to said first plurality, of pulse compression means;

a plurality, equal to said first plurality, of range sidelobe suppression means;

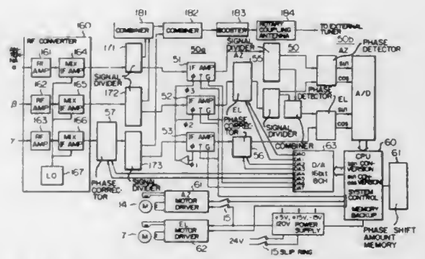
coupling means coupled to said receiving means, said bank of pulse-to-pulse doppler filter channels, said pulse compression means, and said range sidelobe suppression means, for coupling each of said pulse compression means in cascade with one of said range sidelobe suppression means and with one of said doppler filter channels, to form a plurality, equal to said first plurality, of cascaded filters, and for connecting each of said cascaded filters to said receiving means, for filtering said received signals to form a plurality, equal to said first plurality, of doppler filtered, frequency domain received signals in which range sidelobes are suppressed and in which the effective duration of said pulses is shortened from said predetermined duration;

pulse-to-pulse frequency-to-time signal transformation means coupled to each of said cascaded filters, for converting said frequency domain received signals into regenerated time-domain received signals in which said range sidelobes are suppressed and in which the effective duration of said pulse is shortened from said predetermined duration.

5,309,162
AUTOMATIC TRACKING RECEIVING ANTENNA APPARATUS FOR BROADCAST BY SATELLITE

Masahiro Uematsu; Takashi Ojima, both of Tokyo; Kazuo Kato, Yokohama, and Makoto Ochiai, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo and System Uniques Corporation, Kanagawa, both of Japan

Filed Dec. 10, 1992, Ser. No. 988,893
Claims priority, application Japan, Dec. 10, 1991, 3-350103
Int. Cl.[5] H01Q *3/22, 3/24, 3/26*
U.S. Cl. 342—372 **6 Claims**



1. An automatic tracking receiving antenna apparatus used in broadcast by satellite, to be mounted on a mobile body comprising:

a first antenna mounted on said mobile body for receiving a radio signal emitted from said satellite and providing a first received signal;

a second antenna mounted on said mobile body for receiving said radio signal and providing a second received signal;

a phase detection means having two input terminals for detecting a phase difference between said first received signal and said second received signal and providing a phase difference signal; and

a control means for controlling rotation of said first and second antennas on the basis of said phase difference signal so as to direct beam directions of said first and second antennas toward said satellite, said receiving antenna apparatus further comprising:

a peak detection means for detecting power peaks of said first and second received signals;

a phase corrector for receiving a received signal and correcting phase of said received signal with respect to a reference signal;

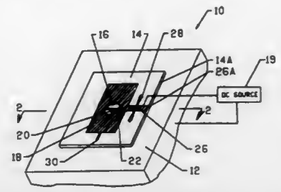
a phase shifting means for shifting phase of an input signal applied to one of the input terminals of said phase detection means; and

a memory for storing a predetermined phase shift value for a phase shift to be shifted by the phase shifting means, wherein said predetermined phase shift value is determined from a phase shift necessary to be made by said shifting means to obtain a phase at said power peak of said first received signal coinciding with a phase at said power peak of said second received signal in a phase adjustment operation, and wherein in a tracking operation said shifting means reads out said predetermined phase shift value from said memory and corrects a phase of said input signal of said phase detection means based on said predetermined phase shift value.

5,309,163
ACTIVE PATCH ANTENNA TRANSMITTER

Yiu C. Ngan, San Gabriel; Wayne W. Lam, Torrance, and Yoshio Saito, Westchester, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 12, 1991, Ser. No. 758,135
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 MS **15 Claims**



1. A microwave antenna transmitter device comprising:

a conductive ground plane;

a dielectric substrate disposed upon said ground plane, said substrate having an opening formed therein exposing an area of said ground plane;

an electrically conductive antenna patch disposed upon said dielectric substrate so as to surround said substrate opening;

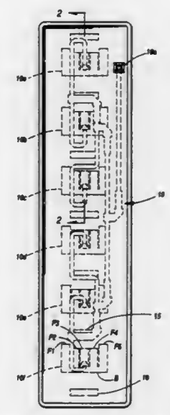
a source of electrical energy; and

a packageless IMPATT diode chip electrically coupled to said source of electrical energy for generating microwave frequency energy therefrom, said diode chip conductively coupled to said antenna patch and to said ground plane and said diode chip being disposed upon said ground plane within said opening in said substrate in a spaced relationship with said substrate.

5,309,164
PATCH-TYPE MICROWAVE ANTENNA HAVING WIDE BANDWIDTH AND LOW CROSS-POL

Geza Dienes, Claremont; William W. Seal, Covina, both of Calif., and Russell W. Dearnley, Viewbank, Australia, assignors to Andrew Corporation, Orland Park, Ill.

Continuation of Ser. No. 867,410, Apr. 13, 1992, abandoned. This application Oct. 23, 1992, Ser. No. 965,338
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 MS **15 Claims**



1. A patch antenna for transmitting and receiving micro-

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wave signals having a desired polarization, said antenna comprising:

a dielectric substrate,

a plurality of radiating patches on said substrate, each radiating patch including a plurality of edges and a plurality of spaced non-radiating slots which are open at one end along only a single edge of said radiating patch to suppress the radiation of energy that is polarized in a direction transverse to the direction of the desired polarization,

a distribution network for transmitting and receiving signals within said antenna, and

a plurality of probes within said substrate for coupling said radiating patches and said distribution network, one end of each probe being connected to said distribution network, and the other end of each probe being coupled to one of said radiating patches.

5,309,165

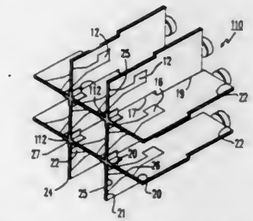
POSITIONER WITH CORNER CONTACTS FOR CROSS NOTCH ARRAY AND IMPROVED RADIATOR ELEMENTS

Gary I. Segal, Randallstown, Md.; Samuel P. Nguyen, Arlington, Va.; Kenneth M. Leader, Glen Burnie, Md., and Thomas A. Ward, Kingsport, Tenn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 9, 1992, Ser. No. 880,406

Int. Cl.[5] H01Q *13/10*

U.S. Cl. 343—770 **14 Claims**



1. A positioner for locating and grounding metallized portions of unrestrained element ends with respect to metallized restrained element ends in a dual polarized cross notch array comprising:

a planar member having spaced slots in respective parallel rows and parallel columns said rows and columns intersecting at right angles, said rows and columns of slots corresponding to the respective restrained and unrestrained element ends; and

conductive tab means formed adjacent the slots at the intersections of the rows and columns corresponding to intersections of the restrained and unrestrained element ends for receiving and securing the metallized portions of the intersecting element ends therein.

5,309,166

FERROELECTRIC-SCANNED PHASED ARRAY ANTENNA

Donald C. Collier, Newtown; Kevin J. Krug, Stamford, and Brittan Kustom, Wilton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1991, Ser. No. 806,528

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] H01Q *3/30*; H01P *1/18*

U.S. Cl. 343—778 **20 Claims**

1. A phased array antenna, comprising:

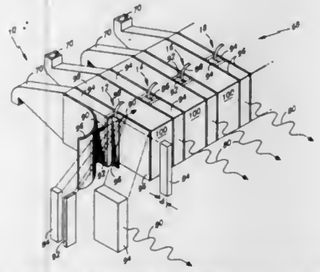
a plurality of elements disposed in an array arrangement, wherein each element includes

(A) an input waveguide which receives and routes RF energy;

(B) a phase shifting element disposed to receive the RF energy from said input waveguide, each of said phase shifting elements includes

(i) a quantity of phase shifting material whose refractive index varies in the presence of an applied electric field, said phase shifting material being disposed in the path of the RF energy and having a first face through which the RF energy enters said material and a second face through which the RF energy exits said material as a phase shifted RF signal;

(ii) a pair of impedance matching layers including a first layer disposed adjacent to said first face and a second layer disposed adjacent said second face, such that, the RF energy propagates through said first layer before entering said phase shifting material and propagates through said second layer upon exiting said phase shifting material;



(iii) means for applying a variable electric field across said phase shifting material to vary the refractive index of said phase shifting material, said means for applying includes a first electrode which bisects said phase shifting material in a direction parallel to the propagation direction of the RF energy, and second and third electrodes located on opposite sides of said first electrode and spaced apart from said first electrode by said phase shifting material, such that a variable electrical potential applied to said first electrode creates an electric field across said phase shifting material in a direction normal to the propagation direction of the RF energy and parallel to the polarization direction of the RF energy; and

(C) an output waveguide which receives said phase shifted RF energy from said phase shifting element and routes said phase shifted RF energy.

5,309,167

MULTIFOCAL RECEIVING ANTENNA WITH A SINGLE AIMING DIRECTION FOR SEVERAL SATELLITES

Claude Cluniat, Verneuil S/Seine, and Jean-Jacques Delmas, Meudon, both of France, assignors to Thomson-LGT Laboratoire General des Telecommunications, Conflans Sainte Honorine and Telediffusion de France S.A., Montrouge, both of France

PCT No. PCT/FR90/00785, § 371 Date May 16, 1991, § 102(e) Date May 16, 1991, PCT Pub. No. WO91/06988, PCT Pub. Date May 16, 1991

Continuation of Ser. No. 689,040, May 16, 1991, abandoned. This PCT application Oct. 31, 1990, Ser. No. 998,648

Claims priority, application France, Oct. 31, 1989, 89 14287

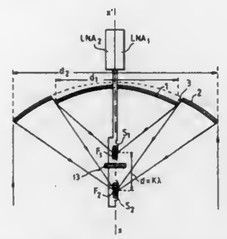
Int. Cl.[5] H01Q *25/000, 21/240, 15/160, 17/000*

U.S. Cl. 343—840 **19 Claims**

1. A multi-focal receiving antenna for receiving radiation of a predetermined wavelength, said antenna having a single aiming direction for more than one satellite, the antenna comprising:

a reflector having at least two sectors of paraboloids, wherein respective axes of the paraboloids of the at least two sectors extend in a same direction with said at least two sectors having different focal points, and with the foci of said at least two sectors offset by a spacing equal to a whole number of wavelengths of the radiation of a predetermined wavelength to be received, said reflector having a quasi-flat structure with respect to a direction along said axes,

said antenna further including a respective source for each of the at least two sectors for coupling the radiation, said



sources located in zones of concentration of the radiation to be received, said sources merged with the respective axes of the at least two sectors of paraboloids, said sources respectively adapted for reception of differently polarized radiation; and

wherein a first of said sectors is a sector of a paraboloid in which the paraboloid of the first of said sectors forms a central zone, and a second of said sectors is a sector of a paraboloid in which the paraboloid of the second of said sectors forms an external zone, and wherein said central zone is within said external zone.

5,309,168

PANEL DISPLAY CONTROL DEVICE

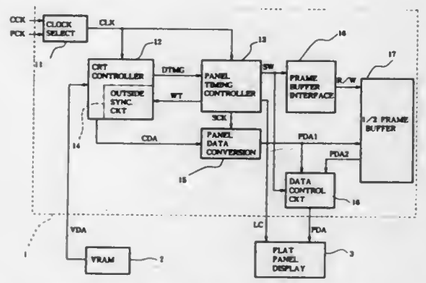
Shubei Itoh, and Mitsuhiro Kurata, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 30, 1991, Ser. No. 784,776

Claims priority, application Japan, Oct. 31, 1990, 2-295610; Mar. 28, 1991, 3-89845

Int. Cl.[5] G09G *3/00*

U.S. Cl. 345—3 **2 Claims**



1. A panel display control device for use with display data, the device comprising:

a clock for providing a basic clock;

a panel display having a first screen and a second screen display;

a CRT controller operated in response to the basic clock and a stored set of values for a CRT timing to provide a display timing signal for the panel display and display data in accordance with the set value of the CRT timing;

a panel data conversion circuit for converting the display data provided by the CRT controller to panel display data for the panel display;

a buffer for storing at least ½ frame of the panel display data provided by the panel data conversion circuit;

a panel timing controller operated in response to the basic clock and providing a wait signal for synchronizing the CRT controller with the panel display timing without changing the stored set of values for the CRT timing, the panel timing controller further providing a screen switching signal for switching the first and second screens synchronized with the wait signal, and a display control signal for the panel display;

a buffer control circuit for controlling a read timing and a write timing of the buffer in response to the screen switching signal, such that the panel display data provided by the panel data conversion circuit is written line by line into the buffer and is read out from the buffer line by line; and

a data control circuit for alternately selecting line by line between the panel display data provided by the panel data conversion circuit and panel display data provided by the buffer, such that the selected display data is supplied to the panel display.

5,309,169

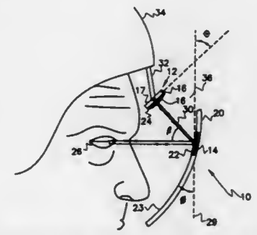
VISOR DISPLAY WITH FIBER OPTIC FACEPLATE CORRECTION

Thomas M. Lippert, Princeton, N.J., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 1, 1993, Ser. No. 12,099

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—8 **11 Claims**



1. A display system for use with headgear of a user, comprising:

a visor display mounted to the headgear so as to define a cavity between the head of the user and an inner surface of the visor display, said visor display having at least one partially reflective aspheric surface section directed inward to the user, said partially reflective aspheric surface section being at a position which intercepts a forward line of sight of an eye of the user and which is at a tilt angle with respect to a plane that is substantially transverse to the forward line of sight;

a shallow packaged image source positioned above the eye within said cavity at a predetermined angle with said plane which is substantially transverse to the forward line of sight; and

a fiber optic faceplate having a first and second end section, said first end section coupled to said image source, said second end section having an aspherically shaped surface so as to project an image from said image source on said aspheric surface section of said visor display for reflection of said image to the eye of the user, said aspherically shaped surface being an aspherical shape determined by a shape of said partially reflective aspheric surface, said tilt angle and said predetermined angle.

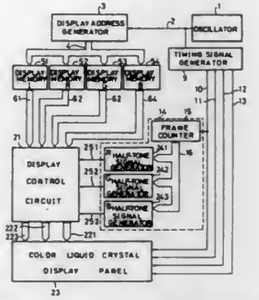
VOL 1162 ISS 1 MY 3 1994 UMI

5,309,170

HALF-TONE REPRESENTATION SYSTEM AND CONTROLLING APPARATUS THEREFOR

Terumi Takashi, Yokohama; Masahiro Jinushi, and Kazuya Kouchiyama, both of Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering, Inc., Yokohama, both of Japan

Filed Apr. 26, 1990, Ser. No. 514,591
Claims priority, application Japan, Apr. 28, 1989, 1-111791
Int. Cl.[5] G09G *1/28, 3/00*
U.S. Cl. 345—89 **11 Claims**



1. A half-tone representation system for displaying data on a display in which each display dot is constituted by a set of N color pixels, where N is an integer of three or more, each pixel capable of being ON-OFF controlled to provide a predetermined number of different colors depending on the combination of ON and OFF states of the N color pixels, the half-tone representation system comprising means for controlling said display to provide an increased number with respect to the predetermined number of different colors by successively ON-OFF controlling any one or more of said N color pixels in a half-tone state according to a predetermined repetitive ON-OFF pattern in successive frames, and means for causing, when at least two of the N color pixels are in the half-tone state, the predetermined repetitive ON-OFF patterns for the at least two or the N color pixels to be different in phase from one another.

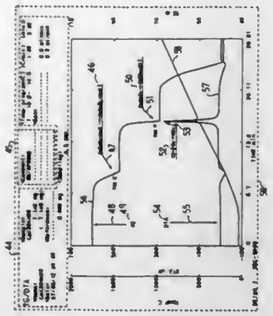
5,309,171

GRAPH DISPLAY DEVICE

Rintaro Nakatani, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 433,304
Claims priority, application Japan, Nov. 9, 1988, 63-283052
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—140 **6 Claims**

1. A device for displaying measurement results in the form of a graph image on a display screen providing a display area, comprising:
- a storage unit for storing measurement results and generating a graph image data indicative of the measurement results;
- a statement input unit for inputting data representing statements which are to appear on the image in the form of given characters;
- a position input unit for inputting data representing the position of each statement, said position data including absolute position data in terms of absolute coordinate values related to the display area of the display screen and relative position data in terms of relative coordinate values related to the graph display of the measurement results;
- a position adjustment unit connected to said statement input unit and to said position input unit for providing data for adjusting the position of each statement on the graph image to be displayed to thereby generate statement image data by converting said relative position data into absolute position data;
- a logically operating unit connected to said adjustment unit and to said storage unit for processing the graph image



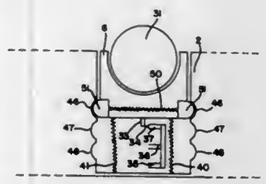
data and the statement image data with each other to generate composite image data; and
- a display unit connected to said logically operating unit and including the display screen for displaying a composite image such that each statement has a desired position on the graph image.

5,309,172

COMPUTER DATA AND COMMAND ENTRY DEVICE

Charles S. Fox, 474 Highcrest Dr., Wilmette, Ill. 60091

Filed Jul. 29, 1991, Ser. No. 737,311
Claims priority, application European Pat. Off., Jun. 14, 1989, 89110777.3
Int. Cl.[5] G09G *5/08*
U.S. Cl. 345—159 **7 Claims**



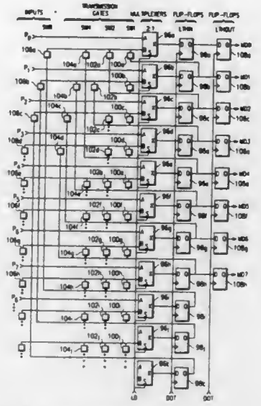
1. A multiple speed cursor control device for use in providing touch commands from a user, comprising:
- a roller ball;
- a roller assembly supporting said roller ball, wherein said roller assembly responds to pressure applied to said roller ball so as to move in a vertical direction and produce a control signal;
- a computer to receive said control signal; and
- a display connected to said computer for displaying a movable cursor, wherein said control signal controls the speed of movement of said cursor on said display.

5,309,173

FRAME BUFFER, SYSTEMS AND METHODS

Louis J. Izzi, Plano, Tex., and Richard E. Downing, Hoffman Estates, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 28, 1991, Ser. No. 723,342
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—190 **16 Claims**



8. A frame buffer comprising:
- a sequentially ordered array of k multiplexers, each said multiplexer having first and second data inputs and a data output for passing data appearing at said first data inputs to said data outputs in response to a first control signal and for passing data appearing at said second data inputs to said outputs in response to a second control signal;
- a sequentially ordered array of k latches, each said latch having an input coupled to said data output of a respective said multiplexer and a latch output, for latching data appearing at said data outputs of said multiplexer; and
- a sequentially ordered array of j transmission gates, an mth one of said transmission gates associated with an $(n-2^{m-1})$th one of said multiplexers and operable to couple said second data input of an $(n-2^{m-1})$th one of said multiplexers with said latch output of an n^{th} one of said latches, wherein j, k, m and n are positive integers, j and k being constants, n being a variable that is greater than 2^{m-1}, and m being a variable between 1 and j.

9. The frame buffer of claim 8, and further comprising:
- a plurality of second latches for latching data appearing at said latch outputs of selected ones of said plurality of latches.

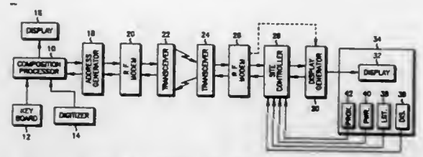
5,309,174

ELECTRONIC DISPLAY SYSTEM

Loren S. Minkus, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 287,532, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 108,860, Oct. 13, 1987, abandoned. This application Mar. 5, 1991, Ser. No. 664,509
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—204 **19 Claims**

1. A display system including a display medium means having a display medium for displaying messages, and central processing means disposed at a remote location from said display medium means for initiating a message for display on said display medium, said display comprising:
- first means for providing electronic communication over a transmission medium between the central processing means and remote display medium means, said first means being controlled to communicate a message from the central processing means to the display medium,
- second means disposed at the remote display medium means for receiving the message and for causing text or graphic characters representing the message to be displayed on the display medium in a manner capable of being interpreted by individuals viewing the display medium, and
- third means disposed at the remote display medium means



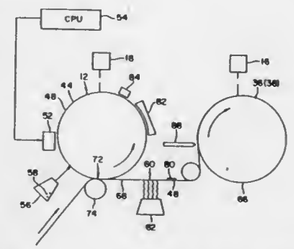
for detecting the status of at least one operational parameter of displaying a message on the display medium which parameter relates to the proper display of the message on the display medium and for providing information representative thereof;
- fourth means associated with the display medium for controlling the first means to electronically communicate the status information of the third means to the central processing means.

5,309,175

IMAGING SYSTEM FOR A PRINTING PRESS

Kevin W. Orth, Des Plaines; Walter J. Pelczarski, Downers Grove, and Garry F. Tupek, Naperville, all of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 845,297, Mar. 2, 1992. This application Jun. 10, 1993, Ser. No. 75,195
Int. Cl.[5] G11B *9/00*
U.S. Cl. 346—74.2 **16 Claims**



1. An imaging system for a printing press, comprising:
- an imaging cylinder having a magnetically addressable outer surface;
- means for writing magnetic information on the outer surface of the imaging cylinder;
- means for passing a magnetic particulate material onto the outer surface of the imaging cylinder to form an image on the outer surface of the imaging cylinder;
- means for transferring the image from the imaging cylinder onto a surface of a film;
- means for bonding the image of particulate material onto the surface of the film;
- a print cylinder; and
- means for placing the film on an outer surface of the print cylinder.

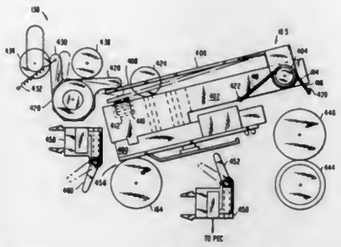
VOL 1162 ISS 1 MAY 3 1994 UMI

5,309,176

AIRLINE TICKET PRINTER WITH STEPPER MOTOR FOR SELECTIVELY ENGAGING PRINT HEAD AND PLATEN

Steven M. Faes, New Market; Alfred L. Fulton; Martin J. Hnetynka, both of Huntsville; Laird Campbell, Laceys Spring; David Preston, Huntsville; Michael Missios, Huntsville, and Scott D. Sampson, Huntsville, all of Ala., assignors to SCI Systems, Inc., Huntsville, Ala.

Filed Aug. 25, 1992, Ser. No. 934,361
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 PH 12 Claims



1. An apparatus for printing information on a ticket, said ticket having a thickness T, comprising:
a frame;
a platen mounted for rotation on said frame;
print head means for printing said information on said ticket;
mounting means for mounting said print head means on said frame adjacent to said platen to form a gap between said platen and said print head means, at least one of said platen and said mounting means being displaceable with respect to one another
feed means for feeding said ticket toward said gap along a feed path;
sensor means disposed in said feed path for sensing the feeding of said ticket and for providing a feed time signal upon sensing the feeding of the ticket;
control means for receiving said feed time signal and for generating engage signals at a timed interval after receiving said feed time signal;
engage means, including a stepper motor responsive to said engage signals, for moving at least one of said platen and said print head means in steps between a first relative position in which said gap is wider than said thickness T of said ticket and a second relative position in which said ticket is engaged between said platen and said print head means;
said print head means being disengaged from said platen except when said ticket is present therebetween.

5,309,177

IMAGE RECORDING APPARATUS

Hisashi Shoji, Kawasaki, and Tomoko Ogawa, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 631,084, Dec. 19, 1990, abandoned.
This application Apr. 8, 1992, Ser. No. 865,672
Claims priority, application Japan, Dec. 19, 1989, 1-327316; Dec. 19, 1989, 1-327317; Dec. 19, 1989, 1-327318; Oct. 15, 1990, 2-273207
Int. Cl.[5] B41J *2/47*; H04N *1/21*
U.S. Cl. 346—108 9 Claims

1. An image recording apparatus for electrostatically forming a latent image on a photoconductive element by scanning said photoconductive element by a laser beam emitted by a semiconductor laser driven by image data, and developing said latent image to produce a visible image, said apparatus comprising:
first driving means for driving the laser by modulating a pulse width by multiple levels which are based on the image data;
second driving means for driving, before the visible image is formed, said first driving means by generating laser drive data having a plurality of tones;
potential sensing means for sensing a surface potential of a latent image electrostatically formed on the image carrier by said second driving means; and

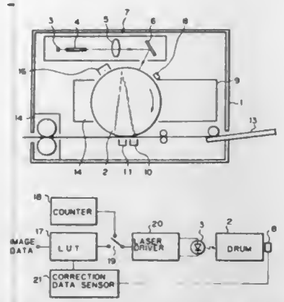


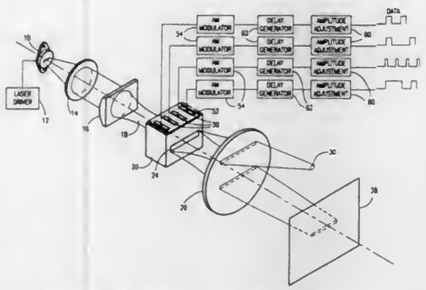
table generating means for generating, in response to a potential sensed by said potential sensing means, a table for correcting image data such that a set relation holds between continuous tone data and latent image potential, the table generating means including an interpolation data calculating unit which produces interpolation data on the basis of (1) an output of a counter within the table generating means and (2) the image data.

5,309,178

LASER MARKING APPARATUS INCLUDING AN ACOUSTIC MODULATOR

Abraham Gross, Rehovot, Israel, assignor to Optrotech Ltd., Ziona, Israel

Filed May 12, 1992, Ser. No. 882,457
Int. Cl.[5] G01D *15/14*; G02F *1/11*; H04N *1/00*
U.S. Cl. 346—108 11 Claims



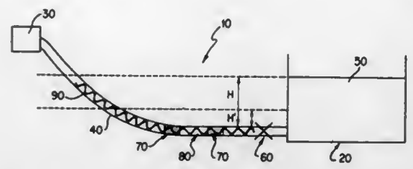
1. Laser marking apparatus comprising:
at least one multimode laser beam source providing a laser beam;
a beam compressor receiving said laser beam and providing a partially flattened tubular output beam;
a multichannel acoustic modulator defining a plurality of at least partially overlapping modulation regions extending in a plane;
means for directing said partially flattened tubular output beam through said multichannel acoustic modulator; and
imaging means for directing light from said modulator to a laser marking image plane.

5,309,179

ENHANCEMENT OF INK FLOW DUCTS WITH HIGH SURFACE ENERGY MATERIAL INCLUSIONS

Lawrence K. Agbezuge, Penfield; Thomas N. Taylor, Rochester, and John G. Ackerman, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 18, 1992, Ser. No. 931,798
Int. Cl.[5] B41J *2/19*
U.S. Cl. 346—140 R 9 Claims



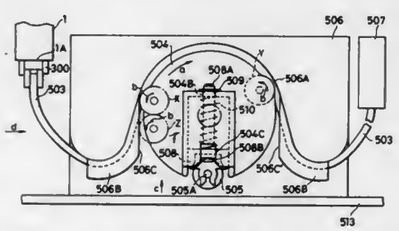
1. An enhanced flow duct apparatus for communicating a liquid between a reservoir source and an outlet, a flow of liquid through the duct apparatus being cycled between on and off states, said off state stopping flow of said liquid and enabling formation of slugs of liquid having a longitudinal length, said slugs being trapped in the duct apparatus and separated by air pockets resulting in increased impedance to flow, the duct apparatus enhancing reestablishment of liquid flow in a subsequent on state including reduction of necessary pressure head at said reservoir source, the apparatus comprising:
a valve for cycling the flow of liquid between said on and off states;
a small diameter tube of a low surface energy material for communicating said liquid between said source and said outlet, said tube having an inner tube wall; and
a member of a high surface energy material in the form of a spring located adjacent said inner wall and extending within said tube substantially from said source to said outlet, said member having greater surface tension and wetting forces between said liquid and said member than surface tension and wetting forces between said liquid and said inner wall to overcome the impedance of the slugs, said spring having a pitch at most equal to an average longitudinal length of said slugs.

5,309,180

INK JET RECORDING APPARATUS AND RECOVERING MECHANISM THEREOF

Haruo Uchida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 835,382, Feb. 14, 1992, abandoned.
This application Sep. 27, 1993, Ser. No. 126,756
Claims priority, application Japan, Feb. 15, 1991, 3-022092
Int. Cl.[5] B41J *2/18*
U.S. Cl. 346—140 R 11 Claims



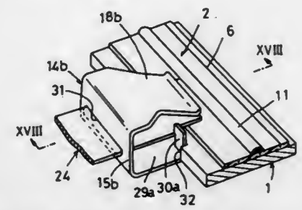
1. A recovering mechanism for an ink jet recording apparatus, for maintaining or recovering an ejection state or an ink jet head by discharging ink through at least one orifice of said ink jet head in an enforced manner, comprising:
a flexible tube having an axial direction;
a movable pressurizing member having a pressurizing state for producing pressure in said flexible tube in order to perform the enforced discharging of ink by resiliently deforming said tube continuously along said axial direction, said pressurizing member defining a region abutting said flexible tube, said pressure being produced as said pressurizing member moves into said region;
biasing means for resiliently biasing said pressurizing member to press against said tube;
guide means for guiding said pressurizing member, said guide means being disposed in a region outside of said region where said pressurizing member abuts said flexible tube in a manner such that said guide means acts to place said pressurizing member in a state which is substantially similar to said pressurizing state.

5,309,181

PRESSING CLIP FOR FLEXIBLE MEMBER

Shgeo Ota, and Yasushi Ema, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 802,193, Dec. 4, 1991, Pat. No. 5,220,353.
This application Oct. 19, 1992, Ser. No. 962,835
Claims priority, application Japan, Dec. 19, 1990, 2-403982[U]; Dec. 26, 1990, 2-404989[U]; Dec. 28, 1990, 2-405603[U]; Nov. 12, 1991, 3-295414
Int. Cl.[5] G01D *15/00*
U.S. Cl. 346—145 6 Claims



1. A pressing clip for pressing a flexible member against a circuit board, the clip comprising:
a web portion;
a presser portion extending from the web portion, the presser portion being elastically deformable for pressing the flexible member on a side thereof away from the circuit board; and
an anchoring portion also extending from the web portion on a side of the circuit board away from the flexible member, the anchoring portion and the presser portion forming a clipping clearance therebetween for receiving the circuit board and the flexible member;
wherein the web portion is formed with an access opening through which the flexible member extends for insertion into the clipping clearance.

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5,309,182

BICOLOR IMAGE FORMING APPARATUS FOR FORMING A BICOLOR IMAGE ON A PHOTOCONDUCTIVE ELEMENT

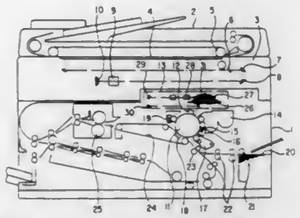
Takasbi Mama, Yokohama; Yuji Yasuda; Kan Tomita, both of Tokyo; Fumihiro Miyagawa, Yokohama; Shinji Kobayashi, Tokyo; Takanobu Fujioka, Chofu; Hidetoshi Kanai, Yokohama, and Yoshiki Yoshida, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,346

Claims priority, application Japan, Oct. 31, 1991, 3-286052; Mar. 12, 1992, 4-053203; Oct. 19, 1992, 4-279802

Int. Cl.[5] G03G *15/01*

U.S. Cl. 346—157 **14 Claims**



1. An image forming apparatus comprising:
a rotatable photoconductive element;
charging means located to face periphery of said photoconductive element;
deflection scanning type exposing means for deflecting a light beam issuing from a beam emitting element toward said photoconductive element;
first developing means for developing an electrostatic latent image formed on the periphery of said photoconductive element by said deflection scanning type exposing means;
line type exposing means located to face part of the periphery of said photoconductive element other than part where the light beam from said deflection scanning type exposing means is incident; and
second developing means for developing an electrostatic latent image formed on the periphery of said photoconductive element by said line type exposing means;
wherein the number of tones per dot of an image is smaller in said line type exposing means than in said deflection scanning type exposing means.

5,309,183

IMAGE PICKUP APPARATUS HAVING DIFFERENCE ENCODING AND NON-LINEAR PROCESSING OF IMAGE SIGNALS

Takashi Sasaki, Yokohama, and Izuru Horiuchi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

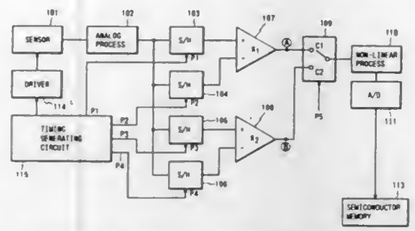
Continuation of Ser. No. 920,167, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 587,049, Sep. 24, 1990, abandoned. This application May 11, 1993, Ser. No. 59,727

Claims priority, applicatioo Japan, Sep. 28, 1989, 1-250689; Sep. 17, 1990, 2-243911; Sep. 17, 1990, 2-243912

Int. Cl.[5] H04N *9/04, 9/07*

U.S. Cl. 348—233 **13 Claims**

1. An image pickup apparatus comprising:
difference encoding means for quantizing a difference between signals from every other pixel in a solid-state image pickup element;
non-linear processing means for non-linearly processing an output from said difference encoding means with a predetermined non-linear processing characteristic;
A/D conversion means for A/D converting an output of said non-linear processing means with a predetermined conversion characteristic, said predetermined non-linear processing characteristic of said non-linear processing means being set according to said predetermined conversion characteristic of said A/D conversion means;
an apparatus main body having an apparatus output terminal



for supplying an output from said A/D conversion means; and
a storage body capable of recording the output from said apparatus output terminal of said apparatus main body.

5,309,184

MECHANICAL CONTROL APPARATUS OF A SINGLE LENS REFLEX CAMERA

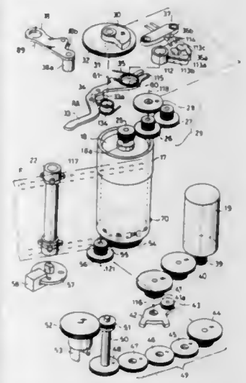
Toshiyuki Kitazawa, and Tomoaki Itabashi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,277

Claims priority, application Japan, Sep. 12, 1992, 3-96363

Int. Cl.[5] G03B *9/00, 19/12*

U.S. Cl. 354—231 **21 Claims**



1. A mechanical control apparatus of a single lens reflex camera comprising:
three coaxial rotating members including,
a shutter cam for charging a shutter of the camera;
a mirror cam for charging a mirror of the camera; and,
a diaphragm resetting mechanism for resetting a diaphragm of the camera in association with rotation of at least one said shutter cam and said mirror cam.

5,309,185

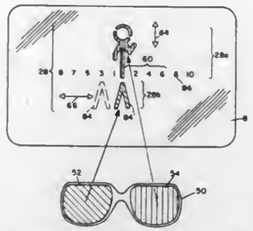
APPARATUS AND METHOD FOR OBJECTIVE QUANTITATIVE ASSESSMENT OF HUMAN OCULAR COORDINATION

Gilberto B. Harper, 2724 Sandover Ct., Bonita, Calif. 91902

Filed Jun. 8, 1992, Ser. No. 894,830

Int. Cl.[5] A61B *3/08*

U.S. Cl. 351—202 **39 Claims**



1. Apparatus for quantitative assessment of human ocular coordination, which comprises:
a first pair of transparent image filters, each filter of said first pair having means to transmit a visual image different from and mutually exclusive with the image transmitted by the other filter of said pair;
means for producing a pair of visual images and displaying them on a viewing surface;
said viewing surface on which said visual images are presented to a human patient, each visual image being visible to said patient through only one respective filter of said pair of filters;
means for said patient to move one of said visual images relative to the other on said viewing surface; and
means for quantitatively determining the spatial relationship between said visual images on said viewing surface which results from movement of said one of said visual images by said patient.

5,309,186

EYE REFRACTIVE POWER MEASURING APPARATUS HAVING OPACITY DISCRIMINANT FUNCTION OF CRYSTALLINE LENS

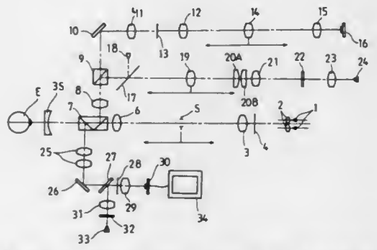
Toshiaki Mizuno, Aichi, Japan, assignor to Nidek Co., Ltd., Gamagori, Japan

Filed Jan. 28, 1992, Ser. No. 826,789

Claims priority, applicatioo Japan, Jan. 30, 1991, 3-29417

Int. Cl.[5] A61B *3/14, 3/10*

U.S. Cl. 351—212 **16 Claims**



1. An eye refractive power measuring apparatus having a crystalline lens opacity discriminant function comprising:
a projecting optical system for projecting a target onto a fundus of an eye under examination to measure the refractive power thereof;
a detecting optical system for detecting an image of the target reflected from the eye fundus;
means coupled to said detecting optical system for measuring the refractive power of the eye in response to said detected target image;
an alignment observing optical system for observing the eye when measuring the refractive power thereof;
an irradiating optical system for irradiating the eye fundus with a retroillumination light; and
an observing optical system, for observing a crystalline lens of the eye illuminated by the retroillumination light reflected form the eye fundus to determine the opacity of the crystalline lens, including at least one magnification variable lens disposed on an optical path of said reflected retroillumination light;
wherein said alignment observing optical system and said observing optical system for observing crystalline lens are included in an optical system, and the optical system displays selectively the image of the target reflected from the eye fundus for alignment observation and the image of the crystalline lens by selecting a magnification of the variable lens.

5,309,187

HIGH MAGNIFICATION OPHTHALMIC LENS

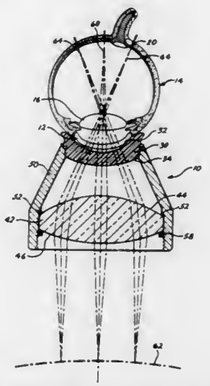
Janet L. Crossman; Phillip J. Erickson, both of Bellevue; Gregory L. Heacock, Seattle, all of Wash., and Martin A. Mainster, Leawood, Kans., assignors to Ocular Instruments, Inc., Bellevue, Wash.

Filed Mar. 18, 1992, Ser. No. 856,320

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] A61B *3/00*

U.S. Cl. 351—219 **19 Claims**



1. A magnifying ophthalmic lens for observing the fundus of the eye and for delivering laser energy thereto comprising:
a contact lens having a posterior surface and an anterior surface, said posterior surface having a curvature compatible with the anterior surface of a cornea, the anterior surface of the contact lens having a predetermined curvature wherein the indices of refraction of said contact lens can range from 1.47 to 1.85, and the axial thickness of the contact lens (T_C) can range from 1 mm to 12 mm, and
an entry lens positioned anterior to the contact lens, the entry lens being aspheric, the surfaces of the entry lens being defined by the formula:

$$Z = \frac{CK^2}{t + \sqrt{1 - C^2EK^2}},$$

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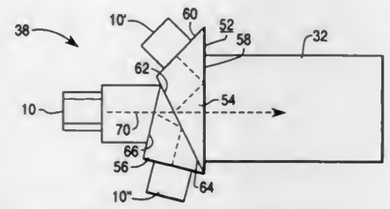
wherein
C=(1/R),
E=b+1, and
$K^2=X^2+Y^2$,
wherein for the anterior surface of the lens,
R_{2EL} ranges from 20 mm to 90 mm and
b_{2EL} ranges from 7.0 to −4.0, and
wherein for the posterior surface of said lens,
R_{1EL} ranges from 10 mm to 50 mm, and
b_{1EL} ranges from 0 to −4.0,
said entry lens having a thickness (T_{EL}) ranging from 6 mm to 14 mm, wherein said entry lens has an index of refraction ranging from 1.47 to 1.85, the optical axes of the contact lens and the aspheric lens being substantially coincident, the entry lens collecting the light rays emerging from the contact lens and producing an aerial image anterior to the entry lens, the contact lens and the entry lens element being positioned relative to each other and having their curvatures chosen such that light rays originating on the fundus of the eye are magnified in the aerial image produced by the entry lens, at a magnification greater than 1.0×.

5,309,188

COUPLING PRISM ASSEMBLY AND PROJECTION SYSTEM USING THE SAME

Herschel C. Burstyn, Plainsboro, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed May 21, 1993, Ser. No. 65,149
Int. Cl.[5] G03B *21/28*; G02B *27/10*
U.S. Cl. 353—33 **9 Claims**



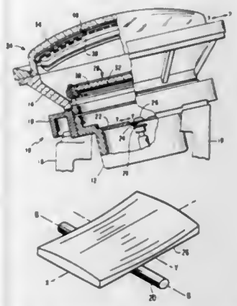
4. A light projection system comprising:
means for generating a beam of light and directing the beam along a path;
means for splitting the light beam into red, blue and green components;
a separate light valve for modulating each color component, each of said light valves having a surface which is adapted to reflect light directed thereon;
a projection lens adapted to receive from each of the light valves all of the modulated color components of the beams;
a separate coupling prism assembly adjacent each of the light valves, each of the coupling prism assemblies being adapted to direct its respective color component onto the light valve and direct the reflected modulated beam from the light valve to the projection lens; and
a color combining prism assembly between the projections lens and each of the coupling prism assemblies for receiving each of the modulated color components of the beam and combining the modulated color components into a single beam which is directed into the projection lens.

5,309,189

METHOD FOR SCREENING LINE SCREEN SLIT MASK COLOR PICTURE TUBES

Bruce G. Marks, Lancaster; Andrew Good, Reamstown; Frank R. Ragland, Jr., Lancaster, and Richard C. Bauder, Millersville, all of Pa., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 14, 1992, Ser. No. 929,223
Int. Cl.[5] G03B *41/00*; G03C *5/00*
U.S. Cl. 354—1 **8 Claims**



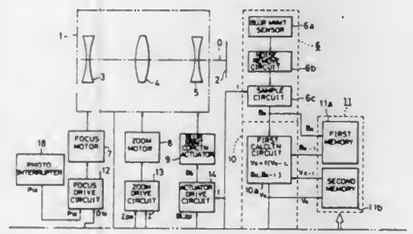
1. In a method of screening a line screen slit mask color picture tube including coating a rectangular faceplate panel of said tube with a photosensitive material, inserting a slit shadow mask into said panel and exposing said photosensitive material by passing light from a line light source through a misregister correction lens and through the slits of said mask, the improvement comprising
positioning a skew correction lens between said line light source and said misregister correction lens during exposure of said photosensitive material, said skew correction lens being rectangular in shape and having a contoured convex surface and a flat surface, said convex surface having a cylindrical shape with deviations from the cylindrical shape being in the four corners of said rectangular skew correction lens.

5,309,190

CAMERA HAVING BLURRING MOVEMENT CORRECTION MECHANISM

Junichi Shinohara, Yokohama; Yoshimi Ohno, Kawasaki; Yoshio Serikawa, Ageo, and Tohru Nishida, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 22, 1992, Ser. No. 887,136
Claims priority, application Japan, May 31, 1991, 3-155245
Int. Cl.[5] G03B *1/18, 17/00*
U.S. Cl. 354—195.1 **5 Claims**



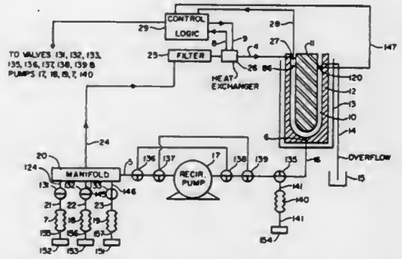
1. A camera having blurring movement correction mechanism, comprising:
a blurring movement correction optical element disposed in an optical path of a photo-taking optical system so as to correct shift of an image formed on a film surface caused by movement of hands holding a camera body;
a blurring movement detection unit for obtaining a blurring movement detection data by converting a blurring movement of said camera body to an electric signal;
a calculation means for calculating blurring movement correction data for correcting said shift of the image formed on the film surface caused by said movement of hands holding the camera body;
a blurring movement correction actuator for moving said optical element in a necessary direction in order to correct said shift of the image on the film surface on the basis of said blurring movement correction data obtained from said calculation means; and
a noise removing means for removing transition output components included in said blurring movement detection data obtained from said detection unit, said transition output components comprising noise signals of high frequency generated at the time when said blurring movement correction actuator is driven.

5,309,191

RECIRCULATION, REPLENISHMENT, REFRESH, RECHARGE AND BACKFLUSH FOR A PHOTOGRAPHIC PROCESSING APPARATUS

Roger E. Bartell, Rochester; David L. Patton, Webster; John H. Rosenburgh, Hilton, and Ralph L. Piccinino, Jr., Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,806
Int. Cl.[5] G03D *13/00, 3/02*
U.S. Cl. 354—299 **13 Claims**



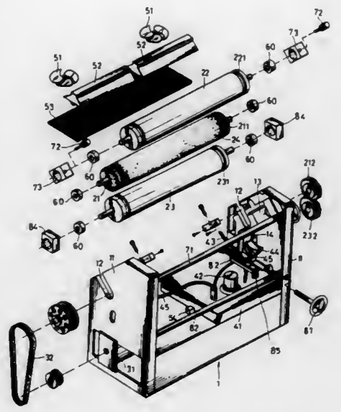
1. An apparatus for processing photosensitive materials, which comprises:
a tank through which a processing solution is pumped;
a rack having integral means to facilitate its insertion and removal from said tank, said rack and said tank are relatively dimensioned so that a small volume for holding processing solution and photosensitve material is formed between said rack and said tank;
means for circulating the processing solution through the small volume;
means for filling the small volume and said circulating means, from the lowest elevation point of the small volume and the lowest elevation point of the circulation means, with processing solution to prevent air from being entrapped in the processing apparatus;
means for emptying the small volume and said circulating means, from the lowest elevation point of the small volume and the lowest elevation point of said circulating means, of processing solution to prevent processing solution and particulate matter from being entrapped in the processing apparatus and
means for controlling said emptying means.

5,309,192

PHOTO COATING MACHINE

Chia-Chang Lu, No. 68, Lane 127, Kuang Fu Rd., Sec. 2, 7 Ling, Nan Cheng, Ts'3 un, Tien Wei Hsiang Chamghua Hsien, Taiwan

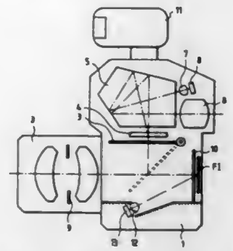
Filed Aug. 24, 1992, Ser. No. 933,714
Int. Cl.[5] G03D *5/00*
U.S. Cl. 354—317 **6 Claims**



1. An improved photo coating machine adapted for provision of a protective film on the surface of a photo comprising:
a mounting base having a pair of side boards disposed on the right and left side thereof respectively;
a roller assembly disposed between said side boards of said mounting base being made up of a main roller, a chemicals distribution roller and a forwarding roller wherein said main roller is superficially covered with a layer of rubber and is provided with a bearing means at each end thereof and a gear means is disposed at the right end thereof; and said distribution roller is disposed on top of said main roller with a bearing means secured to each end thereof which is engaged with a first sliding block respectively; said forwarding roller is located under said main roller with a bearing means secured to each end thereof which is then secured to a second sliding block and a gear means secured to the right end thereof is engaged with said gear means at the right end of said main roller; each end of said main roller, distribution roller and said forwarding roller is provided with a peripheral groove respectively;
a driving mechanism including a motor and a toothed drive belt wherein said motor is disposed at the bottom of said mounting base and is associated with said main roller by way of said toothed drive belt;
a coating device disposed under said roller assembly including a chemicals reservoir, a pump means, a collection means and a recollection pipe;
a drying device disposed at the back of said roller assembly including a fan, a quartz electric heating tube; a net plate and an induction switch; said heating tube being disposed under said fan and said net plate being disposed under said heating tube and said induction switch being disposed in front of said roller assembly;
a micro adjustment mechanism disposed at the ends of said distribution roller including an upper worm, worm gears and said first sliding blocks;
an adjustment mechanism disposed in association with said forwarding roller including a lower worm, a turning wheel, a pair of lever arms, and second sliding blocks;

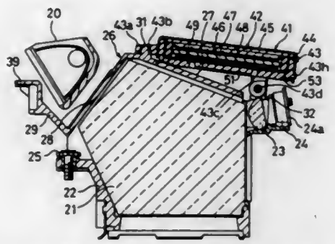
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5,309,193
CAMERA WITH AUTOMATIC LIGHT ADJUSTING DEVICE
Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Apr. 29, 1992, Ser. No. 875,652
Claims priority, application Japan, May 7, 1991, 3-131780
Int. Cl.[5] G03B *15/05, 7/08*
U.S. Cl. 354—415 **6 Claims**



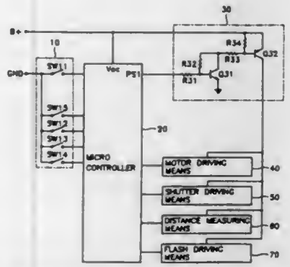
1. A camera provided with an automatic light adjusting device for adjusting a flash apparatus which performs a preliminary flash before a main flash, comprising:
a flash apparatus for performing a preliminary flash before a main flash;
light metering means for at least metering a light which is emitted from said flash apparatus and reflected by a photographic field;
light metered value correcting means for correcting a light metered value upon said preliminary flash by eliminating a component of stationary light excluding the light emitted from said flash apparatus and reflected by said photographic field, from the light metered value upon said preliminary flash which is metered by said light metering means; and
light adjusting means for adjusting the main flash of said flash apparatus based on said light metered value corrected by said light metered value correcting means.

5,309,194
FLAT-TYPE DISPLAY PANEL FIXING DEVICE
Tomoaki Itabashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 15, 1992, Ser. No. 944,979
Claims priority, application Japan, Sep. 18, 1991, 3-097076[U]
Int. Cl.[5] G03B *17/18*
U.S. Cl. 354—471 **6 Claims**



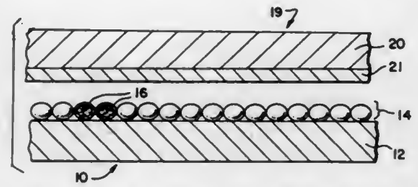
1. A device for fixing a flat-type display panel to a base frame, said device comprising:
a holding frame to which said flat-type display panel is fixed, said holding frame being rotatably supported by said base frame at a predetermined portion of said holding frame;
means for connecting said holding frame to said base frame at another portion of said holding frame; and
said connecting means including an engaging pin formed on said base frame, and an engaging hole formed in said holding frame and engaging said engaging pin;
wherein said engaging pin and said engaging hole are formed in such a manner that, when said holding frame is rotated so that said engaging hole engages said engaging pin, said engaging pin and said engaging hole are offset from each other, whereby said engaging pin is tightly fitted in said engaging hole.

5,309,195
AUTO POWER CUT-OFF DEVICE FOR CAMERA AND DRIVING METHOD THEREFOR
Bonjeong Goo, and Byeongjun Moon, both of Kyeongsangnam, Rep. of Korea, assignors to Samsung Aerospace Industries, Inc., Kyeongsangnam, Rep. of Korea
Filed Dec. 31, 1992, Ser. No. 999,614
Claims priority, applicatioo Rep. of Korea, Oct. 16, 1992, 92-19074
Int. Cl.[5] G03B *7/26*
U.S. Cl. 354—484 **2 Claims**



1. A driving method for an auto power cut-off device for an automatic camera comprising the steps of:
initializing all the variables and auxiliary circuits of the camera after power voltage is applied to start operation;
reading whether a lens cap is closed in case to turning on of a power control switch;
reading whether the lens cap is closed by rotating a lens group driving motor in a reverse direction in case the lens cap was not closed;
cutting off the power supplied to auxiliary circuits after suspending the operation of the lens group driving motor in case that the lens cap is closed by rotating the lens group driving motor in the reverse direction;
reading whether the lens cap can be opened by rotating the lens group driving motor in a forward direction in case that the lens cap is closed after the power control means is turned ON;
reading whether an operation switch is turned ON after suspending the operation of the lens group driving motor in case that the lens cap is opened by rotating the lens group driving motor in the forward direction;
operation the camera in case that the operation switch is turn ON;
saving the present state of the camera after a predetermined time passes in case that the operation switch has not been turned ON;
suspending the operation of the lens group driving motor in case that the lens cap is closed after reading whether the lens cap is closed by rotating the lens group driving motor in the reverse direction;
cutting off the power supplied to the auxiliary circuits after the operation of the lens group driving motor is suspended; and
terminating all the operations.

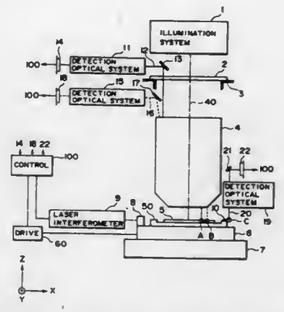
5,309,196
TRANSFER IMAGING SYSTEM
Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Continuation of Ser. No. 727,695, Apr. 26, 1985, Pat. No. 4,822,714, which is a continuation of Ser. No. 520,023, Aug. 3, 1983, Pat. No. 4,551,407, which is a continuation of Ser. No. 320,356, Nov. 12, 1981, Pat. No. 4,399,209. This application Mar. 15, 1989, Ser. No. 323,699
Int. Cl.[5] G03B *27/32, 27/52*
U.S. Cl. 355—27 **10 Claims**



1. A copying apparatus operable with an original in the form of a sheet having an image-bearing surface on which images to be reproduced are supported, comprising:
an image-illuminating device operable to produce a light for illuminating said image-bearing surface of the original;
a photosensitive paper of a transfer type disclosed in facing relation with said image-bearing surface of the original, said photosensitive paper being sensitive to rays of a wavelength included in the light reflected by said image-bearing surface;
an optical system for converging and thereby focusing said reflected light on a surface of said photosensitive paper, to expose local areas of the photosensitive paper, for forming latent images corresponding to said images on said original;
a recording paper having a developer layer; and
a developing device for superposing the exposed photosensitive paper and said recording paper on each other, and applying a pressure to said photosensitive paper and said recording paper toward each other, thereby developing said latent images into visible images on said recording paper.

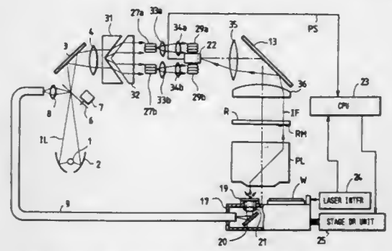
5,309,197
PROJECTION EXPOSURE APPARATUS
Tetsuya Mori, Yokohama; Akiyoshi Suzuki, Tokyo, and Hideki Ina, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1992, Ser. No. 868,705
Claims priority, application Japan, Apr. 16, 1991, 084023
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **11 Claims**

1. A projection exposure apparatus, comprising:
holding means for holding a substrate having a photosensitive layer, said holding means having a portion on which a reference pattern is formed or to be formed;
a projection lens system for projecting an image of a pattern of an original on the substrate, by using a sensitizing beam;
driving means for moving said holding means along an image plane of said projection lens system;
measuring means for measuring the amount of movement of said holding means along the image plane;
a first detection optical system for detecting a mark of the substrate and the reference pattern, through said projection lens system and with a first non-sensitizing beam;
a second detection optical system for detecting the mark of the substrate and the reference pattern, without said projection lens system and with a second non-sensitizing beam having a bandwidth broader than that of the first non-sensitizing beam; and
control means for controlling the position of said holding means by using said measuring means and said driving means to allow detection of the mark and the reference pattern through said first and second detection optical systems, wherein said control means produces first distance information representing the distance between optical axes of said first and second detection optical systems by using said first and second detection optical systems and the reference pattern, said control means produces



second distance information representing the distance between the optical axes of said first and second detection optical systems by using said first and second detection optical systems and the mark, and said control means determines an error in the detection of the position of the substrate through said first detection optical system, on the basis of a difference between the first and second distance information.

5,309,198
LIGHT EXPOSURE SYSTEM
Masahiro Nakagawa, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Feb. 17, 1993, Ser. No. 18,545
Claims priority, application Japan, Feb. 25, 1992, 4-73488; Jun. 2, 1992, 4-166962
Int. Cl.[5] G03B *27/54*
U.S. Cl. 355—67 **20 Claims**



1. A light exposure system for exposure of a pattern on a first object to form an image thereof on a second object, comprising:
an illumination optical system for illuminating said first object;
a projection optical system for projecting the pattern on said first object onto said second object;
stage means for two-dimensionally moving said second object while holding said second object;
a reference member mounted on said stage means;
detecting means for detecting light from said reference member; and

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measuring means for carrying out a predetermined measurement, based on an output of said detecting means;

wherein said illumination optical system comprises:

light source means for supplying exposure light;

off-center multiple beam producing means for producing from the exposure light from said light source means a plurality of light sources eccentric to an optical axis of said illumination optical system; and

a light condensing optical system for condensing a plurality of beams from said off-center multiple beam producing means to illuminate said first object in an oblique direction; and

wherein said detecting means being disposed at a position where said plurality of the light sources are formed by said off-center multiple beam producing means and on said optical axis of the illumination optical system, and receiving the light from said reference member through said projection optical system and said light condensing optical system.

5,309,199

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC COPIES FROM PHOTOGRAPHIC COPY MASTERS ON A PHOTOGRAPHIC COPY APPARATUS

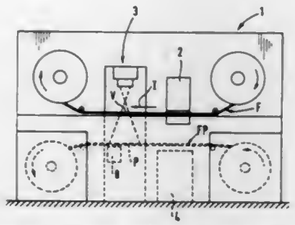
Beat Frick, Buchs, Switzerland, assignor to Gretag Imaging, AG, Regensdorf, Switzerland

Filed Feb. 5, 1993, Ser. No. 14,255

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1992, 92810088

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—77 **12 Claims**



1. Process for the production of photographic copies from photographic copy masters in a photographic copy apparatus, comprising the steps of:

analyzing a photographic master material on which photographic copy masters are exposed in a measuring station;

determining measuring data necessary for exposure of each master;

assigning a number unambiguously to each master, said number being determined by detecting a bar code provided in periodic intervals in a border area of the master material;

passing the numbers assigned to the copy masters together with the associated measured data to a computer and control unit;

exposing each copy master, using the measured data associated with the prevailing copy master number present in the computer and control station, onto photographic copy material to produce photographic copies in an exposure station located after the measuring station in the direction of transport of the master material;

applying the number assigned to each copy master to the photographic copy, said master material having an expanded DX code; and

detecting the coded numbers using a bar code detector provided in the measuring station reading the expanded DX code.

5,309,200

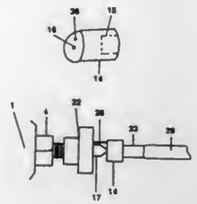
PHOTORECEPTOR DRUM, CHARGE ROLLER AND DEVELOPER BRUSH SPINNER DEVICE

Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322

Filed Sep. 11, 1992, Ser. No. 944,189

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—200 **18 Claims**



1. A spinning means for modifying a variable speed lathe so it may be used to turn the photoreceptor drums, charge rollers and developer brushes used in dry toner copying, printing and facsimile machines, said spinning means comprising an adapting means for fitting on the ends of said drum, roller or brush, a holding means for acting against said adapting means to support said drum, roller or brush on the lathe, and a drive means for turning said drum, roller or brush when the lathe is in operation, said holding means comprising two pieces of tail stock, each piece having a first end for attaching to said lathe at opposite sides of said lathe and a second end for applying pressure through said adapting means against said drum, roller or brush to hold said drum, roller or brush in position on said lathe between said two pieces of tail stock, said adapting means including a receiving means for receiving said second end of said tail stock and a cylindrical bore in a surface opposite said receiving means, and said drum, roller or brush includes a cylindrical end extension with a diameter much smaller than said bore, said adapting means further including a short length of hose with an outside diameter slightly smaller than said bore and an inside diameter slightly larger than said end extension of said drum, roller or brush, whereby said hose is snugly received in said bore and said end extension of said drum, roller or brush may be snugly received in said hose, attaching said adapting means to said drum, roller or brush.

5,309,201

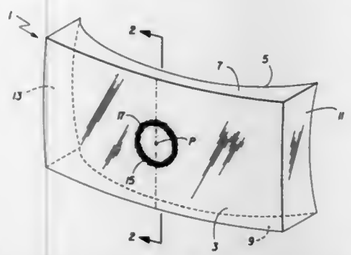
VIEWFINDER LENS WITH MOLDED INTEGRAL AIMING CIRCLE

Ralph M. Lyon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 8, 1992, Ser. No. 941,824

Int. Cl.[5] G03B *13/02*

U.S. Cl. 354—219 **4 Claims**



1. A viewfinder lens comprising a lens element with a lens

surface that is molded integrally textured, characterized in that:

a small portion of said lens surface is molded integrally textured differently than the remainder of the lens surface is molded integrally textured, along at least one line positioned with respect to a centerpoint of the lens surface to provide a molded integral aiming device for said lens element which is the same material as the remainder of the lens element.

5,309,202

IMAGE FORMING APPARATUS

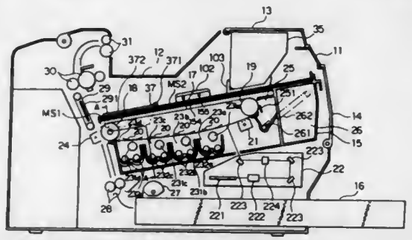
Satoshi Haneda; Hisao Satoh; Tadayoshi Ikeda; Shizuo Morita, and Masakazu Fukuchi, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 23, 1991, Ser. No. 734,526

Claims priority, application Japan, Jul. 26, 1990, 2-200801; Jul. 26, 1990, 2-200802

Int. Cl.[5] G03G *5/00*

U.S. Cl. 355—211 **6 Claims**



1. An image forming apparatus comprising:

(a) a process cartridge having an opening in which an image carrying member is provided, said process cartridge being capable of being moved to and from a working member with respect to image forming;

(b) said working member being provided in a main body of said apparatus for exerting an action on said image carrying member;

(c) an opening and closing member whereby a sheet transport path is accessible when open;

(d) a shielding member provided on the main body of said apparatus; and

(e) said opening being provided to face said working member, said opening being covered by said shielding member when said process cartridge is moved from said apparatus in accordance with an opening movement of said opening and closing member.

5,309,203

BELT-TYPE IMAGE FORMING APPARATUS HAVING VIBRATION RESISTANCE

Norio Hokari, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,353

Claims priority, application Japan, Feb. 19, 1992, 4-69665

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—212 **11 Claims**

1. A belt device in an image forming apparatus comprising:

an endless belt member;

driving roll means, provided at one end of running direction of said belt which forms an action surface of said belt device, for driving said endless belt;

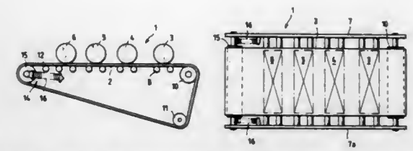
driving means for driving said driving roll means;

tension giving means, provided at another end of running direction of said belt, for giving a tension to said endless belt; and

supporting means for supporting said driving roll means and said tension giving means, wherein a spring constant of the action surface of the endless belt member is k_1 and a spring constant of said tension giving means is k, which are defined as:

$$k_1 = EA/L$$

$$k < (XEA \times 10^{-3})/(2YL)$$



where X (μm) is allowable displacement quantity of said belt member corresponding to an image forming unit, E is Young's modulus of said belt member, A is sectional area (cm2), of said belt member, Y is displacement quantity (mm) of said tension roll means and L (mm) is original length of said belt.

5,309,204

IMAGE FORMING APPARATUS WITH OPTICAL SYSTEM CONTROL MEANS

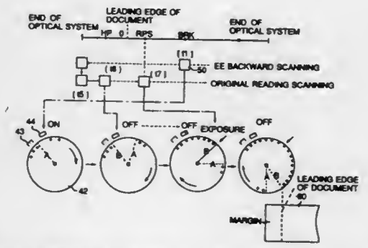
Kazuo Sato; Hideki Endo, and Satoshi Watanabe, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 823,662

Claims priority, application Japan, Feb. 24, 1991, 3-006969

Int. Cl.[5] G03G *15/28*

U.S. Cl. 355—233 **6 Claims**



1. An apparatus for forming an image of a document on a photoreceptor, comprising:

charging means for charging said photoreceptor with an electric charge so as to form an image region;

eliminating means for eliminating a charge on said photoreceptor to form a non-image region;

scanning means for moving from a stop position along a scanning path in a forward direction, to scan a document with an exposure light so that a latent image, corresponding to an image of said document, is formed on said image region of said photoreceptor, and for further moving in a backward direction along said scanning path and for stopping at said stop position;

said scanning means moving in both said forward and backward directions along said scanning path for each latent image formed when a plurality of latent images are being formed successively;

signal means for generating a position signal corresponding to a predetermined position of said scanning means on said scanning path;

timer means for starting a counting of a time in response to said position signal, said timer means producing both a first timing signal after a first counting of a first predetermined time period and a second timing signal after a sec-

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ond counting of a second predetermined time period so that said first and second timing signals are produced by said timer means after said scanning means stops at said stop position; and

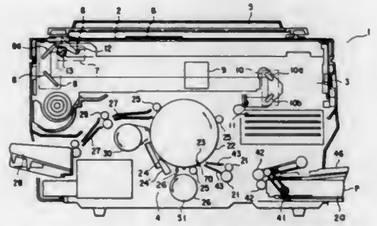
control means for controlling said scanning means to start a next forward movement for a next latent image to be formed on said photoreceptor in response to said first timing signal and for controlling said eliminating means to stop eliminating a charge on said photoreceptor so as to provide an image region on said photoreceptor for a formation of said next latent image in response to said second timing signal so that said eliminating means provides a non-image region on said photoreceptor at a portion on said photoreceptor in a vicinity of an edge portion of said document.

5,309,205

IMAGE FORMING APPARATUS HAVING MAGNIFICATION ERROR COMPENSATION

Yutaka Hayano, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 16, 1992, Ser. No. 945,411
Claims priority, application Japan, Sep. 17, 1991, 3-235920
Int. Cl.[5] G03G *15/04*
U.S. Cl. 355—243 **15 Claims**



1. An image forming apparatus for forming an image on an image forming medium corresponding to an original, comprising:

means for photoelectrically receiving incident light provided via said original;

means for generating image data corresponding to said incident light;

optical means, positioned between said original and said receiving means, for guiding light sent from said original to said receiving means, said optical means guiding the light with a predetermined magnification corresponding to the position of said optical means;

means for compensating for said image data so as to change the modification without changing the position of said optical means; and

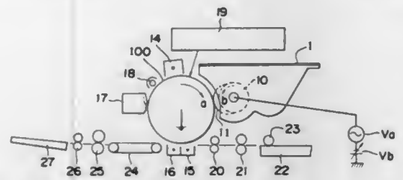
means for forming an image in accordance with image data compensated by said compensating means on said image forming medium.

5,309,206

DEVELOPING DEVICE BROUGHT INTO CONTACT WITH AN ELECTROSTATIC LATENT IMAGE SUPPORT MEMBER

Satoshi Deishi, Amagasaki; Hiroshi Mizuno, Ikoma; Toshimitsu Fujiwara, Kobe; Toshiya Natsuhara, Nishinomiya; Masami Matsuura; Hideo Yamaki, both of Isehara, and Hideaki Hirahara, Ayase, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1992, Ser. No. 887,134
Claims priority, application Japan, May 24, 1991, 3-120185; May 29, 1991, 3-124375; May 29, 1991, 3-124376; May 29, 1991, 3-124377; May 29, 1991, 3-124378; Oct. 18, 1991, 3-270923
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **18 Claims**



1. A developing device comprising:

a drive roller which is driven so as to be rotated;

a developing sleeve which is formed by a thin film and has a peripheral length slightly larger than that of said drive roller so as to be loosely mounted around said drive roller;

a press means which presses said developing sleeve against said drive roller at one side of said drive roller so as to form a sag portion of said developing sleeve such that said sag portion is brought into contact with an electrostatic latent image support member; and

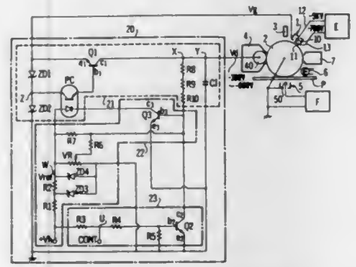
an electric field forming means for forming an alternating electric field such that an attractive force capable of bringing said developing sleeve and said electrostatic latent image support member into contact with each other is applied between said developing sleeve and said electrostatic latent image support member.

5,309,207

APPARATUS FOR FORMING IMAGE

Takashi Omori, Hirakata, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 15, 1992, Ser. No. 898,283
Claims priority, application Japan, Jun. 18, 1991, 3-145897
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **15 Claims**



1. An image forming apparatus, comprising:

charging means, including a grid electrode, for forming an electrostatic latent image on an image holding surface charged at a constant electrical potential,

developing means for supplying toner to the image holding surface,

voltage division and adjustment means for dividing a grid bias voltage applied to the grid electrode, for adjusting the divided grid bias voltage to produce an output voltage corresponding to predetermined developing bias voltage, and for applying the output voltage to the developing means;

modification and drive means for stabilizing the output voltage and for driving the voltage division and adjustment means; and

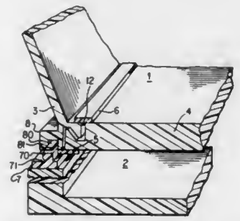
operation means for controlling times at which the modification and drive means drives voltages division and adjustment means.

5,309,208

METHOD AND DEVICE FOR ELIMINATING TONER LEAKAGE FROM A TONER CARTRIDGE

Lloyd F. Bean, Rochester; Victor Berko-Boateng, Penfield, and Thomas R. Race, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1992, Ser. No. 983,929
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **44 Claims**



1. A toner cartridge, for use with a copier having a toner hopper with a first interlocking sealing means, comprising:

a) a plurality of side walls forming a cavity adapted to hold toner;

b) a second interlocking sealing means, said second interlocking sealing means,

i) being formed on a bottom portion of each of said plurality of side walls, and

ii) being specially adapted to interlock with said first interlocking sealing means of said toner hopper;

c) a movable panel, said movable panel being disposed at the bottom portion of the toner cartridge;

d) a hinge, said hinge adapted to pivotally attach said movable panel to a bottom portion of one of said plurality of side walls;

e) means for sealing said movable panel; and

f) a long, thin, flexible member, said long, thin, flexible member having a first end attached to said movable panel and a second end exiting through an opening in said toner cartridge.

5,309,209

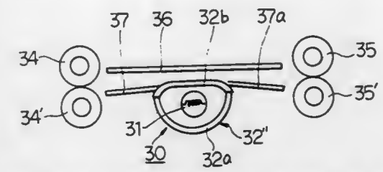
HEAT-FIXING APPARATUS FOR COLOR VIDEO PRINTER INCLUDING A STATIONARY HEAT TUBE

Byuog M. Huh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 20, 1992, Ser. No. 855,604
Claims priority, application Rep. of Korea, Mar. 21, 1991, 4458/1991; May 4, 1991, 7265/1991; May 7, 1991, 7358/1991; Dec. 26, 1991, 24076/1991
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **24 Claims**

1. A heat-fixing apparatus for performing a heat-fixing process in a color video printer after a receiver paper, having an upper surface and an under surface, has undergone a developing process for developing an image on the receiver paper, said apparatus comprising:

heating means for heating the under surface of the receiver paper, thereby heat-fixing the image which has been developed on said receiver paper, wherein said heating means is a combination of a planar heat cover on a hemispherical heat cover, said heating means including a stationary heat tube enclosing a heat source therein; and



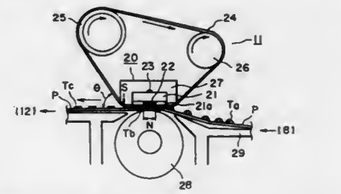
receiver paper feeding and discharging means for feeding the receiver paper to the heating means after said receiver paper has been processed by the developing process, under the condition that said under surface of the receiver paper is in contact with said heating means, and for discharging the receiver paper which has been processed by the heat-fixing process.

5,309,210

IMAGE FIXING APPARATUS USING FIXING FILM CONTAINING FLUORINATED RESIN

Akira Yamamoto, Tokyo; Shigeo Kimura, Yokohama; Kensaku Kusaka, Kawasaki; Hidekazu Muruta, Hachioji, and Hiroyuki Adachi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 542,067, Jun. 22, 1990, abandoned. This application May 18, 1992, Ser. No. 884,997
Claims priority, application Japan, Jun. 22, 1989, 1-161391
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **17 Claims**



9. An image fixing film, comprising:

a resin base layer comprising at least one of polyimide, polyether ether ketone, polyether sulfon and polyether imide resin material; and

a surface fluorine resin layer on said base layer,

wherein fluorine resin particles are dispersed in said resin base layer.

5,309,211

PROCESS UNIT HAVING TWO CHAMBERS FOR STORING WASTE DEVELOPER

Satoru Yoshioka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 755,830, Sep. 6, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,588
Claims priority, application Japan, Sep. 12, 1990, 2-241511
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—298 **18 Claims**

1. A process unit mounted in a housing of an electrophotography imaging apparatus in which an image is formed in accor-

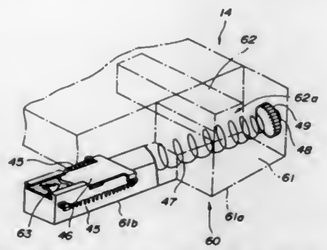
VOL 1162 ISS 1 MY 3 1994 UMI

dance with an electrophotography process carried out on an image retaining member, said process unit comprising:

a developing device for supplying fresh developer to a latent image formed on the image retaining member to form on the image retaining member a visible image corresponding to said latent image;

a first chamber provided adjacent to said developing device to store waste developer apart from said fresh developer;

a second chamber provided in a space which is formed adjacent to said developing device and connected via an opening to said first chamber to store waste developer apart from said fresh developer; and



a feeding mechanism, coupling a cleaning device provided in said electrophotography imaging apparatus to said first chamber, for feeding waste developer from said cleaning device to said first chamber, said waste developer being removed from the image retaining member by said cleaning device after the visible image is transferred from the image retaining member to a recording sheet,

said feeding mechanism further feeding into said second chamber waste developer fed to said first chamber via the opening to said second chamber so that the waste developer is stored in said first and second chambers apart from said fresh developer.

5,309,212

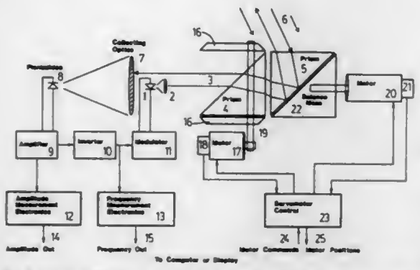
SCANNING RANGEFINDER WITH RANGE TO FREQUENCY CONVERSION

R. Robert Clark, Palo Alto, Calif., assignor to Yaskawa Electric Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,493

Int. Cl.[5] G01C *3/08*; G01B *11/26*; G02B *26/08*

U.S. Cl. 356—5 **24 Claims**



1. A system for measuring a distance to a remote object comprising:

a source for transmitting an optical measurement signal beam to the object;

a detector for generating an output signal in response to detection of a reflection of said signal beam from the object, said detector output signal being related to an amplitude of said detected reflection;

an element responsive to the detector output signal for causing said source to continually transmit the measurement signal beam at a first amplitude while said reflection is detected as being at a second amplitude, and for causing said source to continually transmit the measurement signal beam at said second amplitude while said reflection is detected as being at said first amplitude; and

measurement means for measuring a frequency of modulation of said signal beam, said frequency being indicative of a distance from said source to the object.

5,309,213

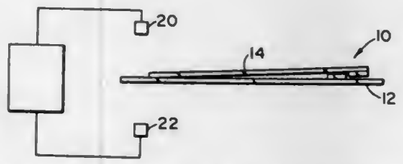
OPTICAL DETERMINATION OF AMOUNT OF SOOT IN OIL SAMPLE

John B. Desjardins, Watertown; William W. Seifert, Wellesley Hills, and Vernon C. Westcott, Lincoln, all of Mass., assignors to Analysts, Inc., Torrance, Calif.

Filed Mar. 5, 1992, Ser. No. 846,385

Int. Cl.[5] G01N *21/03, 21/59*

U.S. Cl. 356—70 **8 Claims**



1. A method for analyzing an oil sample for soot suspending therein which comprises:

providing an optically transparent tapered cell;

placing a sample of said oil within said cell;

providing a light source on one side of said cell;

providing a light detector on the opposite side of said cell;

passing visible light along a path from said source, through said cell and oil, and onto said detector;

moving said cell and light path relative to one another whereby the length of the light path through said sample contained within the cell is progressively altered from a first to a second value as a result of the different thicknesses of the sample;

generating a signal proportional to the intensity of the light impinging on said detector; and

utilizing the measured values of said impinging light measured through said first and second light paths to determine the attenuation per length of said path as a representation of the soot concentration in the sample.

5,309,214

METHOD FOR MEASURING DISTRIBUTED DISPERSION OF GRADIENT-INDEX OPTICAL ELEMENTS AND OPTICAL SYSTEM TO BE USED FOR CARRYING OUT THE METHOD

Takeshi Hashimoto, Fussa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,612

Claims priority, application Japan, Sep. 17, 1991, 3-236289; May 29, 1992, 4-138670

Int. Cl.[5] G01N *21/43*

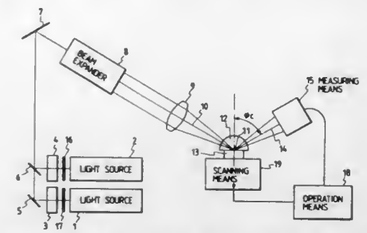
U.S. Cl. 356—128 **5 Claims**

1. A method for measuring distributed dispersion of optical elements comprising:

bringing a medium member having a refractive index higher than that of a sample into contact with one surface of the sample;

allowing a plurality of light beams having wavelengths different from one another as incident light beams travelling along an optical axis to be focused on a measuring point on said surface through said medium member;

detecting bright-dark boundaries in reflected light beams having said wavelengths produced by total reflections on said measuring point as critical angles of total reflection;



determining refractive indices of said sample at said wavelengths from critical angles of total reflection at said wavelengths on said measuring point;

calculating dispersion of said sample at said measuring point from the refractive indices at said wavelengths; and

determining distributed dispersion of said sample by repeating each of said steps while shifting said sample.

5,309,215

PROCEDURE FOR THE DETERMINATION OF PARTICLE SIZE DISTRIBUTION IN PARTICLE MIXTURES

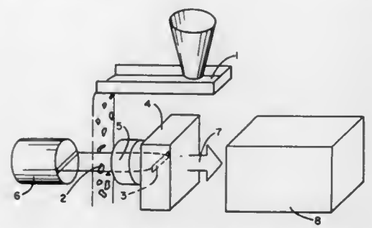
Matthias Schumann, Brennerstrasse 1,, 0-5300 Weimar, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,013

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4119240

Int. Cl.[5] G01N *15/02, 15/14*

U.S. Cl. 356—335 **3 Claims**



1. Procedure for determination of particle size distribution of particle mixtures by means of line-by-line opto-electronic scanning of a separated particle stream, whereby chord lengths of the particles are measured and assigned to certain lengths-classes in a classificator, characterized in that

a) the particle stream moves in a transparent liquid or gaseous medium, by means of gravity or added forces, vertically to a parallel light ray, along the opto-electronic measuring distance,

b) the exposure time of a scan is smaller than the quotient $d_{min}/(2 \cdot v_{min})$ whereby d_{min} constitutes the diameter and v_{min} constitutes the velocity of the smallest to be measured particle,

c) the chronological interval between two scans is greater than the quotient d_{min}/v_{min}

d) for each particle size to be analyzed, the probabilities for occurrence of a chord in a given chord class are calculable or known and thus, beginning with the largest particle class, retrograde to the smallest, the number of particles are ascertained through the quotient from measured chord number to occurrence probability, whereby after each ascertained number of particles of a given size, the chord length distribution must be corrected in accordance with the chords belonging to these particles.

5,309,216

METHOD OF AND AN APPARATUS FOR DETERMINING PARTICLE SIZE DISTRIBUTIONS BY MEASURING THE SPECTRAL LIGHT EXTINCTION DURING SEDIMENTATION

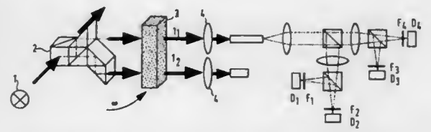
Reiner Weichert, An den Eschenbacher Teichen 21, D-3392 Clausthal-Zellerfeld, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,014

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118768

Int. Cl.[5] G01N *15/02*

U.S. Cl. 356—335 **11 Claims**



1. A particle size determination method comprising the steps of:

placing a quantity of a transparent liquid containing suspended particles in a device for sedimenting said particles by application of a centrifugal field;

subjecting said transparent liquid and said particles to said centrifugal field and simultaneously exposing said transparent liquid to light of different wave lengths λ_i (i = 1, 2, . . .);

measuring the spectral light extinction by measuring the respective light transmissions (T) through the transparent liquid in response to the settling time (t) and calculating the particle size distribution $q_r(x)$ from the light transmissions measured;

storing the respective light transmissions (T) measurements in a memory; and

determining $q_3(x)$ with the following integral equation for the light wave lengths λ_i (i = 1, 2, . . .) used and the stored light transmissions values T

$$\ln \frac{1}{(T(\lambda,t))} = c \int_0^{\xi(t)} \frac{K(\pi x/\lambda)}{x} \exp(-2Fx^2\Omega(t))\, q_3(x)\, dx$$

with

$$F = (Ps - Pf)/18\eta,$$

$$\Omega(t) = \int_0^t (\omega(\tau))^2\, d\tau,\ \xi(t) = \sqrt{\ln \frac{R}{(\tau)} \quad \frac{1}{F\Omega(t)}}$$

whereupon

$$\frac{1}{\Phi} \quad \frac{\partial \Phi}{\partial \lambda}$$

from $\Phi(\lambda_i x)$ with i = 1, 2, . . . is determined from

$$\Phi(\lambda_i\ x) = K(\pi x/\lambda_i) q_3(x)$$

$K(\alpha = \pi x/\lambda_i)$ and $q_3(x)$ with i = 1, 2, . . .

by means of

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$$K(\alpha) = K(\alpha_o)\exp\left(-\int_{\alpha_0}^{\alpha} \frac{\lambda}{a\Phi}\,\frac{\partial\Phi}{\partial\lambda}\,d\alpha\right)$$

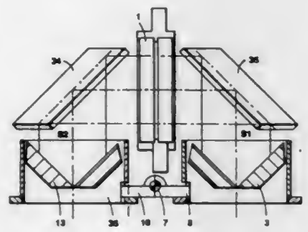
with K(α) from the Fraunhofer approximation, wherein
K(πx/λ) is the extinction function dependent on the material,
Pf is the density of the suspension liquid,
η is the viscosity of the suspension liquid,
Ps is the density of the solids particles,
c is a constant,
ω is the number of revolutions of the centrifuge per unit of time,
r is the inner radius of the cuvette, and
R is the radius at which the transmission measurement is made.

5,309,217

FOURIER SPECTROMETER

Arno Simon, Karlsruhe; Jürgen Gast, Rheinstetten, and Axel Keens, Karlsruhe, all of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik, Fed. Rep. of Germany

Filed Apr. 23, 1992, Ser. No. 872,433
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 41138864
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **17 Claims**



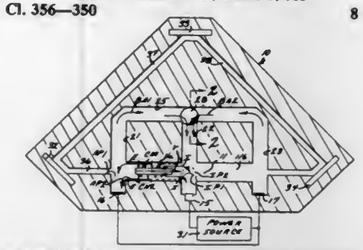
1. A Fourier spectrometer for generating an interference pattern from a measurement beam, the spectrometer comprising:
a beam splitter for dividing the measurement beam into a first partial beam and a second partial beam;
a rotatably-mounted rigid pendulum;
a pair of movable retroreflectors, each of the retroreflectors being mounted on the pendulum;
a pair of fixed deflecting mirrors, each of the deflecting mirrors being physically located with respect to the beam splitter and to the retroreflectors so that the first partial beam travels along a first optical path and is deflected from one of the pair of fixed mirrors along a second optical path onto one of the pair of retroreflectors where the first partial beam is reversed in direction to retrace the first and second optical paths and return to the beam splitter and the second partial beam travels along a third optical path, is deflected from one of the pair of fixed mirrors along a fourth optical path onto one of the pair of retroreflectors where the second partial beam is reversed in direction to retrace the third and fourth optical paths and return to the beam splitter and wherein the first and third optical paths lie in a first plane, the second and fourth optical paths lie in a second plane and the first and the second plane are substantially perpendicular.

5,309,218

GAS RING LASER GYRCSCOPES

Virgil R. Lasl, Dana Point, Calif., assignor to Northrop Corporation, Los Angeles

Filed Dec. 17, 1984, Ser. No. 682,402
Int. Cl.[5] G01B *9/02*; H01S *3/083*
U.S. Cl. 356—350 **8 Claims**



1. In a gas laser assembly characterized by a resonator cavity opening into a gain medium which is conformed to inject a laser beam into said resonator cavity and turning means disposed in said resonator cavity for returning said beam to said gain medium, the improvement comprising:
a bypass tube connected across said gain medium for equalizing pressure differences at the ends thereof.

5,309,219

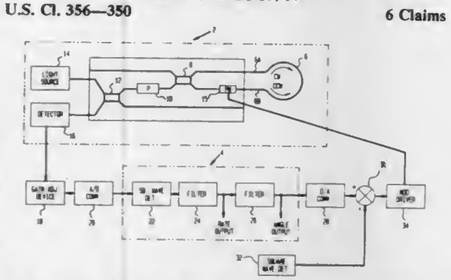
Patent Not Issued For This Number

5,309,220

CLOSED LOOP FIBER OPTIC GYROSCOPE WITH REDUCED SENSITIVITY TO ELECTRONIC DRIFT

Walter P. Hollinger, Mahwah; Kevin M. Killian, Lincoln Park, and Robert A. Kovacs, West Orange, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 24, 1992, Ser. No. 873,133
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **6 Claims**



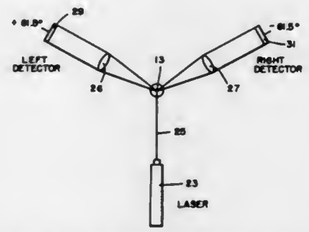
1. A method for reducing the sensitivity of a fiber optic gyro to electronic drift, said gyro being of the type having clockwise and counter clockwise light beams traveling around a fiber optic coil and using square wave phase modulation in a phase nulling feedback loop for developing an error signal corresponding to the phase difference between the clockwise and counterclockwise beams, said method comprising:
applying square wave phase modulation to a modulation drive signal after overflow logic for preventing a phase modulation ramp from exceeding overflow/underflow logic limits;
the phase modulation causing a retrace with each modulation period when the amplitude of the ramp is within selected limits;
providing a gyro square wave output; and
eliminating the effects of mid-frequency voltage variations causing an erroneous amplitude of th gyro square wave output including providing the amplitude of the gyro square wave output as a function of the difference between the output of the first half cycle of the square wave phase modulation and the average of adjacent second half cycles thereof, whereby the sensitivity of the gyro to the electronic drift is reduced.

5,309,221

MEASUREMENT OF FIBER DIAMETERS WITH HIGH PRECISION

Frederic P. Fischer, Williamsville; Patrick S. K. Lee, Poughkeepsie; Raymond C. Logue, Somers, and Thomas W. Parks, Ithaca, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,882
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—355 **46 Claims**



1. A method for measuring the diameter of a transparent filament comprising the steps of:
(a) directing a beam of radiation at said filament so as to produce an interference pattern;
(b) detecting said interference pattern, said detected interference pattern comprising amplitude values at a set of data points; and
(c) determining a value for the average spatial frequency of the detected interference pattern by:
(i) transforming the amplitude values to the spatial frequency domain by performing discrete sequence Fourier transforms at a set of selected spatial frequencies to produce a Fourier coefficient for each of the selected spatial frequencies; and
(ii) determining a value for said spatial frequency from said Fourier coefficients, said value for the average spatial frequency being a measure of the filament's diameter

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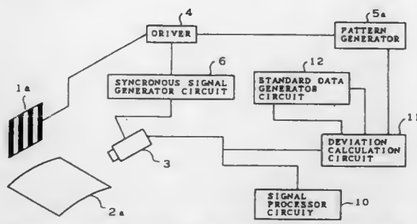
5,309,222

SURFACE UNDULATION INSPECTION APPARATUS

Mitsuhito Kamei, and Mikio Tachibana, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,059
Claims priority, application Japan, Jul. 16, 1991, 3-175140; Apr. 13, 1992, 4-118544
Int. Cl.[5] G01B *11/24, 11/30*
U.S. Cl. 356—371 **6 Claims**

1. A surface undulation inspection apparatus in which a patterning light source and a camera are arranged on opposite sides with respect to a specimen to be inspected, said camera selectively focussing only a principal ray adjusted in focal point to said patterning light source through said specimen to be inspected, said apparatus comprising:
a pattern display element used as a patterning light source,
a pattern generator operatively connected to said pattern display element for generating a display pattern displayed on said pattern display element,
a driver connected between said pattern generator and said pattern display element for causing the display pattern generated by said pattern generator to be displayed onto said pattern display element,
a synchronous signal generator circuit connected to said driver and a camera for synchronizing said driver with scanning of the camera,
a deviation calculation circuit connected to the camera for counting the number of stripes of an image data taken from the camera and calculating a deviation from a reference stripe pattern width data, and



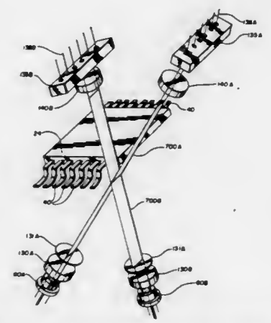
a standard data generator circuit connected to said deviation calculation circuit for producing said stripe pattern width data corresponding to a counted value of said number of stripes output from said deviation calculation circuit and to feed it back to said deviation calculation circuit,
said pattern generator having a function of generating a stripe-like display pattern and changing said display pattern generated so that a deviation output by said deviation calculation circuit is zero.

5,309,223

LASER-BASED SEMICONDUCTOR LEAD MEASUREMENT SYSTEM

John P. Konicek, Minneapolis; Steven K. Case, St. Louis Park; Timothy A. Skunes, Columbia Heights, and Jeffrey A. Jalkio, St. Paul, all of Minn., assignors to CyberOptics Corporation, Minneapolis, Minn.

Filed Jun. 25, 1991, Ser. No. 719,727
Int. Cl.[5] G01N *21/84*
U.S. Cl. 356—375 **49 Claims**



1. A sensor for determining the position of each element of a multiple element device of the type having each of its elements nominally disposed in a single plane, the sensor comprising:
means for providing light, comprising:
two laser diodes each emitting a laser beam of light, each laser beam being angled relative to the other;
means for focusing the light in the plane of the elements, comprising:
a focusing lens interposed in each laser beam, each focus-

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ing lens positioned to focus the laser beam in the nominal plane of the elements;

two detecting means, wherein at least one of the detecting means detects the shadow of at least one edge of each element when it occludes the focused light, comprising:

two single detectors, each detector interposed to receive the light emitted from one of the laser diodes;

means for receiving data indicating the instantaneous lateral position of the edge of each element as the edge is detected by the detecting means; and

logic means, connected to both detecting means and to the means for receiving data, for computing the lateral position of each element and the deviation of the lateral position of each element from its nominal position and for calculating the actual position of each element of the multiple element device.

5,309,224

APPARATUS FOR CONVERTING A TELEVISION SIGNAL OF A FIRST TELEVISION SYSTEM INTO A TELEVISION SIGNAL OF A SECOND TELEVISION SYSTEM EMPLOYING A DIGITAL CHROMINANCE SIGNAL PROCESSING CIRCUIT

Naoshi Usuki, and Toshiyuki Kawabe, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

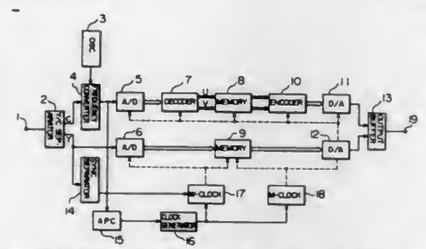
PCT No. PCT/JP91/01472, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO92/08323, PCT Pub. Date May 14, 1992

PCT Filed Oct. 29, 1991, Ser. No. 853,776

Claims priority, application Japan, Oct. 31, 1990, 2-295745; Oct. 31, 1990, 2-295746; Nov. 30, 1990, 2-338019

Int. Cl.[5] H04N *11/20*

U.S. Cl. 348—443 **3 Claims**



1. An apparatus for converting the television system comprising:

frequency conversion means for converting the carrier frequency of a chrominance signal of a first television system into the carrier frequency of a second television system;

A/D conversion means for converting the carrier frequency converted chrominance signal and a luminae signal of the first television system into digital signals in response to a clock which is responsive to the carrier frequency of the second television system;

decoding means for digitally decoding the digital carrier frequency converted chrominance signal into two color difference signals of the first television system;

scanning line conversion means for converting the two decoded color difference signals of the first television system and the digital luminance signal of the first television system to have the number of lines and the number of fields of the second television system through extraction and interpolation processes;

encoding means for digitally encoding the two line-converted color difference signals into a chrominance signal of the second television system; and

D/A conversion means for converting the enclosed chrominance signal of the second television system and the line-converted luminance signal of the second television signal into analog signals in response to a clock which is responsive to the carrier frequency of the second television system.

5,309,225

VIDEO SIGNAL PROCESSOR FOR REMOVING A SEPARATED SIGNAL COMPONENT FROM AN INPUT VIDEO SIGNAL

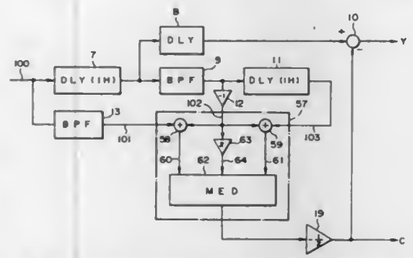
Masanori Kojima, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 605,391, Oct. 30, 1990, abandoned. This application Mar. 3, 1993, Ser. No. 25,807

Claims priority, application Japan, Dec. 6, 1989, 1-318414

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—663 **12 Claims**



1. A video signal processor for use in a television set for processing a video signal, input in horizontal line periods, said video signal processor comprising:

(A) first and second delay circuits, said first delay circuit for delaying said video signal input thereto by a horizontal line period and said second delay circuit for further delaying said delayed input video signal by a second horizontal line period so as to produce a first delay signal and a second delay signal, respectively;

(B) signal processing means for receiving said input video signal, said first delay signal and said second delay signal and for producing and outputting a separated signal component of the input video signal, wherein the signal processing means performs a mean value calculation of three values, a first value being said input video signal added to said first delay signal, a second value being said first delay signal multiplied by an integer value, and a third value being said first delay signal added to said second delay signal;

(C) phase shifting means for shifting a phase of said first delay signal to a phase of the separated signal component output from the signal processing means; and

(D) a separator for removing the separated signal component output from said signal processing means from said phase shifted first delay signal to remove the separated signal component from the input video signal.

5,309,226

MEANS FOR CANCELLING GHOST SIGNALS IN RESPONSE TO THE RECEPTION OF A NON-STANDARD TELEVISION VIDEO SIGNAL

Mitsuhiro Matsunaga, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 28, 1992, Ser. No. 936,796

Claims priority, application Japan, Aug. 30, 1991, 3-220031

Int. Cl.[5] H04N *5/21*

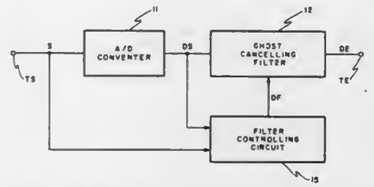
U.S. Cl. 348—614 **5 Claims**

1. A ghost canceling circuit comprising:

an A/D converter for covering a received analog video signal into digital video signals, said analog video signal containing vertical and horizontal synchronizing signals and a color subcarrier;

a ghost canceling filter including a variable delay circuit for receiving and delaying digital video data which is to be outputted, a delay value of said variable delay circuit being controlled by delay control signals, a transversal filter for receiving and controlling an output from said variable delay circuit in response to a tap gain thereof, said tap gain of said transversal filter being controlled by tap gain control signals, and an adder for adding an output of said transversal filter to said digital video signals in order to output said digital video data which is to be outputted,

a filter control circuit including a timing signal source for generating a set of timing signals in response to said vertical and horizontal synchronizing signals and said color subcarrier contained in said analog video signal, an extractor for extracting associated ghost signals from said digital



video signals in response to said timing signals, a tap gain control signal generator responding to said associated ghost signals for generating tap gain control information a delay control signal generator for responding to said associated ghost signal in order to generate and supply said delay control signals to said variable delay circuit, a standard signal discriminator responding to said horizontal and vertical synchronizing signals and said color subcarrier for generating a discrimination signal when said analog video signal is based on a standard broadcasting system, and a setting circuit for transferring said tap gain control information to said transversal filter as said tap gain control signals when said discrimination signal is generated and for changing a value of said tap gain control signals to zero irrespective of said tap gain control information when said discrimination signal is not generated.

5,309,227

VIDEO SIGNAL PROCESSING SYSTEM FOR ELECTRONIC ENDOSCOPE

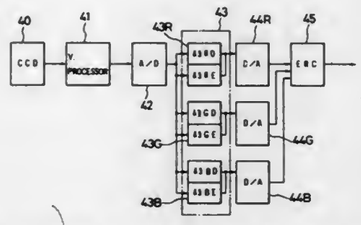
Kiyoshi Inoue, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 748,961, Aug. 23, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,616

Claims priority, application Japan, Aug. 24, 1990, 2-221225

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—71 **4 Claims**



1. A video signal processing system for an electronic endoscope, comprising:

a solid-state image sensor device;

a video processor for reading out signal charges from said solid-state image sensor device under sequential RGB illuminations;

a field memory means for storing output data of said video processor;

control means for reading out from said solid-state image sensor device an A-field signal having a preceding line added to each scanning line and a B-field signal having a succeeding line added to said each scanning line, for storing the A-field and B-field signals in said field memory means, and for reading out the A-field and B-field signals alternately line by line from said field memory means as picture data; and

display means for displaying said picture data.

5,309,228

METHOD OF EXTRACTING FEATURE IMAGE DATA AND METHOD OF EXTRACTING PERSON'S FACE DATA

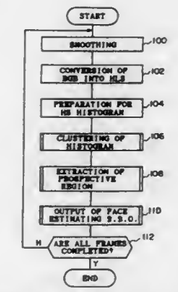
Hiroaki Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 21, 1992, Ser. No. 886,610

Claims priority, application Japan, May 23, 1991, 3-118746; Dec. 5, 1991, 3-321596; Dec. 12, 1991, 3-328997; Dec. 12, 1991, 3-328998

Int. Cl.[5] G03B *27/72*

U.S. Cl. 358—500 **11 Claims**



1. A method of extracting feature image data, comprising the steps of:

(a) dividing a color original image into a plurality of picture elements and resolving each of said picture elements into red, green, and blue colors and photometrically measuring each of said colors;

(b) obtaining a histogram of hue values in accordance with histogram data obtained through the photometry;

(c) dividing the obtained histogram into mountains to produce divided mountains;

(d) determining which of said divided mountains each of said picture elements of the color original image belongs to, classifying said picture elements into a plurality of groups corresponding to the divided mountains, and dividing the color original image into a plurality of divided regions corresponding to each of said groups; and

(e) selecting at least one of the divided regions and extracting data from the selected region as feature image data.

10. A method of extracting human face image data, comprising the steps of:

(a) dividing a color original image into a plurality of picture elements and resolving each picture element into red, green, and blue colors, wherein each of said colors is photometrically measured;

(b) obtaining color regions with the same or similar hue on said color original image in accordance with data obtained through the photometry;

(c) assuming circles or ellipses inscribed with respect to boundary portions of the obtained color regions and di-

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viding the color regions obtained using circular or elliptic regions starting from the largest circle or ellipse in order to thereby obtain a plurality of divided regions; and

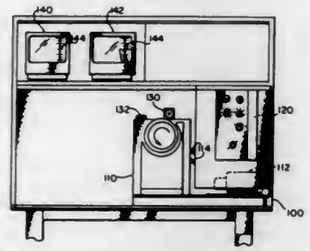
(d) selecting at least one of the divided regions from which to extract the data of the selected region as human face image data.

5,309,229

DUAL OPTIC VIDEO DISPLAY BEARING INSPECTION SYSTEM

Kenneth Stolz, Duncansville; Gerhard A. Thelen, St. Davids, both of Pa., and Paul G. Steets, Marlton, N.J., assignors to Consolidated Rail Corporation, Philadelphia, Pa.

Filed Sep. 18, 1991, Ser. No. 761,730
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—128 **12 Claims**



1. A method of inspecting a surface of an object, wherein the surface being inspected is hidden so as to be blocked from view in a single line of sight, the method comprising the steps of:

inserting a first video probe into the object, the first video probe disposed to view at least a portion of the surface being inspected;

inserting at least a second video probe into the object, the second video probe disposed to view at least a portion of the surface being inspected not within the field of view of the first video probe;

displaying an image collected by the first and second video probes; and

moving the surface and the first and second video probes relative to one another,

whereby the entire surface to be inspected is visually reviewed as a displayed image.

5,309,230

HIGH-SENSITIVITY INFRARED DETECTOR AND AN INFRARED CAMERA USING SUCH A DETECTOR

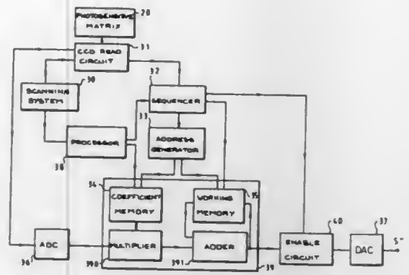
Philippe Blondel, Choisy le Roi, and Francis Bertrand, Acheres, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 25, 1992, Ser. No. 950,997
Claims priority, application France, Oct. 8, 1991, 91 12351
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—164 **6 Claims**

1. A high-sensitivity infrared detector system having a matrix of individual photosensitive cells (P11, . . . Pnp) means of forming a video signal following multiplexing, by a CCD read circuit, of luminance signals output in succession by the cells, proportional to luminous flux individually received from pixels in an image of the scene observed and received by each corresponding cell during a periodic scan of the image of the scene controlled by a scanning system, and a circuit to convert the video signal into digital luminance values corresponding to the signals output by the photosensitive cells, the detector system comprising:

an accumulation circuit to accumulate, during reads of successive frames, luminance values output by adding a luminance value output of each detector cell when reading a frame either to the luminance value output, without any shift by a given cell or, to the luminance value output, after a shaft, by an adjacent cell partially covering the same pixel when the next frame is read;

and selection circuits including a processor, to select in accordance with data relating to the characteristics of the detector scan and delivered by the scanning system to the selection circuits, sequences of binary values corresponding to the type of successive additions to be done, either with or without a cell shift, to apply in time each binary value of such sequences to each corresponding luminance value of each frame read, in order to address in the accumulation circuit such luminance values, whether or not shifted.

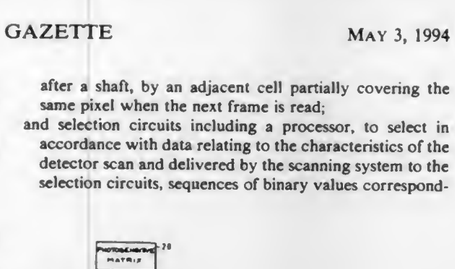


5,309,231

ADAPTIVE ENCODING SYSTEM OF MOVING PICTURE FRAME

Takahiro Hamada; Masahiro Saito, and Syuichi Matsumoto, all of Saitama, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,104
Claims priority, application Japan, Jun. 14, 1991, 3-168993
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—404 **7 Claims**



1. An adaptive encoding system of moving picture signal comprising:

an orthogonal transform means for effecting orthogonal transform for each block in an input picture frame, to provide signal matrix for each block;

a buffer memory for storing said signal matrices of a picture frame;

a pre-quantizer for carrying out provisional quantization of a picture frame stored in said memory and providing total code length L' of a picture frame, and number M' of pels showing number of coefficients to be transmitted depending upon value L';

pre-counting means of significant coefficients for counting number N' of significant coefficients in each block;

step size selection means for selecting step size in quantization according to said values L' and N'; and

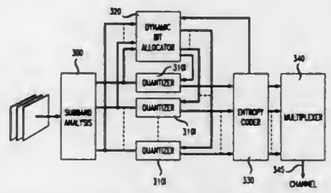
a quantizer for quantizing the picture signal stored in said memory with the step size determined by said step size selection means.

5,309,232

DYNAMIC BIT ALLOCATION FOR THREE-DIMENSIONAL SUBBAND VIDEO CODING

John Hartung, Warren, N.J.; Arnaud E. Jacquin, New York, N.Y.; Thomas A. Michel, Watchung, and Christine I. Podilchuk, Bridgewater, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 832,256, Feb. 7, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 92,768
Int. Cl.[5] H04N *7/13*
U.S. Cl. 348—384 **14 Claims**



1. A method of coding an image signal sequence, the image signal sequence comprising a plurality of image signals, an image signal comprising a set of pixel signals, the method comprising the steps of:

filtering the image signal sequence into a plurality of sets of sub-band pixel signals;

coding one or more pixel signals of a first set of sub-band pixel signals using one or more bits of a first quantity of bits, wherein each bit of the first quantity of bits is available for coding the first set of sub-band pixel signals;

providing a second quantity of bits for use in coding a second set of sub-band pixel signals, the second quantity of bits comprising one or more bits of the first quantity of bits not used in coding the first set of sub-band pixel signals; and

coding one or more pixel signals of the second set of sub-band pixel signals using one or more bits of the second quantity of bits.

5,309,233

APPARATUS FOR CONVERTING THE SCANNING PERIOD OF A VIDEO SIGNAL TO A PERIOD NOT NECESSARILY AN INTEGER TIMES THE ORIGINAL PERIOD

Katuhiko Nishikawa; Kimio Hatajiri, both of Aichi, and Yoshinori Onoe, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,502
Claims priority, application Japan, Apr. 10, 1992, 4-116691
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—441 **1 Claim**

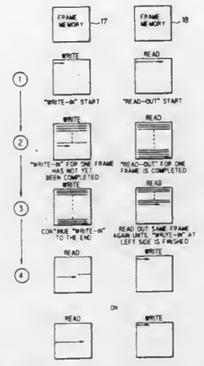
1. Apparatus for converting the scannng period of video signal, comprising:

two frame buffer means each for storing a frame of video data;

write-in means for executing a write-in operation including receiving a video signal having a first scanning period and generating a write-in address in accordance with the first scanning period to write a frame of video data from the video signal into one of said frame buffer means;

read-out means for executing a repetitive read-out operation on a frame-by-frame basis including receiving a synchronizing signal having a second scanning period shorter than the first scanning period and generating a read-out address in accordance with the second scanning period to repetitively read out the video data from the other of said frame buffer means; and

control means for controlling the operations of said read-out means and said write-in means so that when the write-in operation of said write-in means writing data to the one of said frame buffer means is finished, the read-out operation of said read-out means reading data from the other of said frame buffer means is also terminated, and subsequently the read-out operation of said read-out means to read data from the one of said frame buffer means is started from an address corresponding to a read-out address of the other of said frame buffer means at the finishing time of the write-in operation of the one of the said frame buffer means while the write-in operation of said write-in means to write data to the other of said frame buffer means is started.

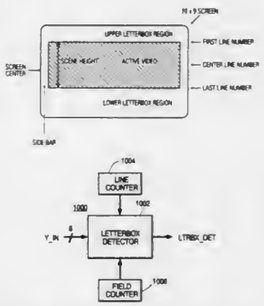


5,309,234

ADAPTIVE LETTERBOX DETECTOR

Greg A. Kranawetter, Carmel; Timothy W. Saeger, and Donald H. Willis, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Indianapolis, Ind.

Continuation of Ser. No. 817,237, Jan. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 3,739, May 29, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,390
Int. Cl.[5] H04N *7/01, 5/45, 5/44*
U.S. Cl. 348—473 **24 Claims**



1. A video display control system, comprising:

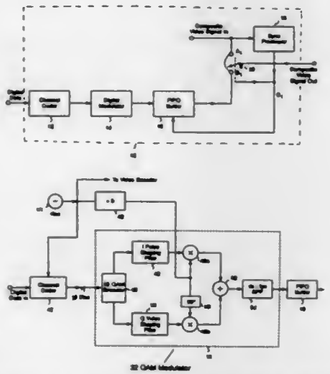
a video display means;

means for continuously detecting first and last lines of active video in a video signal;

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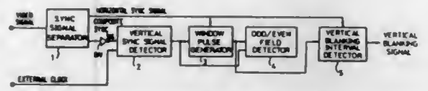
means for storing scan line numbers corresponding to said first and last lines of active video;
means for determining picture height from said scan line numbers of said first and last lines of active video;
means for comparing said picture height to a threshold;
means operable in a first mode of operation for enabling said storing means to continuously update said stored scan line numbers unless said picture height exceeds said threshold, and operable in a second mode of operation for enabling said storing means to update said stored scan line numbers when active video is detected in a video line corresponding to a scan line number less than said stored first line or greater than said stored last line; and
means for controlling at least one of picture size and picture cropping on said display means responsive to said picture height.

5,309,235
SYSTEM AND METHOD FOR TRANSMITTING DIGITAL DATA IN THE OVERSCAN PORTION OF A VIDEO SIGNAL
Saiprasad V. Naimpally, Langhorne, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.
Filed Sep. 25, 1992, Ser. No. 951,101
Int. Cl.[5] H04N *9/87, 7/08*
U.S. Cl. 348—476 **11 Claims**



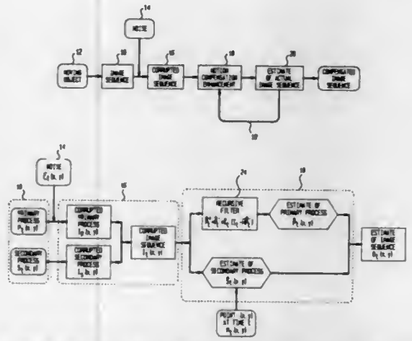
1. In a system for transmitting a video signal, wherein said video signal has a horizontal overscan portion, apparatus for transmitting digital data within the horizontal overscan portion comprising:
a) control means for receiving the video signal and for generating a control signal which is active during the horizontal overscan portion of a horizontal line interval of said video signal and inactive otherwise;
b) carrier generating means for generating in-phase and quadrature phase carrier signals having a frequency within the band of frequencies occupied by said video signal;
c) supply means for supplying bit-serial digital data at a predetermined rate;
d) encoding means, coupled to the supply means for converting the bit-serial digital data into symbols, wherein each symbol represents more than one bit of the digital data; and
e) modulating means, connected to the encoding means and carrier generating means and responsive to the control signal, for modulating both the in-phase and quadrature phase carrier signals with each of the symbols using quadrature amplitude modulation (QAM) during the horizontal overscan portion of the video signal.

5,309,236
VIDEO SIGNAL PROCESSING CIRCUIT OF A BROADCASTING SYSTEM
Hyun J. Park, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Oct. 5, 1992, Ser. No. 956,338
Claims priority, application Rep. of Korea, Oct. 8, 1991, 91-17625
Int. Cl.[5] H04N *5/04, 5/10*
U.S. Cl. 348—500 **7 Claims**



1. A video signal processing circuit of a broadcasting system for use in an NTSC mode and a PAL mode, the processing circuit comprising:
a sync signal separator for separating an input video signal into a horizontal sync signal and a composite sync signal;
a vertical sync signal detector, coupled to receive the separated composite sync signal and to receive an external clock signal, for detecting a vertical sync signal from the separated composite sync signal;
a window pulse generator for combining the detected vertical sync signal with the separated horizontal sync signal, and for generating a window pulse having a width depending on whether one of the NTSC mode and the PAL mode is selected;
an odd/even field detector for receiving the generated window pulse and the detected vertical sync signal, and for detecting a number of pulses of the vertical sync signal within an interval of the generated window pulse; and
a vertical blanking interval detector for counting a predetermined number of pulses of the separated horizontal sync signal, said vertical blanking interval detector using the generated window pulse as a RESET pulse for generating a vertical blanking pulse.

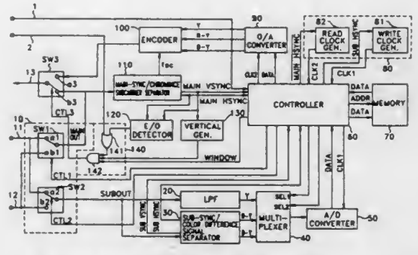
5,309,237
APPARATUS AND METHOD OF COMPENSATING IMAGE-SEQUENCES FOR MOTION
Ajit Singh, Plainsboro, N.J., assignor to Siemens Corporate Research, Inc., Princeton, N.J.
Filed Mar. 31, 1992, Ser. No. 861,414
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—607 **14 Claims**



1. In an apparatus that utilizes an image sequence, a device

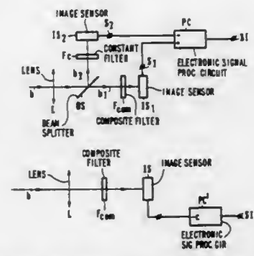
for producing motion compensated enhancement for object points contained within the individual images of said image sequence, comprising:
an estimating means, including a recursive filter, for estimating an instantaneous intensity and a temporal rate of change of intensity for said object points; and
an adjusting means for adjusting said recursive filter after each image in said image sequence, according to said intensity and said temporal rate of change as estimated by said estimating means, for an immediately preceding image in said image sequence to thereby compensate said image by substantially removing noise in the presence of motion.

5,309,238
PICTURE SUPERPOSING CIRCUIT
Jeom-han Bae, Kyunggi, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Kyungki, Rep. of Korea
Filed Jul. 30, 1991, Ser. No. 737,992
Claims priority, application Rep. of Korea, Aug. 14, 1990, 90-12293
Int. Cl.[5] H04N *9/74, 5/268*
U.S. Cl. 348—588 **25 Claims**



1. A picture superposing circuit, comprising:
input means for receiving information for two or more different pictures, said information containing a main video signal and a sub-video signal, and for selecting the main video signal for a main picture and the sub-video signal for a sub-picture;
memory means for storing said sub-video signal supplied from said input means;
switch means for enabling alternate transmission of an analog signal representative of said sub-video signal stored in said memory means and said main video signal supplied from said input means during a sequence of even and odd fields, in response to a control signal;
even/odd control means for detecting synchronization status of said main video signal supplied from said input means to provide said control signal for controlling said switch means;
first signal separator means for separating the sub-video signal supplied from said input means into a luminance signal, color-difference signals and sub-synchronization signals;
second signal separator means for separating the main video signal supplied from said input means into main synchronization signals and a chrominance subcarrier;
first converter means for converting the color-difference signals and the luminance signal into digital data representative of said sub-video signal;
control means for enabling storing of said digital data in said memory means and reading out the stored digital data from said memory means; and
second converter means for converting digital data read out from said memory means into said analog signal representative of said sub-video signal.

5,309,239
IMAGE PICK-UP DEVICE
Gijsbertus Bouwhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 30, 1992, Ser. No. 906,975
Claims priority, application European Pat. Off., Jul. 11, 1991, 91201805.8
Int. Cl.[5] H04N *5/225*
U.S. Cl. 348—265 **7 Claims**



1. An image pick-up device comprising an imaging lens system, an optical radiation-sensitive detection system having discrete detection elements arranged in a periodic pattern with a given period, and low-pass filter means for suppressing image frequencies which exceed the spatial frequency of the detection system, characterized in that the low-pass filter means comprises, for each image-information transporting channel:
first filter means constituted by an optical filter having a filter function composed of a required variable component and an additional constant function forming a composite filter function; and
second filter means having a filter function corresponding to said additional constant function, wherein the combination of said first and second filter means constitutes said low-pass filter means and provides the required variable filter function whereby the filter function of said second filter means is subtracted from the filter function of said first filter means thereby cancelling said additional constant functions and leaving said required variable filter function.

5,309,240
CCD LINEAR IMAGE SENSOR INCLUDING A CCD SHIFT REGISTER ON BOTH SIDES OF LINEARLY ARRANGED PHOTOSENSOR CELLS
Kazuo Miwada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 21, 1992, Ser. No. 822,759
Claims priority, application Japan, Jan. 18, 1991, 3-004190
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 348—311 **4 Claims**

1. A CCD linear image sensor comprising: an array of linearly arranged photosensor cells having a first side and a second side;
a first CCD shift register adjacent said first side of said array of linearly arranged photosensor cells;
a second CCD shift register adjacent said second side of said array of linearly arranged photosensor cells;
said first and second CCD shift registers coupled in parallel to said array of linearly arranged photosensor cells so as to read out signal charges from predetermined photosensor cells of said array of linearly arranged photosensor cells and to transfer the read-out signal charge serially in each of said first and second CCD shift registers;
first branch means coupled to an output end of said first CCD shift register so as to branch said output end of said first CCD shift register into a first pair of branched transfer paths;
second branch means coupled to an output end of said sec-

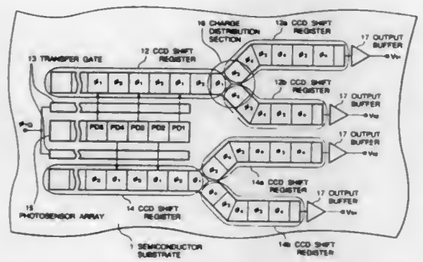
VOL 1162 ISS 1 MY 3 1994 UMI

ond CCD shift register so as to branch said output end of said second CCD shift register into a second pair of branched transfer paths;

an output circuit connected to each output terminal of each of said first and second branched transfer paths;

wherein said first branch means has a first final transfer electrode located just before said first CCD shift register is branched into the first pair of branched transfer paths,

wherein said second branch means has a second final transfer electrode located just before said second CCD shift register is branched into the second pair of branched transfer paths,



wherein said first final transfer electrode is shaped to approximate a triangle and to have a channel length dimension increasing from a lateral side of the first CCD shift register toward a center-line of the first CCD shift register, and

wherein said second final transfer electrode is shaped to approximate a triangle and to have a channel length dimension increasing from a lateral side of the second CCD shift register toward a center-line of the second CCD shift register.

5,309,241

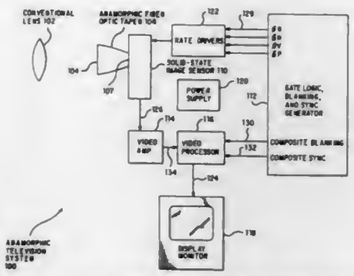
SYSTEM AND METHOD FOR USING AN ANAMORPHIC FIBER OPTIC TAPER TO EXTEND THE APPLICATION OF SOLID-STATE IMAGE SENSORS

Kenneth A. Hoagland, Smithtown, N.Y., assignor to Loral Fairchild Corp., Syosset, N.Y.

Filed Jan. 24, 1992, Ser. No. 825,259

Int. Cl.[5] H04N *5/335, 7/01, 5/225*

U.S. Cl. 348—222 **2 Claims**



1. An anamorphic television system for allowing a solid-state image sensor to be used with scenes conforming to a multiplicity of television standards, the system comprising:

(a) an anamorphic fiber optic taper configured to disproportionately alter dimensions of the senes to form an interim image wherein said anamorphic fiber optic taper comprises means for compressing said image in order to increase image intensity;

(b) a solid-state image sensor for receiving said interim image and converting optical information of said interim image into electrical information;

(c) means for generating timing and control signals necessary to retrieve said electrical information from said solid-state image sensor;

(d) means for transforming said electrical information into a video signal; and

(e) means for displaying said video signal.

5,309,242

FILM IMAGE INPUT SYSTEM FOR MAINTAINING A DESIRED IMAGE MOVING SPEED AND SCANNING DIRECTION

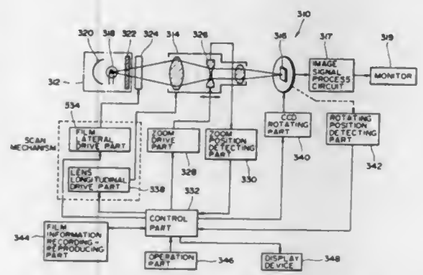
Katuo Asami, and Hitoshi Yozawa, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1991, Ser. No. 755,210

Claims priority, application Japan, Sep. 14, 1990, 2-245114; Sep. 14, 1990, 2-245115; Sep. 14, 1990, 2-245116; Sep. 14, 1990, 2-245117; May 24, 1991, 3-120067; Jun. 13, 1991, 3-142137; Jun. 13, 1991, 3-142138; Aug. 5, 1991, 3-195493

Int. Cl.[5] H04N *5/253, 3/36*

U.S. Cl. 348—97 **13 Claims**



1. A film image input system wherein an image of a developed still photo film is focused on an image sensing plane of a charge coupled device through a taking lens to be converted into electric signals and said electric signals are input into a video monitor, to thereby reproduce the image on a screen of the video monitor, comprising:

a zoom mechanism for changing an image magnification of the taking lens;

a scan mechanism for moving an image taking position of the taking lens on the film;

a change coupled device rotating mechanism for rotating the charge coupled device between a lateral position and a longitudinal position thereof;

detecting means for detecting the image magnification of the taking lens, the image taking position and the rotating position of the charge coupled device; and

display means for displaying a first scope of a border line of the image film, which can be picked-up when the charge coupled device is in the lateral position or in the longitudinal position, and for displaying a second scope of an observation area presently being picked up, said display means superimposing a scope of said border line and a scope of the observation area over one another, wherein said first and second scopes are detected in response to an output from the detecting means.

5,309,243

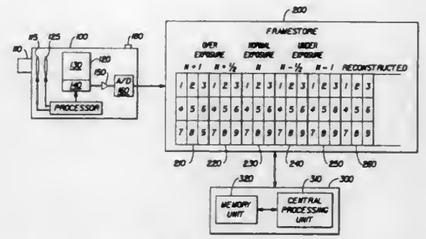
METHOD AND APPARATUS FOR EXTENDING THE DYNAMIC RANGE OF AN ELECTRONIC IMAGING SYSTEM

Yusheng T. Tsai, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,767

Int. Cl.[5] H04N *5/243, 5/232*

U.S. Cl. 348—221 **2 Claims**



1. An electronic imaging system comprising:

image generating means for generating a plurality of digitized images including a plurality of pixels at different exposure levels including at least one normal exposure level (N), where N is considered a normal exposure range, one level above the normal exposure level (N+1), one level (N+½) equal to the geometric mean between the normal exposure level (N) and the level above the normal exposure level (N+1), one level below the normal exposure level (N−1), one level (N−½) equal to the geometric mean between the normal exposure level (N) and the level below the normal exposure level (N−1);

a framestore for storing the digitized images produced by the image generating means; and

an electronic data processing means for comparing each of the pixels of the digitized image generated at the normal exposure level with a preselected normal exposure range to determine if the pixel is underexposed or overexposed;

wherein the electronic data processing means replaces the pixel from the normal exposure level (N) with a corresponding pixel from the digitized image generated at the exposure level above the normal exposure level (N+1) to create a reconstructed image if the pixel from the normal exposure level (N) is underexposed and the pixel from the digitized image generated at the exposure level above the normal exposure level (N+1) is within a first preselected range;

wherein the electronic data processing means replaces the pixel from the normal exposure level (N) with a corresponding pixel from the digitized image generated at the exposure level (N+½) equal to the geometric mean between the normal exposure level (N) and the level above the normal exposure level (N+1) to create a reconstructed image if the pixel from the exposure level above the normal exposure level (N+1) is outside of the first preselected range and the pixel from the digitized image generated at the exposure level (N+½) equal to the geometric mean between the normal exposure level (N) and the level above the normal exposure level (N+1) is within a second preselected range;

wherein the electronic data processing means replaces the pixel from the normal exposure level (N) with a corresponding pixel from the digitized image generated at the exposure level below the normal exposure level (N−1) to create a reconstructed image if the pixel from the normal exposure level (N) is overexposed and the pixel from the digitized image generated at the exposure level below the normal exposure level (N−1) is within a third preselected range; and

wherein the electronic data processing means replaces the pixel from the normal exposure level (N) with a corresponding pixel from the digitized image generated at the exposure level (N−½) equal to the geometric mean between the normal exposure level (N) and the level below the normal exposure level (N−1) to create a reconstructed image if the pixel from the exposure level below the normal exposure level (N−1) is outside of the first preselected range and the pixel from the digitized image generated at the exposure level (N−½) equal to the geometric mean between the normal exposure level (N) and the level below the normal exposure level (N−1) is within a fourth preselected range.

5,309,244

IMAGE PROCESS APPARATUS WITH HOLOGRAM LENSES ARRANGED IN A CONCENTRIC FORM OR A SPIRAL FORM

Masayuki Katagiri; Kengo Takahama, and Noritoshi Kako, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

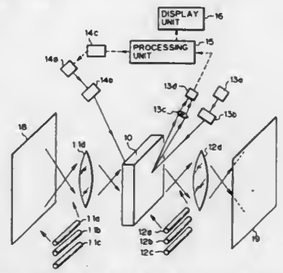
Filed May 31, 1991, Ser. No. 707,146

Claims priority, application Japan, Jun. 8, 1990, 2-150527

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] H04N *1/23;* **G01D** *9/42*

U.S. Cl. 358—296 **24 Claims**



1. An image processing apparatus comprising:

a spatial light modulator;

a digital reading system for digitally reading an image data written on said spatial light modulator by two-dimensionally moving a laser beam on said spatial light modulator for scanning;

a processing unit for processing the read image data; and

a digital writing system for digitally writing the processed image data on said spatial light modulator by two-dimensionally moving the laser beam on said spatial light modulator;

wherein at least one of said digital reading and writing systems provides a hologram disk having a plurality of hologram lenses located in a concentric manner or spiral manner and said hologram disk is arranged to deflect the laser beam for scanning said spatial light modulator.

5,309,245

IMAGE FORMING APPARATUS HAVING FUNCTION FOR FORMING COMPOSITE IMAGE

Masayuki Hayashi; Yasushi Kamo, and Masaaki Ito, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 14, 1992, Ser. No. 883,458

Claims priority, application Japan, May 15, 1991, 3-110413

Int. Cl.[5] H04N *1/387, 1/44;* **G03B** *27/52;* **G03G** *21/00*

U.S. Cl. 358—296 **11 Claims**

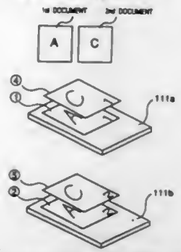
1. An image forming apparatus, comprising:

first image generating means for successively generating n first images, n being an integer;

second image generating means for successively generating m second images different from each other, m being an integer equal to or greater than 2;

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image composition means, coupled to said first and second image generating means, for combining an i-th first image and a j-th second image with each other so as to output a composite image I_{ij}, wherein i varies from 1 to n and j varies from 1 to m, so that said image composition means forms n×m composite images;



printing means, coupled to said image composition means, for printing said composite image I_{ij} on a recording sheet; and

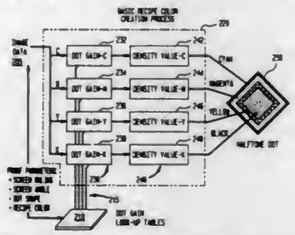
output means, coupled to said printing means, for outputting the recording sheet having the composite image I_{ij} formed thereon, and for classifying n×m recording sheets output by said output means into m sets based on the second images, each of m sets having n recording sheets.

5,309,246

TECHNIQUE FOR GENERATING ADDITIONAL COLORS IN A HALFTONE COLOR IMAGE THROUGH USE OF OVERLAID PRIMARY COLORED HALFTONE DOTS OF VARYING SIZE

Robert V. Barry, Waterport, and Joseph Ambro, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 18, 1991, Ser. No. 761,597
Int. Cl.[5] H04N *1/21, 1/387*
U.S. Cl. 358—298 **49 Claims**



1. A method of generating a desired color in an output image from a plurality of different colorants, said output image being a halftone depiction of a contone input image, the method comprising the steps of:

obtaining data representing a plurality of color contone separations of said input image, each of said separations having incoming contone values wherein corresponding ones of said incoming contone values for all of said separations collectively define a region in the output image that is to contain the desired color;

generating a halftone dot for each one of the incoming contone values in each of said separations having a selected size and solid area density wherein the size and solid area density of said halftone dot is related to said each one of the incoming contone values so as to form a plurality of component halftone dots;

printing spatially corresponding component halftone dots from each of said separations each with a corresponding one of said colorants in superposition in a selected order and in registration so as to form composite halftone dots which collectively depict said desired color.

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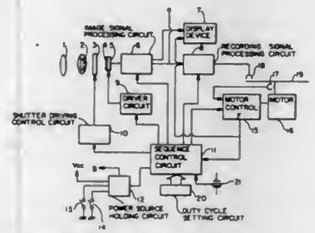
IMAGE PICK-UP DEVICE

Takao Kinoshita, Tokyo; Akihiko Tojo, Kanagawa; Tsutomu Takayama, Kanagawa; Toshio Kaji, Kanagawa, and Nobuyoshi Tanaka, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 459,564, Jan. 2, 1990, Pat. No. 5,010,418, which is a continuation of Ser. No. 274,703, Nov. 15, 1988, Pat. No. 4,910,606, which is a continuation of Ser. No. 195,492, May 18, 1988, abandoned, which is a continuation of Ser. No. 860,513, May 7, 1986, Pat. No. 4,763,204, which is a continuation of Ser. No. 452,500, Dec. 23, 1982, Pat. No. 4,599,657. This application Feb. 13, 1991, Ser. No. 654,802

Claims priority, application Japan, Dec. 29, 1981, 56-215333; Dec. 29, 1981, 56-215337; Dec. 29, 1981, 56-215342; Dec. 29, 1981, 56-215343; Dec. 29, 1981, 56-215344; Dec. 29, 1981, 56-215345

Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **15 Claims**



1. An image pick-up device comprising:

(a) an interline transfer type CCD having a light sensing part and a shaded vertical register, said light sensing par having a photoelectric transducing ability and capable of holding temporarily an electrical image information formed in the light sensing part by transferring it to the vertical register;

(b) control means for controlling the transfer of electrical image information in the interline transfer type CCD, the control means transferring the electrical information formed in the light sensing part of the interline transfer type CCD to the; vertical register; and

(c) light shading means for shading the light sensing part at least during the time for transferring the electrical information in the light sensing part of the interline transfer type CCD to the vertical register.

5,309,248

SYSTEM FOR SIMULTANEOUS LONG-DISTANCE VISION OF VIDEO PICTURES REPRODUCED BY A TRANSMITTING VIDEORECORDER AND RECEIVING VIDEORECORDER

Stefano Polidori, Rome, Italy

Filed Sep. 16, 1992, Ser. No. 945,863
Claims priority, application Italy, Sep. 30, 1991, RM91 A 000732
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **7 Claims**

1. A system for simultaneous long-distance vision of video images reproduced by a transmitting videorecorder and a receiving videorecorder comprising: a transmitting subsystem (1) and a receiving subsystem (2), each disposed in different and mutually distant places; said transmitting subsystem (1) comprising:

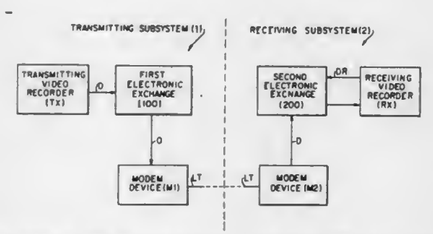
a transmitting videorecorder (TX), in which a video cassette is inserted and on one of whose two audio tracks a position code is recorded;

a first electronic reading processing and transmitting exchange (100) of a sequence of data (d) identifying position and state of said transmitting videorecorder (TX), respectively connected to a telephone line (LT) by means of a first modem device (M1); said receiving subsystem (2) comprising:

a receiving videorecorder (RX), in which a video cassette identical to the one loaded in the transmitting videorecorder (TX) is inserted, and having on one of its two audio tracks a position code which is identical to the one loaded on the transmitting videorecorder (TX);

a second electronic exchange (200) for control, reception, comparison and procession of the data sequence (D) identifying position and state of the transmitting videorecorder (TX) coming from the first electronic exchange (100), with respect to the data sequence (DR) identifying the position of the receiving videorecorder (RX); said second electronic exchange (200) being connected to said receiving videorecorder (RX) and also to a telephone line (LT) by means of a second modem device (M2);

said first electronic exchange (100) having the function of reading, processing and sending the sequence of date (D) regarding the position and state of the transmitting videorecorder (TX), which functions are managed by a first process-



ing program; said second electronic exchange (200) having the function of controlling, receiving, comparing and processing of said data coming from said transmitting subsystem (1) with the data identifying the position of the receiving videorecorder (RX) in command functions for the receiving videorecorder (RX), obtaining picture simultaneity on said videorecorders (TX,RX), which functions are managed by a second processor program, said first electronic exchange (100), connected in input to said transmitting video recorder (TX) and in output to said first modem system (M1) comprises an interface system (101) connected bidirectionally to a microprocessor (111) and directionally to said first modem device (M1), said second electronic exchange (200), connected both in input and in output to said receiving video recorder (RX) comprises a second interface system (202) connected bidirectionally to a second microprocessor (222) and to said second modem device (M2), said second microprocessor (222), through said second processor program, has the function of reading the data (D) from said transmitting subsystem (1), comparing the position of the receiving video recorder (RX) with said read data, the difference, and sending command signals to eliminate said difference.

5,309,249

OPTICAL DISC REPRODUCING APPARATUS HAVING DISPLAYED MODE CONTROL KEY FUNCTIONS WHICH ARE CONTROLLED BY DETECTION OF THE TYPE OF DISC BEING REPRODUCED

Toshiyuki Ishii, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 806,600
Claims priority, application Japan, Dec. 27, 1990, 2-414670
Int. Cl.[5] H04N *5/781*; G11B *7/00*
U.S. Cl. 358—342 **4 Claims**

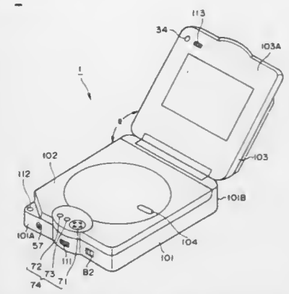
1. An optical disc reproducing apparatus comprising:

optical disc reproducing means for reproducing an optical disc on which only audio digital information is recorded or an optical disc on which non-audio digital information is recorded in addition to the audio information,

a pointing device for generating a command signal corresponding to one of a plurality of operational modes of the optical disc reproducing means in response to a selection input by a user of the optical disc reproducing apparatus, provided with an X-Y device and trigger buttons,

display means provided in the pointing device for indicating the operational modes which can be selected by the pointing device,

disc discriminating means connected to the optical disc reproducing means for discriminating the type of the optical disc being reproduced by the optical disc reproducing means,



reproduction controlling means connected to the pointing device for designating the operational modes which are selectable by the pointing device depending on the type of the optical disc designated by a discriminating output of the disc discriminating means, the reproduction controlling means, upon receipt of a command signal from the pointing device, controlling the operation of the optical disc reproducing means to perform a selected operational mode, and

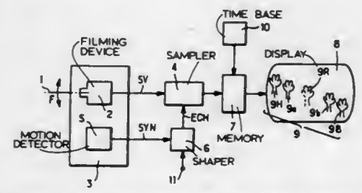
display controlling means for changing the display on the display means depending on the type of the optical disc designated by the discriminating output of the disc discriminating means.

5,309,250

METHOD FOR DETERMINING THE STATIONARY POSITION OF THE LINE OF SIGHT OF A FILMING DEVICE SUBJECT TO VIBRATIONS, DEVICE FOR IMPLEMENTATION THEREOF AND APPLICATION TO THE HARMONIZATION OF FILMING DEVICES

Emmanuel M. Giacometti, Pelissanne, France, assignor to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jun. 18, 1992, Ser. No. 900,954
Claims priority, application France, Jun. 25, 1991, 91 07805
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—406 **19 Claims**



1. A method for determining the stationary position of the line of sight (1) of a filming device (2), subject to periodic

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vibrations (f) and delivering a video signal representing the image of the field which it is observing,

said method comprising the following steps:

detecting the said vibrations (f) and generating from them a succession of synchronizing signals each having a specified phase within the period (T) of said vibrations (f);

generating from the said succession of synchronizing signals a succession of sampling signals each having a same adjustable delay with respect to the corresponding synchronizing signal;

sampling said video signal by means of the succession of said sampling signals, thus providing a succession of sampled video signals;

reconstituting said image on a display device (8), by means of the succession of said sampled video signals, thus providing a reconstituted image (9); and

determining the position of the stationary reconstituted image (9R) corresponding to the stationary line of sight (1) from the reconstituted image (9).

5,309,251

COMMUNICATION APPARATUS CAPABLE OF CONNECTING MEMORY CARD

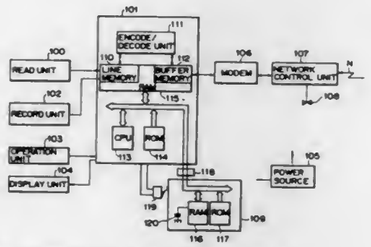
Hisao Terajima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 685,209, Apr. 15, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 44,892

Claims priority, application Japan, Apr. 19, 1990, 2-104214

Int. Cl.[5] H04N *1/40, 1/00*

U.S. Cl. 358—444 **34 Claims**



1. A communication apparatus comprising:

connecting means for connecting a memory card;

communicating means for performing communication through a communication line;

storing means for storing information relating to the communication by said communicating means corresponding to identification of the memory card which has been connected before the communication is performed by said communicating means; and

writing means for writing into the memory card the stored information relating to the communication, when an identification of the memory card which is connected after the communication is performed by said communicating means matches the identification of the memory card when the memory card was connected before the communication.

5,309,252

DOCUMENT GENERATOR INCLUDING A PICKUP MEANS FOR DETECTING PICTURE INFORMATION AND CODE INFORMATION

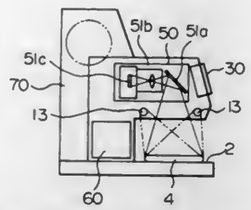
Shigeo Komizo, Machida, and Mikio Fujita, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 4, 1991, Ser. No. 787,112

Claims priority, application Japan, Nov. 9, 1990, 2-305130

Int. Cl.[5] H04N *5/14*

U.S. Cl. 358—445 **4 Claims**



1. A document generator comprising:

image-pickup means for picking up an image of a surface of a distributed object;

signal conversion means for converting a picture signal obtained by said image-pickup means into a digital signal;

memory means for temporarily storing the picture signal digitized by said signal conversion means;

code detecting means for detecting an area of code information in said picture signal;

code interpreting means for interpreting said code information; and

retry means for (i) retrying picking up an image of said distributed object, (ii) detecting an area of code information in a newly picked-up picture signal, and (iii) interpreting said code information of said newly picked up picture signal after storing the former picture signal, in the event the interpreting of said code information ends in failure.

5,309,253

IMAGE ENLARGEMENT/REDUCTION PROCESSOR AND METHOD

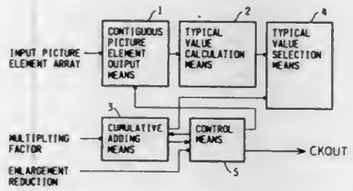
Toru Ariga, and Naoyuki Echigo, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 29, 1991, Ser. No. 677,787

Claims priority, application Japan, Mar. 30, 1990, 2-85955

Int. Cl.[5] H04N *1/393*

U.S. Cl. 358—451 **19 Claims**



1. An image enlargement and reduction processor, comprising:

cumulative adding means for cumulatively adding picture data obtained on the basis of a conversion multiplying factor of a density of picture elements which are arranged in a matrix having two scanning directions, in synchronization with a clock signal generated along one of the two scanning directions, and for outputting added picture data and a carry signal;

contiguous picture element output means for temporarily holding a picture element data array along one of the two scanning directions and outputting at least two contiguous picture element data;

typical value calculation means for dividing a section defined by said contiguous picture element data into a plurality of sub-sections and obtaining typical values corresponding to each sub-section from the contiguous picture element data output from said contiguous picture element output means;

typical value selecting means for selecting and outputting only one value from among the typical values output from said typical value calculation means in accordance with the added picture data from said cumulative adding means; and

control means for controlling an output of said contiguous picture element output means and an addition of said cumulative adding means in accordance with selection data given from an external setting means for selecting a reduction or an enlargement operation and in accordance with the carry signal output from said cumulative adding means.

5,309,254

IMAGE PROCESSING APPARATUS CAPABLE OF PROCESSING HALFTONE IMAGE DATA

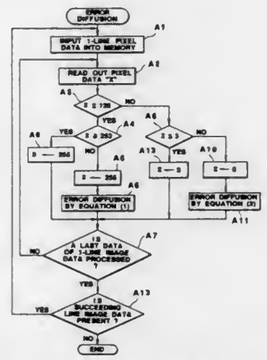
Nobuaki Kuwabara; Takahisa Endou, both of Tokyo, and Yasunobu Suzuki, Tokorozawa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 655,661, Feb. 14, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 102,108

Claims priority, application Japan, Feb. 27, 1990, 2-44348

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—456 **2 Claims**



1. An image processing apparatus, in which an image is represented by pixels disposed in a matrix arrangement, comprising:

image signal producing means for outputting gradation data for each pixel corresponding to an originally input pixel value thereof, each gradation data having a bit number falling within a range of from a value WO to a value BO, the value WO corresponding to a white color on the image and the value BO corresponding to a black color on the image;

storage means for storing the gradation data output from said image signal producing means, the gradation data corresponding to pixels which are disposed in at least two rows of the matrix arrangement;

reading means for successively reading out gradation data corresponding to one pixel by one pixel from said storage means;

judging means for judging whether the gradation data received from said reading means and corresponding to each pixel is larger than a predetermined value Q1, whether the gradation data falls within a range of from the predetermined value W1 to another predetermined value B1, or whether the gradation data is smaller than said another predetermined value B1, the predetermined value W1 being larger than said another predetermined value B1 and being smaller than said value WO, said another predetermined value B1 being larger than said value BO and being smaller than said predetermined value W1;

first processing means for performing an error diffusion process on the gradation data received from said reading means and corresponding to each pixel to replace the relevant gradation data of the storage means with the value WO or the value BO depending on the result of the error diffusion process, with such error diffusion process being performed only when said judging means determines that the gradation data falls within the range of from the predetermined value W1 to said another predetermined value B1;

second processing means for replacing the relevant gradation data of said storage means with the value WO when said judging means determines that the gradation data read out by said reading means is larger than said predetermined value W1;

third processing means for replacing the relevant gradation data of said storage means to the value BO when said judging means determines that the gradation data read out by said reading means is smaller than said another predetermined value B1; and

binary coding means for converting the value WO of said storage means into white data and for converting the value BO of said storage means into black data.

5,309,255

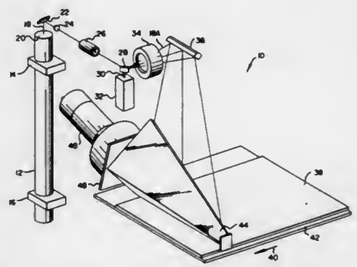
LASER BEAM ENVIRONMENT ISOLATION HOUSING

Michael B. Brandt, Walworth; Paul D. Askins, and David P. Trauernicht, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1992, Ser. No. 843,491

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—471 **3 Claims**



1. Storage phosphor reader apparatus comprising:

a laser mounted in a laser housing for producing a laser beam which is directed along a path in which beam pointing instabilities caused by environmental turbulence may occur;

means for scanning said laser beam along a line scanning beam;

means for transporting a storage phosphor containing a latent image past said line scanning beam in a direction perpendicular thereto so that said storage phosphor is scanned in a raster pattern;

means for detecting light emitted by said storage phosphor and converting said emitted light into an electrical image signal which is representative of the latent image in said storage phosphor; and

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sealed housing means for enclosing said laser beam in the vicinity of said laser to prevent the laser beam produced by said laser from environmental turbulence caused pointing instabilities.

5,309,256

METHOD OF AND APPARATUS FOR PROCESSING IMAGE AND CORRECTION CHART EMPLOYED IN THE APPARATUS

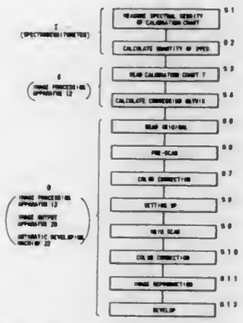
Yoko Takada, Minami-ashigara, and Tadashi Miyakawa, Ashigarakami, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 2, 1991, Ser. No. 769,705

Claims priority, application Japan, Oct. 3, 1990, 2-265808; Oct. 1, 1991, 3-252659

Int. Cl.[5] H04N *1/46*; G03F *3/08*

U.S. Cl. 358—504 **13 Claims**



9. An image processing apparatus comprising:

means for storing therein dye-quantity data, indicative of the quantity of dyes in respective regions of a calibration chart having at least three regions where respective ones of three primary color dyes in a color photosensitive material are developed;

means for reading said calibration chart and an original having the same color development characteristic as that of said calibration chart;

color-correction data arithmetic means for computing color correction data from density data obtained by reading said calibration chart with said reading means, and said dye-quantity data stored in said storing means;

mean for storing therein said color correction data; and

correction density data arithmetic means for computing correction density data from density data obtained by reading said original with said reading means and said color correction data stored in said color correction data storing means, wherein said original and said color calibration chart are disposed within cassettes.

5,309,257

METHOD AND APPARATUS FOR PROVIDING COLOR MATCHING BETWEEN COLOR OUTPUT DEVICES

Bruce S. Bonino, Hemlock, N.Y.; Robert Steinberg, Valencia, and Randall L. Owen, Canyon Country, both of Calif., assignors to Eastmn Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1991, Ser. No. 817,797

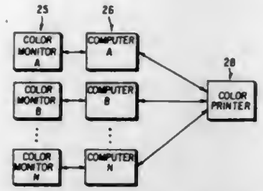
Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—504 **34 Claims**

1. A method for providing color matching among populations of color output devices, each population being comprised of a different type of device and each population including two or more color output devices of a same type, and each member of said population of said color output devices having a device-dependent color gamut, said method comprising the steps of:

forming a set of aim curves for each population of the color output devices;

constructing a first set of color correction transforms based on said set of aim curves for each population of the color output devices, said first set of color correction transforms for transforming said device-dependent color gamut of



each of said color output devices to a population-dependent color gamut;

constructing a second set of color correction transforms for transforming each population-dependent color gamut to a device-independent color space; and

calibrating output colors of each of said color output devices using said first and second sets of color correction transforms.

5,309,258

PATTERN IMAGE GENERATION DEVICE FOR IMAGE PROCESSING SYSTEM

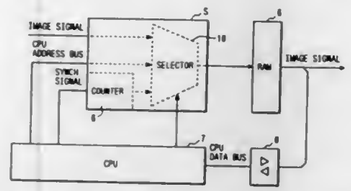
Katsuyuki Kouno; Kazuhisa Sato, both of Kanagawa; Masayasu Kurosawa, Tokyo; Isao Kuwahara, Tokyo, and Mitsuo Fukitomi, Tokyo, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 994,096

Claims priority, application Japan, Sep. 13, 1991, 3-234921

Int. Cl.[5] G03F *3/08*; H04N *1/46*

U.S. Cl. 358—523 **8 Claims**



1. A pattern image generation device for a color image processing system comprising:

an image conversion processing means for converting an input image data signal to output a converted image data, said image conversion processing means including rewritable memory means and address control means for controlling a memory address of said memory means; and

an operation processing means for controlling the operation of said image conversion processing means;

said address control means including a variable address generation means for generating a variable address signal in accordance with a synchronizing signal output from said operation processing means, and a signal select means for selecting one of said input image data signal, an address signal output from said operation processing means and said variable address signal in accordance with a control signal from said operation processing means, and wherein said operation processing means outputs to said memory means one of conversion data used to convert said input image data signal to be set in said memory means and predetermined pattern generation data to be set

in said memory means in synchronization with said control signal, and said operation processing means controls said signal select means to select one of said input image data signal and said variable address signal.

5,309,259

COLOR OUTPUTTING METHOD AND APPARATUS FOR CORRECTING COLOR RATIOS OF SMALL-SIZED CHARACTERS

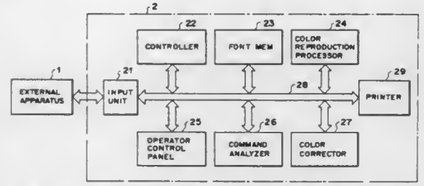
Hironobu Taki, Kawasaki, and Shuichi Kumada, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1991, Ser. No. 772,961

Claims priority, application Japan, Oct. 9, 1990, 2-269622

Int. Cl.[5] H04N *1/393*

U.S. Cl. 358—528 **10 Claims**



1. A color outputting method comprising the steps of:

discriminating the size of a character to be generated; and

correcting ratios of coloring materials in accordance with the size discriminated.

5,309,260

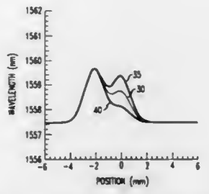
METHOD FOR FORMING DISTRIBUTED BRAGG REFLECTORS IN OPTICAL MEDIA

Victor Mizrahi, Somerset, N.J., and John E. Sipe, Toronto, Canada, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 23, 1992, Ser. No. 995,726

Int. Cl.[5] G02B *5/18, 5/32, 6/34*; G03H *1/28*

U.S. Cl. 359—3 **9 Claims**



1. A method for manufacturing a spectrally selective optical waveguide, the method comprising:

a) providing a photosensitive, optically waveguiding glass body having at least one waveguiding axis; and

b) forming in said body a first refractive index perturbation that defines a Bragg condition relative to light propagation parallel to the waveguiding axis, and that exhibits a reflectivity spectrum having a main peak relative to vacuum wavelengths of light that approximately satisfy the Bragg condition, wherein the forming step comprises the further steps of:

c) generating an interference pattern of actinic radiation having a spatially averaged intensity profile that includes at least one rising portion of said body and at least one falling portion; and

d) impinging the interference pattern on at least a portion of said body such that the interference pattern has at least a locally defined period along the waveguiding axis, and said intensity profile rises and falls along the waveguiding axis, the impinging step performed so as to lead to formation of the first refractive index perturbation; wherein:

e) the impinging step leads to a spatially-averaged, refractive-index profile in the first refractive index perturbation that has at least one rising portion and at least one falling portion along the waveguiding axis, and at least one segment, to be referred to as a resonant segment, included between the rising and falling portions, whereby, absent any further exposure to actinic radiation, the reflectivity spectrum comprises at least one subsidiary peak,

CHARACTERIZED IN THAT the method further comprises:

f) producing a second refractive index perturbation in the body, resulting in a reduction of the amplitude of the subsidiary peak relative to the main peak.

5,309,261

OPTICAL SYSTEM FOR LASER BEAM SCANNER

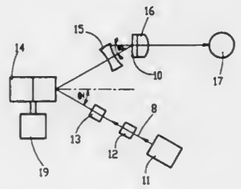
Keun Y. Yang, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 1, 1992, Ser. No. 907,037

Claims priority, application Rep. of Korea, Jul. 3, 1991, 11253/1991

Int. Cl.[5] G02B *27/10*

U.S. Cl. 359—19 **3 Claims**



1. An optical system for a laser beam scanner, comprising:

a light source for generating a laser beam,

a rotary polyhedron for directing the laser beam from said light source to a compensating lens array,

said compensating lens array including a concave lens for receiving the laser beam from said rotary polyhedron and a convex lens attached with a holographic optical element for compensating the laser beam reflected from the rotary polyhedron and scanning the compensated laser beam to a drum, and

wherein said holographic optical element is manufactured using a first and a second cylindrical lens having powers which cross at right angles and the holographic element is attached to the convex lens so as to satisfy the equations

$$\frac{1}{HF1} = (N-1)\left[\frac{1}{2F1} - \frac{1}{R2} + \frac{T(N-1)}{2F1R2N}\right]$$

and

$$\frac{1}{HF2} = (N-1)\left[\frac{1}{2F2} - \frac{1}{R2'} + \frac{T(N-1)}{2F2R2'N}\right]$$

where, HF1 is a focus distance of the holographic optical element at the scanning plane, HF2 is a focus distance of the holographic optical element at a plane perpendicular to the scanning plane, N is a refractive index of the convex lens, F1 is a distance between the focus of the first cylindrical lens and the holographic optical element at the scanning plane, F2 is a distance between the focus of the second cylindrical lens and the holographic optical element at a plane perpendicular to the scanning plane, T is

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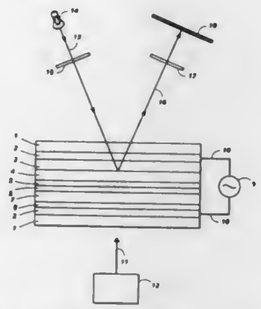
a thickness of the convex lens, R2 is a radius of curvature of the convex lens at the scanning plane, and R2' is a radius of curvature of the convex lens at a plane perpendicular to the scanning plane.

5,309,262

OPTICALLY ADDRESSED LIGHT VALVE SYSTEM WITH TWO DIELECTRIC MIRRORS SEPARATED BY A LIGHT SEPARATING ELEMENT

Werner E. Haas, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1992, Ser. No. 995,730
Int. Cl.[5] G02F *1/1335, 1/135*
U.S. Cl. 359—67 18 Claims



18. Imaging apparatus comprising:

a. light valve comprising a first transparent electrically insulating layer, a first transparent electrically conductive layer, an electro-optic imaging medium layer, a first dielectric mirror, a light separating layer comprising an organic dye, organic pigment, or semiconductor layer selected from the group consisting of As, Se, Te, Bi, Sb, Ge, Si, S or alloys thereof, a second dielectric mirror, a photoconductor layer selected from the group consisting of selenium, selenium alloys and silicon which is sensitive to actinic radiation, a second transparent electrically conductive layer and a second transparent layer, wherein said separating element absorbs actinic radiation comprising wavelengths between about 4000 angstroms and about 7,000 angstroms and wherein said separating layer is at least as electrically insulating as said photoconductor layer in the dark;

b. means for applying an alternating voltage between said first transparent electrically conductive layer and said second electrically conductive layer;

c. means for illuminating said light valve from said second transparent layer side with actinic radiation in imagewise configuration; and

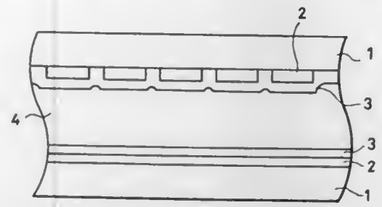
d. means for uniformly illuminating said light valve from said first transparent electrically insulating layer side with broad band radiation which includes actinic radiation having a wavelength between about 4000 angstroms and about 7,500 angstroms; said light separating layer having a thickness and coefficient of absorption for said actinic radiation sufficient to maintain the transmission of said actinic radiation through said separating layer to less than about 50 percent upon activation of said means for uniformly illuminating said device.

5,309,263

LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE AND MANUFACTURING METHOD FOR THE SAME

Masahiko Sato, Isehara, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Continuation of Ser. No. 616,359, Nov. 21, 1990, abandoned.
This application Sep. 24, 1992, Ser. No. 950,771
Claims priority, application Japan, Nov. 24, 1989, 1-305888
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—79 16 Claims



14. A method of manufacturing a liquid crystal device comprising a pair of substrates, a liquid crystal layer disposed between said substrates and electrode arrangements provided on said substrates for applying voltages to said liquid crystal layer, said method comprising the steps of:

providing an ion absorbing film on at least one of said substrates having said electrode arrangements thereon;

forming a liquid crystal layer between said substrates so that said ion absorbing film directly contacts said liquid crystal layer;

heating said liquid crystal device to promote ion absorption by said film; and

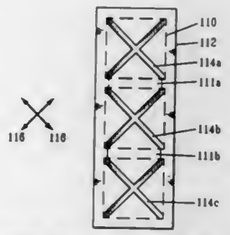
applying a voltage across said liquid crystal layer through said electrode arrangements during heating said device to further promote ion absorption by said film.

5,309,264

LIQUID CRYSTAL DISPLAYS HAVING MULTI-DOMAIN CELLS

Shui-Chih A. Lien, Briarcliff Manor, and Richard A. John, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 879,256
Int. Cl.[5] G02F *1/1343, 1/1337*
U.S. Cl. 359—87 29 Claims



1. A liquid crystal display comprising display elements arranged in an array of rows and columns, a first substrate having a plurality of electrodes thereon, a second substrate having a common electrode thereon, a liquid crystal material disposed between the first substrate and the second substrate, and said common electrode having a pattern of openings therein so that said display elements are caused to have more than one liquid crystal domain, the common electrode being otherwise continuous except where the pattern is located, the common electrode spanning an entire display area so as to serve as an electrode for all said display elements.

5,309,265

SHORT PITCH LC LAYER WITH A TEMPERATURE INDEPENDENT λ_0 AND CONTAINING A NEMATIC LC DOPED WITH PLURAL CHIRAL ADDITIVES HAVING THE SAME TWIST SENSE

Richard Buchecker, Zurich; Jürg Fünfschilling, Basel, and Martin Schadt, Seltisberg, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 690,893, Jun. 20, 1991, abandoned.
This application Nov. 23, 1992, Ser. No. 981,907
Claims priority, application Switzerland, Nov. 1, 1989, 3948/89
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—102 3 Claims

1. A liquid crystal layer containing a liquid crystal composition with a central wavelength of selective reflection λ_o wherein

said liquid crystal layer has a short pitch (p) equal to about one order of magnitude less than the layer thickness;

said liquid crystal composition comprises a nematic liquid crystal compound doped with at least two chiral additives of the same twist sense, wherein said composition has the parameters a and b where a is the reciprocal of the refractive index of 22° C. and b is the linear temperature coefficient of the reciprocal of the refractive index and each chiral additive (k) has the parameters A_K and B_K and A_K is the twisting power (1/p) at 22° C. and B_k is the liner temperature coefficient of the twisting power; and

the parameters a, b, A_K and B_k are such that λ_o is temperature compensated to have temperature independence.

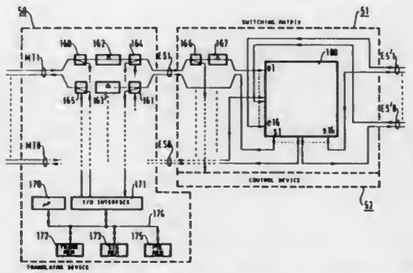
2. The liquid crystal layer of claim 1, wherein there are only two additives which have the respective concentrations c_1 and c_2 and satisfy the condition $a(c_1B_1+c_2B_2)=b(c_1A_1+c_2A_2)$.

5,309,266

PHOTONIC SWITCHING MATRIX

Jean-Baptiste Jacob, Perros-Guirec; Guy Le Roy, Lannion, and Jean-Michel Gabriagues, Le Val Saint-Germain, all of France, assignors to Societe Anonyme dite: Alcatel Cit, Paris, France

Filed Jan. 28, 1992, Ser. No. 827,168
Claims priority, application France, Jan. 29, 1991, 91 00978
Int. Cl.[5] H04B *10/20*
U.S. Cl. 359—139 3 Claims



1. A photonic switching matrix having n inputs and n outputs for switching data in the form of fixed length cells asynchronously time-division multiplexed onto optical fibers, said photonic switching matrix comprising:

a plurality of wavelength converters at respective inputs of the photonic switching matrix to assign a wavelength to each cell applied to an input of the photonic switching matrix;

an optical buffer, connected to outputs of said plurality of wavelength converters, common to all the outputs of the photonic switching matrix for storing each cell for a duration selectable between 0 and $k \cdot T_c$ where K is an integer and T_c is the duration of a cell;

a space routing stage, connected to said optical buffer, comprising a filter for each output of the photonic switching matrix passing to a given output only cells having a given wavelength; and

control means for controlling the wavelength converters and the optical buffer according to routing information indicating for each cell the output of the photonic switching matrix to which said cell is addressed and for selecting the duration for which each cell is stored in the optical buffer so as to construct a queue for each output to avoid conflicts between two cells to be switched to the same output;

wherein said optical buffer comprises:

$k+1$ delay lines respectively introducing time-delays 0, . . . , $K \cdot T_c$ and having outputs connected to inputs of the space routing stage;

$k+1$ combiners each having n inputs and an output connected to an input of a delay line;

n splitters each having an input constituting an input of the optical buffer and $k+2$ outputs; and

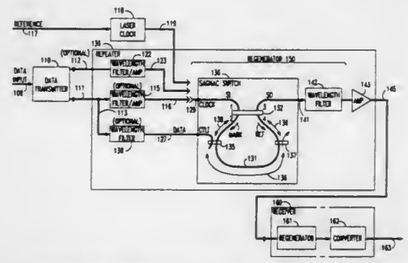
$(k+2) \cdot n$ optical gates each connecting an output of one of the n splitters to an input of a respective one of the $k+1$ combiners to said control means, said optical gates being controlled by the control means so that each splitter is connected to a single combiner at a time.

5,309,267

OPTICAL COMMUNICATION SYSTEM USING A SAGNAC SWITCH

Alan Huang, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 25, 1992, Ser. No. 950,521
Int. Cl.[5] H04B *10/02;* H04J *14/08*
U.S. Cl. 359—139 20 Claims



1. An optical communication system comprising

an optical communication path which, when it receives an optical data signal at one end, outputs a deteriorated corresponding optical data signal at a second end;

means for deriving an optical clock signal from other than said deteriorated data signal, said clock signal having a frequency which is equal to the deteriorated data signal frequency and which is not substantially phase synchronized to said deteriorated data signal;

means for generating a new optical data signal from said deteriorated data signal, said generator means including

a controllable propagation speed medium having a first propagation speed for said deteriorated data signal and a second propagation speed for said clock signal, said medium being of a length to ensure that the difference between said first and second propagation speeds results in the faster signal travelling through said medium approximately one clock period time T faster than the slower signal;

means for injecting said clock signal, into said medium, to

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develop a propagating interacting signal that travels in said medium in one direction at said second propagation speed and a counter propagating reference signal that travels in said medium in the opposite direction at said second propagation speed;

means for controllably injecting said deteriorated data signal into said medium, without regard to its timing with respect to said interacting signal, to travel through said medium in the direction of said interacting signal at said first propagation speed, the difference in propagation speed between said deteriorated data signal and said interacting signal causing the deteriorated data signal and the interacting signal to traverse each other while travelling through said medium and

A means for combining said propagating interaction signal and said counter propagating reference signal after they travel through said medium to generate said new optical data signal by substitution of said clock signal for said deteriorated data signal when said deteriorated data signal and said interacting signal traverse each other while travelling through said medium, so that said new optical data signal has the same data pattern as said deteriorated data signal.

5,309,268

OPTICAL COMMUNICATION SYSTEM AND OPTICAL COMMUNICATION METHOD

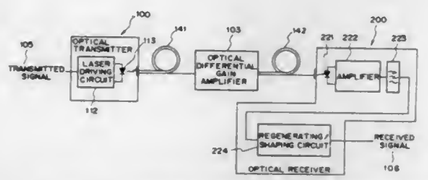
Kenji Nakamura, Hadano, and Jun Nitta, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 487,394, Mar. 2, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 123,900

Claims priority, application Japan, Mar. 9, 1989, 1-55067; Mar. 9, 1989, 1-55068

Int. Cl.[5] H04B *10/00, 10/02*

U.S. Cl. 359—154 **12 Claims**



1. An optical communication system for communicating between a transmission side and a reception side, comprising:

optical output means, disposed on the transmission side, for either turning on or off an optical output in accordance with a binary signal and emitting the optical output into a first optical transmission channel of the transmission side;

receiving means, disposed on the reception side, for receiving an optical signal from a second optical transmission channel; and

optical intermediate means, disposed between said first and second optical transmission channels, for transferring light to said second optical transmission channel, said light being generated in accordance with an optical input from said first optical transmission channel, said optical intermediate means comprising an optical differential gain amplifier;

wherein said optical intermediate means provides spontaneous emission of reduced intensity in a case where the optical input is less than a predetermined threshold and outputs light of increased intensity in a case where the optical input is not less than the predetermined threshold.

5,309,269

LIGHT TRANSMITTER

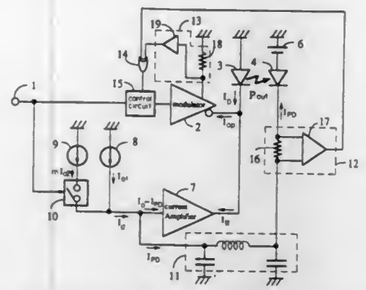
Shinji Shibao, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,173

Claims priority, application Japan, Apr. 4, 1991, 3-71646; Apr. 12, 1991, 3-79781

Int. Cl.[5] H04B *10/04*

U.S. Cl. 359—187 **16 Claims**



1. A light transmitter having a modulator which applies a binary modulation current to a light generation element, and in response to binary transmitted data, a light receiving element which receives a part of the light from the light generation element means for applying a current to the light generation element in proportion to the current difference between a reference current generated in the reference current source and a current flowing in the light receiving element, the transmitter comprising:

a first current to voltage conversion circuit for converting the signal current flowing in the light receiving element to a voltage signal;

a second current to voltage conversion circuit for converting the modulation current outputted from the modulator to a voltage signal;

a mismatch detection circuit for receiving, and determining the mismatch between, the voltage outputted from the first current to voltage conversion circuit and the voltage outputted from the second current to voltage conversion circuit and for providing an output; and

a modulation current control circuit for controlling the modulation current of the modulator in response to the output from the mismatch detection circuit.

5,309,270

OPTICAL SCANNING SYSTEM

Hiromitsu Yamakawa, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 30, 1992, Ser. No. 954,907

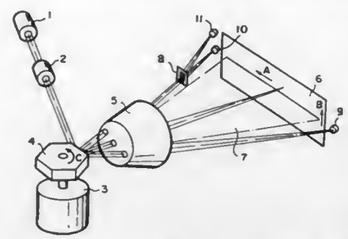
Claims priority, application Japan, Feb. 5, 1992, 4-019938

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—196 **8 Claims**

1. An optical scanning system wherein the optical scanning across an image plane is effected by the deflection of a light beam by means of a light deflector, and wherein a scan timing is detected by either of two light receiving means and the quantity of scanning light is detected by the other of the two light receiving means, theses two light receiving means being disposed in the scan direction at one side external to an effective scan field which is defined within the image plane, wherein the improvement comprises:

a light beam splitting means for separating the light beam into at least two beams, the splitting means being disposed between the light deflector means and the image plane and also located where the light beam passes after being deflected beyond the effective scan field, whereby one of the split beams produced by the light beam splitter means falls



on either of the two light receiving means, whilst the other split beam falls on the other light receiving means.

5,309,271

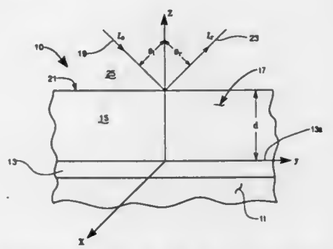
THIN FILM MULTISTABLE ANGULAR OPTICAL SWITCH

Phillip R. Peterson, and Athanasios Gavrielides, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 7, 1991, Ser. No. 637,739

Int. Cl.[5] G02F *1/03, 1/07, 1/00*

U.S. Cl. 359—241 **7 Claims**



2. An intensity sensitive optical switch comprising:

(a) a conducting layer of preselected thickness; and

(b) a layer of nonlinear Kerr material of preselected thickness in the range of 500 to 1500 microns disposed on said conducting surface.

5,309,272

DUAL PASS BINARY DIFFRACTIVE OPTICAL ELEMENT SCANNER

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1992, Ser. No. 989,320

Int. Cl.[5] G02B *26/08, 5/32*

U.S. Cl. 359—196 **16 Claims**

1. An optical scanner for scanning a light beam along a scan line comprising:

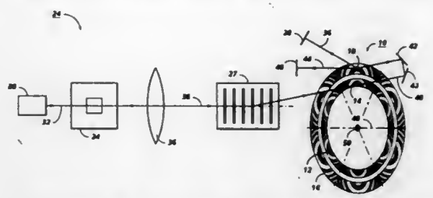
a light source for emitting a coherent light beam,

means to collimate said coherent light beam,

a first stationary binary diffractive optical element to condition said collimated light beam at said scan line,

a rotating disc with a first plurality of binary diffractive optical elements and a second plurality of binary diffractive optical elements, said first plurality of binary diffractive optical elements diffracting said collimated, conditioned light beam to focus said light beam at said scan line, and

reflecting means to direct said light beam from said first plurality of binary diffractive optical elements to said second plurality of binary diffractive optical elements, said second plurality of binary diffractive optical elements



diffracting said reflected light beam to scan said light beam along said scan line.

5,309,273

YAG LASER MASK MARKER

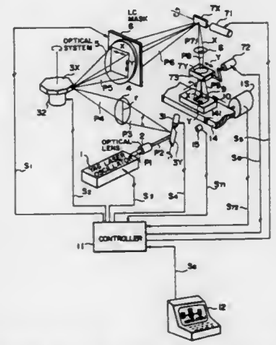
Akira Mori, Chigasaki, and Yukihiro Tsuda, Hatano, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 926,780

Claims priority, application Japan, Aug. 9, 1991, 3-224916

Int. Cl.[5] G02B *26/08;* **B23K** *26/00*

U.S. Cl. 359—202 **44 Claims**



1. A laser mask marker for marking a pattern on a surface of a work, said mask marker comprising:

a laser oscillator having a Q switch;

a first deflector for deflecting in X and Y directions a laser beam from said laser oscillator;

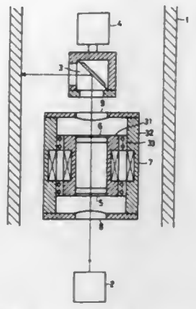
a liquid crystal mask for displaying a predetermined pattern to be raster scanned by the laser beam from said first deflector and for transmitting the resulting raster scanned laser beam through said liquid crystal mask responsive to the thus scanned pattern;

a second deflector for deflecting in X and Y directions the thus transmitted raster scanned laser beam onto the work; and

a controller which stores pattern data representing a pattern to be marked on the work, and controls the marking of the work by displaying on said liquid crystal mask at least a portion of the stored pattern data.

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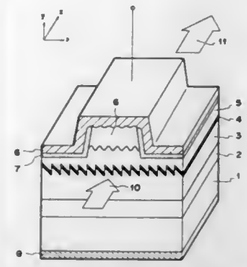
5,309,274
OPTICAL BEAM SCANNING APPARATUS
Yuichi Akanabe, Hino, Japan, assignor to Konica Corporation, Hino, Japan
Filed Feb. 25, 1993, Ser. No. 22,625
Claims priority, application Japan, Feb. 28, 1992, 4-043662
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—209 **19 Claims**



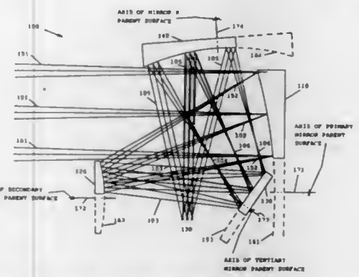
2. An apparatus for recording an image on a photosensitive material by scanning with an optical beam having image information of the image, comprising:
a cylinder for holding the photosensitive material, wherein the photosensitive material faces an interior of the cylinder and is adapted to be scanned in a circumferential direction thereof;
means for projecting the optical beam;
first optical means for transmitting the optical beam projected from the projecting means to the interior of the cylinder in a direction substantially parallel to a central axis of the cylinder, wherein the first optical means includes two anamorphic optical systems, and the optical beam passes through the two anamorphic optical systems;
means for rotating the first optical means about the central axis, wherein the first optical means rotates the optical beam projected from the projecting means about a rotating axis of the first optical means at a rotating speed twice the rotating speed of the first optical means;
second optical means for transmitting the rotated optical beam and changing a direction of the optical beam rotated by the first optical means to a direction which is substantially perpendicular to the central axis so as to direct the optical beam onto the photosensitive material; and
means for rotating the second optical means about the central axis synchronized with a rotation of the optical beam rotated by the first optical means whereby the image is recorded on the photosensitive material by scanning with the optical beam transmitted from the second optical means.

5,309,275
SEMICONDUCTOR OPTICAL AMPLIFYING APPARATUS
Michiyo Nishimura, Fujisawa; Jun Nitta, Sagamihara; Kenji Nakamura, Hadano; Masao Majima, Atsugi, and Toru Nakata, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1991, Ser. No. 716,944
Claims priority, application Japan, Jun. 21, 1990, 2-163665
Int. Cl.[5] H01S *3/19;* **H04B** *10/12;* **G02B** *6/12;* **H01L** *33/00*
U.S. Cl. 359—344 **30 Claims**

1. A semiconductor optical amplifying apparatus, comprising:
a substrate;
an active layer having a quantum well structure formed on said substrate, said active layer guiding first guided mode light and second guided mode light having a polarization direction perpendicular to that of the first guided mode light and amplifying the guided lights, said active layer having a wave-shape the height of which is less than respective extents of electric field distributions of the guided lights and which includes a plurality of inclined surfaces, a projected quantization axis obtained by projecting the quantization axis of the quantum well of said active layer in each inclined surface onto a plane perpendicular to a direction to which the guided lights are guided, forming an angle of 45° with respect to each vibration direction of electric field vectors of said first and second guided mode lights; and
an electrode for supplying a current to said active layer.

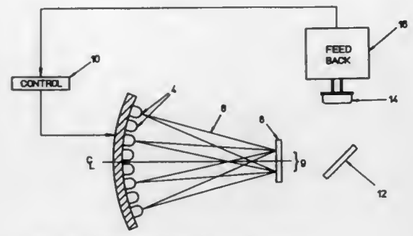


5,309,276
CATOPTRIC OPTICAL SYSTEM INCLUDING CONCAVE AND CONVEX REFLECTORS
John M. Rodgers, Pasadena, Calif., assignor to Optical Research Associates, Pasadena, Calif.
Filed Aug. 29, 1991, Ser. No. 755,515
Int. Cl.[5] G02B *17/06*
U.S. Cl. 359—366 **20 Claims**



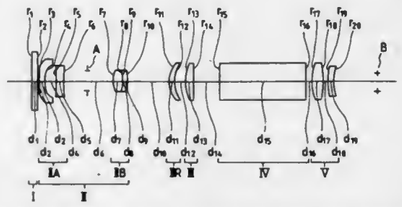
1. An afocal optical system comprising:
concave first reflection means, having an axis, for reflecting an incident beam;
convex second reflection means, disposed to receive the reflected beam from said first reflection means, for reflecting the beam reflected from said first reflection means;
third reflection means, disposed to receive the beam reflected from said second reflection means and having a non-coaxial axis with said second reflection means axes, for reflecting the beam reflected from said second reflection means;
concave fourth reflection means, disposed to receive the beam reflected from said third reflection means, for reflecting the beam reflected from said third reflection means; and
said third reflection means is disposed at a tilt angle relative to said second and fourth reflection means and said fourth reflection means is folded so as to pass two times in front of said first reflection means and emerge as an exit beam being substantially normal to the incident beam.

5,309,277
HIGH INTENSITY ILLUMINATOR
Leslie L. Deck, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.
Filed Jun. 19, 1992, Ser. No. 901,658
Int. Cl.[5] G02B *21/06;* **F21V** *33/00*
U.S. Cl. 359—387 **19 Claims**



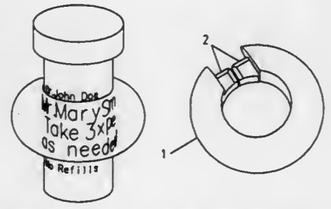
1. A high intensity illuminator comprising;
a mounting fixture;
a receiving surface spaced from said mounting fixture;
a plurality of semiconductor illumination sources, each said illumination source being operable for emitting an outwardly-diverging illumination cone along an axis of illumination of said each source at a predetermined illumination wavelength; said plural illumination sources being mounted on said mounting fixture such that said illumination cones of said sources are overlappingly coincident on a selected portion of said receiving surface to provide at said receiving surface portion a highly uniform illumination of high intensity at said predetermined wavelength; and
a light pipe extending from an input end and terminating at an output end having a surface defining said receiving surface, said light pipe being disposed relative to said mounting fixture so that the illumination cones of said plural illumination sources enter said light pipe at said input end and are directed by said light pipe along said pipe and onto said light pipe output end.

5,309,278
REAL-IMAGE VARIABLE MAGNIFICATION FINDER INCLUDING A LIGHT SHIELD BETWEEN TWO MOVING LENS GROUPS
Takayuki Ito, and Sachio Hasushita, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1992, Ser. No. 952,806
Claims priority, application Japan, Sep. 26, 1991, 3-320117
Int. Cl.[5] G03B *13/06;* **G02B** *13/10, 23/14, 15/163*
U.S. Cl. 359—432 **8 Claims**



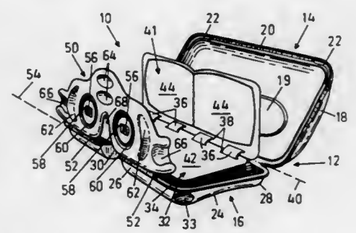
1. A real-image variable magnification finder that comprises, in order from the object side, an objective lens system, a condenser lens with which the image of the object formed by the objective lens system is directed to an eyepiece lens system, an erecting prism system for inverting the image of the object, and the eyepiece lens system, said objective lens system comprising at least two moving groups that will move along the optical axis and a light shielding means that is provided between said moving groups for blocking deleterious rays of light.

5,309,279
SCRIPT VIEW A CURVED CONVEX MAGNIFYING DEVICE
Madeline C. Halstead, Rte. 2 Box 669 Bain La., Mooresville, N.C. 28115
Filed Aug. 21, 1992, Ser. No. 934,353
Int. Cl.[5] G02B *27/02*
U.S. Cl. 359—442 **2 Claims**



1. An instrument for magnifying lines of text printed on a container, said instrument comprising:
a lens means for magnifying said lines of text, said lens means having a shape of an open ring, said open ring having a convex outer surface and a flat inner surface curved inward, and having lead-ins notched into said inner surface and
means for releasably attaching said instrument to said container.

5,309,280
STEREOGRAPHIC BOOK
Charles W. Jones, 630 N. College Ave, Studio 410, Indianapolis, Ind. 46204
Filed Jul. 1, 1992, Ser. No. 907,785
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—474 **20 Claims**



1. A stereographic book comprising:
a base having a first portion and a second portion;
an optical viewer formed integrally with the base, the optical viewer being pivotably coupled to the first portion of the base so that the optical viewer can pivot about a first pivot axis;
a lens system coupled to the optical viewer;
a plurality of pages, the pages including a first surface having an image thereon; and

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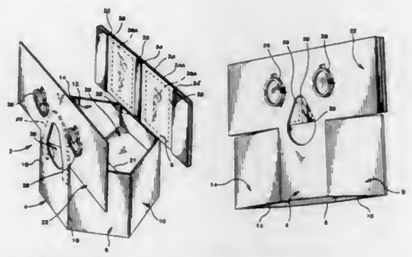
a plurality of binder clips configured to extend through a plurality of apertures formed in the plurality of pages and to engage the base for pivotably coupling the plurality of pages to the second portion of the base about a second pivot axis spaced apart from the first axis by a predetermined distance so that a user can pivot the pages relative to the base and view the image through the lens system of the optical viewer, the binder clips being removable from the base to permit the plurality of pages to be removed from the base, rearranged, and reattached to the base.

5,309,281

FOLDABLE STEREOSCOPIC VIEWER

Chris R. Rover, Lambs La., Cresskill, N.J. 07620

Filed Nov. 19, 1992, Ser. No. 978,717
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—474 **10 Claims**



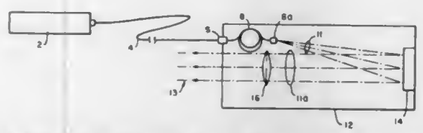
1. A foldable stereoscopic viewer, comprising:
a continuous frame in the form of a regular hexagon including six substantially longitudinally extending panels each of which is creased at its opposite sides so that the frame is foldable outwardly and inwardly;
the plurality of longitudinally extending panels including a front panel and a rear panel;
a first member having an inner and outer surface and integral with the front panel, and extending substantially transversely across the top and beyond the opposite sides thereof, and carrying a pair of eyepieces disposed in spaced relation to each other;
a second member having an inner and outer surface and integral with the rear panel, and extending substantially transversely across the top and beyond the opposite sides thereof, and carrying a pair of stereoscopically paired pictures, said pictures and eyepieces being in viewing alignment;
the first and second members being displaced away from and toward each other when the frame is folded outwardly and inwardly, respectively, for allowing an observer to focus on the stereoscopically paired pictures in accordance with the observer's particularly optical characteristics, to present a three-dimensional image to the observer;
the front and rear panels each having an inner and outer surface;
a bracing member having one end secured to the inner surface of the front panel and an opposite end secured to the inner surface of the rear panel;
the bracing member being creased so as to be foldable with the frame;
the inner surface of the second member including a first pair of parallel rails in longitudinal spaced relation near one end thereof and a second pair of parallel rails in like spaced relation near the opposite end;
each of the first and second pairs of parallel rails receiving one of the stereoscopically paired pictures; and
the opposite end of the bracing member secured to the inner surface of the rear panel forming a ledge which prevents the stereoscopically paired pictures from dropping through the respective pairs of rails receiving said pictures.

5,309,282

HIGH STABILITY WAVEFRONT REFERENCE SOURCE

Mark Feldman, Pleasanton, and Daniel J. Mockler, Tracy, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1992, Ser. No. 914,325
Int. Cl.[5] G02B *27/30, 7/00, 6/00*
U.S. Cl. 359—641 **17 Claims**



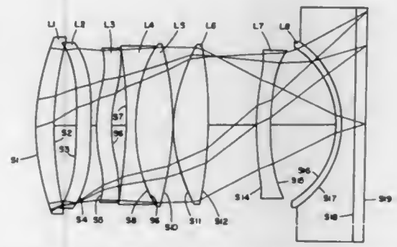
1. An apparatus for generating a collimated wavefront reference beam from coherent radiation propagating within an input optical fiber, including:
a thermally stable frame;
a beam folding mirror attached to the frame;
input beam means for generating a diverging beam from the coherent radiation and directing the diverging beam to the mirror, thereby causing the diverging beam to reflect from the mirror as a diverging reflected beam; and
a collimating lens mounted to the frame in a position for receiving and collimating the diverging reflected beam, thereby generating the collimated wavefront reference beam, wherein the frame includes:
a front plate;
aback plate;
means for mounting the beam folding mirror to the back plate; and
a set of substantially parallel rods connected between the front plate and the back plate.

5,309,283

HYBRID, COLOR-CORRECTED, PROJECTION TV LENS SYSTEM

Melvyn H. Kreitzer, Cincinnati, Ohio, assignor to U.S. Precision Lens Incorporated, Cincinnati, Ohio

Filed Mar. 30, 1993, Ser. No. 40,109
Int. Cl.[3] G02B *3/00*; H04N *9/31, 9/16*
U.S. Cl. 359—649 **28 Claims**



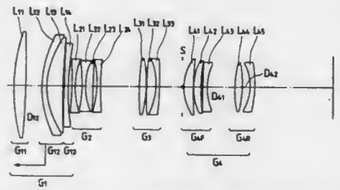
1. A projection lens system for use with a cathode ray tube comprising in order from the system's image side:
a first lens unit comprising a first lens element having spherical surfaces, a second lens element having at least one aspherical surface, and a third lens element having at least one aspherical surface, the second and third lens elements each having a focal length whose magnitude is greater than the focal length of the first lens element;
a second lens unit for supplying the majority of the lens system's positive optical power;
a corrector lens unit having at least one aspherical surface; and
a third lens unit which is associated with the cathode ray tube during use of the lens system and which provides most of the correction for the field curvature of the lens system, said third lens unit having a negative optical power.

5,309,284

GREAT RELATIVE APERTURE TELEPHOTO ZOOM LENS

Masahiro Nakatsuji, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,763
Claims priority, application Japan, Feb. 5, 1992, 4-20073
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—687 **4 Claims**



1. A great relative aperture telephoto zoom lens of four-unit construction having in succession from the object side:
a first lens unit having positive refractive power;
a second lens unit having negative refractive power;
a third lens unit having positive refractive power; and
a fourth lens unit having positive refractive power;
said fourth lens unit having, in succession from the object side, a front group having positive refractive power and a rear group having positive refractive power;
said front group having, in succession from the object side, two positive lens components and a negative lens component;
said rear group having, in succession from the object side, a positive lens component and a negative lens component, and being designed to satisfy the following conditions:

$$1.5 < f_4/(D_{41} \cdot f_n) < 3.0$$

$$3.1 < D_{41}/D_{42} < 4.8$$

$$-3.7 < q_{43} < -1.2$$

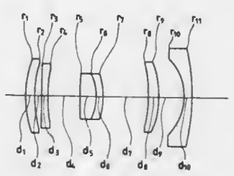
where
f_4: the focal length of the fourth lens unit;
Fn: F number of the entire system;
D_{41}: the air gap from the image side lens surface of that positive lens component in the front group in the fourth lens unit which is most adjacent to the image side to the object side lens surface of that lens component in the rear group in the fourth lens unit which is most adjacent to the object side;
D_{42}: the air gap from the image side lens surface of that lens component in the rear group in the fourth lens unit which is most adjacent to the object side to the object side lens surface of that lens component in the rear group in the fourth lens unit which is most adjacent to the image side;
q_{43}: the shape factor of the negative lens component in the front group in the fourth lens unit, it being to be understood that when the radius of curvature of the object side lens surface is ra and the radius of curvature of the image side lens surface is rb, the shape factor q is defined by $q=(rb+ra)/(rb-ra)$.

5,309,285

ZOOM LENS SYSTEM FOR USE WITH A COMPACT CAMERA

Takayuki Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 589,565, Sep. 28, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 945,433
Claims priority, application Japan, Sep. 29, 1989, 1-254809
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—692 **16 Claims**



1. In a zoom lens system for use with a compact camera that comprises, in order from the object side, a first lens group having a positive focal length and a second lens group having a negative focal length and which performs zooming by changing the distance between the first and second lens groups, the improvement wherein said first lens group comprises, in order from the object side, a subgroup 1a of a small power that is composed of a positive first lens and a negative second lens and a subgroup 1b of a large positive power that has a surface of a negative power on the image side, said subgroup 1a having at least one aspheric surface that has a divergent amount of a sphericity with respect to a paraxial radius of curvature satisfying the following condition (5), and said zoom lens system further satisfying the following conditions:

$$N_{1a-1} < 1.65 \quad (1)$$

$$N_{1a-2} < 1.65 \quad (2)$$

$$\frac{f_1}{|f_{1a}|} < 0.25 \quad (3)$$

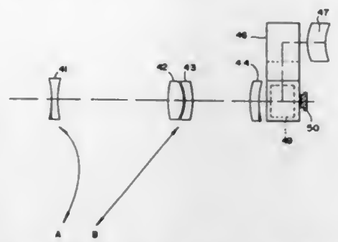
$$0.9 < \frac{f_1}{f_{1b}} < 1.25 \quad (4)$$

$$-50 < \Delta I_{1a} < -5 \quad (5)$$

where:
N_{1a-1}: the refractive index at the d-line of the first lens in subgroup 1a;
N_{1a-2}: the refractive index at the d-line of the second lens in subgroup 1a;
f_1: the focal length of the first lens group;
f_{1a}: the focal length of subgroup 1a;
f_{1b}: the focal length of subgroup 1b; and
Δ_{1a}: the amount of change in the coefficient of a third-order spherical aberration caused by the aspheric surface in subgroup 1a (i.e., an aberrational coefficient as calculated on the assumption that the focal length of the overall system at the wide-angle end is 1.0);

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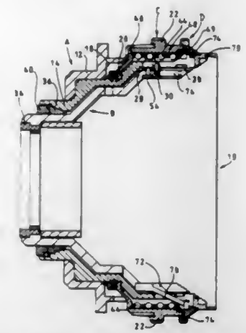
5,309,286
ZOOM FINDER
Tetsuya Abe, and Tahei Morisawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 658,703, Feb. 21, 1991, Pat. No. 5,191,477. This application Oct. 20, 1992, Ser. No. 963,903
Claims priority, application Japan, Feb. 22, 1990, 2-41461
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] G02B *13/02*
U.S. Cl. 359—695 **18 Claims**



18. A zoom finder, including at least one movable lens group, said zoom finder comprising:
an objective optical system of positive power having a first lens group of negative power, a second lens group of positive power, and means for producing a field flattening effect for correcting a curvature of field; and
an eyepiece optical system of positive power through which an image formed by said objective optical system is observed
said means for producing a field flattening effect comprising a third lens group and wherein a focal length f3 of said third lens group and a focal length f_T of said objective optical system at a telephoto extremity satisfy the following relationship:
$|f_T/f3/<0.5$.

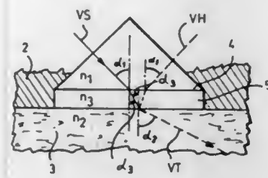
5,309,287
SCREW - THREAD ARRANGEMENT
Alan R. Cheeseman, 9, Alex Grierson Close, Binley, Coventry, England CV3 2QJ
PCT No. PCT/GB91/00658, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO91/16661, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 25, 1991, Ser. No. 968,000
Claims priority, application United Kingdom, Apr. 26, 1990, 9009344
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—829 **34 Claims**

1. A screw-thread arrangement for enabling two coaxial members (22,B) to be rotated relative to one another to move said members axially one relative to another, the arrangement comprising:
a screw-thread (**44**) formed or a radial surface of a first of said members (22,B) and radially spaced front a second of said members;
a plurality of followers (**30**) positioned between said coaxial members and supported on Baid second of said members; and
means (**56**) biasing said followers into engagement with said screw-thread to cause said followers to follow said screw-



thread on relative rotation of said members to involve said members axially relative to one another.

5,309,288
PRISMATIC DEVICE FOR USE WITH PROCESS REFRACTOMETERS
Jan Kahre, Helsinki, Finland, assignor to Janesko Oy, Vantaa, Finland
Filed Sep. 3, 1992, Ser. No. 940,015
Claims priority, application Finland, Sep. 18, 1991, 914386
Int. Cl.[5] G02B *5/04;* **G01N** *21/41*
U.S. Cl. 359—831 **6 Claims**

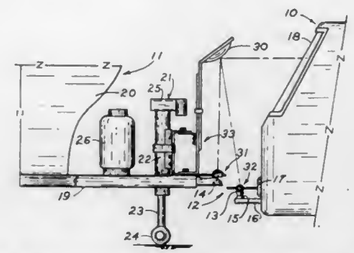


1. A prismatic device for use with a process refractometer to measure a condition of a process material having a refractive index, the device comprising: a prismatic body having a refractive index greater than the refractive index of the process material to be measured, and having a planar face portion; an optically transparent layer of material having a index greater than the refractive index of the prismatic body; the optically transparent material comprising a first surface bonded to the planar face portion of the prismatic body and defining a first interface therebetween, and comprising a second surface disposed for contact with the process material to be measured, a second interface being defined by the second surface and the process material to be measured.

5,309,289
OPTICAL TARGET SYSTEM FOR TRAILER HITCH ALIGNMENT
Brady G. Johnson, 202 English Ave., Newark, Ohio 43055
Filed Mar. 11, 1991, Ser. No. 667,182
Int. Cl.[5] G02B *7/18;* **G01C** *5/00*
U.S. Cl. 359—871 **29 Claims**

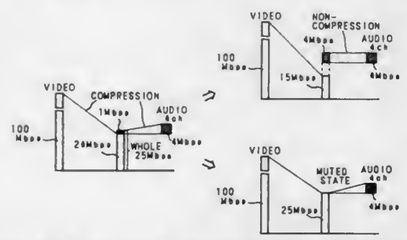
1. An optical target system for facilitating an operator's maneuvering of a towing vehicle having a hitch assembly component to position that component in cooperative alignment with a hitch assembly component carried on a forwardly extending tongue of a towed vehicle to enable mechanical

interconnection of the hitch assembly components, said optical target system comprising
A) a viewing mirror adapted to be supported in a position with respect to the towed vehicle to provide an operator of the towing vehicle with a visual image of the hitch assembly components during maneuvering of the towing vehicle for effecting alignment of the components as seen from a position substantially vertically above the hitch assembly components;
B) a first target positionable with respect to the towed vehicle's hitch assembly component and including longitudi-



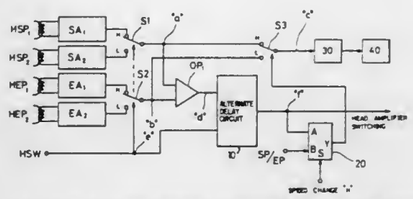
nal and transverse guidance elements disposed in a substantially horizontal plane and oriented to provide reference to a vertical axis extending through the towed vehicle's hitch assembly component; and
C) a second target adapted to be carried on the towing vehicle and including longitudinal and transverse guidance elements disposed in a substantially horizontal plane and oriented to provide a reference to a vertical axis extending through the towing vehicle's hitch assembly component, said longitudinal guidance element positionable in a selected relationship to the longitudinal axis of the towing vehicle.

5,309,290
APPARATUS FOR VARIABLY COMPRESSING VIDEO AND AUDIO INFORMATION WITHIN CONSTANT DATA BLOCK
Kazuhiro Sugiyama; Ken Onishi; Kimitoshi Hongo, and Yukari Ono, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 5, 1992, Ser. No. 894,575
Claims priority, application Japan, Jun. 7, 1991, 3-136446
Int. Cl.[5] G11B *5/00, 5/09, 15/14*
U.S. Cl. 360—32 **10 Claims**



1. A digital video/audio recording and reproducing apparatus for recording digitized video and audio signals on a recording medium at a fixed amount of information per unit time and for reproducing the digitized video and audio signals from the recording medium at a fixed amount of information per unit time, comprising:
first encoding means for compressing and encoding a digitized video signal with a first variable reduction rate;
second encoding means for compressing and encoding a digitized audio signal with a second variable reduction rate; and
control means for controlling the first and second reduction rates in said first and said second encoding means so that a sum of an information amount of the encoded video signal and an information amount of the encoded audio signal is maintained constant.
2. The digital video/audio recording and reproducing apparatus of claim **1**, wherein
said control means controls the first and second reduction rates in said first and said second encoding means so that when the information amount of the encoded video signal is smaller than a reserved video information amount, the encoded audio signal is recorded in a recording area originally provided on the recording medium for recording the encoded video signal, and so that when the information amount of the encoded audio signal is smaller than a reserved audio information amount, the encoded video signal is recorded in a recording area originally provided on the recording medium for recording the encoded audio signal.

5,309,291
CIRCUIT FOR COMPENSATING THE ERRORS OCCURRING WHEN CHANGING THE PLAYING BACK SPEED OF A DOUBLE AZIMUTH 4-HEAD VTR
Jin S. Jeon, Kyungki, Rep. of Korea, assignor to GoldStar Co., Ltd., Rep. of Korea
Filed Dec. 17, 1991, Ser. No. 808,707
Claims priority, application Rep. of Korea, Dec. 22, 1990, 90-21408
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—36.1 **1 Claim**



1. A circuit for compensating horizontal and vertical timing errors occurring when changing a playing back speed of a double azimuth 4-head VTR having four heads in a reading and writing system having reading and writing clock and a field memory storing 1H signals, the circuit comprising:
first and second switches switching data retrieved by the four heads and amplified in response to head switching signals and outputting first and second output signals;
a comparator comparing the first and second output signals received from said first and second switches and outputting head comparing switching signals;
an alternate delay circuit receiving the head comparing switching signals from said comparator and said head switching signals, and delaying horizontal synchronization by 2H during the switching of the data to delay skew signals and not to delay normal signals, said alternate delay circuit comprising an integrating circuit integrating the head comparing switching signals and outputting an integrated signal, a buffer amplifying the integrated signal received from the integrating circuit to a given value and outputting an amplified signal, and a delay multiplexer receiving the amplified signal from said buffer and the head switching signal and outputting delay signals;
a multiplexer generating control signals in response to the delay signals received from said alternate delay circuit and SP/EP head changing pulses;
a third switch transmitting one of the first and second output

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signals received from one of the first and second switches in response to the control signals received from said multiplexer as a third output signal;

a pre-amplifier having a high frequency output terminal, receiving and amplifying the third output signal from said third switch and outputting video signals via the high frequency output terminal; and

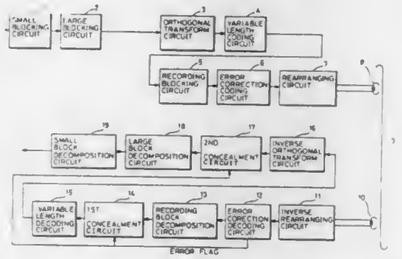
a time base correction (TBC) circuit for receiving the video signals from said high frequency output terminal of the pre-amplifier to retrieve the 1H signals from the field memory to independently operate the reading and writing clocks, thereby compensating the horizontal and vertical timing errors of the delay signals output by said alternate delay circuit.

5,309,292

DIGITAL RECORDING AND/OR REPRODUCTION APPARATUS OF VIDEO SIGNAL REARRANGING MAIN COMPONENTS WITHIN A FIXED LENGTH BLOCK

Eiichi Takakura, Kashiwa, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 15, 1993, Ser. No. 5,382
Claims priority, application Japan, Jan. 17, 1992, 4-006301
Int. Cl.[5] G11B *5/09*; H04N *7/12*
U.S. Cl. 360—48 **15 Claims**



1. An apparatus for recording digitally a supplied digital video signal, comprising:

means for forming a plurality of small blocks, each including a plurality of pixels in the horizontal direction and the vertical direction of said digital video signal,

means for forming a plurality of large blocks, each including a plurality of said small blocks located distant from each other on a screen,

means for coding said digital video signal for each of said small blocks constituting said large block,

means for controlling the code amount for each said large block so that the total code amount of the plurality of said small blocks constituting said large block is constant to form a fixed length block,

means for dividing said fixed length block into a plurality of recording blocks so that respective main components of the plurality of said small blocks constituting said fixed length block are included separately in the plurality of recording blocks,

means for applying coding for error correction to be made at the time of reproduction to said plurality of recording blocks to form a plurality of error correction blocks,

means for rearranging said plurality of recording blocks included in said plurality of error correction blocks on the basis of said recording block so that recording blocks including the main components of small blocks adjacent to each other on a screen are also adjacent on a recording medium, and

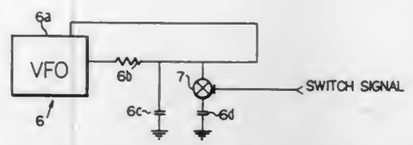
means for recording said rearranged plurality of recording blocks on said recording medium.

5,309,293

MAGNETIC RECORDING/REPRODUCING APPARATUS

Masahiro Ikeda, Shimosuwa, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

Filed Mar. 11, 1992, Ser. No. 849,358
Claims priority, application Japan, Mar. 25, 1991, 3-060114
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 **5 Claims**



1. A magnetic recording/reproducing apparatus for recording data on a medium, for checking the recorded data and for retrieving any of the recorded data, said apparatus comprising:

data reproduction means for reading data from a medium;

conversion means for converting the signals for the reproduced data from said data reproduction means into read data pulses;

a variable frequency oscillator for producing read data and window data out of the read data pulses from said conversion means; and

follow-up characteristics switch means for switching the follow-up characteristics of said variable frequency oscillator from a narrow range option suitable for data checking to a wide range option suitable for data reproduction;

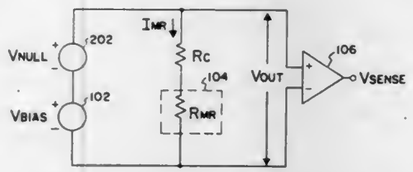
whereby a high level of quality of recorded data can be maintained, a wide range of compatability of recording media is ensured and the rate of issuing error signals due to instantaneous speed variances is reduced.

5,309,294

METHOD AND CIRCUITRY TO PROVIDE TRUE VOLTAGE BIAS TO A MAGNETORESISTIVE HEAD

Dennis J. Cahalan, Boulder, Colo., assignor to Rocky Mountain Magnetics, Inc., Louisville, Colo.

Filed Sep. 8, 1992, Ser. No. 941,929
Int. Cl.[5] G11B *5/03*
U.S. Cl. 360—66 **12 Claims**



1. A circuit which compensates for a parasitic voltage drop by providing a constant voltage bias across an element, wherein the circuit generates an output bias voltage having a constant bias voltage component and a nulling voltage component, the circuit comprising:

a voltage biasing circuit which generates the constant bias voltage component;

a nulling circuit coupled to said voltage biasing circuit which compensates for the parasitic voltage drop by adding the nulling voltage component to the constant bias voltage component to produce the output bias voltage, said nulling circuit having,

monitoring means for monitoring the parasitic voltage drop;

generating means, coupled to said monitoring means, for generating the nulling voltage component in proportion to the parasitic voltage drop; and

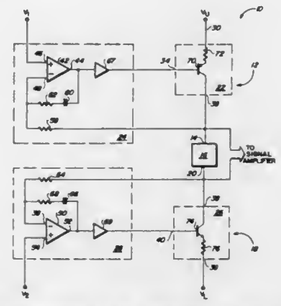
adding means for adding the nulling voltage component to the constant bias voltage component.

5,309,295

METHOD AND APPARATUS FOR BIASING A MAGNETO-RESISTIVE HEAD

James A. Bailey, and Paul H. Francois, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1992, Ser. No. 957,858
Int. Cl.[5] G11B *5/03, 5/09, 5/02*
U.S. Cl. 360—66 **25 Claims**



1. A magneto-resistive head apparatus, comprising:

a) a magneto-resistive head having first and second terminals;

b) a first op-amp having a non-inverting input interconnected with a first voltage source, an inverting input, and an output;

c) an adjustable current source having a control terminal interconnected with said output of said first op-amp, a current terminal interconnected with said first terminal of said head, and a voltage terminal interconnected with a second voltage source;

d) a first capacitance interconnected in parallel with said output of said first op-amp and said inverting input of said first op-amp;

e) a first resistance interconnected between said inverting input of said first op-amp and said first terminal of said head;

f) a second op-amp having a non-inverting input interconnected with a third voltage source, an inverting input, and an output;

g) an adjustable current sink having a control terminal interconnected with said output of said second op-amp, a current terminal interconnected with said second terminal of said head, and a voltage terminal interconnected with a fourth voltage source;

h) a second capacitance interconnected in parallel with said output of said second op-amp and said inverting input of said second op-amp; and

i) a second resistance interconnected between said inverting input of said second op-amp and said second terminal of said head;

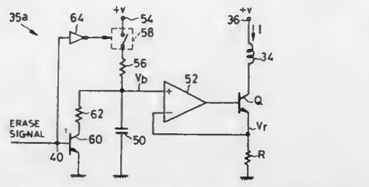
wherein said first terminal of said head is substantially maintained at a first predetermined voltage and said second terminal of said head is substantially maintained at a second predetermined voltage.

5,309,296

SYSTEM FOR ELIMINATING NOISE ARISING FROM DIFFERENCE IN POLARITY OF MAGNETIZATION BY TUNNEL ERASE HEADS

Fumio Nagase, Tama; Tohru Miura, Mitaka, and Hiroshi Tsuyuguchi, Tokyo, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Dec. 3, 1991, Ser. No. 801,755
Claims priority, application Japan, Dec. 7, 1990, 2-414167
Int. Cl.[5] G11B *5/03, 5/127, 5/325*
U.S. Cl. 360—66 **4 Claims**



1. An apparatus having read/write head means for writing and reading data on a magnetic record medium by creating record tracks thereon, and erase head means so arranged with respect to the read/write head so to erase a pair of opposite marginal edge portions of each data track being created by the read/write head means, with the consequent creation of spaces intervening between the record tracks on the record medium, wherein the improvement resides in a system for the reduction of noise arising from an abrupt change from one polarity of magnetization to another in the spaces between the record tracks, the noise reduction system comprising:

(a) erase current supply means for supplying an erase current to the erase head means; and

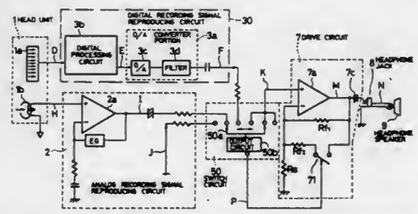
(b) a transition sloping circuit connected between the erase head means and the erase current supply means for controlling the flow of the erase current through the erase head means, the transition sloping circuit having means for sloping at least either of a rise and fall of the erase current flowing through the erase head means.

5,309,297

DIGITAL CASSETTE TAPE REPRODUCING DEVICE INCLUDING NOVEL DRIVE CIRCUIT

Hiroyuki Funahashi, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 14, 1992, Ser. No. 960,796
Claims priority, application Japan, Oct. 16, 1991, 3-296480
Int. Cl.[5] G11B *5/02, 15/12*; H03G *5/00*
U.S. Cl. 360—67 **9 Claims**



1. A digital cassette tape reproducing device comprising:

an analog-recorded signal reproducing circuit responsive to an analog-recorded signal read out from a cassette tape to obtain a first reproduced audio signal;

a digital-recorded signal reproducing circuit responsive to a digital-recorded signal read out from a cassette tape for demodulating the digital-recorded signal to an original

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digital recording value, and for digital-to-analog converting the original digital recording value to obtain a second reproduced audio signal;

a switch circuit for selecting either of said first or second reproduced audio signal and for providing a selection signal indicative of the selected audio signal; and

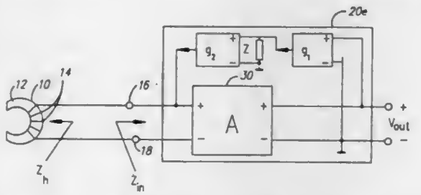
a drive circuit having an amplifier including a negative feedback circuit, said drive circuit being responsive to either of said first or second audio reproduce signal for producing a drive signal for a speaker, an amount of negative feedback being increased to reduce an amplification of said amplifier when said selection signal from said switch circuit indicates that said second reproduced audio signal is selected so that said second reproduced audio signal is amplified without distortion.

5,309,298

SUPPRESSION OF MAGNETIC INSTABILITY IN INDUCTIVE RECORDING HEADS

Klaas B. Klaasen, and Jacobus C. L. van Peppen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,820
Int. Cl.[5] G11B *5/02, 5/035*
U.S. Cl. 360—67 **13 Claims**



1. For use with a magnetic recording medium, circuitry comprising:

an inductive magnetic transducer (**10**) having (i) a yoke region (**12**) with magnetic domain walls separating differently oriented magnetic domains and (ii) and inductive sensing coil (**14**) for sensing data on the recording medium and generating a data signal produced by magnetic flux changes, said coil having an impedance constituting the output impedance (Z_h) of the transducer; and

means (**22**) connected to the coil for amplifying the data signal and having as an input an electronics input impedance (Z_{in}), where $Z_{in}=-Z_h(1-\epsilon)$ and ϵ has a value between $+1$ and -1, the vectorial sum of said input and output impedances having a magnitude that (i) inhibits motion of the domain walls in the yoke region, while the transducer is sensing data, and (ii) inhibits flux variations of the data signal at frequencies at which motion of the domain walls can occur.

5,309,299

METHOD AND SYSTEM FOR POSITION ERROR SIGNAL GENERATION USING AUTO CORRELATION

James F. Crossland; Don G. East; John A. Koski, and James E. Smith, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

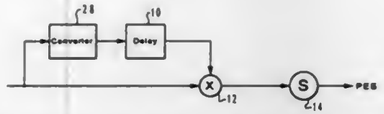
Filed Oct. 7, 1992, Ser. No. 958,151
Int. Cl.[5] G11B *5/58*
U.S. Cl. 360—77.01 **37 Claims**

18. An apparatus for generating a position error signal from a read signal generated by a read element passing over a track, the apparatus comprising:

a first pattern having a first frequency parallel to a second pattern having a second frequency on a magnetic media, wherein the first and second patterns are located on the track are repetitive and harmonically unrelated;

delay means for producing a delayed signal from the read signal;

multiplication means for multiplying the read signal with the delayed signal to form a product signal; and



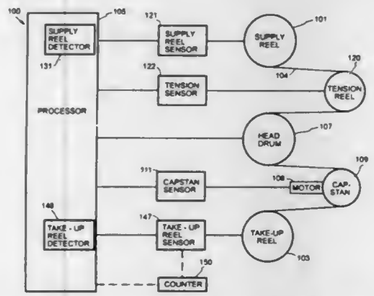
integration means for integrating the product signal to produce a position error signal, wherein changes in the position error signal are proportional to changes in position of the read element over the first pattern and the second pattern.

5,309,300

BEGINNING/END OF TAPE DETECTION SYSTEM

David R. Lee, San Jose, Calif., assignor to R-Byte, Inc., San Jose, Calif.

Filed Aug. 6, 1991, Ser. No. 740,800
Int. Cl.[5] G11B *15/46, 15/43*
U.S. Cl. 360—74.2 **14 Claims**



1. In a tape drive system having a supply reel coupled to a supply reel motion sensor, a capstan coupled to a capstan motor coupled to a capstan motion sensor, and a take-up reel coupled to a take-up reel motion sensor, each of the sensors generating a signal indicative of the angular position of the supply reel, the capstan motor and the take-up reel, a beginning-of-tape/end-of-tape (BOT/EOT) detection system comprising:

processor means, coupled to the supply reel motion sensor, the capstan motion sensor, and the take-up reel motion sensor, for computing beginning-of-tape and end-of-tape utilizing the varying diameters of the supply reel and its tape pack and the take-up reel and its tape pack, and angular velocities of the supply reel, capstan, and take-up reel, said angular velocities being determined from the angular position signals, wherein for the forward tape motion direction, being from the supply reel to the take-up reel, end-of-tape is determined by said processor means utilizing:

$$D_s = D_c \times (V_c / V_s)$$

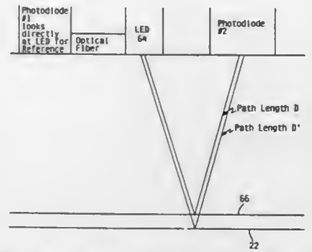
where D_s is the diameter of the supply reel plus tape pack, D_c is the diameter of the capstan, V_c is the angular velocity of the supply reel, and V_c is the angular velocity of the capstan, and the end-of-tape being determined as the diameter of the supply reel plus a predetermined tolerance measure of tape pack thickness.

5,309,301

SERVO CONTROLLED LUBRICANT THICKNESS FOR NEAR CONTACT MAGNETIC RECORDING

Thomas A. Gregory; James A. Hagan, both of Rochester, Minn., and Christopher G. Keller, Albany, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,701
Int. Cl.[5] G11B *15/18, 17/00*
U.S. Cl. 360—137 **22 Claims**



1. A disk drive assembly wherein a disk assembly and a transducer carrying actuator are surrounded by a housing and a lubricant film is maintained on the recording surfaces of the disks comprising:

a lubricant reservoir positioned in close proximity to the disk recording surface;

a heater element mounted in heat transfer relationship with said lubricant reservoir;

sensing means for determining the thickness of the lubricant film on the disk recording surface; and

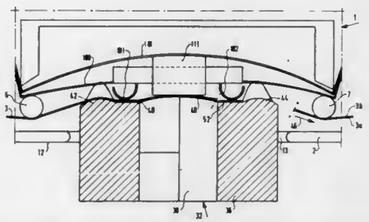
control means for controlling power delivered to said heating element in response to the lubricant film thickness determined by said sensing means.

5,309,302

SYSTEM COMPRISING A PLAYER AND/OR RECORDER APPARATUS AND A TAPE CASSETTE, AND THE APPARATUS AND A CASSETTE SUITABLE FOR USE IN SUCH A SYSTEM

Norbert C. Vollmann, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 1, 1991, Ser. No. 769,599
Claims priority, application Netherlands, Dec. 21, 1990, 9002844
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.1 **5 Claims**



1. A system comprising an apparatus and a cassette suitable for cooperation with the apparatus,

which cassette comprises a magnetic tape with a coating on one side, and a housing having two parallel main walls and transverse walls including one front wall defining a magnetic-head opening, along which front wall the magnetic tape in the housing extends with its coating side facing the opening, which cassette further comprises a resilient element with two tape guides, which element is situated near the opening behind the magnetic tape in the cassette, which tape guides each comprise a guide surface guiding the magnetic tape during cooperation with the apparatus,

which apparatus comprises a magnetic-head unit with a head face past which the magnetic tape is moved in its longitudinal direction during cooperation with the cassette, the magnetic tape coating being in contact with the head face,

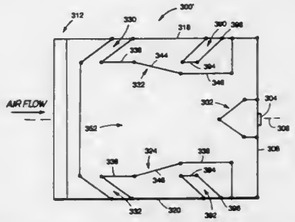
characterized in that the magnetic-head unit comprises two pairs of projections, one pair at each side of the head face, the projections of each pair spaced at a distance from one another which is at least equal to the width of the magnetic tape, the pairs being spaced from each other by a distance such that the projections are in contact with end portions of the cassette guide surfaces, whereby clearance is provided between the tape guides and the magnetic-head unit during cooperation with the apparatus.

5,309,303

SUBAMBIENT PRESSURE AIR BEARING SLIDER FOR DISK DRIVE

Yiao-Tee Hsia, Shrewsbury, and Coda H. T. Pan, Millbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 663,192, Feb. 28, 1991, Pat. No. 5,097,370, which is a continuation of Ser. No. 325,222, Mar. 17, 1989, abandoned. This application Mar. 13, 1992, Ser. No. 851,054
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 **41 Claims**



1. A slider for moving a transducer across a surface of a rotating storage disk while maintaining the transducer in proximity to and spaced from the disk surface, said slider having a cavity for developing a subambient pressure as the disk rotates that tends to draw said slider toward the disk surface, said cavity being bounded by portions of said slider that are raised from a lower surface opposing said storage disk, said slider comprising

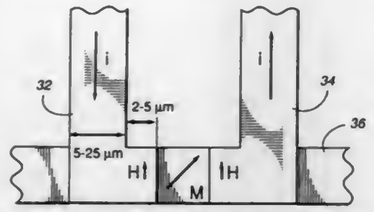
an island that protrudes from said lower surface of said slider for supporting said transducer, at least a portion of said island being disposed outside of said cavity, said island having length and width dimensions that are less than those of said slider.

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5,309,304
MAGNETORESISTIVE TRANSDUCER CONDUCTOR CONFIGURATION

Steven L. Naberhuis, Fremont, Calif.; Ralph Simmons, Boise; Robert J. Davidson, Eagle, both of Id.; Victor W. Hesterman, Los Altos, Calif.; Lung T. Tran, Saratoga, Calif., and Glora J. Tarnopolsky, Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 5, 1992, Ser. No. 894,394
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—113 **3 Claims**



1. A magnetoresistive transducer having an air bearing surface, said transducer comprising:

at least one magnetoresistive element;

a first conductor for carrying current to said magnetoresistive element; and

a second conductor for carrying current from said magnetoresistive element;

wherein each of said conductors has a tapered configuration when viewed from said air bearing surface, and an L-shaped configuration when viewed from above with the wider bottom portion of the "L" contacting the magnetoresistive element; said conductors arranged in a closely spaced configuration encompassing a minimal area necessary to confine a transducer active area to a defined track region; said conductors having a preferred conductor width of from 5 μm to 25 μm at a conductor portion leading to the magnetoresistive element, and having an additional width of from 2 μm to 5 μm at said wider portion of said "L" shaped conductor.

5,309,305
DUAL ELEMENT MAGNETORESISTIVE SENSING HEAD

Daniel A. Nepela, San Jose, and Erich P. Valstyn, Los Gatos, both of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Nov. 16, 1992, Ser. No. 976,536
Int. Cl.[5] G11B *5/39*
U.S. Cl. 360—113 **6 Claims**

1. A signal sensing head for reading signals recorded on a magnetic medium comprising:

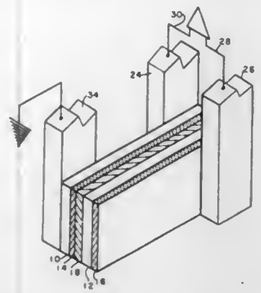
spaced first and second magnetoresistive elements;

an insulating layer disposed between said first and second magnetoresistive elements;

a first antiferromagnetic film disposed between said first magnetoresistive element and said insulating layer;

a second antiferromagnetic film disposed on said second magnetoresistive element and spaced from said insulating layer;

wherein each of said magnetoresistive element have a thickness in the range of about 100–500 Angstroms, and each of

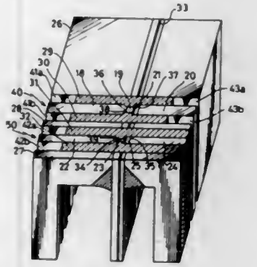


said antiferromagnetic films have a thickness in the range of about 100–300 Angstroms.

5,309,306
COMPLEX MAGNETIC HEAD

Masaru Okada, and Yoshiyuki Suehiro, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 895,599
Claims priority, application Japan, Jun. 10, 1991, 3-137436; Jul. 1, 1991, 3-160237
Int. Cl.[5] G11B *5/255*
U.S. Cl. 360—121 **8 Claims**



1. A complex magnetic head, comprising:

a R/W core block and an erase core block which are facing each other against both sides of a center core piece and are bound into one magnetic head block by melted glass;

a R/W core formed between R/W core track width regulation grooves which have desired width and are filled with molded glass;

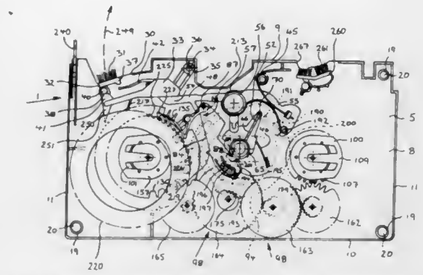
an erase core formed between erase core track width regulation grooves which have desired width and are filled with molded glass and which are arranged parallel to and outside of the R/W core track width regulation grooves; and

a shield member made of glass filling both track width regulation grooves.

5,309,307
TIMER CONTROLLED DEVICE FOR CLEANING A MOVING HEAD AND/OR A DRUM OF A PLAYBACK AND/OR RECORDING UNIT

Joseph F. Fritsch, and Roxanne Y. Fritsch, both of 114 Lansdowne Park, Ballsbridge, Dublin 4, Ireland

Continuation of Ser. No. 646,923, Jan. 28, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 106,788
Claims priority, application Ireland, Jan. 26, 1990, 248/90; Nov. 20, 1990, 4172/90; Dec. 21, 1990, 4646/90
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128 **29 Claims**



1. A device for treating a moving head and/or drum of a playback and/or recording unit, the unit being of the type comprising a receiving area for receiving a cassette, and having at least one rotatable reel spindle in the cassette receiving area for engaging a tape reel in a cassette, the device comprising:

a main support member releasably engagable in the cassette receiving area of the unit,

a treatment means for cleaning, polishing or buffing the head and/or drum,

a carrier arm for carrying the treatment means, the carrier arm being mounted on the main support member and being movable from a rest position with the treatment means spaced apart from the head and/or drum, in use, to a treating position with the treatment means engaging the head and/or drum,

timing means mounted on the main support member for timing at least a delay period greater than zero, and

drive means for moving the carrier arm from the rest position to the treating position, the drive means being responsive to the timing means for moving the carrier arm to the treating position after the timing means has timed the delay period.

5,309,308
CASSETTE-DETECTION DEVICE FOR USE IN MAGNETIC TAPE APPARATUSES

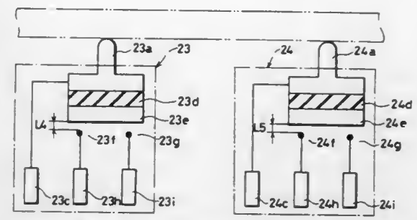
Kouji Nakagawa; Masafumi Kurata, and Hideo Yoshida, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 6,981
Claims priority, application Japan, Mar. 18, 1992, 4-62474
Int. Cl.[5] G11B *15/02*
U.S. Cl. 360—137 **10 Claims**

1. A cassette-detection device for use in a magnetic tape apparatus, which handles either an analog cassette tape having a cartridge made of a non-conductive material with a recessed section in one side of the cartridge or a digital cassette tape having a cassette shell thinner than the cartridge with a metal slide that extends longer on one side, comprising:

a first detection means for detecting the difference in thickness between the cartridge and the cassette shell in order to judge which cassette tape is loaded, an analog cassette tape or a digital cassette tape; and

a second detection means for detecting the recessed section of the cartridge of an analog cassette tape in order to

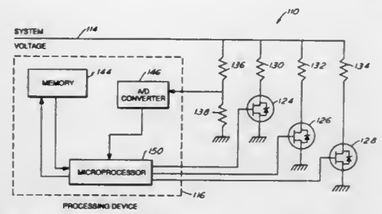


judge which side is up with respect to the analog cassette tape.

5,309,309
SEMICONDUCTOR PROTECTION AGAINST HIGH ENERGY TRANSIENTS

Charles F. Weber, South Lyon, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 745,621, Aug. 15, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 903,301
Int. Cl.[5] H02H *9/06*
U.S. Cl. 361—18 **15 Claims**



1. A circuit including a semiconductor switching device having a conductive state and a nonconductive state, the switching device switching a system voltage across a load in series with the switching device, the circuit comprising:

means for generating a signal representative of the level of the system voltage;

storage means for storing a signal representative of the level of a reference voltage; and

processing means for processing the signal representative of the level of the system voltage sensed and the signal representative of the level of the reference voltage and for generating, if the level of the system voltage exceeds the level of the reference voltage, an output control signal to switch the semiconductor switching device into its conductive state so that the system voltage, including any voltage transients, appears substantially entirely across the load,

wherein the semiconductor switching device includes at least one avalanche-capable field-effect switching transistor.

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5,309,310

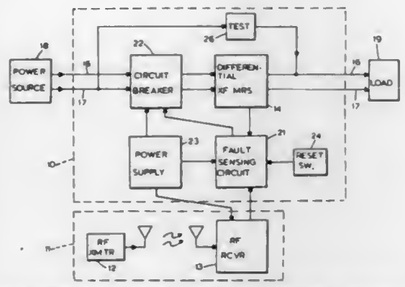
COMBINED GROUND FAULT INTERRUPTER CIRCUIT AND REMOTE CONTROL ON/OFF DEVICE

Mark Baer, Linden, and James M. Robitaille, Williamsport, both of Pa., assignors to Felchar Manufacturing Corporation, Kirkwood, N.Y.

Continuation-in-part of Ser. No. 823,678, Jan. 21, 1992, abandoned. This application Jul. 23, 1992, Ser. No. 918,249

Int. Cl.[5] H02H *3/16;* **H04B** *1/16*

U.S. Cl. 361—42 **29 Claims**



1. Apparatus for remotely controlling electrical equipment including an electrical load and power lines for connecting the load to a power supply, said apparatus comprising:

a) a first switch for connection in the power lines and operable between open and closed positions to control power to the load;

b) a second switch connected to control operation of said first switch;

c) a ground fault interrupter circuit connected to control operation of said second switch;

d) a third switch connected to control operation of said first switch; and

e) radiation signal responsive means for controlling said third switch.

5,309,311

ELECTRICAL APPARATUS FOR DIFFERENTIAL CURRENT PROTECTION

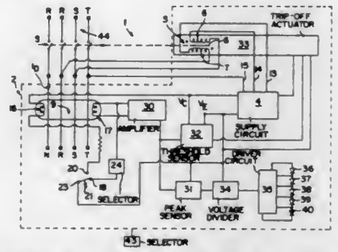
Romano Ballada, Milan, Italy, assignor to Bassani Ticino S.p.A., Milan, Italy

Continuation of Ser. No. 349,631, Jun. 8, 1989, abandoned, which is a division of Ser. No. 200,690, May 31, 1988, Pat. No. 4,851,950. This application Oct. 21, 1991, Ser. No. 779,955

Claims priority, application Italy, Jun. 9, 1987, 20837 A/87; Jun. 9, 1987, 20840 A/87

Int. Cl.[5] H02H *3/00*

U.S. Cl. 361—48 **4 Claims**



4. An electrical apparatus for differential current protection, of the type comprising a differential current sensing device associated with a protection switch, characterized in that said sensing device comprises:

a sensor for sensing differential currents in a three phase system, wherein said sensor comprises the secondary winding of a transformer;

a controlled gain signal amplifier connected to said sensor to generate amplified output signals related to said sensed differential currents;

a threshold selector tied operatively to said controlled gain signal amplifier such that a threshold may be selected by controlling the amplifier gain;

a plurality of light indicators connected to said amplifier and adapted to be turned on progressively in response to said amplified output signals;

a threshold sensor for sensing when said amplifier output signals related to said sensed differential currents have exceeded a selected threshold; and

a trip-off actuator to open said protection switch in response to said threshold sensor sensing an amplified output signal exceeding said selected threshold wherein said actuator comprises first and second windings respectively connected to first and second phase voltages in said three phase system.

5,309,312

OVERCURRENT PROTECTION RELAY WITH COMMUNICATIONS

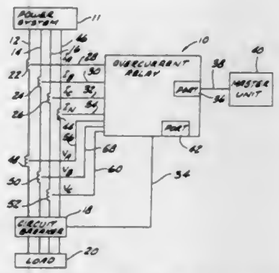
Timothy M. Wilkerson, Highland, Ill.; Sidney B. Harden, and Richard A. Freeman, both of St. Louis, Mo., assignors to Basler Electric Company, Highland, Ill.

Filed Sep. 21, 1990, Ser. No. 586,439

Claims priority, application Canada, Sep. 29, 1989, 614904

Int. Cl.[5] H02H *7/26*

U.S. Cl. 361—79 **19 Claims**



1. In a relay system for protecting an electrical power system supplying electrical power having a current and a voltage of a fundamental frequency to an electrical load, a relay for the system, said relay communicating with a master unit, said relay comprising:

means for sensing both a current and a voltage of the electrical power of the fundamental frequency and for sensing at least two harmonics of both the current and the voltage of the electrical power and for producing analog signals representative of the sensed current and the sensed voltage;

means for periodically sampling the analog signals a predetermined number of times during a preset period of time and for converting the analog signals into a series of digital values;

means for separately processing each of the digital values to determine a processed current value which is a function of the sensed current and the preset period and a processed voltage value which is a function of the sensed voltage and the preset period;

means, responsive to the processing means, for disconnecting the power system from the load in the event that at least one of the processed current value or the processed voltage value is not within preset limits;

means for generating a relay signal representative of the processed values; and

means, responsive to the relay signal, for communicating the processed current and voltage values to the master unit.

5,309,313

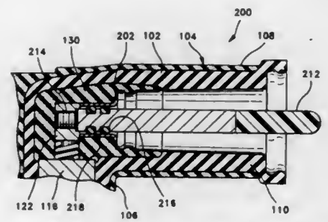
FAULT GAS SEAL FOR A POLYMER SURGE ARRESTER

Harry G. Yaworski, Easton, Pa., and Larry N. Siebins, Port Murray, N.J., assignors to Amerace Corporation, Hackettstown, N.J.

Filed Feb. 5, 1992, Ser. No. 831,682

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—127 **10 Claims**



1. In an elbow-shaped surge arrestor having a dielectric housing, a first leg having a first passage within which are located one or more arrestor devices coupled to a first connector and a second leg having a receptacle to receive the end of a loadbreak bushing insert and a second passage to receive a loadbreak probe connected to said first connector, the improvement comprising at least one annular groove about said loadbreak probe adjacent its end connected to said first connector and seal means in said second passage, one for each of said annular grooves and positioned in its associated groove, said seal means to prevent the entry of gases generated by the failure of one or more of said arrestor devices in said first passage into said receptacle to force said elbow-shaped surge arrestor to separate from a loadbreak bushing insert upon which said elbow-shaped surge arrestor is installed.

5,309,314

CIRCUIT CONFIGURATION FOR ACTUATING A SAFETY RELAY

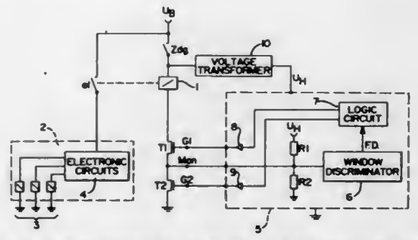
Heinz Loreck, Frankfurt/am Main; Michael Zydek, Langgoens/Cleeberg, and Hermann Esselbruegge, Weiterstadt, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1990, Ser. No. 558,958

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3924988

Int. Cl.[5] H03K *17/18*

U.S. Cl. 361—160 **5 Claims**



1. A circuit configuration for actuating a safety relay such as the power supply relay of an electronically controlled brake system of an automotive vehicle, with at least two electronically operable switches, connected in series and with a monitoring circuit, including a window discriminator, operative to sense voltage at a point of common connection between said switches, and a feedback path between said monitoring circuit and said switches for providing a control signal to said switches, said monitoring circuit operative to interrupt the power supply of the safety relay by actuating the switches by way of said feedback path in response to a circuit malfunction, wherein the operativeness of the switches and of the window discriminator is checked at regular intervals or at regularly repeating incidents such as each time the ignition of an engine of an automotive vehicle is switched on.

5,309,315

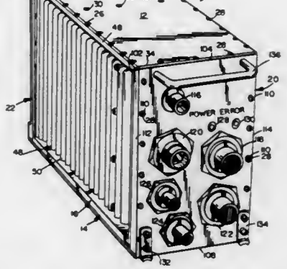
SEVERE ENVIRONMENT ENCLOSURE WITH THERMAL HEAT SINK AND EMI PROTECTION

Richard G. Naedel, Rockville; Francis J. Bogdan, Baltimore; Michael Richardson, Annapolis, and Keith Rosenberger, Baltimore, all of Md., assignors to Pulse Embedded Computer Systems, Inc., Greenbelt, Md.

Filed Aug. 9, 1991, Ser. No. 743,509

Int. Cl.[5] H05K *7/20, 9/00*

U.S. Cl. 361—704 **36 Claims**



1. A chassis construction incorporating a plurality of circuit cards and a power supply comprising:

a top cover, bottom cover, a pair of side plates and a pair of end plates secured together to form an airtight seal along all abutting edges;

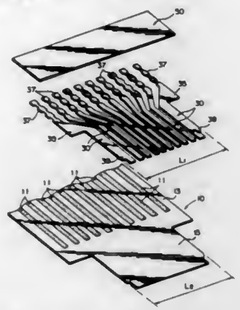
a backplane rigidly fixed to one of said top and bottom covers, and rigidly fixed to said pair of side plates and one of said pair of end plates, said backplane mounting a plurality of connectors for electrical connection with mating connectors along a first edge of each of said plurality of circuit cards;

an internal partition separating said plurality of circuit cards from said power supply, said internal partition rigidly connected to said pair of side plates; and wherein said backplane is rigidly connected to said internal partition between opposite ends of said backplane; and

a plurality of mounting grooves in one of said end plates, said internal partition, and in a card comb rigidly attached to said top cover, intermediate said one of said end plates and said interior partition, for receiving respective second, third and fourth edges of each of said plurality of circuit cards.

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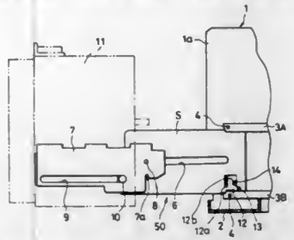
5,309,316
TERMINAL STRUCTURE OF FLEXIBLE PRINTED CIRCUIT BOARD
Nobuyuki Yagi, Tokyo, and Yasutoshi Kaku, Kanagawa, both of Japan, assignors to Teikoku Tsushin Kogyo Co., Ltd., Kanagawa, Japan
Filed Sep. 28, 1992, Ser. No. 952,268
Claims priority, application Japan, Sep. 27, 1991, 3-276885; May 8, 1992, 4-143359
Int. Cl.[5] H05K 1/00
U.S. Cl. 361—749 4 Claims



1. A terminal structure of a flexible printed circuit board, comprising:
a flexible printed circuit board including a resin film, and a plurality of electrically conductive patterns provided on said resin film, a prescribed part of the resin film having a connector insertion portion of a width substantially the same as that of an insertion hole of a connector; and
a plurality of meal terminals each consisting of a slender, elongate metal plate;
said plurality of metal terminals being disposed in parallel on said flexible printed circuit board, distal ends of said terminals being situated adjacent a distal end of the connector insertion portion of said flexible printed circuit board;
each metal terminal being fixedly bonded to a respective one of the electrically conductive patterns provided on said flexible printed circuit board; and
the connector insertion portion of said flexible printed circuit board to which said metal terminals are attached having such a width that said connector insertion portion does not extend beyond outer sides of outermost ones of said metal terminals located along opposing longitudinal edges of said connector insertion portion.

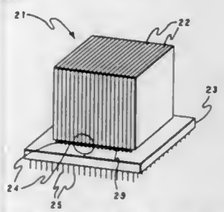
5,309,317
DRAWOUT TYPE SWITCHGEAR INCLUDING LOCK MEMBER TO ALLOW CIRCUIT BREAKER TO BE POSITIONED IN THREE LOCKED POSITIONS
Takayoshi Ishikawa, Fukuyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 981,066
Claims priority, application Japan, Feb. 26, 1992, 4-008743[U]; Feb. 27, 1992, 4-041168
Int. Cl.[5] H02B 1/04
U.S. Cl. 361—609 17 Claims

1. A drawout type switchgear comprising:
a base frame having at least one side plate,
a circuit breaker, which is movably mounted on said base frame, and which is to be locked at plural positions of a connected position, a disconnected position and a drawout position,
an upper and a lower support rail mounted on said at least one side plate of said base frame,
a first slide arm which is slidably supported by said upper and lower support rails,
a second slide arm which is slidably supported by said first slide arm, and which is fixed to said circuit breaker, and



at least one lock member which locks said second slide arm to said first slide arm until said first slide arm reaches a final drawout position of said first slide arm, and which releases by coming off said lower support rail.

5,309,318
THERMALLY ENHANCED SEMICONDUCTOR CHIP PACKAGE
Kenneth E. Beilstein, Jr., Essex Junction; Claude L. Bertin, South Burlington; Gordon A. Kelley, Jr., Essex Junction, and Christopher P. Miller, Underhill, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 871,456, Apr. 21, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 109,016
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—689 25 Claims

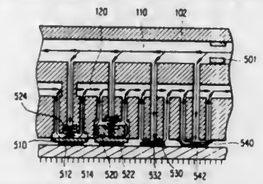


1. A semiconductor chip package with enhanced cooling comprising:
a plurality of semiconductor chips bonded together in a stack forming a chip module;
a base adjacent to a first exterior face of the chip module, said base and first face being spaced apart by a gap;
a plurality of connecting means in said gap physically and electrically connecting the base to the chip module at a plurality of points on said first face of the chip module; and
means for circulating a coolant in the gap between the base and the first face of the chip module around and into thermal communication with the plurality of connecting means to draw heat away from the module through the connecting means, without circulating coolant between adjacent chips of the module.

5,309,319
INTEGRAL COOLING SYSTEM FOR ELECTRIC COMPONENTS
Gaetano P. Messina, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 650,369, Feb. 4, 1991, abandoned. This application Mar. 27, 1992, Ser. No. 860,226
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—699 19 Claims

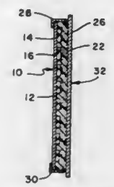
1. An integral cooling system which cools a plurality of electronic components, said system comprising:
a one-piece cooling liquid manifold mounted over said plurality of electronic components;

a main liquid inflow duct formed unitarily within said manifold for supplying cooling liquid;
a main liquid outflow duct formed unitarily within said manifold for removing cooling liquid;
a plurality of component cooling chambers formed unitarily within said manifold, for application of cooling liquid separately to an area immediately adjacent each of said plurality of electronic components;
a plurality of liquid supplying ducts formed unitarily within said manifold to supply cooling liquid from said main liquid inflow duct to each said chamber;
a plurality of liquid removing ducts formed unitarily within said manifold to remove cooling liquid from each said chamber to said main liquid outflow duct,
each said chamber being enclosed except for said liquid supplying duct and said liquid removing duct; and



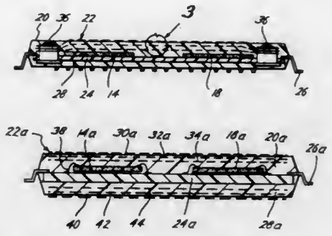
a thermally-conductive slug disposed between each of said electronic components and a respective one of said component cooling chambers to prevent direct application of a flow of said cooling liquid to each of said electronic components, and to encourage uniform cooling across each of said electronic components, said slug being in direct contact with the cooling liquid in each said component cooling chamber.

5,309,320
CIRCUIT CARD ASSEMBLY CONDUCTION CONVERTER
William A. Smith, Laguna Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 936,057, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 651,675, Feb. 6, 1991, abandoned. This application May 14, 1993, Ser. No. 64,991
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—704 2 Claims



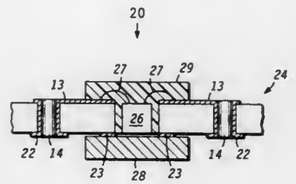
1. A conductively cooled circuit card assembly comprising:
a printed wiring board, and electronic devices mounted on one side of said printed wiring board to comprise a circuit card;
a substantially flat plate-like body of a highly thermally conductive, electrically insulating, and resilient material, said plate-like body having opposing substantially flat surfaces, a first flat surface and a second flat surface, said second flat surface having recesses corresponding in shape and relative location of the electronic devices mounted on said printed wiring board, said plate extending over the electronic devices on said printed wiring board, plate-like body being maintained against said printed wiring board with the electronic devices being disposed in said recesses;
a thermal mounting plate mounted on and in high thermal contact with said first flat surface of said plate-like body; and
means for maintaining said second side of said plate-like body against said printed wiring board.

5,309,321
THERMALLY CONDUCTIVE SCREEN MESH FOR ENCAPSULATED INTEGRATED CIRCUIT PACKAGES
Michael A. Olla; Thomas P. Dolbear, and Seyed H. Hashemi, all of Austin, Tex., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex.
Filed Sep. 22, 1992, Ser. No. 949,300
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—714 31 Claims



1. An encapsulated integrated circuit package, comprising:
an electronic component;
a plurality of layers of thermally conductive screen mesh positioned adjacent to the component;
a non-electrically conductive thermosetting or thermoplastic material forming a housing enclosing the component and bonded to the screen mesh; and
a plurality of electrical leads electrically connected to the component and sealably extending through the housing.

5,309,322
LEADFRAME STRIP FOR SEMICONDUCTOR PACKAGES AND METHOD
Robert Wagner, Mesa; Michael R. Shields, and Samuel L. Coffman, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 13, 1992, Ser. No. 959,573
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—723 11 Claims



1. A leadframe strip for semiconductor packages comprising:
a substantially planar sheet of insulating material having a first surface and a second surface;
a plurality of die attach openings through the sheet of insulating material wherein each die attach opening has sides which have a length;
a plurality of bonding pads on the first surface of the sheet of insulating material wherein the plurality of bonding pads are first metallized areas positioned adjacent each die attach opening so that each bonding pad has a length approximately equal to the length of the side of the die attach opening, and wherein each bonding pad has a metallized projection that extends perpendicularly away from the die attach opening approximately at the center of each bonding pad;
an electrically conductive hole through each metallized

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projection wherein the electrically conductive hole is distal from the die attach opening;

a plurality of heatsink attach areas on the second surface of the sheet of insulating material wherein the plurality of heatsink attach areas are second metallized areas adjacent each side of each die attach opening, and wherein each heatsink attach area has a length that is longer than the length of the sides of the die attach opening, and wherein each second metallized area is isolated from the electrically conductive hole for the purpose of attaching a heatsink on the second surface so that the heatsink overlays the die attach opening; and

a plurality of leadframe attach areas on the second surface of the sheet of insulating material wherein the plurality of leadframe attach areas are third metallized areas that surround each electrically conductive hole and are electrically connected to the electrically conductive hole.

5,309,323

REMOVABLE ELECTRICAL UNIT WITH COMBINED GRIP AND RELEASE MECHANISM EXPOSED BY PARTIAL WITHDRAWAL

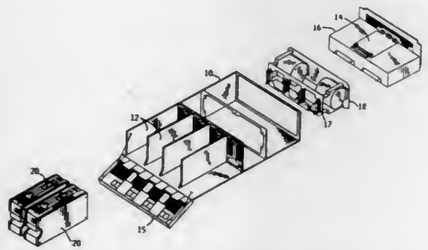
David J. Gray, Nr Fareham; Ian Golledge, Romsey, and Steven R. Spake, Southampton, all of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/GB91/00699, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/20206, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 26, 1991, Ser. No. 965,372

Int. Cl.[5] H05K *7/10, 7/14*

U.S. Cl. 361—726 **13 Claims**



4. An electrical apparatus, comprising:

(a) a chassis having at least one bay for mounting a removable electrical unit, said chassis having stop means mounted on an inner surface of said chassis facing said bay; and

(b) at least one removable electrical unit mounted within said bay of said chassis, said removable electrical unit comprising

i) catch means mounted on an outer surface thereof and adapted to engage with said stop means of said chassis when the unit is partly withdrawn from the chassis, thereby preventing complete removal therefrom, and

ii) a combined grip and release mechanism in the form of a handle, exposed by said partial withdrawal, which is operable to disengage the catch means from the stop means to allow complete withdrawal of the unit from the chassis, wherein when the unit is at said partly withdrawn position, the handle is movable from a first position lying flush with the surface of the unit, where the catch is engaged with the stop, to a second position standing proud from the unit surface, where the catch is disengaged from the stop.

5,309,324

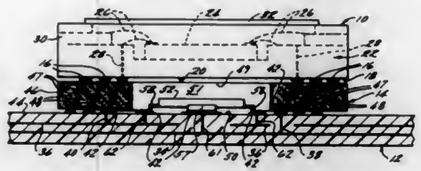
DEVICE FOR INTERCONNECTING INTEGRATED CIRCUIT PACKAGES TO CIRCUIT BOARDS

Jorge M. Herandez, 1920 E. Jarvis, Mesa, Ariz. 85202; Scott S. Simpson, Senexet Rd., Woodstock, Conn. 06281, and Michael S. Hyslop, 4147 W. Victoria La., Chandler, Ariz. 85226

Filed Nov. 26, 1991, Ser. No. 798,229

Int. Cl.[5] H05K *7/00*

U.S. Cl. 361—734 **16 Claims**



1. An electronic subassembly comprising:

an integrated circuit (IC) package, said IC package comprising a land grid array package, said land grid array package having an array of contacts on one surface thereof surrounding a contact free area, at least one of said contacts being a first contact, said first contact being receptive to a first voltage level, at least one other of said contacts being a second contact, said second contact being receptive to a second voltage level;

circuit board means having a plurality of pads, an array of which corresponds to said array of contacts of said land grid array package, at least one of said pads being a first pad, said at least one first pad corresponding to said at least one first contact, said first pad being electrically connected to at least one second pad and having said first voltage level thereon, at least one other of said pads being a third pad, said at least one third pad corresponding to said at least one second contact, said third pad being electrically connected to at least one fourth pad and having said second voltage level thereon, said second and fourth pads being disposed at an area on said circuit board means corresponding to said contact free area of said land grid array package;

first compressible connector means sandwiched between said IC package and said circuit board means, said connector means electrically and mechanically interconnecting said IC package to said circuit board means, said first compressible connector means including an opening therethrough, said opening being disposed under said contact free area of said IC package; and

a decoupling capacitor disposed in said opening and connected to said circuit board means, said decoupling capacitor providing decoupling capacitance between said first and second voltage levels on said land grid array package, said decoupling capacitor being in communication with said second and fourth pads on said circuit board means.

5,309,325

LOCKING CIRCUIT BOARD INJECTOR/EXTRACTOR

John P. Dreher, Mira Loma, and Raymond G. Bond, Long Beach, both of Calif., assignors to EG&G Birtcher, Inc., El Monte, Calif.

Filed Feb. 19, 1993, Ser. No. 19,775

Int. Cl.[5] H05K *7/16*

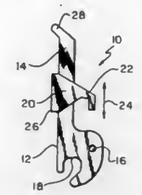
U.S. Cl. 361—754 **21 Claims**

1. A locking circuit board extractor for releaseably mounting a circuit board in a chassis comprising:

a) a body portion adapted to be mounted on an edge of the circuit board, the body portion having a lever arm, a means for engaging a pivot, and a means for engaging the chassis;

b) a locking member mounted on said body portion and having an engagement arm, wherein said engagement arm

is adapted to allow a locking point mounted on the circuit board to be releasably engaged by sliding the engagement



arm in a direction substantially parallel to the edge of the circuit board.

5,309,326

CIRCUIT MODULE HAVING STACKED CIRCUIT BOARDS

Hirai Minoru, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 1, 1992, Ser. No. 983,895

Claims priority, application Japan, Dec. 6, 1991, 3-349529

Int. Cl.[5] H01R *23/68*

U.S. Cl. 361—790 **2 Claims**

1. A circuit module comprising:

a first circuit board, a semiconductor element mounted on the first circuit board, an electrode of said semiconductor element being connected to a wiring pattern of said first circuit board by a metal wire, and a resin coating on said semiconductor element and said metal wire; and

a second circuit board having a larger area than the first circuit board, on which the first circuit board is mounted in stacked relation, wherein said first circuit board is a double-side wired circuit board and said second circuit board is a single-side wired circuit board.

5,309,327

APPARATUS AND METHOD FOR MANUFACTURING PRINTED CIRCUIT BOARDS

Cody Z. Slater, Calgary, Canada, assignor to Platform Systems Inc., Calgary, Canada

Filed Nov. 30, 1992, Ser. No. 983,222

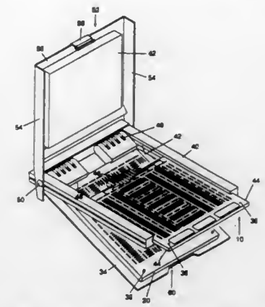
Int. Cl.[5] G11C *11/00*

U.S. Cl. 361—805 **11 Claims**

1. A circuit board assembly system for manufacturing a prototype printed circuit board having a matrix formed in it, the assembly system comprising:

a base board having a connection matrix that matches the matrix of the printed circuit board; and

positioning means connectable to each of the base board and the printed circuit board for locating the printed circuit board in a fixed position relative to the base board with a one to one correspondence between the matrix of the



printed circuit board and the connection matrix of the base board.

5,309,328

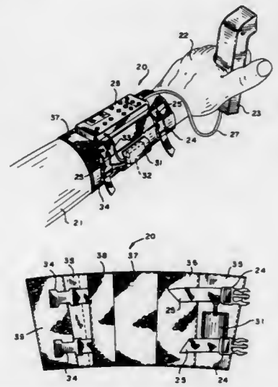
HANDSFREE FOREARM STRAP FOR PORTABLE EQUIPMENT

James C. P. Lum, 3304 Thorngate Dr., Herndon, Va. 22071

Filed Oct. 14, 1992, Ser. No. 960,686

Int. Cl.[5] H05K *7/02;* **A45C** *3/14;* **A45F** *5/00*

U.S. Cl. 361—809 **11 Claims**



1. A handsfree forearm strap for use with portable components;

said forearm strap comprising:

a base layer of fabric having an upper surface and a lower surface;

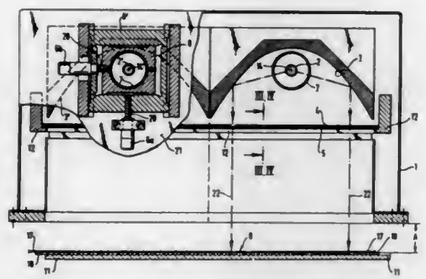
portable component attachment means and supporting means provided at predetermined locations relative to said upper surface of said base layer of fabric;

initial hook and loop attachment means located at opposite ends of said base layer of fabric;

secondary attachment means located inward of said initial attachment means for securely attaching said handsfree forearm strap to a user's forearm whereby a portable component having a strip of mating material secured to its base may be placed over said portable component attachment means and become securely attached thereto permitting the user free use of both hands to perform other tasks.

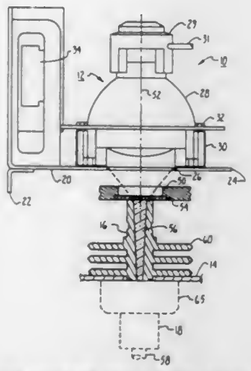
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5,309,329
FLASH DEVICE FOR DYE TRANSFERRING
Reinhold Thiel, Leutenbach-Weiler; Ulrich Staiger, Stuttgart; Olaf Kosanke, Darmstadt, and Volker Gericke, Waiblingen, all of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 9, 1992, Ser. No. 942,541
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1991, 4130992
Int. Cl.[5] G03B *15/02*
U.S. Cl. 362—17 **10 Claims**



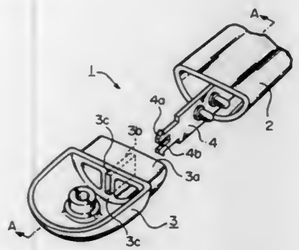
1. A flash device for directing high-energy light flash, to a dye transfer plane, such device being usable for dye transfer such as by transferring dye particles from a radiation-absorbing carrier film which is provided with a sublimable dye layer through a mask onto a receiver element, e.g. glass plate or the like, comprising at least one linearly extending plasma discharge tube means defining an aspheric-cylindrical reflector which concentrates radiation from the tube; and a lamellar louver element arranged downstream of the reflector parallelly directing concentrated radiation from the reflector to impinge on the predetermined dye transfer plane in a substantially perpendicular manner.

5,309,330
LIGHT BOX
Russell B. Pillers, Sparks, Nev.; Darryl J. Bornhop, Truckee, Calif.; John B. Clayton, and George H. Middle, both of Reno, Nev., assignors to Citation Medical Corporation, Reno, Nev.
Filed Jan. 11, 1993, Ser. No. 2,924
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **23 Claims**



1. A device for providing high intensity light to a fiber optic illumination cable having an outside diameter and a optical fiber portion having an input diameter, said device comprising;
a housing;
a light bulb for providing high intensity light, said bulb being mounted in a disposable bulb holder and said bulb holder being slidably mounted in said housing;
a light preparation train for producing a final light beam from said high intensity light, said final light beam having a final light beam diameter slightly larger than said input diameter of said optical fiber portion of said fiber optic illumination cable, said light preparation train including an aperture, a hot mirror and an optical taper through which said high intensity light passes, said light preparation train being mounted in said housing and defining a light path axis; and
means mounted in said housing along said light path axis for holding and aligning said optical fiber portion of said fiber optic illumination cable in optical communication with said light preparation train.

5,309,331
HIGH-MOUNT STOPLIGHT
Hiroto Anzai, Tokyo, and Hirokuni Osugi, Kamakura, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed May 25, 1993, Ser. No. 66,886
Claims priority, application Japan, May 29, 1992, 4-43297[U]
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80.1 **1 Claim**

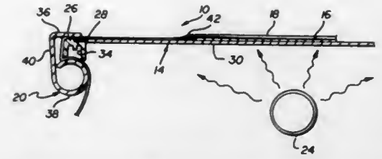


1. A high-mount stoplight comprising:
a light source board including a hook portion;
a housing including an opening, said light source board housed within said opening;
a holder cap including a hook receiving portion and a housing mounting portion, said housing mounting portion engageable with said opening, and said hook portion engageable with said hook receiving portion to lock said housing onto said holder cap.

5,309,332
LIGHT TABLE QUILTING/CRAFT SYSTEM
Majorie L. Evans, and John R. Evans, both of 25725 N. Player Dr., Valencia, Calif. 91355
Continuation-in-part of Ser. No. 810,919, Dec. 20, 1991. This application Oct. 19, 1992, Ser. No. 962,834
Int. Cl.[5] G09F *13/04*
U.S. Cl. 362—97 **8 Claims**

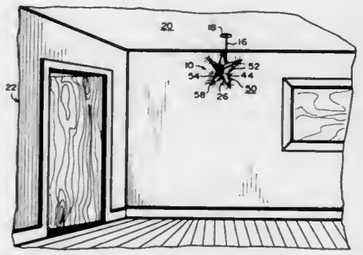
1. A light table quilting/craft system, comprising:
a portable light source placed over a generally planar supporting surface;
a light table having a translucent upper surface, the light table standing atop the supporting surface to position the translucent upper surface over the light source, the light table including a portable frame having a large central window and a downwardly facing peripheral channel, a translucent plate disposed within the window, and a plurality of legs extending downwardly from the translucent plate for supporting the light table over the planar surface;

a pattern placed over the translucent upper surface;
a fabric sheet draped over the pattern and the upper surface of the light table; and
means for non-destructively clamping the fabric sheet to the light table to minimize relative movement therebetween, the clamping means including a plurality of one-piece, resilient hold-down clamps which each include a first side



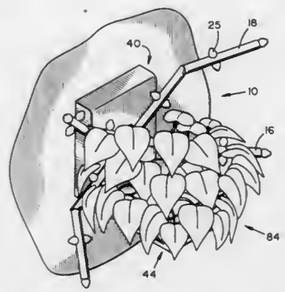
and a second side and are bent into a shape to include an upper bracket whereat the first side engages an upper surface of the light table, and a lower bracket wherein the second side engages the peripheral frame channel and rests partially therein, wherein the lower bracket is bent into a resilient arch having sufficient flexibility to securely hold fabric sheets of various thicknesses in place.

5,309,333
LIGHT EMITTING FOLDABLE DECORATION
Vijay K. Kandampully, 34, Ford Park Road, Plymouth, England PL4 6NU
Filed Mar. 16, 1992, Ser. No. 851,881
Int. Cl.[5] A47G *33/00*
U.S. Cl. 362—121 **7 Claims**



1. A light emitting foldable decoration for a socket holder fixture with a 25 watt light bulb suspended by a power cord from a mounting plate on a ceiling of a building, said decoration comprising:
a) means connected to the socket holder fixture, for screening the light bulb, said screening means is a lamp shade, said lamp shade includes a cup-shaped housing having an open bottom end and a closed top end with a central aperture therethrough to allow the neck of the light bulb to pass through said central aperture, said cup-shaped housing having a plurality of small openings in said closed top end radially positioned about said central aperture to allow hot air rising from the heat of the light bulb to exit therefrom; and
b) means for covering said screening means, so that said covering means will allow some of the light illuminating from the light bulb to enhance the appearance of said covering means, said covering means includes an extendable adornment having a compartment sized to fit about said cup-shaped housing when placed in an opened position and means for securing said extendable adornment in its opened position about the socket holder fixture, said extendable adornment is a three dimensional geometric shaped embellishment that can be collapsed into a closed position and be stored when not in use, said three dimensional geometric shaped embellishment is a star having a plurality of radiating points, each of said points defining a hollow compartment therein and combining centrally to form a hollow central compartment for said cup-shaped housing so that said cup-shaped housing will remain hidden from observers of said star.

5,309,334
FLORAL LIGHT FIXTURE
Lawrence H. Willison, Rte. 3 - Box 293, Mt. Pleasant, Iowa 52641
Filed May 24, 1993, Ser. No. 64,902
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—122 **19 Claims**



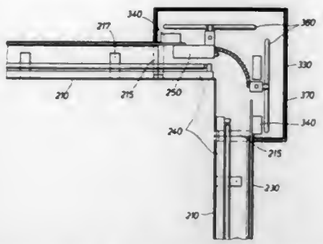
1. A floral lighting fixture for decoratively lighting and displaying a floral arrangement, said floral lighting fixture comprising:
a light rack; and
a wall mount;
said light rack and said wall mount being attachable to and detachable from one another;
said light rack comprising;
at least two extended arms;
each of said two extended arms having at least one light source provided thereon;
said two extended arms being pivotally joined to one another at a pivot point; and
each of said two extended arms having at least one bendable joint provided along its length;
each of said at least one bendable joints being disposed intermediately between the two extreme ends of each of said two extended arms.

5,309,335
LIGHTING SYSTEM
John F. Tryon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 4, 1992, Ser. No. 985,777
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—152 **19 Claims**

1. A lens assembly for use in a lighting system comprising:
(a) a single elongated translucent lens.;
(b) tracks for slidably receiving said lens;
(c) means for securing said lens at one point thereby allowing thermal expansion and contraction of said elongated translucent lens along said tracks; and

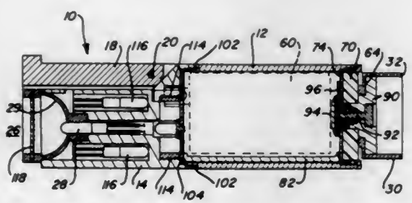
VOL 1162 ISS 1 MY 3 1994 UMI

(d) means at opposite ends of said single elongated translucent lens including lens extending about a corner for



slidably receiving opposite ends of said elongated translucent lens during expansion and contraction.

5,309,336
UNIVERSAL CONNECTOR AND AUTOMOTIVE CIGARETTE LIGHTER ASSEMBLIES AND RECHARGEABLE FLASHLIGHT INCORPORATING SAME
Joseph Hartt, and Joseph E. Velazquez, both of Englewood, Colo., assignors to Millennia Corporation, Englewood, Colo.
Filed Feb. 6, 1991, Ser. No. 651,599
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—183 **19 Claims**

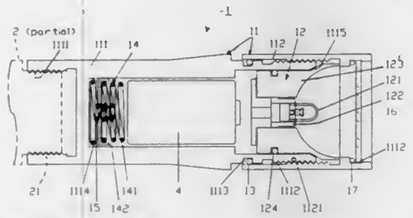


1. A device for drawing current from either one of two electric cigarette lighter receptacles, each of which has a cylindrical inner surface serving as a negative contact surface for each of two respective cigarette lighters with an open outer end and a closed inner end to which is connected to a U-shaped spring bracket that is electrically insulated from the inner surface and formed with spaced spring prongs extending toward the open outer end and serving as a pair of positive contacts for each of the two respective cigarette lighters, the prongs in the first one of the two receptacles having a first greater spacing from each other so as to engage the first cigarette lighter and the prongs in other of the two receptacles having a second lesser spacing from each other so as to engage the second cigarette lighter, said device comprising:

a generally cylindrical housing having a first end with a conductive surface, said housing being receivable in the receptacle so that said conductive surface of said housing is brought into electrical contact with the negative contacting surface of the receptacle, said housing having a second end; and

a conductive cylindrical ring, having an outer peripheral surface and an inner peripheral surface, connected to and extending from said second end of said housing, which is electrically insulated from said conductive surface of said housing, said ring having a diameter intermediate the spacing between the prongs of the one receptacle and the spacing between the prongs of the other receptacle so that when said second end of said housing is inserted into the first receptacle said outer periphery surface of said cylindrical ring makes positive electrical contact with the prongs in the first receptacle and when said second end of said housing is inserted into the second receptacle said inner peripheral surface of said cylindrical ring makes positive electrical contact with the prongs of the second receptacle.

5,309,337
TWIST-ON/TWIST-OFF FLASHLIGHT WITH SHOCK-MOUNTED BULB ASSEMBLY AND REDUNDANT OFF-SWITCHING, PARTICULARLY FOR USE AT THE TIP OF POLICE BATONS
Steven Groben, 850 Daisy St., Escondido, Calif. 92027
Filed Jul. 21, 1992, Ser. No. 918,848
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—206 **25 Claims**



1. In a flashlight having

a tubular case having two electrically-conducting sections which screw together until, the relative angular rotation between the two sections exceeding a predetermined first degree, the two sections are placed into electrical contact,

a light bulb, located within a first end portion of the two-section tubular case and having two terminals a first one of which is in continuous electrical contact with a first section of the two-section tubular case, for emitting light when energized,

a battery, located and moveable within an opposite end portion of the two-section tubular case and having two terminals, for supplying energy, and

spring means for (i) force biasing the battery for movement within the tubular case so that a first one of its two terminals is in continuous electrical contact with a second terminal of the light bulb, and f or (ii) electrically connecting the second terminal of the battery to the second section of the two-section tubular case,

wherein an angular rotation of the two sections exceeding the predetermined first degree places the two electrically-conducting sections of the tubular case into electrical contact, completing an electrical circuit from the battery second terminal to the case second section to the case first section to the light bulb first terminal through the light bulb to the light bulb second terminal bulb back to the battery first terminal and energizing the light bulb from the battery so that it emits light,

wherein angular rotation of the two sections relative to one another constitutes an electrical on/off switching of the flashlight, an improvement to the spring means comprising:

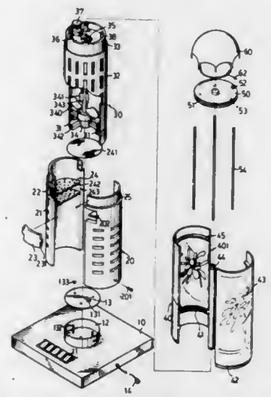
electrically-nonconducting means for force biasing the battery for movement within the tubular case so that a first one of its two terminals is in the continuous electrical contact with a second terminal of the light bulb; and

electrically-conducting means for electrically connecting the second terminal of the battery to the second section of the two-section tubular case only when the case's two sections are angularly rotated relative to one another to greater than a predetermined second degree;

wherein the battery second terminal makes electrical contact with the case second section only when the case's two sections are angularly rotated relative to one another to greater than the predetermined second degree;

wherein the electrical circuit is completed, and the light bulb energized so as to emit light, only when the case's two sections are angularly rotated relative to one another to greater than the largest of the predetermined first degree and the predetermined second degree.

5,309,338
ROTATABLE LIGHTING EQUIPMENT
Zuo H. Liu, No. 61, Sec. 2, Tung Hsing Rd., Taichung, Taiwan
Filed Oct. 29, 1992, Ser. No. 968,489
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—253 **10 Claims**



1. Lighting equipment comprising a casing including an annular groove formed in an upper and outer peripheral portion thereof, a socket and a motor disposed on an upper portion of said casing, a gear coupled to said motor and driven by said motor, a first disc disposed above said casing and fixed to said casing, wherein said first disc includes an annular recess formed in an outer peripheral portion thereof, a light bulb plugged into said socket, and a cover including a lower end rotatably engaged in said annular groove of said casing and including an annular track formed in an inner and lower peripheral portion thereof for engagement with said gear of said motor, wherein said cover includes an annular rib formed in an inner and upper peripheral portion thereof for rotatably engaging in said annular recess of said first disc, whereby said cover is rotated by said motor by the engagement between said gear and said annular track of said cover.

5,309,339
CONCENTRATOR FOR LASER LIGHT
Robert H. Webb, Lincoln, Mass., assignor to The Schepens Eye Research Institute, Inc., Boston, Mass.
Filed Jun. 24, 1992, Ser. No. 903,504
Int. Cl.[5] F21K *7/00*
U.S. Cl. 362—259 **22 Claims**

1. Apparatus for diffusing and concentrating coherent optical energy, comprising

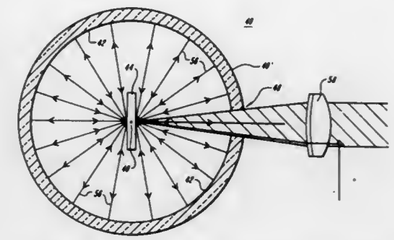
optical source means producing a beam of substantially coherent optical energy illuminating incident on a first point,

diffuser means disposed at said first point for diffusely re-emitting said coherent optical energy incident thereon at said first point, said diffuser means having a surface roughness greater than the wavelength of said coherent optical energy,

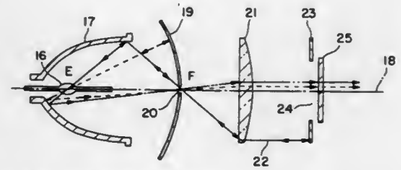
reflective means having a reflective surface having a concentration point disposed at said first point, said reflective surface being disposed for reflection of diffuse optical energy incident thereon and re-emitted from said diffuser means and for concentrating said diffuse optical energy to said concentration point, and

means forming at least one aperture in said reflective means for the transmission of an output beam formed by a portion of said diffuse optical energy re-emitted from said diffuser means,

said diffuser means and said reflective means and said aperture being further arranged for in part reflecting from said reflective surface to said concentration point, and for in part transmitting through said aperture, said diffuse optical energy from said diffuser means.



5,309,340
LIGHTING APPARATUS
Teruaki Shigeta, Neyagawa, and Takeshi Nishiura, Hirataka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 18, 1992, Ser. No. 978,255
Claims priority, application Japan, Nov. 18, 1991, 3-300933
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—299 **14 Claims**



1. A lighting apparatus comprising:

a light source,

a reflector of partial ellipsoid having an inside reflecting surface, so arranged as to have the light source at the first focal point of ellipsoid and to have the light from the light source focused at the second focal point thereof,

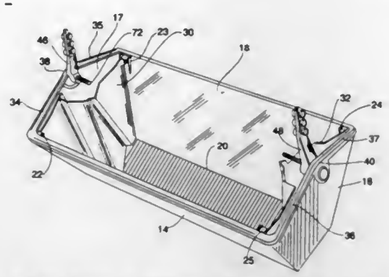
a reflector of partial sphere facing the reflector of ellipsoid with an aperture around the optical axis of the ellipsoid and having the center of the sphere at the light source,

a converging lens arranged at the outside of the reflector of the partial sphere and having a focal point thereof at the second focal point of the reflector of ellipsoid, and

a light-controlling plate, arranged at the further outside of the converging lens.

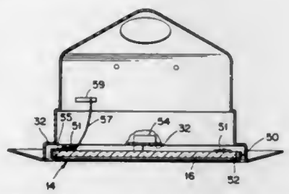
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5,309,341
LIGHT FIXTURE WITH A REVERSIBLE LENS WITH ADJUSTABLE BRACKETS
Thomas Russello, Howell, and Richard Sangiamo, Linden, both of N.J., assignors to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Oct. 23, 1992, Ser. No. 965,209
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—300 **8 Claims**



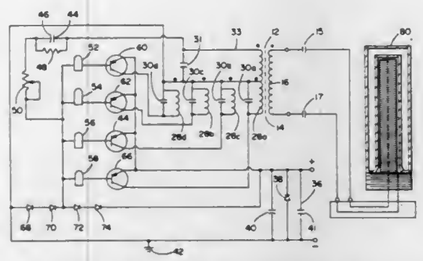
1. A light fixture of the type including a bulb, a reflector proximate to said bulb and a lens enclosing said bulb and said reflector, the improvement wherein the lens has a first and a second longitudinal wall, a first and a second end wall spanning between ends of said first and said second longitudinal wall, and a bottom engaging said first and said second longitudinal wall and said two end walls thereby forming a symmetric trough shape; wherein said first longitudinal wall has a substantially clear texture and said second longitudinal wall has a prismatic texture; the improvement further comprising means for mounting said lens in a first position exposing said first longitudinal wall or a second position exposing said second longitudinal wall, wherein said second position of said lens is achieved by rotating said lens from said first position.

5,309,342
RECESSED LIGHTING FIXTURE
James J. Heinen, Sr., Vernon Hills, Ill., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Mar. 2, 1993, Ser. No. 25,248
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—364 **8 Claims**



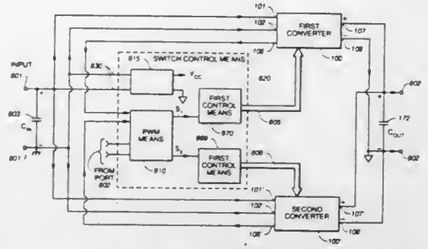
1. A recessed lighting trim comprising a reflector, a frame connected to said reflector, and a translucent member mounted in said frame,
said reflector comprising a body forming a downwardly open chamber for receiving a lamp, said body including:
a main upper portion sized to fit within a ceiling recess and having a hole for accommodating passage of electrical wiring,
a flange extending laterally outwardly from a lower edge of said body for bearing against a ceiling surface, and
a generally circular recess surrounded by said flange and bordered at its upper end by a laterally extending shoulder, said shoulder including a plurality of circumferentially extending slots which are spaced apart in a circumferential direction
said frame comprising a frame body sized to fit within said recess of said reflector body, said frame body including:
a generally circular ring-shaped rim, and
a plurality of circumferentially spaced hooks extending upwardly from said rim, a circumferential spacing between said hooks corresponding to a circumferential spacing between said slots, each hook being of inverted U-shape, each hook being sized to fit through a respective one of said slots to permit said frame to be rotated in a first direction of rotation relative to said reflector body and then lowered such that said hooks become hooked over respective retaining portions of said shoulder to mount said frame in said reflector, said frame being removable from said reflector body in response to being raised and reverse-rotated in a second direction of rotation to return said hooks into alignment with said respective slots,
a safety connector interconnecting said frame and said reflector to permit relative rotation therebetween and permit limited lowering of said frame relative to said reflector.

5,309,343
DRIVER CIRCUIT HAVING PARALLELED TRANSISTORS AND CURRENT-VARIABLE RESISTIVE ELEMENTS
Robert B. Schlenk, 3502 Dell Rd., Louisville, Ky. 40299
Filed Dec. 10, 1992, Ser. No. 988,719
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—16 **5 Claims**



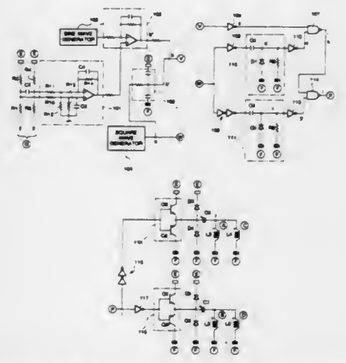
1. An improved driving circuit including a magnetically permeable core, a high voltage secondary winding around said core, said secondary winding being connectable to a device to be powered, a circuit connectable to a D.C. power source and being magnetically coupled to said secondary winding to induce a voltage thereacross sufficient to power a device, a plurality of connected primary windings wound around said core, a RC network and a plurality of parallel connected transistors coupled to said primary windings and said RC network with each respective transistor having a base terminal connected to said RC network by a respective current-variable resistive element,
said improved circuit further including said primary windings having a first primary winding connected in series with a plurality of second primary windings and each of said first and second windings connected in parallel with a respective capacitor.

5,309,344
DUAL ACTIVE CLAMP, ZERO VOLTAGE SWITCHING POWER CONVERTER
David A. Smith, Kowloon, Hong Kong, assignor to Astec International, Ltd., Hong Kong, Hong Kong
Continuation-in-part of Ser. No. 668,587, Mar. 13, 1991, Pat. No. 5,173,846. This application Sep. 9, 1992, Ser. No. 943,008
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **29 Claims**



1. A dual active clamp forward converter comprising:
an input port for receiving a source of power and an output port for providing power to a load;
a first converter and a second converter, each said converter having a power transformer including a primary winding coupled to said input port and a secondary winding coupled to said output port, a primary switch means coupled in series between said primary winding of said power transformer and said input port, a series combination of a first switch means and a first capacitor, said series combination of said first switch means and said first capacitor coupled in parallel with one of said primary winding, said secondary winding, and said primary switch means, and a second switch means coupled in series with said secondary winding of said power transformer, said primary switch means when closed causing a first portion of energy from the source of power at said input port to be coupled through said power transformer to the load by means of said secondary winding and causing a second portion of said energy to be stored in said power transformer;
means for generating a first duty-cycle signal and a second duty-cycle signal, each of said first and second duty-cycle signals having a first state and a second state and operative to alternate in time between said first and second states, said second duty-cycle signal being phase-shifted in time by substantially 180 degrees from said first duty-cycle signal;
means responsive to said first duty-cycle signal for operating the primary switch means and first switch means of said first converter, said means causing the primary switch means of said first converter to close substantially when said first duty-cycle signal enters its respective first state and to open substantially when said first duty-cycle signal enters its respective second state, said means causing the first switch means of said first converter to open substantially when said first duty-cycle signal enters its respective first state and to close substantially when said first duty-cycle signal enters its respective second state, said means opening the first switch means of said first converter prior to when the primary switch means of said first converter closes to create a zero-voltage switching condition on said primary switch means when said primary switch means next is caused to close;
means for operating the second switch means of said first converter, said means opening the second switch means of said first converter substantially when the primary switch means of said first converter opens and closing said second switch means substantially when said primary switch means closes, said second switch means being operated such that substantially no current is conducted by said secondary winding of said first converter during the interval after said first switch means is opened and before said primary switch means is closed;
means responsive to said second duty-cycle signal for operating the primary switch means and the first switch means of said second converter, said second control means causing the primary switch means of said second converter to close substantially when said second duty-cycle signal enters its respective first state and to open substantially when said second duty-cycle signal enters its respective second state, said means causing the first switch means of said second converter to open substantially when said second duty-cycle signal enters its respective first state and to close substantially when said second duty-cycle signal enters its respective second state, said means opening the first switch means of said second converter prior to when the primary switch means of said second converter closes to create a zero-voltage switching condition on said primary switch means when said primary switch means next is caused to close; and
means for operating the second switch means of said second converter, said means opening the second switch means of said second converter substantially when the primary switch means of said second converter opens and closing said second switch means substantially when said primary switch means, said second switch means being operated such that substantially no current is conducted by the secondary winding of said second converter during the interval after said first switch means is opened and before said primary switch means is closed.

5,309,345
INVERTOR DEVICE
Masashi Nakamura, and Motohiro Shimizu, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1991, Ser. No. 790,470
Claims priority, application Japan, Nov. 13, 1990, 2-307823; Jun. 12, 1991, 3-167542
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] H02M *7/525*
U.S. Cl. 363—41 **16 Claims**



1. In an invertor device for an alternating current power unit having a direct current power source circuit, said invertor device including switching means for effecting switching control of an output from said direct current power source circuit, and an output circuit responsive to the switching control of said switching means for supplying an AC power output.
the improvement comprising:

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a sine wave-forming circuit for generating a sine wave signal having a predetermined frequency;

a triangular wave-forming circuit for generating a triangular wave signal having a frequency higher than said predetermined frequency;

a superposed signal-forming circuit for superposing said triangular wave signal on said sine wave signal to generate a superposed signal; and

a pulse width modulating circuit comprising an invertor buffer having a predetermined fixed threshold level for amplifying said superposed signal with reference to said predetermined fixed threshold level to generate a pulse width modulated signal;

wherein said switching means performs said switching control based on said pulse width modulated signal from said pulse width modulating circuit.

5,309,346

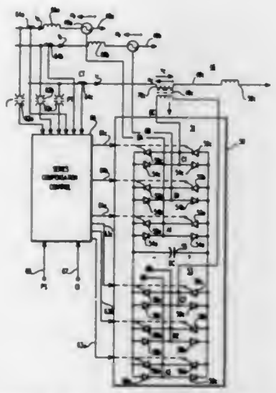
TRANSMISSION LINE FAULT CURRENT DYNAMIC INVERTER CONTROL

Laszlo Gyugyi, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 16, 1991, Ser. No. 760,628

Int. Cl.[5] H02H *7/125*; H02M *1/18*

U.S. Cl. 363—54 **10 Claims**



1. A transmission line fault current surge passing system for dynamically passing fault current, said system comprising:

compensating means coupled in series with the transmission line and being adapted to bypass fault current coupled from the transmission line and thereafter to introduce or to inject therein a voltage component;

control means for interactively adjusting said compensating means to accept fault current during transitions from a normal operating mode, means for sensing said compensating means to dissipate a fault current surge;

said control means switching said compensating means to the fault mode for so long as to pass the fault current.

5,309,347

H-BRIDGE CIRCUIT WITH PROTECTION AGAINST CROSSOVER CONDUCTION

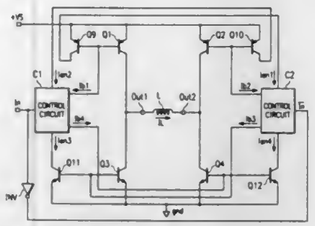
Alberto Poma, Pavia; Vanni Poletto, Casale Monferrato, and Marco Morelli, Livorno, all of Italy, assignors to SGS-Thomson Microelectronics S.R.L., Agrate Brianza and Marelli Autronica S.p.A., Milan, both of Italy

Filed Sep. 18, 1992, Ser. No. 947,105

Claims priority, application Italy, Sep. 18, 1991, T091A000707

Int. Cl.[5] H02M *3/155*

U.S. Cl. 363—63 **35 Claims**



6. A circuit, comprising:

first and second output terminals for connection to the terminals of a load,

first and second pairs of electronic power switches which are connected between said output terminals and the two poles of a direct-current voltage supply so as to form an H-shaped structure with the load, and driver circuit connected to selectively make said the electronic power switches of said first pair or of said second pair conductive in order to cause a current to flow through the load in one direction or the other, respectively, and for preventing said electronic power switches which are connected between the same output terminal and the two poles of the voltage supply from conducting simultaneously; said driver circuit also including:

at least one first and one second auxiliary electronic switch, which are connected respectively to an electronic power switch of said first pair and to an electronic power switch of said second pair in a relation such that, in operation, the current flowing through each auxiliary electronic switch depends on the current flowing through the associated electronic power switch; and wherein comparator and enabling circuitry are connected to said auxiliary electronic switches for supplying a signal to enable current to be conducted through one of said pairs of electronic power switches only when the current flowing through said auxiliary switch associated with the other pair has fallen below a predetermined value.

5,309,348

METHOD AND APPARATUS FOR PREVENTING IMPROPER SWITCHING OF A DUAL POWER SUPPLY

Fang-Jye Leu, Taipei, Taiwan, assignor to Acer Peripherals, Inc., Taoyuan, Taiwan

Filed Aug. 13, 1992, Ser. No. 929,093

Int. Cl.[5] H02M *3/335*

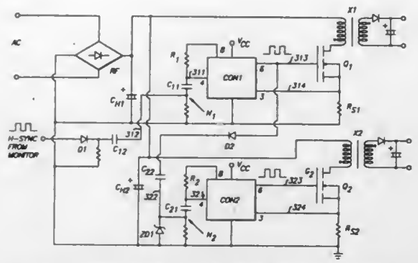
U.S. Cl. 363—71 **13 Claims**

1. A dual switching power supply system having first and second switching power supply means, comprising:

a first switch control means which outputs a first switch control signal for turning the first switching power supply means on and off;

a second switch control means which outputs a second switch control signal for turning the second switching power supply means on and off; and

a differentiating circuit, coupled to both the first and second switching power supply means, for delaying the phase of the second switch control signal with respect to the first switch control signal by a predetermined amount while keeping the frequencies of the first and second switch



control signals equal to each other, such that malfunction of the dual switching power supply system due to noise from the state changes of the first and second switch control signals is eliminated.

5,309,349

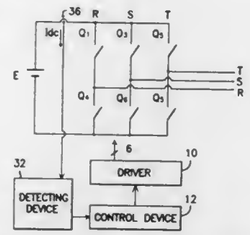
CURRENT DETECTION METHOD FOR DC TO THREE-PHASE CONVERTERS USING A SINGLE DC SENSOR

Khang-Shen Kwan, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 22, 1992, Ser. No. 949,070

Int. Cl.[5] H02M *7/44*

U.S. Cl. 363—98 **12 Claims**



1. A current detection method for a direct-current to three-phase alternating-current converter wherein said converter includes a direct current power supply, a direct-current sensor for detecting direct-current on the direct current side of the converter, three pairs of transistors for converting the direct current power supply to a three phase alternating current power supply, and a control means to control a sequenced switching of the transistors and the resulting three-phase alternating-currents, said method comprising the steps of:

(a) controlling the switching of said three pairs of transistors;

(b) detecting direct current values in the direct current side of the converter corresponding to the phase current of a first phase and a second phase by means of said direct-current sensor; and

(c) calculating a phase current value for a third phase by means of said detected current values of the first and second phases.

5,309,350

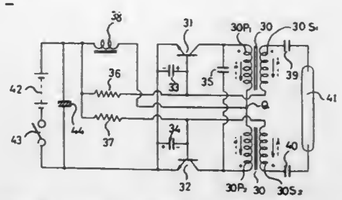
PUSH-PULL INVERTER

Seiichi Kijima, Tokyo, Japan, assignor to Kijima Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 981

Int. Cl.[5] H02M *7/538*

U.S. Cl. 363—133 **5 Claims**



1. Push-pull inverter comprising a boosting transformer having a first primary coil, a first secondary coil, a second primary coil and a second secondary coil; first and second switching elements each having a control electrode adapted for controllably interrupting primary current flowing through said first and second primary coils; a capacitor connected between the respective control electrodes of said two switching elements; and a feedback circuit in which one end of said first secondary coil is connected to the control electrode of the first switching electrode and one end of said second secondary coil is connected to the control electrode of the second switching element so that load current from a load connected between the other ends of these first and second secondary coils flows through said capacitor.

5,309,351

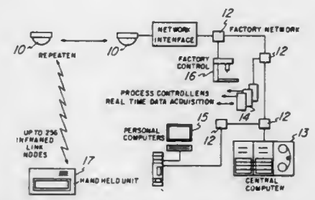
COMMUNICATIONS, INFORMATION, MAINTENANCE DIAGNOSTIC AND TRAINING SYSTEM

Joseph H. McCain, Plano; E. R. Webb, Temple, and William R. Lueders, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 808,036, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 263,679, Oct. 27, 1988, abandoned. This application Sep. 2, 1992, Ser. No. 939,565

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—132 **6 Claims**



1. A data and communications system useful for providing interchange of data between a host computer, individual personal computers, factory machinery, including process controllers, a portable computing unit, and other controller/computing equipment and devices, comprising, a host computer interconnected with a network of interface units connecting other computers and factory machine/process controllers, said network of interface units includes an infrared link in a wireless network which includes at least one satellite unit including a transmitter for transmitting data via infrared signals, a receiver for receiving data via infrared signals, an encoder/decoder to identify from which unit data is received or to which unit data is to be sent and to implement or remove the encoding protocol of the data stream, a controller unit for processing data relayed through the satellite and controlling the operation of the wire-

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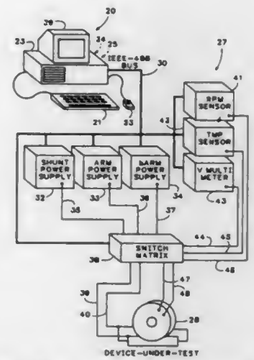
less network, and one or more interface circuits for interfacing the satellite with various communications networks, said satellite unit coupled to the network of interface units for communicating with at least one of the self-contained portable computing units, said infrared link for communicating with a self-contained portable computing unit for two-way communication with said host computer, other computers and machine/process controllers, and a communications link providing for two-way data transfer and control between each of said host computer, other computers, machine/process controller sand said self-contained portable computing unit.

5,309,352

METHOD AND SYSTEM FOR OPTIMIZING TERMINATION IN SYSTEMS OF PROGRAMMABLE DEVICES

David D. Stubbs, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed May 18, 1990, Ser. No. 525,814
Int. Cl.[5] G05B *11/01, 9/02*; G01R *15/12*
U.S. Cl. 364—140 **22 Claims**



1. A method for selectively deactivating computer-controlled devices used to perform a sequence of operations, with each operation using an associated set of the devices, the method comprising:

storing in a computer memory a list of the devices used for each operation;

prior to performing a current operation, determining from the stored lists those devices that will not be used in the current operation; and

generating commands for deactivating those devices that will not be used in the current operation.

5,309,353

MULTIPLE REFERENCE FRAME CONTROLLER FOR ACTIVE FILTERS AND POWER LINE CONDITIONERS

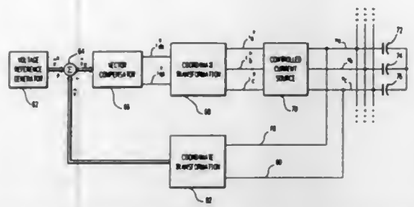
Colin D. Schauder, Murrysville Boro, and Steven A. Moran, Mt. Lebanon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1992, Ser. No. 955,639
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—148 **7 Claims**

1. A control circuit comprising:

means for producing an error signal vector in a fixed reference frame, said error signal vector being representative of the difference between an output signal and a reference signal;

a plurality of rotating frame controllers connected to receive said error signal vector, each of said rotating reference frame controllers including means for transforming said error signal vector onto a rotating frame of reference to produce an intermediate signal, means for integrating said intermediate signal to produce an integrated signal, and means for transforming said integrated signal onto said fixed frame of reference to produce a transformed integrated signal; and



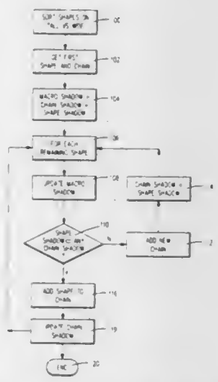
means for combining said transformed integrated signal from each of said rotating frame controllers to produce a control signal for use in controlling said output signal.

5,309,354

ELECTRON BEAM EXPOSURE METHOD

Gregory J. Dick, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1991, Ser. No. 784,834
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—167.01 **27 Claims**



27. A method of generating control for controlling a particle beam tool in exposing a radiation sensitive layer to at least one repetitious shape, said repetitious shape being described by a two dimensional macro, said macro comprising a plurality of fill rectangles, said method comprising the steps of;

a) organizing said macro, said organizing step comprising the steps of:

1) sorting a plurality of fill rectangles in said macro according to the macro's largest dimension, and

2) creating at least one chain of rectangles from said sorted fill rectangles, a chain shadow for each said at least one chain, and a macro shadow for said macro; and,

b) placing said macro for each occurrence of said repetitious shape and for each occurrence of said repetitious shape spanning a boundary of a subfield pair graying said macro along said boundary, said placing and graying step comprising the steps of:

1) transforming said macro shadow onto each said occurrence of said repetitious shape in said subfield pair until said macro shadow spans said boundary,

2) transforming said boundary onto said macro,

3) determining which of said fill rectangles lie in each of said pair of subfields,

4) determining which of said fill rectangles span said subfield boundary,

5) determining which of said fill rectangles form subchains spanning subfield boundaries,

6) gray-splicing and placing said spanning rectangles and said subchain fill rectangles lying in an overlap region,

7) placing in one said subfield all said fill rectangles completely lying in said subfield and placing in the other said subfield all of said fill rectangles completely lying in said other subfield,

8) repeating steps 2–7 for a second subfield pair boundary if at least one said fill rectangle remains unplaced, and

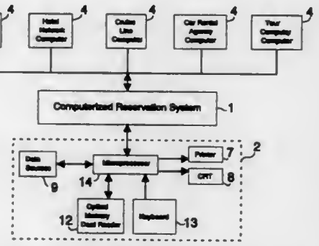
9) repeating steps 1–8 until said macro has been transformed onto every said repetitious shape occurrence.

5,309,355

AUTOMATED SALES SYSTEM

Lawrence B. Lockwood, 5935 Folsom Dr., La Jolla, Calif. 92037

Continuation of Ser. No. 396,283, Aug. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 152,973, Feb. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 822,115, Jan. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 613,525, May 24, 1984, Pat. No. 4,567,359. This application Sep. 3, 1993, Ser. No. 116,654
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—401 **5 Claims**



1. A system for automatically dispensing information, goods or services for a plurality of institutions in a particular industry, comprising:

a central data processing center including means for storing service, price rate information or sales information for each institution;

at least one merchandising apparatus including means for dispensing information and services and means for remotely linking said apparatus to said central data processing center and for transmitting data back and forth between said central data processing center and apparatus; and

a data processing terminal associated with each institution and means for remotely linking each terminal to said central data processing center comprising means for transmitting information back and forth between said data processing terminal and said central data processing center, each data processing terminal including means for storing institution service, price rate information or sales information, and input means for input of updated service or price rate information;

said merchandising apparatus including:

a means for composing and displaying individualized sales presentations according to determinants entered into said apparatus and based on a customer's profile and requests and in combination with at least one remotely-accessible source of information about available goods or services, which comprises:

storage means holding a plurality of randomly accessible segments of data;

means for addressing said storage means as a function of said determinants, said means for addressing comprising:

means for selectively combining said determinants to address and retrieve at least one of said segments;

program-driven communication means for sending inquiries to, and for receiving up-to-date information from said remotely-accessible source;

video means for displaying some of said segments;

means for processing a sales order including means for holding information about, and order from said customer; and

programmable means for directing the operation of said means for composing and displaying, means for addressing, means for selectively combining, communication means, video means, and means for processing, including means for holding an operational sequencing list and means responsive to statuses of said various means for controlling said operation;

said central data processing center including:

means responsive to data received from said merchandising apparatus for transmitting selected stored information to said apparatus via said linking means;

means responsive to a sales order from said merchandising apparatus for updating said sales information in said storage means, and transmitting said order to said apparatus via said linking means for dispensing of the ordered services;

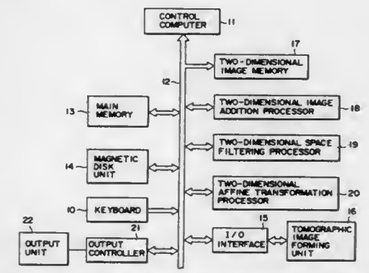
means for periodically accessing said institution terminals via said linking means for transmitting sales information for each institution to its associated terminals, and means for periodically accessing said institution linking means for collecting and storing service or price rate information from each institution terminal.

5,309,356

THREE-DIMENSIONAL REPROJECTED IMAGE FORMING APPARATUS

Akihiko Nishide, Tokyo, and Kazushige Takahashi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 250,156, Sep. 28, 1988, abandoned. This application Apr. 2, 1990, Ser. No. 502,916
Claims priority, application Japan, Sep. 29, 1987, 62-245417; Sep. 30, 1987, 62-245995
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.19 **4 Claims**



1. An image information processing apparatus comprising:

tomographic image forming unit for forming continuous tomographic image data;

two-dimensional image memory means for storing the continuous tomographic image data formed by said tomographic image forming unit;

two-dimensional image adding means for adding the continuous tomographic image data in an image reprojection direction while offsetting the tomographic images stored in the two-dimensional image memory means;

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two-dimensional space filtering means for performing space filtering of spaces between the continuous tomographic image data added by said two-dimensional image adding means to interpolate the spaces; and

two-dimensional affine transforming means for performing two-dimensional affine transformation of an interpolated image obtained in said two-dimensional space filtering means to obtain a compressed reprojected image;

wherein said two-dimensional image adding means include:

means for judging whether an indicated reprojecting direction is perpendicular to a slice plane of the tomographic image; and

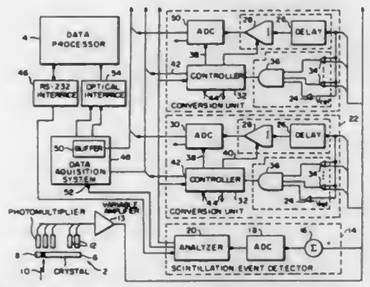
means for adding values at corresponding addresses of all successive tomographic images stored in said image memory means.

5,309,357

SCINTILLATION DATA COLLECTING APPARATUS AND METHOD

Iain Stark, Dollard des Ormeaux, and Abel Ferreira, Pointe-Claire, both of Canada, assignors to Independent Scintillation Imaging Systems (ISIS) Inc., St-Laurent, Canada

Filed Jan. 28, 1992, Ser. No. 826,796
Int. Cl.[5] G01T *1/164*; G06F *15/42*
U.S. Cl. 364—413.24 **20 Claims**



1. A scintillation data collecting apparatus to be used with a scintillation camera and data processing means, said camera including a crystal in which scintillations are produced at spatial locations with given intensities as a result of radiation stimuli, and a plurality of light intensity measurement devices located over a surface of said crystal for respectively collecting light from said scintillations and generating intensity signals having given amplitudes indicative of said intensities, said scintillation data collecting apparatus comprising:

an adder for adding said intensity signals and thereby producing a sum signal, and analyzing means for carrying out a predetermined validity analysis on said sum signal and generating a resulting validity signal, said adder and said analyzing means forming a scintillation detecting means for detecting said scintillations and determining whether said scintillations are noise or valid scintillations;

a plurality of conversion units connected respectively to said light intensity measurement devices for individually converting said intensity signals into digital value signals, each of said conversion units having means for comparing the amplitude of the corresponding intensity signal with a threshold value and generating a resulting comparison signal, and an analog-to-digital converter for converting a signal derived from the corresponding intensity signal into the corresponding digital value signal; and

controlling means for controlling operation of each of said analog-to-digital converters depending on value of the corresponding comparison signal and said validity signal, so that said digital value signals are generated in relationship with said valid scintillations;

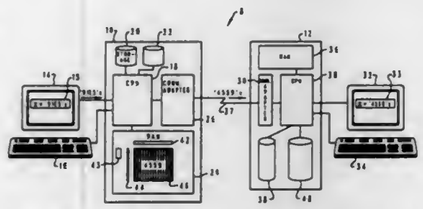
whereby said digital value signals of said valid scintillations can be computed by said data processing means for determining the spatial locations of said valid scintillations.

5,309,358

METHOD FOR INTERCHANGE CODE CONVERSION OF MULTI-BYTE CHARACTER STRING CHARACTERS

Greg P. Andrews, and Chang-Ming Wang, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1992, Ser. No. 837,228
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.01 **16 Claims**



1. A method of converting a multiple byte dataword in a first extended interchange code to a multiple byte dataword in a second extended interchange code, the method comprising the steps performed by a computer of:

verifying each byte of the multiple byte dataword in said first extended interchange code utilizing each of a plurality of separate verification arrays associated with each byte position;

returning an index value for each of the bytes of said multiple byte dataword in said first extended interchange code from the respective associated verification arrays in response to a successful verification thereof; and

utilizing a plurality of the returned index values to access the multiple byte dataword in the second extended interchange code from a multiple dimension conversion matrix.

5,309,359

METHOD AND APPARATUS FOR GENERATING AND UTLIZING ANNOTATIONS TO FACILITATE COMPUTER TEXT RETRIEVAL

Boris Katz, 24A Garden St., Cambridge, Mass. 02138, and Patrick H. Winston, 258 Sodbury Rd., Concord, Mass. 01742

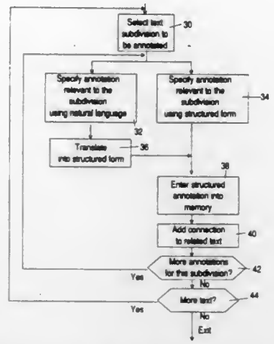
Filed Aug. 16, 1990, Ser. No. 568,520
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—419.19 **48 Claims**

1. A method for facilitating computer text retrieval comprising the steps of:

selecting subdivisions for the text;

generating for each of said subdivisions which is to be recovered at least one annotation containing words having a selected annotator determined relationship and being in a language selected from the group of a natural language and an artificial language;

storing the annotations in a predetermined structured form which retains said selected relationship, the stored annotations being readable by a computer to search for desired annotations; and



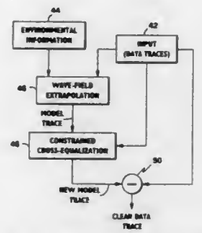
adding to the stored annotations a connection to corresponding text.

5,309,360

METHOD FOR ATTENUATING UNDESIRABLE DATA, SUCH AS MULTIPLES, USING CONSTRAINED CROSS-EQUALIZATION

David J. Monk, Sugarland, and Cameron B. Wason, Plano, both of Tex., assignors to Halliburton Geophysical Services, Inc., Houston, Tex.

Filed May 23, 1991, Ser. No. 704,363
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—420 **25 Claims**



1. A method of cross-equalizing an electrical data trace signal produced by sensing an underwater land formation in an under-water environment and an electrical model trace signal determined from said data trace signal and from parameters of said underwater environment, each of said signals having respective amplitude, phase and time characteristics, said method comprising the steps of:

determining a ratio of said amplitude of said data trace signal and said amplitude of said model trace signal;

determining a phase difference between said phase of said data trace signal and said phase of said model trace signal;

determining a time delay between said time characteristic of said data trace signal and said time characteristic of said model trace signal;

designing a constrained filter using said ratio, phase difference and time delay; and

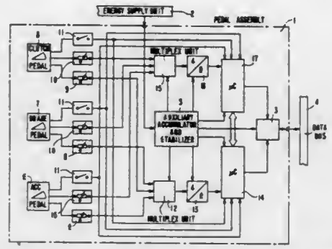
filtering said model trace signal with said constrained filter to produce a crossequalized model trace signal.

5,309,361

PEDAL ASSEMBLY FOR AN AUTOMOTIVE VEHICLES

Peter Drott, Am Kunzengarten 43, 6230 Frankfurt/M 80, and Peter Lohberg, Am Ringelsberg 7, 6382 Friedrichsdorf, both of Fed. Rep. of Germany

PCT No. PCT/EP91/01745, § 371 Date May 15, 1992, § 102(e) Date May 15, 1992, PCT Pub. No. WO92/05482, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 857,913
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1990, 4029334
Int. Cl.[5] G06F *15/50*; G06G *7/70*; F16D *21/04*
U.S. Cl. 364—424.1 **25 Claims**



1. A pedal assembly for an automotive vehicle having an energy supply and a data bus, said pedal assembly comprising:

at least two pedals each having a first electrical signal generator indicating pedal position, a second electrical signal generator also and independently indicating pedal position, and a third electrical signal generator indicating when the pedal exceeds a threshold inclination; and

a data processing system for receiving electrical signals from each of said plurality of electrical signal generators and delivering electrical signals to said data bus, said data processing system having means for providing energy from said energy supply to said pedal assembly and being redundant so that it can determine the consistency of said electrical signals.

5,309,362

ENGINE TORQUE CONTROLLING DEVICE RESPONSIVE TO THE ACCELERATION OF THE VEHICLE AND SLIPPAGE OF THE WHEELS

Masayoshi Ito, Okazaki, and Masayuki Hashiguchi, Oobu, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 644,374, Jan. 23, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 1,909
Claims priority, application Japan, Jan. 25, 1990, 2-13553; Jan. 30, 1990, 2-17821; May 16, 1990, 2-124293
Int. Cl.[5] B60K *28/16*
U.S. Cl. 364—426.03 **7 Claims**

1. An engine torque controlling system for a vehicle, said system comprising:

engine torque adjusting means for adjusting the engine torque independently of operation by a driver,

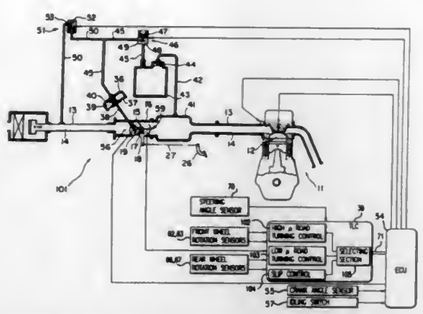
first engine torque setting means for setting a first aimed engine torque in response to a magnitude of lateral acceleration applied to said vehicle during turning of said vehicle,

second engine torque setting means for setting a second aimed engine torque in response to an amount of slip of a driving wheel of said vehicle,

selector means for selecting and outputting said second aimed engine torque whenever said first aimed engine torque has been set by said first engine torque setting means and said second aimed engine torque has been set by said second engine torque setting means regardless of

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the values of said first and second aimed engine torques, and



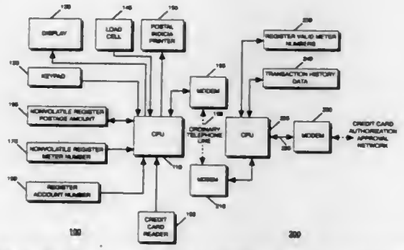
engine torque controlling means for controlling said engine torque adjusting means so that the torque of said engine becomes equal to the aimed torque engine torque selected by said selector means.

5,309,363

REMOTELY RECHARGEABLE POSTAGE METER

Frank M. Graves, 1930 Columbia Rd., NW., Washington, D.C. 20009-5026, and Dale L. Magnusson, Annapolis, Md., assignors to Frank M. Graves, Washington, D.C.

Filed Mar. 5, 1992, Ser. No. 846,167
Int. Cl.[5] G07B *17/00*
U.S. Cl. 364—464.02 **25 Claims**



20. A method of recharging a postage meter, comprising the steps of:

(a) transmitting from a modem of a postage meter to a host credit card number and a postage meter number to request an increase in the mount of postage resident in a nonvolatile register of the postage meter;

(b) receiving in the host the credit card number and the postage meter number from the postage meter requesting an increase in an amount of postage;

(c) searching a list of valid postage meter numbers stored in a register of the host to confirm that the postage meter number is valid;

(d) verifying that the credit card number is valid and creditworthy; and

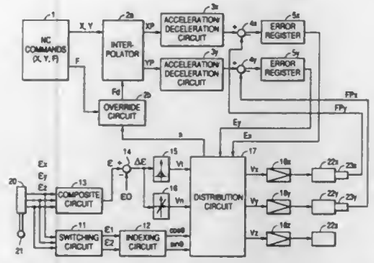
(e) transmitting via the modem an authorization approval from the host to the postage meter to increase the amount of postage in the nonvolatile register of the postage meter when the postage meter number is confirmed as valid in said step (c) and the credit card number is verified as valid and creditworthy in said step (d).

5,309,364

TRACE CONTROL METHOD

Hitoshi Aramaki, and Tetsuji Okamoto, both of Yamanashi, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP91/00432, § 371 Date Nov. 25, 1991, § 102(e) Date Nov. 25, 1991, PCT Pub. No. WO91/15335, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 1, 1991, Ser. No. 773,942
Claims priority, application Japan, Apr. 2, 1990, 2-87869
Int. Cl.[5] G05B *19/36*
U.S. Cl. 364—474.03 **5 Claims**



1. A trace control method used when machining a workpiece by tracing a model with a tracer head moving along first, second and third axes, comprising the steps of:

(a) controlling speed and direction of movement along the first and second axes in dependence upon a numerical control command defining a first planar velocity along the first and second axes;

(b) controlling movement along the first, second and third axes to carry out a tracing operation;

(c) obtaining from the tracing operation a second planar velocity along the first and second axes; and

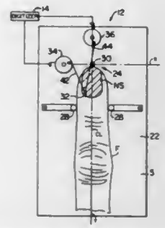
(d) adjusting the numerical control command prior to said controlling in step (a), using a ratio of the second planar velocity to the first planar velocity.

5,309,365

SYSTEM FOR CUTTING ARTIFICIAL NAIL TIPS AND FOR DECORATING THE SAME OR EXISTING NAILS USING AUTOMATED CUTTING PROCESSES

Daniel J. Sullivan, Hartford, and Janine R. Sadoski, Vernon, both of Conn., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Jul. 2, 1992, Ser. No. 908,304
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.03 **32 Claims**



1. A system for automatically cutting a material to be applied to an existing fingernail structure having a surface such that at least a portion of the material when cut is given a desired shape to fit the contour of at least a corresponding portion of the fingernail surface, said system comprising:

a sensing means for sensing the shape of an existing fingernail structure surface onto which surface cut material is to be applied, said sensing means including a first means for determining the outline of the shape of the existing fingernail structure surface and a second means for determining the arcuate configuration of the existing fingernail structure surface;

means for converting data derived from said sensing means into machine usable data;

means for shaping said material by edge cutting it using said machine usable data; and

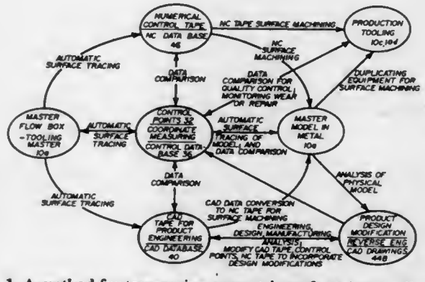
control means for receiving said machine usable data and using said data to drive said cutting means to effect cutting of the material along at least one portion of the material to give said at least one portion of the material a desired shape to fit the contour of a corresponding portion of the fingernail surface as determined by information provided by said sensing means.

5,309,366

METHOD OF DEFINING COMPLEX GEOMETRIES TO TRANSPOSE FLOW BOXES INTO PATTERN EQUIPMENT FOR THE PRODUCTION OF AUTOMOTIVE COMPONENTS

Robert W. Grenkowitz, Romeo, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 3, 1992, Ser. No. 924,803
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.24 **27 Claims**



1. A method for transposing geometric surfaces into tooling for production of a component, said method comprising the steps of:

obtaining a tooling master for a component having at least one geometric surface and at least one substantially planar surface, at least a portion of said at least one geometric surface and at least a portion of said at least one substantially planar surface intersecting along a boundary comprising a rapid transition between said geometric and planar surfaces;

adding a layer of material to said at least one planar surface, and aligning at least a portion of said layer of material in cross-section with at least a portion of said geometric surface substantially adjacent to said boundary;

tracing said geometric surface and said portion of said layer of material in cross-section along a line, and inputting position data related to said surface and layer to a processor means;

repeating said steps of tracing and inputting along a series of lines, whereby position data defining at least a portion of said geometric surface and at least a portion of said layer in cross-section is input to said processor means;

deleting said position data related to said portion of said layer in cross-section; and

defining said planar surface with at least a portion of said position data;

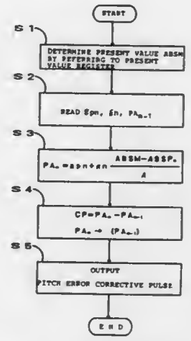
whereby position data defining said geometric shape and said planar surface are entered into said processor means.

5,309,367

PITCH ERROR COMPENSATING SYSTEM

Takao Sasaki, Hachioji; Kentaro Fujibayashi, Musashino; Toshiaki Otsuki, Hino, and Ryonji Eguchi, Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP91/00498, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO91/16173, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 10, 1991, Ser. No. 778,068
Claims priority, application Japan, Apr. 26, 1990, 2-111551
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.35 **4 Claims**



1. A system supplied with interpolated pulses based on a machining program, for compensating for a pitch error of a ball screw of a numerically controlled machine tool, which is controlled by an axis control circuit to move the numerically controlled machine tool along an axis, comprising:

a memory for storing pitch error corrective data;

a present value register for integrating the interpolated pulses to generate a present value and for storing said present value;

pitch error calculating means for reading said present value and for generating and outputting pitch error corrective quantities based on said present value, at equal intervals in a period corresponding to said present value, said period representing a position increment along the axis along which the numerically controlled machine tool can be moved; and

an adder for adding the interpolated pulses and said pitch error corrective quantities, to generate and output sum pulses to the axis control circuit.

5,309,368

WORKPIECE HANDLING MECHANISM OF A C-N-C LATHE MACHINE

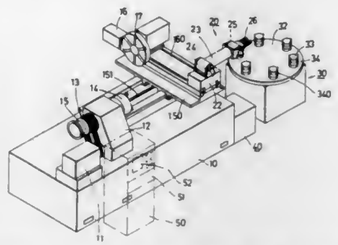
Shyi-Tsae Chern, No. 57, Hua-Fu St., Taichung City, Taiwan

Filed Jan. 21, 1992, Ser. No. 823,132
Int. Cl.[5] G06F *15/46*; B23B *13/00, 15/00*
U.S. Cl. 364—474.21 **4 Claims**

1. A workpiece handling mechanism for a computer numerical control lathe machine, said lathe machine including a machine body which has a first motor and a main shaft mounted thereon, a hydraulically operated chuck provided at one end of said main shaft for holding a workpiece, a second motor and a first screw shaft mounted on said machine body parallel to said main shaft, said first screw shaft being driven by said second motor, a first carriage mounted on said machine body and moved by said first screw shaft towards and away from said

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hydraulic chuck, a second carriage mounted on said first carriage, said second carriage including a third motor, a cutting device being mounted on said second carriage for cutting the workpiece, a second screw shaft mounted on said second carriage and driven by said third motor to move said cutting device forward and backward in a direction perpendicular to said first screw shaft, a hydraulic control system for controlling the operations of said hydraulic operated chuck and said cutting device, an electric control system including a programmable control panel having a display member and, said control panel receiving a plurality of pre-fed instructions to permit automatic control of the operation of said lathe machine, said workpiece handling mechanism comprising:



a workpiece carrying arm mounted on said second carriage; and

a workpiece support spaced from said machine body and adjacent to said workpiece carrying arm, said workpiece support having a rotary disk for holding a plurality of workpieces;

wherein said workpiece is automatically removed from said rotary disk of said workpiece support by said workpiece carrying arm and placed into said chuck, said workpiece is automatically cut by said cutting device while being held in said chuck, and, after being cut, said workpiece is automatically discharged from said chuck and placed into said workpiece support by said workpiece carrying arm.

5,309,369

OPERATING STATE MONITORING METHOD FOR INJECTION MOLDING MACHINES

Masao Kamiguchi; Noriaki Neko, and Osamu Saito, all of Oshino, Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

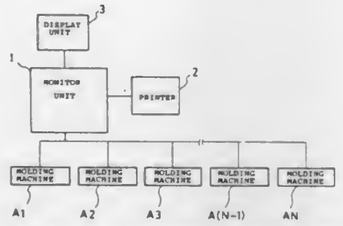
PCT No. PCT/JP91/00761, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO91/19601, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 5, 1991, Ser. No. 829,049

Claims priority, application Japan, Jun. 18, 1990, 2-157744

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—476 **11 Claims**



1. An operating state monitoring method for a plurality of injection molding machines, comprising the steps of:

(a) periodically detecting a set of monitor data indicative of various operating states of a group of the plurality of injection molding machines;

(b) storing at least one set of past detected monitor data from the set of periodically detected monitor data for each injection molding machine in the group of injection molding machines; and

(c) simultaneously visually outputting a set of up-to-date detected monitor data from the periodically detected set of monitor data and the at least one set of past detected monitor data for the group of injection molding machines associated therewith.

5,309,370

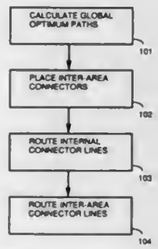
METHOD FOR PLACEMENT OF CONNECTORS USED INTERCONNECTING CIRCUIT COMPONENTS IN AN INTEGRATED CIRCUIT

Dale M. Wong, San Francisco, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 13, 1990, Ser. No. 626,819

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—490 **8 Claims**



1. A method for placing inter-area connectors on peripheries of bounded areas within an integrated circuit, the method being a computer implemented process and comprising the steps, performed by a computer, of:

(a) calculating global optimum paths for connector lines between signal connectors within all the bounded areas; and,

(b) placing inter-area connectors at each location on a periphery of any of the bounded areas where a global optimum path crosses the periphery.

5,309,371

METHOD OF AND APPARATUS FOR DESIGNING CIRCUIT BLOCK LAYOUT IN INTEGRATED CIRCUIT

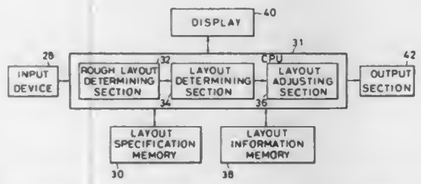
Hiromi Shikata, Chiba; Yoshito Muraishi, Ichihara; Shoichi Moriya, and Naoyasu Seki, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Jun. 26, 1990, Ser. No. 543,549

Claims priority, application Japan, Jun. 28, 1989, 1-165789; Sep. 29, 1989, 1-254798; Oct. 6, 1989, 1-261731

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **17 Claims**



1. A method of generating, in an automatic electronic design apparatus, electronic final layout data corresponding to a circuit block layout for manufacturing an integrated circuit, the automatic electronic design apparatus including a layout specification memory containing electronic circuit block data corresponding to circuit blocks, a layout information memory and a processing unit, said method comprising the steps of:

(a) from the electronic circuit block data, producing electronic rough layout data corresponding to an initial layout of said circuit blocks using a spring model of a mass point system in which infinitesimal circuit blocks are coupled through springs;

(b) from the electronic rough layout data, producing electronic revised layout data corresponding to a revised layout of said circuit blocks by representing at least some of said circuit blocks as circles and eliminating overlap among the circles;

(c) from said electronic revised layout data, generating electronic compacted layout data corresponding to a compacted layout of said circuit blocks to match an external perimeter shape of said circuit blocks as a whole with a frame of a die of the integrated circuit;

(d) altering the electronic compacted layout data to form electronic reshaped layout data corresponding to a layout of reshaped circuit blocks where the representation of the at least some of said circuit blocks is reshaped from a circle to an actual shape;

(e) from the electronic reshaped layout data, generating electronic expanded layout data corresponding to an expanded layout of circuit blocks by expanding each circuit block to provide a region for wiring;

(f) from the electronic expanded layout data, producing electronic fixed layout data by fixing positions of said circuit blocks after adjusting an aspect ratio of each circuit block within a corresponding allowable range; and

(g) from electronic fixed layout data, producing the electronic final layout data by wiring within and between fixed circuit blocks.

5,309,372

SYSTEM AND METHOD FOR DETERMINING ROUTES BETWEEN CIRCUIT BLOCKS OF A PROGRAMMABLE LOGIC DEVICE BY DETERMINING A LOAD PIN WHICH IS CLOSEST TO THE CENTER OF GRAVITY OF A PLURALITY OF LOAD PINS

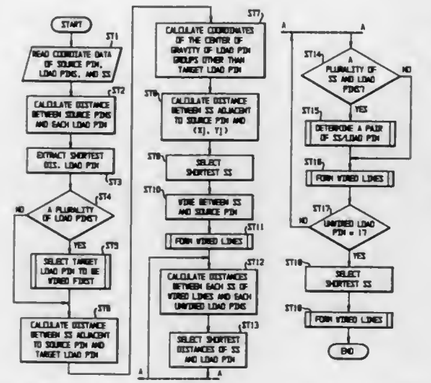
Tomohiro Marui, and Hideyo Funatsu, both of Chiba, Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan

Filed Jul. 16, 1990, Ser. No. 552,517

Claims priority, application Japan, Jul. 17, 1989, 1-183992; Aug. 9, 1989, 1-206570

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **5 Claims**



1. A method for automatically and optimally determining a route to be established in a large scale integrated circuit (LSI), said LSI comprising a) a plurality of circuit blocks, each circuit block having a plurality of terminal pins extended along respective sides thereof; b) a plurality of switching stations, each switching station having a plurality of terminal pins extended along respective sides thereof for providing connecting means between the respective pins so as to propagate the route, the method comprising:

defining a single source pin from any one terminal pin of one of the circuit blocks and a plurality of load pins defined from any other terminal pins of any other circuit blocks required to be connected to the source pin, wherein said method for automatically and optimally determining the route to be established in the LSI comprises the steps of:

selecting a first load pin to be established via a first path based on determining which of the load pins is a shortest distance from the source pin and, when a plurality of load pins are an equally short distance from the source pin, selecting the first load pin based on determining which of the load pins is a shortest distance form a first position on a first center of gravity determined relative to the plurality of load pins to be wired, said first center of gravity being determined excluding the load pins closest to the source pin;

forming a first path from the source pin to the first load pin, the first path including at least one switching station at a position which is a shortest distance both from the first load pin and from a second center of gravity determined from the positions of the unwired load pins excluding the first load pin;

selecting a second load pin to be wired second from among the plurality of load pins other than the first load pin based on determining which of the load pins other than the first load pin is a shortest distance from any one of the switching stations present on the first path;

forming a second path branched from the first path so as to extend the route, the second path including at least one switching station selected at a position which is a shortest distance from the second load pin and from a third center of gravity determined from the positions of the unwired load pins excluding the first and second load pins; and

continuously forming a plurality of paths branched from the established first and second paths to complete a line network from the source pin to the plurality of load pins until all of the unwired load pins are wired to the line network via the switching stations adjacent to the respective load pins.

5,309,373

APPARATUS AND METHOD FOR WIND-CORRECTED MEASUREMENT OF STEERING PULL ON A VEHICLE

James C. Beebe, Kent, and Barry D. Cargould, Hudson, both of Ohio, assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 770,110, Oct. 2, 1991, which is a continuation-in-part of Ser. No. 556,951, Jul. 23, 1990, Pat. No. 5,229,954. This application Jul. 19, 1993, Ser. No. 95,153

Int. Cl.[5] B60R *27/00;* **G06F** *15/20*

U.S. Cl. 364—506 **4 Claims**

1. An apparatus for measuring, in the presence of wind, the steering pull to which a vehicle is subjected due to non-uniformity of its tires, said apparatus comprising:

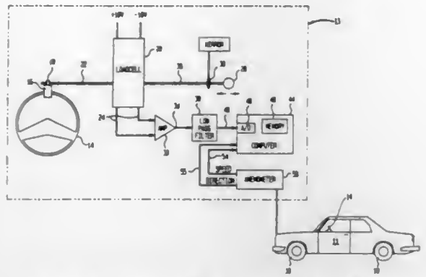
apparent wind measuring means mounted proximate the vehicle and in positionally fixed relation thereto for measuring the speed and direction of wind with respect to the vehicle when the vehicle moves in a direction of travel;

force measuring means coupled to a steering member of the vehicle for measuring the force which must be exerted on said member in order to prevent substantial change in said direction of said travel; and

computing means operably coupled to said apparent wind measuring means and said force measuring means for generating a steering pull measurement correlated with

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said force minus a wind correction quantity, said wind correction quantity being determined using a constant

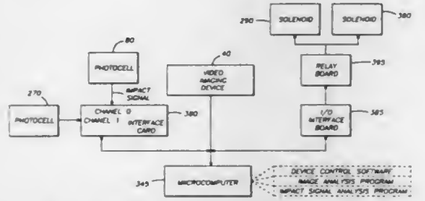


value and measurements of said speed and direction of wind made by said apparent wind measuring means.

5,309,374
ACOUSTIC AND VIDEO IMAGING SYSTEM FOR QUALITY DETERMINATION OF AGRICULTURAL PRODUCTS

Manjit K. Misra, and Yuh-Yuan Shyy, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 3, 1992, Ser. No. 924,195
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—552 **22 Claims**



1. An apparatus for determining quality of an agricultural product, comprising:
- acoustical transducer means for generating a transducer signal indicative of a set of physical characteristics of said product;
- imaging means for synthesizing a digital image representation of said product; and
- signal processing means for analyzing said transducer signal and said digital image representation;
- whereby, based on said analysis, a degree of quality is associated with said agricultural product.

5,309,375
A METHOD FOR DETERMINING A SURFACE TOPOLOGY OF A WORKPIECE

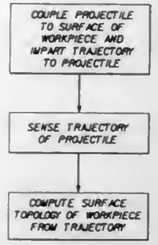
Thomas W. Dey, Springwater, and Philip F. Marino, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1992, Ser. No. 937,816
Int. Cl.[5] G01B *11/24*
U.S. Cl. 364—560 **3 Claims**

1. A method suitable for determining a surface topology of a workpiece, comprising the steps of:

(1) coupling a projectile to a surface of a workpiece, and imparting a trajectory to the projectile with respect to the surface;

(2) sensing the trajectory of the projectile with respect to the workpiece surface, for assessing a locus of positional



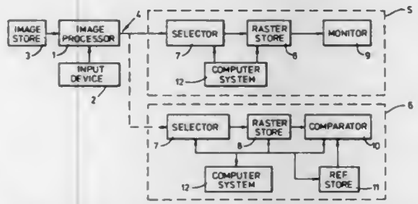
points over time of the projectile, the locus being a measure of the surface topology of the workpiece; and

(3) computing from said locus of positional points over time, the surface topology of said workpiece.

5,309,376
METHODS AND APPARATUS FOR TESTING IMAGE PROCESSING APPARATUS

Ignazio Barraco, Cambs., and James Bradshaw, Lincs., both of England, assignors to Crosfield Electronics Limited, Stevenage, England

Filed Oct. 18, 1991, Ser. No. 779,273
Claims priority, application United Kingdom, Oct. 18, 1990, 9022710
Int. Cl.[5] G01C *11/18*
U.S. Cl. 364—571.01 **10 Claims**



1. Test equipment for testing that image processing apparatus is operating correctly, said test equipment comprising selection means for coupling to an output port of said image processing apparatus; a memory for coupling to said selection means to receive digital signals from said image processing apparatus representing an image, said section means selecting a predetermined group of said signals for storage in said memory, said predetermined group of signals being a subset of said digital signals representing said image; and means coupled to said memory to enable said signals stored in said memory to be analyzed or automatically verified.

5,309,377
CALIBRATION APPARATUS AND METHOD FOR IMPROVING THE ACCURACY OF TIRE UNIFORMITY MEASUREMENTS AND TIRE TESTING METHOD USING SAME

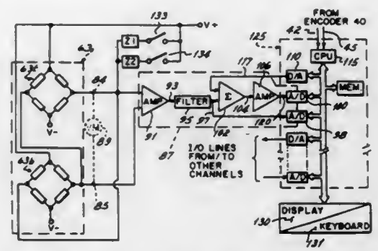
James C. Beebe, Kent, Ohio, assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Nov. 5, 1991, Ser. No. 788,086
Int. Cl.[5] G01D *5/25*
U.S. Cl. 364—571.04 **18 Claims**

13. A method of calibrating a channel of a tire uniformity inspection machine of the type having a loadwheel to be

pressed against a tire and having at least one force transducer having a transfer function and being connected to the channel, said channel including a signal processing network and an analog-to-digital converter operably coupled thereto, said network having an input operably coupled to said transducer and an output operably coupled to the analog-to-digital converter, said method comprising the steps of:

(a) determining an initial output generated. by said analog-to-digital converter when the transducer of said machine is substantially unloaded;



(b) applying a signal of a large magnitude to said network to simulate the application of a force to the transducer;

(c) determining the magnitude of said simulated force by multiplying said transfer function by said large magnitude;

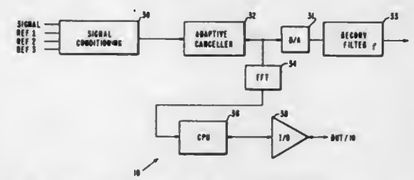
(d) determining a second output generated by said analog-to-digital converter, said second output being generated in response to the application of said signal to said network; and

(e) determining a calibration factor as the ratio of the magnitude of said simulated force to the difference between said second output and said initial output.

5,309,378
MULTI-CHANNEL ADAPTIVE CANCELER

Robert T. Beierle, Diamond Bar, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 794,633, Nov. 18, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 39,713
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—574 **1 Claim**

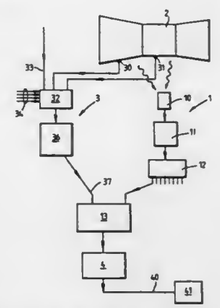


1. An adaptive canceler apparatus comprising:
- primary signal sensor means for receiving a primary signal comprising a signal of interest generated by a device of interest and also comprising a first noise component;
- reference sensor means; and
- adaptive canceler means coupled to said primary signal sensor means and to said reference sensor means for adaptively combining said noise signals with said primary reference signal to provide a noise canceled signal comprising the signal of interest generated by the device of interest and a second noise component, said second noise component having a smaller amplitude than said first noise component.
- said adaptive canceler means comprising a first digital adaptive filter and a second digital adaptive filter coupled in series, said first digital adaptive filter performing a first number of weight adjustments based on feedback from said noise canceled signal to provide an intermediate output signal;
- said second digital adaptive filter receiving said intermediate output signal and performing a second number of weight adjustments based on feedback from said noise canceled signal to provide said noise canceled signal at the output of said adaptive canceler means, said noise canceled signal being one that has been adaptively weighted by said first and second number of weight adjustments.

5,309,379
MONITORING

Keith C. Rawlings, and Roger C. Witcomb, both of Cheltenham, England, assignors to Smiths Industries Public Limited Company, London, England

PCT No. PCT/GB90/00076, § 371 Date Mar. 11, 1991, § 102(e) Date Mar. 11, 1991, PCT Pub. No. WO90/09644, PCT Pub. Date Aug. 23, 1990
PCT Filed Jan. 18, 1990, Ser. No. 663,855
Claims priority, application United Kingdom, Feb. 7, 1989, 8902645
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—578 **10 Claims**



1. A method of monitoring the condition of a sound-generating assembly characterized in that the method includes the steps of deriving signals representative of the condition of the assembly, continuously building a model of the assembly at different stages of use through the life of the assembly such that the model is continuously modified by any ageing of the assembly, and detecting the amount of deviation of the current condition of the assembly from the aged model of the assembly, said step of deriving signals including using a microphone to monitor the acoustic spectrum of the assembly transmitted through air such that the model includes information about the acoustic spectrum of the assembly at different stages of use through the life of the assembly.

5,309,380
COMPUTER DISPLAY FOR INPUT AND DISPLAY OF IMPROPER AND MIXED FRACTIONS

Akiyoshi Satoh, and Michiaki Kuno, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 921,022
Claims priority, application Japan, Jul. 31, 1991, 3-191648
Int. Cl.[5] G06F *3/02*
U.S. Cl. 364—709.07 **7 Claims**

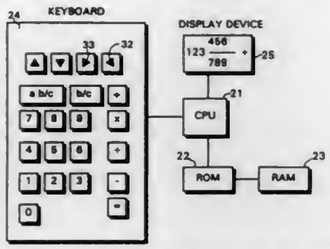
1. A computer comprising:
- input means for inputting data;
- signal generating means for generating a signal indicating that data input by the input means is a value for one of an integer, a numerator, and a denominator of a mixed fraction;
- a display for displaying data;

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storing means for storing the input data and a display position of the input data; and

a data processor including:

means for displaying an integer of a mixed fraction after first data input is displayed at a first display position, and when the generated signal is detected, for displaying a borderline between a numerator and a denominator of the mixed fraction, for generating a signal for moving a cursor to a second display position for displaying the numerator, and for storing the first data as data for the integer of the mixed fraction in the storing means;



means for generating a signal for moving the cursor to a third display position for displaying the denominator after a second data input by the input means is displayed at the second display position, and for storing the second data as data for the numerator of the mixed fraction in the storing means; and

means for displaying third data input by the input means at the third display position, for generating a signal for moving the cursor to an adjacent display position to the right side of the third display position, and for storing the third data as data for the denominator of the mixed fraction into the storing means.

5,309,381

PROBABILITY ESTIMATION TABLE APPARATUS

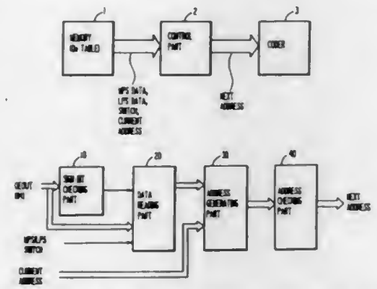
Ryo Fukui, Yao, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,313

Claims priority, application Japan, Apr. 10, 1991, 3-077633; Feb. 27, 1992, 4-041141

Int. Cl.[5] G06F *1/02*

U.S. Cl. 364—715.02 **12 Claims**



1. An apparatus for reading a simplified probability estimation table for use in an arithmetic coder, wherein said simplified probability estimation table is generated from a previously defined standard probability estimation table, said apparatus comprising:

memory means for storing said simplified probability estimation table, said simplified probability estimation table defining, with respect to each of a plurality of possible address values, a switch data value, a probability estimate data value, an LPS data value which is equal to the difference between a current address value and a corresponding standard LPS data value from said standard probability estimation table, and an MPS data value which is equal to the difference between said current address value and a corresponding standard MPS data value from said standard probability estimation table; and

control means coupled to said memory means for reading out said LPS and MPS data values from a location of the simplified probability estimation table in said memory means corresponding to a current address value, and for generating a next address value required for the arithmetic coder to perform arithmetic coding data compression.

5,309,382

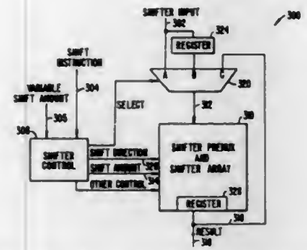
BINARY SHIFTER

Leilani Tamura, Redwood City, and Thang Vo, Fremont, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Oct. 1, 1992, Ser. No. 956,867

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—715.08 **6 Claims**



1. A binary shifter for shifting an n-bit wide binary word, wherein the binary shifter includes n shifter input lines for applying electrical signals representing an n-bit word to-be shifted, wherein the binary shifter also includes n shifter output lines for outputing electrical signals representing the result of the shift operation, the binary shifter further comprising;

selection means for selecting between one of three input words, wherein the selection means includes first, second and third n-bit wide word inputs, an n-bit wide word output and one or more select signals for determining which of the first, second or third word inputs are applied to the word output, wherein the n shifter input lines are coupled to the first word input;

register means for storing and accessing a word of data, wherein the register means has an n-bit wide word input and an n-bit wide word output, wherein the register means word output is coupled to the selection means second word input, wherein the word input of the register means is coupled to the n shifter input lines; and

shifter array means for performing an M-bit shift on an n-bit word, wherein the shifter array means includes an n-bit wide word input and an n-bit wide word output, wherein the word output of the selection means is coupled to the word input of the shifter array means, wherein the shifter array word output is coupled to the third word input of the selection means and to the n shifter output lines.

5,309,383

FLOATING-POINT DIVISION CIRCUIT

Koichi Kuroiwa, Kawasaki, Japan, assignor to Fujitsu, Kawasaki, Japan

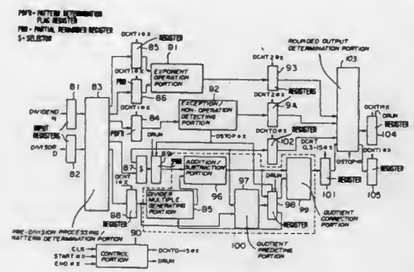
PCT No. PCT/JP92/00296, § 371 Date Nov. 9, 1992, § 102(e) Date Nov. 9, 1992, PCT Pub. No. WO92/16892, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 12, 1992, Ser. No. 946,316

Claims priority, application Japan, Mar. 13, 1991, 3-048452

Int. Cl.[5] G06F *7/38, 7/52*

U.S. Cl. 364—748 **18 Claims**



1. A floating-point division circuit comprising:

a circuit portion conducting pre-division processing and pattern determination on each of floating-point data, including a divisor and a dividend;

an exponent operation portion operating on exponent parts of floating-point data, including the divisor and the dividend subject to pre-processing by said circuit portion;

an exponent/non-operation detecting portion determining a predetermined non-operational pattern on the basis of a result of pattern determination obtained in said circuit portion with regard to said divisor and the dividend, and generating a stop signal when said non-operational pattern is detected;

a mantissa division portion into which mantissa parts of floating-point data, including said divisor and the dividend subject to pre-processing by said circuit portion, are input, wherein procedures based on a predetermined algorithm are repeated to generate a mantissa part data of a quotient; and

quotient generating portions generating a quotient consisting of a predetermined number of bits on the basis of output data from said exponent operation portion, exception/-non-operation detecting portion, and mantissa division portion wherein;

said stop signal stops repeated operations of said mantissa division portion by stopping a latch operation of a register in said mantissa division portion.

5,309,384

DIGITAL MULTIPLIER WITH CARRY-SUM INPUT

Randall L. Conilogue, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 25, 1992, Ser. No. 981,634

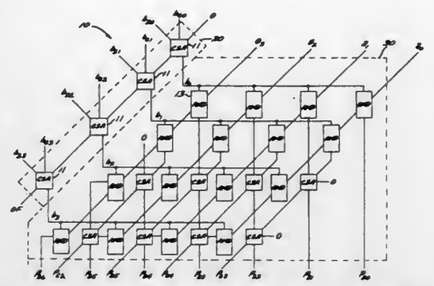
Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—757 **6 Claims**

1. A digital multiplier having inputs for a first operand represented in sum and carry form and a second operand represented in standard binary form, comprising:

combinatorial ripple carry adding means for adding the sum and carry components of the first operand to produce a converted first operand represented in standard binary form; and

a combinatorial array multiplier for, multiplying the second operand with said converted first operand to produce a product represented in sum and carry form;



whereby combinatorial propagation of carries in said ripple carry adding means occurs concurrently with the combinatorial propagation of data through the multiplier array.

5,309,385

VECTOR DIVISION PROCESSING METHOD AND SYSTEM

Fuyuki Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,389

Claims priority, application Japan, Jul. 30, 1991, 3-189074

Int. Cl.[5] G06F *7/52, 7/38*

U.S. Cl. 364—761 **6 Claims**

1. A vector division processing apparatus for performing a division operation on dividend vector data composed of a plurality of elements and divisor vector data composed of a plurality of elements by employing a convergence division method in which each of said dividend vector data and said divisor vector data is multiplied in sequence by a plurality of convergence factor vector data to thereby converge resultant data of the sequential multiplication operations performed on said dividend vector data to a quotient and converge resultant data of the sequential multiplication operation performed on said divisor vector data to 1, said apparatus comprising:

a first vector register having a first storage area for temporarily storing said dividend vector data and a second storage area,

a second vector register having a third storage area for temporarily storing said divisor vector data and a fourth storage area, and

an operation unit having a first input terminal coupled to said first vector register to receive data supplied therefrom, a second input terminal coupled to said second vector register to receive data supplied therefrom and an output terminal coupled to each of said first and second vector registers, said operation unit performing;

a first processing operation in which respective multiplica-

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tion operations on said elements of said dividend vector data stored in said first storage area of said first vector register and associated ones of said convergence factor vector data are performed in sequence to produce a plurality of first intermediate resultant data and said plurality of first intermediate resultant data are written in sequence into said second storage area of said first vector register,

a second processing operation in which respective multiplication operations on said elements of said divisor vector data stored in said third storage area of said second vector register and associated ones of said convergence factor vector data are performed in sequence to produce a plurality of second intermediate resultant data and said plurality of second intermediate resultant data are written in sequence into said fourth stage area of said second vector register,

after said first and second processing operations are completed, a third processing operation in which respective multiplication operations on said plurality of first intermediate resultant data stored in said second storage area of said first vector register and associated ones of said convergence factor vector data are performed in sequence to produce a plurality of third intermediate resultant data and said plurality of third intermediate resultant data are written in sequence into said second storage area of said first vector register, and

after said first and second processing operations are completed, a fourth processing operation in which respective multiplication operations on said plurality of second intermediate resultant data stored in said fourth storage area of said second vector register and associated ones of said convergence factor vector data are performed in sequence to produce a plurality of fourth intermediate resultant data and said plurality of fourth intermediate resultant data are written in sequence into said fourth storage area of said second vector register.

5,309,386

SEMICONDUCTOR MEMORY WITH ENHANCED CAPACITY

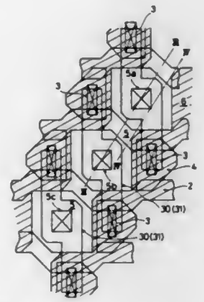
Tatsushi Yusuki, Nara; Atsushi Miura, Yamatokoriyama, and Kenichi Tanaka, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1991, Ser. No. 699,348

Claims priority, application Japan, May 14, 1990, 2-123583; May 18, 1990, 2-129706

Int. Cl.[5] G11C *5/02, 11/24*

U.S. Cl. 365—51 **9 Claims**



1. A semiconductor memory comprising:

a plurality of cells formed on a semiconductor substrate, the cells having active regions extending substantially in a longitudinal direction, each cell having a node electrode, a contact hole for the node electrode, and a bit line contact region,

word lines extending in a direction perpendicular to the longitudinal direction of the active regions,

bit lines extending in a longitudinal direction,

wherein the bit line contact regions of two adjacent cells which are connected to different yet adjacent bit lines are shifted with respect to the longitudinal direction by a distance which is one quarter of a length between two adjacent bit contact regions which are connected to a common bit line; and

the node electrode is shaped as a polygon having at least five interior angles, at least one of the interior angles being an obtuse angle.

5,309,387

TAMPER RESISTANT MODULE WITH LOGICAL ELEMENTS ARRANGED ON A SUBSTRATE TO PROTECT INFORMATION STORED IN THE SAME MODULE

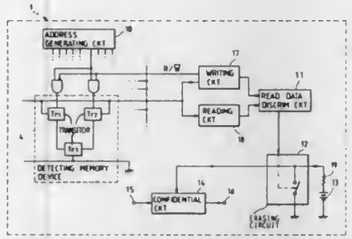
Ryoichi Mori, c/o Institute of Information Sciences And Electronics University of Tsuku, 1-1, Tennodai, 1-chome, Tsukuba-shi, Ibaragi-ken, Japan

Division of Ser. No. 845,767, Mar. 2, 1992, Pat. No. 5,185,717, which is a continuation of Ser. No. 387,845, Jul. 31, 1989, abandoned. This application Nov. 6, 1992, Ser. No. 972,747

Claims priority, application Japan, Aug. 5, 1988, 63-195847

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—52 **8 Claims**



1. A tamper resistant module for safeguarding stored confidential information, comprising substrate means having an inner surface and an outer surface, memory means supported on said inner surface of said substrate means for storing said confidential information in said memory means means supported on said outer surface of said substrate means for providing a testing value, tamper detection circuit means on said inner surface connected to said testing value providing means and to said memory means for erasing said confidential information from said memory means when a tamper is detected in response to said testing value, said tamper detection circuit means comprising address generating circuit means connected to said testing value providing means for supplying address signals to said testing value providing means, a reading circuit connected to said testing value providing means for reading said testing value from said testing value providing means, and testing value comparing circuit means connected to said reading circuit for comparing values from said reading to provide a tamper detection signal if there is any difference between values from said testing value and from said reading circuit.

5,309,388

SOLID STATE MAGNETIC MEMORY DEVICE

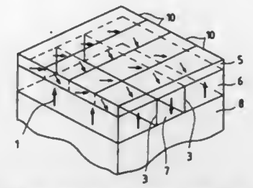
Yooji Maruyama, Iruma; Ryo Imura, Tokorozawa, and Kazuhisa Fujimoto, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 839,334

Claims priority, application Japan, Feb. 28, 1991, 3-34011

Int. Cl.[5] G11C *19/08*

U.S. Cl. 365—87 **15 Claims**



1. In a Bloch line memory device using Block lines generated in magnetic domain walls of magnetic domains generated in a ferromagnetic material as information carriers, a solid state magnetic memory device comprising a ferromagnetic material film covering said ferromagnetic material film wherein an information storing region comprising said information carriers is covered with said magnetic material film having biaxial magnetic anisotropies in parallel with and perpendicular to the film surface and the information storing position of said Block lines in said magnetic domain walls is determined by a spontaneous magnetic domain in said magnetic material film.

5,309,389

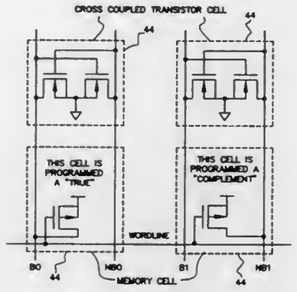
READ-ONLY MEMORY WITH COMPLEMENTARY DATA LINES

Keith W. Golke, Minneapolis, and Mal T. MacLennan, Plymouth, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1993, Ser. No. 112,485

Int. Cl.[5] G11C *17/12*

U.S. Cl. 365—104 **10 Claims**



1. A nonvolatile memory device comprising:

a plurality of memory cells arrayed in columns, each said memory cell comprising a first transistor having a first terminal, a second terminal and a gate terminal;

said first terminal connected to a first voltage;

an input terminal connected to said gate terminal;

first and second output lines for each said column, with said second terminal connected to said first output line when said memory cell is programmed a true and said second terminal connected to said second output line when said memory cell is programmed a complement;

means for precharging said first and second output lines to a second voltage; and

means for maintaining said second output line at said second voltage when said cell is programmed a true and means for maintaining said first output line at a second voltage when said cell is programmed a complement.

5,309,390

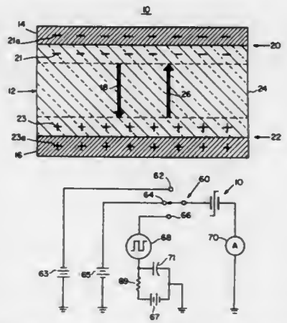
FERROELECTRIC SPACE CHARGE CAPACITOR MEMORY

Ciaran J. Brennan, Bedford, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 630,038, Dec. 19, 1990, Pat. No. 5,140,548, and a continuation-in-part of Ser. No. 630,027, Dec. 19, 1990, Pat. No. 5,151,877. This application Nov. 15, 1991, Ser. No. 792,432

Int. Cl.[5] G11C *11/22*

U.S. Cl. 365—145 **10 Claims**



1. A ferroelectric space charger capacitor memory device comprising:

a pair of spaced first and second metal electrodes;

a ferroelectric dielectric disposed between said electrodes;

means for applying a coercive voltage to said dielectric to write said dielectric into one of two polarization states and to establish in each polarization state proximate the interface between said dielectric and each electrode a space charge region in said dielectric having a charge opposite to that applied to the electrode with a neutral region between the space charge regions, the relative sizes of said neutral and space charge regions defining the capacitance of the dielectric, said neutral region having an internal polarization field opposite to that represented by the space charge regions;

means for applying to said dielectric a bias voltage less than the coercive voltage at a rate slower than the rate of space charge formation to define a capacitance level representative of one of said polarization states;

means for introducing to said dielectric a read signal at a rate faster than the rate of space charge formation which together with the bias voltage is less than the coercive voltage; and

means, responsive to the introduction of the read signal to said dielectric, for determining the capacitance level representative of one of said polarization states.

5,309,391

SYMMETRICAL POLARIZATION ENHANCEMENT IN A FERROELECTRIC MEMORY CELL

Andreas G. Papaliolios, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 2, 1992, Ser. No. 955,506

Int. Cl.[5] G11C *11/22, 16/06*

U.S. Cl. 365—145 **20 Claims**

1. A ferroelectric memory, comprising: an array of memory cells, each cell having,

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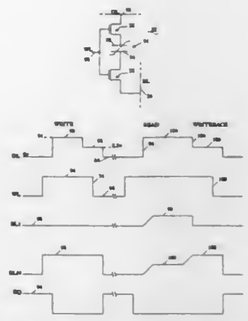
a ferroelectric capacitor with a first plate and a second plate and ferroelectric material formed therebetween for storing either of two polarization states,

a first isolation transistor for connecting the first plate of the ferroelectric capacitor to a drive line, and

a second isolation transistor for connecting the second plate of the ferroelectric capacitor to a respective bit line,

a word line address circuit for driving a gate terminal of the first and second isolation transistors of cells in a row;

a drive line driver for driving a drive line connected to memory cells in the row, said drive line driver being



adapted for driving the drive line with a first voltage level followed by a second, non-zero voltage level that has a magnitude less than the first voltage level; and

wherein said word line address circuit terminates the drive to the gate terminals of the isolation transistors during a time period when the drive line is driven with the second voltage level, whereby the ferroelectric capacitors in an access row are polarized with a polarization state that is a function of a voltage of the respective bit line, and a voltage is isolated on either said first or second capacitor plate of the ferroelectric capacitors irrespective of a respective polarization state stored therein.

5,309,392

SEMICONDUCTOR IC DEVICE USING FERROELECTRIC MATERIAL IN DATA STORAGE CELLS WITH LIGHT ASSISTED STATE TRANSITION

Fumio Ootsuka, Tokorozawa; Masakazu Sagawa, Ome, and Jun Sugiura, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 546,854, Jul. 2, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 86,361

Claims priority, application Japan, Jul. 3, 1989, 1-172683

Int. Cl.[5] G11C *11/22*

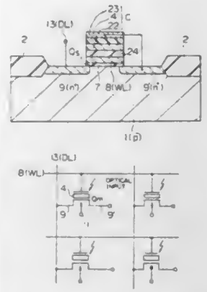
U.S. Cl. 365—145 **8 Claims**

1. A photosensitive non-volatile semiconductor IC device comprising:

a memory cell array formed in a substrate, in which a plurality of non-volatile memory cells are arranged in a predetermined manner, each of which includes a series circuit comprised of a MISFET for memory cell selection and an information storage capacitor element having a first electrode connected with one semiconductor region of said MISFET, a second electrode disposed, opposite to said first electrode, and a ferroelectric material layer disposed between said first and said second electrodes, the polarization direction of which ferroelectric material varies, tracing a hysteresis loop, depending on a voltage applied between the first and second electrodes and light emitted to said ferroelectric material layer;

means for polarizing said ferroelectric material layers of the capacitor elements of said plurality of memory cells in said memory cell array in a first direction by applying a preparation voltage higher than a polarization reversal voltage in the hysteresis loop of said ferroelectric material layer between said first and said second electrodes of said capacitor elements;

means for activating ferroelectric material layers of predetermined memory cells in said memory array toward a second direction opposite to said first direction in the hysteresis loop by applying a write voltage between said first and second electrodes of the capacitor elements of



said predetermined memory cells, said write voltage having an amplitude smaller than that of the polarization reversal voltage which would be necessary to invert the polarization direction to said second direction;

means for inverting the polarization direction of the ferroelectric material layers of said predetermined memory cells in said memory cell array to said second direction by irradiating said ferroelectric material layers of said predetermined memory cells with light to exceed the polarization reversal voltage.

5,309,393

SEMICONDUCTOR MEMORY DEVICE

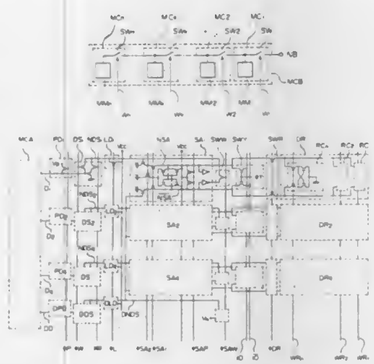
Takeshi Sakata, Kunitachi; Katsutaka Kimura, Akishima, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 774,834

Claims priority, application Japan, Oct. 11, 1990, 2-270398

Int. Cl.[5] G11C *11/24*

U.S. Cl. 365—189.01 **42 Claims**



1. A semiconductor memory device including:

a plurality of word lines;

a plurality of switches each of which is controlled by a corresponding one of said plurality of word lines; and

a plurality of information storage means each of which is coupled between a corresponding one of said plurality of switches and a reference potential,

wherein a memory cell block includes a plurality of memory cells each of which comprises a corresponding one of said plurality of information storage means, a corresponding one of said plurality of switches and a corresponding one of said plurality of word lines, and

wherein said plurality of switches of said plurality of memory cells are so connected in series that the information storage means of one of said plurality of memory cells is coupled between the switch of said one memory cell and the switch of the adjacent memory cell, wherein information of said information storage means of said one memory cell is read out on a signal terminal through said switch of said one memory cell and said switch of said adjacent memory cell, and wherein information is written into said information storage means of said one memory cell through said signal terminal, said switch of said adjacent memory cell and said switch of said one memory cell.

5,309,394

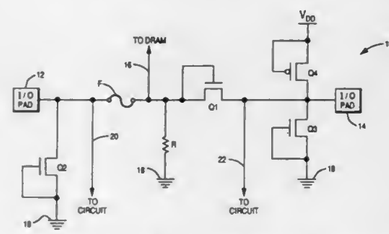
SINGLE ELEMENT SECURITY FUSIBLE LINK

William J. Wuertz, Fort Collins; Steven K. Stefek, Lovelamp, and William W. McKinley, Fort Collins, all of Colo., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 582,705, Sep. 13, 1990, Pat. No. 5,270,983. This application Sep. 8, 1993, Ser. No. 118,161

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.03 **11 Claims**



1. A method of using an I/O pad of an integrated circuit chip, with the I/O pad being connected to a logic circuit, and further with the integrated circuit chip having a memory connected to a write enable line, comprising the steps of:

connecting a fuse between the I/O pad and the write enable line;

applying a first voltage potential to the I/O pad so as to access the write enable line and allow data to be written to the memory;

applying a second voltage potential to the I/O pad so as to blow the fuse and prevent access to the write enable line; and

accessing the logic circuit through the I/O pad.

5,309,395

SYNCHRONOUS STATIC RANDOM ACCESS MEMORY

Alexander G. Dickinson, Highlands; Mehdi Hatamian, Freehold, and Sailesh K. Rao, Lakewood, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 22, 1992, Ser. No. 965,127

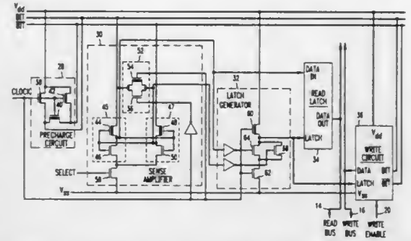
Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.04 **14 Claims**

1. A synchronous static random access memory capable of reading from and writing to a memory cell of said memory in a single memory access cycle, said memory comprising:

means disposed at each memory cell for receiving a signal indicative of the value of a bit to be written to said memory cell;

sensing means connected to bit lines associated with said memory cell for generating a sensed output indicative of the value of the bit stored at said memory cell;



a latch generator responsive to the generation of said sensed output for generating a latch signal; and

means responsive to said latch signal for concurrently latching said bit value into a data storing means and initiating the writing of an input bit value into said memory cell.

5,309,396

INPUT BUFFER CIRCUIT, INPUT/OUTPUT BUFFER CIRCUIT AND PORTABLE SEMICONDUCTOR MEMORY DEVICE WITH BACK-UP POWER

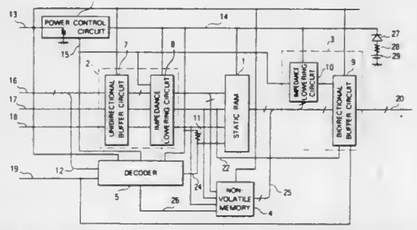
Masatoshi Kimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,334

Claims priority, application Japan, Nov. 30, 1990, 2-330480

Int. Cl.[5] G11C *14/00*; H03K *3/01*

U.S. Cl. 365—189.05 **23 Claims**



1. An input buffer circuit for a semiconductor memory comprising:

an input bus,

at least one first unidirectional buffer connected to said input bus,

a first power supply line for supplying power to said first unidirectional buffer from a first power supply,

a power cutoff circuit connected in series and between said first unidirectional buffer and said first power supply line, said power cutoff circuit connecting said first power supply line to said first unidirectional buffer when a voltage exceeding a predetermined voltage threshold is applied to said first power supply line by said first power supply and disconnecting said first power supply line from said first unidirectional buffer when a voltage not exceeding the predetermined threshold voltage is applied to said first power supply line,

a second power supply line for supplying power from a second power supply,

an impedance lowering circuit connected in series to the at least one first unidirectional buffer and said first and sec-

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ond power supply lines for lowering impedance of said input bus when the voltage applied to said first power supply line does not exceed the predetermined threshold voltage, said impedance lowering circuit including a second unidirectional buffer connected between said first unidirectional buffer and said input bus, and "L" level output means for outputting a signal of "L" level to an input terminal of said second unidirectional buffer when the predetermined threshold voltage is not applied to said power supply line, and

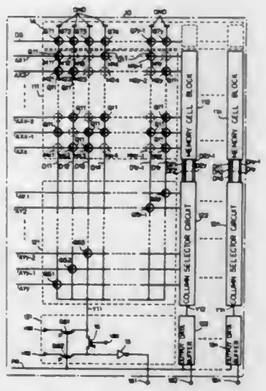
power control means for disconnecting said first power supply line from said second power supply line when the voltage applied to said first power supply line is below the predetermined threshold voltage, said second power supply line being connected to said first power supply line when the voltage applied to said first power supply line exceeds the predetermined threshold voltage.

5,309,397

READ ONLY MEMORY DEVICE EQUIPPED WITH OUTPUT DATA BUFFER CIRCUITS LESS AFFECTABLE BY NOISES ON POWER VOLTAGE LINE

Masakazu Amansi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,701
Claims priority, application Japan, Aug. 29, 1991, 3-244401
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **5 Claims**



1. A read only memory device comprising:

a) a plurality of memory locations arranged in rows and columns, and each having a current path or an enhancement type memory transistor depending upon a data bit stored therein;

b) a plurality of word lines respectively associated with the rows of said plurality of memory locations, and coupled with gate electrodes of said enhancement type memory transistors of the associated rows, respectively, said plurality of word lines being selectively shifted between active level and inactive level;

c) a plurality of digit lines respectively associated with the column of said plurality of memory locations, a conductive channel produced in each enhancement type memory transistor and said current path of said columns forming parts of said associated digit lines;

d) a discharging circuit responsive to a discharging signal for coupling said plurality of digit lines with a discharging line;

e) a column selector means coupled with said plurality of digit lines, and responsive to address signals indicative of a column address assigned to one of said plurality of digit lines for coupling said one digit line with an output node thereof;

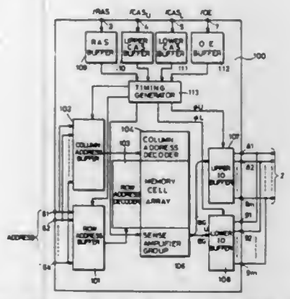
f) an output buffer circuit comprising f-1) an output driver means coupled with a data output node for producing an output data signal, f-2) a delay means coupled between said output node of said column selector means and an input node of said output driver means, and operative to introduce time delay into propagation of voltage fluctuation from said output node of said column selector means to said input node of said output driver means, and f-3) a precharging means coupled between a source of current and said output node of said column selector means and between said source of current and said input node of said output driver means for precharging said output node and said input node.

5,309,398

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR CONTROLLING ITS OUTPUT

Koichi Nagase; Akio Nakayama; Tetsuya Aono; Yutaka Ikeda, and Yoshinori Mizugai, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,243
Claims priority, application Japan, Sep. 27, 1991, 3-249552
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **5 Claims**



1. A semiconductor memory device from which data of n (n is an integer equal to or larger than 2) bits can be read out simultaneously from a memory cell array including a plurality of memory cells, comprising:

selection means for simultaneously selecting n memory cells in said memory cell array based on externally applied address data; and

outputting means for dividing data of n bits read out from the n memory cells selected by said selection means into a plurality of bit groups and for sequentially outputting the plurality of bit groups in response to a plurality of externally applied timing signals which are out of phase with each other.

5,309,399

SEMICONDUCTOR MEMORY

Tatsunori Marotani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

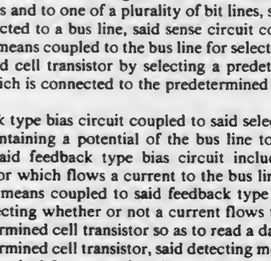
Filed Oct. 14, 1992, Ser. No. 960,870
Claims priority, application Japan, Oct. 25, 1991, 3-279419
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—189.09 **7 Claims**

1. A semiconductor memory, comprising:

a first internal circuit operated by an external source;

a second internal circuit operated by an internal voltage-down-converter which outputs an internal voltage lower than the voltage of the external source; wherein,

the internal voltage-down-converter has a reference-voltage-source-circuit generating a reference voltage and a voltage-down-circuit generating the internal voltage from the external source by reference to the reference voltage, the internal voltage-down-converter outputting the same voltage as the reference voltage and supplying that voltage to the second internal circuit as the internal voltage; wherein,



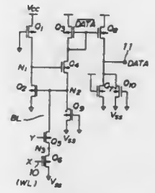
the reference-voltage-source-circuit comprises a standard-voltage-generation-circuit generating a standard voltage equal to a standard internal source voltage, a dividing circuit which divides the standard voltage and outputs a divided voltage, and selection circuit which selects the standard voltage or the divided voltage according to control signals form outside and outputs the thus selected voltage as the reference voltage.

5,309,400

SENSE CIRCUIT FOR NON-VOLATILE MEMORY DEVICE

Takao Akaogi, Inagi, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 654,106, Feb. 12, 1991, abandoned.
This application Aug. 25, 1993, Ser. No. 111,589
Claims priority, application Japan, Feb. 19, 1990, 2-37584
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.09 **10 Claims**



1. A sense circuit for a non-volatile memory device which includes a plurality of cell transistors which form memory cells, each cell transistor being connected to one of a plurality of word lines and to one of a plurality of bit lines, said bit lines being connected to a bus line, said sense circuit comprising:

selecting means coupled to the bus line for selecting a predetermined cell transistor by selecting a predetermined bit line which is connected to the predetermined cell transistor;

a feedback type bias circuit coupled to said selecting means for maintaining a potential of the bus line to a constant level, said feedback type bias circuit including a first transistor which flows a current to the bus line;

detecting means coupled to said feedback type bias circuit for detecting whether or not a current flows through the predetermined cell transistor so as to read a data from the predetermined cell transistor, said detecting means including a terminal for outputting the read data; and

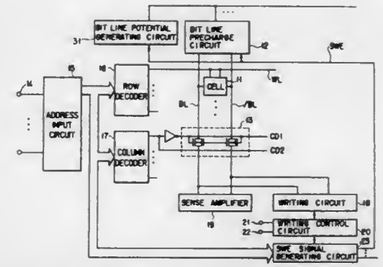
current source means coupled to said feedback type bias circuit, said current source means including a second transistor for forcibly supplying a predetermined current to said first transistor, so that a gate-source voltage of said first transistor is greater than a threshold voltage of said first transistor and wherein said second transistor for supplying a bias current maintains the conductance of said first transistor in a linear conducting region of its conductance characteristic.

5,309,401

STATIC MEMORY DEVICE

Azuma Suzuki, Tokyo, and Masataka Matsui, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 979,623
Claims priority, application Japan, Nov. 21, 1991, 3-305978
Int. Cl.[5] G11C *7/00, 11/40*
U.S. Cl. 365—203 **14 Claims**



1. A static memory device comprising:

a memory cell array having a plurality of sections each including a plurality of static memory cells, said static memory cells being arranged at positions where a plurality of pairs of bit lines cross a plurality of word lines;

a selection signal generating circuit for generating a selection signal for selecting one of the sections in accordance with a data writing or reading operation; and

a potential generating circuit for generating first and second potentials of logically high level and supplying the first and second potentials to a pair of bit lines in one of said plurality of sections in response to the selection signal output from said selection signal generating circuit.

5,309,402

FLASH ELECTRICALLY ERASABLE AND PROGRAMMABLE ROM

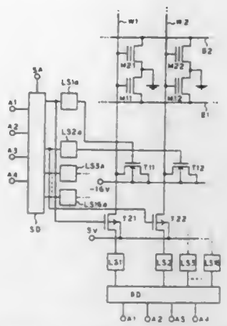
Takeshi Okazawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,357
Claims priority, application Japan, Feb. 15, 1991, 3-021885
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—218 **9 Claims**

1. A semiconductor memory device comprising, on a P-type silicon substrate, stacked gate type memory cells arrayed in matrix form along bit lines and word lines, each of said word lines serving as control gates of associated ones of said memory cells, and a peripheral circuit including a plurality of first level shifters provided correspondingly to said word lines and a row decoder connected to said first level shifters, said silicon substrate being maintained at a predetermined substrate voltage and erasure being carried out by applying an erase voltage having a negative value with respect to said substrate voltage to said control gates of selected ones of said memory cells, said peripheral circuit further including a first N well selectively formed in said P-type silicon substrate and supplied with a first voltage which is higher than said substrate voltage, a plurality of first P-channel MOS transistors corresponding in number to said word lines and formed in said N well each of said first P-channel MOS transistors being connected between an associated one of said word lines and an associated one of said first

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level shifters, a first P well selectively formed in said first N well and separated from said P-type silicon substrate by said first N well, said first P well being supplied with said erase voltage, a plurality of first N-channel MOS transistors corresponding in number to said word lines and formed in said first P well, each of said first N-channel MOS transistors being connected between said first P well and an associated one of said word lines, a plurality of input terminals each supplied operatively with one of said substrate voltage and said first



voltage and each connected to a gate of an associated one of said first P-channel MOS transistors, and a plurality of second level shifters having a plurality of input nodes each connected to an associated one of said input terminals and a plurality of output nodes each connected to a gate of an associated one of said first N-channel MOS transistors, each of said second level shifters responding to a voltage at the input node thereof and operatively generating at the output node thereof one of a second voltage and said erase voltage, said second voltage being equal to or higher than said substrate voltage.

5,309,403

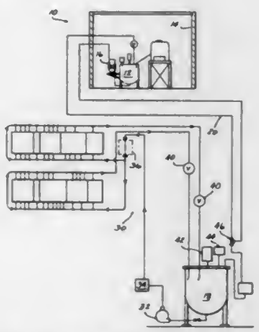
MODULAR CONTINUOUS FLOW PAINT DELIVERY SYSTEM

Douglas H. Bartow, Waterford, Mich., assignor to Complete Automation, Inc., Lake Orion, Mich.

Filed Jul. 10, 1991, Ser. No. 728,201

Int. Cl.[5] B05D *1/02*; B05C *21/00*; B05B *7/32*

U.S. Cl. 366—136 **18 Claims**



1. A modular continuous flow paint delivery system for delivering paint from a first location generally remote from any desired point of paint application to a plurality of points of paint application at a predefined minimum paint application pressure comprising:

a first paint circulation module having a paint mixing and storage tank at a first location generally remote from any desired point of paint application, first pump mans for delivering paint from the paint mixing and storage tank to a second location generally in proximity with at least one desired point of paint application at a first pressure sufficient to supply paint to an atmospheric pressure storage receptacle disposed at said second location, said first pressure less than a second pressure sufficient to supply paint to a furthermost desired point or paint application directly from the first location at the predefined minimum paint application pressure and paint return means for returning excess paint from the second location to the paint mixing and storage tank; and

a second paint circulation module having said atmospheric pressure storage receptacle disposed at said second location to receive paint delivered by the first pump means, second pump means for delivering paint from the atmospheric pressure storage receptacle to said at least one desired point of paint application at a third pressure sufficient to supply paint to said at least one desired point of paint application with the desired minimum paint application pressure, said third pressure less than said second pressure, main paint supply header means for receiving paint discharged from the second pump means, and at least one separate and independent branch paint supply line connected to the main paint supply header means for connecting to said at least one desired point of paint application, each branch paint supply line separately and independently returned to the atmospheric pressure storage receptacle through a back pressure control valve means for independently and selectively controlling the back pressure in each of the branch paint supply lines.

5,309,404

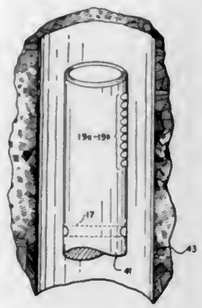
RECEIVER APPARATUS FOR USE IN LOGGING WHILE DRILLING

Sergio Kostek, Ridgefield; Thomas J. Plona, New Milford, and Shu-Kong Chang, West Redding, all of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 548,169, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 288,742, Dec. 22, 1988, abandoned. This application Jun. 28, 1991, Ser. No. 722,321

Int. Cl.[5] G01V *1/40*

U.S. Cl. 367—31 **20 Claims**



1. An apparatus for obtaining sonic logging while drilling a borehole traversing an earth formation, comprising:

a drill collar for supporting a drill bit to drill the borehole, said drill collar having a central axis;

a transmitter having a first end and a second end, transversely mounted in said drill collar a first horizontal plane perpendicular to said central axis for transmitting acoustic energy into the earth formation; and

a first plurality of receivers mounted in said drill collar in second horizontal plane perpendicular to said central axis wherein said receivers are positioned substantially equal distances apart from each other about the exterior of said drill collar.

5,309,405

METHODS OF EMPLOYING VIBRATIONAL ENERGY IN A BOREHOLE

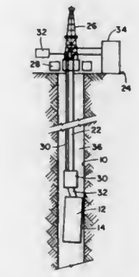
James F. Brett; Joseph F. Goetz, both of Tulsa, and Alan P. Roberts, Bixby, all of Okla., assignors to Oil & Gas Consultants International Inc., Tulsa, Okla.

Continuatioo-in-part of Ser. No. 885,628, May 18, 1992, Pat. No. 5,210,381, which is a continuation-in-part of Ser. No. 704,805, May 23, 1991, Pat. No. 5,159,160. This application Oct. 26, 1992, Ser. No. 967,233

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] G01V *1/40*

U.S. Cl. 367—36 **15 Claims**



1. A method of obtaining information indicative of the earth's structure adjacent a borehole that has a generally cylindrical wall that extends from the earth's surface, comprising:

positioning an instrument housing in the borehole, the instrument housing having an internal cylindrical surface;

positioning a mass having a rotational axis in said instrument housing, the mass having an external surface of dimension less than the instrument housing internal cylindrical surface;

rotating said mass about its rotational axis in a selected direction in said instrument housing and causing said surface of said mass to contact said internal cylindrical surface to thereby cause said mass to backward whirl in the direction opposite to said direction of rotation of said mass, centrifugal force of the backward whirling mass serving to generate vibrational energy that is radiated into the earth as a seismic signal;

positioning at least one geophone in acoustical contact with the earth at a location remote from said rotating mass for receiving seismic signals resulting from vibrational energy generated by said backward whirling mass;

collecting data generated by said at least one geophone; and

processing the collected data to provide information indicative of the earth's structure adjacent the borehole.

5,309,406

METHOD OF PROCESSING SEISMIC DATA

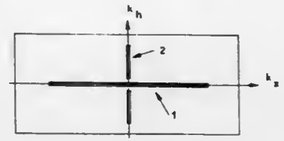
Leo Ongkiehong, Wassenaar; Nicolaus A. Kinneging, Pijnacker; Hendricus L. H. Delfgauw, Delfgauw, and Adrianus J. W. Duijndam, Nijmegen, all of Netherlands, assignors to Lucas Industries Public Limited Company, Solihull, England

Filed Oct. 29, 1992, Ser. No. 968,516

Claims priority, application United Kingdom, Nov. 8, 1991, 9123750

Int. Cl.[5] G01V *1/28*

U.S. Cl. 367—73 **15 Claims**



1. A method of processing a plurality of input seismic data samples having a plurality of midpoints and a plurality of offsets, comprising:

selecting a sample of each of the input seismic data samples;

defining at least one modelling function having at least one model parameter and comprising a first part which is substantially independent of the offsets of the input seismic data samples and a second part which is substantially independent of the midpoints of the input seismic data samples; and selecting the at least one model parameter of the at least one modelling function such that the at least one modelling function represents a best fit to the selected sample of the input seismic data samples.

5,309,407

ULTRASONIC CONTROL UNIT FOR A TRAVELLING CUTTER

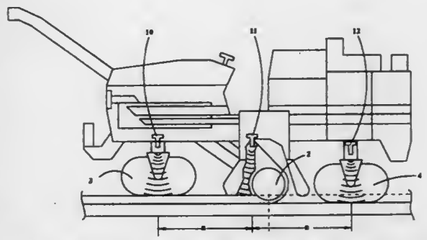
Willibald Sehr, Hadamar/Steinbach, and Martin Zarniko, Diez, both of Fed. Rep. of Germany, assignors to Moba Electronic Gesellschaft für Mobil-Automation mbH, Elz, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 975,697

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1991, 9114281[U]

Int. Cl.[5] E02F *3/84*

U.S. Cl. 367—96 **5 Claims**



1. An ultrasonic control unit for a travelling road grooving machine (1) comprising a cutter drum (2), which is supported for rotation relative to said road grooving machine (1), and front and rear travelling gears (3, 4), one (4) of said travelling

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gears being provided with a first travelling gear height adjustment means controlled in dependence upon a cutting depth control signal, characterized in that:

the other traveling gear (3) is provided with a second travelling gear height adjustment means;

at least three ultrasonic sensors (10, 11, 12) are arranged on the road grooving machine (1) one behind the other essentially in the direction of motion of said road grooving machine (1);

an evaluation means (15) is provided for detecting the distances (s1, s2, s3) between the ultrasonic sensors (10, 11, 12) and a reference surface on the basis of ultrasonic sensor signals of said ultrasonic sensors (10, 11, 12);

that the evaluation means (15) being adapted to derive from said measured distances (s1, s2, s3), on the one hand, an inclination signal representing the angle of inclination of the cutter (1) relative to the reference surface and, on the other hand, an averaged distance signal (dm); and

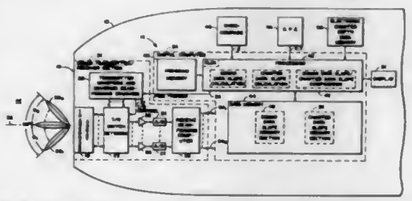
the evaluation means (15) being further adapted to derive control signals for the two travelling gear height adjustment means from said averaged distance signal (dm), from the inclination angle, and from a nominal cutting depth which can be adjusted.

5,309,408

SONAR SYSTEM

E. Theodore Bick, Palmdale, Calif.; Scott D. Carter, Barrington, R.I.; Bradford W. Edgerton, Newport, R.I., and Cheryl A. Suglia, North Kingstown, R.I., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 1, 1993, Ser. No. 24,546
Int. Cl.[5] G01S *15/93*
U.S. Cl. 367—99 **6 Claims**



1. A system for providing advance warning of underwater navigation hazards that threaten safe ship passage, such system comprising:

a sonar transmitter/receiver adapted for mounting on a sea going vessel in a forward looking direction;

means, responsive to sonar returns produced by the sonar transmitter/receiver, for producing a slope profile of a region of the sea bottom in front of the path of the vessel;

means for storing a slope profile developed from charted data;

means for comparing the stored charted data slope profile with the produced slope profile to determine whether the slope profile in front of the vessel is consistent with the charted data developed slope profile.

5,309,409

TARGET DETECTION SYSTEM

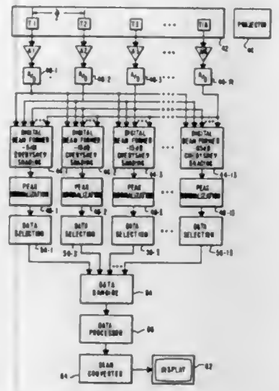
Charles H. Jones, Pasadena; John H. Thompson, and John W. Kesner, both of Severna Park, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 28, 1982, Ser. No. 437,372
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—103 **12 Claims**

1. A detection system, comprising:

A) an array of transducer elements, each operable to provide an output signal in response to energy received from a target area under observation;

B) means including beamformer means operable in response to all of said output signals of said transducer elements to apply different levels of shading function thereto to derive a plurality of different field pattern signals; and



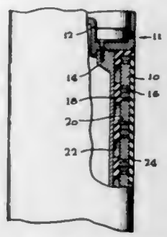
C) means for selecting different predetermined portions from said plurality of field pattern signals and combining said predetermined portions into a single unitary composite field pattern signal.

5,309,410

TUNED CIRCUIT FOR SONAR BEAM PATTERN OPTIMIZATION

Elmore Kittower, Tarzana; Merrill E. Fife, Canyon Country, both of Calif., and Robert T. Winnicki, Marcellus, N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 5, 1982, Ser. No. 439,462
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—138 **5 Claims**



1. A sonar system including an underwater transducer having interleaved separate piozoelectric projecting and receiving arrays wherein said projecting array is energized and said receiving array is connected to receive echo signals during alternate time periods, and

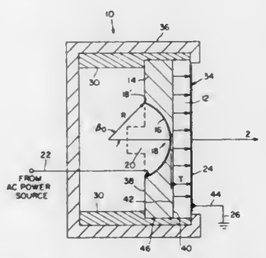
tuned circuit means are included for inhibiting reflected energy from said projecting array during the time said receiving array is receiving echo signals characterized in that said projector array operates to transmit a plurality of selected discrete frequencies with adjoining frequencies differing from each other by less than approximately one percent and said tuned circuit is connected across said projector array and comprises an inductor connected in series with said projector array and a resonant circuit connected in series with said inductor, said resonant circuit including at least two parallel branches, one of which includes inductance means and the other of which contains resistance means, capacitance means and inductance means, values of said resistive, capacitive and inductive components being chosen such that said projector array becomes mechanically stiff at all of the operating frequencies of said receiver.

5,309,411

TRANSDUCER

Dehua Huang, 135 Elm St., Milford, N.H. 03055, and M. A. Breazeale, 1035 Zilla Avent. Dr., Oxford, Miss. 38655

Filed Dec. 8, 1992, Ser. No. 986,716
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—140 **23 Claims**



1. A transducer for generating sonic waves comprising:

a piezoelectric element having dipoles formed therein, and an external surface extending in a plane;

an unpoled backing element having a first surface contacting the piezoelectric element and a second surface opposite to the first surface having an indentation formed therein, the indentation shaped to produce a beam distribution of a predetermined function, the dielectric constant of the unpoled backing element being substantially the same as the dielectric constant of the piezoelectric element;

a first electrode contacting the external surface of the piezoelectric element; and

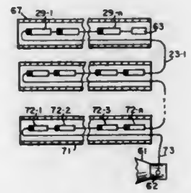
a second electrode contacting the indentation.

5,309,412

ELEMENT RELEASING SYSTEM

Armand E. Bourgeois, Manchester, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.

Filed Jun. 23, 1977, Ser. No. 809,338
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—154 **16 Claims**



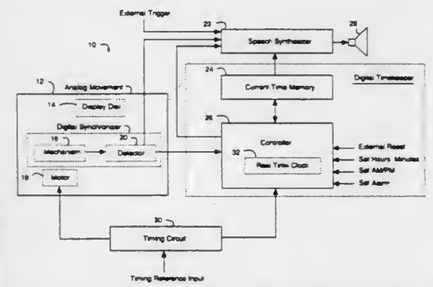
1. An element releasing system comprising a plurality of elements positioned adjacent to each other in a substantially straight line and in a predetermined order from first to last, a plurality of connectors positioned so that one of said connectors overlays and is in engagement with each two adjacent elements, bridging any gap therebetween, and a plurality of flexible cables, one associated with each element and each having a first end and a second end, each of said cables being wound around its associated element and each connector in engagement therewith so as to bind said connectors to said elements and thereby join said elements to each other, said first end of each of said cables being fastened to its associated element, said second end of each of said cables except the first being connected to the next preceding adjacent element, whereby the application of a force to said second end of said first cable and said last element in a direction tending to separate said elements causes said cables to unwind sequentially beginning with said first cable thereby releasing said connectors one at a time and separating said elements which remain joined together and spaced apart by said cables.

5,309,413

METHOD, INTEGRATED CIRCUIT, MECHANICAL ANALOG CLOCK MOVEMENT AND COMPLETED ASSEMBLY FOR A TALKING ANALOG CLOCK

Shiu L. Chan, Los Altos Hills, Calif., assignor to ESS Technology, Inc., Fremont, Calif.

Filed Aug. 3, 1993, Ser. No. 102,140
Int. Cl.[5] G04B *21/08, 23/02, 19/04*
U.S. Cl. 368—63 **21 Claims**



1. A method of synchronizing a digital timekeeping circuit to an analog clock movement with a digital synchronizing circuit wherein once a time reference in a current time memory is set within the digital timekeeping circuit, the time reference will automatically follow the analog clock movement in synchronization thereafter, the method comprising the steps of:

setting a reference time in said analog clock movement by turning a winding stem included in said movement;

setting said time reference in said current time memory with digital inputs to a controller included in said digital timekeeping circuit;

detecting a minute movement with a minute gear connected to a timing pulse generating circuit;

detecting a turning direction of winding stem with a digital circuit; and

incrementing or decrementing according to said turning direction a value representing time in said current memory.

5,309,414

SIMPLE AND PORTABLE PARKING METER

Jacy Chiu, Jong-Her City, Taiwan, assignor to Neilson Chiu, Taipei Hsien, Taiwan

Filed Apr. 27, 1993, Ser. No. 54,542
Int. Cl.[5] G04F *1/00;* **G07C** *1/30;* **G06K** *15/00*
U.S. Cl. 368—90 **3 Claims**

1. A simple and portable parking meter comprising:

a main device for reckoning fees and at least one sub-device insertable into a plurality of slots on said main device, there being one or more sub-devices issued to a person parking his vehicle in an area to be monitored by the main device, the person being able to use a second of the sub-devices when a first of said sub-devices does not by itself

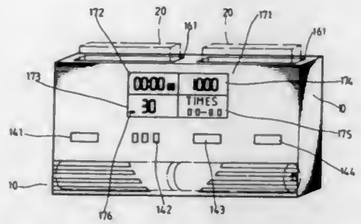
VOL 1162 ISS 1 MY 3 1994 UMI

have sufficient authorization capacity to allow of the parking area, the use of the second sub-device ensuring that no violation is charged to the person parking his vehicle; wherein

said main device has a CPU to which are connected peripherally an electric power loop, a reset loop, a keyboard loop, an oscillating loop, two or more card interface loops, and an LCD loop,

said CPU performing the functions of fee reckoning and timing through the coordination of the above listed elements, providing said LCD with a displaying signal, and transmitting a signal for deducting charges from said sub-devices via the card interface loops,

said electric power loop being used for turning on and off the power, the power loop being activated by a power key on a front panel of said main device,



said reset loop adjusting the rate of charges and setting a predetermined parking time in cooperation with a setting key located on the front panel of said main device,

said keyboard loop including said power key, said setting key, and actuating key, and a time reckoning key to control functions including turning on and off the power, determining the rates of charges and calculating the amount of parking time, and actuating and choosing the mode of charge reckoning,

said oscillating loop providing said CPU with oscillation reckoning functions;

said card interface loops being connected to said slots in said main device so as to communicate with said sub-devices; and wherein

messages displayed by said LCD loop including parking time, the rate of charges, balance remaining on a sub-device, fee based on the time parked, and low power warning.

5,309,415

INFORMATION RECORDING METHOD FOR OVERWRITING A MAGNETO-OPTIC RECORDING MEDIUM WITH TWO INTENSITIES OF LIGHT BEAMS

Koichi Takeuchi; Osamu Ito; Kyosuke Yoshimoto; Kunimaro Tanaka; Isao Watanabe; Kazuhiko Tsutsumi; Ryuichirou Arai; Yoshihiro Kiyose; Kazuhiko Nakane; Teruo Furukawa; Masayoshi Shimamoto, and Yoshiyuki Nakai, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 558,673, Jul. 26, 1990, Pat. No. 5,272,684. This application Jul. 24, 1991, Ser. No. 734,963

Int. Cl.[5] G11B *13/04, 11/12, 11/10*

U.S. Cl. 369—13 **7 Claims**

1. An information recording method comprising the steps of:

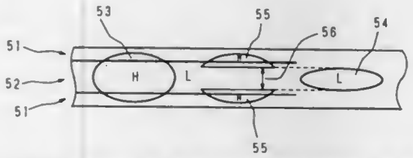
providing a magneto-optic recording information medium which has a plurality of laminated magnetic layers with vertical magnetic anisotropy, the plurality of laminated magnetic layers including a first layer which keeps its direction of magnetization constant and does not exhibit flux reversal at recording and reproducing, and the plurality of laminated magnetic layers further including a second layer which holds information recorded in the second layer as a sequence of first portions having an initial magnetization direction and second portions having a magnetization direction differing from the initial magnetization direction, the magneto-optic recording medium further having a track with a land portion the land portion defined by groove portions elongated on both sides of said land portion;

representing information to be recorded as two kinds of light beams of different intensities;

projecting said two kinds of light beams substantially onto said land portion of said track so as to cause some portions of said track to assume the initial magnetization direction and to cause other portions of said track to assume the magnetization direction differing from the initial magnetization direction; and

controlling the intensity of said two kinds of light beams in such a manner that each of the portions of said track caused to assume the initial magnetization direction extends across the land portion at least to the groove portions, and is larger than each of the portions of said track caused to assume the magnetization direction differing from the initial magnetization direction in said second layer.

5. A method for recording binary data on a magneto-optic recording medium, said medium having a track with a land portion, the land portion bounded by groove portions elongated on both sides of the land portion, said medium having a plurality of magnetic layers at said land portion of said track, one of which holds recorded binary data as a sequence of first regions having an initial magnetization direction and second regions having a non-initial magnetization direction, comprising the steps of:



representing said binary data to be recorded as two kinds of light beams of different intensities, one of said different intensities sufficient to cause said one magnetic layer to assume said initial magnetization direction and another of said different intensities sufficient to cause said one magnetic layer to assume said non-initial magnetization direction;

projecting said two kinds of light beams substantially onto said first and second regions on said land portion of said track; and

controlling said different intensities of said two kinds of light beams such that each of said first regions assuming said initial magnetization in response to said one of said different intensities extends across the land portion at least to the groove portions, and is larger than each of said second regions assuming said non-initial magnetization in response to said other of said different intensities and further such that each of said first region extends at least to the groove portions.

5,309,416

METHOD AND APPARATUS FOR INITIALIZING INTERMEDIATE REGION BETWEEN TRACKS ON MAGNETOOPTICAL RECORDING MEDIUM

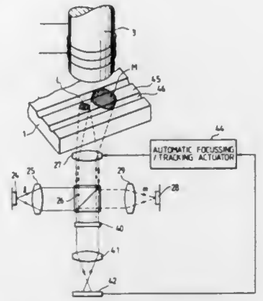
Ryuichi Iwanaga, and Masaharu Tsukada, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 789,436, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 341,575, Apr. 21, 1989, abandoned. This application Jun. 25, 1993, Ser. No. 82,507

Claims priority, application Japan, Apr. 26, 1988, 63-101253; Apr. 27, 1988, 63-102746; Jun. 29, 1988, 63-159305

Int. Cl.[5] G11B *11/00*

U.S. Cl. 369—13 **6 Claims**



1. A method of initializing a magnetooptical recording medium having a plurality of information tracks onto which information is recorded and having a plurality of intermediate regions, free from having information recorded thereon, alternately arranged, said method comprising the steps of:

tracing a central portion of an information track with a coincident central portion of a light beam which is tracking-controlled to the track and has sufficient power to align a magnetizing direction, while applying to the recording medium a magnetic field having a predetermined direction, thereby aligning a magnetizing direction of the information track in a uniform direction; and

tracing a central portion of an intermediate region with a coincident central portion of the light beam which is tracking-controlled to the intermediate region and has sufficient power to align a magnetizing direction while applying to the recording medium a magnetic field having a predetermined direction, thereby aligning a magnetizing direction of the intermediate region in a uniform direction.

5,309,417

INFORMATION RECORDING/REPRODUCING APPARATUS FOR OPTICAL INFORMATION RECORDING MEDIUM

Akira Onodera, Kawagoe, and Koichi Yamazaki, Sakado, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,407

Claims priority, application Japan, Oct. 9, 1991, 3-262283; Nov. 11, 1991, 3-294544; Nov. 29, 1991, 3-316521

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—32 **4 Claims**

1. An information recording and reproducing apparatus for an optical information recording medium for recording and reproducing information to and from the optical information recording medium by scanning each track of the medium with a light beam from an optical head, the optical beam being moved from a first position to a second position on the medium through a combination of a far jump driving the optical head and a near jump driving an objective lens assembled with the optical head, comprising:

position reading means for scanning said medium to read present address information;

position storage means for storing said present address information;

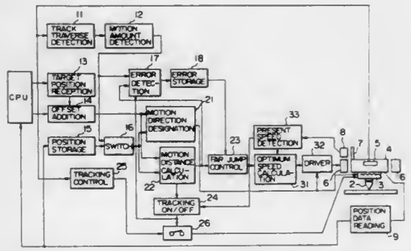
traverse signal generating means for generating a track traverse detecting signal by detecting that said optical beam traverses said track on said medium;

motion amount detecting means being reset at the start of the operation of the information recording and reproducing apparatus, for receiving an output of said traverse signal generating means and detecting a motion amount of said optical head over said medium;

switching means for selecting an output of said position storage means when an output of said motion detecting means is zero, and selecting an output of said motion amount detecting means when an output of said motion detecting means is not zero;

target position receiving means responsive to a next information recording and reproducing command for said medium for receiving a target position;

direction designating means for determining a motion direction by comparing said target position received by said target position receiving means with one of said present position stored in said position storage means and said



motion amount detected by said motion amount detecting means;

motion distance calculating means for calculating a motion distance by comparing said target position received by said target position receiving means with said present position stored in said position storing means, and calculating said motion distance after the motion start by comparing said target position with said motion amount;

on/off controlling means for a tracking control for performing a near jump scan when said motion distance calculated by said motion distance calculating means is smaller than a predetermined value, and performing a far jump scan when said motion distance is larger than said predetermined value;

motion speed controlling means responsive to a selection of said far jump by said on/off controlling means, for controlling to move said optical had in the motion direction designated by said direction designating means, by half said motion distance calculated by said motion distance calculating means in an acceleration mode, and by the remaining half of said motion distance in a deceleration mode; and

driving means for moving said optical head in accordance with outputs form said direction designating means and said motion speed controlling means.

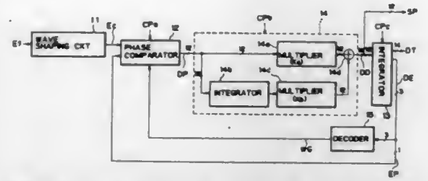
VOL 1162 ISS 1 MY 3 1994 UMI

5,309,418

TRACK COUNTING DEVICE USING A PLL

Haruyuki Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,983
Claims priority, application Japan, Jan. 31, 1991, 3-029134
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 **1 Claim**



1. A track counting device for counting the number of tracks of an optical disk which a light pickup traverses and for detecting a speed of said light pickup based on a tracking error signal output from said light pickup, comprising:

waveform shaping means for shaping a waveform of said tracking error signal output from said light pickup into a shaped track error signal;

a digital integrator;

a phase comparator comparing the difference in phase between said shaped track error signal and a predetermined bit of an output of said digital integrator to thereby output difference in phase digital data;

means for receiving said difference in phase digital data output by said phase comparator and for producing digital data as moving speed data according to said difference in phase digital data.

said digital integrator integrating said digital data as moving speed data to thereby output the integrated digital data as said number of tracks; and

a decoder for decoding a plurality of bits of said output of said digital integrator to thereby generate a gate signal indicating a near changing edge of said predetermined bit, and for enabling said phase comparator only when said gate signal indicates a near changing edge of said predetermined bit.

5,309,419

M-O DISK RECORDING APPARATUS WITH LIGHT AMOUNT CONTROL BASED ON MULTIPLE TEST PERFORMED ON A TEST REGION AT MULTIPLE DISK ROTATIONAL VELOCITIES

Shigeaki Koike, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,909
Claims priority, application Japan, Feb. 14, 1992, 4-028457
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—54 **18 Claims**

1. Optical disk recording apparatus comprising:

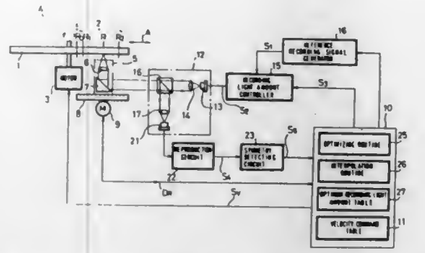
a disk drive for rotating an optical disk;

a light source for recording information on the optical disk;

recording light amount control means for controlling an amount of light emitted by said light source during recording;

reproduction means for reproducing recorded information to produce a reproduced signal;

system control means for controlling said light source and said recording light amount control means to record first and second test data in a predetermined test region of the disk while controlling said disk drive to rotate the disk during recording of said first and second test data at respective first and second different angular velocities such that linear velocities of the test region at said first and second angular velocities are equal to linear velocities of two different radial positions of the disk during information recording, and for controlling said reproduction means to reproduce the first and second test data and for determining respective first and second optimized recording light amounts in accordance with the reproduced first and second test data;



said system control means comprising computing means for computing recording light amounts for other radial positions on the disk from the first and second optimized recording light amounts; and

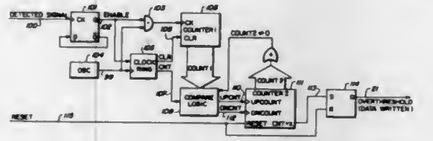
means for setting recording light amount used in information recording in accordance with the reproduced first and second test data.

5,309,420

DISCRIMINATOR FOR DETECTING SIGNAL PRESENCE ON OPTICAL MEDIA

Glen A. Jaquette, and William C. Williams, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1992, Ser. No. 972,579
Int. Cl.[5] G11B *27/36*
U.S. Cl. 369—58 **6 Claims**



1. Apparatus including a signal detector for detecting data and noise signal events from optical media, each of said data signal events expected to occur at a known time delta from a preceding data signal event, comprising:

clock signal generator means for producing a plurality of pulse signals during said time delta interval;

first counter means connected to said clock signal generator means for counting the number of clock pulses received during said time delta interval;

compare logic means connected to said first counter means for comparing the count of said clock pulses received from said first counter means to an expected count and for producing an upcount output signal when the comparison is a match indicating a data signal and for producing a downcount output signal when the comparison is not a match indicating noise, and

second counter means connected to receive said upcount signal and said downcount signal for counting up or down in accordance therewith;

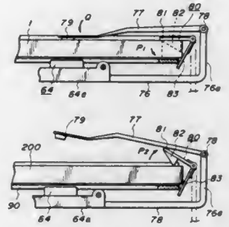
whereby said apparatus counts all detected signal events whether from data or from noise and is enabled to produce a significant count in said second counter when a sector on said optical media is written with data, thereby indicating blank sectors when the count in said second counter remains low.

5,309,421

RECORDING AND/OR REPRODUCING APPARATUS FOR OPTICAL DISK

Hirotoshi Fujisawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 14, 1991, Ser. No. 745,000
Claims priority, application Japan, Aug. 24, 1990, 2-222828
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—77.1 **4 Claims**



1. A disk recording and/or reproducing apparatus for recording and/or reproducing information signals on or from a disk accommodated in a disk cartridge, comprising:

an optical head provided on one surface of the disk accommodated in the disk cartridge loaded in a main body of the apparatus,

means for generating an external magnetic field, said means for generating an external magnetic field being mounted on another surface of said disk for facing the optical head with the disk in-between and for being fed along the radius of said disk together with said optical head, and

setting means for normally biasing the means for generating an external magnetic field away from the disk until said disk cartridge is completely loaded in position in said main body and including discriminating means for discriminating the disk cartridge type by detecting the presence or absence of a notch in the cartridge which indicates that the cartridge contains a magneto-optic disk and setting the position of said means for generating an external magnetic field to be spaced away from said disk in the state in which said disk cartridge is completely loaded in position on said main body when the discriminating means detects the absence of said notch.

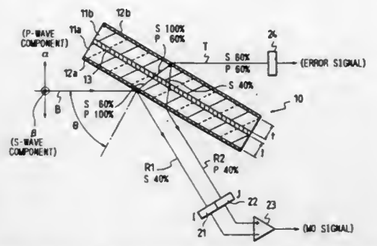
5,309,422

LIGHT SEPARATION ELEMENT AND LIGHT RECEIVING OPTICAL DEVICE USING SAME

Kazuhiko Kuroki, Sendai, and Hiroshi Shiozaki, Iwanuma, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 893,134
Claims priority, application Japan, Jun. 10, 1991, 3-166410; Jun. 10, 1991, 3-166411
Int. Cl.[5] G11B *11/10*
U.S. Cl. 369—110 **12 Claims**

1. A light separation element positioned in a path of light having first and second polarized components angularly spaced 90 degrees from each other in a rotating direction with respect to an optical axis, wherein a pair of polarizing films each transmitting said first polarized component at a predetermined rate therethrough and transmitting said second polarized component at a predetermined rate therethrough are arranged in parallel to each other on opposite surfaces of said light separation element, but inclined at an angle with respect to said optical axis, and an optical member for rotating the



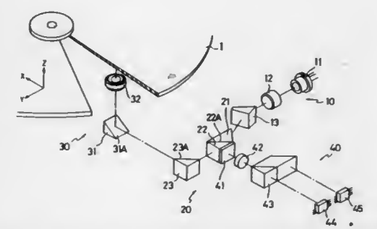
polarizing plane of light passing therethrough 90 degrees is disposed between said pair of polarizing films.

5,309,423

MAGNETO-OPTICAL REPRODUCING DEVICE WITH OPTICAL SYSTEM HAVING TWO REFLECTIVE ELEMENTS AND PROVIDING PHASE DIFFERENCE CANCELLATION

Masato Noguchi; Isao Okuda, and Suguru Takishima, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1992, Ser. No. 929,535
Claims priority, application Japan, Aug. 14, 1991, 3-204228
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—110 **6 Claims**



1. An optical system of a magneto-optical disk apparatus, comprising:

a signal detecting system for detecting a recorded signal of a magneto-optic disk based on a polarized condition of a reflected light beam from said magneto-optic disk;

an optical system for guiding said reflected light beam from said magneto-optic disk toward said signal detecting system, said optical system having at least one pair of first and second reflective elements, said first reflective element having a full reflective surface and said second reflective element having a half-mirror reflective surface;

wherein said first reflective element reflects said reflected light from said magneto-optic disk and imparts a phase difference into said light beam, said second reflective element reflects said reflected light by said first reflective element toward said signal detecting system and imparts a phase difference which has the same magnitude as said phase difference caused by said first reflective element and an inverse sign.

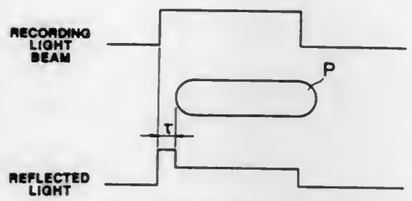
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5,309,424

OPTICAL RECORDING APPARATUS RECORDING BEAM CONTROLLED IN RESPONSE TO REDUCED LIGHT LEVEL REFLECTED BETWEEN SUCCESSIVELY FORMED PITS

Hiroshi Ogawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP90/00772, § 371 Date Feb. 5, 1991, § 102(e) Date Feb. 5, 1991, PCT Pub. No. WO90/16065, PCT Pub. Date Dec. 27, 1990
Continuation of Ser. No. 640,433, Feb. 5, 1991, abandoned. This PCT application Jun. 13, 1990, Ser. No. 42,831
Claims priority, application Japan, Jun. 20, 1989, 1-157342
Int. Cl.[5] C11B *7/00*
U.S. Cl. 369—116 **3 Claims**



1. An optical recording apparatus comprising:
a light source for irradiating an optical recording medium with a pulsed light beam and forming pits in the recording medium for recording data by the light beam;
driving means for driving said light source with a light intensity at a recording level in accordance with recording data and driving said light source with a light intensity at a reproducing level between a preceding recording data pulses and a following recording data pulse during a recording operation;
detecting means for detecting a light beam irradiated by said light source and for detecting a light beam reflected by the optical recording medium;
servo means for controlling the focusing and tracking of the recording light beam on the recording medium; and
control means for producing a first control signal on the basis of a first sample signal produced by sampling a first output signal from said detecting means, the first output signal being produced by detecting the light beam reflected by the recording medium during a period of pit formation on the recording medium, and for producing a second control signal on the basis of a second sampled signal produced by sampling a second output signal from said detecting means, the second output signal being produced by detecting the light beam reflected from a non-record region between pits formed on the recording medium after a predetermined time interval between recording data pulses, said first control signal being supplied to said driving means to control the light intensity of the light beam irradiated on the recording medium, said second control signal being supplied to said servo means.

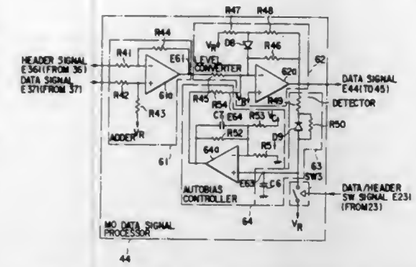
5,309,425

SIGNAL PROCESSING CIRCUIT FOR OPTICAL DISK APPARATUS

Mikio Yamamuro, Zushi, and Akihiko Doi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Tosbiba, Kawasaki, Japan

Filed Jul. 1, 1992, Ser. No. 907,126
Claims priority, application Japan, Jul. 3, 1991, 3-163092
Int. Cl.[5] G11B *7/00*; G06F *15/00*
U.S. Cl. 369—124 **2 Claims**

1. A signal processing circuit for a disk apparatus having an optical head which includes means for detecting light acquired by irradiating light from a light source to a disk having an address portion and a data portion recorded thereon, and for photoelectric-converting the light detected by said detecting means to provide a detection signal, comprising:
means for converting a signal level of the detection signal from said detecting means to provide an output signal;
means for sensing a level of the output signal from said



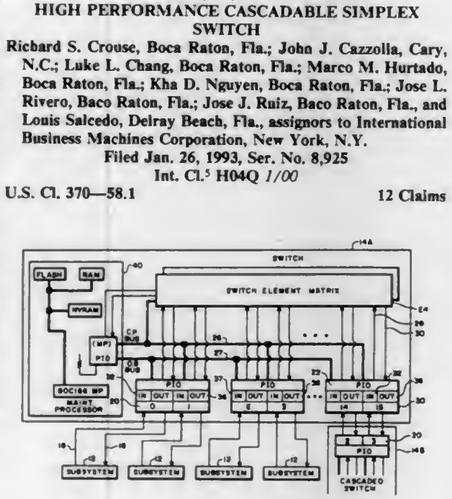
converting means so that time constants for the sensing are switched between the address portion and the data portion of said disk; and
means for changing a level of the output signal from said converting means in accordance with the output signal level from said sensing means.

5,309,426

HIGH PERFORMANCE CASCADABLE SIMPLEX SWITCH

Richard S. Crouse, Boca Raton, Fla.; John J. Cazzolla, Cary, N.C.; Luke L. Chang, Boca Raton, Fla.; Marco M. Hurtado, Boca Raton, Fla.; Kha D. Nguyen, Boca Raton, Fla.; Jose L. Rivero, Baco Raton, Fla.; Jose J. Ruiz, Baco Raton, Fla., and Louis Salcedo, Delray Beach, Fla., assignors to International Business Machines Corporation, New York, N.Y.

Filed Jan. 26, 1993, Ser. No. 8,925
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 370—58.1 **12 Claims**



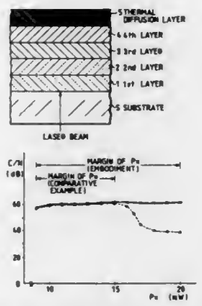
7. A data communications system comprising:
a first simplex serial crossbar switch having a plurality of first I/O ports of which (i) at least one of said plurality of first I/O ports is connected to a communications subsystem which passes data and control messages to other communications subsystems via said first simplex serial crossbar switch, and (ii) at ;least one of said plurality of first I/O ports is connected to a corresponding one of a plurality of second I/O ports on a second simplex serial crossbar switch, said second simplex serial crossbar switch also provided with at least one second I/O port which is connected to a communications subsystem which passes data and control messages to other communications subsystems via the second simplex serial crossbar switch;
each of said plurality of first I/O ports on said first serial simplex switch having programmable latches for alternatively programming each of said first I/O ports to be connected to either (i) a communications subsystem, wherein a single first I/O port is connected to a single subsystem and said single first I/O port manages both data and control messages sent to and from the connected single subsystem, or (ii) one of said plurality of second I/O ports on said second simplex switch, wherein a pair of first I/O ports on said first switch are connected to a pair of similarly configured second I/O ports on said second simplex switch, and wherein one of said pair of first I/O ports manages the transfer of data and the other of said pair of first I/O ports manages the transfer of control messages.

5,309,427

OVERWRITE-CAPABLE MAGNETOOPTICAL RECORDING MEDIUM ALLOWING ENLARGED MARGIN OF HIGH LEVEL BEAM INTENSITY

Hiroyuki Matsumoto, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 757,061
Claims priority, application Japan, Sep. 13, 1990, 2-243339
Int. Cl.[5] G11B *7/24, 13/04*
U.S. Cl. 369—275.2 **10 Claims**



1. An overwrite-capable magneto-optical recording medium comprising:
a first layer consisting of perpendicularly magnetizable magnetic film functioning as a memory layer;
a second layer consisting of perpendicularly magnetizable magnetic film functioning as a writing layer;
a third layer consisting of perpendicularly magnetizable magnetic film functioning as a switching layer;
a fourth layer consisting of perpendicularly magnetizable magnetic film functioning as an initializating layer, said first to fourth layers being sequentially stacked; and
a thermal diffusion layer adjacent to said fourth layer, said thermal diffusion layer being made of nonmagnetic metal,
wherein said first and second layers are exchangecoupled, a direction of magnetization of only said second layer is aligned in a predetermined direction without changing a direction of magnetization of said first layer at a room temperature, and said second layer and said fourth layer are exchange-coupled through said third layer at a temperature equal to or less than a Curie temperature of said third layer.

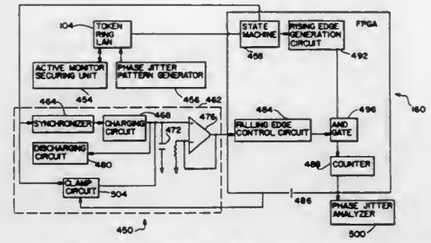
2. A recording medium according to claim 1, further comprising a protective layer intervening between said fourth layer and said thermal diffusion layer.

5,309,428

TOKEN RING LOCAL AREA NETWORK TESTING APPARATUS FOR PHASE JITTER TESTING

Mark Copley, and Gordon A. Jensen, both of Colorado Springs, Colo., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Jan. 11, 1993, Ser. No. 3,235
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—17 **19 Claims**



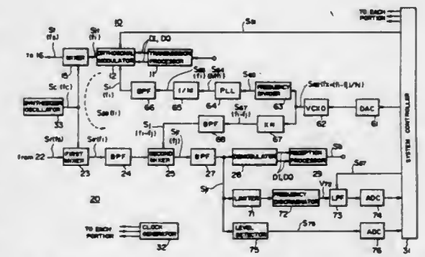
1. A method for testing for phase jitter in a token ring local area network, comprising:
inserting a testing apparatus into a token ring local area network having a plurality of stations;
sending a phase jitter test signal into the token ring local area network using said testing apparatus while allowing the token ring local area network to operate normally including the sending of data between the stations;
checking for the return of said phase jitter test signal to said testing apparatus; and
measuring phase jitter using said returned phase jitter test signal.

5,309,429

TRANSMITTER-RECEIVER

Kunio Fukuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 839,607
Claims priority, application Japan, Feb. 22, 1991, 3-050477; Feb. 22, 1991, 3-050478
Int. Cl.[5] H04B *1/56*
U.S. Cl. 370—29 **19 Claims**



14. A TDD type transmitter-receiver capable of dividing one channel into a transmission slot and a reception slot with respect to time and performing time-divided transmission and reception data during such slots respectively, said transmitter-receiver comprising:
a transmitting circuit for transmitting signals to a remote receiver,
said transmitting circuit comprising means for generating a carrier signal;
a receiving circuit for receiving signals from a remote transmitter,

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a signal path for allowing said carrier signal to pass from said transmitting circuit to said receiving circuit during a transmission slot;

said receiving circuit further comprising:

an oscillation means for generating an oscillation signal;

said oscillation means comprising an oscillator;

a mixer for mixing said oscillation signal with said carrier signal to produce an intermediate frequency signal;

a frequency discriminator for generating a voltage in accordance with the frequency of said intermediate frequency signal;

means of storing the value of said voltage; and

means for controlling, during a receiving slot, the oscillation frequency of said oscillator in accordance with said stored voltage value.

5,309,430

TELECOMMUNICATION SYSTEM

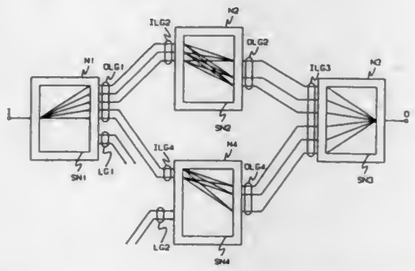
Henri A. J. Verhille, Brecht; Michel A. R. Heorion, Brussels; Michel P. De Somer, Kontich; Bart J. G. Pauwels, Borgerhout, all of Belgium, assignors to Alcatel N.V., Netherlands

Filed Jul. 22, 1992, Ser. No. 918,450

Claims priority, application European Pat. Off., Jul. 22, 1991, 91201915.5

Int. Cl.[5] H01Q *11/04*

U.S. Cl. 370—60 **9 Claims**



1. Telecommunication system including at least a first (N1) and a second (N2, N3) switching node interconnected by a group (LG12, LG23) of at least two transmission links over which cells of information are transferred, each switching node (N1, N2, N3) including an asynchronous switching network (SN1, SN2, SN3) having input ports (IP1-2048) and output ports (OP1-2048) and including a plurality of switch elements (S11-38) arranged in several stages (S1-3) between said input ports and said output ports, the transmission links of said group (LG12, LG23) interconnecting at least one set of output ports of the switching network (SN1) of said first node (N1) with at least one corresponding set of input ports of the switching network (SN2, SN3) of said second node (N2, N3), each of said switch elements having inlets and outlets and being able to transfer a cell received on one of its inlets to one or several of its outlets as a function of routing data associated with said cell, the input ports (IP1-2048) and the output ports (OP1-2048) of each switching network (SN) corresponding to the inlets and to the outlets of the switch elements of a first (S1) and of a last (S3) of said stages respectively,

wherein, in said first switching node (N1), the switching network (SN1) includes at least one switch element (S11/38) which possesses at least three outlets arranged in groups of outlets (OL1-8), each group of outlets comprising at least one outlet, that said routing data designates said set of output ports, said cell being transferred to one output port (OP1-2048) belonging to said set, and that, as a function of said routing data, said one switch element identifies a group (OL1/8) of its outlets and transfers said cell to one outlet selected from among the outlets of said identified group of outlets,

wherein each cell is transferred through said switching networks (SN1, SN2, SN3) according to a self-routing method and in that the routing process of a cell through said second switching node (N2, N3) is independent of the input port (IP1/2048) out of said set of input ports at which said cell is received.

5,309,431

ROUTE REGULATING APPARATUS

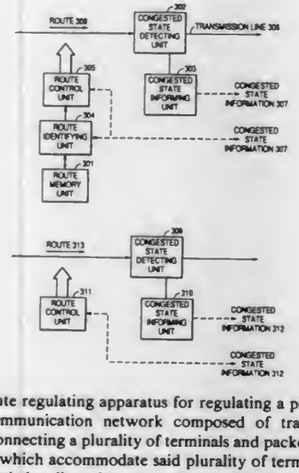
Susumu Tominaga, Yokohama, and Satoshi Nojima, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1991, Ser. No. 671,959

Claims priority, application Japan, Mar. 19, 1990, 2-066838; Mar. 20, 1990, 2-068150

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **11 Claims**



1. A route regulating apparatus for regulating a packet in a packet communication network composed of transmission lines for connecting a plurality of terminals and packet-switching nodes which accommodate said plurality of terminals and said transmission lines for connecting said packet-switching nodes, comprising:

a route which can be uniquely identified is defined by assigning an identifier to an arbitrary packet-switching node and an arbitrary transmission line in said packet communication network in an arbitrary order; and

each of said packet-switching nodes including:

route memory means for memorizing routes included in each of said transmission lines in said packet communication network;

congestion state detecting means for detecting a congested state of an internal transmission line accommodated within a local packet-switching node;

congested state informing means for transmitting a transmission line congested state detected by said congested state detecting means to another packet-switching node as congested state information;

route identifying means for receiving said congested state information from said another packet-switching node and retrieving a retrieved route included in said transmission lines corresponding to said congested state information from said route memory means to thereby determine whether said retrieved route is to be accommodated within said local packet-switching node; and

route control means for controlling a congested state of said retrieved route identified by said route identifying means on the basis of said congested state information.

5,309,432

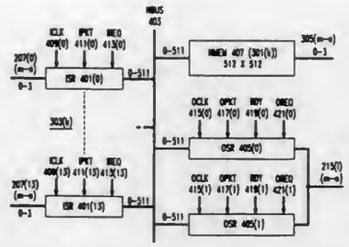
HIGH-SPEED PACKET SWITCH

Hemant R. Kanakia, New Providence, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 6, 1992, Ser. No. 877,041

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **24 Claims**



1. A switch fabric for switching packets having components comprising:

packet receiving means coupled to a plurality of input ports for serially receiving the packets from the input ports;

packet outputting means coupled to a plurality of output ports for serially outputting the packets to the output ports;

packet memory means for storing the packets; and

packet transfer means for transferring the packets in parallel between the packet receiving means, the packet outputting means, and the packet memory means,

the components being distributed over one or more integrated circuits such that the transfer means remains within the boundaries of the integrated circuits.

5,309,433

METHODS AND APPARATUS FOR ROUTING PACKETS IN PACKET TRANSMISSION NETWORKS

Israel Cidon, Haifa, Israel; David W. Davenport, Raleigh, N.C.; Jeffrey H. Derby, Chapel Hill, N.C.; John G. Dudley, Raleigh, N.C.; Inder S. Gopal, Fort Lee, N.J.; James P. Janniello, Stamford, Conn.; Marc A. Kaplan, Katonah, N.Y.; Francis R. Koperda, Raleigh, N.C.; Shay Kutten, Rockaway, N.J., and Kenneth H. Potter, Jr., Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 18, 1992, Ser. No. 900,635

Int. Cl.[5] H04J *3/26;* **H04L** *12/56*

U.S. Cl. 370—60 **12 Claims**

REMOTE ACCESS TO MULTICAST TREE ROUTING FIELD



1. A packet transmission system for digital data packets including a header, said system comprising

a plurality of routing decision points, and

a plurality of transmission links interconnecting said decision points,

each of said decision points comprising

means for receiving a plurality of packets from connected decision points,

means for transmitting a plurality of packets to connected decision points,

switching means for selectively transferring packets from said receiving means to said transmitting means, and

route controlling means for controlling said switching means,

said route controlling means including means responsive to transmission link labels in a first portion of said header for transmitting the packet on a single one of said transmission links, and responsive to a multicast tree address in a second portion of said header for transmitting the packet on a plurality of said transmission links forming part of said multicast tree,

said route controlling means further including means for transmitting said packet on the entry transmission link over which it is received when said entry transmission link is included in the same multicast tree as said decision point.

5,309,434

MULTI-MEDIA COMMUNICATION APPARATUS

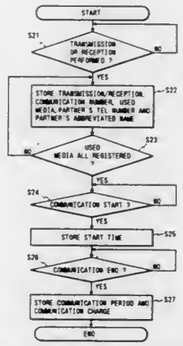
Yoshito Maekawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1991, Ser. No. 754,590

Claims priority, application Japan, Sep. 5, 1990, 2-236848; May 1, 1991, 3-128360

Int. Cl.[5] H04M *15/04, 15/14*

U.S. Cl. 370—62 **17 Claims**



1. A multi-media communication apparatus comprising:

communication means for communicating with a partner's apparatus by using different categories of data on a plurality of kinds of media;

memory means for storing information on a communication, which information is generated when the communication is performed by said communication means;

output means for visually outputting, as a communication report, the information on the communication stored by said memory means; and

edition means for editing the information on the communication stored by said memory means, said outputting means outputting the information edited by said edition means as a communication report,

wherein said edition means edits the information on the communication on each medium used by said communication means.

5,309,435

MULTIRING DATA TRANSMISSION SYSTEM

Masashi Hirome, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 28, 1991, Ser. No. 750,924

Claims priority, application Japan, Aug. 28, 1990, 2-226096

Int. Cl.[5] H04J *1/16, 3/14, 3/02*

U.S. Cl. 370—85.12 **20 Claims**

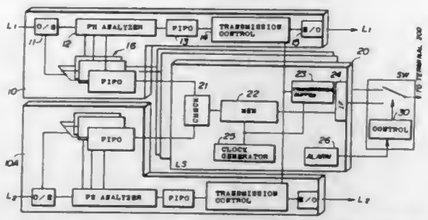
1. A multi-ring data transmission system which uses a plurality of transmission lines including inner and outer transmission lines, said data transmission system comprising:

first means for adding a sequential number to each of at least

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two data packets transmitted on at least the inner and outer transmission lines and for transmitting said at least two data packets having the sequential number added thereto via at least the inner and outer transmission lines;

second means for error checking each of said at least two data packets received from at least the inner and outer transmission lines to determine whether said at least two data packets are normal or erroneous; and



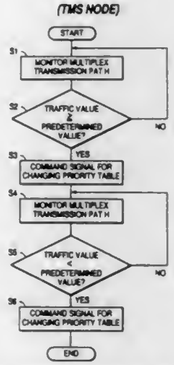
third means, coupled to said second means, for successively employing said at least two data packets which are determined as being normal in said second means and are received from one of at least the inner and outer transmission lines as received data packets in a sequence of the sequential number.

5,309,436

MULTIPLEX TRANSMISSION SYSTEM FOR VEHICLES

Seiyo Hirano; Kunihiko Matumura, and Satoru Kawasoe, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 18, 1992, Ser. No. 836,419
Claims priority, application Japan, Feb. 18, 1991, 3-022572
Int. Cl.[5] H04J *3/02*; H04Q *11/04*
U.S. Cl. 370—85.1 **18 Claims**



18. A multiplex transmission system for a vehicle comprising:

a multiplex transmission path;

a plurality of multiplex nodes, said multiplex nodes being connected to said multiplex transmission path, the multiplex nodes being capable of sending and receiving respective electrical signals containing information of each respective multiplex node to and from said multiplex transmission path, each of said electrical signals including a portion indicating a priority of said electrical signal, said multiplex nodes including means for giving said portion of said electrical signals a plurality of priorities and means for determining the priority of said electrical signals in a predetermined manner such that a signal with higher priority is sent prior to a signal with lower priority when said multiplex nodes are sending respective electrical signals at the same time;

a control node operatively connected to said multiplex transmission path, said control node including a detecting means for detecting a traffic condition on the multiplex transmission path; and

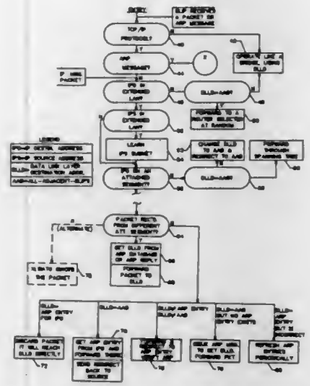
priority changing means operatively connected to said multiplex nodes for changing the priority of said portion of said electrical signals sent by at least one of the multiplex nodes in response to the traffic condition detected by the detecting means, said priority changing means switches the priority of signals between a first order and a second order so that said nodes having a higher priority based on said first order have a lower priority based on said second order.

5,309,437

BRIDGE-LIKE INTERNET PROTOCOL ROUTER

Radia J. Perlman, Acton, Mass., and G. Paul Koning, Brookline, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1990, Ser. No. 546,619
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.13 **26 Claims**



1. For use in a configuration of interconnected local area networks (LANs) handling message traffic in accordance with a set of inter-network protocols that use a network addressing scheme, a bridge-like IP router (BLIP), comprising:

multiple ports for attaching the BLIP to multiple segments of an extended LAN;

means for distinguishing received message traffic that uses the inter-network protocols from other message traffic that does not use the protocols;

bridge means for processing the other message traffic exactly in the manner of a conventional bridge, using unique station addresses to determine how to forward the received message traffic; and

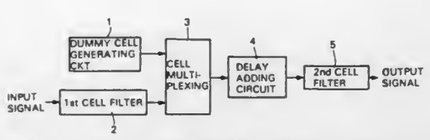
bridge-like means for processing the inter-network protocol traffic in a manner analogous to a bridge, wherein a message packet received from an extended LAN segment attached to the BLIP is forwarded if necessary to at least one other extended LAN segment attached to the BLIP, using network addresses and network segment addresses, instead of unique station addresses, to determine how to forward the message traffic.

5,309,438

ATM CELL DELAY CIRCUIT FOR ISDN SYSTEM

Hideki Nakajima, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 865,423, Apr. 8, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 100,643
Claims priority, application Japan, Apr. 12, 1991, 3-108750
Int. Cl.[5] H04J *3/06, 3/24*
U.S. Cl. 370—94.1 **2 Claims**



1. An Asynchronous Transfer Mode (ATM) cell delay circuit for correcting variations in propagation delay in an Integrated Services Digital Network (ISDN), the circuit comprising:

a dummy cell generating circuit for generating an output of dummy cells at a controllable time interval;

a first cell filter for extracting from an input signal an output of only those cells to which delays are to be applied;

a cell multiplexing circuit for synthesizing the output of said dummy cell generating circuit and the output of said first cell filter and producing an output of said cell multiplexing circuit;

a delay adding circuit for delaying the output of said cell multiplexing circuit and producing an output of said delay adding circuit; and

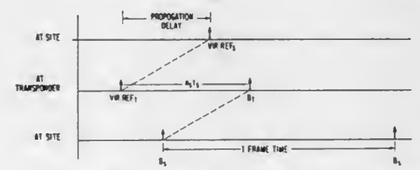
a second cell filter for eliminating said dummy cells from the output of said delay adding circuit.

5,309,439

TDMA SYSTEM WITH A VIRTUAL REFERENCE

David A. Roos, Boyds, Md., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 29, 1991, Ser. No. 799,809
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—104.1 **22 Claims**



1. A method of timing the transmission of a burst from a transmitting station in a TDMA system comprising the steps of:

a) detecting bursts located in a TDMA frame received at the transmitting station;

b) monitoring the locations in said received bursts of unique words contained in said received bursts;

c) deriving, in response to said monitoring step, a virtual frame reference; and,

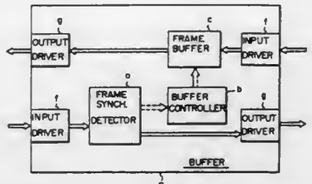
d) timing the transmission of at least one burst transmitted from the transmitting station based on the virtual frame reference derived in said deriving step.

5,309,440

ISDN USER-NETWORK INTERFACE SYSTEM

Hajime Nakamura; Hiroyuki Kikuta, Tokyo; Fumio Watanabe, Tokyo, and Masanobu Fujioka, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,040
Claims priority, application Japan, Sep. 6, 1991, 3-254193; Sep. 6, 1991, 3-254194; Sep. 6, 1991, 3-254195
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—105.1 **4 Claims**



1. An ISDN user-network interface system comprising:

an interface buffer provided between an ISDN network terminal equipment and a terminal equipment to receive an up-signal frame transmitted from said terminal equipment to said interface buffer, to store said up-signal frame, and to transmit said stored up-signal frame at a timing when said network terminal equipment is capable of detecting the synchronization of said up-signal frame; and

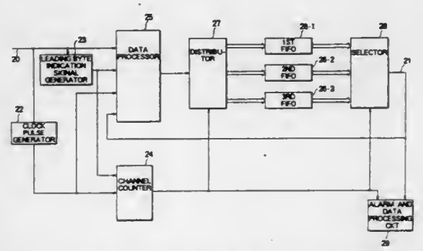
an interface adapter provided between said ISDN network terminal equipment and said terminal equipment, to receive an up-signal frame transmitted from said terminal equipment to said interface adapter, to detect D-channel bits of said up-signal frame, to transmit said up-signal frame to said network terminal equipment, to copy said detected D-channel bits into an echo channel bits of a down-signal frame from said net-work terminal equipment to said interface adapter received immediately after the transmission of said up-signal frame, and to transmit said down-signal frame to said terminal equipment.

5,309,441

COMPACT DEVICE FOR CARRYING OUT TERMINATING PROCESSING OF STS-N SIGNAL

Yoshihide Kuroda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 47,427
Claims priority, application Japan, Apr. 15, 1992, 4-095101
Int. Cl.[5] H04J *14/08*
U.S. Cl. 370—105.2 **4 Claims**



1. A terminating device for carrying out a terminating processing of an STS-N signal which is a multiplexed signal given by synchronously time division multiplexing first through N-th STS-1 signals at every one byte, where N represents a predetermined integer greater than one, said first through said N-th

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STS-1 signals being identified by first through N-th channel numbers, respectively, each of said first through said N-th STS-1 signals comprising a synchronous payload envelope comprising a leading byte representative of predetermined data and a predetermined plural number J of control bytes following said leading byte and representing control information data used in said device in carrying out said terminating processing, said device comprising:

a clock pulse generator supplied with said STS-N signal for successively generating clock pulses in byte synchronism with the leading bytes of the synchronous payload envelopes of said first through said N-th STS-1 signals and the control bytes of the synchronous payload envelopes of said first through said N-th STS-1 signals;

a leading byte indication signal generator supplied with said STS-N signal for generating a leading byte indication signal for collectively indicating said leading bytes of the synchronous payload envelopes or said first through said N-th STS-1 signals by detecting said predetermined data of the leading bytes of the synchronous payload envelopes of said first through said N-th STS-1 signals from said STS-N signal;

a channel counter connected to said clock pulse generator and said leading byte indication signal generator for carrying out a counting operation of counting up a count from a first counted value to an N-th counted value in response to the clock pulses received while said channel counter receives said leading byte indication signal, said channel counter repeatedly carrying out said counting operation of counting up said count from said first counted value to said N-th counted value in response to the clock pulses received when said channel counter does not receive said leading byte indication signal, said channel counter repeatedly producing a channel count signal successively representing, as said first through said N-th channel numbers, said first through said N-th counted values which are counted in response to the clock pulses received when said channel counter does not receive said leading byte indication signal;

a data processor supplied with said STS-N signal and connected to said clock pulse counter and said leading byte indication signal generator for successively producing the control bytes of the synchronous payload envelopes of said first through said N-th STS-1 signals in response to the clock pulses received when said data processor does not receive said leading byte indication signal;

first through N-th first-in first-out memories which are in one-to-one correspondence to said first through said N-th channel numbers; and

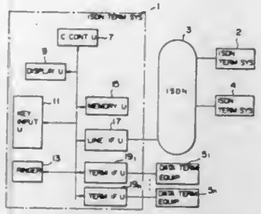
a distributor connected to said data processor and said first through said N-th first-in first-out memories for repeatedly carrying out, in response to said channel count signal repeatedly produced by said channel counter, a distributing operation of distributing the control bytes of the synchronous payload envelopes of said first through said N-th STS-1 signals at every one byte to the first through the N-th first-in first-out memories corresponding to said first through said N-th channel numbers successively represented by said channel count signal, said distributor thereby making said first through said N-th first-in first-out memories memorize the control bytes of the synchronous payload envelopes of said first through said N-th STS-1 signals as first through N-th memorized data signals of said first through said N-th STS-1 signals, respectively.

5,309,442

ISDN TERMINAL SYSTEM

Takashi Saeki, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 24, 1991, Ser. No. 813,269
Claims priority, application Japan, Dec. 26, 1990, 2-407086
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **13 Claims**



1. An ISDN terminal system connected between a data terminal, having a data processing device for processing data received from an ISDN, and an integrated service digital network (ISDN) to which various other ISDN terminal systems having line exchange and packet exchange communication modes are connected, in which said line exchange communication mode exchanges data by connecting data terminals upon a communication request and exclusively using a communication line between the connected data terminals until a connection therebetween is released, and said packet exchange communication mode exchanges data by dividing data to be transmitted into a plurality of packets, each having a destination and a predetermined length, such that data terminals on transmission and reception sides only occupy channels when transmitting or receiving one of said packets without exclusive possession of any communication line, said ISDN terminal system comprising:

analyzing means for analyzing a call setup message attached to data received from said ISDN, said call setup message including a telephone number and exchange mode information indicating whether the received data is processed using said line exchange communication mode or said packet exchange communication mode;

line exchange communication means for, when said data received from said ISDN has been transmitted from one of said other ISDN data terminal systems using the line exchange communication mode, establishing a communication using said line exchange communication mode by matching a data transfer speed of said data terminal to a data transfer speed of the transmitting ISDN data terminal system;

packet exchange communication means for, when said data received from said ISDN has been transmitted from one of said other ISDN data terminal systems using the packet exchange communication mode on a particular time-division channel, establishing a communication using the packet exchange communication mode by setting a time-division channel of said data terminal to the particular channel used by the transmitting ISDN data terminal system; and

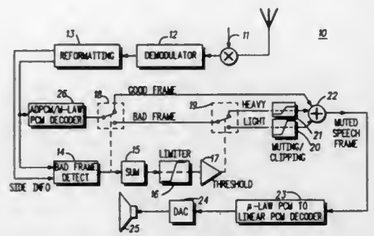
control means for controlling a communication between said ISDN and said receiving data terminal by generating a changeover control signal indicating whether said receiving data terminal should be connected with said line exchange communication means or said packet exchange communication means based on said exchange mode information obtained by said analyzing means, and by selecting a communication path connected between said receiving data terminal and said ISDN to include either said line exchange communication means or said packet exchange communication means in response to said changeover control signal.

5,309,443

DYNAMIC MUTING METHOD FOR ADPCM CODED SPEECH

Eric Schorman, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1992, Ser. No. 894,303
Int. Cl.[5] H04B *1/10*
U.S. Cl. 371—5.5 **20 Claims**



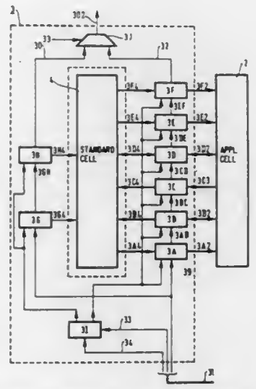
4. An apparatus for muting an audio signal in a digital communication system, such apparatus comprising: means for integrating an indicated error per audio information unit for a time interval; means for comparing the integrated value with a threshold; and means for applying a heavy mute to audio information units with an indicated error when the integrated value does not exceed the threshold and a light mute to audio information units with an indicated error when the integrated value exceeds the threshold.

5,309,444

INTEGRATED CIRCUIT INCLUDING A TEST CELL FOR EFFICIENTLY TESTING THE ACCURACY OF COMMUNICATION SIGNALS BETWEEN A STANDARD CELL AND AN APPLICATION CELL

Luc Dartois, Colombes; Jacques Dulongpont, Pontoise, both of France, and Peter Reusens, Laarne, Belgium, assignors to Alcatel Radiotelephone, Paris, France

Filed Aug. 2, 1991, Ser. No. 739,544
Claims priority, application France, Aug. 3, 1990, 90 09978
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—10.2 **8 Claims**



1. An integrated circuit (1) for monitoring communication signals transmitted between a standard cell and an application cell, said integrated circuit comprising:

a test cell (3), coupled between said standard cell (4) and said application cell (2) via communication links, designed to perform one of the functions of storing information supplied by said communication signals and testing said communication signals passing between said standard cell and said application cell based upon modification data supplied to said integrated circuit,

said application cell comprising a program memory which supplies instructions, via an instruction bus, to said standard cell in response to an instruction address carried by an instruction address bus,

said standard cell executing said instructions provided by said program memory, wherein conductors of said instruction bus and said instruction address bus are carried by said communication links, and

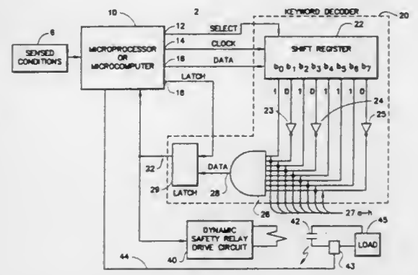
wherein said standard cell comprises branching means for replacing at least one erroneous instruction from said program memory with a replacement instruction previously stored in said integrated circuit in response to an error condition detected by said test cell on at least one of said communication links.

5,309,445

DYNAMIC SELF-CHECKING SAFETY CIRCUIT MEANS

James I. Bartels, Hudson, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 12, 1992, Ser. No. 898,056
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—164 **14 Claims**



1. A dynamic self-checking safety circuit means comprising:

a microprocessor programmed to periodically generate a predetermined sequence of logic bits, wherein on alternate generations of the predetermined sequence of logic bits a single bit is inverted in a particular position in the predetermined sequence of logic bits and the position of the bit which is inverted is rotated through the predetermined sequence of logic bits so as to include all possible bit positions;

decoder means connected to the microprocessor for outputting a first unique signal in response to receiving the predetermined sequence of logic bits, and outputting a second unique signal in response to receiving any sequence of logic bits other than the predetermined sequence bit of logic bits; and

safety relay drive means which allows operation of a load only when the first and second unique signals are output from the decoder means alternately and at a predetermined frequency.

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5,309,446

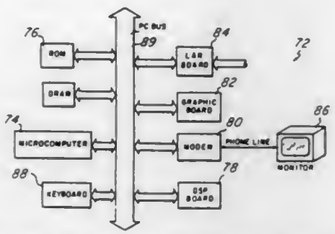
TEST VALIDATION METHOD FOR A SEMICONDUCTOR MEMORY DEVICE

Danny R. Cline, Plano; Wah K. Loh, Richardson; Adin E. Hyslop, Dallas; Hugh P. McAdams, Houston, all of Tex., and Chok Y. Hung, Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 560,982, Jul. 31, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 927,557

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—21.1 **7 Claims**



1. A process of validating a test of a semiconductor device where the device is capable of operating in plural internal test modes, the process comprising:

A. applying to the device signals that indicate that the device should enter at least one of the internal test modes;

B. producing from the device output signals that indicate the test mode entered by the device in response to the applied signals;

C. reading the output signals to determine whether the device entered the indicated test mode;

D. operating the device to conduct the indicated test; and

E. reading the output signals to determine whether the device remained in the indicated test mode during the indicated test.

5,309,447

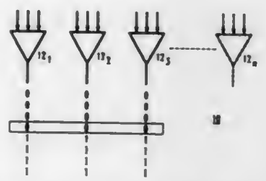
SPACE COMPRESSION TECHNIQUE FOR PSEUDO-EXHAUSTIVE SELF-TESTING OF DIGITAL ELECTRONIC CIRCUITS

Marsha R. Moskowitz, Highland Park, and Eleanor Wu, Princeton, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 3, 1991, Ser. No. 709,740

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.4 **5 Claims**



1. A method for compacting a plurality of response signals, each generated by a separate set of sub-circuits within an electronic digital circuit under test, comprising the steps of:

logically analyzing each response signal generated by each set of sub-circuits and generating a pattern bit indicative of whether that response signal has a particular pattern;

time compacting each pattern bit of each set of sub-circuits by exclusively OR'ing it with a compacted bit generated previously by the same subset of circuits to yield a current compacted bit for subsequent exclusive OR'ing with a subsequently generated pattern bit associated with a different set of sub-circuits; and

repeating the steps of logically analyzing each response signal and time-compacting each pattern bit for a predetermined number of times.

5,309,448

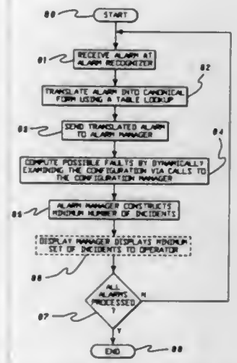
METHODS AND SYSTEMS FOR ALARM CORRELATION AND FAULT LOCALIZATION IN COMMUNICATION NETWORKS

Anastasios T. Bouloutas, Athens, Greece; Seraphin B. Calo, Peekskill, and Allan J. Finkel, New City, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1992, Ser. No. 817,011

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—29.1 **22 Claims**



1. In a communications network having a plurality of devices connected therein, at least some of said devices responding to a perceived fault in said system by presenting an alarm, a method for identifying a fault in said communications network, said identifying method comprising the steps of:

(a) identifying at least one activated alarm in said network, each said alarm being emitted by a corresponding one of said alarm emitting devices o connected within said communications network, and each said alarm indicating knowledge of the corresponding device state or the corresponding device interface state;

(b) assigning to each identified alarm at least one primitive from a plurality of predefined primitives, each said assigned primitive indicating a relative fault location within the network with respect to the corresponding device;

(c) mapping each said alarm with said at least one assigned primitive to a representative portion of said network, said portion corresponding to the relative fault location indicated by said at least one assigned primitive, wherein a set of possible faulted device locations is defined for each alarm; and

(d) using the defined fault location set to determine a possible location of an actual fault in said network.

5,309,449

ELECTRONIC CIRCUIT FOR GENERATING ERROR DETECTION CODES FOR DIGITAL SIGNALS

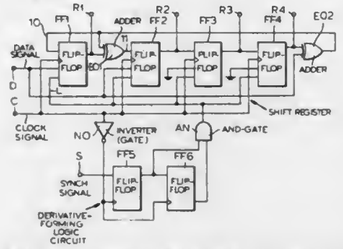
Marco Gandini, Turin; Giovanni Ghigo, Luserna S. Giovanni, and Mauro Marchisio, Turin, all of Italy, assignors to Sip-Societa Italiana Per L'Esercizio Delle Telecomunicazioni P.A., Turin, Italy

Filed Feb. 20, 1991, Ser. No. 658,219

Claims priority, application Italy, Mar. 1, 1990, 67146 A/90

Int. Cl.[5] G06F *11/10;* **H03M** *13/00*

U.S. Cl. 371—37.1 **3 Claims**



1. An electronic system for generating error detection code in digital signals, organized in data blocks (D) forming the coefficients of a dividend polynomial, to be divided by a suitable divisor polynomial of degree n to obtain a remainder polynomial of n−1 degree, whose coefficients form the error detection code, the circuit consisting of a shift register composed of n−1 flip-flops (FF1, . . . , FF4), including:

a first flip-flop (**FF1**) receiving a data signal (D) from a data input, a logic signal (L) common to all of the flip-flops of said shift register, a clock signal (C) common to all of the flip-flops of the shift register, and a feed-back signal (**10**);

a second flip-flop (FF2) receiving an adder signal (**11**), said data signal (D), said clock signal (C) and said logic signal (L);

at least one further flip-flop (FF3) receiving an input from an output of a preceding flip-flop of the shift register, said clock signal (C) and said logic signal (L) and having an output connected to an input of a subsequent flip-flop of the shift register;

a final flip-flop (FF4) having an input from a preceding flip-flop of the shift register, said clock signal **1**(C) and said logic signal (L);

an adder (**EO1**) receiving an output from said final flip-flop and said data signal (D) and generating said feed-back signal (**10**); and

another adder (EO2) receiving an output from said first flip-flop (FF1) and from said feed-back signal (**10**) and generating said adder signal (**11**), wherein the signal outgoing from the (i−**1**)th flip-flop, i being a number between O and n, is sent to a first input of an (i)th flip-flop directly or through said adder (EO1), according to whether the coefficient of the term of (i)th degree of the divisor polynomial is equal to or different from zero, said adder (EO1) adding to the signal outgoing from the preceding flip-flop said feedback signal (**10**) obtained at the output of the (n)th flip-flop, either directly or after adding it at adder (EO2) to the input data signal (D), means for clocking said flip-flops with said common clock signal (C), a second input of the (i)th flip-flop accepting the first bit of said data block or a bit at low logic value, according to whether the coefficient of term of degree (i)th of the divisor polynomial is respectively different from or equal to zero, in correspondence with a clock signal (C) transition relevant to the first bit of the data block, at subsequent transitions the (i)th flip-flop accepting the signals present at the first input, the first or second inputs of the (i)th flip-flop being enabled according to the logic level of said logic signal (L) active in correspondence with the first bit of a data block, said logic signal (L) active in correspondence with the first bit of a data block being generated by a logic circuit (**FF5**, FF6, AN) generating a derivative and including an inverter receiving said clock signal (C), and receiving a synchronism signal (S) signalling start of a data block, resetting said shift register and reading data from said data block into the shift register.

5,309,450

ERROR CORRECTION CODING METHOD AND APPARATUS FOR DIGITAL IMAGE INFORMATION

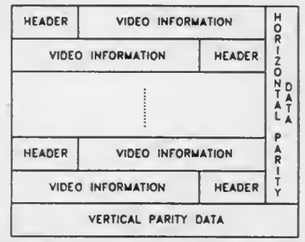
Gye-jong Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Apr. 29, 1991, Ser. No. 693,003

Claims priority, application Rep. of Korea, Apr. 30, 1990, 90-6125

Int. Cl.[5] H03M *13/00;* **G06F** *11/10*

U.S. Cl. 371—39.1 **8 Claims**



3. An error correction coding apparatus in an image processing apparatus for transmitting or storing image information in the form of a digital signal, comprising:

an image divider for receiving digital image signals for a screen, for dividing the received signal into blocks of digital image signals, and for then outputting the blocks;

data compressing means for compressing and coding the blocks from the image divider into block codes, each block code comprising header information and video information arranged in a predetermined order;

parity data insert means for vertically grouping the block codes from said data compressing means to generate parity data therefor; and

data interleave means, coupled between said data compressing means and said parity data insert means, for arranging first ones of said block codes on the basis of said predetermined order, and arranging respective subsequent ones of said block codes in accordance with a grouping order which is different from said predetermined order such that the position of video and header information included there is reversed said data interleave means transmitting the arranged header and video information to said parity data insert means.

5,309,451

DATA AND PARITY PREFETCHING FOR REDUNDANT ARRAYS OF DISK DRIVES

Eric S. Noya, Groton; Randy M. Arnott, Clinton, and Mitchell N. Rosich, Groton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 12, 1992, Ser. No. 929,080

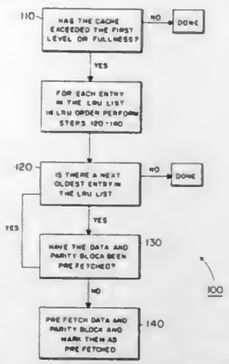
Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—40.4 **10 Claims**

1. An apparatus for prefetching data from a plurality of disk drives, each of the plurality of disk drives organized into a plurality of disk blocks, the plurality of disk blocks further organized into a plurality of stripes, each of the plurality of stripes including at least one disk block from each of the plurality of disk drives, each of the plurality of stripes further including a parity disk block storing parity data generated from the data stored in the other disk blocks of the stripe, the apparatus comprising:

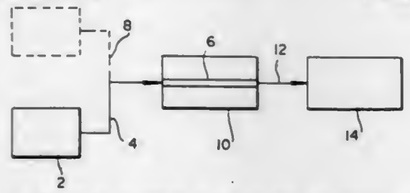
VOL 1162 ISS 1 MY 3 1994 UMI

memory means for storing data, said memory means partitioned into memory blocks compatible with the disk block organization of the plurality of disk drives;
means for maintaining said memory blocks in a least recently used (LRU) order;



means for generating a low threshold signal in response to a first predetermined number of said memory blocks being filled with data; and
means, responsive to said low threshold signal, for starting a prefetch procedure to read disk blocks associated with a predetermined stripe, said predetermined stripe including at least one disk block to be overwritten by a LRU memory block.

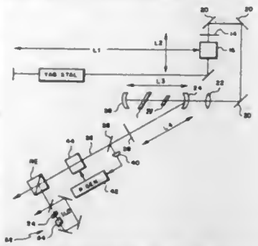
5,309,452
PRASEODYMIUM LASER SYSTEM
Yasutake Ohishi, Mito, Japan, and Elias Snitzer, Piscataway, N.J., assignors to Rutgers University, New Brunswick, N.J.
Filed Jan. 31, 1992, Ser. No. 830,430
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—6 **81 Claims**



1. A system for producing an optical gain, the system comprising:
an optical fiber having a core and a cladding, the core being doped with Pr^{3+}; and
a light source producing light at a wavelength in the range of from about 0.94 to 1.07 microns to energize the Pr^{3+} to the $^1G_4$ state and produce an optical gain by a $^1G_4$-$^3H_5$ transition for light at a wavelength in the range of 1.25 to 1.34 microns.

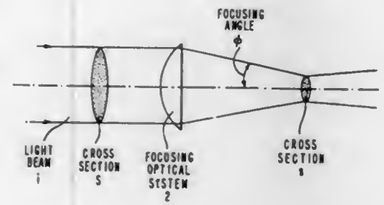
5,309,453
SINGLE PULSE INJECTION LOCKING
Edmond B. Treacy, Richland, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.
Filed Jul. 27, 1981, Ser. No. 290,794
Int. Cl.[5] H01S *3/098, 3/13, 3/093*
U.S. Cl. 372—18 **11 Claims**

1. A system for generating laser radiation having a spectrum substantially filling a bandwidth comprising:
laser oscillator means for generating only a single mode locked pulse of radiation within said bandwidth circulating within a cavity associated with said laser oscillator means whereby said cavity experiences a succession of passes of said mode locked pulse;



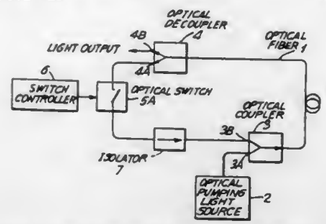
means for applying radiation from the single pulse from one pass of said mode locked pulse from said oscillator onto an output path, said single pulse having said spectrum;
a pump laser providing excitation to said laser oscillator and having a cavity effective length approximately the same as the effective cavity length of said laser oscillator.

5,309,454
APPARATUS FOR WAVELENGTH CONVERSION OF LASER LIGHT
Yoichi Taira, Tokyo, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1992, Ser. No. 874,937
Claims priority, application Japan, Jun. 4, 1991, 3-159530
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—21 **44 Claims**



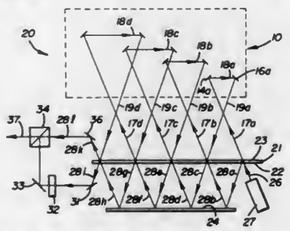
1. An apparatus for converting the wavelength of a laser light beam, comprising:
a plurality of reflecting surfaces;
a wavelength conversion element interposed between said reflecting surfaces, some of the laser light beam entering the wavelength conversion element within an acceptance angle, the acceptance angle having a first larger magnitude in a first plane passing through the wavelength conversion element and a second smaller magnitude in a second plane passing through the wavelength conversion element, the first and second planes being perpendicular to one another;
means for focusing said laser light beam on said wavelength conversion element; and
said focusing means including means for making the cross section of said laser light beam focused on said wavelength conversion element non-circular so that the laser light beam entering the wavelength conversion element converges within the first larger magnitude of the acceptance angle more than within the second smaller magnitude of the acceptance angle to thereby improve the conversion efficiency while providing directional focusing and prevention of optical damage.

5,309,455
HIGH-POWER LIGHT PULSE GENERATING APPARATUS
Shoji Adachi; Nobuaki Takeuchi, and Ryoji Handa, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd. and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan
Filed Jul. 8, 1992, Ser. No. 910,198
Claims priority, application Japan, Jul. 12, 1991, 3-197337
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—25 **4 Claims**



1. A high power light pulse generating apparatus, comprising:
an optical fiber doped with a rare earth element;
an optical pumping light source for optically pumping said optical fiber;
an optical coupler having a first input port coupled to an output port of said optical pumping light source for introducing the output light of said optical pumping light source to said optical fiber and having a second input port;
an optical decoupler having an input port supplied with the output of said optical fiber and having first and second output ports;
an optical switch having an input port coupled to the first output port of said optical decoupler;
an isolator having an input port coupled to the output port of said optical switch;
wherein said optical coupler, said optical fiber, said optical decoupler, said optical switch, said isolator and the second input port of said optical coupler comprise an optical loop which is opened and closed by the optical switch; and
a switch controller for controlling the optical switch to effect the closing of the optical loop for a given time period to produce a high power light pulse at the second output port of the optical decoupler having a pulse width of said given time period.

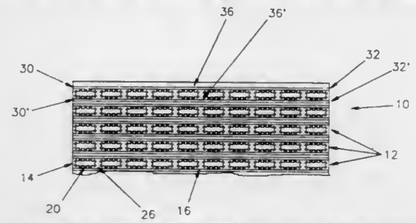
5,309,456
PULSE STRETCHER
James A. Horton, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 30, 1992, Ser. No. 968,949
Int. Cl.[5] H01S *3/00, 3/101*
U.S. Cl. 372—25 **10 Claims**



1. Apparatus for increasing the length of a laser pulse, comprising:
a) means forming a plurality of optical delay paths of successively increasing delay times, each optical delay path having an input and an output,
b) means for generating a laser pulse of a predetermined time duration,
c) a laser output,
d) directing means for directing a portion of said generated laser pulse simultaneously to the inputs of all of said optical delay paths, and for directing a pulse from each of the outputs of said optical delay paths to said laser output so that one elongated laser pulse is formed by a plurality of sequential and adjacent laser pulses from the outputs of said optical delay paths.

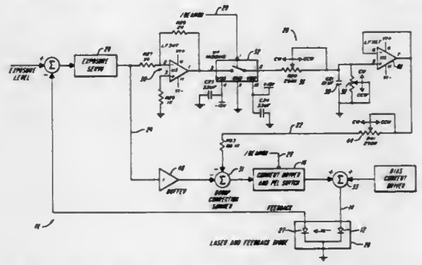
5,309,457
MICRO-HEATPIPE COOLED LASER DIODE ARRAY
Richard B. Minch, 15410 NE. 144th Pl., Woodinville, Wash. 98072
Filed Dec. 22, 1992, Ser. No. 994,651
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—34 **16 Claims**

1. A micro-heatpipe cooled laser diode array assembly comprising:
(a) a plurality of bodies each containing micro-heatpipe means for heat transfer;
(b) an assembly comprising a single laser diode array bar affixed with means providing good thermal contact to principal surfaces of said bodies;
(c) multiple said assemblies held with a mechanical means



for holding said assemblies in a stair-step stacking manner and with electrical means for providing electrical energy to said assemblies, whereby a portion or all of the end of said micro-heatpipe bodies are hidden behind the said laser diode array bars thereby increasing the percentage of the surface normal to the radiation direction emitting radiation.

5,309,458
METHOD AND APPARATUS FOR STABILIZING LASER DIODE ENERGY OUTPUT
James A. Carl, Littleton, Mass., assignor to ECRM Trust, Tewksbury, Mass.
Filed Mar. 2, 1992, Ser. No. 844,277
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—34 **6 Claims**



4. An apparatus for maintaining a controlled precise energy output level from a laser diode having a laser diode junction comprising:

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means for applying a switching current to said laser diode, said switching current switching between a first state in which there is no lasing action in the diode and a second state in which there is lasing action in the diode, and

means for adding to said switching current a thermal stabilization current having a value corresponding to the temperature of the diode junction, said adding means including

means for increasing a signal for generating said stabilization current in accordance with a first time constant corresponding to a heating rate of said diode junction when said diode switching current is in said second state, and

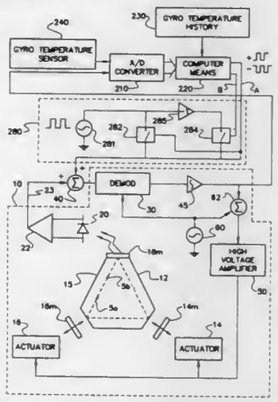
means for decreasing said signal in accordance with a second time constant corresponding to a cooling rate for said diode junction when said switching current is in said first state.

5,309,459

LASER GYRO SMART DIGITAL PLC ACQUISITION CONTROL

Albert C. Hrovat, Shoreview, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 20, 1992, Ser. No. 963,772
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—34 **2 Claims**



1. A ring laser gyro path length control for controlling the position of at lest one mirror of a laser block which forms, at least in part, said ring laser gyro, said control comprising:

a ring laser including a plurality of mirrors for establishing a pair of oppositely traveling laser beams about an optical closed-loop path, wherein at least a first mirror of said plurality of mirrors is coupled to a mirror transducer for controlling the position of said first mirror;

a path length control circuit responsive to at least one of said laser beams for providing a transducer control signal operative for controlling the position of said first mirror to maintain the intensity of said one of said laser beams at a preselected condition;

means for generating data representative of the position of said first mirror;

means for storing data representative of the characteristic of said mirror position as a unction of the temperature of said ring laser, temperature sensing means for providing data representative of the temperature of said ring laser; and

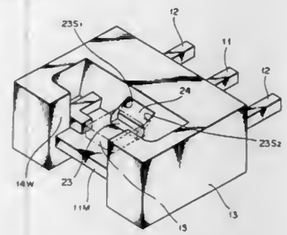
computer means for operating on said data representative of the position of said first mirror, said data representative of said temperature of said ring laser, and data characteristic of the desired relative position of said first mirror as a function of the gyro temperature, so as to affect said path length control circuit in a manner to cause the position of said first mirror to approximate said characteristic data at said ring laser temperature.

5,309,460

SEMICONDUCTOR LASER WITH ENCAPSULATED LEAD MEMBERS

Yoshitsugu Fujimaki, Kanagawa; Kenji Nagashima, Tokyo; Morito Yokoyama, Hyogo; Kunio Tsuboi, Saitama; Toshihiro Imai, Kanagawa, and Atsushi Ogasawara, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 914,961
Claims priority, application Japan, Jul. 17, 1991, 3-055507[U]; Oct. 21, 1991, 3-085590[U]
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—36 **28 Claims**



1. A semiconductor laser device comprising:

a first lead member having a mounting portion for mounting a semiconductor laser;

at least one second lead member to be connected to said semiconductor laser;

a resin mold member for unitarily molding said first and second lead members, wherein said resin mold member has a recess portion for receiving said semiconductor laser therein and for exposing therein said mounting portion of said first lead member and a part of said second lead member, and wherein said semiconductor laser is electrically connected to said first and second lead members within said recess portion; and

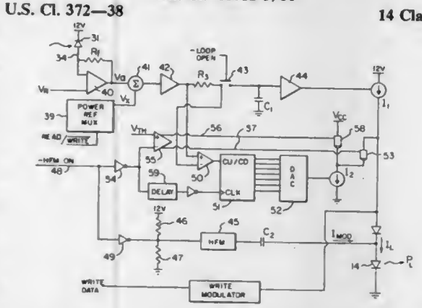
wherein a rear wall of said recess portion of said resin mold body in which said semiconductor laser is disposed is processed to form a taper wall so that a laser beam radiated from a rear end of said semiconductor laser is prevented from being reflected and incident on a resonator of said semiconductor laser as a return beam.

5,309,461

COMPENSATED LASER DRIVE CIRCUIT

David E. Call; Glen A. Jaquette, and Julian Lewkowicz, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 29, 1992, Ser. No. 921,894
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **14 Claims**



1. A drive circuit for supplying drive current to a laser used for illuminating an optical disk at a first relatively high power level for writing data onto said disk and a second relatively low power level for reading data stored on said disk, said drive circuit capable of rapidly switching current levels to drive said laser at the alternate power levels, said circuit comprising:

power reference circuit means electrically connected to said laser for establishing a reference voltage and a corresponding laser drive current for driving said laser to produce a first write level laser light power output and a second read level laser light power output;

control logic means connected to said power reference circuit means for selecting power levels for read mode or write mode;

a photodetector optically coupled to said laser for receiving light indicative of generated laser power;

a laser power servo loop electrically connected to said photodetector and to said power reference circuit means for summing a voltage proportional to the output of said photodetector with said reference voltage to obtain an error voltage, said loop including means for altering said laser current in response to said error voltage to modify the production of light to eliminate said error voltage;

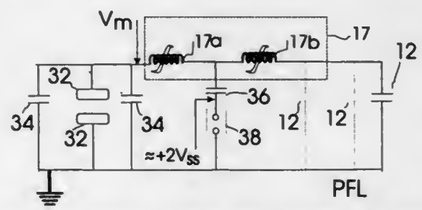
transient compensation current generating means for eliminating temporary alterations of the drive current level when switching between said power levels, said transient compensation current generating means connected to said servo loop for receiving a voltage proportional to said error voltage and for producing a compensation current level in response to said error voltage, said compensation current connected to modify said laser current to eliminate said temporary alterations.

5,309,462

MAGNETIC SPIKER GAS LASER EXCITATION CIRCUIT

Rod S. Taylor, Gloucester, and Kurt E. Leopold, Carp, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Feb. 17, 1993, Ser. No. 18,553
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **19 Claims**



1. A circuit for exciting a laser having a chamber for receiving a gas, the chamber having electrodes therein, comprising:

main energy storage means for storing electrical energy for the operation of the laser, the main energy storage means having a first terminal and a second terminal;

energy transfer means in the form of saturable inductive elements connected in series coupling the first terminal of the main energy storage means with one of the electrodes, and for transferring the electrical energy thereto in the form of a discharge voltage pulse; and,

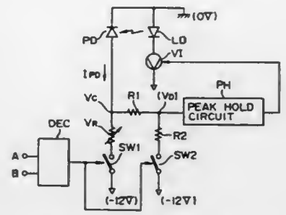
switching means in series with a secondary energy storage means connected between the saturable inductive elements and connected in parallel with the main energy storage means and the electrodes, the switching means operable in one mode to allow the passage of current and operable in another mode to prevent the passage of current across the switching means.

5,309,463

LASER DRIVING CIRCUIT

Toshio Kasai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,522
Claims priority, application Japan, Feb. 26, 1992, 4-017319[U]
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—38 **9 Claims**



1. A laser driving circuit for driving a laser diode, an intensity of a laser beam emitted by said laser diode depending upon en electrical current flowing through said laser diode, said laser driving circuit comprising:

current source means for generating an electrical current to flow through said laser diode, said current source means varying said electrical current in accordance with a voltage applied thereto;

means for applying voltage to said current source means in accordance with the intensity of said laser beam emitted by said laser diode;

a variable resistor member connected to said voltage applying means for varying said voltage applied to said current source means; and

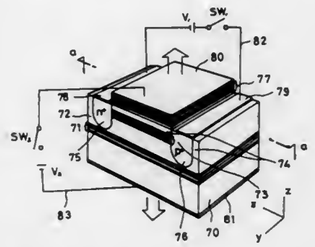
at least one fixed resistor member selectively connected in parallel with said variable resistor member for dividing said voltage varied by said variable resistor member at a predetermined ratio.

5,309,464

SEMICONDUCTOR LASER AND METHOD FOR MANUFACTURING THE SAME

Hyun C. Ko, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 5, 1992, Ser. No. 956,419
Claims priority, application Rep. of Korea, Oct. 5, 1991, 17459/1991
Int. Cl.[5] H01S *3/18*
U.S. Cl. 372—43 **30 Claims**



1. A semiconductor laser comprising:

a semiconductor substrate;

a back reflection layer disposed over the semiconductor substrate;

a first clad layer disposed over the back reflection layer;

an active layer disposed over the first clad layer, the active

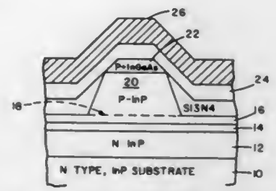
VOL 1162 ISS 1 MY 3 1994 UMI

layer having a width smaller than that of the first clad layer;
a second clad layer formed over the active layer, the second clad layer having a flat upper surface and a width substantially identical to that of the first clad layer;
a front reflection layer disposed over the second clad layer;
a first impurity diffusion region of a first conductivity type extending from an upper surface of the second clad layer to a predetermined depth portion of the first clad layer, the first impurity diffusion region being in contact with a first side portion of the active region;
a second impurity diffusion region of a second condutivity type extending from an upper surface of the second clad layer to a predetermined depth portion of the first clad layer, the second impurity diffusion region being in contact with a second portion of the active region;
a first electrode adapted to oscillate laser beams and disposed over an upper surface of the first conductivity type impurity diffusion region;
a second electrode adapted to oscillate laser beams and disposed over an upper surface of the second conductivity type impurity diffusion region;
a third electrode adapted to discharge laser beams and disposed over the front reflection layer; and
a fourth electrode adapted to discharge laser beams and disposed beneath a bottom surface of the semiconductor substrate.

5,309,465
RIDGE WAVEGUIDE SEMICONDUCTOR LASER WITH THIN ACTIVE REGION

Arsam Antreasyan, Hopewell Junction, N.Y.; Greg Costrini, Austin, Tex., and Peter D. Hoh, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1992, Ser. No. 972,049
Int. Cl.[5] H01S *3/18*
U.S. Cl. 372—43 **4 Claims**

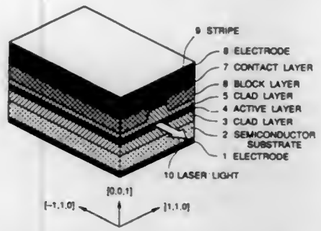


1. A semiconductor ridge waveguide structure comprising:
a semiconductor substrate
a buffer layer disposed on said substrate,
a thin active layer composed of InGaAsP of substantially 1100 angstrom thickness disposed on said buffer layer for spreading the field distribution of higher order laser modes in the vertical direction, and
a layer composed of InP disposed on said active layer having a ridge portion thereon, and a contact layer disposed on said ridge portion, wherein said semiconductor substrate and said buffer layer is composed of InP doped with first type impurities and said InP layer disposed on said active layer is graded and doped with second type impurities and wherein an etch stop layer composed of InGaAsP is disposed on said graded InP layer.

5,309,466
SEMICONDUCTOR LASER

Yoshiyasu Ueno; Hiroaki Fujii, and Akiko Gomyo, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 932,940
Claims priority, application Japan, Aug. 21, 1991, 3-235450; Aug. 21, 1991, 3-235451
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **35 Claims**

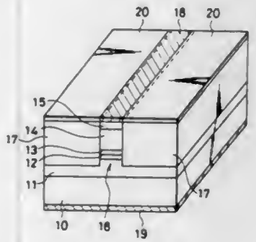


1. In a semiconductor laser including a semiconductor substrate having a surface of a (0,0,1) plane, a first clad layer formed on said surface, an active layer formed on said first clad layer, said active layer including at least a compound semiconductor layer having an ordered structure along a [−1,1,1] direction, a second clad layer formed on said active layer, and a laser resonator.

5,309,467
SEMICONDUCTOR LASER WITH INGAAS OR INGAASP ACTIVE LAYER

Tomoji Terakado, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,798
Claims priority, application Japan, Oct. 8, 1991, 3-259506
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **12 Claims**

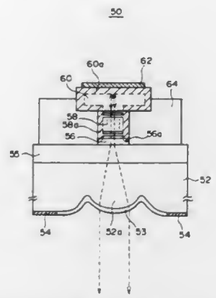


1. A semiconductor laser comprising:
a semiconductor substrate of InP:
a first cladding layer of InP formed on said substrate:
an active layer formed on said first cladding layer, said first cladding layer including at least one of an InGaAsP layer and an InGaAs layer:
a barrier layer of $In_{1-x}Al_xAs$ $(0.48<x\leqq 1.00)$ formed on said active layer; and
a second cladding layer of InP formed on said barrier layer.

5,309,468
LASER DIODE FOR PRODUCING AN OUTPUT OPTICAL BEAM IN A DIRECTION SUBSTANTIALLY PERPENDICULAR TO EPITAXIAL LAYERS

Masao Makiuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 14, 1992, Ser. No. 883,027
Claims priority, application Japan, May 15, 1991, 3-109952; Jan. 30, 1992, 4-14689
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **18 Claims**

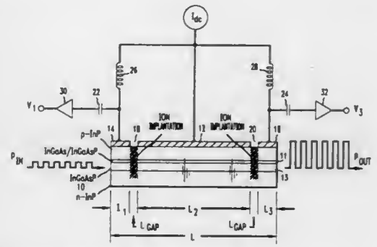


1. A laser diode for producing an optical beam in a direction substantially perpendicular to epitaxial layers, comprising:
a substrate having an upper major surface and a lower major surface, said substrate comprising a single crystal of a first semiconductor material having a first conductivity tape, said substrate being surrounded by a first side wall with a first lateral size;
an active layer having an upper major surface and a lower major surface and provided on said upper major surface of said substrate epitaxially, said active layer being surrounded by said second side wall and having a second lateral size that is substantially smaller than said first lateral size, and active layer comprising an undoped single crystal of a second semiconductor material different from said first semiconductor material and producing an optical beam by a stimulated emission, said active layer having a first refractive index;
a contact layer having an upper major surface and a lower major surface and provided on said upper major surface of said active layer epitaxially, said contact layer being surrounded by a third side wall and having a third lateral size substantially smaller than said first lateral size, said contact layer comprising a third semiconductor material different from said second semiconductor material and doped to said first conductivity type, said contact layer having a second refractive index;
optical confinement means providing on said upper major surface of said substrate in contact with said second and third side walls for confining said optical beam in said active layer and in said contact layer, said optical confinement means comprising a material that has a third refractive index that is smaller than any of said first and second refractive indices;
a convex mirror part provided on said lower major surface on said substrate to protrude outward from said substrate in a direction substantially perpendicular to said lower major surface of said substrate, said convex mirror part comprising a spherical surface for reflecting back said optical beam and concentrating the same in said active layer;
a second mirror part provided in correspondence to said upper major surface of said contact layer for reflecting back said optical beam to said active layer;
first electrode means provided on said upper major surface of said contact layer for injecting carriers of a first polarity;
second electrode means provided on said lower major surface of said substrate for injecting carriers of a second, opposite polarity; and
optical passage means provided at least on one of said spherical surface of said convex lens part and said upper major surface of said contact layer for emitting said optical beam,
said convex mirror part and said second mirror part being arranged in opposing relationship, said substrate, said active layer and said contact layer being interposed between said mirror parts so as to present a resonant cavity.

5,309,469
MONITORING OPTICAL GAIN OF SEMICONDUCTOR OPTICAL AMPLIFIER

Uziel Koren, Fair Haven, and Michael A. Newkirk, Tinton Falls, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 28, 1992, Ser. No. 967,593
Int. Cl.[5] H01S *3/133, 3/103*
U.S. Cl. 372—50 **10 Claims**



9. A semiconductor optical amplifier comprising
an input section, an output section and a middle section located between said input and output sections and including a gain medium and a continuous optical waveguide which extend through said input, middle and output sections,
means to electrically isolate said input, middle and output sections from each other,
means coupled to bias each of said three sections, and
means coupled to detect the change of voltage at the input section and output section,
wherein
said input, middle and output sections are each forward biased,
first means coupled to said input section to detect the bias potential on said input section, and
second means coupled to said output section to detect the bias potential on said output section.

5,309,470
ELECTRICAL DISTRIBUTION SYSTEM FOR SEMICONDUCTOR LASER INTEGRATED CIRCUIT

Bernard Groussin, Les Ulis, France, assignor to Thomson Hybrides, Puteaux, France

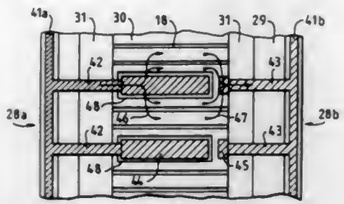
Filed Dec. 10, 1992, Ser. No. 988,758
Claims priority, application France, Dec. 10, 1991, 91 15269
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **9 Claims**

1. An electrical distribution system for a semiconductor laser integrated circuit comprising:
at least one row of lasers for emitting light beams, and comprising a plurality of laser emitter ribbons having center lines;

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two reflector strips formed perpendicular to the center lines of the laser emitter ribbons, wherein the at least one row of lasers is located between the two reflector strips;

a first conductive bus formed on a first of the two reflector strips, the first conductive bus having comb teeth inter-



leaved with the laser emitter ribbons and terminating in a first metallized area parallel to the center lines of the laser emitter ribbons; and

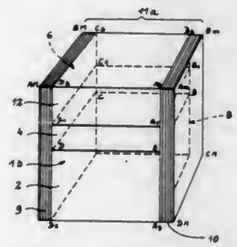
a second conductive bus formed on a second of the two reflector strips and connected to the at least one row of lasers.

5,309,471

OPTICALLY PUMPED LASER MINICAVITY, ITS PRODUCTION PROCESS AND LASER USING SAID CAVITY

Bernard Chambaz, Seyssins; Isabelle Chartier, Grenoble; Bernard Ferrand, Voreppe, and Denis Pelenc, Fontaine, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 10, 1992, Ser. No. 988,461
Claims priority, application France, Dec. 16, 1991, 91 15590
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—92 **20 Claims**



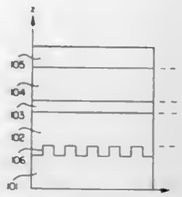
1. A solid, electrically insulating laser emitting minicavity having a paralellepipedic shape, and a light guiding structure comprising two polished, parallel lateral faces (**6**, **8**), a monocrystalline substrate (**2**) and a plurality of monocrystalline layers (**4**, **12**, **14**) epitaxied one on top of the other on the substrate and having in directions parallel to said faces a hardness equal to that of the substrate, the substrate and the epitaxied layers each being non-cleavable, one of the layers constituting a guide layer (**4**, **14**) able to guide pumping light and light emitted by the minicavity and having a refraction index higher than that of adjacent materials (**2**, **4**, **12**) and another layer (**12**) constituting a non-guiding protective layer, the protective layer and the substrate constituting two opposite faces of the minicavity perpendicular to said lateral faces, laser activating ions being contained within the substrate, one of the epitaxied layers, or both the substrate and one of the epitaxied layers.

5,309,472

SEMICONDUCTOR DEVICE AND A METHOD FOR PRODUCING THE SAME

Hiroaki Kudo; Kazuhiko Inoguchi; Satoshi Sugahara, and Haruhisa Takiguchi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 24, 1992, Ser. No. 903,785
Claims priority, application Japan, Jun. 24, 1991, 3-151546
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—96 **46 Claims**



1. A semiconductor device, comprising:

a multiple layer structure including an active layer which is substantially flat, a first semiconductor layer and a second semiconductor layer adjacent to each other, the semiconductor layers having a corrugation at an interface therebetween; and

generating means which is connected to the multiple layer structure,

wherein an electromagnetic field intensity distribution is generated by use of the generating means in a waveguide region including the active layer,

wherein the corrugation is formed outside an area which has the electromagnetic field intensity distribution, and

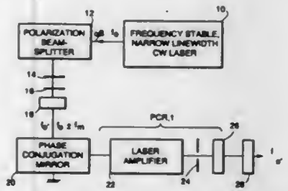
wherein the active layer includes a gain distribution having a distribution pattern corresponding to the corrugation.

5,309,473

PULSED, FREQUENCY STABLE, NARROW LINEWIDTH MASTER OSCILLATOR AND PHASE CONJUGATION MIRROR THEREFOR WITH SEMICONDUCTOR MATERIAL HAVING BANDGAP FOR NONLINEAR RESONANCE

Kotik K. Lee, Colorado Springs, Colo., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 28, 1992, Ser. No. 952,551
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—99 **18 Claims**



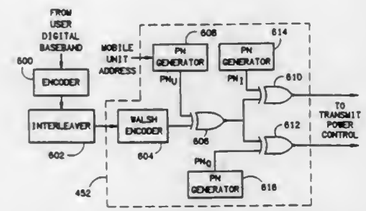
1. An improved phase conjugation mirror for use in a phase conjugation resonator, the improvement comprising said phase conjugation mirror being comprised of a semiconductor material having a characteristic bandgap energy near and at least as great as the absorption bandgap edge for the coherent optical signal whereby a nonlinear resonance enhancement for a coherent optical signal incident thereon is provided.

5,309,474

SYSTEM AND METHOD FOR GENERATING SIGNAL WAVEFORMS IN A CDMA CELLULAR TELEPHONE SYSTEM

Klein S. Gilhousen, San Diego; Irwin M. Jacobs, La Jolla; Roberto Padovani; Lindsay A. Weaver, Jr., both of San Diego; Charles E. Wheatley, III, Del Mar, and Andrew J. Viterbi, La Jolla, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 543,496, Jun. 25, 1990, Pat. No. 5,103,459. This application Mar. 27, 1992, Ser. No. 858,781
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **45 Claims**



34. A communication system in which a plurality of remote user stations communicate with other user stations, via a radio link with a base station, said communication system comprising:

a base station having base station transmission means for communicating user station information signals to intended recipient remote user stations, said base station transmission means comprising:

(a) pilot channel signal generator means for generating as a pilot signal an orthogonal function signal according to a first Walsh function selected from a set of Walsh functions;

(b) at least one communication channel signal generator means each for receiving a respective user station information signal each intended for a different one of said remote user stations, generating an additional Walsh function signal according to an additional Walsh function selected from said set of Walsh functions wherein each additional Walsh function is different from said first Walsh function, combining each additional Walsh function signal with said respective user station information signal to produce a respective communication channel signal;

(c) base station spreading means for receiving said pilot signal and each communication channel signal, generating a base station pseudorandom noise (PN) signal of a first predetermined PN code, combining said PN signal with each of said pilot channel and communication channel signals to produce corresponding base station PN spread pilot and communication signals; and

(d) base station transmission means for receiving and modulating said base station PN spread pilot and communication channel signals upon a base station carrier signal and transmitting said modulated base station carrier signal as a base station communication signal;

said base station having base station reception means for receiving and extracting from each remote user station transmitted remote user station communication signal a corresponding remote user station information signal destined for intended recipient user stations;

at least one remote user station each having remote user station transmission means for communicating remote user station information signals to said base station, said remote user station transmission means comprising:

(a) orthogonal function encoder means for, receiving an input remote user station information signal, converting sequential portions of said input signal into respective Walsh function signal portions wherein each Walsh function signal portion is according to a Walsh function selected from a plurality of Walsh functions according to a value of said respective portions of said input remote user station information signal, and providing an output of said Walsh functions functions function signal portions;

(b) remote user station spreading means for, receiving each of said Walsh function signal portions, generating a remote user station pseudorandom noise (PN) signal of a second predetermined PN code, combining said Walsh function signal portions with said remote user station PN signal so as to produce a remote user station PN spread signal; and

(c) remote user station transmission means for receiving and modulating said remote user station PN spread signal upon a remote user station carrier signal and transmitting said modulated remote user station carrier signal as a remote user station communication signal; and

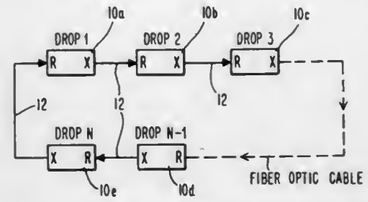
said at least one remote user station each having remote user station reception means for receiving and extracting from said base station communication signal said user station information signal intended for each respective remote user station.

5,309,475

DATA INTERCHANGE NETWORK

Janusz W. Dzieduszko, Coral Springs, Fla., assignor to ABB Power T&D Company Inc., Blue Bell, Pa.

Filed Oct. 1, 1991, Ser. No. 709,711
Int. Cl.[5] H04B *7/17*
U.S. Cl. 375—3 **19 Claims**



1. A drop or node for use in a data interchange network, comprising:

(a) receiver means for receiving a first encoded data signal and providing an output signal (RX);

(b) clock recovery means, coupled to said receiver means, for recovering a clock signal (RC) from said output signal RX;

(c) data decoder means, coupled to said receiver means and said clock recovery means, for providing a received data signal (RD) on the basis of said output signal RX and said clock signal RC, said received data signal RD indicative of data encoded in said encoded data signal;

(d) pulse width distortion (PWD) correction means, coupled to said receiver means, for at least partially correcting for any pulse width distortion in said output signal RX and providing a PWD-corrected signal;

(e) encoder means for providing a transmit data signal (XD) on the basis of data to be transmitted (TD) and an externally generated transmit data clock signal (XC);

(f) transmitter means for transmitting a second encoded data signal on the basis of an input signal; and

(g) select means, coupled between said encoder means, PWD correction means and transmitter means, for selectively providing one of either said PWD-corrected signal or said transmit data signal XD as said input signal to said transmitter means.

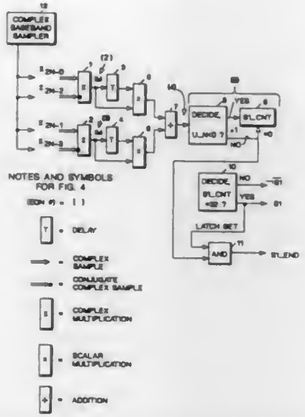
VOL 1162 ISS 1 MY 3 1994 UMI

5,309,476

AUTOMODE SIGNAL DETECTION IN FULL DUPLEX MODEMS

Jack T. Murray, Raleigh, N.C.; Gottfried Ungerboeck, Langnau, Switzerland, and Malcolm S. Ware, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 26, 1991, Ser. No. 766,881
Int. Cl.[5] H04L *5/16*
U.S. Cl. 375—8 6 Claims



1. In a currently receiving modem a method of detecting a received Consultative Committee of Internal Telephone and Telegraph (CCITT) S1 standard modem identification signal sequence being sent by a currently sending modem, comprising steps of:

Complex sampling of amplitude of received baseband signals at a rate of twice a carrier modulation rate to yield four consecutive samples x_{2n-0}, x_{2n-1}, x_{2n-2}, and x_{2n-3} of the form:

$$x_k(S1) = \frac{1}{\sqrt{2}}\left(1 + j\cos\left(\frac{\pi}{T}\tau + k\frac{\pi}{2}\right)\right)e^{j\phi},$$

where τ and ϕ may be an arbitrary value of a sampling phase and carrier phase, respectively, n is an integer, k is an integer having range from 0 to n and T is a modulation interval;

Forming a sum u_n in accordance with $u_n = v_{cos,n}v_{cos,n-1} + v_{sin,n}v_{sin,n-1}$ where $v_{cos,n}$ is

$$v_{cos,n} = Im\{x_{2n-0}\,x^*_{2n-2}\} = \left(\cos\left(\frac{\pi}{T}\tau\right)(-1)^n\right),$$

and $v_{sin,n}$ is

$$v_{sin,n} = Im\{x_{2n-1}\,x^*_{2n-3}\} = \left(\sin\left(\frac{\pi}{T}\tau\right)(-1)^n\right),;$$

Counting an arbitrary number of consecutive occurrences of a value of said sum being less than 0 as indicative of reception of said signal sequence; and

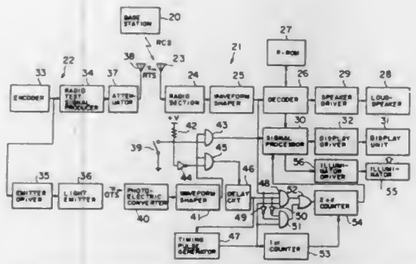
Establishing full duplex communications with said currently sending modem by sending one or more start-up sequences.

5,309,477

MEASUREMENT OF RECEIVER SENSITIVITY OF A RADIO COMMUNICATION APPARATUS BY RADIO AND OPTICAL TEST SIGNALS

Daisuke Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,233
Claims priority, application Japan, Sep. 13, 1991, 3-235131
Int. Cl.[5] H04B *3/46*
U.S. Cl. 375—10 9 Claims



1. A radio communication apparatus for receiving a radio communication signal carrying a communication digital data signal and a radio test signal carrying a test digital data signal, said radio communication apparatus including:

radio digital data recovering means for recovering said communication digital data signal from said radio communication signal and said test digital data signal as a first digital data signal from said radio test signal;

wherein:

said radio communication apparatus is for receiving an optical test signal carrying said test digital data signal;

said radio communication apparatus comprising:

optical digital data recovering means for recovering said test digital data signal as a second digital data signal from said optical test signal;

timing pulse generating means connected to said optical digital data recovering means for generating a timing pulse signal in bit synchronism with said second digital data signal;

comparing means connected to said radio and said optical digital data recovering means for comparing said first digital data signal with said second digital data signal bit by bit to successively produce bit coincidence pulses whenever said first and said second digital data signals are coincident with each other bit by bit;

a first counter connected to said timing pulse generating means for counting up a first count in response to said timing pulse signal from an initial value to a predetermined threshold value to produce a count stop signal when said first count is counted up to said threshold value; and

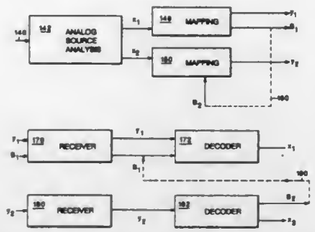
a second counter connected to said comparing means and said first counter for counting up a second count in response to said bit coincidence pulses from an initial count to an increased count until production of said count stop signal to produce a count signal which represents said increased count as a receiver sensitivity of said radio communication apparatus in relation to said communication digital data signal.

5,309,478

METHOD AND APPARATUS FOR HYBRID ANALOG/DIGITAL SIGNAL PROCESSING

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 471,532, Jan. 29, 1990, abandoned. This application Feb. 23, 1990, Ser. No. 484,928
Int. Cl.[5] H04B *15/00*
U.S. Cl. 375—58 33 Claims



29. A system for receiving a transmission signal which is a hybrid analog/digital representation of a first analog value x_1 which is representative of a first component of a source signal, the system comprising:

a circuit for receiving the transmission signal and obtaining an analog value y_1 and B_1 bit(s) of digital information representative of the first analog value x_1,

a circuit for generating a representation of first analog value x_1 by using the B_1 bit(s) of digital information and analog value y_1, wherein said analog value y_1 is related to analog value x_1 according to a mapping function, and

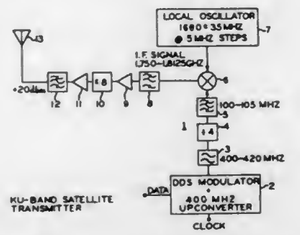
a circuit for generating said representation of a first component of a source signal based upon said first analog value x_1.

5,309,479

LOW COST KU BAND TRANSMITTER

Jonathon Cheah, La Jolla, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 29, 1991, Ser. No. 692,883
Int. Cl.[5] H04L *27/12*
U.S. Cl. 375—62 11 Claims



1. A transmitter for producing a range of high power high frequency modulated signals comprising:

a local oscillator for providing a local oscillator signal having a selectable frequency greater than the frequency bandwidth of said high frequency modulated signals;

a digital data synthesizer modulator for providing a modulated constant envelope signal in response to a data signal and a clock signal;

a heterodyne circuit connected to receive a signal from said digital data synthesizer modulator and said local oscillator signal from said local oscillator, for producing a frequency converted, intermediate frequency signal; and,

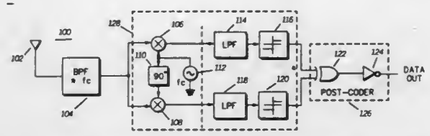
a frequency multiplier for multiplying said converted intermediate frequency signal to said high frequency modulated signals.

5,309,480

NON-COHERENT QUADRATURE DEMODULATION OF MSK SIGNALS

Clinton C. Powell, II, Boynton Beach, and Joseph Boccuzzi, Lantana, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 632,192, Dec. 21, 1990, abandoned. This application Jun. 2, 1993, Ser. No. 70,486
Int. Cl.[5] H04L *27/14*
U.S. Cl. 375—90 10 Claims



1. A radio communication device, comprising:

a receiver for receiving a minimum shift keying (MSK) modulated signal carrying a bit stream of a digital information signal having its alternate bits complemented via a pre-coder;

a quadrature demodulator for demodulating the MSK modulated signal to produce a pair of baseband quadrature demodulated signals; and

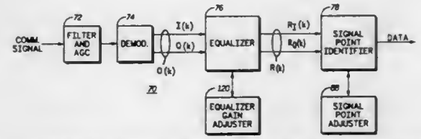
EXOR means for EXORing the pair of baseband quadrature demodulated signals for recovering the alternately complemented bits of the digital information signal.

5,309,481

APPARATUS FOR ADJUSTING SIGNAL POINTS, EQUALIZER COEFFICIENTS AND THE LIKE

Jerome J. Viviano, and Teri C. Raynor, both of Madison, Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Continuation-in-part of Ser. No. 718,459, Jun. 20, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,952
Int. Cl.[5] H04L *27/08*
U.S. Cl. 375—98 36 Claims



1. Apparatus for receiving a communication signal communicated over a communication medium, the communication signal modulated to include digital data in the form of a train of symbols based on a predetermined transmit constellation of signal points, each signal point of the transmit constellation representing a digital code, each symbol of the train having a symbol period and positioned by modulation substantially at the signal point of the transmit constellation corresponding to the digital data code intended to be represented thereby in the train, the modulated symbols of the communication signal being distortable in the communication thereof, the apparatus arranged for processing the received modulated symbols in accordance with a receive constellation of signal points to retrieve the digital data thereof, the apparatus comprising:

means for demodulating at each symbol period a modulated symbol from the received communication signal to generate a demodulator output, D(k);

means for identifying a signal point $S_n(k)$ of the receive

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constellation corresponding to D(k) based on a predetermined criteria, the signal point $S_n(k)$ being used to retrieve the digital data code of D(k); and

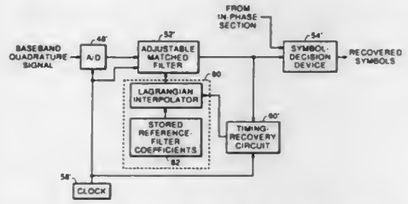
means for adjusting the signal point from its current position $S_n(k)$ to a new position $S_n(k+1)$ of the receive constellation based on the position of D(k) in relation to the current position $S_n(k)$ for use by the identifying means in identifying the signal point of the receive constellation corresponding to at least one subsequent demodulator output D(k+1) of the train.

5,309,482

RECEIVER HAVING AN ADJUSTABLE MATCHED FILTER

Andrew S. Wright; Theodorus J. Smit, and Martin C. Alcock, all of Calgary, Canada, assignors to NovAtel Communications Ltd., Calgary, Canada

Filed Mar. 30, 1992, Ser. No. 859,981
Int. Cl.[5] H04B 1/10
U.S. Cl. 375—103 **18 Claims**



1. In a receiver for receiving as its input the output of a channel driven by a transmitter that includes a transmitter band-limiting filter and applies to the channel as its input a transmitter signal that results from applying to the transmitter band-limiting filter a source signal representing symbols that occur in regularly occurring symbol periods, the receiver including a clock-signal source that generates clock signals that define regularly occurring sampling instants and additionally including a signal-processing train for processing the receiver input and extracting the symbols therefrom, the signal-processing train including analog-to-digital-conversion means, a digital filter, and decision circuitry, the analog-to-digital-conversion means being responsive to the clock signal for generating a digital conversion output representing values that a conversion input assumes at the sampling instants, the digital filter generating a filter output by filtering a filter input determined by the conversion output, and the decision circuitry extracting symbols from the filter output and generating a symbol output representative thereof, the receiver further including a timing-recovery circuit for generating a phase output indicative of the difference between the sample and symbol timing in the filter output, the improvement wherein:

A) the timing of the sampling instants defined by the clock signal is independent of that of the symbol periods;

B) the digital filter is a variable-coefficient filter, adapted to receive coefficient signals that represent filter coefficients, for generating the filter output by filtering the filter input determined by the conversion output in accordance with the filter coefficients; and

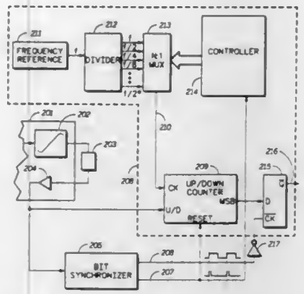
C) the receiver further includes a coefficient generator responsive to the phase output for generating and applying to the digital filter coefficient signals representing the filter coefficients that result from interpolating between predetermined reference coefficients at points determined by the relative timing that the phase output indicates, the reference coefficients defining a reference filter that, combined in a proper phase relationship with the transmitter band-limiting filter, forms a Nyquist filter therewith.

5,309,483

DATA RECOVERY DEVICE

Mark L. Oliboni; James G. Mittel, both of Boynton Beach, Fla., and Richard A. Erhart, Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 16, 1991, Ser. No. 760,657
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—106 **20 Claims**



1. A data recovery device for recovering data symbols having a period T from a received data stream, the data recovery device comprising:

means for generating a reference clock signal in response to a received channel data rate corresponding with the period T associated with a recovered data symbol;

means for generating a synchronizing pulse coupled to the means for generating the reference clock signal, the synchronizing pulse functioning to delineate a data symbol sampling period relative to the reference clock signal and corresponding with the period T associated with the recovered data symbol;

means for sampling at least one data symbol in the received data stream during the data symbol sampling period in response to the synchronizing pulse and accumulating a plurality of sample values as a weighed sample count at a rate determined by an integration envelope having the period T, the weighted sample count representing a recovered data symbol; and

means for storing the recovered data symbol from the sampling means as at least one recovered data bit.

5,309,484

METHOD AND APPARATUS FOR ASYNCHRONOUS TIMING RECOVERY USING INTERPOLATION FILTER

Peter J. McLane, Kingston, Canada; Sangil Park, and Dion M. Funderburk, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 1, 1992, Ser. No. 939,286
Int. Cl.[5] H04L 7/04
U.S. Cl. 375—106 **20 Claims**

1. A method for timing recovery in asynchronous data communication systems, comprising the steps of:

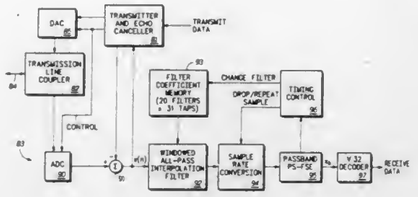
sampling an input signal at a first data rate to provide a plurality of sampled input signals;

interpolating each sampled input signal according to a selected one of a predetermined number of finite impulse response (FIR) filters to provide a plurality of interpolated samples;

sensing a positive difference between said first data rate and a second data rate and periodically dropping corresponding ones of said plurality of interpolated samples and providing a plurality of output samples at said second data rate in response thereto;

sensing a negative difference between said first data rate and said second data rate and periodically repeating corresponding ones of said plurality of interpolated samples and providing said plurality of output samples at said second data rate in response thereto;

selecting a subsequent one of said predetermined number of



FIR filters in response to either sensing said positive difference or sensing said negative difference for a second predetermined number of times; and

recovering said second data rate from said plurality of output samples.

5,309,485

CORE AUTOMATED MONITORING SYSTEM

Fred Chia-Chi Chao, Saratoga, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jul. 6, 1992, Ser. No. 909,343
Int. Cl.[5] G21C 7/36
U.S. Cl. 376—215 **11 Claims**

1. A core automated monitoring system (CAMSYS) comprising:

a nuclear reactor including a reactor pressure vessel containing a nuclear reactor core for boiling water in said vessel to generate steam;

a plurality of monitors for monitoring operation of said nuclear reactor, each monitor providing a signal for a respective monitoring parameter; and

a CAMSYS computer including:

a database containing predetermined setpoints for said monitoring parameters;

means for identifying abnormal and normal behavior of said monitoring parameters based on said database;

means for determining cause of abnormal behavior of said monitoring parameters including predetermined artificial intelligence rules associated with each, primary one, of said monitoring parameters for determining said abnormal behavior cause based on performance of preselected related, secondary, ones of said monitoring parameters; and

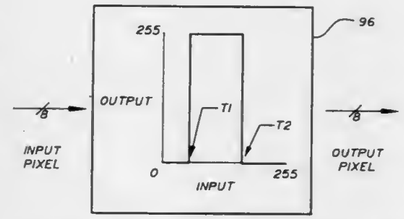
means for determining a control parameter to mitigate said monitoring parameter abnormal behavior.

5,309,486

NON-CONTACT FLAW DETECTION FOR CYLINDRICAL NUCLEAR FUEL PELLETS

John C. Lichauer, Monroeville; Lawrence J. Zana, Hampton Township, Allegheny County; Nicola G. Arlia, Bellevue; John M. Beatty, Murrysville, all of Pa., and Hassan J. Ahmed, Irmo, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 12, 1992, Ser. No. 975,050
Int. Cl.[5] G21C 17/00
U.S. Cl. 376—248 **13 Claims**



1. A method for non-contact flaw detection for cylindrical nuclear fuel pellets, comprising the steps of:

transporting a succession of the pellets substantially continuously along a path while rotating the pellets about a longitudinal axis of the pellets and advancing the pellets along the longitudinal axis;

illuminating the workpieces at an inspection area;

recording a plurality of line scans for at least a subset of the pellets and digitizing the line scans to define a pixel data image having successive lines in which individual pixels are displaced by an offset from adjacent pixels on the pellets recorded in next and previous said line scans, the offset corresponding to an extent of said rotating and advancing;

processing values of pixels in the image to define an average value, a high threshold and a low threshold, the high and low thresholds being within a predetermined range of the average value, and comparing the values of the pixels to said high and low thresholds to generate an image map of pixels as a result of said comparing;

associating pixels in the binary image map to cancel said offset;

applying at least one convolution matrix to a region of interest in the image map, the convolution matrix having a two-dimensional series of factors applied to each pixel in the region of interest for generating a resulting pixel matrix, said factors being chosen for at least one of deemphasizing isolated pixels falling outside the thresholds and enhancing contrast along the edge of the pellets;

determining at least one of parameters including a total number of pixels outside the thresholds, and at least one dimension of a blob of neighboring pixels outside the thresholds;

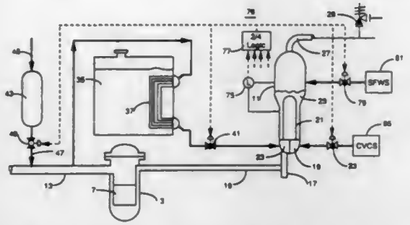
locating in the pixels in the binary image map, as associated to cancel said offset, pixels at an edge of the pellets;

matching the pixels in the binary image map with a nominal contour for the edge of the pellets; and,

selecting and rejecting the workpieces as a function of said parameters and said matching of the pixels to the nominal contour.

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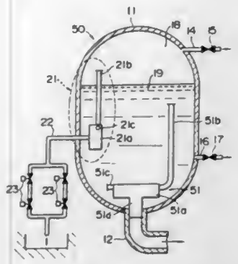
5,309,487
MITIGATION OF STEAM GENERATOR TUBE RUPTURE IN A PRESSURIZED WATER REACTOR WITH PASSIVE SAFETY SYSTEMS
Daniel J. McDermott, Export; Kenneth J. Schrader, Penn Hills, and Terry L. Schulz, Murrysville Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 24, 1992, Ser. No. 903,683
Int. Cl.[5] G21C *15/18, 17/035*
U.S. Cl. 376—250 **12 Claims**



1. In a pressurized water reactor having a reactor core within a reactor vessel, a steam generator having a plurality of heat transfer tubes, a reactor coolant system circulating reactor coolant through said reactor core and said heat transfer tubes of said steam generator under pressure in a primary loop, a pressurizer maintaining reactor coolant pressure in said primary loop, a turbine generator, a feed water supply system supplying feed water to said steam generator which covers said heat transfer tubes and is converted to steam which in turn is circulated to said turbine generator in a secondary loop through a steam line near the top of the steam generator, steam generator level indicating means measuring feed water level in said steam generator, and safety systems maintaining cooling of said reactor core and including a passive heat removal system comprising a cold coolant storage tank, a heat exchanger immersed in said cold coolant storage tank, and first piping with first valve means which when opened diverts reactor coolant in said primary loop through said heat exchanger to remove decay heat, the improvement comprising steam generator heat transfer tube rupture mitigation means comprising means responsive to a selected high level of feed water in said steam generator as measured by said steam generator feed water level indicating means to open said first valve means.

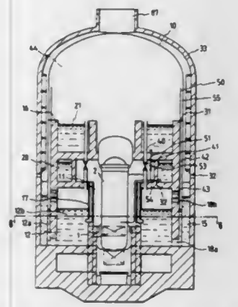
5,309,488
EMERGENCY REACTOR COOLANT ACCUMULATOR
Tsuyoshi Matsuoka, Tokyo, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 26, 1992, Ser. No. 965,951
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—282 **8 Claims**

8. An emergency reactor coolant accumulator for a primary reactor having a primary reactor cooling loop comprising:
an accumulator tank having a bottom potion;
an accumulator coolant injection pipe connected between said bottom portion of said accumulator tank and said primary reactor cooling loop;
a check valve in said accumulator coolant injection pipe for controlling flow of emergency reactor coolant in said accumulator to said primary reactor cooling loop;
a gas damper in said tank;
a vortex fluid diode in said tank;
a lower outlet for said vortex fluid diode communicating with said coolant injection pipe;
a vertical pipe having a lower end connected to said vortex fluid diode and an upper end communicating with said accumulator coolant in said tank; and
a gas release line disposed lustier of said accumulator tank and having on end extending into and connected to said



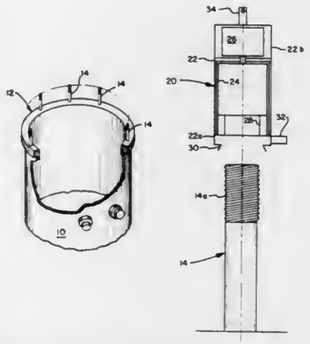
damper for conducting pressurized gas in said accumulator outside of said tank.

5,309,489
NUCLEAR REACTOR WITH COOLING APPARATUS AND METHOD
Hitoshi Tate; Kenji Tominaga, and Tadashi Fujii, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 19, 1992, Ser. No. 854,465
Claims priority, application Japan, Mar. 20, 1991, 3-057093
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—299 **20 Claims**



18. A nuclear reactor arrangement for a nuclear power generation plant, comprising:
a reactor container having a first space for housing a gas disposed in an upper portion thereof and a second space disposed in a lower portion thereof;
an internal structure arranged in the reactor container, said second space being separated from the first space by the internal structure;
a reactor core for heating a power transfer fluid to generate electric energy;
a pressure vessel surrounding the reactor core and arranged in said second space;
wherein the internal structure includes a pressure suppression chamber surrounding the pressure vessel, the pressure suppression chamber comprising a liquid phase portion holding cooling water and a vapor phase portion interfacing the liquid phase portion;
vent passages for supplying a condensed steam, discharged into the second space from the pressure vessel, into the liquid phase portion of the pressure suppression chamber;
a first gas guide structure forming a downward path for supplying the gas from the first space into the vapor phase portion;
a second gas guide structure forming an upward path for supplying the gas, after being heated by the cooling water in the liquid phase portion, into the first space from the vapor phase portion;
a duct arranged outside of the reactor container for cooling a wall of the reactor container; and
wherein said first and second gas guide structures positively guide the gas to flow in respective predetermined guide paths in the event of an accident causing disruption of the reactor operations with said gas effecting a cooling circulation powered by decay heat from the reactor core.

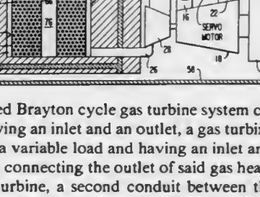
5,309,490
REMOTE STUD CLEANER
Bengt I. Bayersten, Simsbury, Conn., assignor to Combustion Engineerign, Inc., Windsor, Conn.
Filed Nov. 12, 1991, Ser. No. 790,843
Int. Cl.[5] G21C *19/42*
U.S. Cl. 376—310 **6 Claims**



1. A device for cleaning threaded studs on a nuclear reactor pressure vessel comprising:
a right cylindrical housing;
a right cylindrical brush holder telescopically and rotatably carried within said housing;
an annular brush disposed on the inner surface of said brush holder, proximate an end thereof, said brush being adapted for telescopic engagement with the threaded portion of a stud;
motor means for rotating said brush holder relative to said housing; and
lifting means for attaching said housing to a crane or hoist.

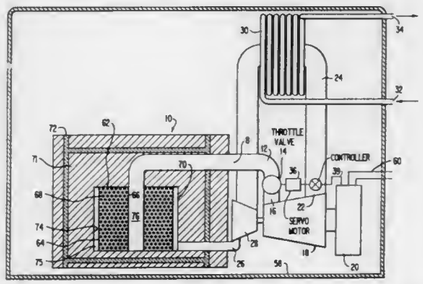
5,309,491
FUEL ASSEMBLY WITH SECURED ROD ENDS AT THE FOOT
Hans-Joachim Lippert, Höchstadt, and Werner Meier, Kunreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 18, 1993, Ser. No. 33,590
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029539
Int. Cl.[5] G21C *3/30*
U.S. Cl. 376—364 **18 Claims**

1. A fuel assembly for a boiling water reactor, comprising:
a) a cluster of mutually parallel fuel rods;
b) a fuel assembly channel laterally surrounding said cluster of fuel rods and having open upper and lower ends;
c) a top plate covering said open upper end of said fuel assembly channel and having coolant outlets formed therein;
d) a foot part having an upper edge being inserted into said open lower end of said fuel assembly channel, and a base plate having coolant inlets formed therein, adjoining said edge and covering said open lower end of said fuel assembly channel;
e) at least one coolant pipe being disposed between and parallel to said fuel rods and having a lower end with a lower end piece having an opening formed therein for coolant;



f) said lower end of said coolant pipe and said base plate each having at least one connecting part with profiles being adapted to one another and forming a releasable connection of said end piece and said base plate; and
g) a securing bolt engaging in both of said connecting parts for locking said releasable connection.

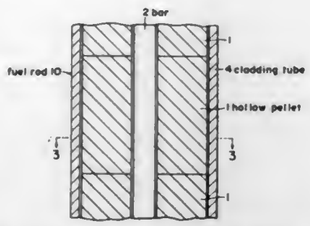
5,309,492
CONTROL FOR A CLOSED CYCLE GAS TURBINE SYSTEM
Rodney M. Adams, Annapolis, Md., assignor to Adams Atomic Engines, Inc., Tarpon Springs, Fla.
Filed Apr. 15, 1993, Ser. No. 46,174
Int. Cl.[5] G21C *15/00*
U.S. Cl. 376—381 **8 Claims**



1. In a closed Brayton cycle gas turbine system comprising a gas heater having an inlet and an outlet, a gas turbine drivingly connected to a variable load and having an inlet and an outlet, a first conduit connecting the outlet of said gas heater with the inlet of said turbine, a second conduit between the outlet of said turbine and the inlet of said gas heater, a compressor for compressing gas in said second conduit and delivering said gas to the inlet of said gas heater, and a gas cooler in said second conduit between said compressor and the outlet of said turbine, the improvement comprising an adjustable throttle valve in said first conduit between the outlet of said gas heater and the inlet of said turbine, said throttle valve being constructed and arranged to adjust the mass flow of gas through said valve with substantially no pressure drop or friction loss and being substantially the sole means for controlling the power output of said turbine.

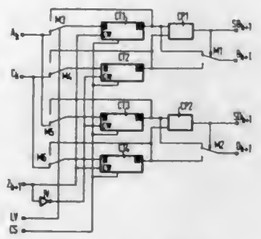
VOL 1162 ISS 1 MAY 3 1994 UMI

5,309,493
FUEL ROD FOR NUCLEAR REACTOR
Katsuichiro Kamimura; Norio Kawata, both of Mito, Japan, and Vitanza Carlo, Atomvelen, Norway, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan
Filed Jun. 30, 1992, Ser. No. 907,103
Claims priority, application Japan, Jul. 15, 1991, 3-173731
Int. Cl.[5] G21C *3/30*
U.S. Cl. 376—431 **5 Claims**



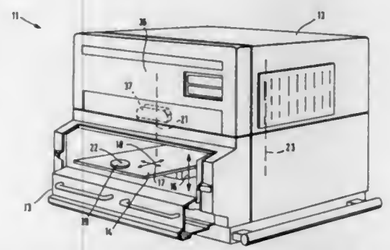
1. A fuel rod for a nuclear reactor comprising
a plurality of hollow pellets each having a hole along its central axis and made of uranium dioxide or a mixed-oxide of uranium dioxide and plutonium dioxide,
a bar made of a sintered oxide of combustible reactivity control material, said plurality of hollow pellets being spitted with said bar to form a pellet stack, and
a cladding tube in which said pellet stack is inserted and sealed.

5,309,494
CIRCUIT CONFIGURATION FOR GENERATING LOGICAL BUTTERFLY STRUCTURES
Udo Grehl, München, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 26, 1992, Ser. No. 967,680
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135318
Int. Cl.[5] H03K *21/02, 21/08;* **H03M** *13/00*
U.S. Cl. 377—39 **4 Claims**



1. A circuit configuration, comprising:
k linking cells each generating one of k output states from two of k input states;
each of said linking cells having two counters;
each of said counters having a serial data input, a serial data output, and a serial counting width input, and said counters increasing a counter state loaded through the data input and representing the respectively assigned input state by a value input through the counting width input;
comparators each being connected to the data outputs of two of said counters for serially comparing the two counter states with one another;
multiplexers each being connected to the data outputs of two of said counters for outputting one of the two counter states as an output state under the control of said comparator; and
further multiplexers, each two of said further multiplexers being connected upstream of said respective counters and being switched through for loading the counter states with the respectively assigned input states and for comparing the counter state at the data outputs with the counter states at the data inputs of said respective counters.

5,309,495
POSITIONING DEVICE FOR AN X-RAY THICKNESS MEASURING SYSTEM
Helmut Fischer, 7032 Sindelfingen 6, Industriestr. 21, Fed. Rep. of Germany
Filed Mar. 18, 1992, Ser. No. 853,492
Int. Cl.[5] G01B *15/02*
U.S. Cl. 378—89 **13 Claims**

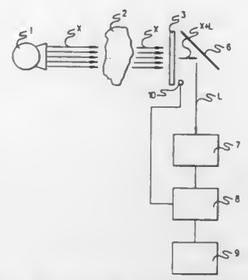


1. A measuring system having a device for positioning a measurement object relative to an x-ray beam for measuring the thickness of thin layers in accordance with the backscatter principle, comprising:
an x-ray tube for emitting x-rays along a first geometric longitudinal axis,
a proportional counter tube for receiving radiation backscatterred from said measurement object, and
a carrier for supporting said measurement object and for bringing said measurement object into said geometric longitudinal axis, wherein
a) said carrier is a tray, movable between a forward position for loading said measurement object and a rearward position at said first geometric longitudinal axis, and movable continuously up and down in said loading position at least in the 1/10 mm range,
b) an illuminating device is supported in a fixed position by said measurement system above said tray, said illuminating device projecting focused light to a target spot that lies in front of said geometric longitudinal axis by a distance by which said tray can be moved to said forward position in a translational movement from said first geometric longitudinal axis, and
c) said target spot has a height position that corresponds to the optimal height position of the spot at which said x-ray beam impinges said measurement object on said tray.

5,309,496
FILMLESS X-RAY APPARATUS AND METHOD OF USING THE SAME
Robin W. Winsor, 1439 Lake Twintree Way SE, Calgary, Alberta, Canada T2J 2X6
Filed Dec. 23, 1992, Ser. No. 995,966
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—98.2 **25 Claims**

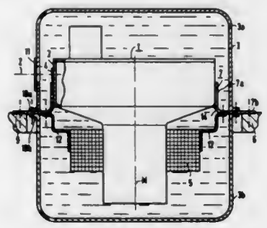
1. A filmless X-ray apparatus, comprising:
an X-ray source disposed for directing X-rays through a subject;

a fluorescent intensifying screen mounted at least partially in the path of the X-rays passing through the subject;
a mirror disposed at an oblique angle behind said fluorescent intensifying screen;
a video camera oriented at an oblique angle relative to said mirror so as to receive only a visible component of reflected radiation from said mirror;
a frame grabber operably connected for receiving a video signal from said video camera;



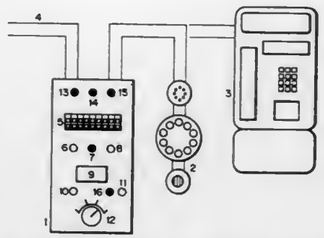
a computer operably associated with said frame grabbler for processing and enhancing an image received by said video camera; and
a photocell disposed for receiving radiation visible spectrum from said fluorescent intensifying screen and operably associated for controlling capture of images from said video camera by said frame grabber.

5,309,497
X-RAY RADIATOR HAVING AN EXTERNALLY ACCESSIBLE FASTENING MEANS
Horst Goetzl; Roland Schmidt, both of Erlangen; Hans Stroehlein, Nuremberg, and Thomas Weller, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 17, 1993, Ser. No. 18,516
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207174
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—193 **12 Claims**



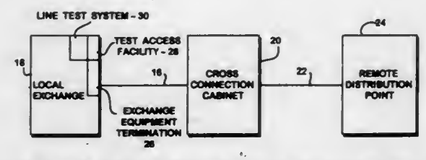
1. An x-ray radiator for use with an external mount, said x-ray radiator comprising:
a protective housing;
an x-ray tube disposed inside said protective housing, said x-ray to be generating radiation having a central ray; and
fastening means, attached to said x-ray tube and extending through said protective housing to the exterior of said housing, for providing a direct connection of said x-ray tube to said mount for fixing a position of said central ray relative to said mount.

5,309,498
MAINTENANCE UNIT FOR MODULAR PUBLIC TELEPHONE
Antonio Aragoncillo Ballestero, Madrid, Spain, assignor to Telefonica de España, S.A., Madrid, Spain
Filed Jan. 15, 1992, Ser. No. 820,929
Claims priority, application Spain, Jan. 31, 1991, 9100253
Int. Cl.[5] H04M *1/24, 17/00*
U.S. Cl. 379—21 **4 Claims**



3. A modular public telephone maintenance unit for use with a modular public telephone having condensers and interposed between a validation and identification unit and the modular public telephone, wherein the modular public telephone has an identification number, said modular public telephone maintenance unit comprising:
a telephone connection selectively connectable with a modular public telephone;
charger means connectable with the condensers of the modular public telephone for rapidly charging the condensers;
input means for selecting a number corresponding to the identification number of the modular public telephone; and
means for transmitting the identification number to the verification and identification unit.

5,309,499
COMMUNICATIONS LINE TESTING
Alan Webber, Bath, England, assignor to British Telecommunications Public Limited Company, London, Great Britain
PCT No. PCT/GB90/01718, § 371 Date May 1, 1992, § 102(e) Date May 1, 1992, PCT Pub. No. WO91/07834, PCT Pub. Date May 30, 1991
PCT Filed Nov. 8, 1990, Ser. No. 855,001
Claims priority, application United Kingdom, Nov. 8, 1989, 8925205
Int. Cl.[5] H04M *3/30*
U.S. Cl. 379—29 **20 Claims**



16. A method for conditioning spare conductive line-pairs in a communication signal distribution system so that a spare line-pair can be subsequently tested from a proximal end distribution site before being removed from its spare status and utilized by connection of its distal end for utilization, said method comprising the steps of:
connecting a respectively corresponding substantially identical test unit to the distal end of each of a plurality of spare line-pairs in a communication system and leaving said test units so-connected until a designated spare line-pair is to be utilized;

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prior to connection of the distal end of the designated spare line-pair for utilization, applying test signals to the proximal end of the designated line-pair and thereby ascertaining its operational status; and

if the designated line-pair tests as operational, then disconnecting the test unit from its distal end and re-connecting the distal end of the designated line pair for utilization.

5,309,500

APPARATUS FOR DISPLAYING TIME-OF-DAY DATA ADAPTIVELY TO DIFFERENT TIME ZONES

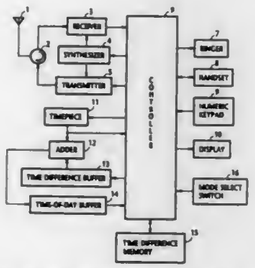
Noriko Koma, Tokyo, and Kazuaki Iguchi, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 756,656, Sep. 9, 1991, Pat. No. 5,258,964. This application Jun. 24, 1993, Ser. No. 80,516

Claims priority, application Japan, Sep. 7, 1990, 2-238480

Int. Cl.[5] H04M *11/00*; **G04C** *11/02*; **H04B** *15/00*

U.S. Cl. 379—58 **4 Claims**



1. A cellular mobile telephone set operable in a telephone mode and a time data display mode, said telephone set including a receiver for receiving area identifying codes transmitted from a cellular mobile communications system and a keypad, comprising:

a timepiece for constantly generating time-of-day data;

a memory;

write control means responsive to said receiver during said time data display mode for storing a plurality of successive time difference data entered from said keypad into said memory respectively corresponding to area identifying codes successively received by said receiver;

read control means responsive to said receiver during said time data display mode for recalling one of the stored time difference data from said memory corresponding to an area identifying code received by said receiver and modifying said time-of-day data with the recalled time difference data; and

a display for displaying the modified time-of-day data.

5,309,501

ARRANGEMENT FOR DETECTING FRAUDULENTLY IDENTIFIED MOBILE STATIONS IN A CELLULAR MOBILE TELECOMMUNICATIONS NETWORK

Jack Kozik, Naperville; Chinmei C. Lee, Woodridge, and Dennis J. Wiest, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

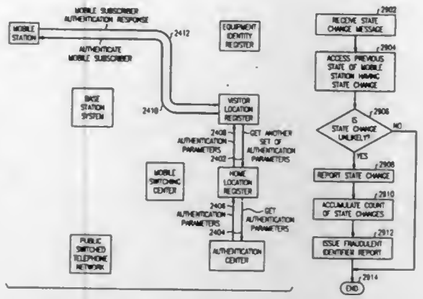
Continuation of Ser. No. 799,584, Nov. 27, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 100,644

Int. Cl.[5] H04M *11/00*; **G07D** *7/00*; **H04K** *1/00*; **H04B** *1/00*

U.S. Cl. 379—58 **18 Claims**

1. In a mobile telecommunications network comprising a mobile switching center, a method of detecting fraudulently identified mobile stations, comprising:

in said switching center, upon receipt of a call state change message from a base station system, said message reporting a state change to a present mobile station call state that is one of a plurality of selected mobile station call states, said message comprising a mobile station identifier, accessing a previous call state recorded for a mobile station having said identifier, said selected mobile station call states each representing an operational status of a mobile station, during each call said mobile station passing through a plurality of different call states during each call; and



responsive to accessing said previous call state, if a transition from said previous call state to said present mobile station call state is one of a predetermined set, reporting said transition.

5,309,502

RADIO TELEPHONE HAVING A CORDLESS OR CELLULAR ONLY MODE AND A CORDLESS/CELLULAR MODE

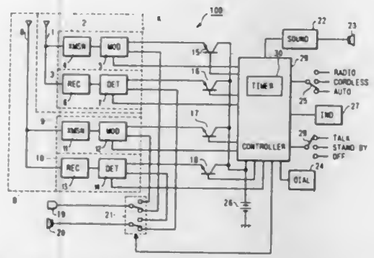
Yuji Hirai, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 31, 1991, Ser. No. 738,414

Claims priority, application Japan, Aug. 7, 1990, 2-207531

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—59 **4 Claims**



2. A combined cellular and cordless telephone device operable in (i) a cordless mode of operation for placing and receiving telephone calls through a telephone network by establishing radio communications with a dedicated local low power cordless base station and (ii) a cellular mode of operation for placing and receiving telephone calls through said telephone network by establishing radio communications with a remote cellular communications site, said telephone device comprising:

a selector for selectively operating said telephone device in an operating mode selected from: (i) a cordless only mode, (ii) a cellular only mode, and (iii) an automatic mode of operation;

call initiation means for supplying a communications start signal;

cordless availability detector means for detecting an answer signal from the cordless base station and, in response supplying a cordless detection signal indicating presence and absence of the answer signal; and

control means responsive to said operating mode, said cordless detection signal and said communications start signal for:

(i) initiating establishment of communications with the cordless base station in response to said communications start signal when said telephone device is in said cordless only mode of operation,

(ii) initiating establishment of communications with the cellular communications site in response to said communications start signal when said telephone device is in said cellular only mode of operation, and

(iii) when said telephone device is in said automatic mode,

(a) initiating establishment of communications with the cordless base station in response to said communications start signal and subsequently, in response to an indication by said cordless detection signal of absence of the answer signal,

(b) automatically initiating establishment of communications with the cellular communications site.

5,309,503

DYNAMIC CHANNEL ASSIGNMENT IN A COMMUNICATION SYSTEM

Eugene J. Bruckert, Arlington Heights, and Gerald P. Labedz, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 6, 1991, Ser. No. 802,932

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—60 **23 Claims**

19. A radiotelephone system having dynamic channel assignment, the radiotelephone system having a plurality of cells each having predetermined coverage areas, at least one of the cells acting as an umbrella cell having a plurality of micro-cells, at least two micro-cells having common coverage area with the corresponding predetermined coverage area of the umbrella cell, each cell and micro-cell having a base-station within its coverage area to provide radiotelephone system coverage for its corresponding coverage area, each base-station coupled to one another via a switch, the radiotelephone system comprising:

means for communicating, on a first base-station corresponding to a first micro-cell, to a subscriber unit on both an uplink and downlink path of a first channel;

means for measuring, at said first base-station corresponding to said first micro-cell, at at least a second base-station corresponding to at least a second micro-cell and at a third base-station corresponding to the umbrella cell, the quality of said uplink path of said first channel;

means for assigning said second base-station to only receive said uplink path of said first channel when said quality measured by the second base-station exceeds the quality measured by the first base-station and the third base-station; and

means for initiating, at the switch, a transfer of communication from the first base-station to the third base-station on a second channel when said relative quality assessed by the third base-station exceeds the relative quality assessed by the first base-station and the second base-station.

5,309,504

AUTOMATED IDENTIFICATION OF ATTENDANT POSITIONS IN A TELECOMMUNICATION SYSTEM

Sanford J. Morganstein, West Dundee, Ill., assignor to Syntellect Acquisition Corp., Phoenix, Ariz.

Filed Nov. 18, 1991, Ser. No. 793,843

Int. Cl.[5] H04M *3/22, 3/50*; **H04Q** *3/64*

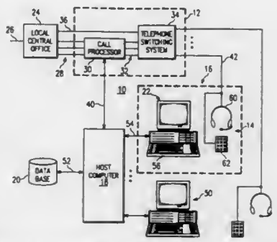
U.S. Cl. 379—67 **31 Claims**

17. A communication complex for distributing incoming calls to a plurality of attended data terminal positions, comprising:

a telephone call distribution system for receiving incoming calls and distributing the calls to respective attended audio equipment;

a data storage system for storing records associated with calling parties and causing the display of records on selected data terminal positions; and

said call distribution system including a look-up table for correlating each audio equipment with a different data terminal position, and said call distribution system is responsive to receipt of audio equipment identification information for accessing said look-up table for defining data terminal position identification information for transferral thereof to the data storage system.



28. A method for distributing incoming calls to a plurality of attendant positions having associated therewith data terminals and audio apparatus, comprising the steps of:

in response to an incoming call received by a call processor, requesting service of a switching system to cause the switching system to select an idle attendant position;

receiving by the call processor an audio indication of the identity of the selected attendant position; and

transmitting by the call processor to a data processing system an indication of a data terminal associated with the selected attendant position so that the data processing system can transmit data for display on the data terminal associated with the selected attendant position.

5,309,505

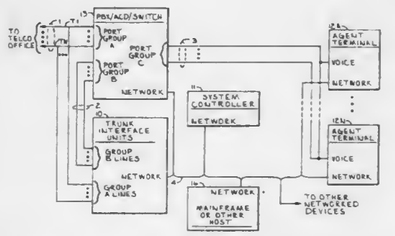
AUTOMATED VOICE SYSTEM FOR IMPROVING AGENT EFFICIENCY AND IMPROVING SERVICE TO PARTIES ON HOLD

Aleksander Szlam, Norcross, and Charles L. Warner, II, Stone Mountain, both of Ga., assignors to Inventions, Inc., Norcross, Ga.

Filed May 20, 1991, Ser. No. 703,158

Int. Cl.[5] H04M *1/274, 11/10*

U.S. Cl. 379—88 **24 Claims**



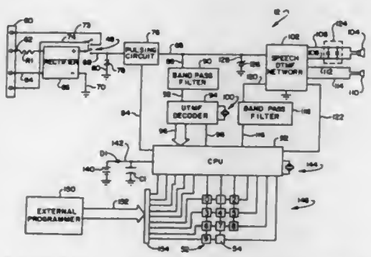
1. A method for improving agent efficiency, comprising the steps of:

(A) connecting an agent to a party on a call;

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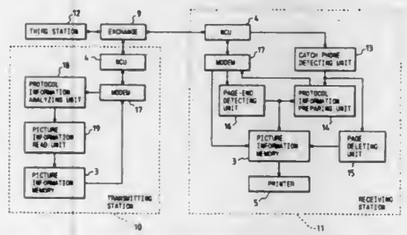
(B) sending at least a portion of available data for said party to said agent;
(C) monitoring for a request from said agent for automated handling of said call;
(D) if said request for automated handling is provided then, in response to said request, converting a word into digital signals, said word being spoken by said agent subsequent to provision of said request, disconnecting said agent from said call, converting said digital signals and previously stored digital signals into a signal form suitable for playing back to said party, said previously stored digital signals representing words spoken by said agent prior to provision of said request, and playing a message represented by said digital signals and said previously stored digital signals to said party on said call.

5,309,506
PERSONAL SERVICES TELEPHONE HANDSET AND SYSTEM
Thomas T. Alexander, Columbus, Ohio, assignor to Forerunner Corporation, Columbus, Ohio
Filed Oct. 25, 1991, Ser. No. 782,645
Int. Cl.[5] H04M *11/00, 11/04*
U.S. Cl. 379—95 **13 Claims**



1. A telephonic handset for telephonic communication through a telephone system line with service facilities having predetermined telephonic access numbers, account code data and access protocol codes, comprising:
a housing assembly including a hand held component and a hook switch, user actuable to have on-hook and off-hook states;
a microphone and a speaker mounted with said hand held component of said housing assembly for interactive sound communication with a user;
a plurality of discrete service request actuators mounted upon said housing assembly and each associated with a select one of said service facilities and manually actuable to effect derivation of a corresponding service code in an access mode and to effect derivation of a number signal in an interactive mode;
a speech and signaling network coupled with said microphone, said speaker and said telephone system line and having a DTMF input and mute function input;
a dual tone multi-frequency (DTMF) decoder network coupled with said telephone system line and having a digital output;
memory means for receiving and retaining account codes and service facility telephone numbers; and
control means coupled with said memory means, said service request actuators, said speech and signaling network, said DTMF input, said mute function input and said DTMF decoder network, responsive to a program mode input for entering a programming mode, responsive in said programming mode to an applied select service code, an applied predetermined telephonic access number, and an applied account code corresponding with said account code data for effecting their transfer to said memory means, responsive in the presence of said off-hook state to a first received service request switch service code for entering said access mode and, during said access mode, accessing said memory means for a corresponding said account code and corresponding said predetermined telephonic access number for effecting the calling and telephonic communication with a select one of said service facilities at said predetermined telephone access number, and subsequently responsive to the receipt of one of said access protocol codes from said select one of said service facilities as a said digital output from said DTMF decoder network for effecting the transmission of said account code, said control means being responsive to the transmission of said account code to enter said interactive mode and is responsive in said interactive mode to a said number signal to effect the transmission thereof to said select one of said service facilities.

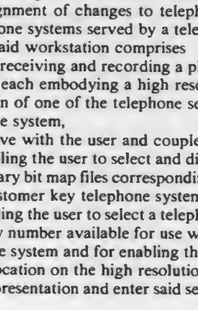
5,309,507
DATA COMMUNICATION APPARATUS FOR MAINTAINING DATA INTEGRITY DURING AN INTERRUPTION REQUEST
Ryuji Hosaka; Naoki Suto; Tomoo Fukao; Naoharu Kodo; Kazuyuki Tsukamoto, and Minoru Yoshida, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 11, 1991, Ser. No. 774,920
Claims priority, application Japan, Jan. 24, 1991, 3-022581; Feb. 6, 1991, 3-035016
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—96 **5 Claims**



1. A data communication apparatus which receives a communication in predetermined units from a remote station, comprising:
means for detecting an interruption request signal from a source different from the remote station received during receipt of the communication; and
means for transmitting communication unit resending request information to the remote station in the form of protocol information in response to detecting a signal from said detecting means upon detection of said interruption request signal without interrupting the communication.

5,309,508
APPARATUS AND METHOD FOR AUTOMATICALLY BLOCKING THE TRANSMISSION OF IDENTIFYING INFORMATION CONCERNING A TELEPHONE CALLING PARTY
Howard Rosen, 1 Lyncroft Road, Montreal, Quebec, Canada H3X 3E3
Filed Sep. 23, 1992, Ser. No. 948,595
Int. Cl.[5] H04M *1/56, 3/42, 5/00, 1/00*
U.S. Cl. 379—142 **7 Claims**

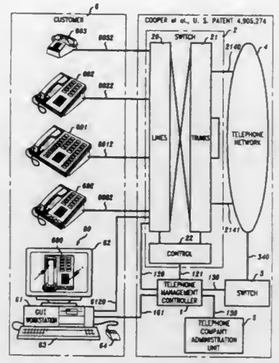
5. Apparatus for blocking the transmission of identifying information of a calling party on a telephone network, comprising;
off-hook detector means having an input and an output, said input of said off-hook detector means being connected to the telephone line of said calling party to detect an off-hook condition on said telephone line of said calling party and to provide and initiating signal on detection of said off-hook condition;
automatic dialing means having an input and an output, said automatic dialing means input being connected to said off-hook detector means output and said automatic dialing means output being connected to said telephone line of said calling party;
so that, upon receipt of said initiating signal from said off-hook detector means, said automatic dialing means dials a predetermined code and applies it to said telephone line of said calling party to thereby block the transmission of identifying information concerning said calling party;



said predetermined code being automatically dialed before the calling party dials the telephone number of a receiving party;
said predetermined code being transmitted to a computer of the telephone company which then blocks the transmission of the identifying information;
the speed of the automatic dialer being high enough so that the action of the automatic dialer is essentially transparent to said calling party;
said predetermined code being automatically dialed each time said off-hook condition is detected on the telephone line of said calling party.

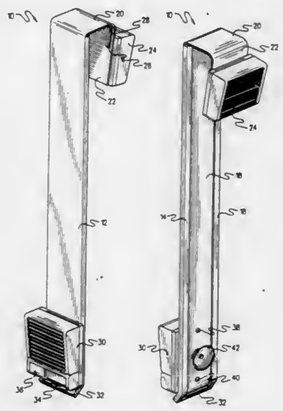
5,309,509
GRAPHICAL USER INTERFACE WORKSTATION
Sherri L. Cocklin, Englishtown; Thomas P. Orlofsky, Lincroft, both of N.J., and Tanya T. van der Heyde, Reynoldsburg, Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 27, 1992, Ser. No. 920,089
Int. Cl.[5] H04M *17/00, 3/42*
U.S. Cl. 379—165 **23 Claims**

16. A graphical user interface workstation interconnected with a telephone manager controller for controlling and implementing the assignment of changes to telephone sets of customer key telephone systems served by a telephone switching system wherein said workstation comprises
a data base for receiving and recording a plurality of binary bit map files each embodying a high resolution graphical representation of one of the telephone sets of a customer key telephone system,
means interactive with the user and coupled with said data base for enabling the user to select and display one of said recorded binary bit map files corresponding to a telephone set of the customer key telephone system,
means for enabling the user to select a telephone line, feature and directory number available for use with the customer key telephone system and for enabling the user to select a key button location on the high resolution graphical telephone set representation and enter said selected telephone line, feature and directory number into the selected key button location,
means for converting the entered key button telephone line, feature and directory number into a set of program instructions for controlling operation of the telephone manager controller, and



means responsive to said converting means and interconnecting said workstation with the telephone manager controller for transmitting said program instructions set to the telephone manager controller for use in controlling the telephone switching system to assign the user entered key button telephone line, feature and directory number to the telephone set corresponding to the high resolution graphical telephone set representation.

5,309,510
DOOR INTERCOM DEVICE
Christian H. Berndt, Calgary, Canada, assignor to Hunterwood Holdings Ltd., Calgary, Canada
Filed Sep. 4, 1992, Ser. No. 940,653
Int. Cl.[5] H04M *1/60*; H04B *3/00*
U.S. Cl. 379—167 **20 Claims**

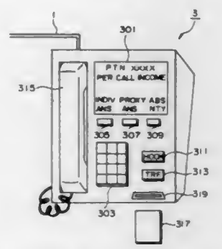


1. A door intercom device, comprising:
a mounting bracket including an interior portion adapted to be disposed on an interior face of a conventional swinging door, and an exterior portion adapted to be disposed on an exterior face of a conventional swinging door;

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a master intercom station secured to said interior portion of said mounting bracket;
a slave intercom station secured to said exterior portion of said mounting bracket;
electrical wiring operatively connecting said master and slave intercom stations; and
a protective bead portion on said mounting bracket substantially enclosing and protecting said electrical wiring to substantially prevent damage from weather, abrasion, tampering, and vandalism.

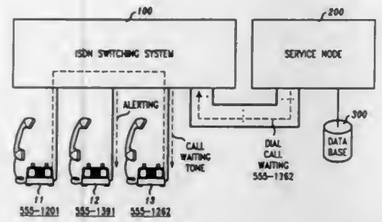
5,309,511
PERSONAL COMMUNICATION SYSTEM
Siro Kotake, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jul. 9, 1992, Ser. No. 911,665
Claims priority, application Japan, Jul. 10, 1991, 3-170230
Int. Cl.[5] H04M *3/42, 3/54*
U.S. Cl. 379—201 **4 Claims**



1. A personal communication system in which a call is originated from a calling side terminal equipment using number information allocated to a called person and the call is processed on the called side terminal equipment as a personal call, the system comprising:
absence notifying means disposed on the called side terminal equipment, for sending absence notify information to the calling side terminal equipment when a predetermined absence notify request is entered during a processing of the personal call.
personal call release means disposed on the calling side terminal equipment, for transmitting a personal call release signal to the called side terminal equipment when a predetermined personal call release request by the calling person is entered;
personal service releasing means disposed on the called side terminal equipment for allowing unspecified persons to answer the personal call when the personal call release signal is received.

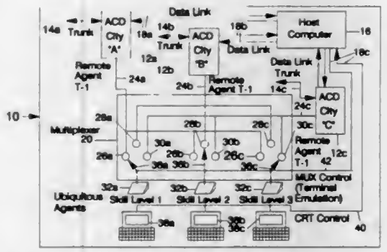
5,309,512
CALL WAITING DELUXE FEATURE
La Sheral Blackmon, Naperville; James R. Blakley, Chicago; Cheryl J. Kohn, Naperville; Brenda L. Sermersheim, Aurora; Kathleen C. Whildin, Sugar Grove, and Diane M. Zurbriggen, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 29, 1992, Ser. No. 922,439
Int. Cl.[5] H04M *3/42, 1/64, 1/56*
U.S. Cl. 379—210 **16 Claims**

1. In an arrangement comprising a switching system and a service node for specialized call processing, a method comprising
in response to an incoming call from a calling communication station to said switching system for a called communication station having a given directory number and having a call forwarding-busy line feature assigned to it by said switching system, determining whether said called station is busy on another call,
upon determining that said called station is busy on another call, forwarding said incoming call to said service node in accordance with said call forwarding-busy line feature,
in response to said forwarded incoming call, said service node effecting a search for information associated with said calling station,
said service node causing a call waiting signal to be transmitted to said called station by invoking a call waiting-originating feature of said switching system and dialing



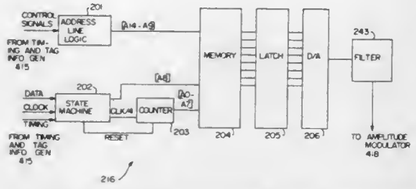
said given directory number, where said call waiting-originating feature takes precedence over said call forwarding-busy line feature,
after said call waiting signal is transmitted and in response to receipt of a predefined signal from said called station, said switching system disconnecting a communication path between a calling communication station for said another call and said called station, and
after said communication path is disconnected, said service node transmitting speech signals, generated from said information obtained during said search, to said called station.

5,309,513
TELEPHONE SYSTEM WITH UBIQUITOUS AGENTS
James D. Rose, Fayetteville, Ga., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 2, 1992, Ser. No. 907,997
Int. Cl.[5] H04M *3/00;* **H04Q** *3/64*
U.S. Cl. 379—265 **7 Claims**



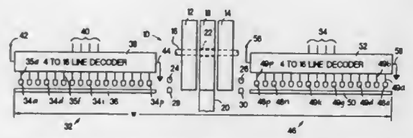
1. A telephone system, comprising:
a plurality of automatic call distributors for receiving and distributing calls in a sequential order;
multiplexer switch means being connected to each of the automatic call distributors; and
means for controlling the multiplexer switch means for connecting any of said automatic call distributors to any of a plurality of agent positions, wherein the agent positions can be served by any one of the plurality of automatic call distributors.

5,309,514
PULSE GENERATOR INCLUDING A MEMORY FOR STORING PULSES FOR MODULATION ON A CARRIER OF A TELEVISION SIGNAL
Marshall B. Johnson, Norcross, and Lamar E. West, Jr., Maysville, both of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.
Filed Jun. 1, 1992, Ser. No. 891,053
Int. Cl.[5] H04N *7/167*
U.S. Cl. 38[illegible]—10 **8 Claims**



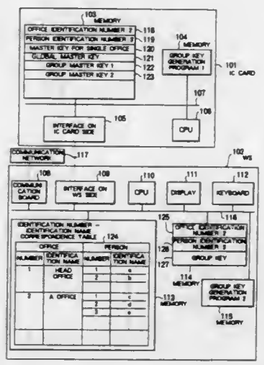
1. A pulse generator for generating pulses for modulation onto a carrier signal of a television signal distribution system, comprising:
a memory for storing one or more waveshapes defined as sequence of addressable values representing the amplitude of the waveshape as a function of time;
a selecting circuit for selecting one of the waveshapes from said memory;
a counting circuit responsive to a clock signal for generating address signals for sequentially reading the amplitude values corresponding to the selected waveshape from said memory; and
a digital to analog converter for converting the amplitude values sequentially read from said memory to an analog pulse for modulation onto the carrier.

5,309,515
CURRENCY NOTE WIDTH DETECTOR
Peter Troung, Browns Mills; Michael L. DeFeo, Runnemede, both of N.J.; Paul Hessler, Oreland, Pa.; Kenneth W. Maier, Levittown, Pa.; Martin J. Poloncarz, Oreland, Pa., and William Sherman, III, Medford, N.J., assignors to Brandt, Inc., Bensalem, Pa.
Continuation of Ser. No. 676,188, Mar. 27, 1991, abandoned.
This application May 20, 1993, Ser. No. 64,335
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—7 **20 Claims**



1. Apparatus for accurately determining the position with respect to a reference point of the edge of a document traveling along a path including a combination, a plurality of energizable light emitting devices disposed along a line extending transversely of said path from said reference point, said devices including devices at the ends of said line, common light detecting means associated with said line of devices, means mounting said devices and said detecting means on opposite sides of said path whereby a document moving along said path completely blocks light from some of said devices while leaving others completely unblocked and only partially blocking a particular device adjacent to said edge and inwardly of said devices at the ends of said line, means for sequentially energizing said plurality of devices one by one in a certain direction from said reference point, and light detecting means producing a voltage at a particular level in response to light from one of said devices in the completely unblocked condition thereof, means for detecting a deviation of said voltage from said level in response to light from said only partially blocked particular device adjacent to said edge and inwardly of said devices at the ends of said line, said detecting means producing an output upon the occurrence of said deviation, first means responsive to the output of said deviation detecting means for inhibiting further operation of said energizing means upon the occurrence of said deviation, second means responsive to said deviation detecting means for determining the percent by which said particular device is only partially blocked, by means for counting the number of completely unblocked energized devices and means for combining said number and said percent unblocked determination.

5,309,516
GROUP CIPHER COMMUNICATION METHOD AND GROUP CIPHER COMMUNICATION SYSTEM
Kazuo Takaragi, Ebina; Seiichi Susaki, Yokohama; Hiroshi Matsumoto, Sagamihara, and Tsutomu Nakamura, Takarazuka, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Chubu Software Ltd., Nagoya, both of Japan
Continuation-in-part of Ser. No. 35,956, Mar. 23, 1993, which is a continuation-in-part of Ser. No. 802,724, Dec. 5, 1991, Pat. No. 5,218,638. This application Jun. 15, 1993, Ser. No. 76,862
Claims priority, application Japan, Dec. 7, 1990, 02-400806; Jun. 15, 1992, 4-154733
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—45 **17 Claims**



1. A group cipher communication method applied to a communication system comprising a plurality of communication terminals each using an IC card and having an input/output interface to said IC card, and a communication network interconnecting said communication terminals, said IC cards being each stored with a value different for individual IC cards to specify them and with secret values constituting a plurality of master keys which are common to a predetermined subsets of said IC cards, said group cipher communication method comprising the steps of:
in one of said plurality of terminals which starts transmission,
generating a destination indicator for specifying a partner to be communicated with to transmit the destination indicator to other terminals through said communication network;
selecting one of said plurality of master keys stored in an IC card inserted in said transmission start terminal on the

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basis of said destination indicator to generate a group key by using the selected master key and performing encipherment of a transmission message to be transmitted to said destination terminal, using the selected master key to transmit an enciphered message to said communication network; and

receiving an enciphered reception message to decipher the enciphered message by using said generated group key; and

in a terminal standing for a destination in said plurality of terminals,

receiving said destination indicator from said transmission starting terminal;

selecting one of said plurality of master keys stored in an IC card inserted in said destination terminal on the basis of said destination indicator to generate a group key of destination terminal by using the selected master key;

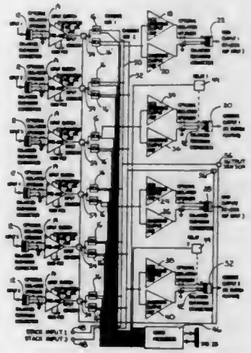
performing decipherment of an enciphered reception message by using the generated group key; and

performing encipherment of a transmission message to be transmitted to said transmission start terminal, using said destination terminal group key to transmit the enciphered transmission message to said communication network.

5,309,517
AUDIO MULTIPLEXER

Clay Barclay, Elkhart, Ind., assignor to Crown International, Inc., Elkhart, Ind.

Continuation of Ser. No. 703,029, May 17, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,498
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—119 **7 Claims**

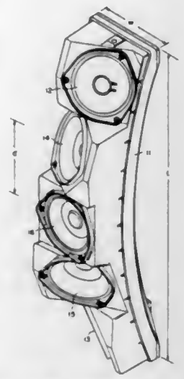


1. An audio multiplexer comprising multiple input means each for receiving an audio signal, a separate control means associated with each input means for selectively varying the volume of said audio signal received from said associated input means upon activation of the control means, computer means connected to each control means for selectively activating each control means, output means in summed association with each control means for receiving said audio signal from the controls means, and a sensing means located between each input means and control means for monitoring said audio signal into the control means, said computer means associated with each sensing means for monitoring said audio signal into each control means and causing said control means to be selectively activated to regulate the audio signal received by said associated input means.

5,309,518
MULTIPLE DRIVER ELECTROACOUSTICAL TRANSDUCING

Christopher B. Ickler, Sudbury; Morten Jorgensen, Cambridge; Kenneth D. Jacob, Saxonville, and Seiji Kawakami, Natick, all of Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Oct. 15, 1992, Ser. No. 961,397
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—188 **14 Claims**



1. A loudspeaker system comprising

a plurality of at least three loudspeaker driver assemblies each operative over a plurality of octaves in the audio frequency range and characterized by an axis and a span s,

support structure supporting said loudspeaker driver assemblies in fixed substantially contiguous relationship substantially along an arcuate surface of predetermined width with the axis of each of said driver assemblies having a component perpendicular to and a component parallel to said arcuate surface with each of said driver assemblies oriented in a prescribed direction and coacting to illuminate with sound a predetermined solid angle centered at the loudspeaker system substantially uniformly over said plurality of octaves.

5,309,519
ELECTROACOUSTIC NOVELTIES

Kyung T. Park, Berwyn, and Peter F. Radice, Upper Merion, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 255,008, Oct. 7, 1988, Pat. No. 5,115,472. This application Dec. 23, 1991, Ser. No. 812,324
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] H04R *25/00, 1/02;* **G09F** *27/00*
U.S. Cl. 381—190 **16 Claims**

1. An electroacoustic novelty, comprising:

a flexible substrate forming at least a portion of said novelty, at least a portion of said substrate having a curved, noncontinuous cross section;

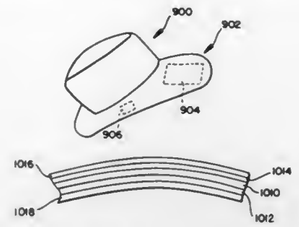
a piezoelectric polymer film having opposed first and second surfaces;

a first transparent electrode electrically coupled with said first surface;

a second transparent electrode electrically coupled with said second surface;

means for conformably adhering said film to the portion of said substrate having the curved, noncontinuous cross section; and

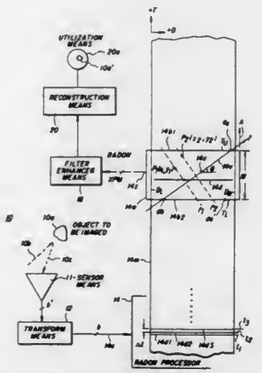
means electrically coupled with said first and second electrodes for applying an audio-frequency signal voltage across said film to cause said film and associated portion of said substrate having the curved, noncontinuous cross section to vibrate and emit sound waves.



5,309,520
SIGNAL PROCESSING SYSTEM USING RECURSIVE RADON VIDEO TRANSFORM PROCESSOR

John R. Meckley, Voorhees, N.J., assignor to General Electric Co., Morrestown, N.J.

Filed Dec. 16, 1991, Ser. No. 809,111
Int. Cl.[5] G06K *9/36, 9/64, 9/32, 15/00*
U.S. Cl. 382—41 **10 Claims**



1. An apparatus for performing a radon transform on sets of input signals, said input signals including components representing a current pixel value of a line-scanned frame and components representing the Cartesian coordinates of said current pixel, said apparatus comprising:

a memory for storing said current pixel value components of said input signal at addresses relating to the corresponding ones of said Cartesian coordinates, for thereby producing stored signals, and for reading said stored signals at a predetermined time after their storage, to thereby produce delayed signals; and

at least one window subprocessor unit, said window subprocessor unit comprising

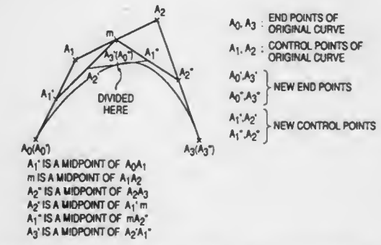
(a) summing means including first and second noninverting input ports, an inverting input port, and an output port, said first noninverting input port being coupled for receiving said current pixel value component of said input signal, said inverting input port being coupled to said memory for receiving said delayed signals therefrom, and said second noninverting input port being coupled for receiving a signal representing the current value of a radon transform value at a particular value of ρ and θ, for subtracting said delayed signals from said current pixel value signals component of said input signals, to produce a difference signal representing the difference between pixel values of a current line of said frame and pixel values of a line of said frame preceding said current line by said predetermined time, and for summing said difference signal with said current value of a radon transform value to thereby produce a summed signal at said output port; and

(b) radon transform generating means including an input port and an output port, said input port being coupled to said output port of said summing means for receiving said summed signal therefrom, for performing a radon transform thereon for said particular value of θ, to produce said current value of said radon transform value, and for applying said current value of said radon transform value to said second noninverting input port of said summing means.

5,309,521
METHOD AND APPARATUS FOR GENERATING A CHARACTER CURVE BY DIVIDING AND DEVELOPING A BÈZIER CURVE

Tadahiro Matsukawa, Nagoya, Japan, assignor to Mitsubhishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1991, Ser. No. 717,819
Claims priority, application Japan, Jun. 28, 1990, 2-168556
Int. Cl.[5] G06K *9/48;* **G06F** *15/72*
U.S. Cl. 382—22 **3 Claims**



1. An image processing method for a raster image processor in which character data indicative of display coordinates of a character curve is generated based on input data indicative of coordinates of a preset Bézier curve, said method comprising:

a first step of inputting the input data indicative of the coordinates of the preset Bézier curve into a control computer of the raster image processor, the coordinates of the input data including first and second end points of the preset Bézier curve and first and second control points defining the Bézier curve which are intermediate the first and second end points;

a second step of applying the input data from the control computer to an error calculator circuit which is configured to generate error data denoting respective distances from said first control point and said second control point to a straight line connecting said first and second end points of the preset Bézier curve;

a third step of inputting the error data generating by said error calculator circuit to said control computer and determining whether the respective distances from said first control point and said second control point to said straight line connecting said first and second end points of the preset Bézier curve fall within a preset tolerable range;

a fourth step of applying character data denoting the straight line connecting said first and second end points of the present Bézier curve from the control computer to an output display device when the respective distances denoted by the error data fall within the tolerable range;

a fifth step of applying the input data from the control computer to a curve divider circuit when the respective distances denoted by the error data fall outside the tolerable

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range, the curve divider circuit configured to generate divided curve data denoting coordinates of a first curve segment forming a Bézier curve having as end points said first end point and a common dividing point and having two intermediate control points defining the first curve segment and a second curve segment forming a Bézier curve having as end points said common dividing point and said second end point and having two intermediate control points defining the second curve segment;

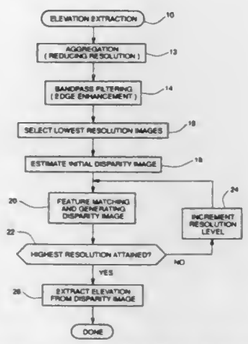
a sixth step of repeatedly carrying out in succession said second through fifth steps with respect to each curve segment denoted by the divided curve data generated by said curve divider circuit until the respective distances denoted by error data corresponding to each curve segment fall within the tolerable range.

5,309,522

STEREOSCOPIC DETERMINATION OF TERRAIN ELEVATION

Robert Dye, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Jun. 30, 1992, Ser. No. 906,554
Int. Cl.[5] G01C *3/20, 11/12;* **G06K** *9/36, 9/54*
U.S. Cl. 382—41 **7 Claims**



5. The method of extracting elevation information from a pair of stereo images of terrain comprising:

reducing the resolution of each image of a pair of stereo images;

repeating the resolution reduction step to obtain several successively lower levels of image resolution;

enhancing edges in each level of image resolution by bandpass filtering the images;

matching features of the filtered image pair at the lowest level of image resolution wherein the features have expected relative positions in the two images and elevation of a feature causes a disparity in expected positions;

determining the disparity for each matched feature and generating a disparity image from the disparity of matched features;

then matching features at successively higher levels of resolution using the disparity image generated at the next lower level of resolution to steer the search for a matched feature, and generating a new disparity image for each resolution level by filling image areas lacking a matched feature with the measured disparities of adjacent matched features to thereby approximate the disparity over the whole image; and

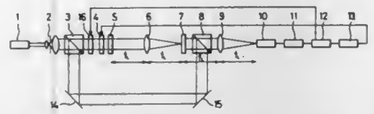
extracting elevation information from the disparity image for the highest level of resolution.

5,309,523

OPTICAL PATTERN RECOGNITION APPARATUS

Tadao Iwaki, and Yasuyuki Mitsuoka, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Continuation of Ser. No. 539,725, Jun. 15, 1990. This application Aug. 18, 1992, Ser. No. 931,893
Claims priority, application Japan, Jun. 16, 1989, 1-155224; Jun. 29, 1989, 1-167758; Sep. 22, 1989, 1-247612; Jan. 12, 1990, 2-5241; Jan. 12, 1990, 2-5246
Int. Cl.[5] G06F *15/336;* **G06K** *9/64*
U.S. Cl. 382—42 **27 Claims**



1. An optical pattern recognition apparatus for applying optical correlation processing using coherent light to a two-dimensional image so as to automatically recognize and measure a particular pattern, comprising: means for converting at least three images comprised of at least one reference image and at least one input image into a joint coherent image; means for Fourier transforming the joint coherent image to produce a joint Fourier transform image of each said reference image and each said input image; means including a spatial light modulator of the light addressed type for converting the joint Fourier transform image into an intensity distribution image and recording the same on the spatial light modulator; means for reading the image recorded in the spatial light modulator of the light addressed type by using coherent light; means for Fourier transforming the read image into a correlation image; means for converting the correlation image into correlation signals; means for processing the correlation, signals to determine a correlation coefficient between each said reference image and each said input image; and means including another spatial light modulator adjacent to a plane of each said reference image for changing the intensity of the coherent light passing through the plane of each said reference image before the joint coherent image is Fourier transformed again by the means for Fourier transforming the joint coherent image, the intensity of the coherent light being changed according to the determined correlation coefficient between each said reference image and each said input image to thereby effect correction of the correlation coefficient through feedback.

5,309,524

IMAGE REDUCING APPARATUS

Yasuji Hirabayashi, Tokyo; Mitsuru Maeda, Yokohama; Tadashi Yoshida, Ichikawa, and Akihiro Katayama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

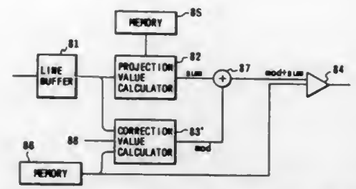
Division of Ser. No. 670,528, Mar. 18, 1991, Pat. No. 5,138,672, which is a continuation of Ser. No. 446,791, Dec. 6, 1989, abandoned. This application May 22, 1992, Ser. No. 886,945
Claims priority, application Japan, Dec. 8, 1988, 63-311692; Dec. 8, 1988, 63-311693
Int. Cl.[5] G06K *9/42*
U.S. Cl. 382—47 **11 Claims**

1. An image processing apparatus comprising:

first input means for inputting image data of an object pixel;

second input means for inputting image data of a neighboring pixel of the object pixel;

third input means for inputting reduced image data of a pixel other than the object pixel; and



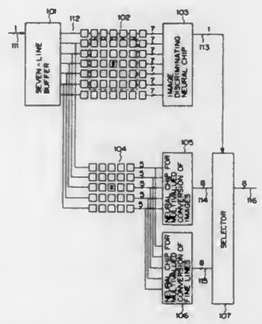
processing means for processing the image data simultaneously input by said first, second and third input means, and outputting processed data.

5,309,525

IMAGE PROCESSING APPARATUS USING NEURAL NETWORK

Yukari Shimomura, Yokohama, and Junichi Shishizuka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1991, Ser. No. 713,312
Claims priority, application Japan, Jun. 14, 1990, 2-153935; Jun. 19, 1990, 2-161901; Jun. 19, 1990, 2-161902
Int. Cl.[5] G06K *9/38, 9/62*
U.S. Cl. 382—50 **22 Claims**



1. An image processing apparatus for estimating multivalued image data from binary image data converted by a binarizing method which exerts a large influence on surrounding multivalued pixels in specific directions with respect to a multivalued pixel undergoing binarization by the method, comprising:

input means for inputting binary image data comprising a plurality of pixels which include a pixel of interest that is to be subjected to multivalued conversion, the plurality of pixels being arranged so that a number of binary pixels in a first specific direction with respect to the position of the pixel of interest is larger than that of pixels in a direction other than the first specific direction, the pixels in the first specific direction being ones having a large influence upon the pixel of interest; and

multivalued converting means for executing processing, using a neural network, to restore the input binary image data to multivalued image data for the pixel of interest, wherein said neural network comprises:

an input layer which includes a plurality of neurons for inputting the binary image data from the input means in individual pixel units;

an intermediate layer which includes a plurality of neurons, connected to the input layer, for receiving outputs from the neurons of the input layer; and

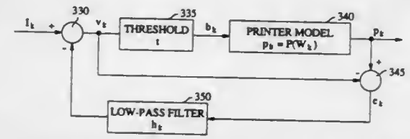
an output layer having one neuron, connected to the intermediate layer, for receiving outputs from the neurons of the intermediate layer and outputting one multivalued image data as image data of the pixel of interest.

5,309,526

IMAGE PROCESSING SYSTEM

Thrasyvoulos N. Pappas, Summit; Robert J. Safranek, New Providence; Nambirajan Seshadri, Chatham; James D. Johnston, Warren, all of N.J., and David L. Neuhoff, Ann Arbor, Mich., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 350,435, May 4, 1989, abandoned, and a continuation-in-part of Ser. No. 659,793, Feb. 22, 1991, abandoned, and a continuation-in-part of Ser. No. 763,002, Sep. 20, 1991, abandoned. This application Oct. 31, 1991, Ser. No. 785,673
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **14 Claims**



1. A method of communicating a first image based on one or more levels of imperceptible noise, the one or more levels of imperceptible noise determined based on an analysis of images generated by a device for displaying multi-level halftone images, the method comprising the step of:

a. encoding the first image to produce one or more encoded values without introducing in a value noise which exceeds a determined level of imperceptible noise;

b. communicating the one or more encoded values;

c. decoding the encoded values to produce a representation of the first image;

d. determining a halftone image based on the representation of the first image, which representation comprises one or more input signals, said step of determining a halftone image including the steps of

1. forming past signals predictive of regions of halftone images formed by a display device in response to applied binary signals,

2. modifying each of a plurality of the input signals in response to one or more past error signals, the past error signals reflecting differences between the past modified input signals and said past signals predictive of regions of halftone images, and

3. forming a binary signal in response to each of a plurality of the modified input signals; and

e. displaying the halftone image with use of one or more formed binary signals.

5,309,527

IMAGE DATA PROCESSING APPARATUS

Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jan. 15, 1992, Ser. No. 820,779
Claims priority, application Japan, Jan. 18, 1991, 3-018456
Int. Cl.[5] H04N *7/12*
U.S. Cl. 382—56 **10 Claims**

1. A data processing apparatus for selectively outputting data, comprising:

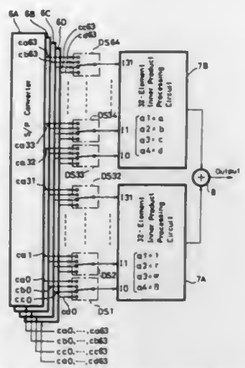
first processing means for processing a plurality of groups of input data and outputting processed data in parallel;

a plurality of data selectors for selecting data from the processed data outputted from said first processing means; and

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second processing means for processing the selected data from said data selectors;

wherein said first processing means comprises a plurality of serial-to-parallel converters for converting the groups of input data input parallel data, said data selectors comprising means for selecting data from the parallel data from



said serial-to-parallel converters, said second processing means comprising a pair of inner product processing circuits for producing respective inner products of the selected data from respective first and second groups of the data selectors, and an adder for adding the inner products from said inner product processing circuits.

5,309,528

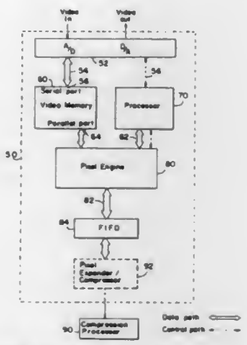
IMAGE DIGITIZER INCLUDING PIXEL ENGINE

B. Joshua Rosen, Westford, and Eric C. Peters, Carlisle, both of Mass., assignors to Avid Technology, Inc., Tewksbury, Mass.

Filed Dec. 13, 1991, Ser. No. 807,433

Int. Cl.[5] G06K *7/00*

U.S. Cl. 382—58 **20 Claims**



1. An image digitizer comprising:

an analog to digital converter;

video memory for storing pixel data, the video memory connected to the analog to digital converter;

a FIFO interface;

a processor having a control path connected to the analog to digital converter, the processor having address space divided into a plurality of regions including a first region for identifying locations of pixels for being accessed by the processor for processing, and a second region for identifying locations of pixels to be transferred from the video memory to the FIFO interface; and

a pixel engine intermediate the video memory and the processor so that pixel data passing between the video memory and the processor passes through the pixel engine;

wherein the pixel engine has means for enabling pixels to be transferred out of the video memory and into the FIFO interface while bypassing the processor, and

wherein, in response to an address to the first region, the pixel engine allows access from the processor to the video memory through the pixel engine.

5,309,529

BEARING ARRANGEMENT FOR A RADIAL BEARING IN AN ACCELERATION-PROOF GYROSCOPE

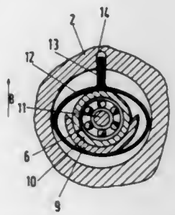
Ernst Gruber, Munich, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG, München, Fed. Rep. of Germany

Filed Dec. 11, 1992, Ser. No. 989,564

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141312

Int. Cl.[5] F16C *39/00*

U.S. Cl. 384—536 **6 Claims**



1. A bearing arrangement adapted to be subjected to brief acceleration forces acting perpendicularly to a rotational axis of the bearing arrangement, the bearing arrangement comprising:

a radial bearing;

a support ring surrounding the radial bearing, said radial bearing being axially insertable into said support ring;

a bearing seat for accommodating said radial bearing, said bearing seat being fashioned as a cylindrical half shell having a cylindrical axis coinciding with a rotational axis of the radial bearing, an open side of said cylindrical half shell faces a direction in which the acceleration forces act upon the radial bearing; and

an elastic element radially acting on the radial bearing and urging said support ring into the cylindrical half shell with a predetermined force, said elastic element having a spring characteristic such that the support ring and the radial bearing are lifted off the cylindrical half shell when a preset acceleration force is exceeded.

5,309,530

TECHNIQUE UTILIZING STRESS-INDUCED BIREFRINGENCE FOR REDUCING POLARIZATION DEPENDENT HOLE-BURNING IN AN AMPLIFIED OPTICAL TRANSMISSION SYSTEM

Neal S. Bergano, Lincroft; Vincent J. Mazurczyk, Manalapan, and Paul F. Wysocki, Scotch Plains, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 30, 1993, Ser. No. 56,213

Int. Cl.[5] G02B *6/10, 5/30;* H01S *3/10*

U.S. Cl. 385—1 **10 Claims**

1. An apparatus for reducing the effects of polarization dependent hole-burning within an optical transmission system employing optical fiber amplifiers, comprising:

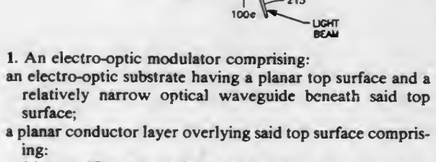
means for generating a polarized optical signal;

means for launching said polarized optical signal into a birefringent optical fiber so that the state of polarization of said polarized optical signal is not aligned with a primary birefringent transmission axis of said birefringent optical fiber;

means for mechanically stressing said birefringent optical fiber to induce a modulation of the state of polarization of said polarized optical signal, said modulation being at a frequency greater than or equal to $1/t_s$, where t_s is the minimum saturation time exhibited by any of the optical amplifiers within said optical transmission system; and

means for launching the modulated polarized optical signal into said optical transmission system.

6. A method for reducing the effects of polarization dependent hole-burning within an optical transmission system employing optical fiber amplifiers, comprising the steps of:



generating a polarized optical signal;

launching said polarized optical signal into a birefringent optical fiber so that the state of polarization of said polarized optical signal is not aligned with a primary birefringent transmission axis of said birefringent optical fiber;

mechanically stressing said birefringent optical fiber to induce a modulation of the state of polarization of said polarized optical signal, said modulation being at a frequency greater than or equal to $1/t_s$, where t_s is the minimum saturation time exhibited by any of the optical amplifiers within said optical transmission system; and

launching the modulated polarized optical signal into said optical transmission system.

5,309,531

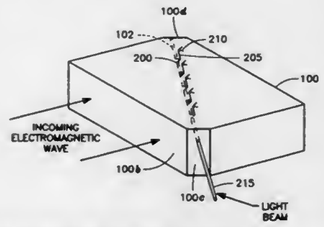
BROAD-BAND SUBSTRATE-WAVE-COUPLED ELECTRO-OPTIC MODULATOR

Finbar Sheehy, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Nov. 12, 1992, Ser. No. 975,393

Int. Cl.[5] G02F *1/01*

U.S. Cl. 385—2 **21 Claims**



1. An electro-optic modulator comprising:

an electro-optic substrate having a planar top surface and a relatively narrow optical waveguide beneath said top surface;

a planar conductor layer overlying said top surface comprising:

(a) an endfire antenna facing an incoming direction parallel to said top surface and disposed at angle with respect to said narrow optical waveguide, and

(b) an elongate coupling electrode parallel to and at least nearly overlying said optical waveguide, said elongate coupling electrode being connected to said endfire antenna.

5,309,532

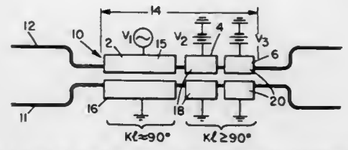
ELECTRO-OPTIC INTENSITY MODULATOR WITH IMPROVED LINEARITY

William S. C. Chang, La Jolla, and Mark L. Farwell, San Diego, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 801,940, Dec. 2, 1991, Pat. No. 5,230,028. This application Nov. 2, 1992, Ser. No. 970,064

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—3 **17 Claims**



1. An optical waveguide modulator with extended linear dynamic range for coupling a first optical channel and a second optical channel, said first optical channel and said second optical channel being carried by a first optical waveguide and a second optical waveguide, respectively, said optical waveguide modulator comprising:

an optical coupling section for coupling said first optical channel and said second optical channel, said active coupling section having an input end and an output end, a first coupling length and a fixed amount of coupling;

a first pair of electrodes for conducting a signal to said active coupling section;

an RF signal source and a first bias voltage source each connected to said first pair of electrodes for providing said signal to induce a controlled mismatch in propagation constants between said first optical channel and said second optical channel;

a first and a second passive coupling section connected to said first optical waveguide and said second optical waveguide and having a plurality of variable parameters for providing feed forward interaction with said active coupling section to compensate for nonlinearities, said first and said second passive coupling sections having a second pair of electrodes and a third pair of electrodes, respectively; and

a second bias voltage source connected to said second pair of electrodes and a third bias voltage source connected to said third pair of electrodes for providing control of said plurality of variable parameters in response to nonlinear distortion calculated for said optical waveguide modulator.

5,309,533

STRUCTURE WITH INTRINSIC DAMAGE CONTROL, MANUFACTURING PROCESSES AND METHOD OF USE

Philippe Bonnian, Houilles; Bernard Estang, Chevreuse; Bernard Perrier, Viry Chatillon; Jean Chazelas, Paris, and Jerôme Lecuellet, Chatenay Malabry, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Dec. 11, 1992, Ser. No. 989,568

Claims priority, application France, Dec. 11, 1991, 91 15347

Int. Cl.[5] G02B *6/22*

U.S. Cl. 385—11 **13 Claims**

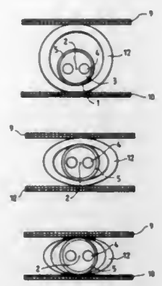
1. A structure comprising:

a composite material comprising a plurality of sheets forming plies;

a casing formed between two of the plurality of sheets forming the composite material, the casing having an internal diameter;

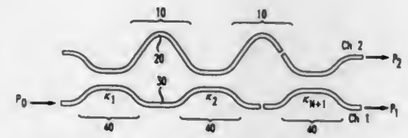
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an optical fiber located within the casing and having an external diameter which is less than the internal diameter of the casing, the optical fiber having a slow axis and a fast axis of propagation, wherein the optical fiber comprises:



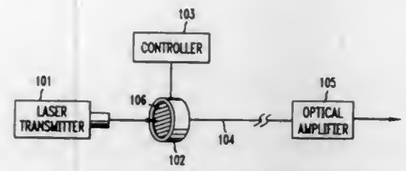
an optical core;
a sheath surrounding the optical core and comprising at least two longitudinal channels positioned symmetrically with respect to the optical core.

5,309,534
OPTICAL FILTER HAVING MULTIPLE INTERFEROMETRIC STAGES
Leonard G. Cohen, Berkeley Heights; Charles H. Henry, Skillman; Rudolf F. Kazarinov, Martinsville, and Mark E. Kuznetsov, East Brunswick, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 24, 1993, Ser. No. 21,702
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—27 **10 Claims**



1. A spectrally discriminating optical filter which comprises a substrate having a longitudinal axis and first and second optical waveguides formed on the substrate, said waveguides having respective first and second effective refractive indices, wherein:
a) the filter is subdivided into N stages, N at least 2, and N+1 approximately equally spaced-apart coupling sections, such that each stage is situated between two coupling sections;
b) the first waveguide is optically coupled to the second waveguide in each of the coupling sections; and
c) the optical path length within each stage is greater in the first waveguide than in the second waveguide,
CHARACTERIZED IN THAT
d) the first and second effective refractive indices are nominally equal.

5,309,535
APPARATUS AND METHOD UTILIZING A ROTATING WAVEPLATE FOR REDUCING POLARIZATION DEPENDENT HOLE-BURNING IN AN AMPLIFIED OPTICAL TRANSMISSION SYSTEM
Neal S. Bergano, Lincroft; Vincent J. Mazurczyk, and Paul F. Wysocki, Scotch Plains, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 30, 1993, Ser. No. 56,214
Int. Cl.[5] G02B *6/10, 5/30;* H01S *3/10*
U.S. Cl. 385—38 **8 Claims**



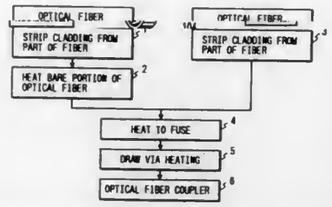
1. An apparatus for reducing the effects of polarization dependent hole-burning within an optical transmission system employing optical fiber amplifiers, comprising:
an optical waveplate assembly;
means for generating a polarized optical signal;
means for launching said polarized optical signal so that it passes through said optical waveplate assembly;
means for rotating said optical waveplate assembly to induce a modulation of the state of polarization of said polarized optical signal, said modulation being at a frequency greater than or equal to $1/t_s$, where t_s is the minimum saturation time exhibited by any of the optical amplifiers within said optical transmission system; and
means for launching the modulated polarized optical signal into said optical transmission system.

6. A method for reducing the effects of polarization dependent hole-burning within an optical transmission system employing optical fiber amplifiers, comprising the steps of:
generating a polarized optical signal;
launching said polarized optical signal so that it passes through an optical waveplate assembly;
rotating said optical waveplate assembly to induce a modulation of the state of polarization of said polarized optical signal, said modulation being at a frequency greater than or equal to $1/t_s$, where t_s is the minimum saturation time exhibited by any of the optical amplifiers within said optical transmission system; and
launching the modulated polarized optical signal into said optical transmission system.

5,309,536
PROCESS FOR PRODUCING AN OPTICAL FIBER COUPLER
Hiroshi Suganuma; Tomoyuki Hattori; Hiroaki Takimoto; Yoshiharu Okawa; Hiroshi Yokota, and Kazuhiko Arimoto, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Sumiden Opcom, Ltd., Tokyo, both of Japan
Filed Jan. 17, 1992, Ser. No. 899,783
Claims priority, application Japan, Jun. 18, 1991, 3-171876; Jun. 28, 1991, 3-185475
Int. Cl.[5] G02B *6/26;* C03C *25/02*
U.S. Cl. 385—43 **7 Claims**

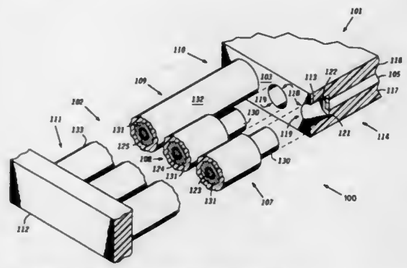
1. A process for producing an optical fiber coupler from a plurality of optical fibers, comprising:
subjecting at least one, but not all, of said optical fibers to a heat treatment for a predetermined time, while maintaining outer fiber diameter and length;
bringing all said optical fibers into intimate contact with one another;

heating all said optical fibers to fuse them together to form a unitary portion; and
drawing said unitary portion, thus forming a coupling portion;



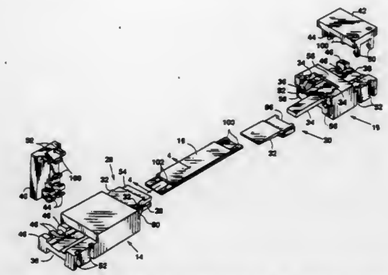
wherein said drawing step consists only of heating said unitary portion.

5,309,537
OPTOELECTRONIC COUPLING DEVICE AND METHOD OF MAKING
Christopher K. Y. Chun, Mesa; Davis H. Hartman, Phoenix; Shun-Meen Kuo, Chandler, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 5, 1993, Ser. No. 43,944
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—59 **19 Claims**



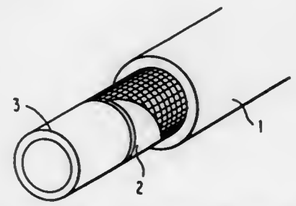
7. An optoelectronic module comprising:
an interconnect board having electronic components mounted thereon with interconnecting points;
an optical waveguide having a plurality of core regions surrounded by a cladding region, the optical waveguide having a first end, a second end, and a first surface, the first surface of the waveguide being mounted to the interconnect board securing the waveguide to the interconnect board, the first end having an opening that exposes a cross-section of a core region in the optical waveguide,
an optical device mounted on the second end of the optical waveguide and having a working portion of the optical device aligned to at least one cross-section of the plurality of core regions in the optical waveguide; and
an optical cable having a first end and a second end with the first end of the optical cable having a plurality of individual optical fibers each of which includes a core region, the individual optical fibers connected to the first end of the molded waveguide such that the core region of at least one of the individual fibers is aligned to the exposed cross-section of the core region of the waveguide.

5,309,538
REINFORCED MULTIPLE OPTICAL FIBER SPLICE HAVING PREANODIZED ELEMENT
Donald K. Larson, Williamson, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 753,333, Sep. 6, 1991, Pat. No. 5,155,787. This application Aug. 18, 1992, Ser. No. 931,936
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—98 **17 Claims**



1. A device for splicing a first plurality of optical fibers to a second plurality of optical fibers, the device comprising:
a splice body having a slot therein;
splice element means located in said slot of said splice body for holding the first and second plurality of optical fibers;
actuation means for clamping said splice element means; and
means for reinforcing said splice body, said reinforcing means including a metallic tube located inside said body, said tube surrounding said slot.

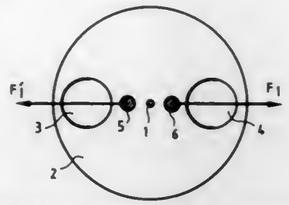
5,309,539
COMMUNICATION CABLE
Hiroaki Sano; Jun-ichi Ohta, and Nobuyuki Suzuki, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 30, 1991, Ser. No. 767,779
Claims priority, application Japan, Oct. 2, 1990, 2-265852
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—106 **5 Claims**



1. A communication cable comprising an outer sheath layer and at least one pipe through which an optical fiber unit is laid by means of a compressed gas, said outer sheath layer comprising a high-melting and flame-retardant resin and each of said at least one pipe is surrounded by an inorganic fiber layer on the surface thereof.

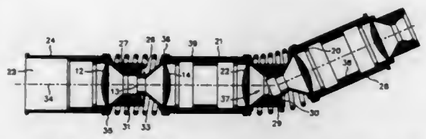
VOL 1162 ISS 1 MY 3 1994 UMI

5,309,540
OPTICAL FIBER SENSOR AND A MANUFACTURING PROCESS FOR MAKING SAME
Marc Turpin, Bures sur Yvette; Marie-Noëlle Charasse, Orsay, and Jean-Pierre Le Pesant, Gif sur Yvette, all of France, assignors to Thomson-CSF, Puteaux, France
Filed Oct. 26, 1992, Ser. No. 966,403
Claims priority, application France, Oct. 29, 1991, 91 13315
Int. Cl.[5] G02B *6/02; C03B 37/00*
U.S. Cl. 385—123 **16 Claims**



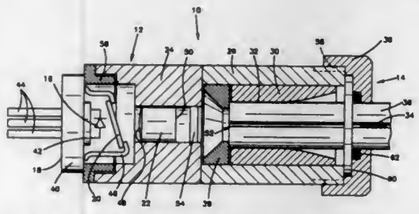
1. A sensor formed of an optical fiber comprising a guide core enclosed in guide cladding with a refractive index which is lower in the core of the cladding and which includes, close to the core, at least one cavity, running the full length of the fiber, and which also includes, over the full length of the fiber, between said at least one cavity and the fiber core, a stress zone which creates an anisotropic stress distribution and generates a tensile stress in the fiber core, and wherein said stress zone is disposed in said guide cladding.

5,309,541
FLEXIBLE LIGHT CONDUIT
Graham W. Flint, Albuquerque, N. Mex., assignor to Laser Power Corporation, San Diego, Calif.
Filed Apr. 16, 1993, Ser. No. 49,012
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—133 **37 Claims**



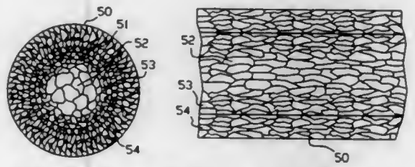
1. An elongated flexible light conduit for transmitting a beam of light from a source of the light to a working location, said conduit comprising:
- a plurality of rigid conduit elements;
- a coupling means connecting together each two adjacent said conduit elements so as to define a pivot point between each two said conduit elements and permitting alignment between each two adjacent said conduit elements to be varied, a plurality of said coupling means and conduit elements comprising a chain and forming said flexible conduit;
- a spaced pair of optical elements within each said conduit element, an optical axis being defined between said optical elements of each said pair of optical elements, said optical elements and said pivot points being so arranged and configured that when the light beam is focused at one of said pivot points at one end of a said conduit element and substantially on the optical axis defined between said pair of optical elements, that beam is transmitted between said optical elements in said pair of optical elements in a parallel manner and focused thereby at the next pivot point at the opposite end of said conduit element;
- an input optical element for focusing the input beam substantially on the axis thereof generally at the first pivot point of the first of said conduit elements in said chain; and
- an output optical element which provides the output beam of a desired convergence/divergence from the last of said conduit elements in said chain.

5,309,542
FIBER OPTIC TRANSMITTER MODIFICATION FOR IMPROVED EXTINCTION RATIO
Douglas H. Strope, Apalachin; Lawrence P. Brehm, Binghamton; Kishen N. Kapur, Vestal, and Robert C. Seward, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 18, 1991, Ser. No. 764,569
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—140 **20 Claims**



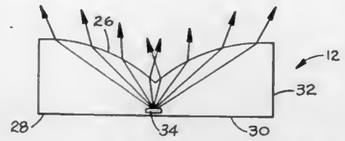
1. An optical data transmission system, comprising:
- a light emitting device having a drive current input and an optical signal output the power of which varies generally linearly with changes in said drive current input;
- a single focusing and attenuating element for focusing said optical signal output of said light emitting device and for attenuating said optical signal output by absorbing a substantial portion thereof; and
- a fiber optic cable having an endface for receiving is a attenuated and focused optical signal output and a generally uniform cross sectional area throughout its length for transmitting said attenuated and focused optical signal output.

5,309,543
METHOD OF MAKING INFRARED CRYSTALLINE FIBER AND PRODUCT
Vjacheslav G. Artushenko, Moscow, Russian Federation; Wolfgang Neuberger, Bonn, Fed. Rep. of Germany; Alexey O. Nabatov, and Eugene F. Kuzin, both of Moscow, Russian Federation, assignors to CeramOptec, Inc., Enfield, Conn.
Filed Nov. 23, 1992, Ser. No. 980,289
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—142 **9 Claims**



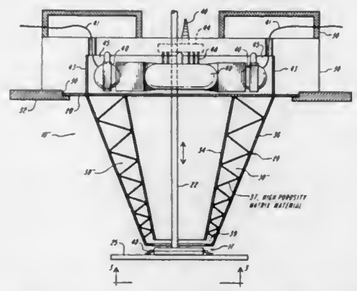
1. An unclad optical fiber comprising a silver halide solid solution of the formula $AgCl_xBr_{1-x}$ wherein x ranges from 0 to 1.0, and one or more dopants selected from the group consisting of AgI and those of the formula MY, wherein M may be Li, Na, K, Rb, Cr, Mg, Ca, Sr, Ba, Cd or Hg, and Y may be Cl, Br or I.

5,309,544
LIGHT PIPE HAVING OPTIMIZED CROSS-SECTION
Steven G. Saxe, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Mar. 31, 1992, Ser. No. 861,243
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—146 **7 Claims**



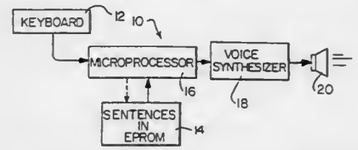
1. A luminaire comprising a light pipe, said light pipe comprising a tube having an optical axis and a structured outer surface and a smooth inner surface and a reflective light extractor inside said tube, said extractor being positioned within said tube such that light propagating in said tube in a direction generally along said optical axis and striking said extractor will be reflected in a direction such that it will strike said tube on a first side thereof, said first side of said tube having a contour such that said direction of reflected light will have a projection in a plane perpendicular to said optical axis that makes a predetermined angle with said smooth surface.

5,309,545
COMBINED RADIATIVE AND CONVECTIVE REWORK SYSTEM
Donald J. Spigarelli, Groton, Mass.; John M. DeCarlo, York, Me.; John A. Romano, Billerica, and William F. Drislane, N. Chelmsford, both of Mass., assignors to Sierra Research and Technology, Inc., Westford, Mass.
Continuation-in-part of Ser. No. 660,657, Feb. 22, 1991, which is a continuation-in-part of Ser. No. 573,500, Aug. 27, 1990, Pat. No. 5,060,288. This application Aug. 23, 1991, Ser. No. 749,116
Int. Cl.[5] B23K *1/005, 1/012*
U.S. Cl. 392—419 **12 Claims**



1. A combined radiative and convective rework system for repair, replacement, removal and rework of an electronic component on a printed circuit board, the electronic component having leads and a component body, the system comprising:
- a guide for guiding heat-inducing radiation towards at least one lead of said electronic component, said guide having a receiving end for receiving said heat-inducing radiation, and a delivery end for delivering said heat-inducing radiation;
- a heater, connected to the receiving end of said guide, for providing said heat-inducing radiation; and
- a pickup tube, extending through and generally concentric with said guide, for picking up and cooling said component body.

5,309,546
SYSTEM FOR METHOD FOR PRODUCING SYNTHETIC PLURAL WORD MESSAGES
Bruce R. Baker, 425 Cumberland St., Cumberland, Md. 21502; Richard D. Creech, Rt. 3, Box 170A, Siler City, N.C. 27344, and Kenneth W. Smith, 3316 Englewood Rd., Wilmington, Del. 19810
Continuation of Ser. No. 374,869, Jul. 3, 1989, abandoned, which is a division of Ser. No. 325,044, Mar. 16, 1989, abandoned, which is a continuation of Ser. No. 3,464, Jan. 15, 1987, abandoned, which is a continuation of Ser. No. 815,196, Dec. 27, 1985, Pat. No. 4,661,916, which is a continuation of Ser. No. 659,878, Oct. 15, 1984, abandoned, which is a continuation of Ser. No. 340,287, Jan. 18, 1992, abandoned. This application Feb. 6, 1991, Ser. No. 652,255
The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.
Int. Cl.[5] G10L *5/02*
U.S. Cl. 395—2 **42 Claims**



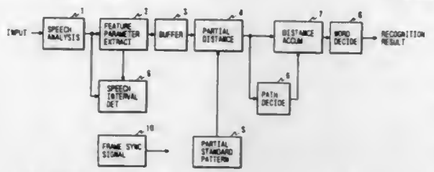
1. A system for enabling an operator to retrieve and generate a selected plural word message relating to particular information from among a large number of plural word messages relating to varied kinds of information stored in a system for producing messages, comprising:
- a plurality of input devices each bearing different polysemic pictorial illustrations of real like objects, said polysemic pictorial illustrations not including alphanumeric characters or formal, contemporary oriental language characters, each illustration being suggestive to an operator of the system of a plurality of types of information, each of said input devices also bearing an alpha character corresponding to the first letter of a word that describes the pictorial illustration on that input device;
- memory means for storing message data representative of a plurality of sequences of said polysemic pictorial illustrations, each sequence of illustrations being a semantic summary of a different plural word message;
- means for retrieving said selected message from the memory means in response to actuation of a selected sequence of a plurality of said input devices, the number of polysemic pictorial illustrations in the selected sequence being much less than the number of alpha characters which constitute the plural word message when spelled by formal alpha language characters; and
- means for outputting said selected message.

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5,309,547
METHOD OF SPEECH RECOGNITION

Katsuyuki Niyada, Sagamihara; Masakatsu Hoshimi, Zama; Shoji Hiraoka, Kawasaki, and Tatsuya Kimura, Sagaminhara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 11, 1992, Ser. No. 897,131
Claims priority, application Japan, Jun. 19, 1991, 3-147438
Int. Cl.[5] G10L *5/00*
U.S. Cl. 395—2.47 **5 Claims**

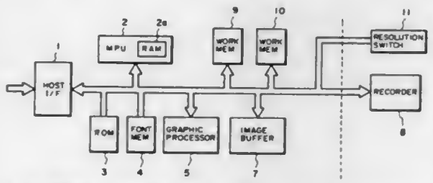


1. A method of speech recognition, comprising the steps of:
analyzing input speech every frame and deriving feature parameters from the input speech;
generating an input vector from the feature parameters of a plurality of frames;
forming partial standard patterns to contain a correlation between frames of speech data by using speech data of a plurality of frames;
calculating partial distances between the input vector and partial standard patterns while shifting the frame one by one, wherein standard patterns correspond to recognition-object words respectively, and each of the standard patterns is composed of the partial standard patterns which represent parts of the corresponding recognition-object word respectively;
the partial-distance calculating step comprising the step of using a statistical distance measure based on a posteriori probability in measuring the partial distances;
accumulating the partial distances into distances between the input speech and the standard patterns, the distances corresponding to the recognition-object words respectively;
comparing the distances with each other and selecting a minimum distance of the distances when the input speech ends; and
deciding one of the recognition-object words which corresponds to the minimum distance to be a recognition result.

5,309,548
PATTERN GENERATING METHOD AND APPARATUS

Takatoshi Ohta, and Nobuo Ohnuma, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 584,647, Sep. 19, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,624
Jul. 12, 1993, Ser. No. 90,624
Claims priority, application Japan, Sep. 21, 1989, 1-243361; Sep. 27, 1989, 1-249203
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—109 **14 Claims**

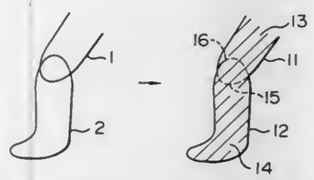


1. A pattern generating apparatus comprising:
font memory means for storing outline font data of characters, symbols, and the like;
image memory means for storing image data based on the outline font data stored in said font memory means;
storing means for storing a font image based on the outline font data into said image memory means;
color data generating means for generating color data in accordance with designated color information;
painting means for painting the inside of the stored font image in accordance with the generated color data;
print means for printing a pattern of the painted font image; and
discrimination means for discriminating whether said print means has completed printing of one page of data.

5,309,549
METHOD FOR AND APPARATUS FOR SYNTHESIZING AND FILLING IN FIGURES HAVING CONTOURS

Tetsuo Iwamoto, Tokorozawa; Yasumasa Matsuda; Akira Nakajima, both of Tokyo, and Sayuri Oshima, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1990, Ser. No. 606,607
Claims priority, application Japan, Nov. 7, 1989, 1-289054
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—121 **6 Claims**



1. A method for drawing a composite figure by means of an information processing device comprising a central processing unit (CPU), a storage device storing at least an operation program of said CPU and figure data and an output device for outputting figure data, comprising the steps of:
extracting part of data defining at least contour attributes which is relative to a plurality of figures to be composed;
successively drawing contours of said plurality of figures in accordance with said contour attributes;
extracting part of data defining at least plane filling attributes of said data relative to said plurality of figures to be composed;
successively filling the insides of said contours of said plurality of figures with one of a pattern, color, or both in accordance with the corresponding plane filling attributes thereof; and
suppressing a part of said contours which divide a region comprising at least two of said plurality of figures having the same said one of a predetermined pattern, color or both.

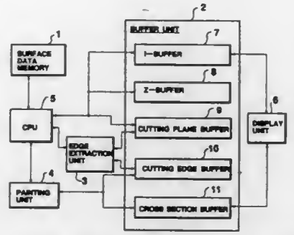
5,309,550
METHOD AND APPARATUS FOR THREE DIMENSIONAL DISPLAY WITH CROSS SECTION

Kazushige Takahashi, Yokobama, Japan, assignor to Kabushiki Kaisha Tosbiba, Kawasaki, Japan

Continuation of Ser. No. 453,507, Dec. 20, 1989, abandoned. This application Dec. 30, 1992, Ser. No. 996,493
Claims priority, application Japan, Dec. 27, 1988, 63-327903
Int. Cl.[5] G06F *15/62, 15/72, 15/16*
U.S. Cl. 395—121 **8 Claims**

1. An apparatus for three dimensionally displaying an object with a cross section, comprising:
two dimensional surface data memory means for storing surface data representing a surface of said object in a form of a collection of two dimensional figures;
two dimensional cutting plane buffer means for storing

cutting plane data representing a cutting plane on which said cross section lies;
surface image generating means for generating a surface image, in which said object is cut at said cutting plane and said cross section is left open, from said surface data and said cutting plane data;
cross sectional image generating means for generating a cross sectional image, in which an interior region of said cross section is painted in a prescribed color, from said surface data and said cutting plane data, and where said

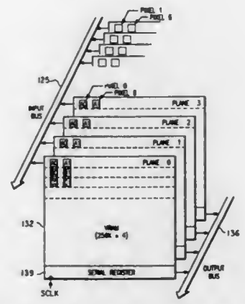


cross sectional image generating means generates said cross sectional image during a generation of said surface image by said surface image generating means, in parallel to generation of said surface image by said surface image generating means; and
display means for displaying said surface image and said cross sectional image by superposing said cross sectional image as generated by said cross sectional image generating means on said surface image as generated by said surface image generating means.

5,309,551
DEVICES, SYSTEMS AND METHODS FOR PALETTE PASS-THROUGH MODE

Karl M. Guttag, Missouri City; Jeffrey L. Nye, Houston, and Michael D. Asal, Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 27, 1990, Ser. No. 545,421
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—131 **43 Claims**

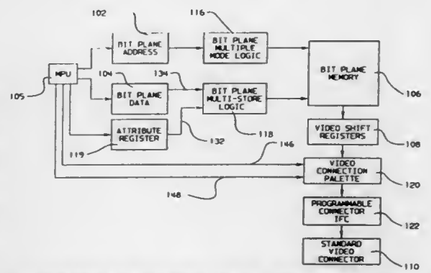


1. A palette device for use with a digital computer that produces a first video control signal and first color code signals of a first graphics bus, the digital computer having circuitry that produces a different second video control signal and second color code signals on a second graphics bus, said palette device comprising:
an input for a first set of bits representing first color codes from the first graphics bus and a second set of bits representing second color codes from the second graphics bus;
a look-up table memory for supplying color data words in response to color codes; and
a selector circuit connected between said input and said look-up table memory, the selector circuit controllable to transfer color codes from a selected one of the first or second graphics bus to said look-up table memory and to select a corresponding video control signal for output depending upon the selected first or second graphics bus.

5,309,552
PROGRAMMABLE MULTI-FORMAT DISPLAY CONTROLLER

Robert S. Horton, Hurley; Ralph C. Mitchell, Kingston, both of N.Y., and Walter G. Temnycky, Aberdeen, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 246,726, Sep. 20, 1988, abandoned. This application Oct. 18, 1991, Ser. No. 782,889
Int. Cl.[5] G06F *15/66*
U.S. Cl. 395—131 **4 Claims**



1. Apparatus for generating a pixel image for display by a raster scan device, said image comprising foreground pixels and background pixels, each of said foreground and background pixels containing a plurality of bit positions and having a value at each of said bit positions, each of said bit positions having a foreground value and a background value associated therewith such that the foreground pixels have said foreground value at said bit position and the background pixels have said background value at said bit position, said apparatus comprising:
an addressable memory for storing said pixel image, said memory having locations corresponding to said pixels;
means for generating a pixel signal indicating whether a pixel is a foreground pixel or a background pixel;
storage means for storing for each of said bit positions data representing the foreground and background values associated with said bit position for said image; and
means responsive to said pixel signal and to said storage means for simultaneously generating the foreground or background values of said pixel, as determined by said pixel signal, for each of said bit positions and for storing said values in said memory at the location corresponding to said pixel.

5,309,553
APPARATUS FOR AND METHOD OF GENERATING A STRAIGHT LINE OF PIXELS IN A DISCRETE COORDINATE SYSTEM

Nobuhiko Mukai; Masatoshi Kameyama; Hiroyasu Negishi, and Tsnyoshi Iizuka, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1991, Ser. No. 714,203
Claims priority, application Japan, Jun. 15, 1990, 2-157366; Jan. 17, 1991, 3-003885
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—143 **15 Claims**

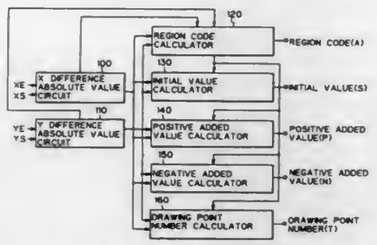
4. A straight line generator for drawing a straight line in a

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discrete coordinate system comprised of pixels, each pixel having a first coordinate and a second coordinate, said straight line having a slope, a start pixel and an end pixel, said generator determining the coordinates for intermediate pixels between the start and end pixels and comprising:

means for storing the first and second coordinates of at least a current intermediate pixel;

a region code register for storing a region code indicative of a relation of the coordinates of the end pixel to the coordinates of the start pixel and of the slope of said straight line;



an error register for storing an error term obtained using a Bresenham algorithm;

a first register for storing a first error update value;

a second register for storing a second error update value;

an adder for selecting an error update value from the first and second registers and for adding the selected error update value to the error term in the error register;

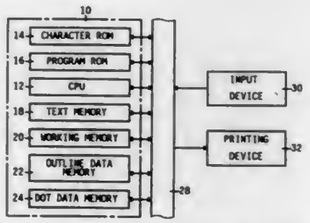
control logic for successively updating the current first and second coordinates in the means for storing on the basis of said region code and said error term and for controlling the selection of error update values by said adder.

5,309,554

APPARATUS FOR CONVERTING CHARACTER OUTLINE DATA INTO DOT DATA, HAVING MEANS FOR MOVING OUTLINE SEGMENTS

Yosuke Ito, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 5, 1991, Ser. No. 755,529
Claims priority, application Japan, Sep. 12, 1990, 2-241863
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—150 **17 Claims**



1. A data converting apparatus having dot data preparing means for converting a batch of original outline data representative of an outline of a character into a batch of dot data indicative of the presence of image dots to be formed at positions of picture elements whose centers are located within the outline of the character when said outline of the character is superimposed on a coordinated pixel screen, wherein the picture elements are defined by a plurality of parallel x-axis pixel lines and a plurality of parallel y-axis pixel lines perpendicular to said x-axis pixel lines, said outline comprising at least one segment including at least one curve, wherein the improvement comprises:

calculating means for calculating a coordinate value of a maximal or minimal point of said at least one curve of said outline of said character as measured in an x-axis direction parallel to said x-axis pixel lines or a y-axis direction parallel to said y-axis pixel lines; and

outline moving means responsive to said calculating means, for moving each of said at least one curve of said outline such that the coordinate value of said maximal or minimal point of said each curve moved by said outline moving means has a decimal fraction between 0.3 and 0.7 of a size of said picture elements, which size is defined by a spacing of said x-axis and y-axis pixel lines, wherein said pixel lines define coordinate values represented by integers;

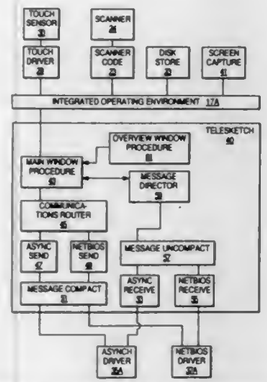
wherein said dot data preparing means prepares said dot data according to the outline data representative of the outline moved by said outline moving means.

5,309,555

REALTIME COMMUNICATION OF HAND DRAWN IMAGES IN A MULTIPROGRAMMING WINDOW ENVIRONMENT

Anthony S. Akins, Pearland; Peter A. Lee, Houston; Gunnar P. Seaburg, Friendswood, all of Tex., and Gordon W. Arbeitman, Potomac, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 524,770, May 15, 1990, abandoned. This application May 14, 1992, Ser. No. 882,997
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—157 **7 Claims**



1. A first data processing system for transmission and reception of realtime freehand drawing to and from a second data processing system, each system having a processor coupled to a memory, a display and an input device, each of said system having an operating system which runs a plurality of application programs each displayed in a respective one of a plurality of windows on the display, the first data processing system comprising:

means for presenting a first set of points in a first window on the display in said first data processing system, the first set of points representing freehand drawing generated by the input device at the first data processing system;

means for sending the first set of points to the second data processing system;

means for receiving and presenting a second set of points in the first window, the second set of points representing freehand drawing generated at the second data processing system;

means for presenting a first set of image data from a first image handling application in a second window in said first data processing window;

means for importing said first image data from said second window to said first window;

said sending means, sending said first image data to said second data processing system from said first window;

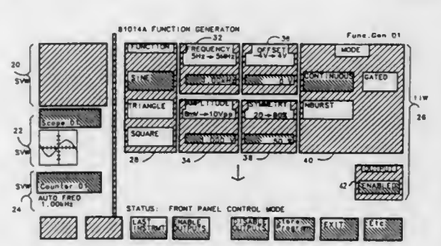
wherein the input device is a touch sensitive overlay disposed over the viewing surface of a display which generates the first set of points as the overlay is contacted on a surface facing opposite to the viewing surface of the display.

5,309,556

METHOD FOR USING INTERACTIVE COMPUTER GRAPHICS TO CONTROL ELECTRONIC INSTRUMENTS

Robert C. Sismilich, Rockaway, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 374,599, Jun. 30, 1989, abandoned, which is a continuation of Ser. No. 837,618, Mar. 7, 1986, abandoned. This application May 18, 1992, Ser. No. 887,574
Int. Cl.[5] G06F *15/24*
U.S. Cl. 395—161 **6 Claims**



1. A system comprising:

control means and an instrument, said instrument having a number of possible states comprised of different combinations of operating parameters,

said control means having viewing means,

means for simultaneously displaying on said viewing means controls and indicators that are interactive with said instrument and denote a first state of the instrument and other controls and indicators pertinent to said first state, the controls and indicators denoting the first state being visually emphasized with respect to the representation of other controls and indicators,

means for placing the instrument in a second state, and

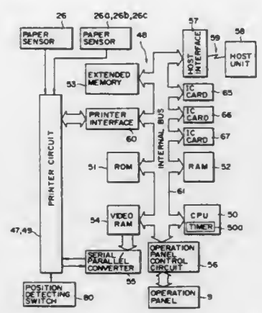
means responsive to the instrument being in said second state for showing on said viewing means controls and indicators denoting said second state, erasing from said screen controls and indicators that are not pertinent to the second state, forming on said viewing means controls and indicators that are in pertinent to the second state, forming on said viewing means controls and indicators that are pertinent to the second state but not pertinent to the first state and visually emphasizing controls and indicators denoting the second state.

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IMAGE FORMING METHOD AND APPARATUS INCLUDING MEANS FOR DETERMINING PROCESSING TIME

Takashi Saitoh, Tokyo, and Yasufumi Tanimoto, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1990, Ser. No. 605,390
Claims priority, application Japan, Oct. 31, 1989, 1-283742
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **8 Claims**



1. A data processing method adapted for a data processing apparatus, comprising the steps of:

receiving image data and a processing command, the image data defining the image to be formed on an image forming medium and the processing command defining the processing of image formation of the image data;

processing the image data corresponding to the processing command to obtain processed image data, the processed image data having processing time data indicating a total amount of time required for processing of the processed image data;

storing the processing time data corresponding to the processing command in storing means;

reading the processing time data corresponding to the processing command from the storing means;

generating prescribed time data indicating a lapse of time while the processing proceeds;

computing a remaining amount of time required for successive processing operation by comparing the prescribed time data with the processing time data; and

displaying the remaining amount of time.

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SET ADDRESSING FOR ELECTRONIC PRINTING MACHINES

John L. Rourke, Fairport, and Steven M. Rousos, Spencerport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1990, Ser. No. 628,130
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—166 **14 Claims**

1. A process of addressing sets for use with an electronic printing system having a user interface with an interactive display screen and a printer for making prints on a print media from image signals, a memory for storing the image signals, and programming means for programming said electronic printing system to produce prints, comprising the steps of:

a) providing a list of M addresses, with a first address and an Mth address, for use in addressing prints produced by said printer;

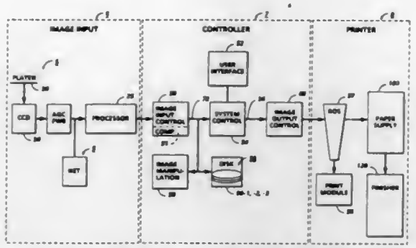
b) storing said list of M addresses in said memory;

c) programming said printer to print one or more sets of N

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prints on said print media, said N prints including a first print and an Nth print;

d) displaying, on said interactive display screen, a print outline with a selected identifiable area, said selected identifiable area being positioned on said print outline and representing a relative size, location and orientation of an area on each of the N prints upon which each of said M addresses is to be printed;



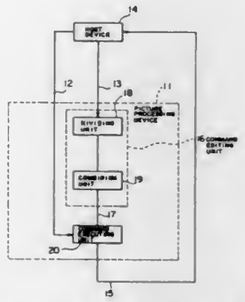
e) printing copies of the M addresses from said list of M addresses successively on said N prints, at said selected identifiable area on each of said N prints, as said N prints are printed on said print media, said first address in said list of M addresses being printed at said identifiable area of said first print and said Mth address in said list of M addresses being printed at said identifiable area of said Nth print.

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PICTURE PROCESSING DEVICE HAVING AN EDITING FUNCTION OF INPUT CONCATENATED-COMMAND

Akihiko Sato, and Masayoshi Hamada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,073
Claims priority, applicatioo Japan, Feb. 28, 1991, 3-033757
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **7 Claims**



1. A picture processing device, supplied with an input picture and an input concatenated-command for said input picture, for processing said input picture into a processed picture in compliance with said input concatenated-command, said device comprising:

command editing means supplied with said input concatenated-command for editing said input concatenated-command into an edited concatenated-command which is equivalent in function to said input concatenated-command and is smaller in length than said input concatenated-command; and

command executing means connected to said command editing means and supplied with said input picture for executing said edited concatenated-command for said input picture to produce said processed picture;

said command editing means including

a dividing means supplied with said input concatenated-command for dividing said input concatenated-command into elementary commands to successively produce said elementary commands as a succession of said elementary commands, and

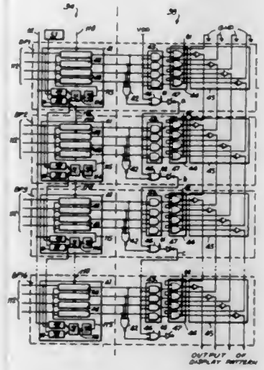
a combining means connected to said dividing means for combining said elementary commands into said edited concatenated-command by deleting, from said succession of said elementary commands, a succession of a particular one of said elementary commands and an inverse one of said elementary commands, said inverse one of said elementary commands immediately succeeding said particular one of said elementary commands in said succession of said elementary commands and being inverse in function to said particular one of said elementary commands.

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DATA SELECTION DEVICE

Sachiyuki Abe; Hisao Sato; Hiroaki Nasu, and Yasuaki Hagiwara, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 197,863, May 24, 1988, abandoned.
This application Oct. 13, 1992, Ser. No. 961,043
Claims priority, application Japan, May 25, 1987, 62-127411; Jan. 13, 1988, 63-5083
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—166 **42 Claims**



1. A device for selecting data having the highest priority from a plurality of data, comprising:

a plurality of storage means for storing said plurality of data and arranged in series to define M+1 stages of said storage means, wherein M≧1, each storage means of said plurality of storage means being associated with one of the M+1 stages, each stage of said M+1 stages having a stage priority relative to each of the other stages;

timing means for producing timing signals; and

a plurality of logic circuit means, at least one of said logic circuit means from said plurality of logic circuit means being associated with each of the M+1 stages except for a first of the M+1 stages, each logic circuit means for comparing and selecting between data stored in storage means associated with the same stage as that logic circuit means and data provided from a previous stage of the M+1 stages based on the stage priority of that logic circuit means and the stage priority of the previous stage in response to said timing signals;

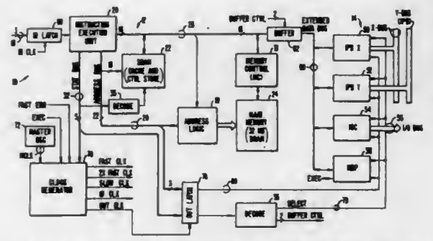
wherein the output from the logic circuit means of the M+1 stage represents data having the highest stage priority.

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SYNCHRONOUS PROCESSOR UNIT WITH INTERCONNECTED, SEPARATELY CLOCKED PROCESSOR SECTIONS WHICH ARE AUTOMATICALLY SYNCHRONIZED FOR DATA TRANSFER OPERATIONS

Leonard E. Overhouse, Los Gatos, and Daniel E. Lenoski, Cupertino, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Sep. 28, 1990, Ser. No. 589,847
Int. Cl.[5] G06F *1/12*
U.S. Cl. 395—200 **10 Claims**



1. A synchronous data processor having separately clocked multiple processing sections, comprising:

a first processing section synchronously operable to execute instructions in response to a first clock signal for performing at least arithmetic and logic operations, the first processing section including a first bus means for communication digital information;

a second processing second that operates in response to a second clock signal different from the first clock signal, the second processing section including a second bus means for communicating digital information;

circuit means coupling the first bus means and the second bus means to one another for communication of digital information, the instructions including data transfer instructions that when executed by the first processing section, effect communication of digital information between the first and second bus means; and

clock generating means for generating the first and second clock signals, the clock generating being operable in a first mode to produce the first and second clock signals with frequencies different from one another, and in a second mode for producing the first locks with at lest one predetermined state transition synchronized with a state transition of the second block signal;

the clock generating means including means coupled to detect the data transfer instructions being executed by the first processing section to switch the clock generating means from the first mode of operation to the second mode of operation to synchronize the one predetermined state transition of the first clock with the state transition of the second block during the communication of digital information between the first and second bus means.

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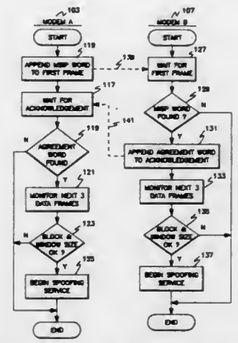
METHOD AND APPARATUS FOR ESTABLISHING PROTOCOL SPOOFING FROM A MODEM

Ping Li, New Brighton, Minn., assignor to Multi-Tech Systems, Inc., Mounds View, Minn.

Filed Aug. 19, 1991, Ser. No. 746,875
Int. Cl.[5] G06F *13/42, 13/14;* H04L *7/00*
U.S. Cl. 395—200 **13 Claims**

1. In a modem for transmitting data between a host computer and a receiving computer over a communication line, the host computer and receiving computer communicating through a high level data transfer protocol wherein data is sent in portions and the host computer waits for an acknowledgement from the receiving computer after each portion is sent before sending another portion, the high level protocol further including the host computer and receiving computer engaging in a negotiation prior to a data transfer operation, the negotiation including the transfer of an initial negotiation frame to the receiving computer, the receiving computer responding to the initial negotiation frame with an initial acknowledgement frame, and the host and receiving computers thereafter exchanging one or more frames of information regarding respective data transfer capabilities, the modem having a spoofing service wherein the spoofing service provides that when the modem receives a portion of data from a host computer over the communication line to be supplied to a receiving computer, the modem automatically provides a high level protocol acknowledgement to the host computer even though the receiving computer has not actually received all of the portion of data yet from the modem, the spoofing service also suppressing the high level protocol acknowledgement sent by the receiving computer to prevent the host computer from receiving two acknowledgements for the same data portion, a spoofing service initiation system, comprising:

first means for detecting an initial negotiation frame received by the modem from a host computer to be applied to the



communication line, and in response to the detection of the initial negotiation frame;

(a) appending a modem spoofing initiation protocol (MSIP) word to the initial negotiation frame, the MSIP word signalling that the modem can support the spoofing service and containing information on data transfer modes supported by the modem for the spoofing service; and

(b) detecting an initial acknowledgement frame received from a communication line to be supplied to a host computer, and monitoring the detected initial acknowledgement frame for an agreement word, and, if the word is present

(i) determining a mutually supported data transfer mode from the agreement word, and

(ii) monitoring subsequent high level protocol negotiation data exchanged by the receiving computer and the host computer, the high level negotiation data specifying a high level data transfer protocol, and if the high level data transfer protocol is compatible with the mutually supported data transfer mode, establishing the spoofing service;

second means for detecting an initial negotiation frame received from the communication line to be supplied to a receiving computer, and monitoring a detected initial negotiation frame for the presence of an appended MSIP word, the second means including means responsive to the

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presence of an appended MSIP word and the detection of an initial acknowledgement frame sent by the receiving computer connected to the modem for

(a) appending an agreement word to the initial acknowledgement frame, the agreement word signalling that the modem can support the spoofing service and specifying a data transfer mode for the modem compatible with a data transfer mode specified in the MSIP word, to establish the mutually supported data transfer mode, and

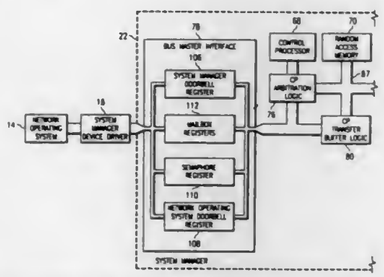
(b) monitoring subsequent high level protocol negotiation data exchanged by the receiving computer and the host computer, the high level negotiation data specifying a high level data transfer protocol, and if the high level data transfer protocol is compatible with the mutually supported data transfer mode, establishing the spoofing service.

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COMPUTER IMPLEMENTED METHOD FOR TRANSFERRING COMMAND MESSAGES BETWEEN A SYSTEM MANAGER FOR A COMPUTER SYSTEM AND A NETWORK OPERATING SYSTEM ASSOCIATED THEREWITH

Scott C. Farrand, Tomball; Thomas J. Hernandez, Houston; James E. Barron; Ronald A. Neyland, both of Spring; Cheryl X. Chen, Tomball; Gaines C. Teague; Paul J. Muraski, both of Spring, and Jay C. Brinkmeyer, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 9, 1991, Ser. No. 756,488
Int. Cl.[5] G06F *13/00, 15/16*
U.S. Cl. 395—200 **12 Claims**



1. A computer implemented method for transferring a command message from a network operating system to a system manager for a computer system associated therewith via an interface having at least one interface storage register for storing said command message during said transfer and a first interface control register for controlling said transfer of said command message, comprising the steps of:

said network operating system initiating a first use of said at least one interface storage register by setting a first bit of said first interface control register when said first bit of said first interface control register is not set;

the prior contents of said first bit of said first interface control register transferring to a second bit of said first interface control register each time said first bit of said interface control register is set or reset;

said network operating system testing said second bit of said first interface control register, said at least one interface storage register being busy if said second bit is set and not busy if said second bit is not set;

said network operating system writing said command message to said at least one interface storage register in response to said testing indicating said at least one interface storage register is not busy;

said second bit of said interface control register being set by an attempt to initiate a second use of said at least one interface storage register by setting said first bit of said interface control register while said first bit of said interface control register is set;

said network operating system informing said system manager that said command message has been written to said at least one interface storage register; and

said system manager resetting said first bit of said first interface control register and reading said command message from said at least one interface storage register, said resetting of said first bit of said interface control register setting said second bit of said interface control register;

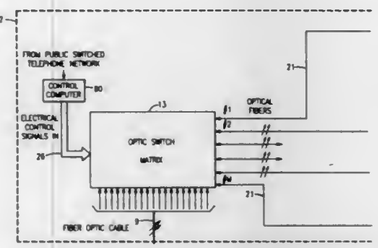
wherein a subsequent use of said at least one interface storage register is initiated by setting said first bit of said interface control register, said setting of said first bit of said interface control register resetting said second bit of said interface control register.

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APPARATUS FOR NETWORKING COMPUTERS FOR MULTIMEDIA APPLICATIONS

Graham C. Bradley, 3200 College Avenue, Regina, Saskatchewan, Canada S4T 1V9 ; Everett L. Florence, 207 Lincoln Drive, Regina, Saskatchewan, Canada S4S 6P5 , and Alton O. Stretton, 3615 McCallum Avenue, Regina, Saskatchewan, Canada S4S 0S6

Filed Mar. 19, 1992, Ser. No. 854,978
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **4 Claims**



1. A metropolitan area network for transport of computer generated video images and computer user input comprising:

at least one central facility housing a plurality of personal computers each computer provided with storage apparatus for retaining software and data for producing high resolution multimedia video images, each said personal computer having a keyboard input port, mouse input port and a video image output port; an electrical to optical interface device provided for each personal computer, each interface device having: an optical input path for producing electric signalling in response to an input light beam on corresponding electrical terminations for said keyboard input port and mouse input port, said signalling adapted to be processed by the personal computer as keyboard input or mouse input respectively, and each interface device having: an optical output path for producing a modulated light beam in response to electrical signalling received on a corresponding electrical termination for said video image output port of said personal computer; a first fiber optic cable optically coupled to the optical input path and optical output path of said interface device extending therefrom and terminating at a fiber optic matrix switch configured to optically couple said first fiber optic cable to a second fiber optical cable extending to one of a plurality of remote user locations;

each said remote user location having a fiber optic cable extending therefrom and optically terminated at one end on said fiber optic matrix switch of said central location and at the other end on an electrical to optical interface each interface device having: an optical output path for producing a modulated light beam in response to electrical signalling received on corresponding electrical terminations adapted to be attached to a computer keyboard device and a computer mouse device for producing said electrical signalling, and each interface device having: an optical input path for producing electric signalling in response to an input light beam on a corresponding electrical termination adapted to be attached to a video image display responsive to said electrical signalling;

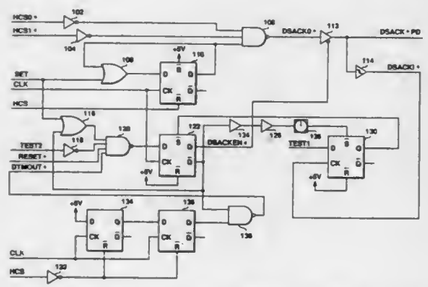
whereby user operation of said remotely located keyboard and mouse devices results in computer processing to occur at a corresponding centrally located personal computer the result of which processing is presented to said user on the remotely located video display.

5,309,565

DSACK CLAMP

Robert Hollyer, and Douglas Farrar, both of Los Altos, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 15, 1991, Ser. No. 670,044
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 **5 Claims**



1. In a data processing system having a central processing unit (CPU) and at least one peripheral unit connected to the CPU by a data bus, wherein the peripheral unit provides the CPU with a tri-state data strobe acknowledgment signal when data are placed on the data bus, an apparatus for controlling generation of said tri-state data strobe acknowledgment signal comprising:

first circuit means for receiving a first address strobe signal from the CPU and for generating a bi-state data strobe acknowledgment signal in response to said first address strobe signal;

a tri-state line driver having an input coupled to said first circuit means and an output coupled to the CPU, wherein said bi-state data strobe acknowledgment signal is supplied by said first circuit means to said input of said tri-state line driver;

second circuit means for enabling said tri-state line driver in response to said first address strobe signal from the CPU;

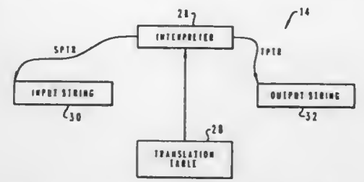
third circuit means coupled to the output of said tri-state line driver for providing an active feedback path to said second circuit means so as to disable said tri-state line driver when the output thereof exceeds a threshold voltage.

5,309,566

SYSTEM AND METHOD FOR CHARACTER TRANSLATION

Lawrence E. Larson, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1992, Ser. No. 830,820
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **8 Claims**



1. A translator for a computer system, comprising:

a translation table containing a plurality of entries defining a state machine, each entry having the following fields:

a current state field;

an input character field;

an output character field;

a next state field; and

an action field containing an identifier of at least one action to be performed; and

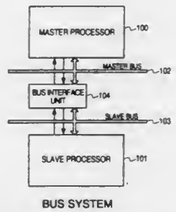
an interpreter connected to said translation table for reading input characters, for matching a current translator state and an input character with the current state field and the input character field, respectively, of a currently selected table entry to select a next table entry, and for performing actions defined in the action field of an entry matching the current translator state.

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STRUCTURE AND METHOD FOR AN ASYNCHRONOUS COMMUNICATION PROTOCOL BETWEEN MASTER AND SLAVE PROCESSORS

Toshiaki Mizukami, Cupertino, Calif., assignor to C-Cube Microsystems, Milpitas, Calif.

Filed Jan. 24, 1992, Ser. No. 826,327
Int. Cl.[5] G06F *15/16, 13/00*
U.S. Cl. 395—325 **14 Claims**



BUS SYSTEM

8. A method for interfacing a master processor to a slave processor comprising the steps of:

receiving a write request signal from said master processor;

receiving from said master processor data associated with said write request signal;

providing an interrupt signal to said slave processor in response to said write request signal;

providing a slave processor busy signal to said master processor upon receiving said write request signal;

receiving an interrupt acknowledge signal from said slave processor;

inactivating said interrupt signal upon receiving said interrupt acknowledge signal;

receiving from said slave processor an input signal;

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transferring said data to said slave processor upon receiving said input signal from said slave processor; and

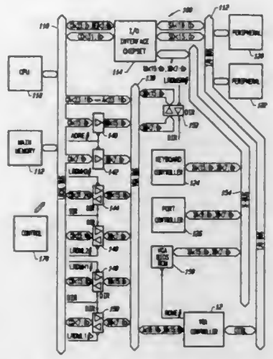
inactivating said busy signal after said transferring of data to said slave processor is complete.

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LOCAL BUS DESIGN

Subir Ghosh, Santa Clara, and Fong-lu Lin, San Jose, both of Calif., assignors to OPTI, Inc., Santa Clara, Calif.

Filed Mar. 16, 1992, Ser. No. 851,444
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **23 Claims**



1. Computer apparatus for use with a local device (**116**) having address (CA, BE#), data (CD) and control (M/IO#, W/R#, ADS#) lines, and having a local bus clock signal line carrying a local bus clock signal (CLK), said local device (**116**) being able to initiate a local device memory address space read access cycle to a first desired address in a memory address space by placing said first address on said address lines and issuing a first predefined combination of signals on said control lines in coordination with said local bus clock signal (CLK), said local device (**116**) also being able to initiate a local device I/O address space read access cycle to a second desired address in an I/O address space distinct from said memory address space, by placing said second address on said address lines and issuing a second predefined combination of signals on said control lines in coordination with said local bus clock signal (CLK),

for use further with a peripheral subsystem (**12**) receiving control signals and having peripheral subsystem port leads (DC(15:0)) carrying data, said control signals received by said peripheral subsystem (**12**) including a peripheral subsystem memory address space read request signal (ADMR#) and a peripheral subsystem I/O address space read request signal (CIOR#), each of said peripheral subsystem read request signals (ADMR#, CIOR#) being received by said peripheral subsystem (**12**) in conjunction with a respective address received by said peripheral subsystem (**12**), said peripheral subsystem (**12**) outputting data over said peripheral subsystem port leads (DB(15:0)) in response to said peripheral subsystem memory address space read request signal (ADMR#) if the address received by said peripheral subsystem (**12**) in conjunction with said peripheral subsystem memory address space read request signal (ADMR#) is within a first predefined set of addresses (AOOOO-BFFFF) in said memory address space, and said peripheral subsystem (**12**) also outputting data over said peripheral subsystem port leads (DB(15:0)) in response to said peripheral subsystem I/O address space read request signal (CIOR#) if the address received by said peripheral subsystem (**12**) in conjunction with said peripheral subsystem I/O address space read request signal (CIOR#) is within a second predefined set of addresses (3BO-3DE) in said I/O address space,

for use further with an I/O bus carrying data and control signals, said I/O bus carrying an I/O bus clock signal (BCLK) having a maximum frequency which is slower than that of said local bus clock signal (CLK), said I/O bus control signals including an I/O bus memory address space read request signal (MEMR#) which when asserted indicates a read access to an address in said memory address space, said I/O bus control signals further including an I/O bus I/O address space read request signal (IOR#) which when asserted indicates a read access to an address in said I/O address space,

said apparatus comprising:

a first data path (**114**; **110**) which only when enabled couples any of said data on said I/O bus to said data lines of said local device (**116**);

a second data path (**144**, **146**, **148**, **150**; **110**) which only when enabled couples said peripheral subsystem port leads (DB(15:0)) to said data lines of said local device (**116**);

bus interface control circuitry (**114**) which asserts said I/O bus memory address space read request signal (MEM#) synchronously with said I/O bus clock signal (BCLK) and enables said first data path (**114**; **110**), both in response to a local device memory address space read access cycle initiated by said local device (**116**) to an address which is outside said first predefined set of addresses (AOOOO-BFFFF), said first data path (**114**; **110**) not being enabled in response to a local device memory address space read access cycle initiated by said local device (**116**) to an address which is within said first predefined set of addresses (AOOOO-BFFFF),

said bus interface control circuitry (**114**) further asserting said I/O bus I/O address space read request signal (IOR#) synchronously with said I/O bus clock signal (BCLK) and enabling said first data path (**114**; **110**), both in response to a local device I/O address space read access cycle initiated by said local device (**116**) to an address which is outside said second predefined set of addresses (3BO-3DE), said first data path (**114**; **110**) not being enabled in response to a local device I/O address space read access cycle initiated by said local device (**116**) to an address which is within said second predefined set of addresses (3BO-3DE); and

peripheral subsystem control circuitry (**170**) which asserts said peripheral subsystem memory address space read request signal (ADMR#) synchronously with said local bus clock signal (CLK) and nonsynchronously with said I/O bus clock signal (BCLK) and which enables said second data path (**144**, **146**, **148**, **150**; **110**), both in response to a local device memory address space read access cycle initiated by said local device (**116**) to an address which is within said first predefined set of addresses (AOOOO-BFFFF), said second data path (**144**, **146**, **148**, **150**; **110**) not being enabled in response to a local device memory address space read access cycle initiated by said local device (**116**) to an address which is outside said first predefined set of addresses (AOOOO-BFFFF),

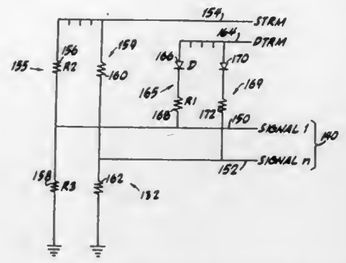
said peripheral subsystem control circuitry (**170**) further enabling said second data path (**144**, **146**, **148**, **150**; **110**) in response to a local device I/O address space read access cycle initiated by said local device (**116**) to an address which is within said second predefined set of addresses (3BO-3DE), said second data path (**144**, **146**, **148**, **150**; **110**) not being enabled in response to a local device I/O address space read access cycle initiated by said local device (**116**) to an address which is outside said second predefined set of addresses (3BO-3DE).

5,309,569

SELF-CONFIGURING BUS TERMINATION COMPONENT

Nicholas A. Warchol, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 874,288
Int. Cl.[5] G06F *13/40*
U.S. Cl. 395—325 **11 Claims**



1. A circuit that is configurable for terminating a bus which operates, at any given time, according to one of at least a first and second bus protocol, the circuit comprising:

n signal lines for connecting to a bus which operates, at any given time, according to one of at least the first and second bus protocols;

power supply means for powering the circuit according to a first characteristic of the bus when the bus is operated according to the first bus protocol and according to a second characteristic of the bus when the bus is operated according to the second bus protocol;

n resistor-diode subcircuits connected respectively to the n signal lines, and connected to the power supply means, with each of the n resistor-diode subcircuit providing a first impedance level to the connected signal line when powered by the power supply means; and

n resistor subcircuits connected respectively to the n signal lines, and connected to the power supply means, with each of the resistor subcircuits when powered by the power supply means along with the corresponding diode-resistor subcircuit connected to the same signal line being powered by the power supply, providing a second impedance level to the connected signal line.

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DESIGN PATENTS

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ERRATA

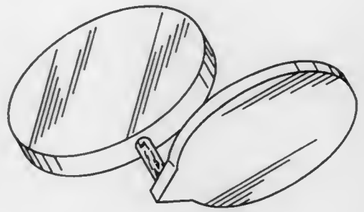
For CLASS	See PATENT NO.
006-634	D 346,488
003-308	D 346,682

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DESIGNS

MAY 3, 1994

346,475
LOLLIPOP SUCKER
Steven J. Bierend, 530 Parkview North, Santa Maria, Calif. 93455
Filed Apr. 8, 1993, Ser. No. 6,834
Term of patent 14 years
U.S. Cl. D1—102



346,476
PIECE OF CHOCOLATE CANDY
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S.A. Confiserie Leonidas, Brussels, Belgium
Filed May 5, 1993, Ser. No. 7,857
Claims priority, application Hague, Nov. 19, 1992, DM/024470
Term of patent 14 years
U.S. Cl. D1—108



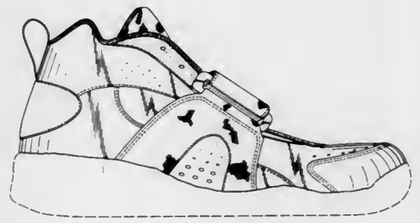
346,477
HAT
James Harmon, 1842 Reyburn Ave., Cleveland, Ohio 44112
Filed May 21, 1992, Ser. No. 887,913
Term of patent 14 years
U.S. Cl. D2—882



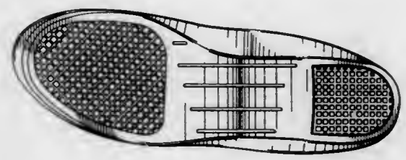
346,478
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 26, 1993, Ser. No. 6,357
Term of patent 14 years
U.S. Cl. D2—97



346,479
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,047
Term of patent 14 years
U.S. Cl. D2—970

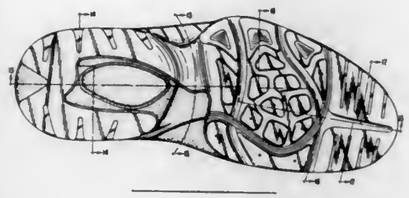


346,480
FOOTWEAR INSOLE
Murray R. Davidson, P.O. Box 759, San Marcos, Calif. 92069
Filed Dec. 28, 1992, Ser. No. 3,099
Term of patent 14 years
U.S. Cl. D2—961



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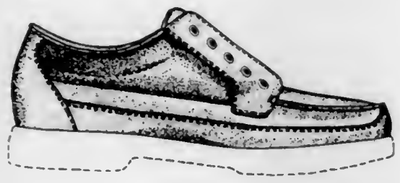
346,481
CUP SHAPED SHOE SOLE
William J. Worthington, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Dec. 4, 1992, Ser. No. 2,126
Term of patent 14 years
U.S. Cl. D2—954



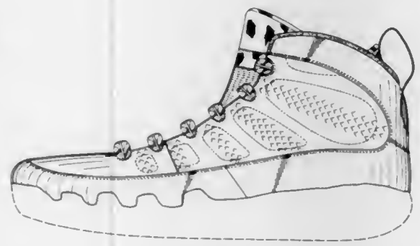
346,482
REFLECTIVE SAFETY BELT
Linda K. Merrill, Wichita, Kans., assignor to Wichita Industries and Services for the Blind, Inc., Wichita, Kans.
Filed Mar. 16, 1992, Ser. No. 852,389
Term of patent 14 years
U.S. Cl. D2—627



346,483
SHOE UPPER
David W. Foster, Bolton, England, assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Feb. 5, 1993, Ser. No. 4,503
Term of patent 14 years
U.S. Cl. D2—969



346,484
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 6,193, Mar. 18, 1993, abandoned. This application May 19, 1993, Ser. No. 8,527
Term of patent 14 years
U.S. Cl. D2—970



346,485
TOE PORTION OF A SHOE UPPER
Ricardo Vestuti, and Christian Tresser, both of Quincy, Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Filed May 28, 1993, Ser. No. 8,837
Term of patent 14 years
U.S. Cl. D2—972



346,486
SHOE UPPER
Jonathan R. Morris, Cranston, R.I., and Christopher J. Kittle, Cohasset, Mass., assignors to Reebok International Ltd., Stonghton, Mass.
Filed Dec. 22, 1992, Ser. No. 2,865
Term of patent 14 years
U.S. Cl. D2—969

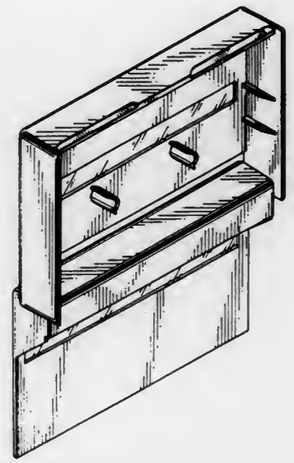




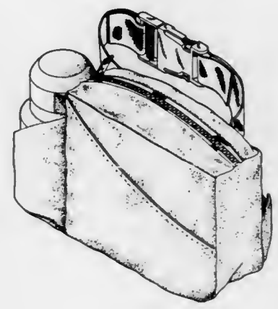
346,487
FAN
Howard Newman, 18910 Jonathan La., Homewood, Ill. 60430
Filed Oct. 13, 1992, Ser. No. 361
Term of patent 14 years
U.S. Cl. D3—2



346,488
CASE FOR AN AUDIO TAPE CASSETTE
Kazuhisa Horikiri, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 30, 1991, Ser. No. 784,797
The portion of the term of this patent snbsequent to Jul. 13, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—634



346,489
BICYCLE BAG
Andrew J. Bean; David W. Eyman, both of Cincinnati, and Kevin O. Strand, Delphos, all of Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Jun. 30, 1992, Ser. No. 908,008
Term of patent 14 years
U.S. Cl. D7—709



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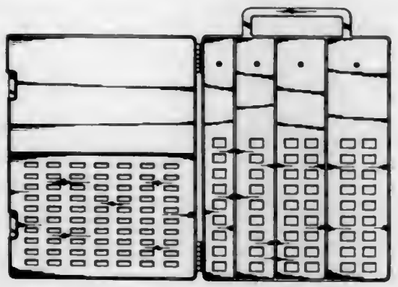
346,490
WALLET FOR STORING CONDOMS
Andrew A. Prosa, 1470 NE. 123rd St., North Miami, Fla. 33161
Filed Jun. 9, 1992, Ser. No. 895,863
Term of patent 14 years
U.S. Cl. D3—247



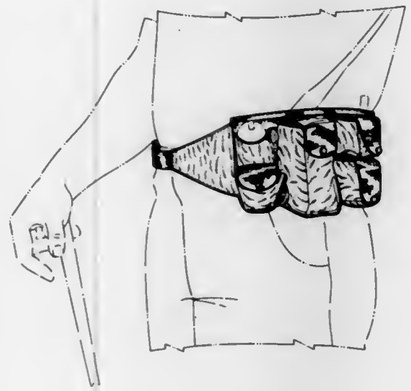
346,491
COMPUTER CASE
Michael D. Shoaf, 1009 N. Hamilton St., High Point, N.C. 27262
Filed Aug. 19, 1992, Ser. No. 932,062
Term of patent 14 years
U.S. Cl. D3—269



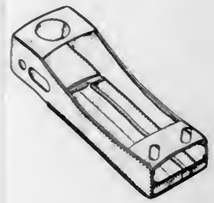
346,492
PAINT BRUSH CASE
John Cacciatore, Jr., 144 Van Guilder Ave., New Rochelle, N.Y. 10801
Filed Jan. 10, 1992, Ser. No. 818,987
Term of patent 14 years
U.S. Cl. D3—282



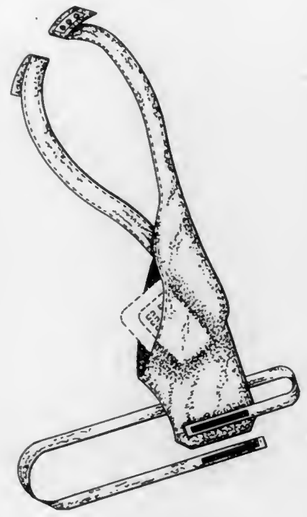
346,493
GOLF ACCESSORY ORGANIZER
Joseph Nichols, 527 Lincoln Dr., Great Falls, Mont. 59945
Filed Jan. 31, 1992, Ser. No. 828,646
Term of patent 14 years
U.S. Cl. D3—224



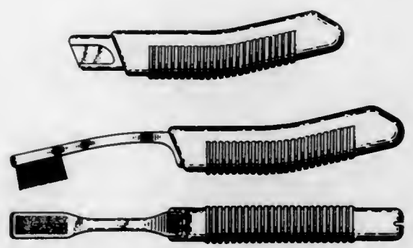
346,494
PORTABLE CELLULAR TELEPHONE CARRYING CASE WITH EXPANDABLE, EASY-ACCESS TO BATTERY
Nancy A. Graham, Lawrenceville, Ga., and Adel Ojaghi, Highland Park, N.J., assignors to Oki Telecom, Suwanee, Ga.
Filed Nov. 3, 1992, Ser. No. 1,102
Term of patent 14 years
U.S. Cl. D3—218



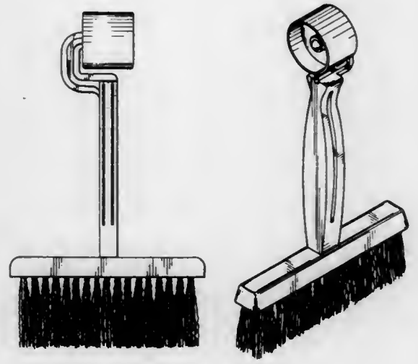
346,495
SHOULDER HOLSTER FOR REMOTE CONTROL UNIT
Daniel R. Morrissey, 1804 Commercial St., East Weymouth, Mass. 02189
Filed Nov. 13, 1992, Ser. No. 1,416
Term of patent 14 years
U.S. Cl. D3—218



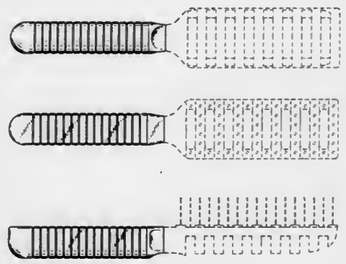
346,496
COMBINED TOOTHBRUSH AND CASE
Robert D. Berghash, Buffalo; Daniel A. Jachimowicz, Elba, and Christopher Pearson, Henrietta, all of N.Y., assignors to Brimms Inc., Tonawanda, N.Y.
Filed Jul. 13, 1992, Ser. No. 912,795
Term of patent 14 years
U.S. Cl. D4—108



346,497
COMBINED BRUSH AND ROLLER FOR APPLYING WALL PAPER
Ming-Tsung Huang, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Oct. 28, 1991, Ser. No. 783,095
Term of patent 14 years
U.S. Cl. D4—116

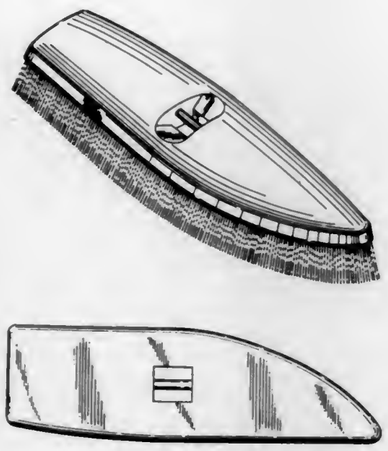


346,498
BRUSH HANDLE
Kathy Gertsma, Sausalito, Calif., assignor to West Coast Beauty Supply Co., San Francisco, Calif.
Filed Aug. 16, 1991, Ser. No. 747,538
Term of patent 14 years
U.S. Cl. D4—138

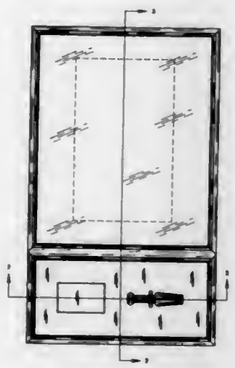


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346,499
FLOOR SCRUB BRUSH HEAD
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 27, 1992, Ser. No. 825,710
Term of patent 14 years
U.S. Cl. D4—199



346,500
PICTURE AND ARTICLE DISPLAY FRAME
Phillip J. Crawford, 5173 Merrill Cir., Las Vegas, Nev. 89120
Filed Mar. 26, 1991, Ser. No. 676,220
Term of patent 14 years
U.S. Cl. D6—301



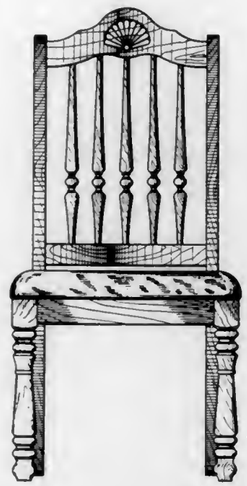
346,501
CHAIR
Josep Llusca, Barcelona, Spain, assignor to Driade S.p.A., Fossadello di Caorso, Italy
Filed Aug. 18, 1992, Ser. No. 931,489
Claims priority, application World Int. Prop. O., Feb. 25, 1992, DMA/001714
Term of patent 14 years
U.S. Cl. D6—374



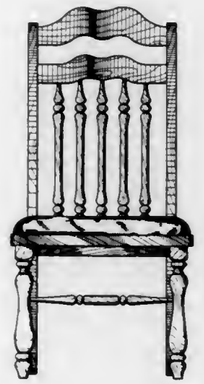
346,502
CHAIR
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Sep. 22, 1992, Ser. No. 949,087
Claims priority, application World Int. Prop. O., Mar. 25, 1992, DM/022385
Term of patent 14 years
U.S. Cl. d6—379



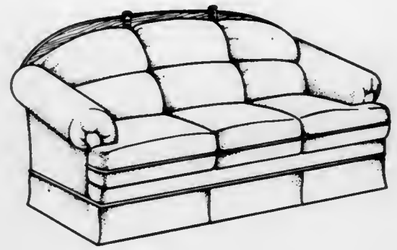
346,503
DINING CHAIR
Friedrich H. Wegener, Columbus, Ohio, assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Sep. 11, 1992, Ser. No. 943,585
Term of patent 14 years
U.S. Cl. D6—380



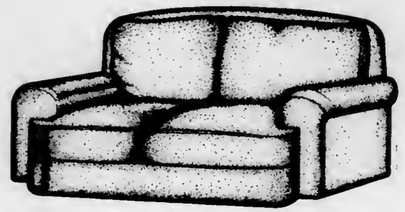
346,504
DINING CHAIR
Friedrich H. Wegener, Columbus, Ohio, assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Sep. 11, 1992, Ser. No. 943,590
Term of patent 14 years
U.S. Cl. D6—380



346,505
SEAT
Robert W. Schweiger, Greensboro, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Jul. 24, 1992, Ser. No. 920,212
Term of patent 14 years
U.S. Cl. D6—381



346,506
SEAT
Robert A. Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Jul. 24, 1992, Ser. No. 920,222
Term of patent 14 years
U.S. Cl. D6—381

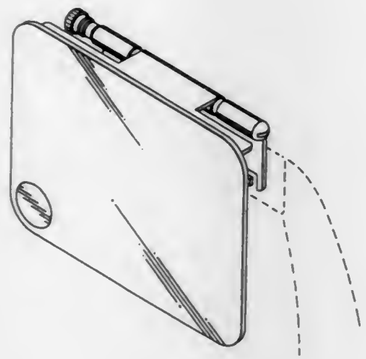


346,507
SOFA
Nancy J. Genova; John C. Genova, both of Corona Del Mar, and Joseph P. Knetge, Glendora, all of Calif., assignors to John Charles Designs, Inc., Cerritos, Calif.
Filed Jun. 17, 1993, Ser. No. 9,640
Term of patent 14 years
U.S. Cl. D6—381

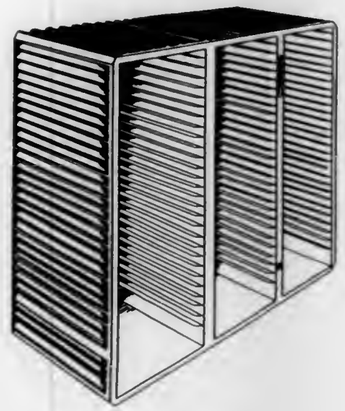


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346,508
MIRROR FOR ATTACHMENT TO A DENTAL LAMP
David J. Morgan, Hillsboro, Oreg., assignor to Northwest Dental, Inc., Hillsboro, Oreg.
Filed Jul. 27, 1992, Ser. No. 920,047
Term of patent 14 years
U.S. Cl. D6—308

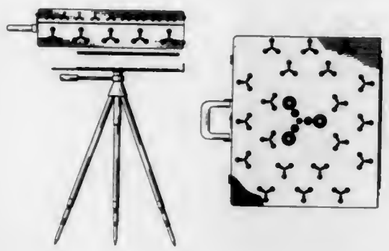


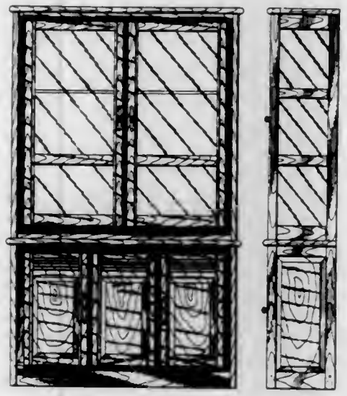
346,510
COMPACT DISC STORAGE RACK
Jerry M. Long, Stockton; Christopher G. Palmer, Santa Clara, and Peter J. Palmer, Cupertino, all of Calif., assignors to Creative Point, Inc., Fremont, Calif.
Filed Sep. 3, 1991, Ser. No. 754,440
Term of patent 14 years
U.S. Cl. D6—407



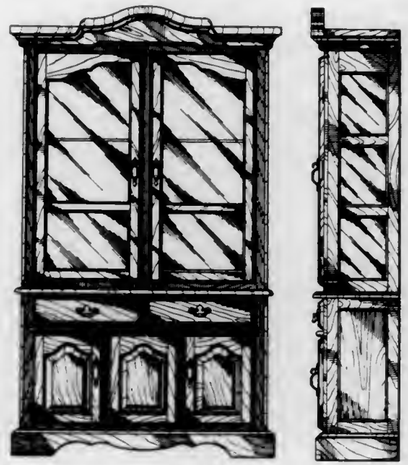
346,511
COMBINED HUTCH AND BUFFET
Friedrich H. Wegener, Columbus, Ohio, assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Sep. 11, 1992, Ser. No. 943,588
Term of patent 14 years
U.S. Cl. D6—438

346,509
COMBINED PORTABLE DESK AND TRIPOD STAND
Lawrence J. Mezoe, 3799 Coelebs Ave., Boynton Beach, Fla. 33436
Filed Nov. 18, 1991, Ser. No. 793,667
Term of patent 14 years
U.S. Cl. D6—397

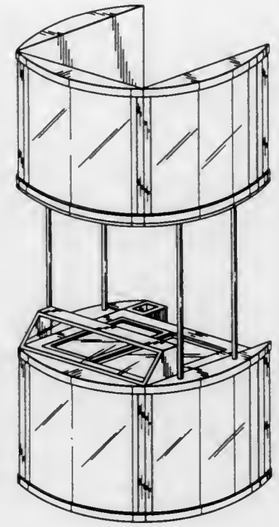




346,512
COMBINED HUTCH AND BUFFET
Friedrich H. Wegener, Columbus, Ohio, assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Sep. 11, 1992, Ser. No. 943,592
Term of patent 14 years
U.S. Cl. D6—438



346,514
FOOD KIOSK
Sidney Barish, 55 Newkirk Rd. North, Richmond Hill, Ontario, Canada L4C 3G4
Filed Jun. 2, 1992, Ser. No. 892,000
Claims priority, application Canada, Dec. 12, 1991, 121291
Term of patent 14 years
U.S. Cl. D6—481



346,513
PATIO TABLE
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 16, 1992, Ser. No. 510
Term of patent 14 years
U.S. Cl. D6—451

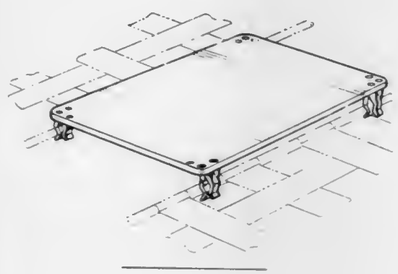


346,515
BED POST
Ronald D. Fisher, 1007 W. Church St., Marshalltown, Iowa 50158
Filed May 20, 1991, Ser. No. 711,464
Term of patent 14 years
U.S. Cl. D6—503



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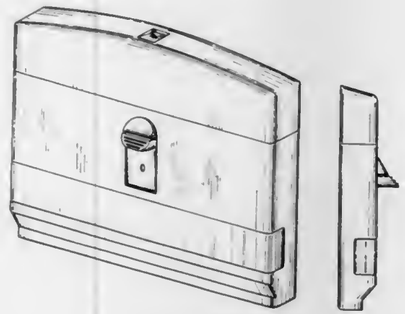
346,516
ATTACHABLE LAWN CHAIR TABLE
Stacey D'Anna, and Jeffrey D'Anna, both of 336 Stratford, Ferndale, Mich. 48220
Filed Sep. 27, 1991, Ser. No. 766,161
Term of patent 14 years
U.S. Cl. D6—511



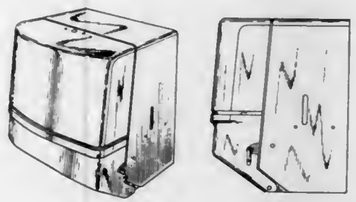
346,517
BRACKET FOR HOLDING, MEASURING AND CUTTING PLASTIC WRAP
Robert V. Franklin, and Karen R. Franklin, both of 3707 Fairway Dr., Temple, Tex. 76502
Filed Nov. 6, 1992, Ser. No. 1,213
Term of patent 14 years
U.S. Cl. D6—515



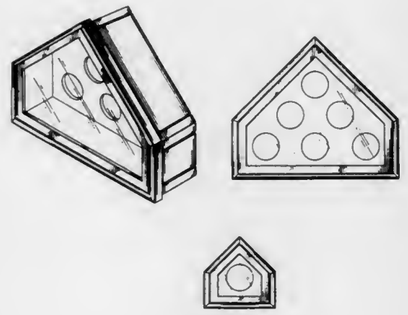
346,518
TOILET SEAT COVER DISPENSER
Allen E. Brandenburg, Austin, Tex., assignor to Scott Paper Company, Delaware County, Pa.
Filed Oct. 9, 1992, Ser. No. 245
Term of patent 14 years
U.S. Cl. D6—518



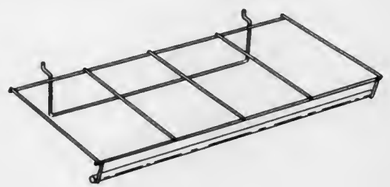
346,519
TOWEL DISPENSER
Donald G. Krueger; Kenneth H. LaCount, both of Green Bay; Kenneth H. Quigley, Oneida, and Alan J. Pierquet, Green Bay, all of Wis., assignors to Alwin Mfg. Co., Inc., Green Bay, Wis.
Filed Jun. 8, 1992, Ser. No. 895,824
Term of patent 14 years
U.S. Cl. D6—522



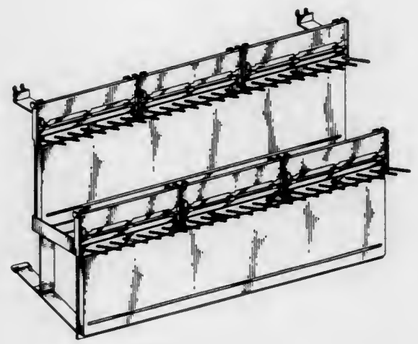
346,520
BALL HOLDER
Jesse Barfield, Houston, Tex., assignor to Sports Designs by Jesse Barfield, Inc., Houston, Tex.
Filed Sep. 2, 1992, Ser. No. 939,364
Term of patent 14 years
U.S. Cl. D6—552



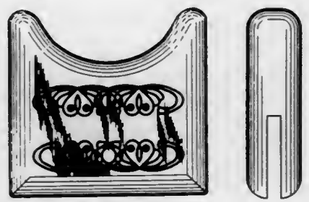
346,521
DISPLAY RACK
Gunter Rosenthal, St-Benoit, Canada, assignor to Rosenthal Import, Ltd., Montreal, Canada
Filed Jan. 15, 1992, Ser. No. 820,954
Claims priority, application Canada, Dec. 20, 1991, 20-12-91-13
Term of patent 14 years
U.S. Cl. D6—566



346,522
WALL DISPLAY UNIT FOR WATCHBANDS
Harvey J. Engel, Boca Raton, Fla., assignor to Textron Inc., Providence, R.I.
Filed Dec. 22, 1992, Ser. No. 2,879
Term of patent 14 years
U.S. Cl. D6—571

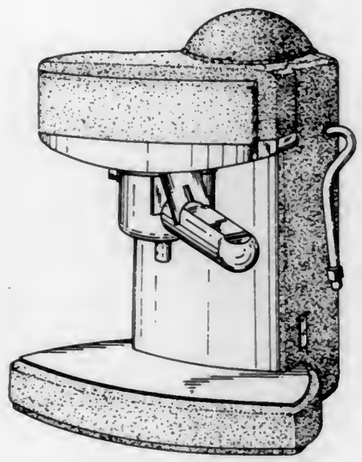


346,523
HEADREST TO BE ATTACHED TO A CAR WINDOW
Steven E. Johnson, R.R. 1 Box 1, Yale, S. Dak. 57386
Filed Jul. 1, 1993, Ser. No. 10,143
Term of patent 14 years
U.S. Cl. D6—601

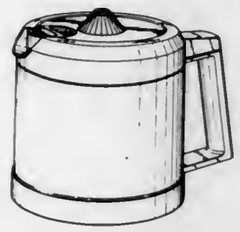


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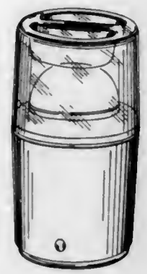
346,524
ESPRESSO COFFEE MAKER
Philippe Saltet, Chateaufort, France, assignor to Moulinex S.A., Bagnolet, France
Filed Jun. 23, 1992, Ser. No. 902,675
Claims priority, application France, Dec. 24, 1991, 91 8133
Term of patent 14 years
U.S. Cl. D7—309



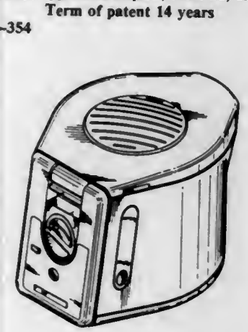
346,525
BEVERAGE CONTAINER
Ludwig Littmann, Fasanenweg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Jul. 22, 1992, Ser. No. 918,456
Claims priority, application World Int. Prop. O., Feb. 4, 1992, DMA/001693
Term of patent 14 years
U.S. Cl. D7—317



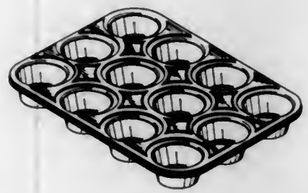
346,526
YOGHURT MAKER
Francis R. Bannigan, Huntingdale, Australia, assignor to Kambrook Distributing Pty. Ltd., Australia
Filed Jul. 1, 1992, Ser. No. 907,452
Term of patent 14 years
U.S. Cl. D7—323



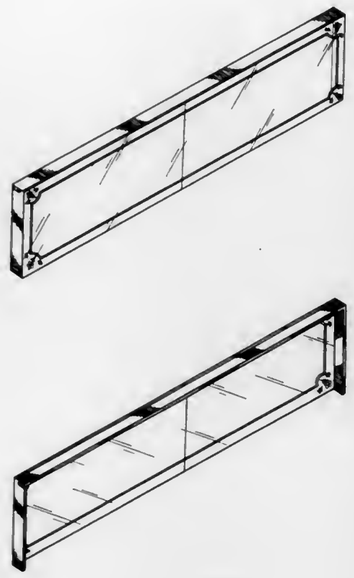
346,527
FRYING MACHINE
Miguel L. Del Fresno, Vitoria, Spain, assignor to Electrodomesticos Solac, S.A., Vitoria, Spain
Filed May 21, 1992, Ser. No. 887,270
Claims priority, application Spain, Nov. 21, 1991, 126.323
Term of patent 14 years
U.S. Cl. D7—354



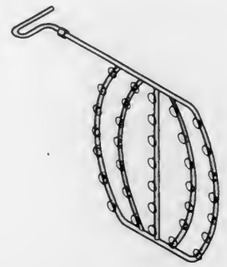
346,528
MUFFIN PAN
William R. Crawford, Port Jervis, and Stephen J. Susta, Jr., Walden, both of N.Y., assignors to Genpak Corporation, Middletown, N.Y.
Filed Mar. 20, 1992, Ser. No. 854,270
Term of patent 14 years
U.S. Cl. D7—357



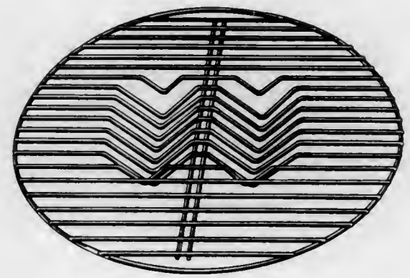
346,529
STOVE PANEL GUARD
Maglena Honaker, 10190 Robious Rd., Richmond, Va. 23235
Filed Mar. 12, 1991, Ser. No. 668,449
Term of patent 14 years
U.S. Cl. D7—405



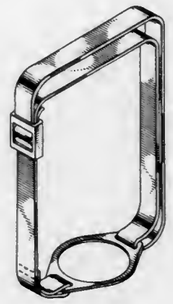
346,530
GAS FIRED CHARCOAL LIGHTER
Robert W. Elliott, 2100 Kent Dr., Bakersfield, Calif. 93306, and John M. Lopez, 412 Bridle Ave., Bakersfield, Calif. 93307
Filed Feb. 10, 1992, Ser. No. 832,777
Term of patent 14 years
U.S. Cl. D7—416



346,531
FUEL SUPPORT GRID FOR OUTDOOR COOKER
James C. Stephen, Arlington Heights, Ill.; Ross McDonald, Leabrook, and Alan Royce, Adelaide, both of Australia, assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Aug. 14, 1992, Ser. No. 930,222
Term of patent 14 years
U.S. Cl. D7—409

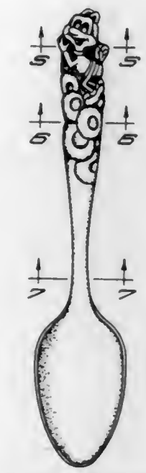


346,532
BOTTLE CARRIER
Brian C. Ogden, 41132 Ridgegate La., Quartz Hill, Calif. 93551, and Timothy J. Wilkins, 226 N. Locust Ave., Agoura Hills, Calif. 91301
Filed Aug. 31, 1992, Ser. No. 937,203
Term of patent 14 years
U.S. Cl. D7—619



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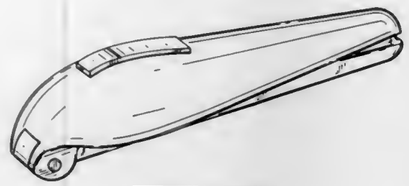
346,533
SPOON
Frank R. Perry, Oneida, N.Y., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Jun. 16, 1992, Ser. No. 899,658
Term of patent 14 years
U.S. Cl. D7—656



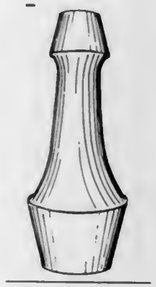
346,534
PET SPOON
Rocco Cassarino, 288 President St., Brooklyn, N.Y. 11231
Filed Jul. 24, 1992, Ser. No. 918,403
Term of patent 14 years
U.S. Cl. D7—656



346,535
NUTCRACKER
Dario Tanfoglio, Fornaci-Brescia, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Aug. 10, 1992, Ser. No. 927,809
Claims priority, application Italy, Feb. 13, 1992, MI920 000078
Term of patent 14 years
U.S. Cl. D7—680



346,536
TART TAMPER
Marjorie A. Thornley, 7225 Oxford Cir., Fox Lake, Ill. 60020-1037
Filed Oct. 9, 1992, Ser. No. 259
Term of patent 14 years
U.S. Cl. D7—682



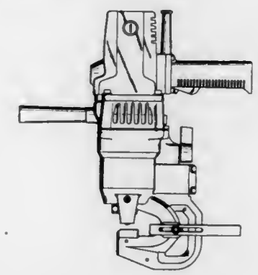
346,537
PLANT PROP
Réjean Lefebvre, 1680 Kent, Apt. 202, Longueuil (Québec), Canada J4J 4K4
Filed Dec. 5, 1991, Ser. No. 802,460
Term of patent 14 years
U.S. Cl. D8—1



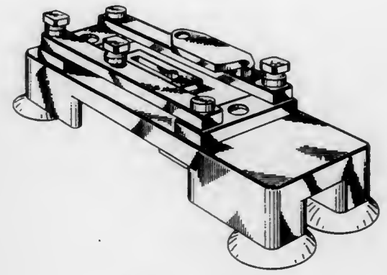
346,538
PRUNING SHEARS
Nathaniel Florian, P.O. Box 325, Plantsville, Conn. 06479
Filed Apr. 15, 1992, Ser. No. 868,782
Term of patent 14 years
U.S. Cl. D8—5



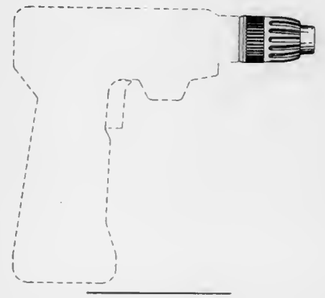
346,539
HYDRAULIC PUNCHER
Masayuki Saito, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Oct. 27, 1992, Ser. No. 901
Claims priority, application Japan, May 1, 1992, 4-12939
Term of patent 14 years
U.S. Cl. D8—61



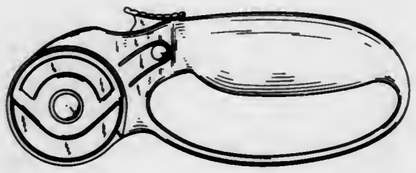
346,540
FIXTURE FOR CUTTING A GROOVE IN WINDOW FOAM SPACERS
Stephen D. Crawley, Bloomington, Minn., assignor to Lake Country Sales, Inc., Elysian, Minn.
Filed Dec. 21, 1992, Ser. No. 2,765
Term of patent 14 years
U.S. Cl. D8—64



346,541
CHUCK FOR A DRILL
Robert I. Somers, Forest Hill, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 16, 1992, Ser. No. 503
Term of patent 14 years
U.S. Cl. D8—70



346,542
ROTARY CUTTING TOOL
Douglas J. Birkholz, De Forest, Wis., assignor to Fiskars Oy Ab, Helsinki, Finland
Filed Nov. 17, 1992, Ser. No. 1,681
Term of patent 14 years
U.S. Cl. D8—98

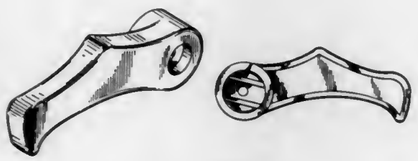


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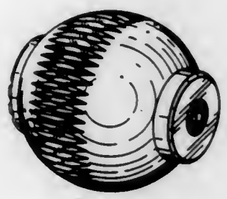
346,543
HANDLE GRIP
Enzo Berti, Venice, Italy, and Robert J. Libman, Champaign, Ill., assignors to The Libman Company, Arcola, Ill.
Filed Oct. 7, 1992, Ser. No. 136
Term of patent 14 years
U.S. Cl. D8—107



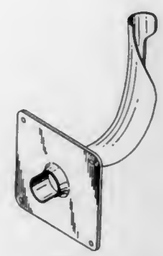
346,544
ADJUSTMENT HANDLE
Macy J. Price, Jr., Louisville, and Matthew P. Drabczyk, Westminster, both of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Jan. 25, 1993, Ser. No. 4,054
Term of patent 14 years
U.S. Cl. D8—308



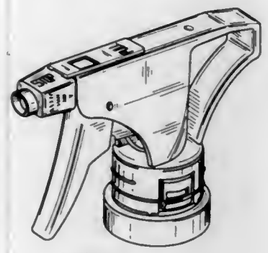
346,545
SPHERICAL HANDLE
Bernard Tinz, Stuttgart, Fed. Rep. of Germany, assignor to Heinrich Kipp Werk Spanntechnik + Normelemente, Sulz, Fed. Rep. of Germany
Filed Mar. 1, 1993, Ser. No. 5,307
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1993, 9300643
Term of patent 14 years
U.S. Cl. D8—312



346,546
BEND SUPPORT FOR FLEXIBLE CONDUIT
Thomas E. Tesmar, Jr., Hudson, Wis., assignor to Wirsbo Company, Apple Valley, Minn.
Filed Jan. 13, 1993, Ser. No. 3,661
Term of patent 14 years
U.S. Cl. D8—356



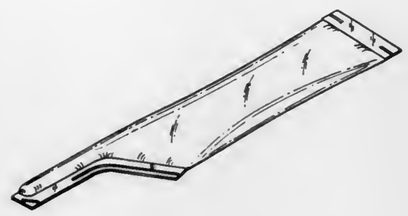
346,547
SPRAYER
Emile B. Steijns, Lierop, and Wilhelmus J. J. Maas, Someren, both of Netherlands, assignors to AFA Products Inc., Forest City, N.C.
Filed Feb. 24, 1992, Ser. No. 840,777
Term of patent 14 years
U.S. Cl. D9—448



346,548
COMBINED PUMP DISPENSER AND CAP
Danny H. Maddox, 2237 6th St. NE, Birmingham, Ala. 35215
Filed Oct. 23, 1992, Ser. No. 715
Term of patent 14 years
U.S. Cl. D9—300



346,549
DISPENSING CONTAINER
Robert C. Smith, Short Hills, N.J., assignor to Unette Corporation, Parsippany, N.J.
Filed Dec. 31, 1992, Ser. No. 3,186
Term of patent 14 years
U.S. Cl. D9—306



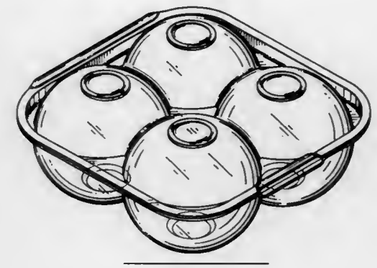
346,550
CONTAINER FOR HOLDING DENTAL-RELATED PRODUCTS
Michael E. Terrell, 11501 Carriage Rest Ct., Louisville, Ky. 40216
Filed Apr. 29, 1992, Ser. No. 875,980
Term of patent 14 years
U.S. Cl. D9—314



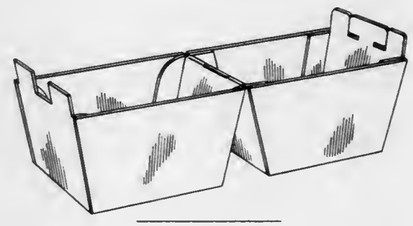
346,551
CONTAINER FOR HOLDING DENTAL-RELATED PRODUCTS
Michael E. Terrell, 11501 Carriage Rest Ct., Louisville, Ky. 40216
Filed Apr. 29, 1992, Ser. No. 876,207
Term of patent 14 years
U.S. Cl. D9—314



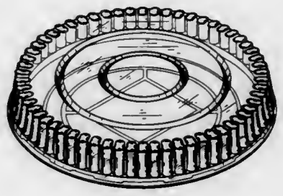
346,552
FRUIT CLAMSHELL CONTAINER
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers
Filed Mar. 16, 1993, Ser. No. 5,991
Term of patent 14 years
U.S. Cl. D9—341



346,553
DISPOSABLE PACKAGE
Jan Akerlind, Stockholm, Sweden, assignor to Eson Pac AB, Veddige, Sweden
Filed Oct. 21, 1991, Ser. No. 778,327
Term of patent 14 years
U.S. Cl. D9—346

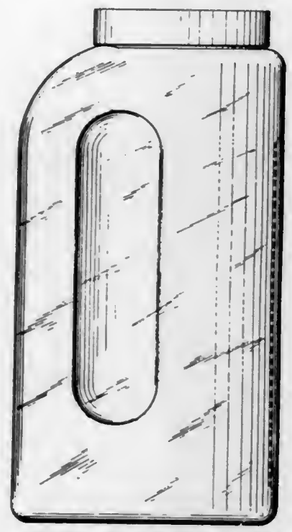


346,554
STORAGE AND DISPLAY CONTAINER FOR FOOD
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Mar. 8, 1993, Ser. No. 5,651
Term of patent 14 years
U.S. Cl. D9—429



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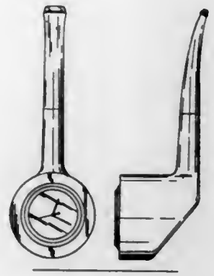
346,555
COMBINED CONTAINER AND CAP
J. Morris Binder, Des Moines, Iowa, assignor to Tone Brothers, Inc., De Moines, Iowa
Filed Feb. 12, 1991, Ser. No. 654,558
Term of patent 14 years
U.S. Cl. D9—522



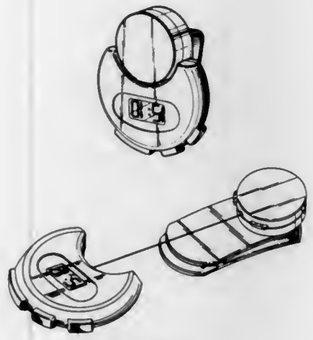
346,556
BOTTLE
Michael A. Sirico, Bergenfield; William J. Doskoczynski, Stewartsville, both of N.J., and Paul N. Voyer, Norcross, Ga., assignors to CPC International Inc., Englewood Cliffs, N.J.
Continuation of Ser. No. 534,408, Jun. 6, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,678
Term of patent 14 years
U.S. Cl. D9—538



346,557
CLOCK
Timothy M. West, 1588 Grayling Ct., Columbus, Ohio 43235, and James E. Seman, 4860 Drayton Rd., Hilliard, Ohio 43026
Filed Feb. 25, 1992, Ser. No. 839,897
Term of patent 14 years
U.S. Cl. D10—6



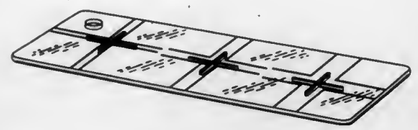
346,558
COMBINED PORTABLE WATCH AND REEL
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Dec. 6, 1991, Ser. No. 805,813
Claims priority, application Japan, Oct. 2, 1991, 3-29767
Term of patent 14 years
U.S. Cl. D10—31



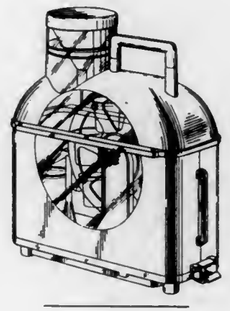
346,559
THERMOMETER
Ralph M. Nowak, Marblehead, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Jul. 7, 1992, Ser. No. 909,816
Term of patent 14 years
U.S. Cl. D10—57



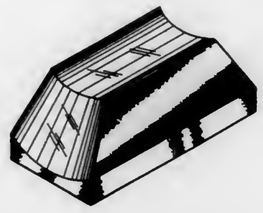
346,560
PICTURE FRAME MATTING TEMPLATE
Peggy H. Phillips, 19950 NW. Wallowa Pl., Portland, Oreg. 97229
Filed Jul. 9, 1993, Ser. No. 10,607
Term of patent 14 years
U.S. Cl. D10—64



346,561
RAINFALL SAMPLING APPARATUS
Hiroshi Nagai, and Masayuki Ohishi, both of Kyoto, Japan, assignors to Horiba Ltd., Kyoto, Japan
Filed Nov. 2, 1992, Ser. No. 1,089
Claims priority, application Japan, Jun. 3, 1992, 4-16580
Term of patent 14 years
U.S. Cl. D10—96



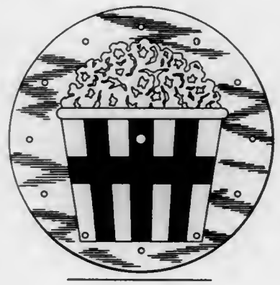
346,562
REFLECTOR
William H. Parsons, 4205 Kennesaw Dr., Birmingham, Ala. 35213, and Lloyd W. Hillman, 4301 Chickasaw, Huntsville, Ala. 35801
Filed Apr. 23, 1992, Ser. No. 873,290
Term of patent 14 years
U.S. Cl. D10—111



346,563
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan
Filed Jun. 28, 1993, Ser. No. 9,977
Term of patent 14 years
U.S. Cl. D10—116



346,564
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,131
Term of patent 14 years
U.S. Cl. D10—126

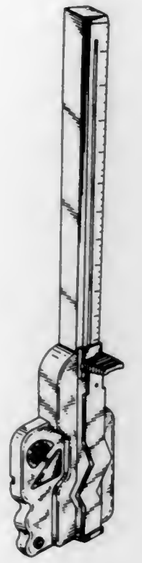


346,565
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,134
Term of patent 14 years
U.S. Cl. D10—126



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346,566
HEIGHT MEASUREMENT DEVICE
Curtis L. Dawson, Oxnard, Calif., assignor to With Design In Mind, Chatsworth, Calif.
Filed Mar. 5, 1993, Ser. No. 5,573
Term of patent 14 years
U.S. Cl. D10—65



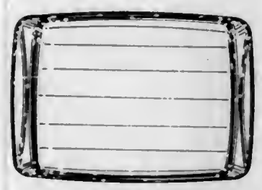
346,567
PASSIVE INFRA-RED SENSOR
Yehuda Rimon, Ramat Hasharon, Israel, assignor to Visonic Ltd., Tel Aviv, Israel
Filed Jun. 28, 1993, Ser. No. 10,055
Term of patent 14 years
U.S. Cl. D10—106



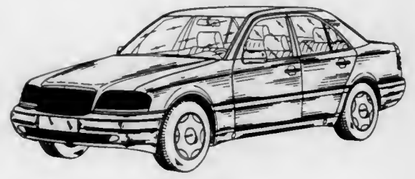
346,568
PLANT STAND
Charles L. Bates, 1598 Hatteras Sound, Mt. Pleasant, S.C. 29464
Filed Oct. 26, 1992, Ser. No. 824
Term of patent 14 years
U.S. Cl. D11—164



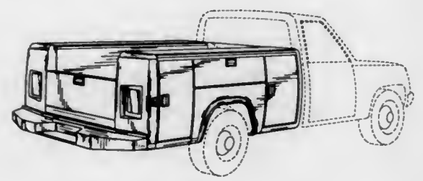
346,569
BUCKLE
Attilio Lovato, Pino Torinese, Italy, assignor to ITW Fastex Italia S.p.A., Torin, Italy
Filed Nov. 18, 1991, Ser. No. 794,179
Claims priority, application Italy, May 17, 1991, T0910-000120
Term of patent 14 years
U.S. Cl. D11—218



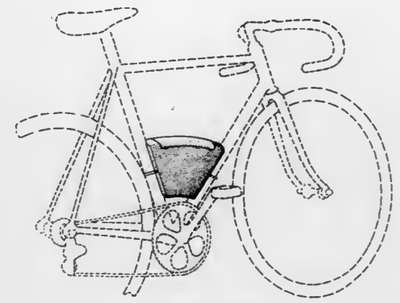
346,570
AUTOMOBILE
Bruno Sacco; Joseph Gallitzendörfer, and Peter Pfeiffer, all of Sindelfingen, Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany
Filed Jun. 6, 1991, Ser. No. 710,936
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1990, 9008367
The portion of the term of this patent subsequent to Apr. 28, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—92



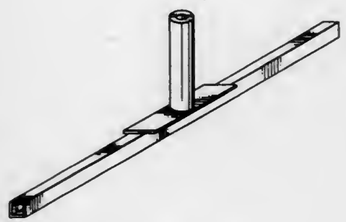
346,571
UTILITY TRUCK BODY
Richard Lewellen; George Kalis, Jr., and Robert M. Lapsley, all of Wooster, Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Filed Jul. 20, 1992, Ser. No. 915,957
Term of patent 14 years
U.S. Cl. D12—98



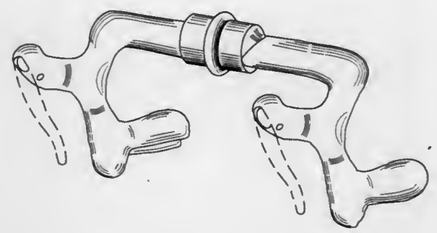
346,572
BICYCLE STORAGE COMPARTMENT
James G. Honey, #305 - 1715 West 11th Avenue, Vancouver, British Columbia, Canada V6J 2C2
Filed Sep. 24, 1992, Ser. No. 948,798
Claims priority, application Canada, Jul. 24, 1992, 24-07-92-9
Term of patent 14 years
U.S. Cl. D12—410



346,573
CART STEERING AXLE ASSEMBLY
John V. Smith, III, 3000 Lakeshore Blvd., St. Cloud, Fla. 34769
Filed Dec. 31, 1991, Ser. No. 815,354
Term of patent 14 years
U.S. Cl. D12—160

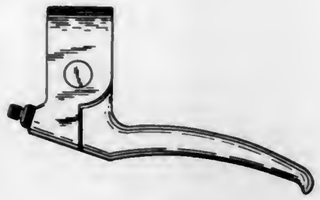


346,574
BICYCLE HANDLEBAR
David R. Jeshurun, 952 Ridgedale, Birmingham, Mich. 48009, and Joseph Toth, 2001 Burger, Dearborn, Mich. 48128, assignors to Weston W. Marsh; Vasanth Surath; David R. Jeshurun and Joseph Toth
Filed Nov. 24, 1992, Ser. No. 1,853
Term of patent 14 years
U.S. Cl. D12—178

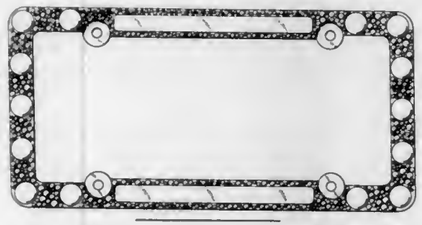


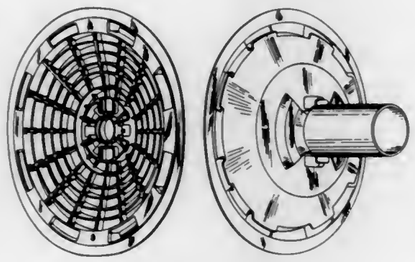
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346,575
BICYCLE BRAKE HANDLE
Cleément Lussier, 821 Henri-Bourassa, Marieville, Quebec, Canada J0L 1J0
Filed May 13, 1992, Ser. No. 882,528
Claims priority, application Canada, Dec. 20, 1991, 2012918
Term of patent 14 years
U.S. Cl. D12—179

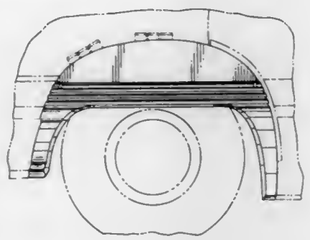


346,576
REAR PARTITION FOR A TANDEM BRAKE BOOSTER
John E. Steer, Forest, Va.; Thomas M. O'Brien, Buchanan, Mich.; Thomas E. Dodd, South Bend, Ind.; Jon R. Dodson, Niles, Mich., and Louis P. Rossigno, Granger, Ind., assignors to Allied-Signal Inc., Morristown, N.J.
Filed Dec. 28, 1992, Ser. No. 997,627
Term of patent 14 years
U.S. Cl. D12—180





346,577
AUTOMOBILE FENDER SKIRT
Jerry Roman, Avon Lake, Ohio, assignor to Roman Chariot, Inc., Cleveland, Ohio
Filed Oct. 1, 1992, Ser. No. 68
Term of patent 14 years
U.S. Cl. D12—184

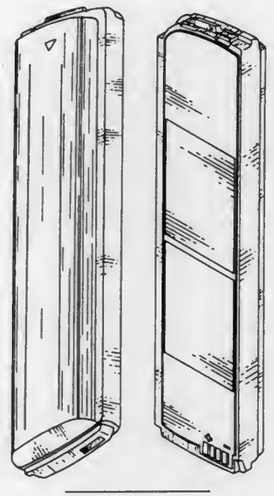


346,578
LICENSE PLATE FRAME
John L. Corey, 17700 S. Avalon Blvd., #55, Carson, Calif. 90746
Filed May 5, 1992, Ser. No. 881,362
Term of patent 14 years
U.S. Cl. D12—193

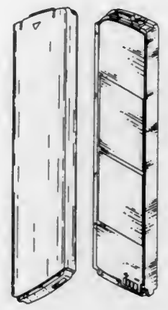
346,579
BATTERY PACK FOR A PORTABLE VIDEO CAMERA
Akinari Mohri, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 6, 1992, Ser. No. 831,328
Claims priority, application Japan, Sep. 10, 1991, 3-27332
Term of patent 14 years
U.S. Cl. D13—103



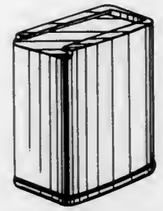
346,580
BATTERY FOR A HAND TELEPHONE
Jouko Tattari, Salo, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Mar. 26, 1992, Ser. No. 859,546
Claims priority, application Finland, Sep. 27, 1991, 783/91
Term of patent 14 years
U.S. Cl. D13—103



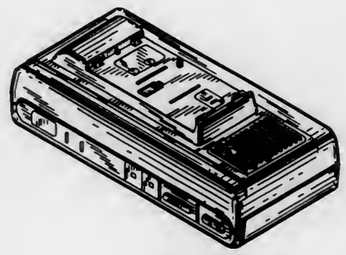
346,581
BATTERY FOR HAND TELEPHONE
Jouko Tattari, Salo, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Mar. 26, 1992, Ser. No. 860,736
Term of patent 14 years
U.S. Cl. D13—103



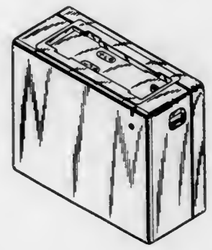
346,582
BATTERY FOR PORTABLE RADIOS
Steven L. Sands, and Richard Culbertson, both of Lynchburg, Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.
Filed Jul. 23, 1992, Ser. No. 917,435
Term of patent 14 years
U.S. Cl. D13—103



346,583
ADAPTER COMBINED WITH A BATTERY CHARGER FOR A VIDEO CAMERA
Akinari Mohri, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,370
Claims priority, application Japan, Feb. 13, 1992, 4-3713
Term of patent 14 years
U.S. Cl. D13—108

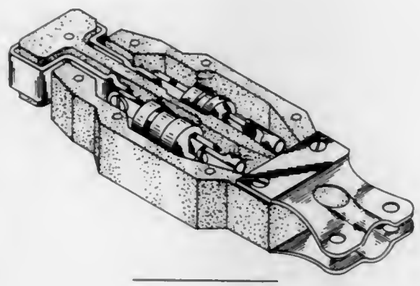


346,584
BATTERY ADAPTOR FOR A PORTABLE VIDEO CAMCORDER BATTERY PACK
Shuhei Taniguchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 22, 1991, Ser. No. 688,348
Claims priority, application Japan, Oct. 22, 1990, 2-35340
Term of patent 14 years
U.S. Cl. D13—119

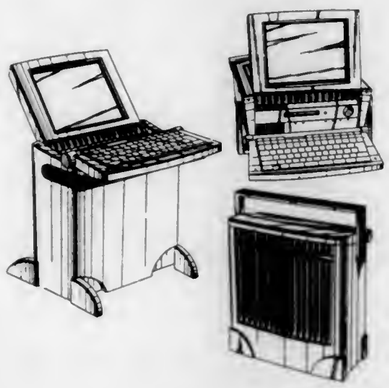


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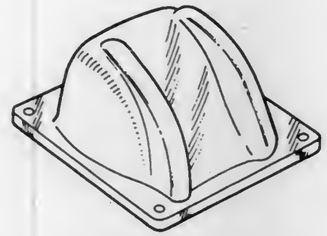
346,585
FUSED ELECTRIC POWER PLUG
William G. Krokaugger, Chatsworth, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
Filed Oct. 21, 1991, Ser. No. 779,574
Term of patent 14 years
U.S. Cl. D13—133



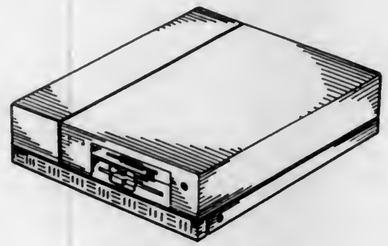
346,586
PROGRAMMING DEVICE FOR A SEQUENCE CONTROLLER
Takao Miyake, and Masayoshi Kawaishi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 23, 1992, Ser. No. 872,663
Claims priority, application Japan, Nov. 5, 1991, 3-33536
Term of patent 14 years
U.S. Cl. D13—163



346,587
CONTOURED TRANSPARENT COVER FOR A PHOTOELECTRIC SWITCH
Jeffrey G. Herman, Lake Orion, and Mark C. Matzka, Rochester Hills, both of Mich., assignors to Break-A-Beam, Inc., Warren, Mich.
Filed Jun. 11, 1992, Ser. No. 897,512
Term of patent 14 years
U.S. Cl. D13—177



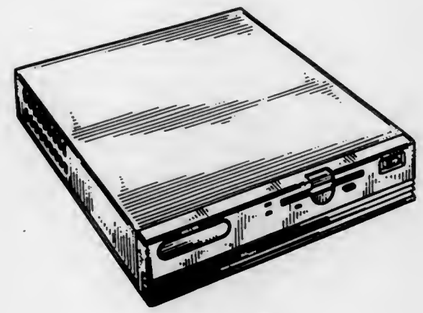
346,588
COMPUTER
Jae-heaun Oh, Kyunggi-do, and Sang-hyun Lee, Seoul, both of Rep. of Korea, assignors to TriGem Computer, Inc., Kyunggi-do, Rep. of Korea
Filed Dec. 11, 1991, Ser. No. 806,923
Claims priority, application Rep. of Korea, Jun. 21, 1991, 91-8897
Term of patent 14 years
U.S. Cl. D14—100



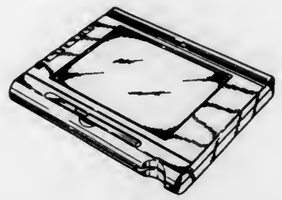
346,589
ELECTRONIC BOOKREADER
W. Todd Andros, 545 San Servando, Coral Gables, Fla. 33146
Filed Apr. 27, 1992, Ser. No. 874,424
Term of patent 14 years
U.S. Cl. D14—100



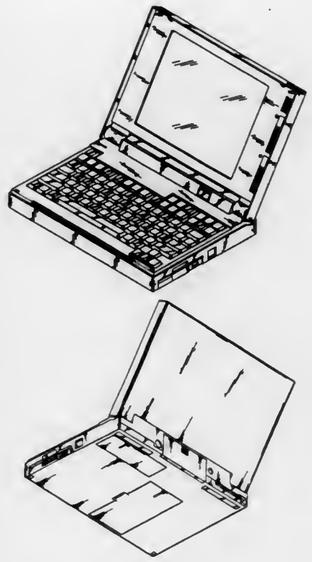
346,590
PERSONAL COMPUTER
Steven D. Gluskoter, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed May 1, 1992, Ser. No. 877,606
Term of patent 14 years
U.S. Cl. D14—100



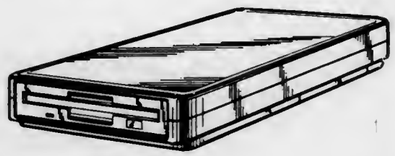
346,591
PORTABLE PEN COMPUTER
Kyung-Rim Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea
Filed Jun. 16, 1992, Ser. No. 899,649
Claims priority, application Rep. of Korea, Dec. 17, 1991, 91-18801
Term of patent 14 years
U.S. Cl. D14—100



346,592
PORTABLE COMPUTER HOUSING
Kenneth A. High; Timothy P. Hiteshew, both of Cary; Aubrey L. Hodges, Creedmoor; Michael L. King, Raleigh; Joseph F. Lamoreux, Raleigh; M. Todd Tucker, Raleigh, and Lawrence A. Stone, Cary, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 3, 1992, Ser. No. 817,253
Term of patent 14 years
U.S. Cl. D14—106

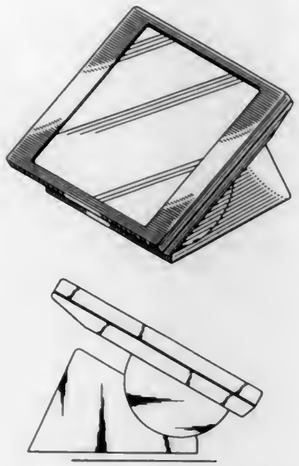


346,593
FLOPPY DISK DRIVE FOR A COMPUTER
Kanji Mizusugi, Mie; Kensho Tsuji, and Hiroshi Yamamizu, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 10, 1992, Ser. No. 849,215
Claims priority, application Japan, Sep. 13, 1991, 3-27848
Term of patent 14 years
U.S. Cl. D14—109

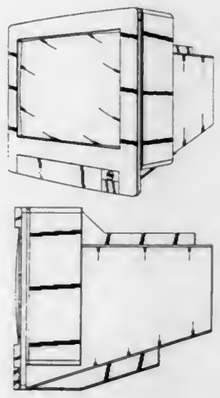


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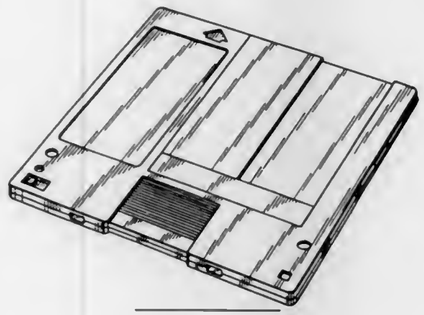
346,594
POINT OF SALE TOUCH DISPLAY SCREEN
Paul T. Skaggs, Spokane, Wash., and William J. Schauert, Downers Grove, Ill., assignors to Olivetti North America, Inc., Spokane, Wash.
Filed Jul. 9, 1992, Ser. No. 912,105
Term of patent 14 years
U.S. Cl. D14—113



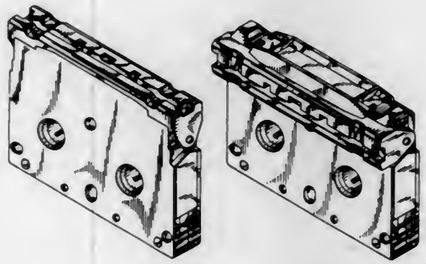
346,595
VIDEO DISPLAY
Markus D. Oates, Near Farnham, United Kingdom, assignor to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 21, 1992, Ser. No. 934,211
Claims priority, application United Kingdom, Feb. 21, 1992, 2021132
Term of patent 14 years
U.S. Cl. D14—113



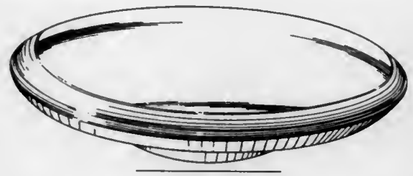
346,596
OPTICAL DISK CARTRIDGE
Takashi Kajita; Masahiko Happo, and Tomiaki Shirakawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 4, 1992, Ser. No. 2,233
Claims priority, application Japan, Jun. 4, 1992, 4-16353; Jun. 4, 1992, 4-16360
Term of patent 14 years
U.S. Cl. D14—114



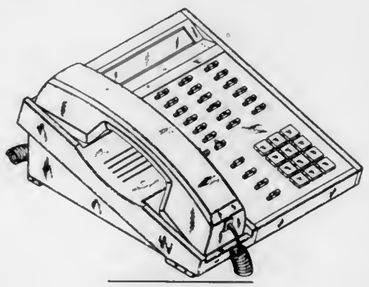
346,597
MAGNETIC TAPE CASSETTE
Masato Tanaka, and Kiyotaka Yanaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 25, 1990, Ser. No. 603,313
Claims priority, application Japan, Apr. 28, 1990, 2-14555
The portion of the term of this patent subsequent to Feb. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—121



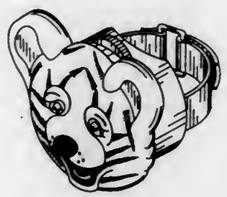
346,598
TRANSCEIVER MODULE FOR A TABLE-TOP TELECONFERENCING SYSTEM
James McCay, New York; Jeremy F. Skene, Mount Sinai, and Steven Vordenberg, New York, all of N.Y., assignors to Coherent Communications Systems Corporation, Hauppauge, N.Y.
Filed Apr. 28, 1992, Ser. No. 850,789
Term of patent 14 years
U.S. Cl. D14—137



346,599
TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown; David Bryant, Austin, Tex.; William McRight, Round Rock, Tex., and Pearce Jones, Austin, Tex., assignors to ROLM Compnay, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,899
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—151



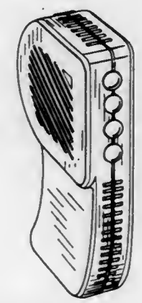
346,600
PORTABLE RADIO
Mark A. Grasso, 20748 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Feb. 5, 1992, Ser. No. 831,284
Term of patent 14 years
U.S. Cl. D14—189



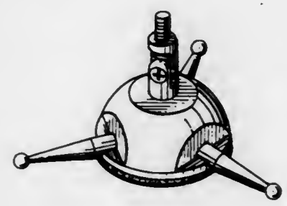
346,601
LOUD SPEAKER SYSTEM FOR EMERGENCY VEHICLES
Harold W. Lyons, Killingworth, Conn., assignor to Whelen Technologies, Inc., Chester, Conn.
Filed Mar. 16, 1992, Ser. No. 852,093
Term of patent 14 years
U.S. Cl. D14—204



346,602
AUDIBLE MESSAGE NOVELTY ITEM
Alexander B. Robertson, Highland Park, Ill., assignor to Adams Apple Distributing L.P., Chicago, Ill.
Filed Jun. 5, 1991, Ser. No. 710,912
Term of patent 14 years
U.S. Cl. D14—217

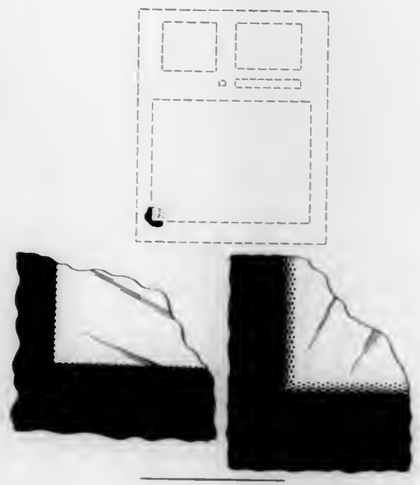


346,603
BASE FOR AN IMITATION ANTENNA
Carl W. Leu, Miami, Fla., assignor to Poli-Auto, Inc., Miami, Fla.
Filed Aug. 19, 1992, Ser. No. 931,529
Term of patent 14 years
U.S. Cl. D14—238

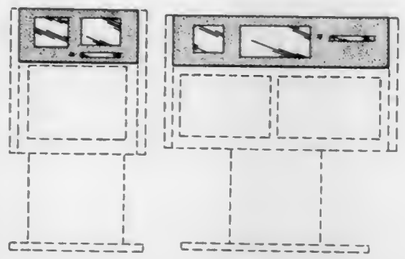


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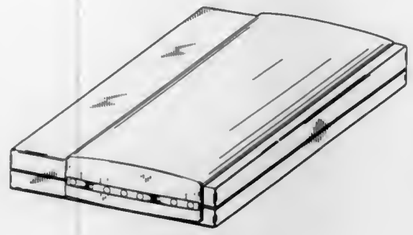
346,604
TRANSITION PATTERN BETWEEN OPAQUE BORDER AND TRANSPARENT SCREEN SURFACE FOR VIDEO SCREEN
Peter T. Bosson, London, England, assignor to British Telecommunications plc, London, England
Filed Nov. 29, 1991, Ser. No. 800,827
Claims priority, application United Kingdom, May 29, 1991, 2014979; May 29, 1991, 2014980; May 29, 1991, 2014981; May 29, 1991, 2014982; Jun. 21, 1991, 2015494; Jun. 21, 1991, 2015495
Term of patent 14 years
U.S. Cl. D14—239



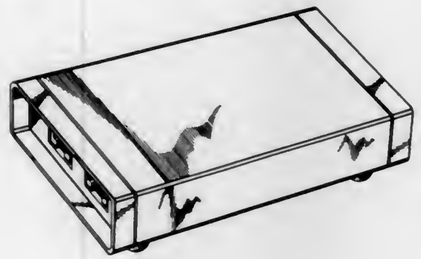
346,605
VIDEO CONFERENCE CAMERA SCREEN
Peter T. Bosson, London, England, assignor to British Telecommunications plc, London, England
Filed Dec. 20, 1991, Ser. No. 810,937
Claims priority, application United Kingdom, Jun. 21, 1991, 2015494; Jun. 21, 1991, 2015495
Term of patent 14 years
U.S. Cl. D14—239



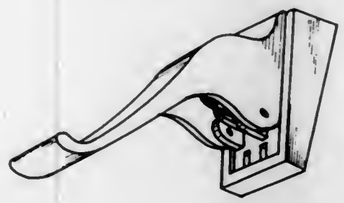
346,606
MODEM
Samuel W. Harris, Norcross; Jonathan M. Wood, Lilburn; Vikram Bhargava, Alpharetta, all of Ga., and Terrence M. Hanrahan, Thousand Oaks, Calif., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.
Filed Jul. 24, 1992, Ser. No. 919,582
Term of patent 14 years
U.S. Cl. D14—242



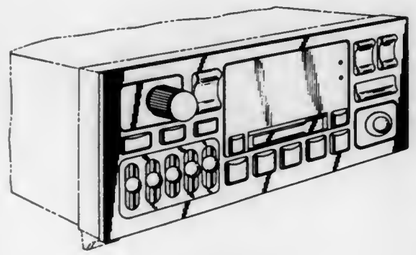
346,607
EXTENDER ENCLOSURE
Vikram Bhargava, Alpharetta, Ga., and David A. Kutilek, San Bruno, Calif., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.
Filed Sep. 9, 1992, Ser. No. 942,523
Term of patent 14 years
U.S. Cl. D14—242



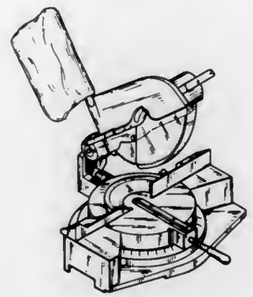
346,608
ATTACHMENT FOR A TELEPHONE SUPPORTING DEVICE
Ampton Leung, Hong Kong, Hong Kong, assignor to World Wide Product Development Co. Ltd., Cairns, Australia
Filed Dec. 1, 1992, Ser. No. 2,069
Term of patent 14 years
U.S. Cl. D14—251



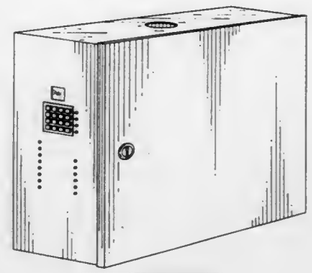
346,609
FRONT PANEL FOR A COMBINED RADIO RECEIVER AND CASSETTE TAPE PLAYER
Andrew P. Person, Farmington Hills; Michael W. Wielgat, Royal Oak; Andrew D. Magic, Livonia; Harlan E. Kifer, Birmingham; Michael G. Moore, Rochester, and Hiroyuki Yabashi, West Bloomfield, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Jan. 16, 1992, Ser. No. 824,474
Term of patent 14 years
U.S. Cl. D14—258



346,610
COMPOUND MITER SAW
Ruey-Zon Chen, No. 261, Jen-Hua Road, Ta-Li Hsiang, Taichung Hsien, Taiwan
Filed Sep. 29, 1992, Ser. No. 952,780
Term of patent 14 years
U.S. Cl. D15—133



346,611
SPOT AND SEAM WELDING MACHINE CONTROLLER
C. R. Hodge, Perry, Okla., and Gary E. Robertson, North Kansas City, Mo., assignors to Eron Corporation, Perry, Okla.
Filed Feb. 28, 1992, Ser. No. 841,742
Term of patent 14 years
U.S. Cl. D15—144



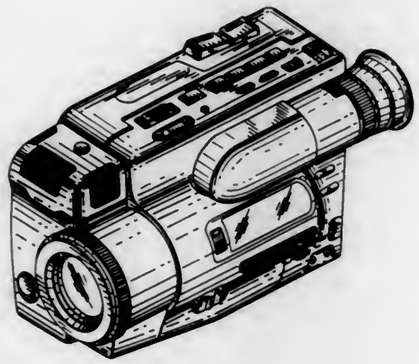
346,612
WINDING GEAR
Sung M. Wong, Tsuen Wan, Hong Kong, assignor to Flying Dragon Manufactory, Tsuen Wan, Hong Kong
Filed May 19, 1992, Ser. No. 885,211
Claims priority, application China, Nov. 23, 1991, 91305008.3
Term of patent 14 years
U.S. Cl. D15—148

346,613
PROTECTIVE GOGGLES
Kendell A. Simm, 8832 Sapphire Ave., Westerminister, Calif. 92683, and Issac J. Waksul, 1900 E. Ocean Blvd., Suite 106, Long Beach, Calif. 90802
Filed Aug. 3, 1992, Ser. No. 923,180
Term of patent 14 years
U.S. Cl. D16—107

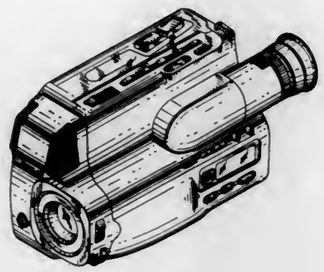


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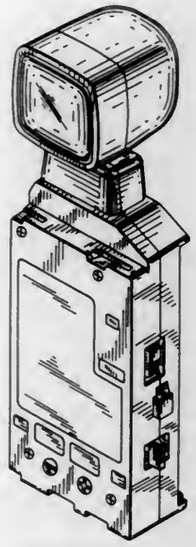
346,614
VIDEO CAMERA COMBINED WITH A VIDEO TAPE RECORDER
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,367
Claims priority, application Japan, Jan. 31, 1991, 4-2423
Term of patent 14 years
U.S. Cl. D16—202



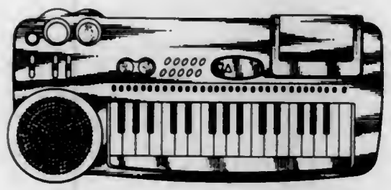
346,615
VIDEO CAMERA COMBINED WITH A VIDEO TAPE RECORDER
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,371
Claims priority, application Japan, Jan. 31, 1992, 4-2424
Term of patent 14 years
U.S. Cl. D16—202



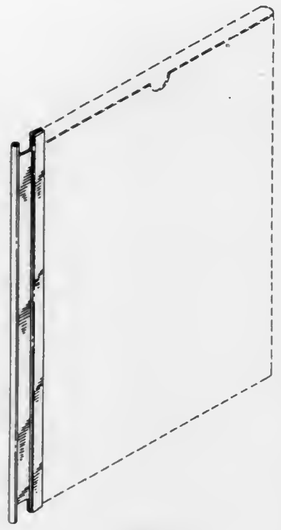
346,616
LIGHT FOR A VIDEO CAMERA
Akinari Mouri, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 23, 1992, Ser. No. 855,941
Claims priority, application Japan, Oct. 1, 1991, 3-29611
Term of patent 14 years
U.S. Cl. D16—239



346,617
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Yuji Oki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,481
Claims priority, application Japan, Mar. 19, 1992, 7628/1992
Term of patent 14 years
U.S. Cl. D17—1



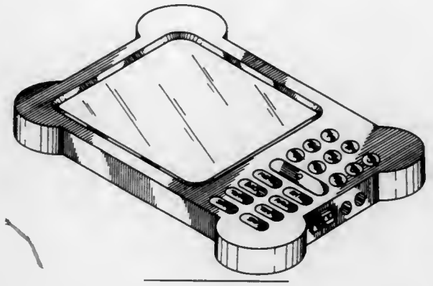
346,618
BINDER
Stephen Holmes, 43 Christowel Street, Camberwell Victoria, 3124, Australia
Filed Jun. 23, 1992, Ser. No. 903,813
Claims priority, application Australia, Dec. 24, 1991, 3886/91
Term of patent 14 years
U.S. Cl. D19—32



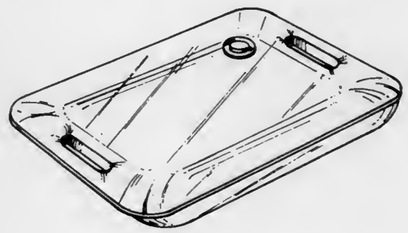
346,619
COMBINED PEN AND NOTE PAPER DISPENSER
Phily Ho, Taipei, Taiwan, assignor to Kudos Finder Trading Co., Ltd., Taipei, Taiwan
Filed Oct. 9, 1991, Ser. No. 773,697
Term of patent 14 years
U.S. Cl. D19—36



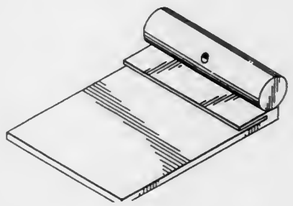
346,620
ELECTRONIC BOOK FOR DISPLAYING SHEET MUSIC
Jeffrey E. McSorley, 861 Parklyn Way, Ferndale, Wash. 98248
Filed Nov. 4, 1992, Ser. No. 1,123
Term of patent 14 years
U.S. Cl. D19—59



346,621
MAT FOR DEVELOPING HAND-TO-EYE COORDINATION IN INFANTS
Linda F. Dial, Atlanta, Ga., assignor to W. B. Nod & Company, Atlanta, Ga.
Filed Sep. 6, 1990, Ser. No. 578,862
The portion of the term of this patent subsequent to Jun. 22, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—64

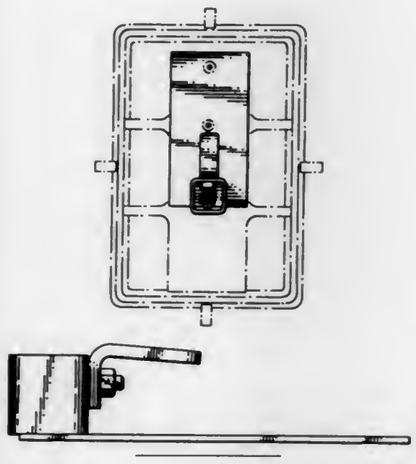


346,622
COMBINED HOLDER FOR A NOTE PAD AND PEN
Donald R. Miller, 5742 SE. 119th, Portland, Oreg. 97266
Filed Sep. 30, 1992, Ser. No. 954,932
Term of patent 14 years
U.S. Cl. D19—78

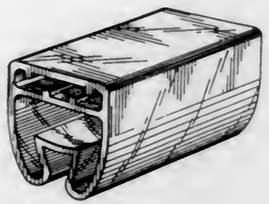


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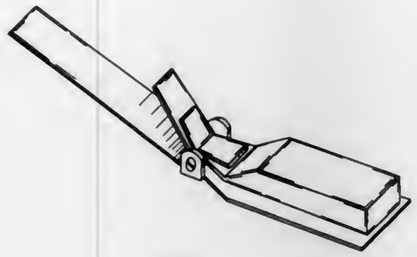
346,623
DETACHABLE BASE PLATE FOR A TRAFFIC SIGN
Paul A. Brydalski, West Seneca, and George A. Glotis, Williamsville, both of N.Y., assignors to Flasher Handling Corp., Depew, N.Y.
Continuation-in-part of Ser. No. 611,869, Nov. 13, 1990, Pat. No. Des. 331,605. This application Sep. 17, 1992, Ser. No. 948,829
Term of patent 14 years
U.S. Cl. D20—41



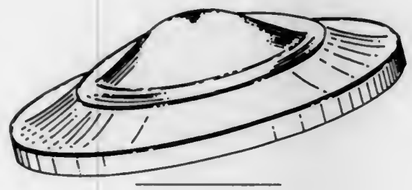
346,624
SIGN HOLDER
Lars Skarin, Otterbäcken, Sweden, assignor to Partex Fabriksaktiebolag, Gullspang, Sweden
Filed Sep. 2, 1992, Ser. No. 938,645
Claims priority, application Sweden, Mar. 3, 1992, 92 0478; Mar. 3, 1992, 92-0477
Term of patent 14 years
U.S. Cl. D20—43



346,625
MAGNETIC BINGO MARKER PICKUP TOOL
William H. Lettmoden, 59 Van Vlack Rd., Hopewell Junction, N.Y. 12533
Filed Sep. 11, 1992, Ser. No. 943,593
Term of patent 14 years
U.S. Cl. D21—48



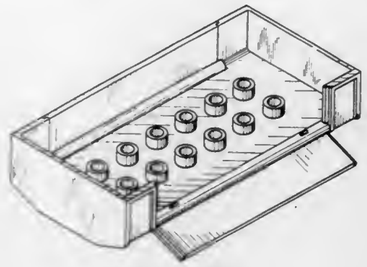
346,626
FLYING DISC TOY
Michael F. St. Lawrence, 319 Hermit's Trail, Altamonte Springs, Fla. 32701
Filed May 18, 1992, Ser. No. 885,230
Term of patent 14 years
U.S. Cl. D21—86



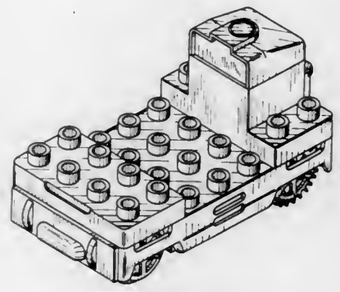
346,627
ELEMENT FOR A TOY BUILDING SET
Erik Bach, Molleparken, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,812
Term of patent 14 years
U.S. Cl. D21—108



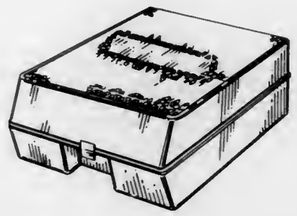
346,628
PLATFORM FOR A TOY TRUCK
Ede F. Ruszkai, København, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,895
Term of patent 14 years
U.S. Cl. D21—108



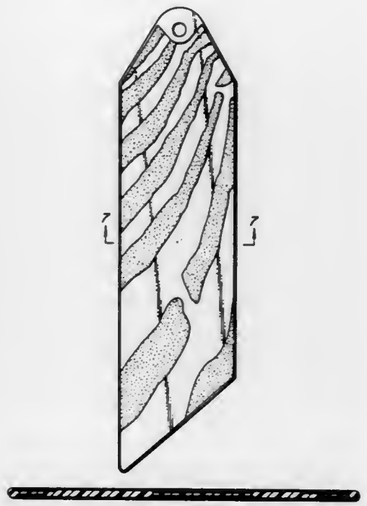
346,629
BUILDING BASE FOR A TOY VEHICLE
Ede F. Ruszkai, Kobenhavn, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,915
Term of patent 14 years
U.S. Cl. D21—108



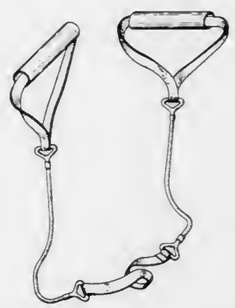
346,630
STEPPING EXERCISE STAND
Martin A. Van Der Hoeven, #303 3330 Carlsbad Blvd., Carlsbad, Calif. 92008
Filed Sep. 28, 1992, Ser. No. 951,558
Term of patent 14 years
U.S. Cl. D21—191



346,631
FLAG FOR TAG-TYPE GAME
Vincent Morales, Benicia, Calif., assignor to Discovery Toys, Inc., Martinez, Calif.
Filed Jan. 30, 1992, Ser. No. 828,591
Term of patent 14 years
U.S. Cl. D21—199



346,632
ISOMETRIC EXERCISER
Edward Castellanos, 385 Midland Ave., Unit 14, Garfield, N.J. 07026
Filed Jul. 15, 1991, Ser. No. 729,815
Term of patent 14 years
U.S. Cl. D21—198

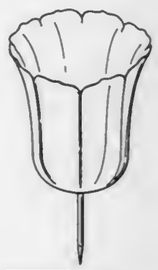


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346,633
IN-LINE ROLLER-SKATE
Gino Conte, Treviso, Italy, assignor to Roces S.r.l., Montebelluna, Italy
Filed Jan. 22, 1993, Ser. No. 3,967
Claims priority, application World Int. Prop. O., Jul. 29, 1992, DM/023 473
Term of patent 14 years
U.S. Cl. D21—226



346,634
COMBINED BROKEN TEE RECEPTACLE AND TEE MARKER
Elaine Evers, 1713 Sunset Dr., Carbondale, Ill. 62901
Filed Oct. 18, 1990, Ser. No. 600,220
Term of patent 14 years
U.S. Cl. D21—234



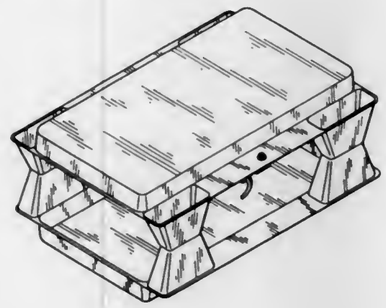
346,635
TWO SHOTS BLOW GUN
Leng Vang, 7860 Cedar Springs Way, Sacramento, Calif. 95832
Filed Mar. 5, 1991, Ser. No. 664,957
Term of patent 14 years
U.S. Cl. D22—102



346,636
BIPOD FOR SUPPORTING A FIREARM
Daniel L. Bechtel, 4701 Inwood Rd., Ft. Worth, Tex. 76109
Filed Apr. 17, 1992, Ser. No. 870,044
Term of patent 14 years
U.S. Cl. D22—108



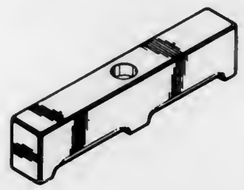
346,637
ILLUMINATED FLEA TRAP
Joe Exum, Snow Hill, and Jess Mellenthin, Oxford, both of N.C., assignors to Happy Jack, Inc., Snow Hill, N.C.
Filed Jan. 27, 1992, Ser. No. 825,704
Term of patent 14 years
U.S. Cl. D22—122



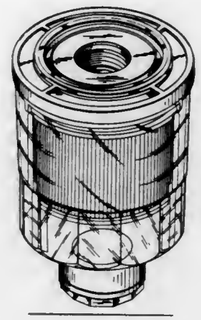
346,638
FISHING ROD AND REEL SUPPORT STAND
Otis J. Streeter, 1217 Alabama Ave., SW., Birmingham, Ala. 35211
Filed Sep. 1, 1992, Ser. No. 937,664
Term of patent 14 years
U.S. Cl. D22—147



346,639
GAME TOWING HANDLE
Ernest C. Smith, 1813 Crosstown Blvd., NW., Andover, Minn. 55304
Filed Aug. 3, 1992, Ser. No. 924,255
Term of patent 14 years
U.S. Cl. D22—199



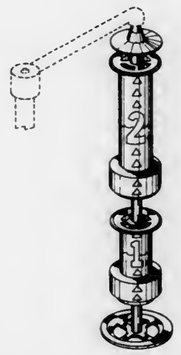
346,640
FUEL FILTER
Yong S. Kim, 120-20 Kwe-Ahn-Dong, Nam-Ku, Buchon-City, Kyung-Ki-Do, Rep. of Korea
Filed May 6, 1992, Ser. No. 880,326
Term of patent 14 years
U.S. Cl. D23—209



346,641
AIR VALVE
Robert S. Scheurer, 1627 Midwestern Pkwy., Wichita Falls, Tex. 76302
Filed Oct. 26, 1992, Ser. No. 806
Term of patent 14 years
U.S. Cl. D23—233



346,642
TOILET FLUSH SIZE SELECTION UNIT
Dominick A. Ali, 1279 E. 4th St., Brooklyn, N.Y. 11230, and Gerald J. Apicello, 489 High St., Monroe, N.N.Y. 10950
Filed Mar. 8, 1991, Ser. No. 667,061
Term of patent 14 years
U.S. Cl. D23—236

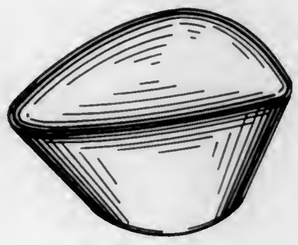


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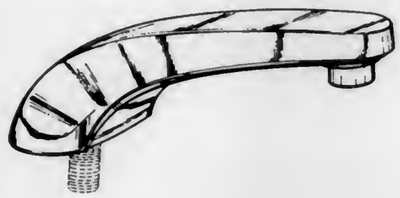
346,643
VALVE FOR WATER CLOSETS
John S. Gregory, 4421 Shearwater Way, Oceanside, Calif. 92057
Filed Aug. 14, 1991, Ser. No. 745,104
Term of patent 14 years
U.S. Cl. D23—236



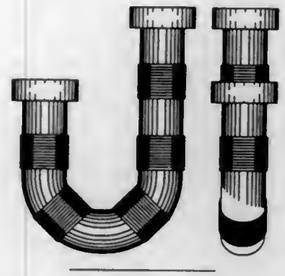
346,644
PLUMBING FITTING HANDLE
Thomas A. Bonnell, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 823,646
Term of patent 14 years
U.S. Cl. D23—252



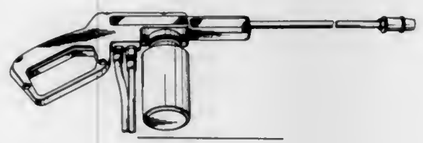
346,645
FAUCET SPOUT
Loran R. Hill, Indianapolis, and Anthony G. Spangler, Sheridan, both of Ind., assignors to MASCO Corporation of Indiana, Indianapolis, Ind.
Filed Apr. 26, 1991, Ser. No. 692,022
Term of patent 14 years
U.S. Cl. D23—255



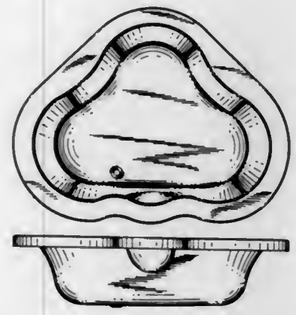
346,646
FLEXIBLE SINK TRAP
Luke Doyle, R.R. #2, 2445 Arthur Street West, Thunder Bay, Ontario P7C 4V1, Canada
Filed Jun. 14, 1991, Ser. No. 715,239
Term of patent 14 years
U.S. Cl. D23—268



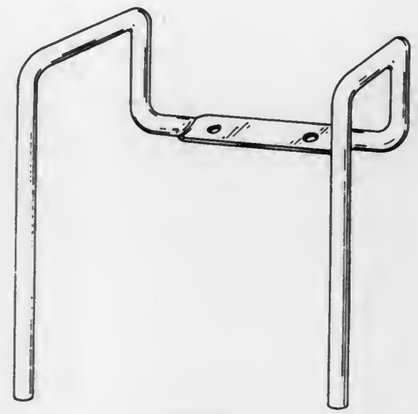
346,647
PRESSURE WASHER SPRAY GUN
Henry K. Arnette, Fort Mill, S.C.; Jan J. Reiss, Matthews, N.C., and Graylon D. Smith, Fort Mill, S.C., assignors to Textron Inc., Providence, R.I.
Filed Oct. 16, 1992, Ser. No. 581
Term of patent 14 years
U.S. Cl. D23—225



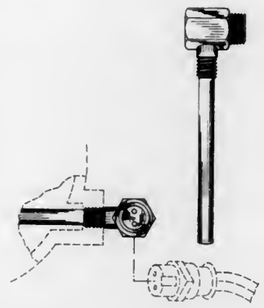
346,648
BATHTUB
Robin H. Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of Ser. No. 554,031, Jul. 17, 1990, Pat. No. Des. 330,934. This application Aug. 1, 1991, Ser. No. 738,939
Term of patent 14 years
U.S. Cl. D23—277



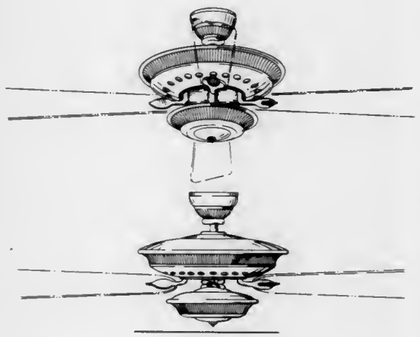
346,649
ARMREST FOR A TOILET
Stephen F. Verona, Bel Air, Calif., assignor to The Original Throne Chair Company, Beverly Hills, Calif.
Filed May 11, 1992, Ser. No. 882,643
Term of patent 14 years
U.S. Cl. D23—309



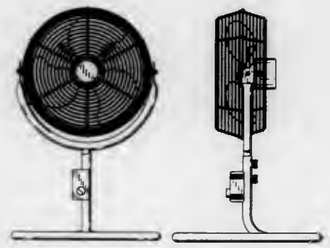
346,650
RESISTIVE WATER HEATER ELEMENT
Richard W. Bremer, P.O. Box 1395, Hemet, Calif. 92343
Filed Jan. 15, 1991, Ser. No. 641,369
Term of patent 14 years
U.S. Cl. D23—322



346,651
COMBINED MOUNTING CANOPY, MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT FOR A CEILING FAN
Charles J. DiPasquale, Carrollton, Tex., assignor to Smartel, Inc., Carrollton, Tex.
Filed Mar. 11, 1993, Ser. No. 5,761
Term of patent 14 years
U.S. Cl. D23—377

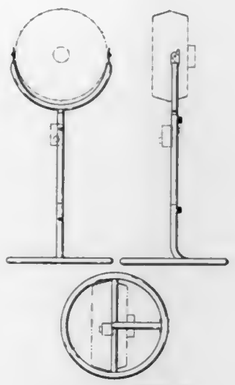


346,652
HIGH VELOCITY FAN WITH A CONVERTIBLE STAND
Bernard Chiu, Ashland, Mass.; Jul-Shang Wang, and Johnson Peng, both of Taipei, Taiwan, assignors to Duracraft Corporation, Whitinsville, Mass.
Filed Mar. 4, 1993, Ser. No. 5,429
Term of patent 14 years
U.S. Cl. D23—378

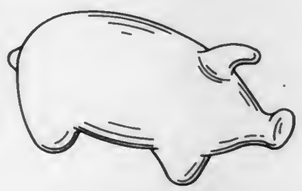


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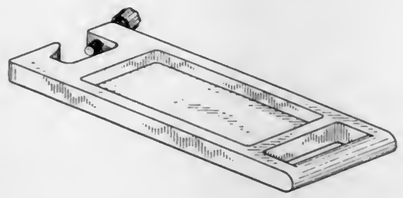
346,653
FAN STAND
Bernard Chiu, Ashland, Mass., and Jui-Shang Wang, Taipei, Taiwan, assignors to Duracraft Corporation, Whitinsville, Mass.
Filed Mar. 4, 1993, Ser. No. 5,423
Term of patent 14 years
U.S. Cl. D23—411



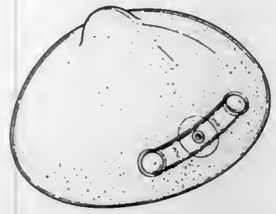
346,654
CAPSULE
Keith A. Bennell, Swindon, Great Britain, assignor to R. P. Scherer Corporation, Troy, Mich.
Filed Apr. 29, 1993, Ser. No. 7,715
Claims priority, application United Kingdom, Nov. 4, 1992, 2026866
Term of patent 14 years
U.S. Cl. D24—104



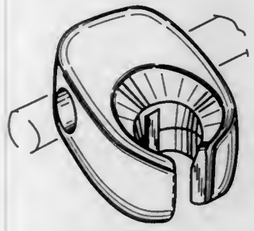
346,655
COMBINED TRAY AND HANDLE FOR AN INTRAVENOUS POLE
Jay W. Harris, 1614 Bolivar, Denton, Tex. 76201
Filed Nov. 18, 1991, Ser. No. 793,714
Term of patent 14 years
U.S. Cl. D24—128



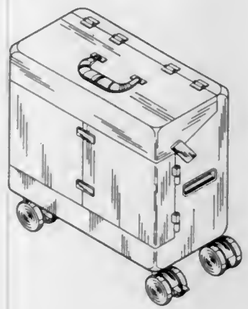
346,656
SALINE INFLATABLE NIPPLE AREOLAR PROSTHESIS
Allen D. Rosen, 65 Roosevelt Blvd., North Caldwell, N.J. 07006
Filed May 28, 1992, Ser. No. 889,309
Term of patent 14 years
U.S. Cl. D24—155



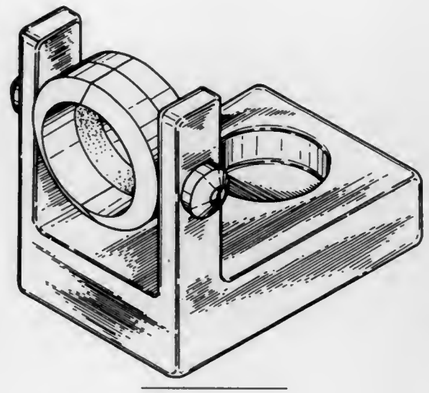
346,657
HOLDER FOR A DENTAL INSTRUMENT
Pierre LaPlante, Newberg; Carl G. Nordstrom, Lake Oswego, and Larry D. Osterhoudt, Newberg, all of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Mar. 31, 1992, Ser. No. 861,485
Term of patent 14 years
U.S. Cl. D24—176



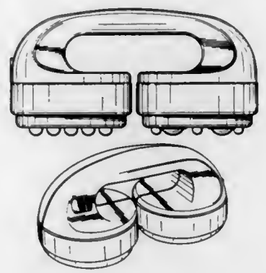
346,658
PORTABLE DENTAL HOUSING
James R. Bailey, Indianapolis, and C. Robert Schrock, Greenwood, both of Ind., assignors to International Equipment & Supply Corp., Indianapolis, Ind.
Continuation-in-part of Ser. No. 540,508, Jun. 19, 1990, Pat. No. Des. 332,313. This application Nov. 29, 1991, Ser. No. 804,213
The portion of the term of this patent subsequent to Jan. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—177



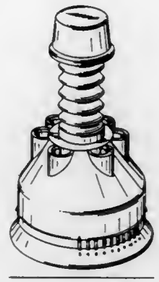
346,659
HOLDER FOR A BABY BOTTLE
Kenneth Adams, 33565 University Dr., Union City, Calif. 94587
Filed Jan. 5, 1993, Ser. No. 3,282
Term of patent 14 years
U.S. Cl. D24—199



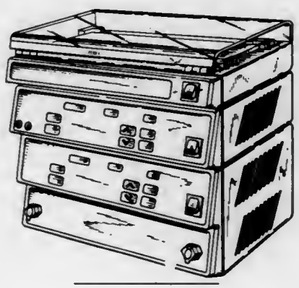
346,660
HAND-HELD ELECTRIC MASSAGER
Chi-Wing Chiang, Kowloon, Hong Kong, assignor to Futec Products Limited, Kowloon, Hong Kong
Filed Mar. 23, 1993, Ser. No. 6,066
Claims priority, application United Kingdom, Jul. 6, 1992, 2024034
Term of patent 14 years
U.S. Cl. D24—215



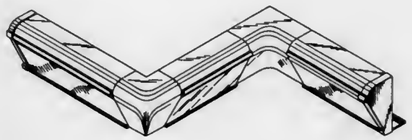
346,661
ADJUSTABLE DISPENSER FOR ANTIBIOTIC DISKS
Graham A. Thomson, London, England, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands
Filed Mar. 25, 1992, Ser. No. 856,934
Claims priority, application United Kingdom, Sep. 25, 1991, 2017728
Term of patent 14 years
U.S. Cl. D24—224



346,662
COMBINED STACKED TEMPERATURE REGULATOR, POWER SUPPLY AND GEL DRYER FOR ELECTROPHORESIS
Duke Larsen, Lake Geneva; Robert W. Dunst, Cedarburg; Timothy G. J. Ehr, Menomonee Falls; Stephen H. Gorski, Wauwatosa; Michael E. Hansen, and Brian P. Walsh, both of Pewaukee, all of Wis., assignors to Fotodyne Incorporated, Hartland, Wis.
Filed Jan. 14, 1992, Ser. No. 820,391
Term of patent 14 years
U.S. Cl. D24—233



346,663
CORNICE COVER
Arnold McKnight, Chicago, Ill., assignor to Thermo Plastics Display, Inc., Chicago, Ill.
Filed Apr. 8, 1992, Ser. No. 866,228
Term of patent 14 years
U.S. Cl. D25—55

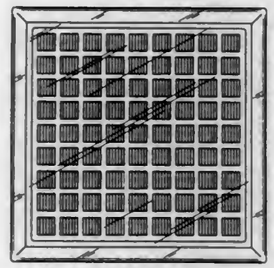


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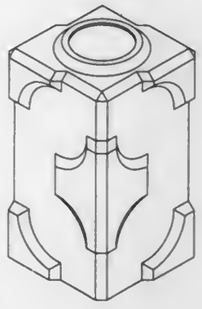
346,664
STORE FRONT
Joel Brand, Houston, Tex., assignor to Ethan Allen Inc., Danbury, Conn.
Filed Oct. 15, 1992, Ser. No. 495
The portion of the term of this patent subsequent to Apr. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—59



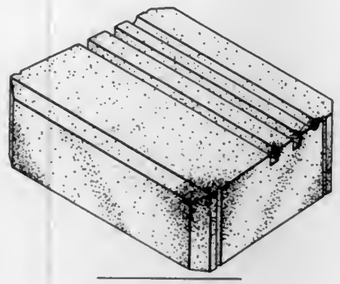
346,665
GLASS BLOCK
Peter S. Aldridge, Corning, N.Y., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.
Filed Jun. 25, 1992, Ser. No. 903,902
Term of patent 14 years
U.S. Cl. D25—103



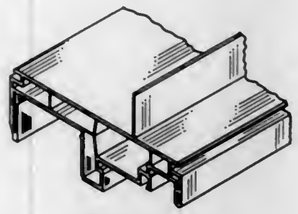
346,666
CONTAINER BLOCK
Bob G. Newsom, Virgie, Ky., assignor to Advanced Building Technologies, Inc., Olive Hill, Ky.
Filed Aug. 17, 1992, Ser. No. 930,225
Term of patent 14 years
U.S. Cl. D25—113



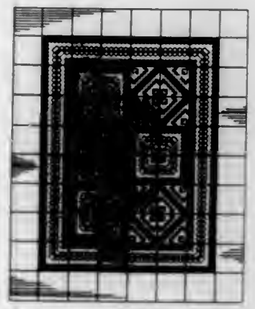
346,667
RETAINING WALL BLOCK
Peter J. Blomquist, Lake Elmo, and Todd P. Strand, Forest Lake, both of Minn., assignors to Kiltie Corporation, North St. Paul, Minn.
Filed Sep. 9, 1992, Ser. No. 942,074
Term of patent 14 years
U.S. Cl. D25—113



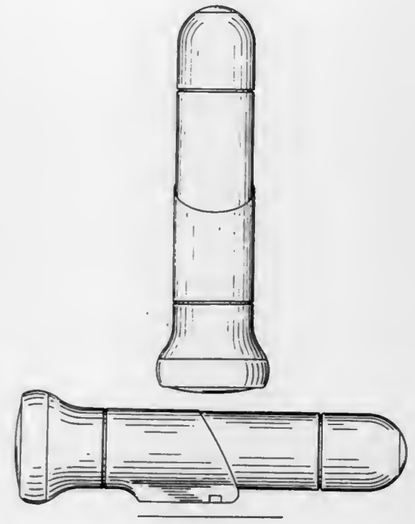
346,668
FRAME MEMBER
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,822
Term of patent 14 years
U.S. Cl. D25—124



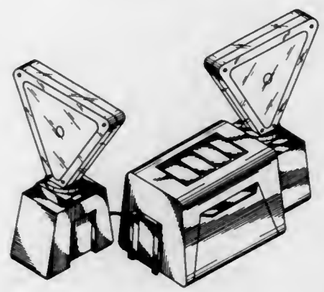
346,669
CERAMIC TILE UNIT FOR A FLOOR OR A WALL
Jose Benavent Adrian, Nules, Spain, assignor to Gres de Nules, S.A.-Gresnul, Nules, Spain
Filed Apr. 17, 1991, Ser. No. 686,534
Claims priority, application Spain, Oct. 18, 1990, 21.183
Term of patent 14 years
U.S. Cl. D25—138



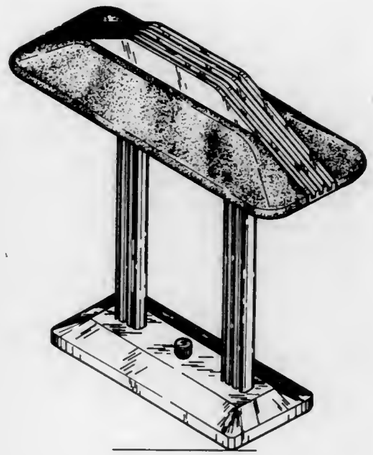
346,670
BICYCLE HEAD LAMP
Takashi Ueda, Izumi, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Mar. 11, 1992, Ser. No. 853,302
Claims priority, application Japan, Sep. 19, 1991, 3-28397
Term of patent 14 years
U.S. Cl. D26—28



346,671
SOLAR POWERED PAIR OF VEHICLE SAFETY LIGHTS
Terry K. Herring, 719 S. Main St., Montpelier, Ind. 47359
Filed Apr. 24, 1992, Ser. No. 873,051
Term of patent 14 years
U.S. Cl. D26—35



346,672
TABLE LAMP
James Chan, No. 1, Lane 27, Ping An Street, Changhua, Taiwan
Filed Jun. 11, 1991, Ser. No. 713,329
Term of patent 14 years
U.S. Cl. D26—109

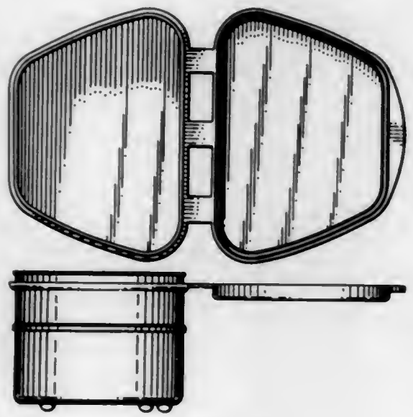


346,673
WATER PIPE
Mark R. Newman, P.O. Box 17009, Tucson, Ariz. 85731
Filed Sep. 2, 1993, Ser. No. 12,447
Term of patent 14 years
U.S. Cl. D27—162



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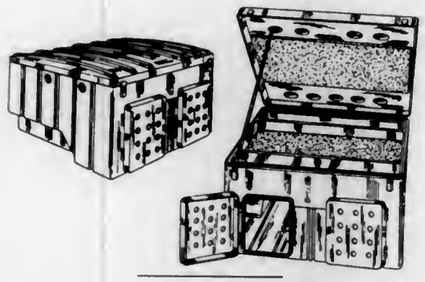
346,674
DENTURE BATH CONTAINER
Robert D. Berghash, Williamsville, N.Y., assignor to Brimms Inc., Tonawanda, N.Y.
Filed Jul. 8, 1992, Ser. No. 910,683
Term of patent 14 years
U.S. Cl. D28—73



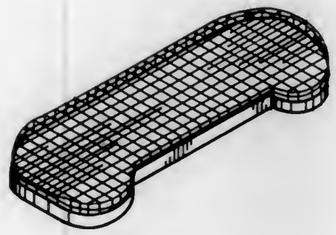
346,675
DISPENSING CONTAINER FOR A COSMETIC PRODUCT
Frank J. Lang, 1060 Calico Ridge Dr., Henderson, Nev. 89015, and Robert Chadfield, 6101 34th St., #16F West, Bradenton, Fla. 34210
Continuation-in-part of Ser. No. 705,560, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 613,285, Nov. 15, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 902,283
Term of patent 14 years
U.S. Cl. D28—76



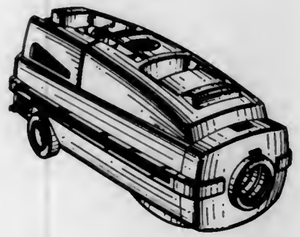
346,676
ANIMAL TRANSPORTATION CONTAINER
Eugene J. Hopper, Jr., 1632 Bald Hill Loop, Madison, N.C. 27025, and Alexander M. Smith, II, Elkin, N.C., assignors to Eugene J. Hopper, Jr., Madison, N.C.
Filed Oct. 29, 1992, Ser. No. 937
Term of patent 14 years
U.S. Cl. D30—108



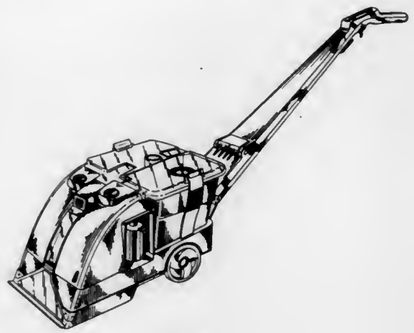
346,677
ANIMAL LITTER-TRAY ACCESSORY
Stephen Casmira, 488 Summer St., New Bedford, Mass. 02740
Filed Jun. 26, 1992, Ser. No. 903,196
Term of patent 14 years
U.S. Cl. D30—161



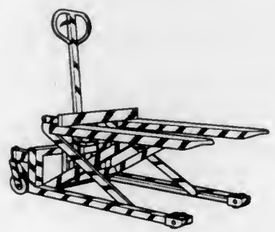
346,678
VACUUM CLEANER AND TOOL HOLDER
Robert W. Burkhardt, Bristol, Tenn., assignor to Electrolux Corporation, Marietta, Ga.
Filed Jul. 13, 1992, Ser. No. 912,744
Term of patent 14 years
U.S. Cl. D32—21



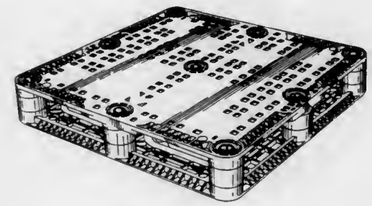
346,679
CARPET CLEANER
Sidney H. Bradd, Solon; Milton G. Kieft, and Gerald L. Melegari, both of North Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio
Continuation of Ser. No. 632,514, Dec. 24, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 7,693
Term of patent 14 years
U.S. Cl. D32—22



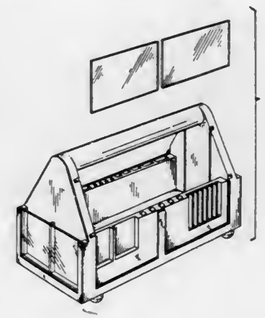
346,680
HYDRAULIC HIGH LIFT PALLET TRUCK
Steven Lee, 11th Fl., No. 603, Sec. 5, Chung Shan N. Rd., Taipei, Taiwan
Filed Jan. 8, 1993, Ser. No. 3,386
Term of patent 14 years
U.S. Cl. D34—31



346,681
TWO PART INTERLOCKING PLASTIC PALLET
Brandon L. Pigott, 1017 Elmwood Ave., Wilmette, Ill. 60091; Schuyler F. Pigott, 1122 N. Patton St., Arlington Heights, Ill. 60004; Peter S. Pigott, 803 Elmwood Ave., Wilmette, Ill. 60091, and Maurice J. Pigott, 591 Cherry St., Winnetka, Ill. 60093
Continuation-in-part of Ser. No. 961,396, Oct. 15, 1992, which is a continuation-in-part of Ser. No. 644,928, Jan. 23, 1991, Pat. No. 5,197,395, which is a continuation-in-part of Ser. No. 230,025, Aug. 9, 1988, Pat. No. 4,843,976. This application Apr. 21, 1993, Ser. No. 7,372
Term of patent 14 years
U.S. Cl. D34—38



346,682
TOOL BOX
Ronnie Trovato, 82 Eaton Pl., Bloomfield, N.J. 07003
Filed Dec. 11, 1992, Ser. No. 2,477
Term of patent 14 years
U.S. Cl. D3—308



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF MAY, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See—*
Bookbinder, Mark J.; Bellinger, Chrisotpher M.; Johnson, Dwayne L.; and , 5,308,231, Cl. 418-55.600.

A. Ahlstrom Corporation: *See—*
Kapanen, Kari; Lukkarinen, Seppo; Parviainen, Jouni; and Vikio, Pentti, 5,308,384, Cl. 95-260.000.

A. G. Schmid AG: *See—*
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A. O. Smith Corporation: *See—*
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AB Rexroth Mecman: *See—*
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ABB Power T&D Company Inc.: *See—*
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ABB Stromberg Drives OY: *See—*
Johansson, Kai; Lounila, Matti; and Kokkonen, Juha, 5,309,086, Cl. 324-117.00R.

ABB Vetco Gray Inc.: *See—*
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Abbasi, Hamid A.: *See—*
Khinkis, Mark J.; and Abbasi, Hamid A., 5,307,746, Cl. 110-245.000.
Khinkis, Mark J.; and Abbasi, Hamid A., 5,307,748, Cl. 110-346.000.

Abbott Laboratories: *See—*
Donovan, James J.; and Worobec, Stephen W., 5,308,775, Cl. 436-518.000.
Garleb, Keith A.; DeMichele, Stephen J.; Rausch, Linda S.; Fuller, Martha K.; and Behr, Stephen R., 5,308,832, Cl. 514-2.000.
Manosalva, Edgar G.; Ross, Jeffrey R.; and Goldhardt, Donald J., 5,307,924, Cl. 206-63.300.
Mehta, Smriti U.; Johnson, Jill E.; Dailey, Stephen H.; Desai, Suresh M.; and Devare, Sushil G., 5,308,750, Cl. 435-5.000.

Abe, Sachiyuki; Sato, Hisao; Nasu, Hiroaki; and Hagiwara, Yasuaki, to Seiko Epson Corporation. Data selection device. 5,309,560, Cl. 395-166.000.

Abe, Tetsuya; and Morisawa, Tahei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom finder. 5,309,286, Cl. 359-695.000.

Abe, Tomematsu, to Kabushiki Kaisha Nichiwa. Check valve for fluid containers and a method of manufacturing the same. 5,308,163, Cl. 383-44.000.

Ables, Elden: *See—*
Wuest, Craig R.; Bionta, Richard M.; and Ables, Elden, 5,308,987, Cl. 250-374.000.

Abrams, Richard L.: *See—*
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ABU Garcia Produktion AB: *See—*
Karlsson, Jarding, 5,308,019, Cl. 242-279.000.

Acer Peripherals, Inc.: *See—*
Leu, Fang-Jye, 5,309,348, Cl. 363-71.000.

Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for stacking flat workpieces on a stacking table. 5,308,056, Cl. 271-183.000.

Acheson Industries, Inc.: *See—*
Stoutenburg, Edmond J., 5,307,660, Cl. 72-42.000.

Ackerman, John G.: *See—*
Agbezuge, Lawrence K.; Taylor, Thomas N.; and Ackerman, John G., 5,309,179, Cl. 346-140.00R.

Actel Corporation: *See—*
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,309,091, Cl. 324-158.00R.
Hawley, Frank W.; and Yeouchung, Yen, 5,308,795, Cl. 437-195.000.

Adachi, Hiroyuki: *See—*
Yamamoto, Akira; Kimura, Shigeo; Kusaka, Kensaku; Muruta, Hidekazu; and Adachi, Hiroyuki, 5,309,210, Cl. 355-285.000.

Adachi, Shoji; Takeuchi, Nobuaki; and Handa, Ryoji, to Ando Electric Co., Ltd.; and Nippon Telegraph and Telephone Corporation. High-power light pulse generating apparatus. 5,309,455, Cl. 372-25.000.

Adam, Gerard: *See—*
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean; Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice, 5,308,866, Cl. 514-469.000.

Adam, Norbert: *See—*
Markusch, Peter H.; Kogelnik, Hans-Joachim; Dormish, Jeffrey F.; and Adam, Norbert, 5,308,657, Cl. 427-284.000.

Adam, Peter: *See—*
Pillhoefer, Horst; Thoma, Martin; Walter, Heinrich; and Adam, Peter, 5,308,399, Cl. 118-719.000.

Adamis, Panagiotis: *See—*
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Adams Atomic Engines, Inc.: *See—*
Adams, Rodney M., 5,309,492, Cl. 376-381.000.

Adams, Paul E.: *See—*
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Adams, R. James: *See—*
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Adams, Rodney M., to Adams Atomic Engines, Inc. Control for a closed cycle gas turbine system. 5,309,492, Cl. 376-381.000.

Adams, Wilmer L.; and Torborg, Ralph H., to Honeywell, Inc. Adaptive forced warm air furnace using analog temperature and pressure sensors. 5,307,990, Cl. 236-11.000.

ADC Telecommunications, Inc.: *See—*
Emmons, David J.; and Atwill, Douglass H., II, 5,308,656, Cl. 427-282.000.

Addeo, Antonio; and Vezzoli, Annibale, to Centro Sviluppon Settori Impiego S.r.l. Process for preparing thermoinsulating and/or structural double-walled molded bodies. 5,308,557, Cl. 264-28.000.

Ade, Rolf, to SWF Auto-Electric GmbH. Conductor embedded in an injection molded component for the cover of an electric motor. 5,309,053, Cl. 310-71.000.

Adelstein, S. James: *See—*
Kassis, Amin I.; and Adelstein, S. James, 5,308,605, Cl. 424-1.100.

Aderhold, Daniel O. Electronic speed signal ratio measuring apparatus for controlling operations. 5,309,093, Cl. 324-161.000.

Adir et Compagnie: *See—*
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Adler, David E.; McCallum, Thomas F., III; Shulman, Jan E.; and Weinstein, Barry, to Rohm and Haas Company. Aminoacryloyl-containing terpolymers. 5,308,532, Cl. 252-174.230.

Adrian J. Paul Company: *See—*
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Adrian, Willy: *See—*
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Advanced Micro Devices: *See—*
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African Oxygen Limited: *See—*
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Agbezuge, Lawrence K.; Taylor, Thomas N.; and Ackerman, John G., to Xerox Corporation. Enhancement of ink flow ducts with high surface energy material inclusions. 5,309,179, Cl. 346-140.00R.

Agfa-Gevaert, N.V.: *See—*
Defieuw, Geert H.; Uytterhoeven, Herman J.; Wehrmann, Rolf; and Ebert, Wolfgang, 5,308,736, Cl. 430-200.000.
Defieuw, Geert H., 5,308,825, Cl. 503-227.000.
De Keyzer, Rene M.; and Lamotte, Johan J., 5,308,738, Cl. 430-230.000.
Uytterhoeven, Herman; and Bastiaens, Luc, 5,308,739, Cl. 430-258.000.

AGI Incorporated: *See—*
Curtis, Michael; Henkel, Dean; and Oppenheimer, James, 5,307,927, Cl. 206-312.000.

Ahl, Nils G., to Flintab AB. Truck scale. 5,308,933, Cl. 177-135.000.

Ahls, Hermann W.: *See—*
Meyer, Helmut J. W.; Ahls, Hermann W.; and Blaseck, Klaus, 5,307,920, Cl. 198-335.000.

Ahmed, Hassan J.: *See—*
Lichauer, John C.; Zana, Lawrence J.; Arlia, Nicola G.; Beatty, John M.; and Ahmed, Hassan J., 5,309,486, Cl. 376-248.000.

Ahonen, Antti I.; Knuutila, Jukka E. T.; Simola, Juha T. A.; and Vilkman, Visa A., to Neuromag Oy. Compact magnetometer probe and an array of them covering the whole human skull for measurement of magnetic fields arising from the activity of the brain. 5,309,095, Cl. 324-248.000.

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Ahonen, Robert G., to Honeywell Inc. Method to deposit multilayer films. 5,308,461, Cl. 204-192.110.

Aida, Satoshi: *See—*
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Air Products and Chemicals, Inc.: *See—*
Bazarian, Edward R.; Heffron, James F.; and Baukal, Charles E., Jr., 5,308,239, Cl. 431-10.000.
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Aisin Kako Kabushiki Kaisha: *See—*
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Aizawa, Katsuo; and Kuroiwa, Yukari, to Nippon Petrochemicals Company, Limited. Therapeutic agent for treating atherosclerosis of mammals. 5,308,861, Cl. 514-410.000.

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Akahori, Kingo: *See—*
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Akamatu, Yoshimi; and Tomori, Masahiro, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for preparing biodegradable resin foam. 5,308,879, Cl. 521-84.100.

Akanabe, Yuichi, to Konica Corporation. Optical beam scanning apparatus. 5,309,274, Cl. 359-209.000.

Akaogi, Takao, to Fujitsu Limited. Sense circuit for non-volatile memory device. 5,309,400, Cl. 365-189.090.

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Akatsuka, Takeshi: *See—*
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Akins, Anthony S.; Lee, Peter A.; Seaburg, Gunnar P.; and Arbeitman, Gordon W., to International Business Machines Corporation. Real-time communication of hand drawn images in a multiprogramming window environment. 5,309,555, Cl. 395-157.000.

Akmakjian, Lewis: *See—*
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Aksu, Allen. Automated test pin loading method. 5,307,560, Cl. 29-842.000.

Alanco Environmental Resources Corp.: *See—*
Kersey, Larry M.; and Steinke, Richard A., 5,308,590, Cl. 422-170.000.

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Alcock, Martin C.: *See—*
Wright, Andrew S.; Smit, Theodorus J.; and Alcock, Martin C., 5,309,482, Cl. 375-103.000.

Aldinger, Fritz; Bestgen, Harro; Kostler, Christine; and Roosen, Andreas, to Hoechst Aktiengesellschaft. Oxygen sensor and method of producing it. 5,308,469, Cl. 204-426.000.

Alexander, Thomas T., to Forerunner Corporation. Personal services telephone handset and system. 5,309,506, Cl. 379-95.000.

Alfa-Laval Food Engineering AB: *See—*
Noren, Tommy, 5,308,629, Cl. 426-234.000.

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Allain, Jean-Guy; Kermorgant, Jean-Louis; and Rivalain, Fernand, to Cogema-Compagnie Generale Des Matieres Nucleires. Liquid sampling head having a removable needle body immersed in a cavity. 5,307,696, Cl. 73-864.740.

Allcock, Harry R.: *See—*
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Allen-Bradley Company, Inc.: *See—*
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Allen, Donald E., to Motorola, Inc. Spatially varying multiple electrode acoustic wave filter and method therefor. 5,309,126, Cl. 333-193.000.

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Allentown Caging Equipment Co., Inc.: *See—*
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Inaba, Toshiya; and Koinuma, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Strapping structure for an instrument and the like. 5,307,966, Cl. 224-151.000.

Inagaki, Takashi; Yoshimoto, Tokuji; Okubo, Michio; Okazaki, Kouji; and Ikeda, Tsugio, to Honda Giken Kogyo Kabushiki Kaisha. Engine oil cooling system. 5,307,865, Cl. 165-41.000.

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Institute of Gas Technology: *See*—
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Ishibashi, Kenji, to Sharp Kabushiki Kaisha. Timer circuit for stretching the duration of an input pulse. 5,309,034, Cl. 307-267.000.

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Ishida, Minoru: *See*—
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Ishida, Norikazu; and Iwamura, Takurou, to Mitsubishi Materials Corporation. Extra-low-oxygen copper and a method of processing same. 5,308,379, Cl. 75-646.000.

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Ishii, Toshiyuki, to Sony Corporation. Optical disc reproducing apparatus having displayed mode control key functions which are controlled by detection of the type of disc being reproduced. 5,309,249, Cl. 358-342.000.

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Ito, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system for use with a compact camera. 5,309,285, Cl. 359-692.000.

Ito, Yosuke, to Brother Kogyo Kabushiki Kaisha. Apparatus for converting character outline data into dot data, having means for moving outline segments. 5,309,554, Cl. 395-150.000.

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Kitazawa, Toshiyuki; and Itabashi, Tomoaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mechanical control apparatus of a single lens reflex camera. 5,309,184, Cl. 354-231.000.

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Klein, Helmut; and Sersch, Jurgen, to S. Franzen Sohne (GmbH & Co.). Permutation lock, in particular for trunks pieces of furniture or the like. 5,307,657, Cl. 70-312.000.

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Ko, Hyun C., to Gold Star Co., Ltd. Semiconductor laser and method for manufacturing the same. 5,309,464, Cl. 372-43.000.

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Koole, Peter M., to Scheide International B.V. Game net post. 5,308,085, Cl. 273-411.000.

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Chen, Michael S. K.; and Cook, Philip J., to Air Products and Chemicals, Inc. Process for removing oxygen and nitrogen from crude argon. Re. 34,595, Cl. 95-54.000.

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Shimotori, Kazumi; Ochi, Yoshiharu; Ishihara, Hideo; Umeki, Takenori; and Ishigami, Takashi, Re. 34,598, Cl. 257-770.000.

Kabushiki Kaisha Toshiba: *See*—
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Masuda, Shunji; and Nakai, Eiji, to Mazda Motor Corporation. Valve driving system for internal combustion engine. Re. 34,596, Cl. 123-90.160.

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Shimotori, Kazumi; Ochi, Yoshiharu; Ishihara, Hideo; Umeki, Takenori; and Ishigami, Takashi, to Kabushiki Kaisha Toshiba. Highly pure titanium. Re. 34,598, Cl. 257-770.000.

Suszynski, Edward D.; and Meyst, Richard P., to Diatek Incorporated. Disposable probe cover assembly for medical thermometer. Re. 34,599, Cl. 374-158.000.

Umeki, Takenori: *See*—
Shimotori, Kazumi; Ochi, Yoshiharu; Ishihara, Hideo; Umeki, Takenori; and Ishigami, Takashi, Re. 34,598, Cl. 257-770.000.

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Aloka Co. Ltd.: *See*—
Yoshikawa, Yoshihiro; Katabami, Takao; Fujinaga, Katsumi; and Kobayashi, Yoshiaki, B1 4,344,327, Cl. 73-626.000.

American Hoechst Corporation: *See*—
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Asanger, James T.: *See*—
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General Electric Company: *See*—
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Herkules Equipment Corporation: *See*—
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Herrington, Daniel R.; and Schwerko, Albert P., to Standard Oil Company, The. Hydrotreating process utilizing elemental sulfur for presulfiding the catalyst. B1 4,177,136, 5-3-94, Cl. 208-215.000.

Hilton, Charles B., to American Hoechst Corporation. Removal of iodide compounds from non-aqueous organic media. B1 4,615,806, 5-3-94, Cl. 210-690.000.

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AFA Products Inc.: *See*—
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LIST OF STATUTORY INVENTION REGISTRATIONS

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Allen, Charles A.; Grey, Alan E.; McCaffrey, Robert R.; Simpson, Brenda M.; and Stone, Mark L., to United States of America, Energy. Phosphazene polymer containing composites and method for making phosphazene polymer containing composites. H1309, 5-3-94, Cl. 428-224.000.
Bhattacharyya, Maryka H.: *See—*
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514 5,307,835
576 5,307,836
607 5,307,837
625.11 5,307,838
899 5,307,839
5,307,840

CLASS 138

90 5,307,841
149 5,307,842
174 5,307,843

CLASS 139

1 R 5,307,844
5,307,845

CLASS 141

1 5,307,846
20.5 5,307,847
44 5,307,848

CLASS 148

26 5,308,407
108 B1 4,116,728
113 5,308,411
238 5,308,412
255 5,308,413
328 5,308,408
512 5,308,409
561 5,308,410

CLASS 150

165 5,307,849

CLASS 152

209 R 5,307,850
5,307,851
5,308,416
243 5,307,852
540 5,307,853

CLASS 156

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73.1 5,308,419
79 5,308,420
89 5,308,421
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117 5,308,432
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234 5,308,426
245 5,308,427
272.6 5,308,428
306.6 5,308,429
307.1 5,308,430
345 5,308,431
417 5,308,437
441.5 5,308,436
465 5,308,435
472 5,308,434
626 5,308,414
5,308,447
636 5,308,438
643 5,308,415
5,308,417
644 5,308,442
5,308,443
656 5,308,439
664 5,308,440

CLASS 157

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CLASS 160

66 5,307,855
70 5,307,856
190 5,307,857
213 5,307,858
264 5,307,859
348 5,307,860

CLASS 162

7 5,308,448
72 5,308,449
158 5,308,441
360.2 5,308,450

CLASS 164

428 5,307,861
436 5,307,862
466 5,307,863
476 5,307,864

CLASS 165

41 5,307,865
95 5,307,866
109.1 5,307,867
119 5,307,868
167 5,307,869
173 5,307,870
5,307,871

CLASS 166

54 5,307,872
206 5,307,873
282 5,307,875
288 5,307,874
293 5,307,876
295 5,307,877
305.1 5,307,878
382 5,307,879

CLASS 172

19 5,307,880

CLASS 173

62 5,307,881
152 5,307,882

CLASS 174

15.2 5,308,920
48 5,308,921
87 5,308,922
5,308,923
5,308,924
152 GM 5,308,925
250 5,308,926
256 5,308,927
261 5,308,928
262 5,308,929

CLASS 175

19 5,307,883
20 5,307,884
26 5,307,885
53 5,307,886
371 5,307,887

CLASS 177

25.13 5,308,930
25.14 5,308,931
25.15 5,308,932
135 5,308,933
244 5,308,934
256 5,308,935

CLASS 178

18 5,308,936

CLASS 180

6.2 5,307,888
13 5,307,889
65.1 5,307,890
79 5,307,891
79.1 5,307,892
117 5,307,893
132 5,307,894
143 5,307,895
274 5,307,896

CLASS 181

141 5,308,937

CLASS 182

3 5,307,897
63 5,307,898
136 5,307,899
204 5,307,900

CLASS 184

5.1 5,307,901
64 5,307,902

CLASS 187

67 5,307,904
115 5,308,938
124 5,307,903

CLASS 188

72.6 5,307,905
106 F 5,307,906
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CLASS 190

18 A 5,307,908
26 5,307,909

CLASS 192

13 R 5,307,910
31 5,307,911
56 R 5,307,912
70.17 5,307,913
87.13 5,307,914
98 5,307,915
129 R 5,307,916

CLASS 198

313 5,307,917
323 5,307,918
335 5,307,919
5,307,920
365 5,307,921
443 5,307,922
852 5,307,923

CLASS 200

83 P 5,308,940
83 R 5,308,939
277 5,308,941
332.1 5,308,942
521 5,308,943

CLASS 202

158 5,308,451
164 5,308,452

CLASS 203

79 5,308,453

CLASS 204

59 R 5,308,454
98 5,308,455
130 5,308,456
131 5,308,457
151 5,308,466
157.6 5,308,458
180.1 5,308,459
5,308,460
192.11 5,308,461
192.15 5,308,462
192.3 5,308,463
222 5,308,464
283 5,308,465
301 5,308,467
419 5,308,468
426 5,308,469

CLASS 206

63.3 5,307,924
141 5,307,932
266 5,307,925
311 5,307,926
312 5,307,927
320 5,307,928
331 5,307,929
349 5,307,930
386 5,307,931
443 5,307,933
471 5,307,934
554 5,307,935

CLASS 208

14 5,308,470
89 5,308,471
111 5,308,472
113 5,308,473
5,308,474
120 5,308,475
157 5,308,476
215 B1 4,177,136
400 5,308,477

CLASS 209

164 5,307,937
167 5,307,938
270 5,307,939
517 5,307,940

CLASS 210

97 5,308,478
151 5,308,479
195.1 5,308,480
198.2 5,308,481
207 5,308,482
232 5,308,483
5,308,484
5,308,485
396 5,308,486
400 5,308,487
404 5,308,488
500.4 5,308,489
605 5,308,490
614 5,308,491
631 5,308,492
635 5,308,493
639 5,308,494
656 5,308,495
674 5,308,496
690 B1 4,615,806
693 5,308,497
697 5,308,498
705 5,308,499
716 5,308,500
718 5,308,501
724 5,308,502
728 5,308,503
744 5,308,504
745 5,308,505
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748 5,308,507
767 5,308,508
770 5,308,509
776 5,308,510

CLASS 211

11 5,307,941
26 5,307,942
70.5 5,307,944

CLASS 215

31 5,307,943
329 5,307,945
5,307,946

CLASS 219

110 5,308,948
121.13 5,308,241
121.43 5,308,950
121.5 5,308,949
121.78 Re.34,597
121.84 5,308,951
130.4 5,308,952
242 5,308,953
243 5,308,954
390 5,308,955
400 5,308,956
483 5,308,957
486 5,308,958
634 5,308,947
645 5,308,946
687 5,308,944
730 5,308,945

CLASS 220

266 5,307,947
269 5,307,948
276 5,307,949
714 5,307,950
771 5,307,951

CLASS 221

197 5,307,360

CLASS 222

1 5,307,952
82 5,307,953
94 5,307,954
107 5,307,955
143 5,307,956
144.5 5,307,957
146.1 5,307,958
174 5,307,959
183 5,307,960
252 5,307,961
321 5,307,962
368 5,307,963
402.13 5,307,964
616 5,307,965

CLASS 224

151 5,307,966
257 5,307,967
275 5,307,968

CLASS 225

42 5,307,969

CLASS 226

92 5,307,970
168 5,307,971
176 5,307,972
190 5,307,973

CLASS 227

1 5,307,974
67 5,307,975
178 5,307,976

CLASS 228

4.5 5,307,977
5,307,978
32 5,307,979
56.3 5,307,980
102 5,307,981
180.22 5,307,983
189 5,307,984

CLASS 229

120 5,307,985
172 5,307,982
186 5,307,986
225 5,307,987
238 5,307,988
305 5,307,989

CLASS 235

379 5,308,959
454 5,308,960
5,308,961
455 5,308,962
462 5,308,963
472 5,308,964
5,308,965
5,308,966
492 5,308,967
5,308,968

CLASS 236

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CLASS 239

1 5,307,991
135 5,307,992
247 5,307,993
340 5,307,994
373 5,307,995
424 5,307,996
491 5,307,997

CLASS 241

3 5,307,998
24 5,307,999
33 5,308,000
92 5,308,002
260.1 5,308,003

CLASS 242

18 A 5,308,004
35.5 A 5,308,001
55 5,308,005
56.4 5,308,006
58.1 5,308,007
65 5,308,008
71.1 5,308,009
75.3 5,308,010
86 5,308,011
86.5 R 5,308,012
198 5,308,013
199 5,308,014
5,308,015
201 5,308,016
241 5,308,017
271 5,308,018
279 5,308,019
284 5,308,020
289 5,308,021

CLASS 244

3.14 5,308,022
102 R 5,308,023
165 5,308,024
170 5,308,025

CLASS 248

63 5,308,026
101 5,308,027
118 5,308,028
159 5,308,029
214 5,308,030
222.1 5,308,031
230 5,308,032
231.8 5,308,033
452 5,308,034
454 5,308,035
638 5,308,036
670 5,308,037

CLASS 250

208.1 5,308,969
5,308,970
214 VT 5,308,971
216 5,308,972
227.17 5,308,973
234 5,308,974
239 5,308,975
251 5,308,976
288 5,308,977
5,308,978
5,308,979
338.4 5,308,980
339.01 5,308,981
5,308,982
5,308,983
342 5,308,984
353 5,308,985
370.11 5,308,986
374 5,308,987
385.1 5,308,988
441.11 5,308,989
459.1 5,308,990
492.22 5,308,991
556 5,308,992
561 5,308,993

CLASS 251

129.14 5,308,038
192 5,308,039
208 5,308,040

CLASS 252

8.6 5,308,511
8.7 5,308,512
8.8 5,308,513
18 5,308,514
21 5,308,515
30 5,308,516
32.7 R 5,308,517
33.6 5,308,518
46.4 5,308,519
47.005 5,308,520
49.6 5,308,521
49.9 5,308,522
51.5 A 5,308,523
5,308,524
78.3 5,308,525
125 5,308,526
162 5,308,527
171 5,308,528
174.12 5,308,529
5,308,530
174.17 5,308,531
174.23 5,308,532
181.6 5,308,533
189 5,308,534
299.01 5,308,535
5,308,536
299.60 5,308,537
299.61 5,308,538
5,308,539
5,308,540
299.63 5,308,541
5,308,542
5,308,543
301.17 5,308,544
301.27 5,308,545
301.36 5,308,546
315.2 5,308,547
315.4 5,308,548
399 5,308,549
544 5,308,550
548 5,308,551
570 5,308,552
601 5,308,553

CLASS 254

134.4 5,308,041

CLASS 257

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53 5,308,996
57 5,308,997
5,308,998
66 5,308,999
99 5,309,001
076 5,309,000
130 5,309,002
194 5,309,003
216 5,309,004
239 5,309,005
275 5,309,006
286 5,309,007
304 5,309,008
318 5,309,009
347 5,309,010
390 5,309,011
401 5,309,012
446 5,309,013
584 5,309,014
659 5,309,015
666 5,309,016
5,309,017
5,309,018
670 5,309,019
685 5,309,020
691 5,309,021
743 5,309,022
770 Re.34,598
773 5,309,023
5,309,024
784 5,309,025
787 5,309,026
796 5,309,027

CLASS 260

589 5,308,994

CLASS 261

44.3 5,308,554

CLASS 264

1.5 5,308,555
13 5,308,556
28 5,308,557
45.3 5,308,558
46.4 5,308,559
50 5,308,560
65 5,308,561
101 5,308,562
103 5,308,563
5,308,564
112 5,308,565
118 5,308,566
127 5,308,567
177.12 5,308,568
216 5,308,569
255 5,308,570
257 5,308,571
510 5,308,572
516 5,308,573
572 5,308,574

CLASS 266

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78 5,308,043
88 5,308,044
235 5,308,045
263 5,308,046
271 5,308,047

CLASS 267

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CLASS 269

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309 5,308,050

CLASS 270

45 5,308,051

CLASS 271

2 5,308,052
9 5,308,053
5,308,054
15 5,308,055
183 5,308,056
248 5,308,057
297 5,308,058

CLASS 273

1.5 R 5,308,059
61 B 5,308,060
80 A 5,308,062
80.1 5,308,063
83 5,308,064
85 CP 5,308,065
153 S 5,308,066
164.1 5,308,067
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5,308,069
186.1 5,308,070
187.2 5,308,071
187.4 5,308,072
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188 R 5,308,074
195 A 5,308,075
232 5,308,076
243 5,308,077
246 5,308,078
249 5,308,079
264 5,308,080
274 5,308,081
400 5,308,082
5,308,083
403 5,308,084
411 5,308,085
435 5,308,086

CLASS 277

14 R 5,308,087
53 5,308,088
139 5,308,089
204 5,308,090
212 FB 5,308,091

CLASS 278

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CLASS 280

11.2 5,308,093
43.17 5,308,094
93 5,308,095
204 5,308,096
234 5,308,097
250.1 5,308,098
276 5,308,099
474 5,308,100
480.1 5,308,101
612 5,308,102
655 5,308,103
668 5,308,104
676 5,308,105
728 A 5,308,107

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5,308,110
728 B 5,308,106
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728 R 5,308,109
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58 5,308,119
70 5,308,120
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CLASS 285

52 5,308,122
226 5,308,123
328 5,308,124
349 5,308,125

CLASS 290

1 R 5,309,029

CLASS 292

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336.3 5,308,130
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64.1 5,308,132

CLASS 296

39.2 5,308,133
91 5,308,134
96.21 5,308,135
97.1 5,308,136
5,308,137
146.6 5,308,138

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184.11 5,308,139
195.1 5,308,140
218 5,308,141
286 5,308,142
292 5,308,143
301 5,308,144
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440.16 5,308,146
452.18 5,308,147
468 5,308,148

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CLASS 303

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115.2 5,308,154

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CLASS 307

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140 5,309,032
265 5,309,033
267 5,309,034
269 5,309,035
270 5,309,036
272.3 5,309,037
277 5,309,038
296.1 5,309,039
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451 5,309,043
454 5,309,044
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14 5,309,050
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313 C 5,309,057

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402 5,309,059
486 5,309,069
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509 5,309,071
511 5,309,060

CLASS 315

47 5,309,061
53 5,309,062
111.51 5,309,063
111.81 5,309,064
205 5,309,065
5,309,066
360 5,309,067
362 5,309,068

CLASS 318

500 5,309,073
571 5,309,074
608 5,309,075
782 5,309,076
799 5,309,077
811 5,309,078
5,309,079

CLASS 320

35 5,309,080

CLASS 322

10 5,309,081

CLASS 323

270 5,309,082
313 5,309,083
321 5,309,084

CLASS 324

71.5 5,309,085
117 R 5,309,086
146 5,309,087
158 D 5,309,088
158 MG 5,309,089
158 R 5,309,090
5,309,091
5,309,092
161 5,309,093
174 5,309,094
248 5,309,095
256 5,309,096
258 5,309,097
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306 5,309,099
5,309,100
309 5,309,101
314 5,309,102
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5,309,106
5,309,107
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10 5,309,114
133 5,309,115

CLASS 331

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33 5,309,121
116 5,309,122
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CLASS 337

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CLASS 338

15 5,309,132
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210 5,309,134
211 5,309,135
295 5,309,136

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466 5,309,140
467 5,309,141
471 5,309,142
475 5,309,143
539 5,309,144
540 5,309,145
5,309,146
567 5,309,147
628 5,309,148
683 5,309,149
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CLASS 342

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89 5,309,170
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140 R 5,309,179
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145 5,309,181
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128 5,309,229
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222 5,309,241
233 5,309,183
265 5,309,239
311 5,309,240
384 5,309,232
404 5,309,231
441 5,309,233
443 5,309,224
473 5,309,234
476 5,309,235
500 5,309,236
588 5,309,238
607 5,309,237
614 5,309,226
663 5,309,225

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CLASS 353

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160 B1 4,602,860
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53 5,309,197
67 5,309,198
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212 5,309,203
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260 5,309,208
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70 5,309,213
128 5,309,214
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350 5,309,218
5,309,220
355 5,309,221
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298 5,309,246
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406 5,309,250
444 5,309,251
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451 5,309,253
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102 5,309,265
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187 5,309,269
196 5,309,270
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344 5,309,275
5,309,276
387 5,309,277
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474 5,309,280
5,309,281
641 5,309,282
649 5,309,283
687 5,309,284
692 5,309,285
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74.2 5,309,300
77.01 5,309,299
96.1 5,309,302
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79 5,309,312
127 5,309,313
160 5,309,314
609 5,309,317
689 5,309,318
699 5,309,319
704 5,309,315
5,309,320
714 5,309,321
723 5,309,322
726 5,309,323
734 5,309,324
749 5,309,316
754 5,309,325
790 5,309,326
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253 5,309,338
259 5,309,339
299 5,309,340
300 5,309,341
364 5,309,342

CLASS 363

16 5,309,343
20 5,309,344
41 5,309,345
54 5,309,346
63 5,309,347
71 5,309,348
98 5,309,349
133 5,309,350

CLASS 364

132 5,309,351
140 5,309,352
148 5,309,353
167.01 5,309,354
401 5,309,355
413.19 5,309,356
413.24 5,309,357
419.01 5,309,358
419.19 5,309,359
420 5,309,360
424.1 5,309,361
426.03 5,309,362
464.02 5,309,363
474.03 5,309,364
5,309,365
474.21 5,309,368
474.24 5,309,366
474.35 5,309,367
476 5,309,369
490 5,309,370
491 5,309,371
5,309,372
506 5,309,373
552 5,309,374
560 5,309,375
571.01 5,309,376
571.04 5,309,377
574 5,309,378
578 5,309,379
709.07 5,309,380
715.02 5,309,381
715.08 5,309,382
748 5,309,383
757 5,309,384
761 5,309,385

CLASS 365

51 5,309,386
52 5,309,387
87 5,309,388
104 5,309,389
145 5,309,390
5,309,391
5,309,392
189.01 5,309,393
189.03 5,309,394
189.04 5,309,395
189.05 5,309,396
5,309,397
5,309,398
189.09 5,309,399
5,309,400
203 5,309,401
218 5,309,402

CLASS 366

136 5,309,403
152 5,308,159
160 5,308,160

CLASS 367

31 5,309,404
36 5,309,405
73 5,309,406
96 5,309,407
99 5,309,408
103 5,309,409
138 5,309,410
140 5,309,411
154 5,309,412

CLASS 368

63 5,309,413
90 5,309,414

CLASS 369

13 5,309,415
5,309,416
32 5,309,417
44.28 5,309,418
54 5,309,419
58 5,309,420
77.1 5,309,421
110 5,309,422
5,309,423
116 5,309,424
124 5,309,425
275.2 5,309,427

CLASS 370

17 5,309,428
29 5,309,429
58.1 5,309,426
60 5,309,430
5,309,431
5,309,432
5,309,433
62 5,309,434
85.1 5,309,436
85.12 5,309,435
85.13 5,309,437
94.1 5,309,438
104.1 5,309,439
105.1 5,309,440
105.2 5,309,441
110.1 5,309,442

CLASS 371

5.5 5,309,443
10.2 5,309,444
21.1 5,309,446
22.4 5,309,447
29.1 5,309,448
37.1 5,309,449
39.1 5,309,450
40.4 5,309,451
164 5,309,445

CLASS 372

6 5,309,452
18 5,309,453
21 5,309,454
25 5,309,455
5,309,456
34 5,309,457
5,309,458
5,309,459
36 5,309,460
38 5,309,461
5,309,462
5,309,463
43 5,309,464
5,309,465
45 5,309,466
50 5,309,468
5,309,469
5,309,470
92 5,309,471
96 5,309,472
99 5,309,473

CLASS 374

5 5,308,161
131 5,308,162
158 Re.34,599

CLASS 375

1 5,309,474
3 5,309,475
8 5,309,476
10 5,309,477
58 5,309,478
62 5,309,479
90 5,309,480
98 5,309,481
103 5,309,482
106 5,309,483
5,309,484

CLASS 376

215 5,309,485
248 5,309,486
250 5,309,487
282 5,309,488
299 5,309,489
310 5,309,490
364 5,309,491
381 5,309,492
431 5,309,493

CLASS 377

39 5,309,494

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CLASS 378

89 5,309,495
98.2 5,309,496
193 5,309,497

CLASS 379

21 5,309,498
29 5,309,499
58 5,309,500
5,309,501
59 5,309,502
60 5,309,503
67 5,309,504
88 5,309,505
95 5,309,506
96 5,309,507
142 5,309,508
165 5,309,509
167 5,309,510
201 5,309,028
5,309,511
210 5,309,512
265 5,309,513

CLASS 380

10 5,309,514
45 5,309,516

CLASS 381

119 5,309,517
188 5,309,518
190 5,309,519

CLASS 382

7 5,309,515
22 5,309,521
41 5,309,520
5,309,522
42 5,309,523
47 5,309,524
50 5,309,525
56 5,309,526
5,309,527
58 5,309,528

CLASS 383

44 5,308,163

CLASS 384

13 5,308,164
45 5,308,165
5,308,166
5,308,167
5,308,168
5,308,170
99 5,308,169
448 5,308,171
453 5,308,172
536 5,309,529

CLASS 385

1 5,309,530
2 5,309,531
3 5,309,532
11 5,309,533
27 5,309,534
38 5,309,535
43 5,309,536
59 5,309,537
98 5,309,538
106 5,309,539
123 5,309,540
133 5,309,541
140 5,309,542
142 5,309,543
146 5,309,544

CLASS 392

419 5,309,545

CLASS 395

2 5,309,546
2.47 5,309,547
109 5,309,548
121 5,309,549
5,309,550
131 5,309,551
5,309,552
143 5,309,553
150 5,309,554
157 5,309,555
161 5,309,556
162 5,309,557
5,309,559
166 5,309,558
5,309,560
200 5,309,561
5,309,562
5,309,563
5,309,564
275 5,309,565
5,309,566
325 5,309,567
5,309,568
5,309,569

CLASS 400

29 5,308,173
83 5,308,174
605 5,308,175
618 5,308,176
697 5,308,177

CLASS 401

8 5,308,178
131 5,308,179
205 5,308,180
206 5,308,181
219 5,308,182

CLASS 403

259 5,308,183
305 5,308,184
342 5,308,185

CLASS 404

14 5,308,186
17 5,308,187
25 5,308,188
26 5,308,189
95 5,308,190

CLASS 405

68 5,308,191
154 5,308,192
158 5,308,193
195.1 5,308,194
284 5,308,195
288 5,308,196

CLASS 407

101 5,308,197

CLASS 408

1 R 5,308,198
115 R 5,308,199

CLASS 409

132 5,308,200
134 5,308,201

CLASS 410

94 5,308,202

CLASS 411

31 5,308,203
37 5,308,204
182 5,308,205
429 5,308,206
513 5,308,207

CLASS 412

5 5,308,208
15 5,308,209

CLASS 414

222 5,308,210
408 5,308,211
428 5,308,212
482 5,308,213
541 5,308,214
546 5,308,215
550 5,308,216
610 5,308,217
676 5,308,218
695.5 5,308,219
699 5,308,220
734 5,308,221
783 5,308,222
790.3 5,308,223

CLASS 415

53.1 5,308,224
57.3 5,308,225
160 5,308,226

CLASS 416

219 R 5,308,227
230 5,308,228

CLASS 417

368 5,308,229
394 5,308,230

CLASS 418

55.6 5,308,231

CLASS 419

37 5,308,575
38 5,308,576

CLASS 420

57 5,308,577
558 5,308,578

CLASS 422

28 5,308,579
58 5,308,580
82.08 5,308,581
99 5,308,582
100 5,308,583
104 5,308,584
142 5,308,585
147 5,308,586
160 5,308,587
165 5,308,588
169 5,308,589
170 5,308,590
174 5,308,591
191 5,308,592
243 5,308,593

CLASS 423

112 5,308,595
333 5,308,596
440 5,308,597
447.2 5,308,598
447.4 5,308,599
527 5,308,600
593 5,308,601
705 5,308,602

CLASS 424

1.1 5,308,605
1.490 5,308,603
1.53 5,308,604
1.65 5,308,606
5 5,308,607
9 5,308,608
61 5,308,609
73 5,308,643
76.5 5,308,610
78.07 5,308,611
78.35 5,308,612
84 5,308,613
88 5,308,614
93 C 5,308,615
93 D 5,308,616
93 V 5,308,626
94.64 5,308,617
195.1 5,308,618
5,308,619
401 5,308,621
422 5,308,622
426 5,308,623
427 5,308,624
449 5,308,625
484 5,308,620
639 5,308,627

CLASS 425

79 5,308,232
151 5,308,233
188 5,308,234
194 5,308,235
305.1 5,308,236
437 5,308,237

CLASS 426

34 5,308,628
234 5,308,629
270 5,308,630
422 5,308,631
460 5,308,632
503 5,308,633
531 5,308,634
549 5,308,635
573 5,308,636
589 5,308,637
592 5,308,638
602 5,308,639
611 5,308,640

CLASS 427

2 5,308,641
5,308,642
96 5,308,644
97 5,308,645
136 5,308,646
154 5,308,647
212 5,308,648
5,308,653
239 5,308,654
248.1 5,308,655
282 5,308,656
284 5,308,657
385.5 5,308,389
421 5,308,658
428 5,308,659
443.1 5,308,660
535 5,308,661
562 5,308,649
570 5,308,650
582 5,308,651
600 5,308,652

CLASS 428

34 5,308,662
34.2 5,308,663
34.9 5,308,664
35.2 5,308,665
5,308,666
40 5,308,667
43 5,308,668
72 5,308,669
81 5,308,670
99 5,308,671
102 5,308,673
5,308,674
120 5,308,675
141 5,308,676
174 5,308,677
182 5,308,678
193 5,308,679
195 5,308,680
5,308,682
5,308,683
202 5,308,684
204 5,308,685
209 5,308,686
216 5,308,688
229 5,308,689
256 5,308,690
286 5,308,691
290 5,308,692
307.3 5,308,693
331 5,308,694
354 5,308,695
357 5,308,696
373 5,308,697
385 5,308,698
402 5,308,699
5,308,700
402.22 5,308,701
403 5,308,702
408 5,308,703
410 5,308,704
411.1 5,308,687
421 5,308,705
426 5,308,706
610 5,308,707
5,308,708
623 5,308,709
653 5,308,710

CLASS 429

29 5,308,711
30 5,308,712
49 5,308,713
59 5,308,714
91 5,308,715
97 5,308,716
99 5,308,717
152 5,308,718
160 5,308,719
194 5,308,720

CLASS 430

5 5,308,721
5,308,722
23 5,308,723
48 5,308,724
56 5,308,725
5,308,726
58 5,308,727
5,308,728
115 5,308,729
5,308,730
5,308,731
125 5,308,732
126 5,308,733
137 5,308,734
175 5,308,735
200 5,308,236
201 5,308,737
230 5,308,738
258 5,308,739
311 5,308,740
312 5,308,741
313 5,308,742
318 5,308,743
326 5,308,744
329 5,308,745
331 5,308,746
507 5,308,747
574 5,308,748

CLASS 431

10 5,308,239
131 5,308,240

CLASS 433

79 5,308,238
114 5,308,242
203.1 5,308,243

CLASS 434

169 5,308,244
236 5,308,245
5,308,246

CLASS 435

5 5,308,749
5,308,750
6 5,308,751
7.21 5,308,752
7.32 5,308,753
7.4 5,308,754
5,308,755
13 5,308,756
29 5,308,757
30 5,308,758
67 5,308,759
69.1 5,308,760
101 5,308,761
184 5,308,766
190 5,308,770
193 5,308,769
199 5,308,762
240.21 5,308,763
240.24 5,308,764
252.3 5,308,765

CLASS 436

12 5,308,767
16 5,308,768
39 5,308,771
63 5,308,772
73 5,308,773
87 5,308,774
518 5,308,775

CLASS 437

21 G 5,308,776
40 5,308,778
5,308,779
41 5,308,777
44 5,308,780
48 5,308,781
52 5,308,782
5,308,783
67 5,308,784
5,308,785
5,308,786
70 5,308,787
81 5,308,788
141 5,308,789
164 5,308,790
173 5,308,791
180 5,308,792
194 5,308,793
5,308,794
195 5,308,795
200 5,308,796
209 5,308,797
250 5,308,798

CLASS 438

195 5,308,681

CLASS 439

34 5,308,247
59 5,308,248
62 5,308,249
63 5,308,250
64 5,308,251
66 5,308,252
148 5,308,253
157 5,308,254
5,308,255
5,308,256
267 5,308,257
284 5,308,258
320 5,308,259
344 5,308,260
358 5,308,261
495 5,308,262
570 5,308,263
607 5,308,264
752 5,308,265
817 5,308,266
851 5,308,267

CLASS 440

30 5,308,268
112 5,308,269

CLASS 441

21 5,308,270
74 5,308,271
88 5,308,272

CLASS 445

27 5,308,273

CLASS 446

23 5,308,274
28 5,308,275
288 5,308,276
320 5,308,277

CLASS 450

86 5,308,278

CLASS 454

139 5,308,279
170 5,308,280

CLASS 464

30 5,308,281
68 5,308,282
136 5,308,283
175 5,308,284

CLASS 470

4 5,308,285
9 5,308,286

CLASS 473

127 5,308,061

CLASS 474

28 5,308,287
92 5,308,288
94 5,308,289
152 5,308,290
205 5,308,291
207 5,308,292

CLASS 475

18 5,308,293
162 5,308,294
275 5,308,295

CLASS 476

10 5,308,297
5,308,298

CLASS 482

5 5,308,296
49 5,308,299
52 5,308,300
53 5,308,301
60 5,308,302
97 5,308,303
99 5,308,304
124 5,308,305
142 5,308,306

CLASS 492

1 5,308,307

CLASS 493

199 5,308,308

CLASS 494

85 5,308,309

CLASS 501

12 5,308,802
17 5,308,803
5,308,804
71 5,308,805
95 5,308,806
134 5,308,807
146 5,308,808
152 5,308,809

CLASS 502

28 5,308,810
62 5,308,811
63 5,308,812
64 5,308,813
66 5,308,814
104 5,308,815
108 5,308,816
117 5,308,817
127 5,308,818
162 5,308,819
167 5,308,820
180 5,308,821
243 5,308,822

CLASS 503

209 5,308,823
226 5,308,824
227 5,308,825

CLASS 504

132 5,308,826
206 5,308,827
241 5,308,828
243 5,308,829
273 5,308,830

CLASS 505

100 5,308,831
126 5,308,799
310 5,308,801
400 5,308,800

CLASS 514

2 5,308,832
12 5,308,833
5,308,834
5,308,835
5,308,836
46 5,308,837
54 5,308,838
152 5,308,839
212 5,308,840
215 5,308,841
224.5 5,308,842
227.8 5,308,843
230.5 5,308,844
250 5,308,845
259 5,308,846
262 5,308,847
269 5,308,848
279 5,308,849
301 5,308,850
313 5,308,860
333 5,308,851
336 5,308,852
5,308,853
338 5,308,854
341 5,308,855
369 5,308,856
370 5,308,857
372 5,308,858
383 5,308,859
410 5,308,861
411 5,308,862
431 5,308,863
460 5,308,864
465 5,308,865
469 5,308,866
475 5,308,867
560 5,308,868
637 5,308,869
653 5,308,870
690 5,308,871
729 5,308,872
5,308,873
731 5,308,874
762 5,308,875

CLASS 521

25 5,308,876
50 5,308,877
56 5,308,878
84.1 5,308,879
110 5,308,880
112 5,308,881
115 5,308,882
125 5,308,883
128 5,308,884
5,308,885

CLASS 522

5,308,886
148 5,308,887
156 5,308,888

CLASS 523

113 5,308,889
201 5,308,890
218 5,308,891
318 5,308,892
436 5,308,893
5,308,894
445 5,308,895

CLASS 524

13 5,308,896
47 5,308,897
59 5,308,898
109 5,308,899
120 5,308,900
5,308,901
128 5,308,902
204 5,308,903
232 5,308,904
310 5,308,905
398 5,308,906
436 5,308,907
451 5,308,908
494 5,308,909
503 5,308,910
5,308,911
507 5,308,912
546 5,308,913
591 5,308,914

CLASS 534

638 B1 4,378,313

CLASS 600

18 5,308,319
21 5,308,310
5,308,326

CLASS 601

5,308,327
110 5,308,328
9 5,307,791
5,308,329
5,308,330

CLASS 602

17 5,308,312
55 5,308,313
126 5,308,333

CLASS 604

131 5,308,334
4 5,308,314
141 5,308,335
5,308,315
167 5,308,336
5,308,320
174 5,308,337
13 5,308,316
175 5,308,338
22 5,308,317
180 5,308,339
54 5,308,318
208 5,308,340
74 5,308,321
5,308,341
83 5,308,322
282 5,308,342
95 5,308,323
289 5,308,343
5,308,324
378 5,308,344
385.2 5,308,345
403 5,308,346
5,308,347
892.1 5,308,348

CLASS 606

28 5,308,311
88 5,308,349
5,308,350
116 5,308,351
130 5,308,352
144 5,308,353
159 5,308,354
166 5,308,355
194 5,308,356
205 5,308,357
5,308,358
242 5,308,359

CLASS 623

2 5,308,361

CLASSIFICATION OF DESIGNS

D6— 379 346,502
D1— 102 346,475
108 346,476
D2— 97 346,478
627 346,482
882 346,477
954 346,481
961 346,480
969 346,483
346,486
970 346,479
346,484
972 346,485
D3— 2 346,487
218 346,494
346,495
224 346,493
247 346,490
269 346,491
282 346,492
308 346,682
D4— 108 346,496
116 346,497
138 346,498
199 346,499
D6— 301 346,500
308 346,908
374 346,501
380 346,303
346,504
381 346,505
346,506
346,507
397 346,509
407 346,510
438 346,511
346,512
451 346,513
481 346,514
503 346,515
511 346,516
515 346,517
518 346,518
522 346,519
552 346,520
566 346,521
571 346,522
601 346,523
634 346,488
D7— 309 346,524
317 346,525
323 346,526
354 346,527
357 346,528
405 346,529
409 346,531
416 346,530
619 346,532
656 346,533
346,534
680 346,535
682 346,536
709 346,489
D8— 1 346,537
5 346,538
61 346,539
64 346,540
70 346,541
98 346,542
107 346,543
308 346,544
312 346,545
356 346,546
D9— 300 346,548
306 346,549
314 346,550
346,551
341 346,552
346 346,553
429 346,554
448 346,547
522 346,555
538 346,556
D10— 6 346,557
31 346,558
57 346,559
64 346,560
65 346,566
96 346,561
106 346,567
111 346,562
116 346,563
126 346,564
346,565
D11— 164 346,568
218 346,569
D12— 92 346,570
98 346,571
160 346,573
178 346,574
179 346,575
180 346,576
184 346,577
193 346,578
410 346,572
D13— 103 346,579
346,580
346,581
346,582
108 346,583
119 346,584
133 346,585
163 346,586
177 346,587
D14— 100 346,588
346,589
346,590
346,591
106 346,592
109 346,593
113 346,594
346,595
114 346,596
121 346,597
137 346,598
151 346,599
189 346,600
204 346,601
217 346,602
238 346,603
239 346,604
346,605
242 346,606
346,607
251 346,608
258 346,609
D15— 133 346,610
144 346,611
148 346,612
255 346,645
D16— 107 346,613
202 346,614
346,615
239 346,616
D17— 1 346,617
D19— 32 346,618
36 346,619
59 346,620
64 346,621
78 346,622
D20— 41 346,623
43 346,624
D21— 48 346,625
86 346,626
108 346,627
346,628
346,629
191 346,630
198 346,632
199 346,631
226 346,633
234 346,634
D22— 102 346,635
108 346,636
122 346,637
147 346,638
199 346,639
D23— 209 346,640
225 346,647
233 346,641
236 346,642
252 346,644
255 346,645
268 346,646
277 346,648
309 346,649
322 346,650
377 346,651
378 346,652
411 346,653
D24— 104 346,654
128 346,655
155 346,656
176 346,657
177 346,658
199 346,659
215 346,660
224 346,661
233 346,662
D25— 55 346,663
59 346,664
103 346,665
113 346,666
346,667
124 346,668
138 346,669
D26— 28 346,670
35 346,671
109 346,672
D27— 162 346,673
D28— 73 346,674
76 346,675
D30— 108 346,676
161 346,677
D32— 21 346,678
22 346,679
D34— 31 346,680
38 346,681

CLASSIFICATION OF PLANTS

P.— 15 8,706
34.1 8,707
49 8,708
68.1 8,709
8,710
82.5 8,711
87.12 8,712
88.1 8,713
88.5 8,714
88.8 8,715
8,716
8,717

STATUTORY INVENTION REGISTRATIONS

44— 449 H1305
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on May 7, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,012,525 through 5,014,352
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 5, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,662,005 through 4,663,778
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 3, 1983 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utiility Patents 4,381,567 through 4,382,300
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 27, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,879	07/162,294	02/28/89
(4,572,388)	(06/713,327)	(02/25/86)
Re. 33,981	07/576,684	06/30/92
(4,903,581)	(07/201,123)	(02/27/90)
Re. 34,533	07/775,423	02/08/94
(4,903,494)	(07/396,092)	(02/27/90)
Re. 34,545	07/749,976	02/15/94
(4,903,636)	(07/066,952)	(02/27/90)
4,317,298	06/229,892	03/02/82
4,317,402	06/229,092	03/02/82
4,317,712	06/254,330	03/02/82
4,317,741	06/229,368	03/02/82
4,317,759	06/241,527	03/02/82
4,317,778	06/220,624	03/02/82
4,317,799	06/248,819	03/02/82
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4,572,128	06/649,608	02/25/86
4,572,131	06/617,627	02/25/86
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4,903,917	07/086,460	02/27/90
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4,903,922	07/264,372	02/27/90
4,903,923	07/238,303	02/27/90
4,903,928	07/212,162	02/27/90
4,903,932	07/180,123	02/27/90
4,903,935	07/175,925	02/27/90
4,903,960	07/274,389	02/27/90
4,903,965	07/207,225	02/27/90
4,903,966	07/341,831	02/27/90
4,903,969	07/265,854	02/27/90
4,903,972	07/135,231	02/27/90
4,903,976	07/199,544	02/27/90
4,903,978	07/365,971	02/27/90
4,903,979	07/151,486	02/27/90
4,903,980	07/269,069	02/27/90
4,903,990	07/343,437	02/27/90
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4,904,022	07/239,216	02/27/90
4,904,026	07/254,558	02/27/90
4,904,031	07/197,677	02/27/90
4,904,034	07/150,469	02/27/90
4,904,035	07/233,313	02/27/90
4,904,043	07/207,342	02/27/90
4,904,047	07/323,286	02/27/90
4,904,049	07/239,250	02/27/90
4,904,052	07/300,386	02/27/90
4,904,059	07/270,702	02/27/90
4,904,060	07/274,551	02/27/90
4,904,062	07/321,484	02/27/90
4,904,067	07/168,986	02/27/90
4,904,071	07/259,972	02/27/90
4,904,074	07/361,420	02/27/90
4,904,077	07/262,987	02/27/90
4,904,086	07/293,933	02/27/90
4,904,088	07/244,577	02/27/90
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4,904,091	07/391,694	02/27/90
4,904,102	07/239,508	02/27/90
4,904,112	07/385,565	02/27/90
4,904,114	07/245,988	02/27/90
4,904,115	07/182,833	02/27/90
4,904,119	07/109,946	02/27/90
4,904,121	07/288,449	02/27/90
4,904,130	07/295,527	02/27/90
4,904,137	07/071,757	02/27/90
4,904,142	07/318,201	02/27/90
4,904,145	06/925,674	02/27/90
4,904,146	07/194,855	02/27/90
4,904,167	07/146,929	02/27/90
4,904,171	07/288,621	02/27/90
4,904,174	07/245,137	02/27/90
4,904,183	07/171,966	02/27/90
4,904,184	07/296,989	02/27/90
4,904,185	07/267,032	02/27/90
4,904,186	07/221,212	02/27/90
4,904,192	07/293,849	02/27/90
4,904,197	07/296,566	02/27/90
4,904,203	07/179,233	02/27/90
4,904,212	07/239,100	02/27/90
4,904,215	07/308,657	02/27/90
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4,904,228	06/622,548	02/27/90
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4,904,245	07/280,965	02/27/90
4,904,247	06/782,848	02/27/90
4,904,264	06/795,493	02/27/90
4,904,268	07/242,827	02/27/90
4,904,272	07/222,997	02/27/90
4,904,273	07/023,121	02/27/90
4,904,282	07/207,260	02/27/90
4,904,288	07/369,148	02/27/90
4,904,297	07/169,912	02/27/90
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4,904,322	07/307,179	02/27/90
4,904,326	07/239,270	02/27/90
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4,904,334	07/159,293	02/27/90
4,904,337	07/202,645	02/27/90
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4,904,363	07/343,011	02/27/90
4,904,368	07/262,923	02/27/90
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4,904,379	07/267,449	02/27/90
4,904,389	07/208,342	02/27/90
4,904,391	06/785,729	02/27/90
4,904,394	07/010,888	02/27/90
4,904,402	07/322,336	02/27/90
4,904,407	07/278,404	02/27/90
4,904,414	07/098,184	02/27/90
4,904,420	07/163,754	02/27/90
4,904,424	07/055,221	02/27/90
4,904,431	07/231,037	02/27/90
4,904,441	07/247,941	02/27/90
4,904,443	07/202,864	02/27/90
4,904,444	06/781,184	02/27/90
4,904,445	07/172,237	02/27/90
4,904,456	06/746,906	02/27/90
4,904,461	07/129,060	02/27/90
4,904,462	06/722,255	02/27/90
4,904,469	07/010,983	02/27/90
4,904,471	07/072,489	02/27/90
4,904,482	07/289,806	02/27/90

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4,904,497	07/140,694	02/27/90
4,904,505	07/169,803	02/27/90
4,904,508	07/134,968	02/27/90
4,904,509	07/269,091	02/27/90
4,904,513	07/270,588	02/27/90
4,904,527	06/557,661	02/27/90
4,904,530	07/045,983	02/27/90
4,904,532	07/173,026	02/27/90
4,904,544	07/226,483	02/27/90
4,904,553	07/211,059	02/27/90
4,904,554	07/170,951	02/27/90
4,904,585	07/115,980	02/27/90
4,904,600	07/420,751	02/27/90
4,904,604	07/124,273	02/27/90
4,904,617	07/236,476	02/27/90
4,904,622	07/157,619	02/27/90
4,904,631	07/268,833	02/27/90
4,904,636	07/169,503	02/27/90
4,904,639	07/245,976	02/27/90
4,904,640	07/164,159	02/27/90
4,904,648	07/311,257	02/27/90
4,904,651	07/227,761	02/27/90
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4,904,669	06/929,353	02/27/90
4,904,672	07/187,170	02/27/90
4,904,673	07/298,078	02/27/90
4,904,675	07/154,217	02/27/90
4,904,677	07/292,955	02/27/90
4,904,678	07/090,244	02/27/90
4,904,679	07/185,177	02/27/90
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4,904,734	07/322,143	02/27/90
4,904,738	07/300,008	02/27/90
4,904,751	07/135,951	02/27/90
4,904,755	07/299,208	02/27/90
4,904,756	07/217,353	02/27/90
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4,904,830	07/316,661	02/27/90
4,904,834	07/109,004	02/27/90
4,904,853	07/326,481	02/27/90
4,904,864	07/131,166	02/27/90
4,904,871	07/253,977	02/27/90
4,904,876	07/188,255	02/27/90
4,904,892	07/257,055	02/27/90
4,904,894	07/302,295	02/27/90
4,904,897	06/677,948	02/27/90
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4,904,915	07/251,378	02/27/90
4,904,916	07/195,251	02/27/90
4,904,923	07/233,542	02/27/90
4,904,926	07/244,021	02/27/90
4,904,927	07/288,421	02/27/90
4,904,935	07/270,866	02/27/90
4,904,941	07/137,045	02/27/90
4,904,950	07/267,024	02/27/90
4,904,955	07/240,947	02/27/90
4,904,956	07/253,291	02/27/90
4,904,970	07/157,205	02/27/90
4,904,977	07/310,794	02/27/90
4,904,979	07/333,822	02/27/90
4,904,981	07/293,703	02/27/90
4,904,985	07/295,141	02/27/90
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4,905,009	07/056,964	02/27/90
4,905,010	07/338,929	02/27/90
4,905,018	07/180,103	02/27/90
4,905,026	07/313,166	02/27/90
4,905,029	07/250,712	02/27/90
4,905,038	07/218,219	02/27/90
4,905,044	07/328,246	02/27/90
4,905,053	07/148,698	02/27/90
4,905,055	07/299,620	02/27/90
4,905,071	07/176,786	02/27/90
4,905,074	06/934,279	02/27/90
4,905,084	07/303,917	02/27/90
4,905,112	07/211,544	02/27/90
4,905,125	07/236,174	02/27/90
4,905,172	07/222,460	02/27/90
4,905,174	07/199,006	02/27/90
4,905,175	07/280,070	02/27/90
4,905,179	07/186,895	02/27/90
4,905,208	07/081,330	02/27/90
4,905,210	07/027,848	02/27/90
4,905,213	07/280,568	02/27/90
4,905,219	06/534,562	02/27/90
4,905,233	07/124,282	02/27/90
4,905,236	07/218,211	02/27/90
4,905,237	07/222,044	02/27/90
4,905,239	07/172,785	02/27/90
4,905,250	07/120,153	02/27/90
4,905,278	07/221,901	02/27/90
4,905,280	07/100,024	02/27/90
4,905,281	07/190,284	02/27/90
4,905,286	07/032,566	02/27/90
4,905,291	07/291,529	02/27/90
4,905,298	07/282,625	02/27/90
4,905,307	07/134,868	02/27/90
4,905,310	07/214,395	02/27/90
4,905,311	07/307,303	02/27/90
4,905,313	07/324,920	02/27/90
4,905,315	07/213,896	02/27/90

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,473,405, Re. S.N. 08/180,357, Jan. 12, 1994, Cl. 106/090, ADMIXTURE FOR HYDRAULIC CEMENT, Arhtur H. Gerber, Owner of Record: *Sandoz, Ltd., Basle, Switzerland,* Attorney or Agent: Jean K. Dudek, Ex. Gp.: 1108

4,760,472, Re. S.N. 08/206,042, Mar. 4, 1994, Cl. 360, READBACK RECOVERY SYSTEM, Vadim Minobin, et. al., Owner of Record: *Seagate Technology Party, Scotts Valley, Calif.*, Attorney or Agent: David R. Fairbairn, Ex. Gp.: 2313

5,041,885, Re. S.N. 08/110,045, Aug. 20, 1993, Cl. 257/23.4, SURFACE FIELD EFFECT TRANSIT WITH DEPRESSED SOURCE AND/OR DRAIN AREAS FOR ULSI INTEGRATED DEVICES, Fabio Gualandris, et. al., Owner of Record: *SGS-Thomson Microelectronics SRL, Milano, Italy,* Attorney or Agent: Robert Groover, Ex. Gp.: 2503

5,059,976, Re. S.N. 08/139,561, Oct. 20, 1993, Cl. 341/51, CODING METHOD OF IMAGE INFORMATION, Fumitaka Ono, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: David M. Driscoll, Ex. Gp.: 2104

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5,082,167, Re. S.N. 08/188,448, Jan. 21,1994, Cl. 228/258, METHOD OF SOLDERING HONEYCOMB BODY, Yutaka Sodano, et. al., Owner of Record: *Nippon Steel Corp., Toyota Jidosha Kabushiki Kaisha, Aichi Nippon Kinzoku Co., Ltd., Tokyo, Japan,* Attorney or Agent: Michelle N. Lester, Ex. Gp.: 3205

5,082,856, Re. S.N. 08/183,744, Jan. 21, 1994, Cl. 514/423, PYRROLECARBOXYLIC ACID DERIVATIVES, Masao Taniguchi, et. al., Owner of Record: *Mitsubishi Kasei Corp., Tokyo, Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1205

5,096,289, Re. S.N. 08/207,607, Mar. 9, 1994, Cl. 356/001, OBJECT DISTANCE MEASURING DEVICE IN CAMERA, Makoto Mogamiya, et. al., Owner of Record: *Asah Kogaki Kogyo Kabushi Ki Kaisha, Tokyo, Japan,* Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2202

5,097,397, Re. S.N. 08/213,266, Mar. 15, 1994, Cl. 362/74, NON-LINEAR SIGNALLING DEVICE FOR VEHICLES, Edward S. Staunch, et. al., Owner of Record: *Federal Signal Corp., University Park, Ill.,* Attorney or Agent: John B. Conklin, Ex. Gp.: 3406

5,103,630, Re. S.N. 08/202,614, Feb. 28, 1994, Cl. 60/39.161, DRY LOW NO, HYDROCARBON COMBUSTION APPARATUS, Sanjay Marc Correa, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Patrick R. Scanlon, Ex. Gp.: 2204

5,113,795, Re. S.N. 08/212,988, Mar. 15, 1994, Cl. 119/51, CAT SCRATCHING POST FEEDER, Robert Delzic, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 3303

5,130,305, Re. S.N. 08/210,006, Mar. 18, 1994, Cl. 514/110, CYCLOPHOSPHAMIDE-SODIUM BICARBONATE LYOPHILIZATES, Nageswava R. Palepu, et. al., Owner of Record: *Erbamont, Inc., Dublin, Ohio,* Attorney or Agent: Carl E. Moore, Jr., Ex. Gp.: 1205

5,142,707, Re. S.N. 08/206,128, Mar. 4, 1994, Cl. 4/222, ADDITIVE INJECTION UNIT FOR A MARINE TOILET SYSTEM, Fredrick Prue, Owner of Record: *Inventor,* Attorney or Agent: Charles G. Call, Ex. Gp.: 2403

5,143,597, Re. S.N. 08/200,050, Feb. 22, 1994, Cl. 208/131, PROCESS OF USED LUBRICANT OIL RECYCLING, Steven W. Sparks, et. al., Owner of Record: *Mobile Oil Corp., Fairfax, Va.,* Attorney or Agent: Jessica M. Sinnott, Ex. Gp.: 1109

5,176,101, Re. S.N. 08/210,363, Mar. 16, 1994, Cl. 119/6, MODULAR INJECTION SYSTEM FOR AVIAN EMBRYOS, Eric A. Paul, et. al., Owner of Record: *Embrex, Research Triangle Park, N.C.,* Attorney or Agent: Phillip Summa, Ex. Gp.: 3303

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,870,389, Reexam. No. 90/003,374, Mar. 28, 1994, Cl. 345/161, JOYSTICK, Takehiko Ishiwata, et. al., Owner of Record: *ASCII Corp., Tokyo, Japan,* Attorney or Agent: E. Robert Yoches, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 2609, Requester: Owner

5,241,300, Reexam. No. 90/003,388, Feb. 25, 1994, Cl. 340/573, SIDS DETECTION APPARATUS AND METHOD, Johannes Buschmann, Owner of Record: *Inventor, Munchen Federal Republic of Germany,* Attorney or Agent: Dominik, Stein, Saccocio, Reese, Colitz & Van Der Wall, Tampa, Fla., Ex. Gp.: 2617, Requester: Eckhard H. Kuesters, Oblon, Spivak, Mc Clelland, Maier & Neustadt, Arlington, Va.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED MARCH 21, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
92,115	71/068,152	06/17/1913
92,123	71/061,316	06/17/1913
92,139	71/068,375	06/17/1913
303,865	71/327,411	06/13/1933
303,906	71/335,017	06/13/1933
303,911	71/334,794	06/13/1933
303,923	71/334,236	06/13/1933
303,953	71/332,002	06/13/1933
303,976	71/333,627	06/13/1933
575,762	71/546,704	06/16/1953
575,766	71/557,558	06/16/1953
575,781	71/586,974	06/16/1953
575,789	71/590,902	06/16/1953
575,791	71/591,069	06/16/1953
575,798	71/593,341	06/16/1953
575,799	71/593,750	06/16/1953
575,800	71/593,934	06/16/1953
575,801	71/594,717	06/16/1953
575,805	71/598,534	06/16/1953
575,814	71/602,083	06/16/1953
575,824	71/607,756	06/16/1953
575,829	71/610,131	06/16/1953
575,830	71/610,169	06/16/1953
575,833	71/610,777	06/16/1953
575,834	71/610,834	06/16/1953
575,837	71/610,996	06/16/1953
575,851	71/614,055	06/16/1953
575,852	71/614,276	06/16/1953
575,853	71/614,278	06/16/1953
575,854	71/614,296	06/16/1953
575,857	71/615,859	06/16/1953
575,858	71/616,005	06/16/1953
575,859	71/616,006	06/16/1953
575,871	71/618,290	06/16/1953
575,873	71/618,973	06/16/1953
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575,892	71/621,519	06/16/1953
575,903	71/622,295	06/16/1953
575,905	71/622,468	06/16/1953
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575,920	71/623,858	06/16/1953
575,927	71/624,702	06/16/1953
575,929	71/624,875	06/16/1953
575,941	71/625,914	06/16/1953
575,943	71/626,328	06/16/1953
575,947	71/626,638	06/16/1953
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Reg. No.	Serial Number	Reg. Date
575,975	71/628,725	06/16/1953
575,978	71/629,180	06/16/1953
575,983	71/629,336	06/16/1953
575,986	71/629,499	06/16/1953
576,005	71/630,432	06/16/1953
576,006	71/630,482	06/16/1953
576,007	71/630,554	06/16/1953
576,023	71/631,193	06/16/1953
576,040	71/631,933	06/16/1953
576,042	71/631,975	06/16/1953
576,047	71/632,380	06/16/1953
576,052	71/632,495	06/16/1953
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576,067	71/633,096	06/16/1953
576,074	71/633,575	06/16/1953
576,077	71/633,812	06/16/1953
576,083	71/634,086	06/16/1953
576,088	71/634,271	06/16/1953
576,095	71/634,598	06/16/1953
576,097	71/634,627	06/16/1953
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576,111	71/635,489	06/16/1953
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576,134	71/621,076	06/16/1953
576,148	71/611,828	06/16/1953
576,159	71/634,733	06/16/1953
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960,706	72/424,706	06/12/1973
960,707	72/407,695	06/12/1973
960,713	72/397,739	06/12/1973
960,714	72/409,122	06/12/1973
960,720	72/367,154	06/12/1973
960,722	72/397,395	06/12/1973
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960,817	72/399,661	06/12/1973
960,820	72/404,424	06/12/1973
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960,848	72/409,932	06/12/1973
960,849	72/409,933	06/12/1973
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960,853	72/411,230	06/12/1973
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960,869	72/415,661	06/12/1973
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960,879	72/430,547	06/12/1973
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960,883	72/431,632	06/12/1973
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960,900	72/414,442	06/12/1973
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960,902	72/414,793	06/12/1973
960,903	72/415,580	06/12/1973
960,904	72/415,842	06/12/1973
960,907	72/416,645	06/12/1973
960,909	72/410,185	06/12/1973
960,911	72/410,475	06/12/1973
960,914	72/413,238	06/12/1973
960,922	72/362,018	06/12/1973
960,923	72/362,519	06/12/1973
960,925	72/405,347	06/12/1973
960,927	72/407,875	06/12/1973
960,933	72/417,739	06/12/1973
960,934	72/418,799	06/12/1973
960,937	72/421,115	06/12/1973
960,939	72/421,420	06/12/1973
960,942	72/422,745	06/12/1973
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960,968	72/422,735	06/12/1973
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960,977	72/401,127	06/12/1973
960,983	72/420,679	06/12/1973
960,984	72/420,680	06/12/1973
960,985	72/420,681	06/12/1973
960,986	72/420,682	06/12/1973
960,987	72/420,683	06/12/1973
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960,994	72/423,941	06/12/1973
960,997	72/418,201	06/12/1973
960,999	72/387,143	06/12/1973

Patent Available For License or Sale

4,630,861	Contact:	FOLDABLE STOOL Donna Henschel Tower Stool Co. P.O. Box 337 Faith, S. Dak. 57626 (605) 967-2418
4,867,318	Contact:	STORAGE RACK AND THE LIKE Jerry A. Robson Care, Inc. 2754 Lexington Mansfield, Ohio 44904 (419) 884-1255
4,967,915		STORAGE RACK AND THE LIKE

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Contact: Jerry A. Robson
Care, Inc.
2754 Lexington
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5,161,484 COLLAPSIBLE PORTABLE PET REST ATTACHABLE TO A BED

Contact: Michael Duane
20 Cedar St.
Sedona, Ariz., 86351
(602) 284-0152

5,220,775 APPARATUS FOR REMOVING FRUIT

Contact: John V. Vogel
12014 North Street
Gibsonton, Fla., 33534

5,246,868 INFRARED EMISSION DETECTION

Contact: Daniel S. Hodgins
Arnold. White & Durkee
2300 One American Center
600 Congress Ave.
Austin, Tex., 78701
(512) 320-7200

5,258,941 APPARATUS FOR UTILIZING A DISCRETE FOURIER TRANSFORMER TO IMPLEMENT A DISCRETE COSINE TRANSFORMER

Contact: Edward Newberger
55 Greenwich Dr., Apt. 1
Amherst, N.Y., 14228
(716) 636-8358

5,269,861 STRUCTURE AND METHOD FOR REPAIR OF SHEETROCK WALLS

Contact: Lindsey W. Gilbreath
#7 CR 5336-3025B
Farmington, N. Mex., 87401

5,299,714 OIL FILTER PUNCTURING, DRAINING, AND SOCKET EXTENSION DEVICE

Contact: Gary H. Kilgore
206 Laurel Heights Place
San Antonio, Tex., 78212
(210) 732-2046

Errata

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the Official Gazette were listed inadvertently:

TM 231, TMI 29	1,816,652	01-18-94
TM 245, TMI 4	1,817,226	01-18-94
TM 142, TMI 29	1,820,039	02-08-94
TM 142, TMI 29	1,820,040	02-08-94
TM 224, TMI 27	1,820,854	02-08-94
TM 255, TMI 14	1,821,196	02-15-94
TM 260, TMI 8	1,821,406	02-15-94
TM 260, TMI 18	1,821,414	02-15-94

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

April 5, 1994 DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers were erroneously listed as canceled in the "Trademark Registrations Canceled, Section 8" and "Index of Registrants" sections of the *Official Gazette*:

TM 150, TMI 1	979,519	09-23-80
TM 380, TMI 18	1,418,858	07-20-93
TM 354, TMI 20	1,435,118	11-16-93

Consequently, the above-identified registrations are still active.

April 5, 1994 DAVID E. BUCHER
Director of Trademark Examining Groups

The errata notice of Oct. 12, 1993 on page TMOG 43 erroneously listed the registration number 1,702,962 as being vacated. Consequently, the certificate of registration is still active.

April 4, 1994 DAVID E. BUCHER
Director of Trademark Examining Groups

Errata

"All reference to Patent No. 5,303,040 to Henry B. Mistrot of Tex., `MICROKEYER: MICROCOMPUTER BROADCAST VIDEO OVERLAY DEVICE AND METHOD' appearing in the *Official Gazette* of April 12, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,303,317 to Silvio Marazzi of Switzerland `CONNECTOR FOR AN OPTICAL FIBER' appearing in the *Official Gazette* of April 12, 1994 should be deleted since no patent was granted."

Disclaimers

4,589,552--*Pierre Chevalier*, Boulogne sur Seine, France. PACKAGE COMPRISING A STRIP AND SIDE FLAPS. Patent dated May 20, 1986. Disclaimer filed Feb. 24, 1994, by the inventor.

Hereby enters this disclaimer to claim 1, 7, 8 and 10 of said patent.

4,856,873--*Larry Kleinberg*, Toluca Lake, Calif. DOCUMENTATION ILLUMINATION MODULE. Patent dated Aug. 15, 1989. Disclaimer filed Feb. 9, 1994, by the assignee, Storz Instrument Company.

Hereby enters this disclaimer to all claims of said patent.

4,931,261--*Adir Jacob*, Framingham, Mass. APPARATUS FOR DRY STERILIZATION OF MEDICAL DEVICES AND MATERIALS. Patent dated June 5, 1990. Disclaimer filed Nov. 15, 1993, by the inventor.

Hereby enters this disclaimer to claims 1, 2, 6 and 7 of said patent.

5,007,723--*Larry K. Kleinberg*, Toluca Lake, Calif. DOCUMENTATION ILLUMINATION MODULE FOR A MICROSCOPE SYSTEM. Patent dated April 16, 1991. Disclaimer filed Feb. 9, 1994, by the assignee, Storz Instrument Company.

Hereby enters this disclaimer to all claims of said patent.

5,089,909--*Larry K. Kleinberg*, Toluca Lake, Calif. DOCUMENTATION ILLUMINATION MODULE FOR A MICROSCOPE SYSTEM. Patent dated Feb. 18, 1992. Disclaimer filed Feb. 9, 1994, by the assignee, Storz Instrument Company.

Hereby enters this disclaimer to all claims of said patent.

5,094,334--*Reinhold Bobrowski*, Morris, Manitoba, Canada. MECHANICALLY DRIVEN AUGER SYSTEM. Patent dated Mar. 10, 1992. Disclaimer filed Nov. 2, 1993, by the assignee, Alberta, Ltd.

Hereby enters this disclaimer to all claims of said patent.

5,111,914--*Rudolf Thiel* Frankfurt am Main; *Ulrich Klimt*, Muehltal; George Halasy-Wimmer, Eschborn, all of Fed. Rep. of Germany. SPOT-TYPE DISC BRAKE. Patent dated May 12, 1992. Disclaimer filed Feb. 7, 1994, by the assignee, Alfred Teves GmbH.

Hereby enters this disclaimer to claim 27 of said patent.

5,135,975--*John W. Rekers*, Spartanburg, S.C. BIS(3,4-DIALKYLBENZYLIDENE) SORBITOL ACETALS AND COMPOSITIONS CONTAINING SAME. Patent dated Aug. 4, 1992. Disclaimer filed Jan. 19, 1994, by the assignee, Milliken Research Corp.

Hereby enters this disclaimer to claims 1 and 3 of said patent.

5,148,273--*Bernard Lippel*, West Long Branch, N.J. TELEVISION SYSTEMS TRANSMITTING DITHER-QUANTIZED SIGNALS. Patent dated Sept. 15, 1992. Disclaimer filed June 14, 1993, by the inventor.

Hereby enters this disclaimer to claim 8 of said patent.

5,184,578--*Stanley B. Quinn, Jr.; Alan L. Miller; Edward C. Siemon*, all of Ithaca, N.Y. VCT SYSTEM HAVING ROBUST CLOSED LOOP CONTROL EMPLOYING DUAL LOOP APPROACH HAVING HYDRAULIC PILOT STAGE WITH A PWM SOLENOID. Patent dated Feb. 9, 1993. Disclaimer filed Feb. 22, 1994, by the assignee, Borg-Warner Automotive Transmission and Engine Components Corp.

Hereby enters this disclaimer to claim 19 of said patent.

5,223,292--*Robert R. Thulin*, Wyckoff; *Robert E. Ross*, Wayne; *Lori J. Banks*, Hackensack, all of N.J. METHOD AND DOUGH COMPOSITIONS FOR MAKING SHELF-STABLE SOFT OR CHEWY COOKIES. Patent dated June 29, 1993. Disclaimer filed March 16, 1994, by the assignee, Nabisco, Inc.

Hereby enters this disclaimer to the remaining term of said patent.

5,237,986--*Harold J. Seppla*, St. Paul, Minn.; *Alex A. Wawiluk*, Overijse, Belgium. RESPIRATOR HARNESS ASSEMBLY. Patent dated Aug. 24, 1993. Disclaimer filed Mar. 16, 1994, by the assignee, Minnesota Mining and Manufacturing Co.

Hereby enters this disclaimer to all claims of said patent.

5,274,077--*Ronald M. Evans*, La Jolla; *Estelita S. Ong; Prudimar S. Segui*, both of San Diego; *Catherine C. Thompson*, La Jolla; *Kazihiko Umesono*, San Diego, all of Calif.; *Vincent Giguere*, Etobicoke, Canada. RETINOIC ACID RECEPTOR COMPOSITION. Patent dated Dec. 28, 1993. Disclaimer filed Jan. 3, 1994, by the assignee, The Salk Institute Of Biological Studies.

Hereby enters this disclaimer to claims 6, 9 and 12 of said patent.

Dedication

4,161,539--*Odie T. Stallcup*, Fayetteville, Ark. USE OF MALIC ACID AS A RUMINANT FEED ADDITIVE. Patent dated July 17, 1979. Dedication filed Jan. 25, 1994, by the assignee, Dow Chemical Co.

Hereby dedicates to the public all claims of said patent.

Disclaimers and Dedications

4,806,868--*George F. Schulke*, Sunnyvale, Calif. NMR SPINNER SPEED CONTROL. Patent dated Feb. 21, 1989. Disclaimer and Dedication filed Dec. 21, 1993, by the assignee, Varian Associates, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,983,949--*James H. Wicker*, Charlotte, N.C. SAFETY UNIT ACTUATING DEVICE. Patent dated Jan. 8, 1991. Disclaimer and Dedication filed Nov. 26, 1993, by the assignee, Specialty Manufacturing Co., Inc.

Hereby disclaims and dedicates to the Public claims 17 and 18 of said patent.

5,103,609--*Thomas L. Thoreson*, Forest Lake, Minn.; *Robert C. McCurdy*, deceased, Birchwood, Minn. INTUMESCABLE FIRE STOP DEVICE. Patent dated April 14, 1992. Disclaimer and Dedication filed Mar. 7, 1994, by the assignee, Minnesota Mining & Manufacturing Co.

Hereby disclaims and dedicates to the public all claims of said patent.

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Correction
Issue of May 10, 1994

D. 333,916	D. 340,424	4,855,999	4,885,277
D. 334,139	D. 340,506	4,866,712	4,925,933
D. 339,035	Re.34,309	4,874,499	4,929,313
D. 340,156	Re.34,444	4,874,551	4,929,802
D. 340,319	4,387,161	4,882,085	4,933,146

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4,960,798	5,128,923	5,176,193	5,210,265	5,226,886	5,239,673	5,252,626	5,262,387
4,961,002	5,130,442	5,176,634	5,210,434	5,227,217	5,240,045	5,252,806	5,262,842
4,965,205	5,130,558	5,177,676	5,210,485	5,227,520	5,240,275	5,253,485	5,262,897
4,966,615	5,132,305	5,177,988	5,211,154	5,227,643	5,240,506	5,253,858	5,263,196
4,980,800	5,134,725	5,178,624	5,211,744	5,229,300	5,240,756	5,254,352	5,263,295
4,981,509	5,135,864	5,178,841	5,211,967	5,229,404	5,240,795	5,254,559	5,263,701
4,987,458	5,136,326	5,178,846	5,212,262	5,229,464	5,240,867	5,254,574	5,264,170
4,989,609	5,136,791	5,179,123	5,212,523	5,229,482	5,241,195	5,254,798	5,264,208
4,997,473	5,136,874	5,179,180	5,214,399	5,229,577	5,241,249	5,254,916	5,264,239
5,000,169	5,138,045	5,179,636	5,214,693	5,229,865	5,241,313	5,254,941	5,264,302
5,010,452	5,141,642	5,180,992	5,215,220	5,230,062	5,242,114	5,255,838	5,264,666
5,017,658	5,144,561	5,181,943	5,215,388	5,230,233	5,242,480	5,255,939	5,264,743
5,027,853	5,144,813	5,183,046	5,215,680	5,230,766	5,242,505	5,255,948	5,264,797
5,031,057	5,147,174	5,185,178	5,216,445	5,230,985	5,243,487	5,256,025	5,264,888
5,032,868	5,153,168	5,186,767	5,216,475	5,231,012	5,243,539	5,256,156	5,265,373
5,041,013	5,153,581	5,187,774	5,216,518	5,231,312	5,243,551	5,256,367	5,265,696
5,043,673	5,154,126	5,188,575	5,216,997	5,231,471	5,243,747	5,256,409	5,265,765
5,046,773	5,155,666	5,188,863	5,217,590	5,231,475	5,243,887	5,256,545	5,265,982
5,047,199	5,156,977	5,189,025	5,217,861	5,231,505	5,244,184	5,256,628	5,266,041
5,052,301	5,157,653	5,189,043	5,217,873	5,231,515	5,244,639	5,256,677	5,266,149
5,053,035	5,159,208	5,189,471	5,217,893	5,231,573	5,244,698	5,256,697	5,266,376
5,053,523	5,159,319	5,191,241	5,218,175	5,231,849	5,244,749	5,257,009	5,266,408
5,061,979	5,159,377	5,191,496	5,218,274	5,231,853	5,245,009	5,257,058	5,266,550
5,064,846	5,159,443	5,192,526	5,218,471	5,232,007	5,245,157	5,257,078	5,266,626
5,066,130	5,159,611	5,192,652	5,218,478	5,232,627	5,245,866	5,257,121	5,267,109
5,066,276	5,160,219	5,194,961	5,218,722	5,232,789	5,245,995	5,257,720	5,267,762
5,068,252	5,160,255	5,196,171	5,220,042	5,233,940	5,246,453	5,258,052	5,268,257
5,070,848	5,161,134	5,196,435	5,220,501	5,234,267	5,246,709	5,258,106	5,268,517
5,075,625	5,161,932	5,196,781	5,220,980	5,234,300	5,247,856	5,258,357	5,268,721
5,077,001	5,162,578	5,197,352	5,221,613	5,234,509	5,248,288	5,258,790	5,268,735
5,079,507	5,163,031	5,197,813	5,221,721	5,234,612	5,248,329	5,258,819	5,269,587
5,081,333	5,163,936	5,197,985	5,221,888	5,234,712	5,248,346	5,259,055	5,269,713
5,088,065	5,164,243	5,198,040	5,222,125	5,235,053	5,248,451	5,259,121	5,270,078
5,088,559	5,166,232	5,198,666	5,222,488	5,235,149	5,248,792	5,259,175	5,270,135
5,088,996	5,166,402	5,200,422	5,222,802	5,235,263	5,248,882	5,259,215	5,270,871
5,091,529	5,166,858	5,200,848	5,222,854	5,235,396	5,249,003	5,259,260	5,271,493
5,092,107	5,167,220	5,200,955	5,223,068	5,235,560	5,249,062	5,259,646	5,271,872
5,092,920	5,167,459	5,201,785	5,223,609	5,235,670	5,249,345	5,259,998	5,271,929
5,101,050	5,168,024	5,202,311	5,223,581	5,235,713	5,250,306	5,260,112	5,272,562
5,103,327	5,168,187	5,202,471	5,223,813	5,235,827	5,250,351	5,260,328	5,272,834
5,109,265	5,169,013	5,202,803	5,224,554	5,236,522	5,250,505	5,260,525	5,273,820
5,109,899	5,170,581	5,202,960	5,224,930	5,236,593	5,250,819	5,260,551	5,274,689
5,109,905	5,171,189	5,203,129	5,225,320	5,237,292	5,251,020	5,260,624	5,275,338
5,111,793	5,171,528	5,204,462	5,225,352	5,237,499	5,251,146	5,260,637	5,275,859
5,117,295	5,171,859	5,206,882	5,225,384	5,237,647	5,251,511	5,260,817	5,275,892
5,118,680	5,172,313	5,208,389	5,225,405	5,237,650	5,251,640	5,261,060	5,276,003
5,120,642	5,172,495	5,208,911	5,225,704	5,238,410	5,251,657	5,261,438	5,276,053
5,123,734	5,172,829	5,208,974	5,225,849	5,238,738	5,251,757	5,261,495	5,276,617
5,126,021	5,175,001	5,208,989	5,226,495	5,238,950	5,252,101	5,261,580	5,276,630
5,128,812	5,175,306	5,209,852	5,226,502	5,239,145	5,252,549	5,262,234	5,277,751
							5,279,266

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
March 21-25, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
3-21	EX	74/163,203	Advance Magazine Publishers, Inc.	2(d)	Refusal Affirmed		"THE NEW YORKER" [t-shirts]	"THE 'NEW YORKER'" (in stylized lettering) [men's suits and overcoats]	No
3-21	EX	74/215,970	F.C.F., Inc.	whether the matter asserted for registration functions as a trademark or, rather, only as package ornamentation	Refusal Affirmed		rose design applied to packaging for applicant's goods [foundation makeup, lipstick, cosmetic pencil for lips, nail polish, concealer, face powder, and blush]		Yes
3-23	OPP	78,189	Jean Couturier Int'l. v. C.D. Parfums, Inc.	2(d)	Opposition Sustained	design applied to the packaging for opposer's goods [perfumes and cosmetics]	"CHRISTIAN DIOR" and a design applied to the packaging for applicant's goods [perfume, toilet water, cologne, and cosmetics]		No
3-23	EX	74/085,533	R & M Materials Handling, Inc.	2(d)	Refusal Affirmed		"R & M MATERIALS HANDLING INC." (and design) [cranes and hoists and structural parts therefor]	"R & M" (in stylized lettering) [electric hoists, cranes, etc.]	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — JOHN DOLL, Acting Director	308-0661	5/17/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	3/11/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	7/26/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	5/24/93
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COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	4/13/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	4/18/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/25/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	9/23/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	7/21/92
MECHANICAL EXAMINING GROUPS		
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	4/05/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	5/13/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	11/20/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	6/03/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during April 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,015,294 to 4,020,506 inclusive
Plant Patents ..... 4,032 to 4,045

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of April 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/12/93	12/10/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/22/93	02/14/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/06/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/93	01/18/94
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/28/93	12/10/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/93	01/18/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	01/03/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/22/93	02/22/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/12/93	12/29/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/15/93	03/03/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/10/94	02/22/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/29/93	01/25/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/17/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	11/15/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

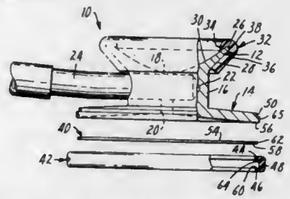
1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

MAY 10, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,475,619 (2293rd)
STETHOSCOPE WITH FLOATING DIAPHRAGM
Thomas J. Packard, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Reexamination Request No. 90/002,497, Oct. 31, 1991.
Reexamination Certificate for Patent No. 4,475,619, issued Oct. 9, 1984, Ser. No. 478,222, Mar. 24, 1983.
Int. Cl.[5] H04R *25/00;* **A61B** *7/02*
U.S. Cl. 181—137

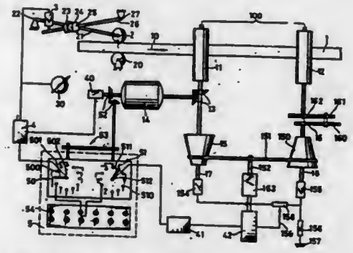


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

1. A stethoscope head comprising:
a. a body having a bore therein;
b. a diaphragm head connected to the body and having an aperture therein communicating with the bore in the body to conduct sound from the diaphragm head into the bore;
c. a continuous and peripheral rim connected to the head;
d. a diaphragm comprising: (1) a first surface adapted to selectively engage the rim to prevent the passage of sound energy there between, (2) a second surface spaced from the first surface and (3) at least a single edge connecting the first surface to the second surface; and
e. means for loosely affixing the diaphragm to the head whereby the first surface of the diaphragm and the rim are held in close proximity.

B1 4,137,487 (2294th)
METHOD AND DEVICE FOR AUTOMATICALLY LEVELING FLEECES, SLIVERS, ROVINGS AND THE LIKE BY DRAWING
Heinrich Niestroj, Ingolstadt, Peter Denz, Hohenwart, both of Fed. Rep. of Germany Assignees, Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany
Reexamination Request No. 90/003,151, July 30, 1993
Reexamination Certificate for Patent No. 4,137,487, Issued Jan 5, 1994, Appl. No. 726,737, Filed Sep. 27, 1976
Int. Cl.[5] D01H 5/38, G05B 19/27
U.S. CL. 318/19



The patentability of claims **1–6** is confirmed.

1. A method and apparatus for automatically leveling a band of fibers such as sliver, roving and the like by varying the drafting speed of a drafting mechanism responsive to variations in the thickness of the band. Analogue signals are produced by variations in the thickness of the band and are converted to digital signals for being stored in a digital register. After a period of time, corresponding with the time for conveyance of the scanned point in the sliver up to and into the draft zone, the information is read out of the storage register and converted back to an analogue signal. The analogue signal is compared with another signal representing the actual drafting speed for producing a compared signal for controlling the drafting speed.

B1 4,845,027 (2295th)
FLUOROMETRIC ASSAY OF ALLERGIC REACTIONS
Emanuel Calenoff, Burlingame; Ruth M. Johnson, Redwood City; Yuh-Geng Tsay, San Jose, and John Scott, Mountain View, all of Calif., assignors to Biowhittraker, Inc.
Reexamination Request No. 90/003,001, Mar. 8, 1993.
Reexamination Certificate for Patent No. 4,845,027, issued Jan. 15, 1988, Ser. No. 144,737, Jul. 4, 1989.
Continuation of Ser. No. 434,061, Oct. 13, 1992, abandoned.
Int. Cl.[5] G01N *33/53, 33/535*
U.S. Cl. 435—7.95

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

New claims **9** and **10** are added and determined to be patentable.

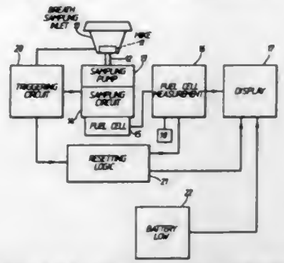
1. A method for identifying and quantifying allergen specific IgE levels in patient serum comprising:
(a) contacting an insoluble support having allergen adhering thereto with patient serum for a sufficient time to permit conjugation of any allegen specific IgE to the allergen and removing the patient serum therefrom;
(b) contacting the insoluble support with anti-IgE antibody labeled with a fluorogenic enzyme for a time between 30 and 180 minutes and sufficient to permit conjugation of the anti-IgE antibody to any IgE and removing any non-bound anti-IgE antibody therefrom;
(c) contacting the insoluble support with a solution of substrate which undergoes reaction in the presence of the fluorogenic enzyme to yield fluorescent product for a period between 5 and 240 minutes;
(d) measuring the fluorescence level of the solution; and
(e) determining the amount of allergen specific IgE in the patient serum by comparing the fluorescence measured in step d with those of control solutions.

B1 4,868,545 (2296th)
ALCOHOL OR DRUGS BREATH DETECTING DEVICES
Thomas P. Jones, Sully, United Kingdom, assignor to Lion Technology Limited, Barry, England
Reexamination Request No. 90/003,152, Aug. 5, 1993.
Reexamination Certificate for Patent No. 4,868,545, issued Sep. 19, 1989, Ser. No. 154,252, Jan. 28, 1988.
PCT No. PCT/GB87/00412, § 371 Date Jan. 28, 1988, § 102(e) Date Jan. 28, 1988, PCT Pub. No. WO87/07723, PCT Pub. Date Dec. 17, 1987
Claims priority, application United Kingdom, Jun. 14, 1986, 8614515
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—573

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims **1–19** is confirmed.



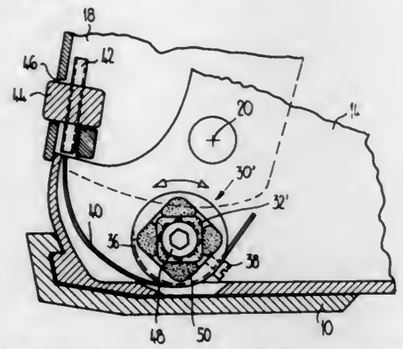
1. Apparatus for detecting the presence of alcohol in expired breath, from a subject, in the atmosphere, comprising a gas sampler, a detector for the presence of alcohol in a gas sample, an output indicator or recorder coupled to the detector to provide an output signal when alcohol is detected, a presence sensor for sensing the presence of a subject in relation to the gas sampler, and an automatic controller for actuating the sampler and detector in response to a signal from a presence sensor.

B1 5,088,211 (2297th)

SKI BOOT

Klaus Walkhoff, Kreuzlingen, Switzerland, assignor to Raichle Sportschuh AG, Kreuzlingen, Switzerland

Reexamination Request No. 90/003,090, Jun. 8, 1993.
Reexamination Certificate for Patent No. 5,088,211, issued Feb. 18, 1992, Ser. No. 427,495, Oct. 27, 1989.
Claims priority, application Switzerland, Nov. 21, 1988, 4308/88
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **4**, **8** and **20** are determined to be patentable as amended.

Claims **2**, **3**, **5**, **6**, **7**, **9–19**, **21** and **22**, dependent on an amended claim, are determined to be patentable.

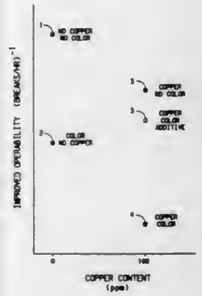
1. A ski boot with a boot shell which has a boot sole and is formed by a lower shell and a boot shaft which is movable relative to the lower shell at least in a forward lean direction, the ski boot comprising a damping arrangement which is effective between the lower shell and the boot shaft to resiliently dampen the forward lean movement, said damping arrangement having at least one rubber spring element comprising a core piece having a longitudinal axis, a tubular piece coaxially surrounding said core piece, one of said core piece and said tubular piece being rotatable upon the forward lean movement relative to the other of said core piece and said tubular piece, and further comprising flexible, compressible members of elastomeric material arrangedradially outward of said longitudinal axis of said core piece and radially inward of said tubular piece, as to be between said core piece and said tubular piece, said compressible, flexible members being compressed by the relative rotation between said core piece and said tubular piece occurring during the forward lean movement, thus elastically limiting said relative rotation, said at least one spring element seated in said lower shell; and a force transmission member extending between at least one of said core and said tubular piece of said *rubber* spring **[**member**]** *element* and said boot shaft.

B1 5,108,684 (2298th)

PROCESS FOR PRODUCING STAIN-RESISTANT, PIGMENTED NYLON FIBERS

Anthony Anton, Wilmington, Del.; Peter R. Witt, Lugoff, S.C.; Linda H. Sauerbrunn; Diane M. Scholler, both of Wilmington, Del.; William P. Parmelee; William T. Windley, both of Seaford, Del., and Paul S. Pearlman, Thornton, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Reexamination Request No. 90/003,043, Apr. 29, 1993.
Reexamination Certificate for Patent No. 5,108,684, issued Apr. 28, 1992, Ser. No. 284,091, Dec. 14, 1988.
Reexamination Certificate B0 5,108,684, issued Jun. 29, 1993.
Int. Cl.[5] D01F *1/04*
U.S. Cl. 264—176.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. A process for producing stain-resistant, pigmented nylon fiber comprising the steps of:

a) forming a sulfonated nylon copolymer containing 0.25–4.0 weight percent of an aromatic sulfonate or an alkali metal salt thereof;

b) adding pigment to the copolymer to form a **[**pigment-/polymer**]** *pigment/copolymer* blend; and

c) spinning the **[**pigment/polymer**]** *pigment/copolymer* blend into a fiber,

where the fiber so produced has a CIELAB L* value less than 88 or, if the CIELAB L* value is 88 or greater has a CIELAB C* value greater than 8.

B1 5,115,611 (2299th)

METAL CLADDING SYSTEMS

Guy H. Lim, Rotterdam; Willem Rijnders, Papendrecht, and Cornelis Louwerens, Rotterdam, all of Netherlands, assignors to Hunter Douglas International, Curacao, Netherlands Antilles

Reexamination Request No. 90/003,148, Aug. 2, 1993.
Reexamination Certificate for Patent No. 5,115,611, issued May 26, 1992, Ser. No. 570,262, Aug. 20, 1990.
Claims priority, application United Kingdom, Aug. 25, 1989, 8919330; Jun. 22, 1990, 9014274
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—537

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

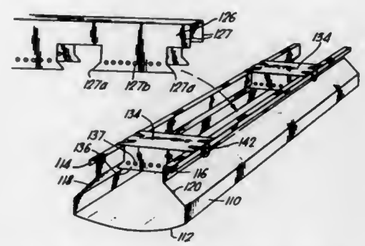
The patentability of claims **26** and **27** is confirmed.

Claims **1–13**, **18–25** and **28–32** are cancelled.

Claim **14** is determined to be patentable as amended.

Claims **15–17** dependent on an amended claim, are determined to be patentable.

1. A self-sustained cladding panel for use in a cladding system for a building, said panel being formed of a resilient metal



or metal alloy sheet material having an elastic range of deformation and said panel comprising a generally central visible portion, longitudinally extending side edges, and means on said panel connecting said longitudinally extending side edges with respect to one another, said connecting means retaining said panel in a final shape under tension with the elastic range of deformation of said material with at least the central visible portion in an elastically deformed state.

B1 5,169,499 (2300th)

PAPER MACHINE FELTS OF A COPOLYMER OF 1,4-DIMETHYLOCYCLOHEXANE, TEREPHTHALIC ACID, AND ISOPHTHALIC ACID

Dana B. Eagles, Sherborn; Jeanne A. Leon, Westwood, and Francis Ditaranto, Plainville, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Reexamination Request No. 90/003,132, Jul. 19, 1993.
Reexamination Certificate for Patent No. 5,169,499, issued Dec. 8, 1992, Ser. No. 678,292, Apr. 4, 1991.
PCT No. PCT/GB90/00623, § 371 Date Apr. 4, 1991, § 102(e) Date Apr. 4, 1991, PCT Pub. No. WO90/12918, PCT Pub. Date Nov. 1, 1990
Claims priority, application United Kingdom, Apr. 24, 1989, 8909291; Jun. 15, 1989, 8913731; Nov. 6, 1989, 8924996
Int. Cl.[5] D21F *7/08;* **D01F** *6/62*
U.S. Cl. 428—175

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-15** is confirmed.

1. An article of paper machine clothing used in the forming, pressing or drying sections of a papermaking machine, which article includes a fibre structure characterized in that the fibres of said structure consist essentially of a woven polyester material which is a copolymer of terephthalic acid, 1,4-dimethylolcyclohexane and isophthalic acid the polyester material exhibiting an increase in life of the clothing relative to clothing comprised of polyethylene terephthalate, and said fibres have a melting point greater than 260° C.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,600

ENERGY RECOVERY SYSTEM FOR ABSORPTION HEAT PUMPS

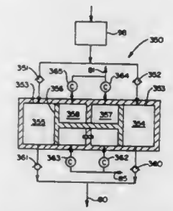
F. Bert Cook, Columbus, and Edward A. Reid, Jr., Westerville, both of Ohio, assignors to Columbia Gas Service Corporation, Wilmington, Del.

Original No. 5,077,986, dated Jan. 7, 1992, Ser. No. 478,226, Feb. 9, 1990. Application for reissue Aug. 31, 1992, Ser. No. 938,852

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—483

4 Claims



1. In an absorption refrigeration and/or heating system having components connected in series, including at least one generator, a condenser, an evaporator, and an absorber, wherein refrigerant is absorbed and desorbed or expelled in an absorbent solution, and the application of heat and externally supplied mechanical energy is combined and converted to pressure energy that is applied to, or removed, from a solution of refrigerant and absorbent, and having means to recover a portion of the pressure energy for addition to the mechanical energy, the improvement comprising:

(a) means to convert the pressure energy and/or phase change energy in the solution and/or refrigerant to mechanical energy,

(b) means to replace or supplement the externally supplied mechanical energy in the system with the converted mechanical energy,

(c) said system including first positive displacement pump means for conveying the absorbent solution from the absorber to the at least one generator means, with said first pump means driven by a motive means that is activated by the externally supplied mechanical energy, and

(d) a second pump means driven and controlled by the system pressure energy, as determined by the first positive displacement pump means with each pumping means independently driven, and connected to the other, only by fluid connection means.

Re. 34,601

CAPACITIVE LIQUID SENSOR

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

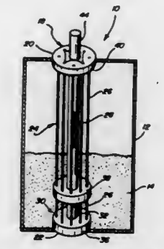
Original No. 4,947,689, dated Aug. 14, 1990, Ser. No. 297,113, Jan. 13, 1989. Application for reissue Jul. 29, 1992, Ser. No. 922,046

Int. Cl.[5] G01F *23/26;* G08B *21/00*

U.S. Cl. 73—304 C

15 Claims

1. A capacitive sensor assembly for placement in a container to determine the level of substance therein, said assembly comprising; sensing means (18) having [a] first and second [end] *ends* (22) for measuring the level of substance between said first and second [end] *ends*; said sensing means including measurement capacitance means (24) extending between said first and second ends comprising at least two parallel conductive members to establish an electrical capacitance representative of level *therebetween*, and reference capacitance means (30) connected at said second end (22) comprising at least two parallel conductive members to establish an electrical capacitance *therebetween* representative of dielectric constant; measuring means (34) responsive to said [level] *reference* capacitance *means* (*30*) for producing a reference signal representing dielectric constant and [reference] *said measurement* capacitance *means* (*24*) for producing a level signal representing level



of the substance, said measuring means (34) including reference timing means (48) connected to said reference capacitance means (30) for producing a *pulsing* reference signal having a timing component indicative of said reference capacitance, and level timing means (50) independent from said reference timing means (30) and connected to said measurement capacitance means (24) for producing a *pulsing* level signal having a timing component indicative of said level capacitance.

Re. 34,602

MULTISTROKE PUNCHING METHOD AND APPARATUS THEREFOR

Kinshiro Naito, Isehara, and Yoshio Imamura, Hiratsuka, both of Japan, assignors to Amada Company, Ltd., Japan

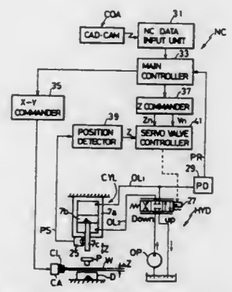
Original No. 4,771,663, dated Sep. 20, 1988, Ser. No. 122,695, Nov. 19, 1987. Application for reissue Sep. 17, 1990, Ser. No. 583,723

Claims priority, application Japan, Nov. 19, 1986, 61-273966; Nov. 19, 1986, 61-273967

Int. Cl.[5] B23D *27/00*

U.S. Cl. 83—49

10 Claims



1. A method of punching a sheet-like workpiece at multistrokes by a press including a die and a striker, which comprises the following steps of:

(a) preparing a height-different punch formed with a lower front edge, an upper rear edge, and an intermediate edge

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extending between the [two edges] *lower front edge and the upper rear edge;*

(b) feeding the workpiece on a horizontal plane in two predetermined directions step by step;

(c) striking the height-different punch by the striker at a first stroke so that the lower front edge thereof cuts off the workpiece partially in cooperation with the die;

(d) repeatedly striking the height-different punch at succeeding strokes so that the intermediate edge thereof cuts off the workpiece mincingly and curls refuse cut off from the workpiece within a recess of the die at such a stroke that the lower front edge of the punch is repeatedly struck by the striker within a stroke between a height below the workpiece and a height within a thickness of the workpiece; and

(e) striking the height-different punch at a last stroke so that the upper rear edge thereof cuts curled refuse away from the workpiece to complete multistroke punching operation in cooperation with the die[;].

Re. 34,603

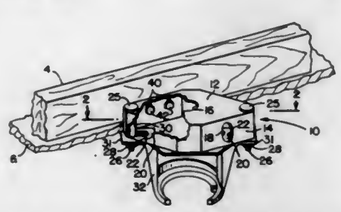
ELECTRICAL JUNCTION BOX FOR SUPPORT OF A HANGING APPLIANCE

Gregory W. Caison, and David G. Wilson, both of Fayetteville, N.C., assignors to Fasco Industries Incorporated, Fayetteville, N.C.

Original No. 4,788,383, dated Nov. 29, 1988, Ser. No. 93,699, Sep. 8, 1987. Application for reissue Nov. 23, 1990, Ser. No. 617,341

Int. Cl.[5] H02G *3/20*

U.S. Cl. 174—54 **14 Claims**



11. An electrical junction box for supporting a hanging load, said junction box including a base plate and a peripheral sidewall extending therefrom, said base and sidewall together forming a junction box cavity;

said base plate defining a spaced plurality of base plate bolt holes adjacent said sidewall;

said sidewall including a spaced plurality of inwardly extending tabs each defining a tab bolt hole in alignment with one of said base plate bolt holes;

a bolt extending through each of said base plate bolt holes and the tab bolt hole aligned therewith, and a lock nut engaged with each of said bolts for supporting said hanging load on said box, and

means on said bolts for preventing rotation thereof with respect to said base plate and tabs.

Re. 34,604

SENSOR USING FIBER INTERFEROMETER

Herbert J. Shaw, Stanford, Calif., assignor to Stanford University, Stanford, Calif.

Original No. 4,773,758, dated Sep. 27, 1988, Ser. No. 900,768, Aug. 27, 1986. Division of Ser. No. 564,998, Dec. 13, 1983, Pat. No. 4,634,852, which is a continuation-in-part of Ser. No. 368,422, Apr. 14, 1982, abandoned. Application for reissue Sep. 26, 1990, Ser. No. 589,061

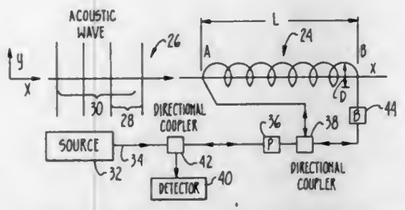
Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—345 **26 Claims**

24. An apparatus for sensing, comprising:

an interferometer having a loop comprising an optical waveguide for propagating light and a detector for detecting said light to pravide an output signal;

a modulator for sensing a time varying quantity, Q, independently of said output signal, said modulator adapted to generate a carrier signal and modulate said carrier signal with said



quantity Q, said modulator thereby transforming said quantity Q into a time varying signal q(t); and

a transducer for receiving said time varying signal 20 q(t) from said modulator and modulating the light propagating through said loop in accordance with the signal q(t), said signal q(t) varying in amplitude.

Re. 34,605

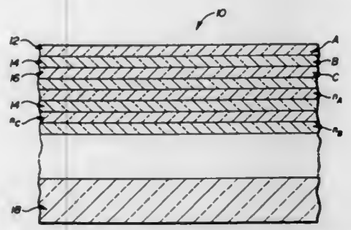
INFRARED REFLECTIVE OPTICAL INTERFERENCE FILM

Walter J. Schrenk, and John A. Wheatley, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 5,103,337, dated Apr. 7, 1992, Ser. No. 557,262, Jul. 24, 1990. Application for reissue Dec. 11, 1992, Ser. No. 989,303

Int. Cl.[5] G02B *5/28*

U.S. Cl. 359—359 **23 Claims**



21. An optical interference film which reflects light in the infrared region of the spectrum while transmitting light in the visible region of the spectrum comprising multiple alternating layers of at least first, second, and third "diverse", substantially transparent polymeric materials A, B, and C, said layers of first and third polymeric materials being of an optical thickness of between about 0.09 and 0.45 micrometers and each of said polymeric materials having a different index of refraction, n_i, and wherein the refractive index of said second polymeric material is intermediate the respective refractive indices of said first and third polymeric materials.

Re. 34,606

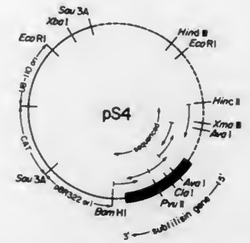
MODIFIED ENZYMES AND METHODS FOR MAKING SAME

David A. Estell, San Mateo; James A. Wells, and Richard R. Bott, both of Burlingame, all of Calif., assignors to Genencor, Inc., So. San Francisco, Calif.

Original No. 4,760,025, dated Jul. 26, 1988, Ser. No. 614,612, May 29, 1984. Application for reissue Jul. 20, 1990, Ser. No. 556,918

Int. Cl.[5] C12N *9/56, 9/54, 15/03;* **C12P** *19/34*

U.S. Cl. 435—222 **20 Claims**



4. A substantially pure modified subtilisin substituted at the residue position equivalent to asp+32 of the Bacillus amyloliquefaciens subtilisin shown in FIG. 1B with one of the other nineteen naturally occurring amino acids shown in FIG. 17.

Re. 34,607

CROSS-LINKABLE FOAMABLE POLYOLEFIN RESIN COMPOSITION

Toshiaki Suzuki; Sotoyuki Kitagawa; Takashi Nakayama, and Takao Kuno, all of Kawasaki, Japan, assignors to Tonen Chemical Corporation, Tokyo, Japan

Original No. 5,091,435, dated Feb. 25, 1992, Ser. No. 726,075, Jul. 5, 1991. Application for reissue Feb. 4, 1993, Ser. No. 13,821

Claims priority, application Japan, Jul. 4, 1990, 2-177161

Int. Cl.[5] C08J *9/10*

U.S. Cl. 521—134 **4 Claims**

1. A cross-linkable, foamable polyolefin resin composition comprising:

(a) [30–80] *14–80* weight % of a propylene-ethylene random copolymer having an ethylene content of 1.5–6 weight %;

(b) 10–60 weight % of a propylene-ethylene random copolymer having an ethylene content of 0.2–1.0 weight %;

(c) 10–60 weight % of a linear low-density polyethylene; and

(d) 1–30 parts by weight, per 100 parts by weight of the total amount of said propylene-ethylene random copolymer (a)+said propylene-ethylene random copolymer (b)+said linear low-density polyethylene (c), of a foaming agent.

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PLANT PATENTS

GRANTED MAY 10, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,718

SHRUB ROSE PLANT NAMED 'JACWHIP'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Apr. 2, 1993, Ser. No. 42,112
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—1

1 Claim

I. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, a sport of the variety JACship, characterized particularly as to novelty by its distinct and uniformly white buds and flowers as compared to the pink buds and flowers of its parent.

8,719

SHRUB ROSE PLANT NAMED 'JACCASP'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Apr. 2, 1993, Ser. No. 42,113
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—1

1 Claim

I. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its recurrent blooms; dwarf procumbent habit of growth; small, dark green, glossy, disease-resistant foliage; heavy production of glands on the peduncle; and ease of propagation by soft-wood cuttings.

8,720

APPLE TREE NAMED APPLEWAITES

Richard Hill, St. Andrew's Road, Havelock North, New Zealand

Filed Aug. 28, 1992, Ser. No. 936,821
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—34.1

1 Claim

1. A new and distinct variety of apple which is a mutation of the Gala variety (U.S. Plant Pat. No. 3,637) substantially as shown and described, characterised by an overall strong dark red colour.

8,721

SWEET CHERRY TREE NAMED 'REDLAC'

Donald A. Calder, 1301 O Ave., La Grande, Oreg. 97850

Filed Jan. 8, 1992, Ser. No. 819,372
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—37

1 Claim

1. A new and distinct variety of cherry tree, substantially as herein shown and described.

8,722

COMPACT SHRUB DOGWOOD—BAILHALO CULTIVAR

Rodney P. Bailey, St. Paul, Minn., assignor to Bailey Nurseries, Inc., St. Paul, Minn.

Filed Dec. 8, 1992, Ser. No. 998,242
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—53.2

1 Claim

1. A new and distinct cultivar of *Cornus alba* shrub, having the following combination of characteristics:

(a) exhibits a full and rounded growth habit,
(b) exhibits a more compact growth habit than the Argenteo-Marginata cultivar with lesser internode lengths,
(c) is slower growing than the Argenteo-Marginata cultivar,
(d) exhibits a finer branching habit and brighter and darker red-brown bark than the Argenteo-Marginata cultivar,
(e) exhibits the same attractive variegated green irregularly edged with white foliage as the Argenteo-Marginata cultivar which is well retained during the summer, and
(f) is well adapted for growing as an ornamental shrub in a smaller area than the Argenteo-Marginata cultivar;

substantially as illustrated and described.

8,723

VARIETY OF LIMONIUM NAMED OCEAN BLUE

Kazunori Sato; Kazuharu Koreeda, both of Shizuoka, and Nobuaki Takanashi, Kanagawa, all of Japan, assignors to Dai-Ichi Engei Plantech Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1993, Ser. No. 72,716
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—68.1

1 Claim

1. A new and distinct variety of Limonium as shown and described herein and characterized by its bluish-purple color, height, and upright stems.

8,724

SPRAY CARNATION NAMED STAGIGI

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Oct. 21, 1991, Ser. No. 780,141
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—70.2

1 Claim

1. A new and distinct spray carnation plant substantially as herein shown and described, characterized by its recurrent, profuse production of small flowers which are white at the base and purple to the outer edge.

8,725

GERANIUM PLANT NAME FISMAG

Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Jul. 21, 1993, Ser. No. 94,325
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—87.12

1 Claim

1. A new and distinct cultivar of geranium plant named Fismag, as illustrated and described.

8,726

GERANIUM PLANT NAMED FISCRID

Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Jul. 21, 1993, Ser. No. 94,326
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—87.12

1 Claim

1. A new and distinct cultivar of geranium plant named Fiscrid, as illustrated and described.

8,727

GERANIUM PLANT NAMED FISDIA

Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis/AC, Binningen, Switzerland

Filed Jul. 21, 1993, Ser. No. 94,327
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—87.12

1 Claim

1. A new and distinct cultivar of geranium plant named Fisdia, as illustrated and described.

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GERANIUM PLANT NAMED FISTANTUT
Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland
Filed Jul. 21, 1993, Ser. No. 94,330
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fistantut, as illustrated and described.

PATENTS

GRANTED MAY 10, 1994

ERRATA

For CLASS	See PATENT NO.
073-052	5,309,750
601-004	5,309,897
601-002	5,309,898
604-038	5,309,899
209-584	5,310,062
222-482	5,310,112
588-250	5,310,285
008-116	5,310,418
008-190	5,310,424
117-058	5,310,446
423-446	5,310,447
423-593	5,310,448
429-212	5,310,553
528-354	5,310,599
505-430	5,310,704
505-211	5,310,705
505-451	5,310,706
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437-231	5,310,720
524-100	5,310,767
514-574	5,310,768
524-513	5,310,787
585-721	5,310,868
430-272	5,310,869
525-440	5,310,872
514-341	5,310,920
585-360	5,310,931
544-105	5,310,942
370-031	5,311,114
345-077	5,311,169
359-130	5,311,221
359-529	5,311,222
348-180	5,311,294
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348-505	5,311,296
348-675	5,311,297
348-710	5,311,298
348-622	5,311,299

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ERRATA—CONTINUED

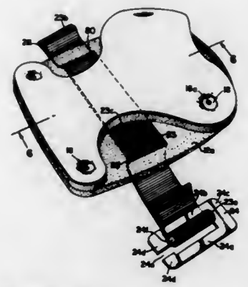
348-690	5,311,300
348-453	5,311,301
348-014	5,311,302
348-032	5,311,303
348-087	5,311,304
348-169	5,311,305
348-702	5,311,306
348-384	5,311,307
348-426	5,311,308
348-409	5,311,309
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348-476	5,311,311
348-614	5,311,312
348-614	5,311,313
348-607	5,311,314
348-614	5,311,315
348-584	5,311,316
348-725	5,311,317
348-731	5,311,318
348-300	5,311,319
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348-760	5,311,321
348-223	5,311,322
348-005	5,311,325
359-022	5,311,335
395-650	5,311,461

PATENTS

GRANTED MAY 10, 1994

GENERAL AND MECHANICAL

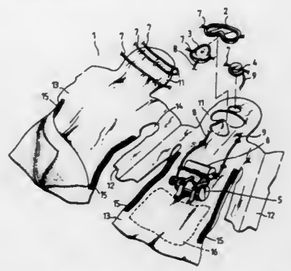
5,309,570
KNEE PAD
Thomas M. Grimm, Robbinsdale, Minn., assignor to Ergodyne Corporation, St. Paul, Minn.
Filed Jul. 27, 1993, Ser. No. 97,569
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—24 **17 Claims**



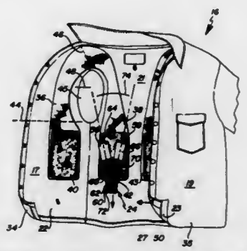
1. A knee pad comprising;
(a) a base member having top and bottom surfaces and upper and lower sections, which when unassembled is planar;
(b) a top member having top and bottom surfaces and upper and lower sections operatively connected to the top surface of said base member;
(c) said base member having first and second points of attachments proximate its upper section, when unassembled said first and second points being at a first distance from each other;
(d) said top member having first and second points of attachments proximate its upper section, when unassembled said first and second points being at a first distance from each other;
(e) means for securing said top member to said base member at said points of attachment wherein, when assembled, said first and second points of attachment of said base member are at a second distance from each other, said second distance less than said first distance wherein said base member forms a cupped region; and
(f) means for attaching said base and top members to a user's knee.

5,309,571
FIRE-PROTECTING SUIT
Ming-Chi Huang, 11F., No. 440, Kuang Fu S. Rd., Taipei, Taiwan
Filed Aug. 17, 1992, Ser. No. 929,954
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—81 **6 Claims**

1. A fire-protecting suit comprising a fire protective clothing, a fire-proof eye shield, a mouthpiece, a cap-lamp, an air tank, and a battery power supply, the fire-protective clothing comprising a face mask, wherein the fire-proof eye shield, the cap-lamp and the mouthpiece are directly fastened to the face mask by elastic bands, the air tank and the battery power supply being mounted to the inside of the fire-protective clothing and respectively connected to the mouthpiece and the cap-lamp by an air hose and an electric wire inside the fire-protective clothing so that the entire fire-protecting suit including the air tank can be donned rapidly.



5,309,572
GARMENT SUPPORT APPARATUS
Phillip W. Seamans, 5216 Newton Ave. North, Minneapolis, Minn. 55430
Filed Feb. 13, 1992, Ser. No. 835,282
Int. Cl.[5] A41F *5/00, 7/00*
U.S. Cl. 2—112 **24 Claims**



1. A system for suspending a body encircling band from an upper body garment, said upper body garment and band being wearable on the body of a person, said system comprising:
an upper body garment having an inside surface and a shoulder portion and wearable on the body of a person;
at least one non-stretchable panel attached to said inside surface of said upper body garment for support by said shoulder portion, a portion of each said panel covered at least in part with a first coupling material surface comprising a loop surface; and
a plurality of support straps, each strap comprising:
an elongate strip of elastic material having first and second ends and folded in the center thereof between said ends;
a hitch affixed to said elastic material between said first and second ends thereof; and
pads of hook material joined to said first and second ends and comprising a second coupling material surface, said pads configured to face said inner surface of said upper body garment for detachable adjustable attachment to said loop surface.

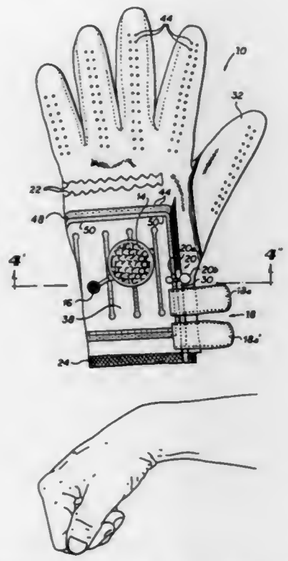
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,573

INFLATABLE WRIST-STABILIZING SYSTEM

Kenneth J. Solar, and Roberta E. Solar, both of 3229 Asbury Sq., Dunwoody, Ga. 30346

Continuation-in-part of Ser. No. 853,946, Mar. 19, 1992, abandoned. This application Mar. 10, 1993, Ser. No. 28,776
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—160 30 Claims



1. An apparatus for use with a glove for inhibiting movement of an individual's wrist joint in flexion and extension from a position wherein the lateral side of the individuals forearm and hand above and below the wrist joint, respectively, lie substantially in a common lateral plane without interfering with the normal movement and gripping use of the fingers, knuckle joints, thumb and palm of the individual's hand, the apparatus comprising;

a wrist-stabilizing means including a fluid-inflatable bladder means, said bladder means being spaced from the medial side of the hand and wrist and being of a size to extend along the lateral side of the hand and forearm from a leading edge which extends below the wrist joint but spaced from the knuckles and thumb to a rear edge above the wrist joint along the forearm when the apparatus is worn;

adjusting means mounted to said bladder means for securing said bladder means substantially taut against the lateral side of the individual's forearm in the area of the individual's wrist joint, said adjusting means being mounted so as to be in spaced non-interfering relationship with the fingers, knuckle joints, thumb and palm when the apparatus is worn;

means for regulating the fluid volume within said bladder means, whereby when the apparatus is worn and a glove worn in overlaying relationship thereto the apparatus will substantially inhibit movement of the wrist joint in flexion and extension from a position wherein the lateral side of the individual's forearm and hand above and below the wrist joint, respectively, lie substantially in a common lateral plane.

5,309,574

WEATHER-ADAPTABLE SKI HAT

Jeffrey B. Balaban, Camarillo; James Olmes, Agoura, and Jerris E. Greenblat, Sunset Beach, all of Calif., assignors to Ski Tote U.S.A., Camarillo, Calif.

Continuation of Ser. No. 646,061, Jan. 25, 1991, Pat. No. 5,109,548. This application May 1, 1992, Ser. No. 877,455
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—202 26 Claims



1. A ski hat comprising:

(a) a substantially tubular shell of flexible laminated fabric having top and bottom apertures, the flexible laminated fabric being substantially impermeable to liquid water while being permeable to water vapor, the flexible laminated fabric comprising the following three layers;

(i) an outer layer made of spandex fabric;

(ii) a middle layer made of microporous polyurethane laminate; and

(iii) an inner layer made of spandex fabric;

(b) a flexible outer band surrounding the top aperture; and

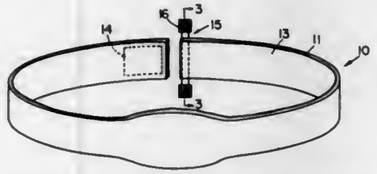
(c) drawstring means for reversibly tightening the flexible outer band thereby closing the top aperture when the drawstring means is tightened.

5,309,575

BELT WITH MUTUALLY ADHESIVE FABRIC MATERIAL

Nancy F. Lookhoof, 2501 Deerfoot Trail, Austin, Tex. 78704

Filed Nov. 14, 1989, Ser. No. 436,353
Int. Cl.[5] A41F *9/02*
U.S. Cl. 2—322 9 Claims



1. A belt of sufficient length to wrap around the torso of the wearer in partially overlapping fashion creating a top belt portion and an underneath belt portion in order to form a continuous band comprising:

a) an outer face of fashion material in any shape and an inner face of mutually adhesive fastening material having the same dimensions as said outer face;

b) a relatively short strip of mutually adhesive fastening material securely affixed to one end of said outer face of fashion material that engages said inner face of said fastening material at any point along the circuniference so that an infinitely sized, adjustable, interconnected, continuous band in partially overlapping fashion is formed; and

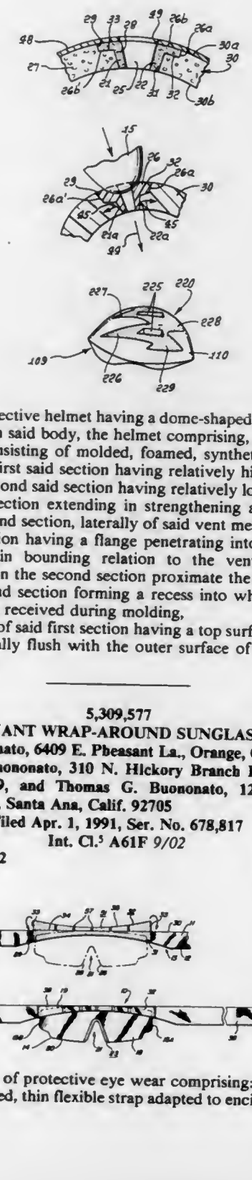
c) a closure means to maintain said top belt portion closely adjacent to said underneath belt portion when said belt is partially overlapped and interconnected.

5,309,576

MULTIPLE DENSITY HELMET BODY COMPOSITIONS TO STRENGTHEN HELMET

Lester V. Broersma, Bellflower, Calif., assignor to Bell Helmets Inc., Cerritos, Calif.

Filed Jun. 19, 1991, Ser. No. 717,485
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—412 22 Claims



1. In a protective helmet having a dome-shaped body and air vent means in said body, the helmet comprising,

a body consisting of molded, foamed, synthetic resin sections, a first said section having relatively higher density and a second said section having relatively lower density,

said first section extending in strengthening adjacency to said second section, laterally of said vent means, and said first section having a flange penetrating into the second section, in bounding relation to the vent means, to strengthen the second section proximate the vent means, the second section forming a recess into which the first section is received during molding,

said flange of said first section having a top surface which is substantially flush with the outer surface of said second section.

5,309,577

BUOYANT WRAP-AROUND SUNGLASSES

Guy S. Buononato, 6409 E. Pheasant La., Orange, Calif. 92669; Kemp F. Buononato, 310 N. Hickory Branch La., Orange, Calif. 92669, and Thomas G. Buononato, 12691 Bonita Heights Dr., Santa Ana, Calif. 92705

Filed Apr. 1, 1991, Ser. No. 678,817
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—452 19 Claims

1. An article of protective eye wear comprising:

a. an elongated, thin flexible strap adapted to encircle and be retained on a human head, said strap having joined to the upper longitudinal edge thereof on a hinge line a flexible flap, said flap being adapted to fold downward on said hinge line and rearward of said strap, said strap having a lower longitudinal edge wall in which is formed a cutout having a concave edge and forming above said cutout edge an outer eyebrow strip or lesser height than the remainder of said strap.

b. an eyeshield having the shape of a thin, arcuately curved plate, said eyeshield having an upper longitudinal edge wall shaped similarly to said hinge line, and having a circumferential width approximately equal to the circumferential width of said flap, and

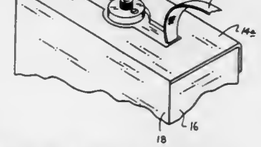
c. means for holding the upper margin of said eyeshield sandwiched between the inner facing surfaces of said folded-down flap and said strap, said means comprising in combination a first pressure sensitive adhesive layer between the inner surface of said folded-down flap and the rear surface of said upper margin of said eyeshield, and a second pressure sensitive adhesive layer between the inner surface of said strap and the front surface of said upper margin of said eyeshield.

5,309,578

DEER STAND URINAL DEVICE

Richard A. Temple, Sr., 501 German Town Rd., Minden, La. 71055

Filed May 10, 1993, Ser. No. 58,147
Int. Cl.[5] A47K *11/12*
U.S. Cl. 4—144.3 4 Claims



1. A deer stand urinal device, comprising,

a rigid container, the rigid container having a bottom wall, a top wall, a front wall, a rear wall, a first side wall, and a second side wall, with the container including a cushioned outer layer substantially coextensive with the rigid container, and

a fluid tube directed through the rigid container extending from the rear wall in adjacency to the bottom wall and projecting through the front wall in adjacency to the top wall, wherein the fluid tube includes a free end positioned in a spaced relationship relative to the front wall, and the fluid tube having a fluid tube outlet opening within the rigid container, with the outlet opening in a facing relationship relative to the bottom wall, the free end including a cap member securably and removably mounted relative to the free end, and

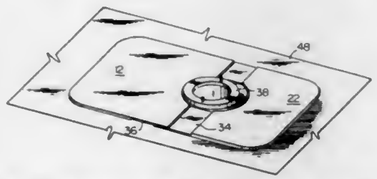
the fluid tube includes at least one arcuate baffle member, the arcuate baffle member having at least one fluid aperture directed through the arcuate baffle member in a lowermost end of the arcuate baffle member, and the arcuate baffle member including a concave interior wall in a facing relationship to the free end, and

a funnel member, the funnel member including a funnel neck, the funnel neck having a plurality of annular sealing rings arranged to sealing engage the fluid tube within the fluid tube in a fluid sealing relationship, with the free end having a truncated conical entrance for reception of the funnel neck, and

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a chlorine tablet dispenser mounted to the top wall, with the dispenser having a cylindrical tube fixedly mounted to the top wall, the cylindrical tube including an annular flange directed exteriorly of the cylindrical tube, and a dispensing aperture directed through the top wall within the cylindrical tube in adjacency to the cylindrical tube, and a cylindrical hub rotatably mounted within the cylindrical tube, the cylindrical hub including a handle oriented medially of the hub, and an annular array of hub bores concentric with the cylindrical hub, with each of said hub bores arranged for selective alignment with the dispensing aperture, and each of the hub bores arranged to receive a chlorine tablet therewithin.

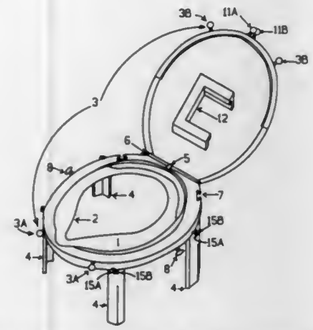
5,309,579
ADJUSTABLE TRIM PLATE FOR TOILET REFLACEMENT
Matthew M. Nelson, 217 Norfolk St., Dorchester, Mass. 02124
Filed Aug. 6, 1993, Ser. No. 103,273
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—252.1 **12 Claims**



1. An adjustable trim plate that is adapted to be positioned around an existing toilet flange and beneath a base of a toilet installed on the toilet flange, the trim plate comprising a front section and a back sect-ion that adjustably mate with one another to fit beneath the base of the toilet before the toilet is fastened in place on the toilet flange, said back section being formed of a thin sheet material of a predetermined width that extends beyond side edges of the toilet base and having a main rear portion of a first predetermined thickness and a rear flange member that projects forward therefrom having a rear cutout to accommodate a rear portion of the toilet flange, said rear flange member having a second predetermined thickness smaller than said first predetermined thickness; said front section formed of said thin sheet material of said predetermined width and having a main front portion of said first predetermined thickness and a front flange member that projects rearward from said main front portion having a front cutout therein to accommodate a front portion of the toilet flange, said front flange having a third predetermined thickness smaller than said first predetermined thickness, such that said second and third predetermined thicknesses together substantially equal said first predetermined thickness, one of said front and rear flanges having an upper surface flush with an upper surface of the respective main portion and the other of the front and rear flanges having a lower surface flush with a lower surface of its respective main portion.

5,309,580
COMBINATION PORTABLE CHILDREN'S TOILET AND TOILET TRAINER
Meber D. Amalsad, 15842 Villanova Cir., Westminster, Calif. 92683, and Horace U. Grant, Toluca Lake, Calif., assignors to Meber D. Amalsad, Westminster, Calif.
Filed Aug. 18, 1992, Ser. No. 931,327
Int. Cl.[5] A47K *11/06*
U.S. Cl. 4—483 **4 Claims**

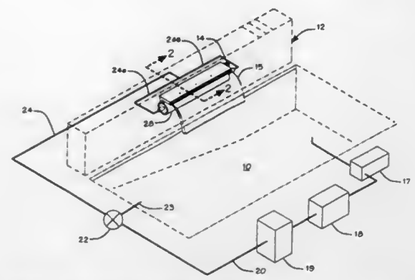
1. A portable compact toilet comprising:
an apertured seat having an upper surface to support a child and a lower surface;
a plurality of legs each being pivotally attached to said lower surface of said seat and movable between a folded position adjacent said lower surface for compact portability, and an unfolded position extending downwardly from said lower surface to support said seat on a supporting surface, said legs including means for retaining said legs in said folded position and first means for releasably locking said legs in said unfolded position;
a cover having an inner surface and an outer surface, said cover being hinged at one end to said seat to be movable between an open position with said inner surface spaced from said upper surface of said seat to allow access to said seat, and a closed position with said inner surface superimposed adjacent said upper surface for compact portability, said cover being sized such that said inner surface is coextensive with said upper surface when said cover is in said closed position, said seat and cover including second means for releasably locking said cover in said closed position;



an internal storage section mounted to said inner surface of said cover for receiving toilet accessories, said internal storage section being received in said aperture of said seat when said cover is in said closed position; and
an external storage section mounted to said outer surface of said cover for receiving toilet accessories.

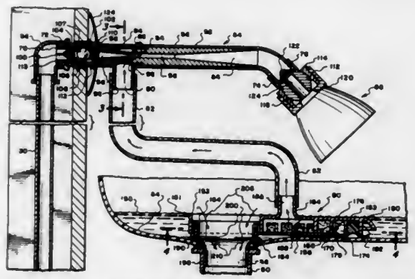
5,309,581
WATER STEAM APPARATUS
Arthur D. Lockwood, 5428 Davit, Santa Ana, Calif. 92704, and Robert G. Lockwood, 13660 Ocana Ave., Bellflower, Calif. 90706
Continuation of Ser. No. 977,089, Nov. 16, 1992. This application Nov. 15, 1993, Ser. No. 151,939
Int. Cl.[5] E04H *4/00*; A47K *3/04*
U.S. Cl. 4—507 **23 Claims**

1. Apparatus for producing a waterfall at a side of a swimming pool and being capable of producing a smooth sheet of water which is directed away from the side of the pool, said apparatus comprising:
elongate reservoir means adapted to be encapsulated by gunite in the side of said pool for receiving water, said reservoir means including an elongate slotted opening;
water flow means having at least one tubular member axially positioned along the axis of and within said reservoir means for flowing water to said reservoir means;
means for coupling an external source of water to said water flow means;
nozzle means in said tubular member formed on a line generally opposite said slotted opening for providing communication between said tubular member and said reservoir means;
valve means at least partially formed within said tubular member for enabling equalization of water pressure along the length of said tubular member with water provided to said coupling means to provide a generally uniform water pressure along the length of said slotted opening; and



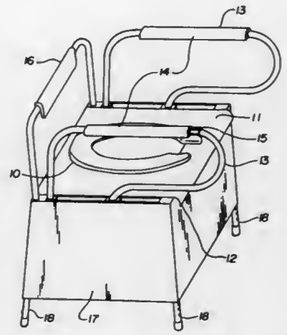
means for directing water from said reservoir means through said slotted opening to the side of said pool.

5,309,582
TAP WATER POWERED WATER RECIRCULATION SYSTEM
Melvyn L. Henkin, 5011 Donna Ave., Tarzana, Calif. 91356, and Jordan M. Laby, 3038 Bayshore, Ventura, Calif. 93001
Filed Sep. 4, 1991, Ser. No. 755,021
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—603 **55 Claims**



1. A water recirculation system for use with a source of tap water and a water discharge device mounted about a drain opening, said system comprising;
pooling means positioned relative to said discharge device to collect water discharged therefrom to form a water pool;
pump means having a supply inlet, a suction inlet, and a discharge outlet, said pump means being responsive to tap water supplied by said source to said supply inlet for producing a suction at said suction inlet sufficient to draw water into said pump means for discharge with said supplied tap water through said discharge outlet;
means for coupling said suction inlet to said pool for drawing water therefrom;
means for coupling said discharge outlet to said discharge device; and
filter means for filtering water returned from said pool prior to being discharged through said discharge outlet.

5,309,583
POWERED LIFT TOILET SEAT
Johnny White, 411 Main, Newport, Ark. 72112; Greg Dolling, 28 Westgate, Searcy, Ark. 72143; Paul Carter, Rte. 2, Box 608, Cave City, Ark. 72521, and Edward L. House, 1305 Briar Dr., Batesville, Ark. 72501
Filed Jun. 10, 1993, Ser. No. 74,395
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—667 **2 Claims**



1. A powered lift toilet seat, comprising:
a toilet seat having a frontward portion, a rearward portion and a pair of toilet seat support sides;
a support assembly for supporting said toilet seat over a toilet bowl positioned on a floor, said support assembly comprising a pair of support assembly sides braced by a plurality of transverse braces, each of said support assembly sides having a front member, a lower member, an upper member and a rear member;
means for moving said toilet seat between a first position horizontally disposed above the toilet bowl and a second position elevated and tilted forward relative to the toilet bowl, said means for moving said toilet seat comprising at least one seat-raising linkage associated with one of said support assembly sides comprising a longitudinal slot in a respective one of said toilet seat support sides, a supporting arm having a first end pivotally coupled to a fixed point in said front member of said support assembly side and a second end having a bearing pin disposed in said longitudinal slot for both pivotal and longitudinal sliding motion of said supporting arm relative to said toilet seat, a reversible electrically powered linear actuator pivotally coupled at a fixed rearward point in said rear member of said support assembly side and having a driving member, said driving member having an end pivotally coupled to a point in said frontward portion of said toilet seat, and means for pivotally coupling said drive member to said supporting arm at an intermediate point intermediate to said first and second ends of said supporting arm and intermediate to said end of said drive member and said fixed rearward point of said rear member;
a pair of armrests pivotally connected to said support assembly; and
means for moving said armrests along an arcuate path between a position corresponding to said first position wherein said armrests are disposed substantially above said toilet seat to a position corresponding to said second position wherein said armrests are disposed relatively higher and forward of said position corresponding to said first position and simultaneously maintaining said armrests parallel to the floor.

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5,309,584

INVALID HOISTS

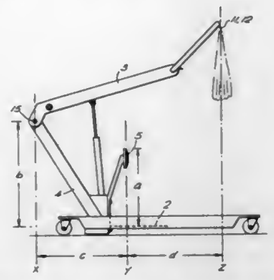
Roy Parker, Slades Cottage, Adlams Lane, Sway, Hampshire SO41 6EG, United Kingdom

Filed Dec. 17, 1992, Ser. No. 991,977

Claims priority, application United Kingdom, Dec. 17, 1991, 9126689

Int. Cl.[5] A61G 7/10

U.S. Cl. 5—81.1 17 Claims



1. An invalid hoist comprising a pivoted jib (3) for carrying an under-arm sling (13) for engaging the under-arm area of a user and means for pivoting said jib from a lower to a higher position to lift a user via the sling from a sitting position to a substantially standing position, and vice versa; a knee engaging means (5) for engaging the knee area of a user; said jib being mounted for pivotal movement about a pivot (15) that is located at a lower position than the position of engagement of the sling with a user in a sitting position, whereby pivotal movement of the jib from a lower to a higher position to raise a sling and a user always imparts a substantial forward component of motion to the sling and the upper body of a user between a user sitting and a user standing position.

5,309,585

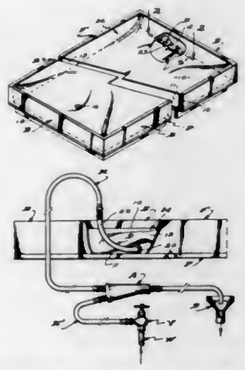
DRAIN FITTING FOR WATERBED MATTRESSES

Arthur A. Hochschild, III, 7274 Lampson Ave., Garden Grove, Calif. 92641

Filed Jun. 17, 1993, Ser. No. 77,656

Int. Cl.[5] A47C 27/08

U.S. Cl. 5—451 16 Claims



1. A waterbed structure including a mattress (M) fabricated of thin flexible water-impervious sheet material and including horizontal top and bottom walls (10 and 11) with upper and lower surfaces and vertical side walls 12 with inner and outer surfaces about and extending between perimeter edge portions of the top and bottom walls (10 and 11); a frame (F) including a horizontal platform (P) below the lower surface of and supporting the bottom wall (11) and vertical boards (B) positioned outward of the outer surfaces of and supporting the side walls (12); a volume of water within the mattress normally supporting the top wall (10) on a horizontal plane spaced above the bottom wall (11) and that is close to the horizontal top plane of the frame (F) defined by upper edges of the boards (B); a drain fitting connected with the mattress (M) to drain water therefrom through a drain opening (22) in a lower edge portion of a side wall (12) immediately above the upper surface of the bottom wall (11), said fitting (D) includes an elongate flexible normally substantially horizontally disposed drain tube (23) with inner and outer ends extending parallel with said side wall (12) between said side wall (12) and its related board (B), a tubular neck (24) with inner and outer ends and angularly related to and connected with and between the inner end of the tube (23) and the side wall (12) at the drain opening therein, said tube (23) is selectively manually bendable from its normal horizontal position to an upturned position where its outer end is disposed substantially vertically upwardly and is accessible at the top planes of the mattress (M) and frame (F), coupling means (T) at the outer end of the tube (23) to selectively sealingly couple the outer end of the tube (23) with a closure part (C) and with the inner end of an elongate drain hose (11), and an elongate horizontally disposed spacer part (S') with an outer end at the inner end of the neck (24) and an outer end portion projecting inwardly from the neck (24) through the drain opening (22) and into the mattress (M) across the upper surface of the bottom wall (11) thereof and defining a central longitudinal flow passage communicating with the neck (24) and having radial openings throughout its longitudinal extent and opening into the central flow passage and into the interior of the mattress.

5,309,586

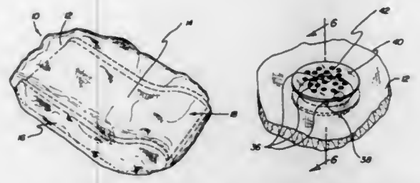
BABY SEAT OR CARRIER BLANKET

Bunny L. Sies, and Kelley F. Sies, both of 1103 N. Monroe St., Litchfield, Ill. 62056

Filed Feb. 12, 1993, Ser. No. 17,178

Int. Cl.[5] A47G 9/00

U.S. Cl. 5—482 6 Claims



1. A new and improved blanket apparatus for fitting over a baby seat or carrier having a top and sides, comprising:

a flexible member having dimensions sufficient to fit over the top and sides of the baby seat or carrier and having an outer edge; and

means, installed near said outer edge of said flexible member, for gathering said outer edge to form an opening having a plurality of adjustable sizes, wherein a first adjustable size of said opening is sufficiently large to fit over the top and sides of the baby seat or carrier for installing the blanket apparatus on the baby seat or carrier, and

wherein a second adjustable size of said opening is sufficiently small to hold the blanket apparatus onto the baby seat or carrier, by preventing the blanket apparatus from slipping over the sides of the baby seat or carrier, once the blanket apparatus has been installed on the baby seat or carrier,

the blanket apparatus described in claim 1, further comprising means, attached to said flexible member, for generating sound as said flexible member is moved,

wherein said sound generating means is comprised of a rolling ball in a walled chamber, and

wherein said walled chamber includes chimes that are struck by said rolling ball.

5,309,587

INDUSTRIAL RAG CLEANING PROCESS

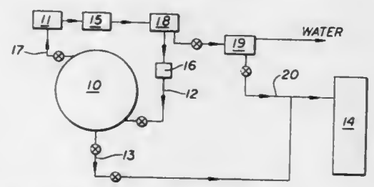
James V. Fierro, 9626 Ronbet Dr., Loveland, Ohio 45140

Continuation-in-part of Ser. No. 822,531, Jan. 17, 1992, Pat. No. 5,222,267. This application Jun. 28, 1993, Ser. No. 83,356

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] D06F 43/02

U.S. Cl. 8—158 9 Claims



1. A process for the cleaning of industrial rags contaminated with environmentally unsafe petroleum-based solvent, comprising the steps of:

(a) placing a load of the industrial rags in a mechanically-driven rotary drum;

(b) revolving the drum at a high speed sufficient to physically extract liquid petroleum-based solvent contaminate from the industrial rags;

(c) routing the extracted petroleum-based solvent contaminate from the rotary drum to a waste solvent collection line for environmentally safe disposal;

(d) revolving the rotary drum to cause a tumbling of the industrial rags while maintaining the temperature within the drum at below the flash point of the petroleum-based solvent;

(e) intermittently forcing cold air and hot air through the rotary drum to vaporize solvent from the industrial rags; and

(f) routing the vaporized petroleum-based solvent contaminant from the rotary drum to a condenser wherein the petroleum-based solvent contaminate is condensed and thereafter further routing said condensed solvent to a waste collection line for environmentally safe disposal.

5,309,588

METHOD FOR PROCESSING TEXTILE GOODS

Bruce M. Gould, Fullerton, Calif., assignor to Challenge RMF, Inc., City of Industry, Calif.

Continuation of Ser. No. 725,358, Jul. 3, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 974,363

Int. Cl.[5] D06F 21/10

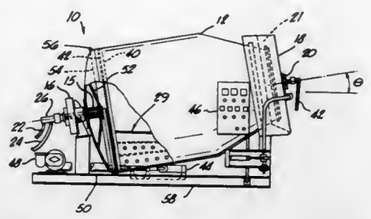
U.S. Cl. 8—158 15 Claims

1. A method for treating garments comprising:

placing the garments into an elongated drum having an inclined axis;

rotating said elongated drum at said inclined axis;

subjecting the garments in said elongated drum to an abrading force; and



applying said abrading force in a continuous massaging manner which produces a stone-washed appearance in the garments.

5,309,589

AUTOMATIC CARDING MACHINE FOR FOOTWEAR UPPERS AND THE LIKE

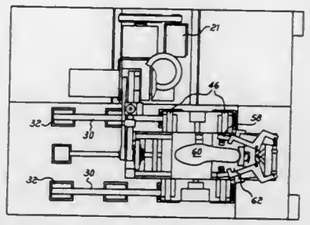
Roberto Ferrari; Mario Pagani, and Doriano Varini, all of Vigevano, Italy, assignors to Sagitta Officina Meccanica S.p.A., Vigevano, Italy

Filed Nov. 2, 1992, Ser. No. 970,270

Claims priority, application Italy, Nov. 4, 1991, MI91 A 002921

Int. Cl.[5] A43D 95/16

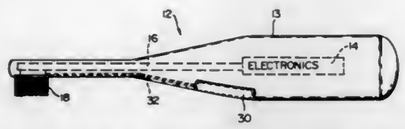
U.S. Cl. 12—78 9 Claims



1. A machine for automatically carding an upper of footwear, said upper having a back, said machine comprising a bed (12), a turret (14) overlying said bed, said turret having a top, a tool-holding unit arranged on said top of said turret, said tool-holding unit comprising a fixed arm (16) having a free front end, said arm bearing a card (18) at said front end of said arm, a first and a second motor (20,22) for movement of said card in the vertical direction, said bed (12) having a top, first parallel guides (30) arranged on said top of sag bed, a carriage (34), the back of said upper being arranged on said carriage, said carriage being arranged on said first parallel guides and running longitudinally thereon, said carriage having a top sector (34'), a pair of second guides (46) arranged perpendicularly to said first guides and constrained to said carriage (34), said upper sector (34') being movable transversely on said second guides, whereby said carriage (34) and said top sector (34') move independently.

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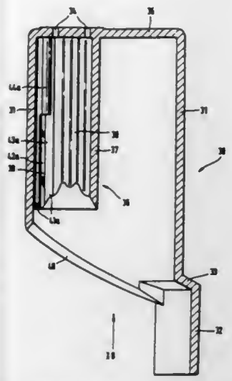
5,309,590
DENTIFRICE/MEDICATION DISPENSING TOOTHBRUSH
David Giuliani, Mercer Island, and Martin, Roy W., Redmond, both of Wash., assignors to Gemtech, Inc., Bellevue, Wash.
Continuation of Ser. No. 626,976, Dec. 13, 1990, abandoned.
This application Dec. 29, 1992, Ser. No. 999,466
Int. Cl.[5] A61C *17/20*
U.S. Cl. 15—22.1 **32 Claims**



1. A toothbrush having a dentifrice dispensing capability, comprising:
a toothbrush assembly including a toothbrush body, a brushhead, which includes bristles, in the vicinity of one end of the body, means for supporting said brushhead for vibrating movement, and means for driving said brushhead such that it vibrates, so that the toothbrush assembly is capable of producing a mechanical scrubbing of the teeth as well as producing an acoustical cleaning effect for the teeth and surrounding areas;
a reservoir for dentifrice;
means defined in the brushhead permitting release of dentifrice from said brushhead; and
means connecting sad reservoir to said release means, wherein said driving means includes means for vibrating said brushhead at such a frequency and amplitude that dentifrice is drawn from said reservoir and moved out through said release means by the vibrating movement of the brushhead to support acoustical cleaning of the teeth and surrounding areas.

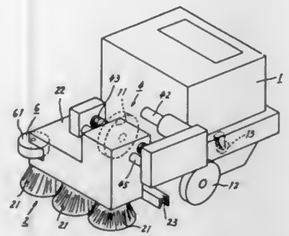
5,309,591
ELECTRIC TOOTHBRUSH WITH PUSH-ON PROTECTIVE COVER
Walter Hägele, Frankfurt/M., and Peter Hartwein, Königstein/Ts., both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jan. 14, 1993, Ser. No. 4,467
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201091
Int. Cl.[5] A46B *17/04*
U.S. Cl. 15—22.1 **19 Claims**

1. A protective device for an electric toothbrush including a handles section accommodating an electric motor drive mechanism as well as a switch providing at least two switch positions reflecting an On and an Off condition of the electric motor drive mechanism, said protective device comprising a protective cover adapted to be pushed on the handle section and a safety interlock configured such that, with the protective



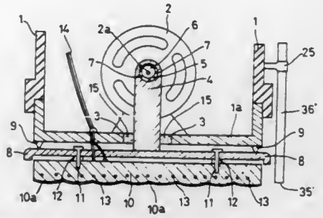
cover pushed on, the switch is prevented from going from the Off position to the On position.

5,309,592
CLEANING ROBOT
Kazuhiro Hiratsuka, Hirakata, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jun. 15, 1993, Ser. No. 76,754
Claims priority, application Japan, Jun. 23, 1992, 4-164902
Int. Cl.[5] A47L *11/16, 11/202*
U.S. Cl. 15—49.1 **4 Claims**



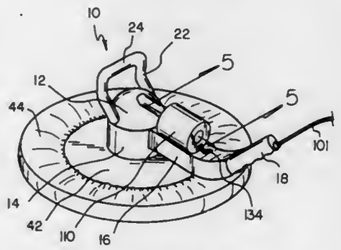
1. A cleaning robot having a robot body to be self-propelled on a floor along a side wall, and a cleaning mechanism mounted on the robot body, the cleaning robot being characterized in that the robot comprises:
a steering device provided on the robot body for changing the direction of advance of the robot body,
a slide device mounted on the robot body and reciprocatingly movable toward and away from the side wall,
a contact force sensor provided at an end of the slide device and positionable in contact with the side wall for detecting a force of contact exerted thereon by the side wall,
slide control means for controlling the slide device based on a detection signal from the contact force sensor so as to maintain the contact force at a target value or at a value within a target range, and
steering control means for controlling the steering device based on the detection signal from the contact force sensor so as that a component of the contact force in the direction of advance of the robot body becomes substantially zero.

5,309,593
SURFACE FINISHING DEVICE
Takashi Yonehara, Tokyo, Japan, assignor to Tokyo Copal Chemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 352,503, May 16, 1989, Pat. No. 5,016,313.
This application Mar. 4, 1991, Ser. No. 757,169
Int. Cl.[5] A47L *11/12*
U.S. Cl. 15—92 **1 Claim**



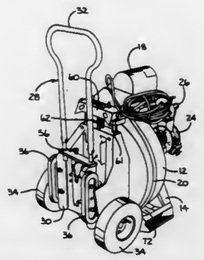
1. A surface finishing device, comprising:
a body;
vibration generating means fixedly supported to said body;
vibration transmitting means disposed at a lower portion of said body and forming substantially all of said body facing a floor surface, said vibration transmitting means being operable to transmit the vibration of said vibration generating means of said body to the floor surface;
said vibration generating means having a mechanical means for vibrating said vibration transmitting means toward and away from the floor surface;
a heat source incorporated in said vibration transmitting means and extending over substantially the entire portion of said body facing the floor surface; and
a discharge outlet spaced from said vibration transmitting means for applying a fluid solution onto the floor surface.

5,309,594
BUFFING APPLIANCE
Timothy E. Thompson, 500 S. Gardner Rd., Burlington, Wash. 98233
Filed Aug. 31, 1992, Ser. No. 937,170
Int. Cl.[5] B24B *29/00;* **A46B** *13/04*
U.S. Cl. 15—97.1 **2 Claims**



1. A new and improved buffing appliance comprising:
a housing,
a buffing wheel,
means in said housing for causing rotation of said buffing wheel about a predetermined axis,
first control means associated with said housing for regulating said rotation means,
surface treating substance supply means in said housing, and
second control means associated with said housing for regulating said supply means,
wherein said housing comprises a first portion for enclosing said rotation means, said predetermined axis extending through said first portion, said housing further comprising first handle means extending from said first portion, and second handle means on said housing first portion,
wherein said substance supply means comprises a delivery tube extending through said housing, said tube having a first portion extending coaxial with respect to said predetermined axis whereby said tube is adapted to deliver said substance in response to said second control means from a substance storage source to said rotating wheel,
said second control means comprises valve means for controlling the flow of said substance through said first portion of said delivery tube,
wherein said substance supply means further comprises an external reservoir for storing said substance, and a supply conduit connected between said reservoir and said delivery tube first portion,
wherein said substance supply means comprises a canister mounted on said first handle means for storing said substance therein and defining said reservoir, said canister having an outlet connected to said supply conduit, and said canister having self-contained means for urging said substance in said canister to flow through said conduit and said first portion of said delivery tube.

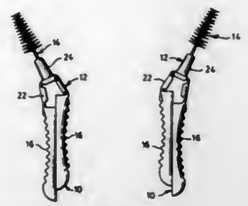
5,309,595
DRAIN CLEANING APPARATUS
Roy W. Salecker, Mendota; David Margherio, Ladd; Donald Borelli and Rockwell T. Slater, both of Mendota, all of Ill., assignors to Spartan Tool Div. of Pettibone Corp., Mendota, Ill.
Filed Sep. 24, 1992, Ser. No. 950,816
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.33 **17 Claims**



1. A drain cleaning apparatus comprising:
a drum containing a supply of flexible line suitable for cleaning a drain;
a frame;
means cooperating between the frame and the drum for removably mounting the drum in an operative position on the frame for rotation relative to the frame,
whereby a length of the cable projecting from the drum can be engaged by a control means to selectively advance the cable from the drum and cause the cable to move back into the drum as the drum and cable length are rotated in use;
a cart; and
means for selectively releasably connecting the cart and the frame so as to a) allow the cart to be used to transport the drum and frame as a unit in an operative position and b) allow the cart to be detached from the frame to allow the connecting means to be used to transport at least one of a different frame and a drum.

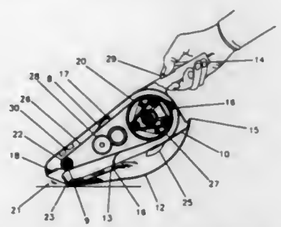
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,596
INTERPROXIMAL BRUSH
Graham J. Simms, Brookline, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 23, 1993, Ser. No. 34,281
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **12 Claims**



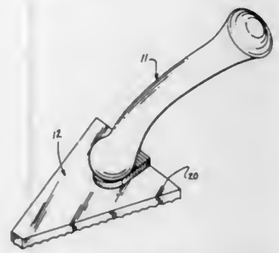
1. An interproximal brush comprising:
an elongated body member having a longitudinal axis and comprising a pair of parallel legs slidably attached to each other for movement relative one to the other in the direction of the body member longitudinal axis;
a substantially planar platform having a lower surface thereof facing said parallel legs when said legs are attached and brush means disposed on an opposite upper surface thereof and extending outwardly therefrom; and
hinge means comprising first and second pairs of hinges, said first pair of hinges formed on said planar platform having one hinge located adjacent one side of said brush means and a second hinge located adjacent an opposite side of said brush means, said second pair of hinges having one hinge connecting said planar platform to one of said parallel legs and the other connecting said planar platform to the other of said parallel legs, said first pair of hinges located intermediate said brush means and said second pair of hinges, whereby movement of said legs relative one to the other is effective to move said brush means angularly with respect to said body member longitudinal axis.

5,309,597
POWERED ENDLESS BELT BRUSH
Roger S. Wymore, 4612 F Ave. NE., Cedar Rapids, Iowa 52402
Continuation-in-part of Ser. No. 788,773, Nov. 6, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,619
Int. Cl.[5] A46B *13/02*; A47L *11/24*
U.S. Cl. 15—22.3 **4 Claims**



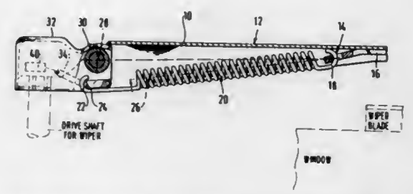
1. A powered endless belt brush comprising: an elongated enclosed housing having a top wall, side walls, bottom wall and a closed end wall having a handle mounted thereon, said housing having an opening extending across the end of said housing opposite said closed end, a portion of said top wall adjacent said end opening curved downwardly toward said opening, said housing having a greater height dimension adjacent the closed end than at the end having said opening, a large hollow pulley means rotatably mounted in said housing adjacent the closed end and extending between the sidewalls thereof, a smaller pulley means extending across said housing adjacent said end opening, motor means mounted within said large pulley means and engaging said large pulley means to rotate said large pulley means, an endless belt means extending around said large and smaller pulley means, a plurality of spaced fastening means on said endless belt means, said fastening means attaching alternating rows of brushing means and scraping means to said endless belt means, an opening extending across the bottom wall substantially midway between said pulley means, a dust pan having side and bottom walls and extending along the bottom wall of said housing, a first end of said dust pan pivotally mounted on said housing adjacent said end opening and forming with said housing a debris receiving enclosure, said bottom wall opening positioned in communication with said dust pan, a second end of said dust pan having means engaging said housing adjacent the closed end thereof to retain said dust pan in a closed position, power supply means for said motor means mounted within said housing, whereby when said lower end opening of said housing is in contact with a surface to be cleaned the brushing means engages the surface and conveys debris through said end opening onto the surface of the housing bottom wall and to said bottom wall opening and into said dust pan.

5,309,598
PAINT SCRAPER KIT
Joyce A. Carpenter, P.O. Box 124, Oxford Junction, Iowa 52323-0124
Filed Jun. 1, 1993, Ser. No. 69,743
Int. Cl.[5] A47L *13/02*
U.S. Cl. 15—236.08 **1 Claim**



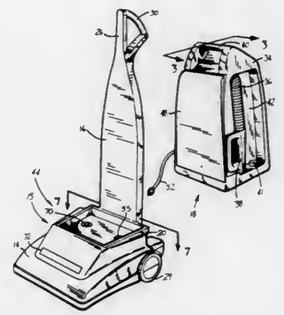
1. A paint scraper kit, comprising,
an arcuate handle, the arcuate handle including a handle end wall, with the handle end wall including an end wall lug, the end wall lug projecting orthogonally and beyond the end wall, and
an end wall threaded bore directed into the handle through the end wall, with the end wall lug and the threaded bore arranged in a parallel relationship relative to one another spaced apart a predetermined spacing, and
a plurality of blade members selectively mounted to said handle, said plurality of blade members including a first blade plate, a second blade plate, third blade plate, and a fourth blade plate wherein the first blade plate is of a generally isosceles triangular configuration, and the second blade plate is of a generally equilateral triangular configuration, with the first blade plate having a first blade end wall and a first blade fastener bore directed orthogonally through the first blade in adjacency to the first blade end wall medially of the first blade end wall, and
an arcuate array of alignment bores concentrically oriented about the first blade fastener bore, wherein the first blade fastener bore is arranged for coaxial alignment with the end wall threaded bore, and said one of said array of alignment bores arranged for reception of said end wall lug, wherein the second blade plate has a second blade fastener bore directed medially of a second blade plate top wall, with a circular array of second blade alignment bores directed through the second blade concentrically relative to the second blade fastener bore, and
wherein the third blade plate is of a generally square configuration, having a third blade fastener bore directed orthogonally and medially of said third blade, with a semi-annular array of third blade alignment bores concentrically oriented relative to said third blade fastener bore oriented about said third blade fastener bore, and
said fourth blade plate includes a plurality of fourth blade scraping plates intersecting one another at an acute included angle therebetween, with a connecting web directed between the fourth blade scraping plates, the connecting web including a fourth blade fastener bore oriented medially of the connecting web, and a fourth blade alignment bore, wherein the fourth blade fastener bore and the fourth blade alignment bore are arranged colinear relative to one another and bisecting a predetermined acute angle between said fourth blade scraping plates.

5,309,599
WIPING DEVICE FOR WINDOWS OF POWER VEHICLES
Wolfgang Leutsch, Buehlertal, and Axel Boeringer, Grossburgwedel, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Feb. 27, 1991, Ser. No. 661,864
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1990, 4008352
Int. Cl.[5] B60S *1/32*
U.S. Cl. 15—250.2 **2 Claims**



1. A wiping device for windows of a power vehicle, comprising a wiper shaft; a wiper arm including one part of said wiper arm mounted on said wiper shaft and another part of said wiper arm hingedly connected with said one part of said wiper arm on an axle of said wiper arm; a wiping element arranged on a free end of the other part of said wiper arm; and a unit for changing an abutment force of said wiper arm and including a pulling spring loading said wiping element toward a window of a power vehicle, and means for changing a pretensioning of said pulling spring, said means consisting of an actuating unit, a first hinge rod having one end directly hingedly connected with said actuating unit and another end, a second hinge rod having one end and another end, a first axle on which said hinge rods are hingedly connected with one another by said another ends, a second fixed axle about which said one end of said second hinge rod is turnable, said actuating unit displacing said first hinge rod in direction toward said second fixed axle of said second hinge rod so that said hinge rods are freely movable together and said first axle is movable over an arc, wherein said arc defines a concave surface facing the spring and convex surface facing the wiper shaft said second fixed axle being located substantially under said axle of said wiper arm, said another part of said wiper arm extending in one direction from said axle of said wiper arm, while said hinge rods extend in an opposite direction with respect to said one direction of said another part of said wiper arm, said pulling spring having an end which is spaced from said wiping element and suspended on said first axle.

5,309,600
VACUUM CLEANER WITH A DETACHABLE VACUUM MODULE
James M. Weaver; Giovanni Pino, both of Grand Rapids; Marc D. Zuiderveen, Hudsonville, and Steven R. Umbach, East Grand Rapids, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Filed Feb. 12, 1993, Ser. No. 17,652
Int. Cl.[5] A47L *7/00*
U.S. Cl. 15—328 **18 Claims**



1. A vacuum cleaner comprising;
a foot housing;
a base pivotally mounted to said foot housing;
an elongated support member non-removably mounted at a lower portion to the base during typical use of the vacuum cleaner, the elongated support member being adapted for use in pushing and pulling the base and the foot housing along the floor; and
a portable cleaning module comprising;
a module housing;
a bag supported in the module housing for collecting dust and dirt;
a flexible conduit for conveying the collected dust and dirt from the foot housing to the bag, the conduit having a first end connected to the bag and a second end removably connected to the base; and
a motor-driven fan supported in the module housing for creating suction within the conduit through the bag to convey collected dust and dirt to the bag;
the module mounting the bag, conduit and motor-driven fan such that the bag, conduit and motor-driven fan are connected together as a unit, the module being selectively and removably mounted to the base at least through a mechanical interconnection such that the module can be separated from the foot housing, base and elongated support member and be operated as a portable vacuum cleaner and the module further is closely adjacent the elongated support member, extends upwardly along at least a portion of the length of the elongated support member and is adapted to pivot with the base and elongated support member relative the foot housing when the module is mounted to the base;
whereby the module can be operated as a portable vacuum cleaner independently of and separate from the foot housing, base and elongated support member when the module is separated from the base and the vacuum cleaner can be operated as an upright vacuum cleaner when the module is mounted to the base.

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5,309,601

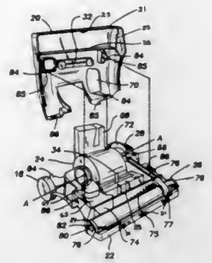
VACUUM CLEANER WITH IMPROVED ASSEMBLY

Leonard D. Hampton; Vincent L. Bobrosky; Paul J. Burress, all of Normal, and Hollis Spence, Bloomington, all of Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 16, 1992, Ser. No. 962,412

Int. Cl.[5] A47L *9/00*

U.S. Cl. 15—339 **7 Claims**



1. An upright vacuum cleaner, comprising a floor engaging unit, said floor engaging unit being supported above a floor by a plurality of floor engaging wheels and having a rotary brush mounted thereto, a height adjustment means being associated with at least some of said wheels to adjust the portion of said brush relative to said floor, wherein said floor engaging unit has a two-part construction comprising a base and a hood, said base and hood cooperating to define a chamber in which the rotary brush is received and said hood including a first resilient mounting arm, said mounting arm extending into an aperture provided by the base to releasably attach the hood thereto, said hood being removable from the base to provide access to the rotary brush.

5,309,602

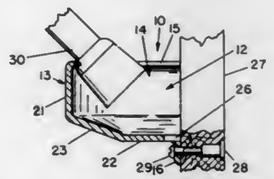
WALKING APPLIANCE DOOR FIXTURE AND METHOD OF USE

Hubert B. Von Holten, 345 Burnett Rd., West Lafayette, Ind. 47906

Filed Nov. 4, 1992, Ser. No. 971,895

Int. Cl.[5] E05B *1/00, 7/00;* **E05F** *7/00*

U.S. Cl. 16—124 **21 Claims**



1. A walking appliance fixture arranged to be mounted on an outer surface of a door to facilitate operation of the door by a walking appliance, said fixture comprising a receptacle formed to receive the end of the walking appliance, said receptacle comprising:

an elongated cavity for receiving said end of said walking appliance and having first dimensions in directions substantially parallel said surface and a second dimension in a direction extending outwardly from said surface, said second dimension having a greater magnitude than said first dimensions;

an outer wall surrounding said cavity; and

an appliance opening in said outer wall communicating with said cavity to allow passage of said end of said walking appliance into said cavity;

a portion of said outer wall forming a ledge projecting inwardly towards said cavity and extending at least partially about said appliance opening for maintaining said end of said walking appliance in said receptacle when said end of said walking appliance is positioned in said cavity.

20. A method of manipulating a door with a walking appliance of a disabled person, comprising the steps of:

providing a door fixture positioned on a visible surface of a door near the unhinged side and bottom thereof, said fixture having a receptacle with an elongated cavity having first dimensions in directions substantially parallel said surface and a second dimension in a direction extending outwardly from said surface, said second dimension having a greater magnitude than said first dimensions, an outer wall having a ledge projecting inwardly toward said cavity, and an appliance opening in said outer wall communicating with said cavity for passage of an end of said walking appliance through said appliance opening and into said cavity;

positioning said walking appliance through said appliance opening and into said cavity of said door fixture; and

moving said door with said walking appliance when said end of said walking appliance is positioned in said cavity.

5,309,603

DEVICE AND PROCESS TO COMPRESS AND GUIDE A FIBER SLIVER

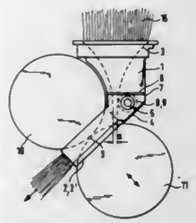
Rudolf Oexler, and Friedrich Hauner, both of Ingolstadt, Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 29, 1992, Ser. No. 968,379

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136209

Int. Cl.[5] D01H *5/64*

U.S. Cl. 19—266 **10 Claims**



1. A fiber sliver compression and guiding device for use with a textile plant sliver preparation machine, the sliver preparation machine having a sliver funnel and draw-off rollers downstream of the funnel, said device comprising guide surfaces on both sides of the draw-off rollers and disposed at predetermined lateral distances from the respective surfaces of said draw-off rollers; and means for independently varying the lateral distances between each guide surface and the draw off rollers.

5,309,604

COILING/UNCOILING DEVICE FOR TUBING

C. Eric Poulsen, Damascus, Md., assignor to Merit Medical Systems, Inc., Salt Lake City, Utah

Filed Mar. 11, 1993, Ser. No. 29,789

Int. Cl.[5] A44B *21/00*

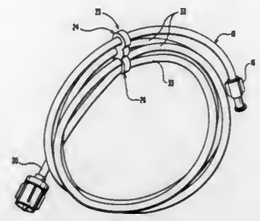
U.S. Cl. 24—16 R **2 Claims**

1. A unitary one piece device releasably securing an elongate, flexible tubing that has a free end and an attached end joined to a support, the device securing the tubing in a plurality of substantially concentric loops that can be released by pulling downwardly on the free end, the device comprising:

a body have a top end, a bottom end, and an intermediate portion disposed between the top and bottom ends;

a closed circular member formed at the top end and completely encircling the flexible tubing so as to slidably mount the device to the flexible tubing between the free and attached ends thereof;

a first C-clip means formed at the bottom end and generally in line with the circular member and having a downwardly oriented opening that is large enough to receive and simultaneously hold more than one coil of the tubing for releasably securing at least two coils of the tubing in a friction fit; and



a second C-clip means formed at the intermediate portion and having an opening oriented toward a side and generally perpendicular to the first C-clip means for releasably receiving a third coil of the tubing in a friction fit, such that the coils of the tubing are released by each C-clip means by pulling down on the tubing near the free end thereof with one hand.

5,309,605

SPRING CLIP

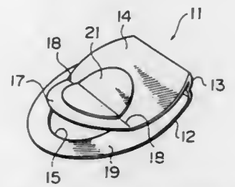
Hisao Sato, Fujimidai-Mansion 2002, 29-10, Nukui 1-Chome, Nerima-Ku, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,408

Claims priority, application Japan, Apr. 30, 1992, 4-36136[U]

Int. Cl.[5] B42F *1/02*

U.S. Cl. 24—67.9 **8 Claims**



1. A spring clip formed by bending a single sheet of elastic metal plate for binding a plurality of sheet materials together, comprising:

a base portion having an opening formed in a central portion thereof;

a rising-up portion raised up substantially vertically from said base portion; and

a grasping portion bent at an acute angle from said rising-up portion toward said base portion so as to cooperate with said base portion to grasp said sheet materials between said grasping portion and said base portion, said grasping portion including a contact portion formed at a portion facing at least an outer circumferential portion of said opening of said base portion for contacting with the sheet materials, an opening portion formed substantially in a center of the grasping portion including said contact portion, and a lead-in portion extended from said contact portion to a top end portion and bent so as to come away from said base portion.

5,309,606

TONGUE ASSEMBLY FOR USE IN A SEAT BELT DEVICE

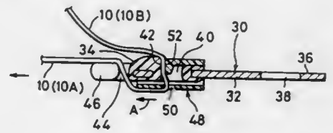
Yoshihisa Kawamura, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 483,486

Claims priority, application Japan, Dec. 6, 1991, 3-322968

Int. Cl.[5] A44B *11/06*

U.S. Cl. 24—196 **7 Claims**



1. A tongue assembly for use in a seat belt device adapted to be attached to a seat belt and to engage a buckle, comprising:

a tongue main body having a rear portion, an insertion portion at a side opposite to the rear portion and adapted to engage the buckle, a middle portion between the rear portion and the insertion portion, and upper and lower surfaces,

a first slit situated in the middle portion of the main body and extending in a direction perpendicular to an inserting direction of the main body relative to the buckle,

a first wall portion fixed to the main body, said first wall portion projecting upwardly from the upper surface of the main body and extending along the first slit at a side of the rear portion,

a slider slidably disposed over the middle portion of the main body and having upper and lower sides,

a second wall portion formed in the upper side of the slider, said second wall portion extending parallel to the first slit at a side of the insertion portion and having a surface opposing to the first wall portion,

a second slit formed at the lower side of the slider, said second slit extending parallel to the first slit and disposed under the second wall portion so that a rear edge of the second slit at a side of the rear portion of the main body is situated close to the insertion portion of the main body with respect to the surface of the second wall, and

a third slit formed in the rear portion of the main body and extending parallel to the first slit, said seat belt extending between the first and second wall portions, through the first and second slits, under the lower side of the slider and through the third slit so that when a tension is applied from the side of the third slit, the slider is pulled toward the rear portion of the main body to urge the second wall portion of the slider to the first wall portion to thereby strongly hold the seat belt between the first and second wall portions.

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5,309,607

HOSE CLIP

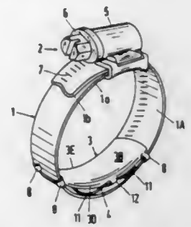
Ralf Hohmann, Bruchköbel; Bernd Kleinhens, Geinhausen; Manfred Krüger, Büdingen; Stephan Mann, Bieber; Erich Ruf, Frankfurt; Ralf Spors, Bruchköbel; Reiner Schreiter; Willi Stichel, both of Maintal; Gerhard Wachter, Büdingen; Gerhard Winterstein, Bad Vilbel, and Siegmund Zeidler, Hanau, all of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Jul. 29, 1992, Ser. No. 922,053

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127017

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—274 R **16 Claims**



1. A hose clip comprising a substantially annular deformable strap having an internal surface; an elongated insert having an external surface adjacent and extending along a portion of said internal surface circumferentially of said strap, said insert having a first end and a second end and at least one of said ends being movable along and circumferentially of said strap; and means for biasing said external surface away from said portion of said internal surface, said biasing means being integral with said insert and comprising at least one undulate leaf spring which is interposed between said surfaces, said leaf spring being elongated and comprising two spaced apart end portions and a corrugation between said end portions, said insert having first and second marginal portions and said corrugation being integral with one of said marginal portions.

5,309,608

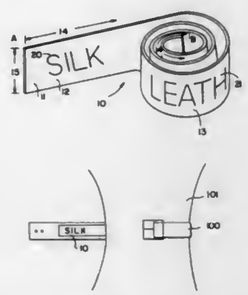
ACCESSORY ATTACHMENT

Theresa L. Lucas, 8170 Chestnut Blvd., Broadview Hts., Ohio 44147

Filed May 24, 1991, Ser. No. 705,591

Int. Cl.[5] A41D *1/00*

U.S. Cl. 24—304 **19 Claims**



1. A connection means for interconnecting two overlaying articles of clothing, the application having a length, said connection means comprising a tape, said tape having two sides and a length, said two sides each incorporating a selectively releasable attachment means substantially for the length of said tape, one side of said tape being removably attached to one of the two articles, the other side of the tape being removably attached to the other of the two articles and said length of said tape matching the length of the particular application whereby the two articles are held in fixed position overlaying each other.

5,309,609

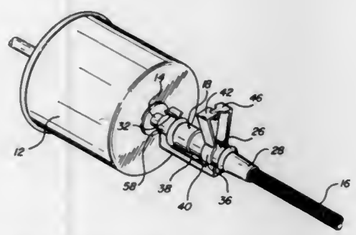
CLIP-ON RETAINER

Joseph L. Janiszewski, Berkley, and John E. Kajander, Ypsilanti, both of Mich., assignors to Industrial Machine Products, Oxford and Ford Motor Co., Dearborn, both of Mich.

Filed Jun. 7, 1993, Ser. No. 71,849

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—339 **4 Claims**



3. A clip-on retainer of the type used to secure a telescopic coupling between male and female components, said retainer comprising:

a first clip portion made up of first and second opposed compliant fingers adapted to receive and grasp the male component therebetween;

a second clip portion made up of third and fourth opposed compliant fingers adapted to receive and grasp the female component therebetween; and

a bridge between the first and second clip portions to space said clip portions longitudinally along the coupling by a distance which is sufficient to receive said coupling therebetween;

wherein the improvement comprises a self-aiming, one-way latch means for selectively securing the ends of the third and fourth fingers to one another;

said self-aiming, one-way latch comprises a pair of tangs formed on the ends of the third finger, said tangs being turned back on said finger to form a hook area, and a T head formed on the end of the fourth finger, the T head being oriented such that opposing forces tending to urge the third and fourth fingers together causes the T head to cam along the exterior surfaces of the tangs until clear of the tangs and thereafter to snap in behind the tangs to latch the ends of the third and fourth fingers together.

5,309,610

QUICK-RELEASE BUCKLE FOR ATTACHING TWO STRAPS TOGETHER

Yann le Gai, Voreppe, France, assignor to Lafuma SA, France

Filed Jan. 21, 1993, Ser. No. 7,627

Claims priority, application France, Jan. 24, 1992, 92 00975

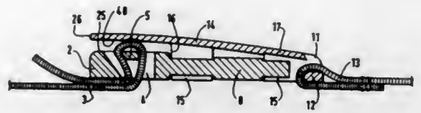
Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—625 **3 Claims**

1. An improved quick-release buckle for attaching two straps (**3**, **13**) respectively a fixed strap (**13**) and an adjustment strap (**3**), consisting of:

a male part (**1**) formed by a base (**2**) for connection to the adjustment strap (**3**) in the form of a window (**4**), comprising a cross-strut (**5**) over which the strap (**3**) passes, said base (**2**) being associated with a fork consisting of a central guide finger (**6**) and two symmetrical lateral elastic clipping fingers (**7**, **8**);

a female part (**10**) comprising a heel (**11**) in which the end of the fixed strap engages, said heel (**11**) being associated with a shell having a front opening, formed by two respectively upper (**14**) and lower (**15**) plates, said shell having



two lateral openings (**30**, **31**) which interact with the end of the elastic fingers (**7**, **8**) and in which the upper plate (**14**) of the shell comprises an extension (**20**) extending beyond the front opening (**16**) and intended, once the two parts (**1**, **10**) are engaged in each other, to cover the top of the base (**2**) of the male part (**1**) as far as the rear end (**25**) of this base (**2**).

5,309,611

BUCKLE FOR VEHICLE SAFETY BELT SYSTEMS

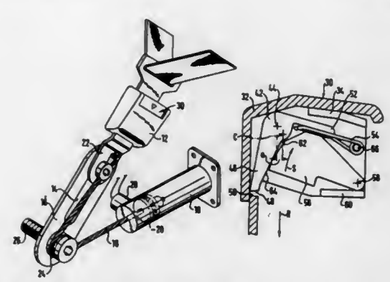
Franz Wier, Göggingen; Hans-Peter Betz, Böbingen, and Christian Hoika, Vellberg-Lorenzenzimmern, all of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed May 11, 1993, Ser. No. 60,157

Claims priority, application Fed. Rep. of Germany, May 12, 1992, 4215563

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—633 **8 Claims**



1. A buckle for vehicle safety belt systems provided with a pretensioner engaging the buckle, comprising a base wherein an insertion path is defined to receive a tongue having a detent opening, said base defining an abutment edge, a latch mounted on the base which interacts with said detent opening, a release button having a cap portion and mounted on said base to be slidable in a release stroke parallel with the insertion path to release said latch from said detent opening, a swivable two-armed lever having a first arm forming a locking pawl and a second arm angled with respect to said first arm, said lever being fitted into said cap portion and being movable in said cap portion between a normal rest position wherein said locking pawl is spaced from said abutment edge and a locking position wherein said locking pawl, on movement of said release button in a release stroke, engages said abutment edge to stop said release button in its release stroke, a spring member preloading said lever to said normal rest position, and an inertial body movable in said cap portion between first and second positions, said inertial body being spring-loaded to said first position and movable from said first to said second position by inertial forces occurring upon acceleration of said buckle in a first direction, said inertial body, upon movement from its first to its second position, engaging said lever to move said locking pawl to said locking position, and said lever tending to move towards said locking position upon acceleration of said buckle in a second direction opposite said first direction.

5,309,612

FASTENING DEVICE FOR FOAM UPHOLSTERING

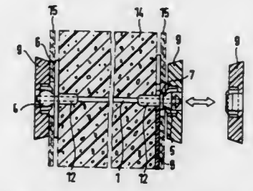
Jean Briere, Fontaine, and Erminio Moretti, Grenoble, both of France, assignors to A. Raymond & Cie, Grenoble, France

Filed Jun. 26, 1992, Ser. No. 903,971

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1991, 4121574

Int. Cl.[5] A44B *1/00;* **A47C** *31/00*

U.S. Cl. 24—90 B **2 Claims**



1. A fastening device for detachably fastening upholstery buttons to upholstering objects comprising a flexible length of tape adapted to be pulled through the object, said tape having a length approximating the thickness of the object, two end pieces, each end piece having an outer spherical head portion integrally connected at its base to a narrower inner cylindrical stem portion that is attached to an end of said tape, a first one of said end pieces having an integrally connected stop plate located between the base of its head portion and stem portion and extending radially out beyond said portions for holding said first end piece against one side of said upholstering object, the second one of said end pieces having a support plate located between the base of tis head portion and stem portion and having a diameter corresponding approximately to the diameter of the spherical head so that said second end piece can be pulled through said object, and a separate anchor plate adapted to bear against the side of the support plate opposite from said spherical head of said second end piece after said second end piece has been pulled through the object to hold said second end piece against the opposite since of the upholstering object, said anchor plate having a central retaining hole having a diameter corresponding approximately to the diameter of the cylindrical stem portion of said second end piece, a funnel shaped opening extending from a side of said anchor plate toward said central hole and a constricted passage having a diameter less than the cylindrical stem portion connected between said central hole and said funnel opening through which the cylindrical stem portion of the second end piece can pass by elastically widening the constricted passage as the funnel opening in the anchor plate is inserted onto said stem portion from the side adjacent said support plate to thereby firmly hold the anchor plate in place on the stem of said second end piece, said spherical heads of said end pieces being shaped to receive and hold upholstering buttons having resilient fastening means adapted to snap fit over said heads.

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5,309,613

PROCESS AND APPARATUS FOR IMPROVING THE HANDLE AND SURFACE OF TEXTILE FABRICS AND KNITTED MATERIALS

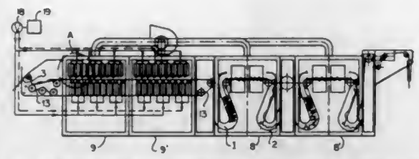
Christian Strahm, Bronschhofen, Switzerland, assignor to Solipat AG, Zug, Switzerland

Filed Sep. 21, 1992, Ser. No. 947,584

Claims priority, application Switzerland, Sep. 21, 1991, 2804/91

Int. Cl.[5] D06C *19/00*

U.S. Cl. 26—27 **21 Claims**



10. An apparatus for continuously improving the handle and surface of textile fabrics and knitted material webs, said apparatus comprising:

two material web stores, each for loosely receiving one section of said material web;

a material web guidance and acceleration channel, said channel being arranged between said material web stores, said channel connecting said material web stores to one another;

two material web impact surfaces, each associated with a respective material web store;

a pneumatic conveying means which is connected to said material web guidance and acceleration channel, for alternately conveying a material web section in mutually opposed longitudinal directions of said guidance and acceleration channel against said respective material web impact surface and from said impact surface into said respectively associated material web store, said pneumatic conveying means associated with said acceleration channel being divided into two pneumatic conveying means groups acting in mutually opposed directions of said acceleration channel, and said two groups being connected to a compressed-air source, alternating separately from one another, by way of a changeover element, said two groups having on either side of said acceleration channel blower nozzles which are arranged alternately laterally offset with respect to one another and directed obliquely with respect to a plane of transport of said material web, and said two groups being arranged in an end region of said acceleration channel, as seen in their respective direction of conveying;

a supply arrangement for continuously supplying said material web to said first material web store; and

a removal arrangement for continuously guiding away said material web from said second web store.

5,309,614

SWING BAR HARDWARE FOR CASKETS

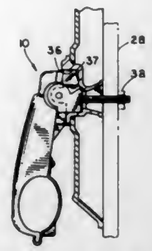
William T. MacKirdy, Scott Run, Pa., assignor to Casket Shells, Inc., Enyon, Pa.

Filed Jun. 9, 1992, Ser. No. 895,777

Int. Cl.[5] A61G *17/00*

U.S. Cl. 27—10 **4 Claims**

1. Swing bar hardware for caskets comprising an arm having a top and bottom for receiving a bar at its bottom, a clevis, means for pivotally connecting the clevis to the arm at its top, a bolt extending laterally from the clevis, a decorative lug having an opening, an insert extending into the opening of the lug and engaging surrounding surfaces of the lug and having a base adapted to connect with a side wall of the casket in a load bearing capacity, the insert including an opening aligned with the opening in the lug and through which the bolt extends, clevis bearing surfaces surrounding the opening in the insert, the clevis engaging the clevis bearing surfaces of the insert and being fixed thereto, the insert having a recess in which the clevis bearing surfaces of the clevis are disposed, whereby



when the bolt is tightened to the side wall of the casket, the lug will be held onto the side wall and the insert is connected to the side wall and the clevis is connected to the insert, the lug is non-load bearing and the arm, clevis, insert and bolt are load bearing when the casket is lifted by the bar.

5,309,615

DROPPER RANDOM-SEPARATING MECHANISM

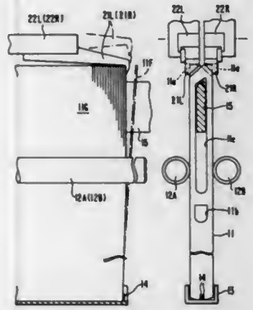
Juro Tachibana, Matsuyama, and Yoshibide Nishimura, Ehime, both of Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Oct. 9, 1992, Ser. No. 958,749

Claims priority, application Japan, Oct. 24, 1991, 3-275890

Int. Cl.[5] D03J *1/14*

U.S. Cl. 28—207 **2 Claims**



1. A dropper random-separating mechanism comprising:

a plurality of dropper rows arranged in parallel, each dropper row having a plurality of droppers arranged sequentially;

a plurality of pairs of separating pawls equal in number to said plurality of dropper rows, each pair of separating pawls being positioned at a respective dropper row for separating a foremost dropper of said respective dropper row, and each of said separating pawls being movable between a first position in which said foremost dropper is held and a second position in which said foremost dropper is separated from following droppers of said respective dropper row by a predetermined dropper separation space;

urging means for urging each of said separating pawls into said second position;

a cam member formed with a plurality of cam portions and mounted on a common rotational shaft, each cam portion having a first portion by which a corresponding separating pawl is held in said first position and a second portion, said corresponding separating pawl being allowed to be urged into said second position by said second portion;

a plurality of power transmission means provided between said cam member and said separating pawls for forming power transmission paths between said cam member and said separating pawls;

drive means for driving said common rotational shaft so that one separating pawl of said plurality of pairs of separating pawls is held in said first position by the first portion of said cam portion corresponding to said one separating pawl and is allowed to be urged into said second position by the second portion of said cam portion corresponding to said one separating pawl; and

regulating means for connecting and disconnecting said power transmission paths, the movement of said one separating pawl into said second position being regulated by disconnecting the corresponding power transmission path when said common rotational shaft is rotated.

5,309,616

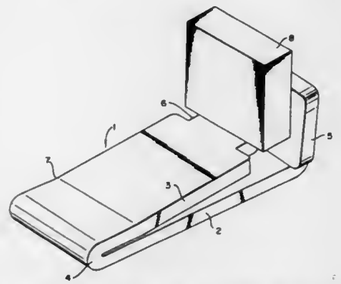
METHOD OF MAKING A CATCH FOR JEWELRY CLASP

Donald J. Sobin, Springfield, N.J., assignor to Do-All J.M.C. Inc., Springfield, N.J.

Division of Ser. No. 721,248, Jun. 26, 1991, abandoned. This application Oct. 20, 1992, Ser. No. 963,557

Int. Cl.[5] B23P *13/00*

U.S. Cl. 29—160.6 **8 Claims**



1. A method of making a dual thickness catch for a clasp from a sheet of stock material having a first thickness portion and a second thickness portion, said second thickness portion having a greater thickness than said first thickness portion, said method comprising the steps of:

cutting a strip of material from the sheet of stock material to obtain a dual thickness trip in the form of a substantially flat blank said strip thereby having a first thickness part and a second thickness part being unitary and being demarcated by a transverse transition area, said second thickness part being thicker than said first thickness part, said first thickness part defining a first stripend and said second thickness part defining a second strip end;

bending said first thickness part at an area of said first thickness part intermediate of said first strip end and said transverse transition area to form a substantially V-shaped tongue with a bend, said V-shaped tongue having an underlying portion extending in a direction from said first strip end toward said bend and an overlying portion extending in a direction from said bend toward said transverse transition area; and

bending said second thickness part relative to said first thickness part at said transverse transition area to form a pushing member that extends substantially perpendicular to said overlying portion of said V-shaped tongue and extends away from said underlying portion of said V-shaped tongue.

5,309,617

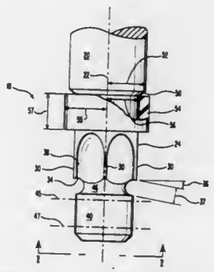
THREADED INSERT REMOVAL TOOL

Bruce L. R. Dannar, Chadron, Nebr., assignor to Thiokol Corporation, Ogden, Utah

Filed Jun. 7, 1993, Ser. No. 73,348

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—240.5 **18 Claims**



1. An apparatus for removing threaded inserts from a hole, the hole having a radius and having parent threads with an inner radius and the threaded insert having an inner radius, the apparatus comprising:

a drive shaft configured about a central axis and having an engagement end and an insertion end;

a blade positioned at the insertion end of the drive shaft, the blade extending outwardly from the central axis and having an outer radius greater than the inner radius of the threaded insert and less than the inner radius of the parent threads, such that upon forceful insertion of the apparatus into the hole, the blade may engage the threaded insert without damaging the parent threads; and

a channel adjacent the blade for receiving fragments of the threaded insert produced by cutting action of the blade.

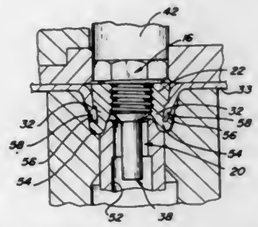
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,618

METHOD OF ATTACHING A FEMALE FASTENER ASSEMBLY TO A PANEL

Rudolf R. M. Muller, Frankfurt, Fed. Rep. of Germany, assignor to Profil Verbindungstechnik GmbH & Co., KG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 491,925, Mar. 12, 1990, Pat. No. 5,092,724, and Ser. No. 457,060, Dec. 26, 1989, Pat. No. 5,072,518, which is a division of Ser. No. 271,123, Nov. 14, 1988, Pat. No. 4,893,394, which is a division of Ser. No. 111,966, Oct. 21, 1987, Pat. No. 4,831,698, which is a continuation-in-part of Ser. No. 69,804, Aug. 17, 1987, Pat. No. 4,810,143, which is a division of Ser. No. 869,507, Jun. 2, 1986, Pat. No. 4,700,470, which is a division of Ser. No. 657,570, Oct. 4, 1984, Pat. No. 4,610,072, which is a continuation-in-part of Ser. No. 563,833, Dec. 21, 1983, Pat. No. 4,555,838, which is a continuation-in-part of Ser. No. 504,074, Jun. 14, 1983, Pat. No. 4,543,701, and Ser. No. 485,099, Mar. 28, 1993, Pat. No. 4,459,073, which is a division of Ser. No. 229,274, Jan. 28, 1981, abandoned, said Ser. No. 504,074, is a continuation of Ser. No. 229,274, Jan. 28, 1981, said Ser. No. 491,925, is a division of Ser. No. 196,209, May 19, 1988, Pat. No. 4,915,558, which is a division of Ser. No. 892,017, Aug. 1, 1986, Pat. No. 4,765,057, which is a division of Ser. No. 773,387, Sep. 6, 1985, Pat. No. 4,633,560, which is a division of Ser. No. 563,833, Sep. 6, 1985.
This application Oct. 10, 1991, Ser. No. 774,437
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003908
Int. Cl.[5] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—432.2 13 Claims



1. A method of attaching a fastener assembly to a panel, said fastener assembly including a female fastener element and a male fastener element, said female fastener element having a body portion having an axial bore therethrough and a panel riveting portion integral with said body portion, said male fastener element including a shank portion retained within said axial bore of said female fastener and a quill portion integral with said shank portion, said quill portion extending beyond said panel riveting portion of said female fastener element, said method comprising the steps of:
(A) placing said quill portion of said male fastener adjacent said panel;
(B) passing said quill portion through said panel,
(C) then, after step (B), driving said panel riveting portion of said female fastener through said panel,
(D) radially deforming said panel riveting portion of said female fastener thereby entrapping said fastener assembly in said panel.

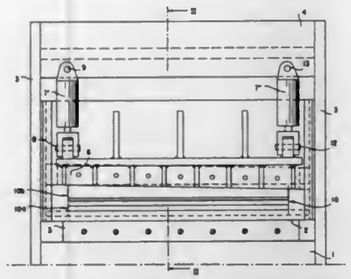
5,309,619

MULTI-FUNCTION POWER SHEAR MACHINES

Michel Montaigne, 112 Greenbrier Ct., Aptos, Calif. 95003

Filed Feb. 14, 1992, Ser. No. 836,033
Int. Cl.[5] B21D *5/01*; B23P *23/00*
U.S. Cl. 29—560 12 Claims

1. A convertible sheet metal and plate power shear machine, comprising:
a machine-surfaced table base (2) having a rear side and parallel side, edges, upstanding side members attached to each of said parallel side edges and a top cross beam (4) secured between said upstanding two side members (3);
a shear having a bottom blade (5) bolted to said rear and side of said machine-surfaced table base (2) cooperating with a top blade (6) capable of vertical sliding displacements by sliding through a first pair of vertical grooves provided on facing portions of said side members (3);
a hold-down (10) capable of vertical displacements in front of said top blade (6) and overlaying said table base (2) through a second pair of vertical grooves on said facing portions of said side members (3); and



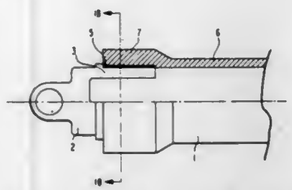
means (7', 7'', 11', 11'') for controlling said top blade (6) and said hold-down (10) to slide up and down independently of each other,
wherein said hold-down (10) includes two separable top and bottom parts (10*a*, 10*b*) each supporting, on a face thereof, at least one cooperating tool (14*a*, 14*b*) for performing forming and machining operations and a means for temporarily locking together said separate parts (10*a*, 10*b*) of said hold-down (10), and for allowing said hold-down (10) to apply a hold-down force on a part to be sheared by said shear.

5,309,620

METHOD OF MAKING A DRIVE SHAFT MADE OF FIBER REINFORCED PLASTIC WITH PRESS-FIT METALLIC END FITTINGS

Yasuo Shinohara; Hitoshi Murotani, and Kohji Yamatsuta, all of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 29, 1992, Ser. No. 875,409
Claims priority, application Japan, Apr. 30, 1991, 3-099022
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—432 10 Claims



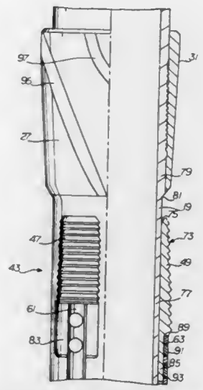
1. A method of producing a drive shaft, said drive shaft comprising a fiber reinforced plastic pipe portion having an end including a connecting portion; and a metal fitting including a connecting portion having a serrated portion disposed on its outer circumference, said method comprising the steps of:
(a) fixing a metallic foil having a thickness between 10 and 100 μm to an inner circumferential surface of the connecting portion of said pipe portion; and
(b) press-fitting the serrated portion of said metal fitting into said fiber reinforced plastic pipe portion, such that the respective connecting portions of the pipe portion and the fitting engage each other, and the serrated portion of the fitting bites into said metallic foil,
wherein a ratio of an outer diameter (df) of said metal fitting at the connecting portion thereof inclusive of a top of the serrations, to an inner diameter (dp) of said pipe portion, df/dp, is between 1.0002 and 1.020, and
said pipe portion has a fiber reinforcing layer integrally molded on the outer periphery of its connecting portion.

5,309,621

METHOD OF MANUFACTURING A WELLBORE TUBULAR MEMBER BY SHRINK FITTING TELESCOPING MEMBERS

John A. O'Donnell, Cypress, and Richard W. Wilson, The Woodlands, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 26, 1992, Ser. No. 858,100
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—447 21 Claims



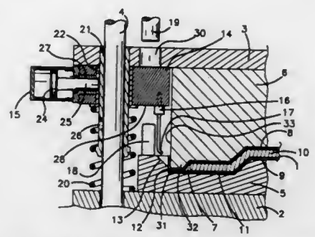
1. A method of securing a wellbore tool assembly to a wellbore tubular member, comprising the method steps of:
providing said wellbore tubular member which defines a surface portion, with a substantially cylindrical shape having a selected tubular diameter;
providing said wellbore tool assembly which includes a plurality of ring-shaped components, with at least one ring-shaped component defining a cylindrical surface having a selected ring diameter which differs from said tubular diameter of said wellbore tubular member;
forming a plurality of radial groove members and radial land members on at least one of said cylindrical surface of said wellbore tubular member and said cylindrical surface of said at least one ring-shaped component of said wellbore tool assembly;
urging said wellbore tubular member and said at least one ring-shaped component to differing thermal conditions to cause said tubular diameter and said ring diameter to change sufficiently to allow the wellbore tubular member and said at least one ring-shaped component to be placed concentrically one within the other without interference between the groove and land members;
placing said wellbore tubular member and said at least one ring-shaped component in a selected nested position one within the other; and
urging said wellbore tubular member and said at least one ring-shaped component to substantially similar thermal conditions to cause a radial component to substantially similar thermal conditions to cause a radial interference coupling therebetween.

5,309,622

PRESSING TOOL FOR THE PRODUCTION OF MULTILAYER FORMED PLATES

Gerhard Pirchl, Birrwil, Switzerland, assignor to AAW Produktions Aktiengesellschaft, Triesen, Liechtenstein

PCT No. PCT/CH88/00186, § 371 Date Aug. 15, 1989, § 102(e) Date Aug. 15, 1989, PCT Pub. No. WO89/03732, PCT Pub. Date May 5, 1989
PCT Filed Oct. 11, 1988, Ser. No. 381,419
Claims priority, application Switzerland, Oct. 29, 1987, 4238/87-8
Int. Cl.[5] B24D *39/02*
U.S. Cl. 29—566.1 9 Claims



1. A pressing tool for producing a multilayer formed plate having at least two outer layers which form at least one overlapping border area, the pressing tool comprising:
a lower part including a die having a forming surface and first and second side wall portions of different inclinations relative to the forming surface, the first side wall portion adjoining the forming surface and extending approximately perpendicular to the forming surface, the second side wall portion adjoining the first side wall portion and diverging outwardly therefrom, the forming surface and the first and second side wall portions defining a mold cavity;
an upper part including a pressing stamp which fits into the mold cavity;
guide columns interconnecting the lower and upper parts;
a frame arranged coaxially around the pressing stamp and displaceable from a predetermined position relative to the pressing stamp, the frame having a bottom surface;
a coupling device for interlockingly connecting the frame and the pressing stamp together; and
a plurality of spring elastic elements fastened to the bottom surface of the frame, each spring elastic element including a free end which engages the second side wall portion of the die of the lower part and then turns in a direction to fold an edge of one outer layer over an edge of another outer layer and thereby to form the at least one overlapping border area when the frame is displaced from the predetermined position relative to the pressing stamp.

5,309,623

METHOD OF MAKING A SEESAW BALANCE TYPE MICROMINIATURE ELECTROMAGNETIC RELAY

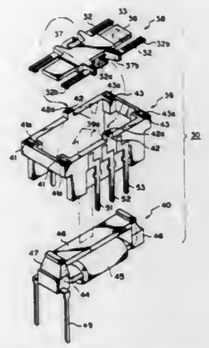
Yoshio Okamoto; Takashi Miura; Takanori Tanaka; Ikuhiro Andoh; Hajime Tsuboi, and Koji Hanada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 900,728, Jun. 18, 1992. This application Jul. 22, 1993, Ser. No. 94,984
Claims priority, application Japan, Jun. 18, 1991, 3-145115; Feb. 10, 1992, 4-023121
Int. Cl.[5] H01F *41/00*
U.S. Cl. 29—602.1 3 Claims

1. A method of producing an electromagnetic relay includ-

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ing an armature unit composed of two movable contact springs having a pivot arm formed at the center thereof and contacts formed at every end thereof, an armature having a protrusion on the back side for a pivotal movement, and an insert-molded insulator, a substrate unit composed of a common terminal for mounting the pivot arm electrically connected to a common terminal pin, a pair of switching terminals having fixed contacts for connecting the contacts electrically connected to terminal pins, and an electromagnet unit composed of a yoke, an exciter coil wound on the yoke a flat shape permanent magnet provided between both ends of the yoke, and two terminal pins electrically connected to the start and the end of the exciter coil, respectively, comprising the steps of:



forming a hoop member in an integrated configuration of a plurality of groups by a press blanking procedure; each group including a pair of movable contact springs each having a pivot arm, two non-magnetizing plates and two connecting bars connecting both ends of the springs and one end of the non-magnetizing plate;

piling the armature on the free edge of the non-magnetizing plate of the hoop member and welding at least one end of the armature with the free edge of the non-magnetizing plate;

forming an insulator by an insert-mold procedure to cover the movable contact springs and the armature, and

forming the armature unit by cutting boundary portions between the connecting bars and the movable contact springs and non-magnetizing plate.

5,309,624

METHOD OF MAKING A DISC RECORDING AND/OR REPRODUCING APPARATUS

Tatsuo Nishikawa, Tachikawa, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Division of Ser. No. 636,899, Jan. 2, 1991, abandoned, which is a division of Ser. No. 550,852, Jul. 10, 1990, abandoned, which is a division of Ser. No. 409,985, Sep. 19, 1989, Pat. No. 4,959,740, which is a continuation of Ser. No. 328,734, Feb. 8, 1989, abandoned, which is a continuation of Ser. No. 207,011, Jun. 15, 1988, abandoned, which is a continuation of Ser. No. 673,156, Nov. 19, 1984, abandoned. This application Aug. 3, 1993, Ser. No. 101,711

Claims priority, application Japan, Nov. 18, 1983, 215961; Nov. 18, 1983, 215967; Nov. 18, 1983, 215968; Nov. 18, 1983, 215973; Nov. 18, 1983, 215974

Int. Cl.[5] G11B *5/42*

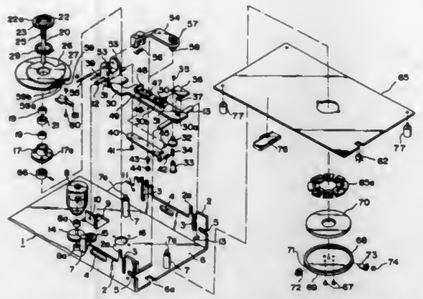
U.S. Cl. 29—603 **5 Claims**

1. A method for manufacturing a disc drive unit to which a disc is mounted and which records or reproduces information on or from the mounted disc by contacting a head with the disc, comprising the steps of:

(a) forming guide slots on end portions of a planar member;

(b) bending both end portions of said planar member at a right angle to a central portion of said planar member, said guide slots being thereby disposed at either bent end portion so as to form right and left side plates and said central portion becoming a bottom plate;

(c) attaching disc drive means for rotating the mounted disc to said bottom plate;



(d) attaching head shift means, for moving said head in a radial direction of the mounted disc, to said bottom plate; and

(e) bringing engaging portions provided on a cassette guide for holding said disc and moving said disc between a receiving position and a loading position of said disc into engagement with the guide slots on said right and left side plates.

5,309,625

CARD TYPE FUSE AND METHOD OF PRODUCING THE SAME

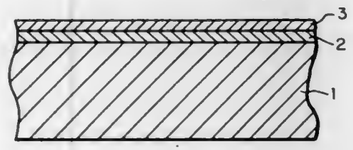
Yasuhiko Onishi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Jun. 3, 1993, Ser. No. 71,689

Claims priority, application Japan, Jul. 16, 1992, 4-213387

Int. Cl.[5] H01H *69/02, 85/04*

U.S. Cl. 29—623 **11 Claims**



1. A method for the production of a card-type fuse comprising at least one fuse circuit on an insulation substrate, said method comprising

depositing said fuse circuit on a heat resistant film, inserting said heat resistant film into a mold, introducing a heat resistant thermoplastic resin into said mold and in contact with said film and said fuse circuit, and permitting said thermoplastic resin to set, whereby said heat resistant film, said fuse circuit, and said resin are fused together and said film forms a protective cover for said fuse circuit.

5,309,626

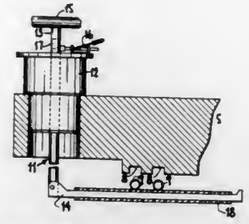
REACTOR VESSEL HEAD O-RING INSTALLATION TOOL

Ralph W. Tolino, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 30, 1992, Ser. No. 968,742

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—723 **16 Claims**



1. A tool for supporting a large diameter metal O-ring immediately beneath a circular groove in the underside of a nuclear reactor head flange to facilitate the installation of the O-ring into the circular groove, comprising an attachment portion secured to said flange and a cantilever support arm projecting horizontally away from said attachment portion and extending underneath said circular groove for supporting said O-ring immediately beneath said circular groove.

5,309,627

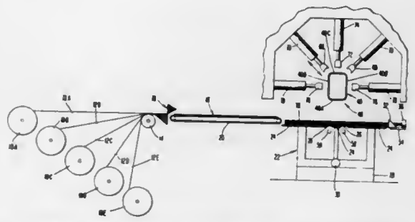
APPARATUS FOR MAKING A TRANSFORMER CORE OF NON-CIRCULAR CROSS-SECTION

Lawrence M. Burrage, South Milwaukee; James V. White, Waukesha; John F. Baranowski, Franklin, and Gary L. Goedde, Racine, all of Wis., assignors to Cooper Power Systems, Inc., Houston, Tex.

Filed Dec. 28, 1990, Ser. No. 635,675

Int. Cl.[5] H01F *41/02*

U.S. Cl. 29—738 **23 Claims**



1. Apparatus for making a transformer core, comprising:

a stationary mandrel having a non-circular cross sectional perimeter, said mandrel being collapsible to facilitate the removal of a core therefrom,

a preformed base layer of stiff material in contact with said mandrel perimeter to form a surface upon which packets of amorphous metal alloy core strips are wrapped,

positioning means for positioning a packet of amorphous metal alloy core strips adjacent said mandrel,

wrapping means for urging a section of said packet against said base layer surface and wrapping a remaining section of said packet around said non-circular perimeter, so that opposite ends of said packet form a joint, and

holding means for holding said packet against said base layer surface while said wrapping means receives successive packets from said positioning means.

5,309,628

ASSEMBLING POSITION ADJUSTING MECHANISM OF A SPINDLE MOTOR FOR A MAGNETIC DISK APPARATUS

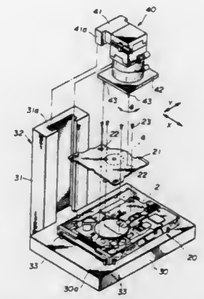
Kiyoshi Fukuchi, Musashino; Yoshiaki Sakai, Higashikurume; Hiroshi Tsuyuguchi, Tokyo; Takashi Numata, Tokorozawa, and Fumio Nagase, Tama, all of Japan, assignors to TEAC Corporation, Japan

Filed Dec. 17, 1992, Ser. No. 992,134

Claims priority, application Japan, Dec. 27, 1991, 3-107976[U]

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—759 **7 Claims**



1. An assembling position-adjusting mechanism of a spindle motor for a magnetic disk apparatus comprising:

a table having a top surface on which a main body of a magnetic disk apparatus including a magnetic head is fixed;

a positioning head having a bottom surface holding a motor assembly including a spindle motor assembled in said main body of said magnetic apparatus, said bottom surface having engaging means for engaging with said motor assembly to move said motor assembly with a movement of said positioning head to a predetermined position;

a first moving means for moving said positioning head in a direction perpendicular to said top surface of said table; and

a second moving means, provided in said positioning head, for moving said bottom surface of said positioning head so that said bottom surface of said positioning head moves in a direction parallel to said top surface of said table.

said main body of said magnetic disk apparatus being fixed on said top surface of said table, and said motor assembly being engaged with said bottom surface of said positioning head and being placed on said main body when assembling said motor assembly to said main body of said magnetic disk apparatus, said motor assembly being moved by operating said second moving means of said positioning head to adjust a position of said motor assembly so that said magnetic head of said main body of said magnetic disk apparatus is at a predetermined position relative to said spindle motor of said motor assembly.

5,309,629

METHOD OF MANUFACTURING A MULTILAYER CIRCUIT BOARD

Richard T. Traskos, Brooklyn, and William D. Smith, Abington, both of Conn., assignors to Rogers Corporation, Rogers, Conn.

Continuation-in-part of Ser. No. 939,105, Sep. 1, 1992. This application Dec. 31, 1992, Ser. No. 999,493

Int. Cl.[5] H05K *3/36*

U.S. Cl. 29—830 **45 Claims**

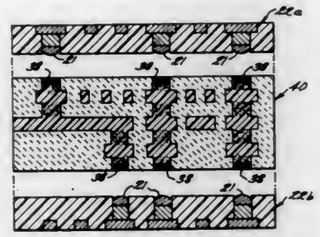
1. A method of making a multilayer circuit comprising the steps of:

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providing at least one first circuit board comprising a substrate of fusible dielectric material having opposing first and second surfaces, said first circuit board further comprising a first conductive circuit formed on said first surface, said first circuit including conductive material provided on at least one selected location thereof, said conductive material being exposed at said second surface;

providing at least one second circuit board comprising a substrate of a non-fusing, polymer-based dielectric material and a second conductive circuit formed thereon;

stacking said first and second circuit boards one on top of the other so that said conductive material exposed at said second surface of said first circuit board aligns with a



selected location on said second circuit, said selected location on said second circuit or said conductive material exposed at said second surface of said first circuit board or both have a fusible conductive material disposed thereon; and

laminating said stacked circuit boards under heat and pressure effective to adhere said fusible dielectric material to said non-fusing, polymer-based dielectric material and to fuse said fusible conductive material so as to form a cohesive multilayer circuit having a solid conductive interconnect between said first and second circuits, said solid conductive interconnect being defined by said fusible conductive material.

5,309,630

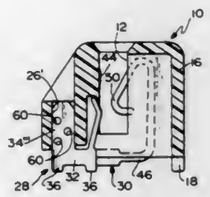
IMPEDANCE AND INDUCTANCE CONTROL IN ELECTRICAL CONNECTORS

David L. Brunker, Naperville, and Frank A. Harwath, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 856,593, Mar. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 852,441, Mar. 16, 1992, Pat. No. 5,203,725. This application Mar. 15, 1993, Ser. No. 34,201

Int. Cl.[5] H01R *9/00*

U.S. Cl. 29—842 **15 Claims**



1. A method of tuning the impedance of an electrical connector adapted for interconnection in a plurality of electrical circuits, each having a given impedance, without requiring the modification of a footprint of the connector relative to a complementary mating electrical component, said method comprising the steps of:

providing a set of dielectric electrical connector housings for mounting a plurality of terminals therein, all of the housings including a substantially identical receptacle for receiving a complementary mating electrical component, a plurality of terminal receiving cavities positioned adjacent said receptacle and adapted for receiving a portion of a terminal therein, and a plurality of anchoring regions, each anchoring region being adapted to receive an anchoring portion of a terminal therein to operatively secure said terminal in said housing, each of said housings including anchoring regions different from the anchoring regions of the other of said housings for receiving differently configured anchoring portions of the terminals;

providing sets of conductive terminals for selective mounting in the set of housings, all of the terminals having a connection interface section for mating with electrical components of a complementary mating electrical component, a tail portion for interconnecting said terminal to its respective electrical circuit and an anchoring portion separate from said connection interface section, said connection interface sections being substantially identical and including a contact arm and a contact portion located thereon, each set of terminals having generally planar anchoring portions of a different surface area than the anchoring portions of the other sets of terminals in order to vary the impedance characteristics of each set of terminals;

selecting a set of said terminals having a desired predetermined impedance substantially similar to said given impedance in order to select the impedance of the terminals without varying the dimensions of said connection interface sections;

selecting one of said housings having anchoring regions dimensioned for operatively receiving the anchoring portions of said selected set of terminals thereat; and

inserting said selected set of terminals into said housing;

whereby the impedance of the terminals may be selected without requiring a modification to the footprint of the connector relative to a complementary mating electrical component.

5,309,631

ROLL MANUFACTURING METHOD

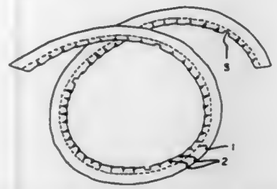
Tetsuo Higashino, Omihachiman; Shosaku Nakamura, Shiga; Akira Iimurou; Misao Maeyama, both of Uzi, and Yosbimi Fukusbige, Itami, all of Japan, assignors to Tohoyogyo Co., Ltd., Shiga, Japan

Filed Mar. 18, 1993, Ser. No. 34,751

Claims priority, application Japan, Aug. 31, 1992, 4-257429

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—895.21 **6 Claims**



1. A method of manufacturing a fiber roll from a longitudinally extending belt-like fiber material and a roll shaft, comprising the steps of:

sewing one end of the belt-like fiber material in the longitudinal direction with a sewing thread so that the length of one side of the belt-like fiber material is shorter than the other side, thereby forming a circular arc with the belt-like fiber material with the shorter side forming the inside surface of the arc; and

mounting the thus sewn belt-like fiber material on a roll shaft such that the inside surface of the arc contacts the roll shaft.

5,309,632

PROCESS FOR PRODUCING PRINTED WIRING BOARD

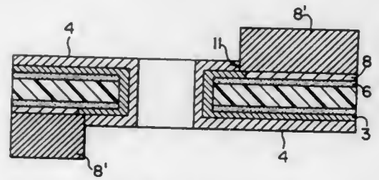
Hiroshi Takahashi, Kasama; Shin Takanezawa, Shimodate; Masao Kanno, Shimodate; Yorio Iwasaki, Shimodate; Toshirou Okamura, Shimodate; Akishi Nakaso, Oyama, and Kiyoshi Hasegawa, Yuki, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 327,593, Mar. 23, 1989, abandoned. This application Nov. 2, 1992, Ser. No. 970,925

Claims priority, application Japan, Mar. 28, 1988, 63-74119; Mar. 31, 1988, 63-78383; Apr. 5, 1988, 63-83384; Jul. 26, 1988, 63-185755

Int. Cl.[5] H01K *3/10*

U.S. Cl. 29—852 **9 Claims**



1. A process for producing a printed wiring board, which comprises

(i-a) forming an adhesive layer containing an electroless plating catalyst on surfaces of an insulating substrate containing an electroless plating catalyst,

(ii-b) drilling through-holes in the resulting insulating substrate,

(iii-c) masking portions except for the through-holes and circuit forming portions with a first resist for electroless plating,

(iv-d) dipping the resulting substrate in a chemical roughening solution to selectively roughen the portions not masked with the resist,

(v-e) dipping the thus treated substrate in an electroless nickel plating solution to form nickel plated layers on the roughened portions not masked with the first resist,

(v-ef) masking portions except for the through-holes and circuit forming portions with a second resist for electroless plating, the second resist forming a circuit forming pattern that is 5 to 10 μm narrower than that of the first resist, so that the second resist covers a portion of the nickel plated layers, and

(vi-f) dipping the nickel plated substrate in an electroless copper plating solution to conduct copper plating on exposed portions of the nickel plated layers.

5,309,633

METHOD AND DEVICE FOR FORMING WIRING HARNESSES

Claude Ricard, Villa Ste. Magdeleine, 52 cours Gambetta, 13100 Aix En Provence, France

Continuation-in-part of Ser. No. 806,195, Dec. 13, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 971,155

Claims priority, application France, Dec. 13, 1990, 90 15969; Dec. 13, 1990, 90 15970

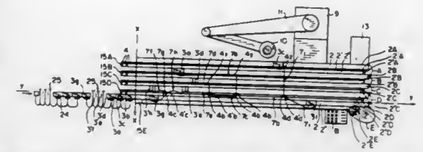
Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—861 **15 Claims**

1. A process for the automatic production of conductor wire or optical bundles having a plurality of branches, comprising the steps of:

separately engaging wire ends of a plurality of wire sections of each of said plurality of branches in preselected clamps on a supply conveyor, moving said clamps on said supply conveyor to grid means for spacing said clamps apart in a predetermined geographic position on said grid,

spacing said clamps in said geographic position on said grid,



fastening said wire sections engaged in said clamps together, and

removing said clamps to form said bundles.

5,309,634

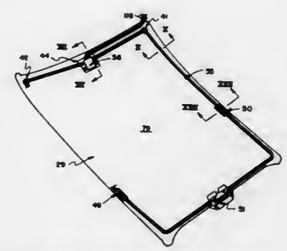
METHOD OF ASSEMBLING ELECTRICAL CIRCUIT TO VEHICLE PANEL

Kim L. Van Order, Hamilton; Lee Garvelink; Rick A. Van Vuren, both of Holland; Jerry M. De Jong, West Olive, and Alex C. Ramon, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Apr. 28, 1992, Ser. No. 875,644

Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—863 **11 Claims**



1. A method of assembling an electrical system to a vehicle panel, comprising the steps of:

mechanically attaching at least one panel electrical accessory to said vehicle panel, said panel accessory including an insulation displacement contact;

connecting at least one electrical conductor to said insulation displacement contact of said electrical accessory; and

applying an adhesive to said conductor and said panel whereby said adhesive secures said conductor to said vehicle panel.

5,309,635

METHOD FOR SECURING INDEX STRIP AND CUTTER-PRESSER TOOL

Robert G. Drach, Douglas, Nebr., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 843,866, Feb. 27, 1992, Pat. No. 5,205,033. This application Feb. 26, 1993, Ser. No. 23,647

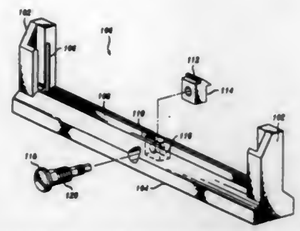
Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—863 **3 Claims**

1. A method of securing an index strip within a holding bracket portion of a tool for assembling multiple conductor connectors comprising the steps of positioning the index strip within the tool and then controllably applying position-securing forces to at least two oppositely-aligned side portions of the index strip wherein at least one of the position-securing forces

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is applied to the side portions of the index strip b y a protrusion having a sharp, tapered edge which becomes embedded into



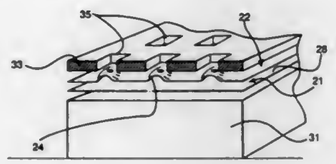
the side of the index strip thereby maintaining the index strip in a desired position.

5,309,636

METHOD FOR MAKING FILM COOLED SHEET METAL PANEL

Richard A. McGovern, Rockville, and Stephen F. Phillips, East Hartford, both of Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 19, 1990, Ser. No. 477,355
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.01 **1 Claim**



1. A method for fabricating a brazed sheet metal panel for use in an engine nozzle structure, comprising the steps of:

(a) providing first and second sheet metal members, said first member having formed therein a plurality of spaced dimples, said second member having a plurality of spaced cutouts corresponding in position to said spaced dimples in said first member;

(b) providing a mixture of powdered braze material and polymer binder;

(c) spraying a layer of said mixture of braze material and binder onto a surface of said second member;

(d) assembling said first and second members in laminar contact with said cutouts of said second member in registration with said dimples of said first member and said layer of said mixture between said first and second members;

(e) heating said assembly under vacuum to a temperature sufficient to fuze said braze powder and to volatilize said binder.

5,309,637

METHOD OF MANUFACTURING A MICRO-PASSAGE PLATE FIN HEAT EXCHANGER

Michael P. Moriarty, Simi Valley, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

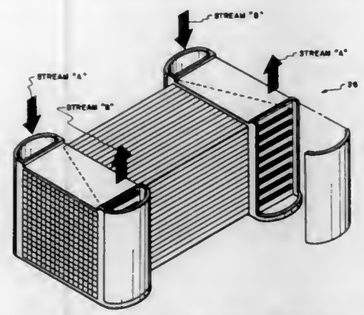
Filed Oct. 13, 1992, Ser. No. 959,586
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.054 **1 Claim**

1. A method of fabricating a heat exchanger comprising the steps of:

(a) preparing a substrate layer of multiple square metal tubes arranged adjacent and physically attached to each other in a horizontal plane;

(b) configuring multiple layers in a vertical plane of multiple square metal tubes arranged adjacent to each other and said substrate layer in a horizontal plane as in step (a) and having interposed between each layer of multiple metal tubes physically and communicating therewith a braze alloy thus forming a heat exchanger core;

(c) causing the braze alloy within the core to bond the multiple layers of multiple square metal tubes forming a core



mass comprising in a vertical plane, multiple layers of multiple square metal tubes arranged adjacent and physically attached to each other and said substrate layer;

(d) forming in alternate tube layers counter-flow fluid channels communicating across the entire horizontal plane thereof;

(e) providing the core mass with side containment shells and manifolds in communication with said multiple square metal tube core mass and said counter-flow channels; and

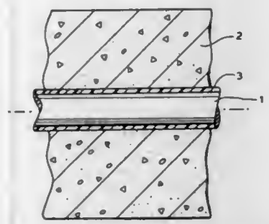
(f) brazing the heat exchanger to bond parts thereof together.

5,309,638

METHOD OF PRODUCING A PRESTRESSED REINFORCED CONCRETE STRUCTURE

Mark Farber, 20-66 W. 8 St. #6, and Lyubov Kots, 19-63 74 St., both of Brooklyn, N.Y. 11223

Filed Sep. 8, 1992, Ser. No. 941,944
Int. Cl.[5] B21D *39/00*
U.S. Cl. 29—897.34 **5 Claims**



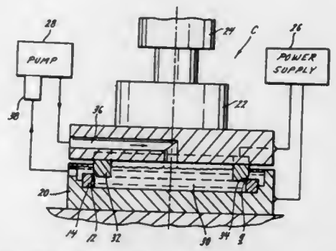
1. A method of producing a prestressed, reinforced concrete structure, comprising the steps of providing a metal reinforcing element; coating said reinforcing element with a coating composed of such a material which under the action of heating is first melted and then rigidifies during heating to a higher temperature; introducing said reinforcing element coated with the coating into a freshly poured body of concrete and establishing a bond between the reinforcing element and a concrete; initially heating said reinforcing element with the coating to a first temperature such that the reinforcing element expands the coating melts, and the bond established between the reinforcing element and the concrete through the coating is interrupted; and subsequently heating the reinforcing element to a second higher temperature so that the coating rigidifies and the expanded reinforcing element becomes bonded with the body of concrete through the rigidified coating.

5,309,639

METHOD OF MAKING A MACHINE COMPONENT WITH LUBRICATED WEAR SURFACE

Peter W. Lee, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Nov. 23, 1992, Ser. No. 979,902
Int. Cl.[5] B22F *3/24*; B23P *13/02*; F16C *33/64*
U.S. Cl. 29—898.13 **18 Claims**



1. A process for producing a powdered metal part provided with a working surface for positioning or guiding a machine element that moves along and against the surface, said process comprising: compacting powdered metal to leas than theoretical density so as to provide a shape having pores and a working surface; sintering the shape to bond the powdered metal and rigidify the shape; mechanically machining the sintered shape at its working surface, such that a Bielby layer develops which closes the pores at the working surface; eroding the shape at its working surface with electrical arcs to remove the Bielby layer and expose and open the pores a the working surface; and introducing a fluent lubricant into the pores after the shape is sintered.

5,309,640

INSTRUMENT FOR CUTTING HAIR AND SIMULTANEOUSLY CAUTERIZE THE CUT HAIR ENDS

Giovanni Caron, Varese, Italy, assignor to S.E.R.P.A.T. s.r.l, Varese, Italy

PCT No. PCT/IT91/00058, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/00688, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 8, 1991, Ser. No. 961,687
Claims priority, application Italy, Jul. 10, 1990, 83625 A/90
Int. Cl.[5] A61B *17/38*
U.S. Cl. 30—140 **4 Claims**

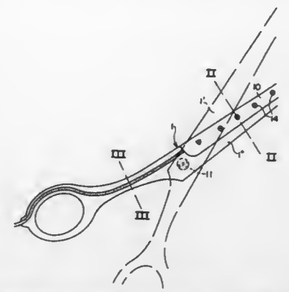
1. Scissors for cutting hair and simultaneously cautherizing ends of the hair that are cut, characterized by the fact that the scissors comprise:

two knives, each having a handle portion and a metallic, recessed, blade-holder portion;

a heating resistor set in a recess of said blade-holder portion of each knife;

a replaceable blade, mounted on the blade-holder portion of each knife, the mounted blade covering said recess and being heated by said heating resistor set in said recess;

at least one of said knives having a recess and at least a heat sensor, set in said recess of said at least one of said knives,



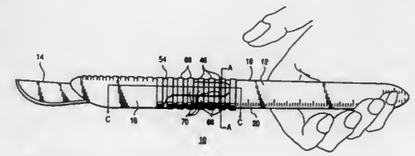
and capable of sensing the temperature of the blade of said at least one of said knives heated by said heating resistor.

5,309,641

DISPOSABLE SURGICAL SCALPEL WITH SAFETY GUARD

Jeff W. Wonderley, Ft. Defiance, and Donald G. Strickland, Charlottesville, both of Va., assignors to American Safety Razor Company, Verona, Va.

Continuation-in-part of Ser. No. 808,891, Dec. 18, 1991. This application Dec. 8, 1992, Ser. No. 986,741
Int. Cl.[5] B26B *3/02, 1/04, 1/10*
U.S. Cl. 30—339 **18 Claims**



1. A scalpel comprising:

an elongated handle comprising an upper and lower surface, a first and second side opposite one another, and a keyway formed by grooves positioned at the same location on said first and second side, wherein at lest one of said upper and lower surface is exposed so as to facilitate gripping the handle during use;

a blade carried by said handle proximate to one end thereof;

a guard movably mounted to said handle for sliding movement relative to said handle between a protective position covering said blade and a retracted position exposing said blade for use;

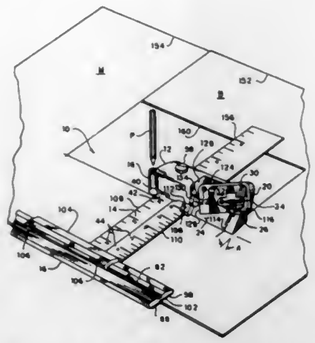
said guard comprising resilient side members located proximate to said first and second side of said handle, each side member comprising a guide arm having an inwardly extending key positioned within the adjacent groove of said keyway so as to secure said guard to said handle, and

locking means for releasably securing said guard to said handle in the retracted position and in the protective position, said locking means is movable to enable said guard to move between said protective position and said retracted position,

whereby the resilient force of the side members maintains said key on each guide arm within the adjacent groove of said keyway so as to prevent the separation of said guard from said handle, and effects the engagement of said locking means so as to releasably secure said guard in said positions.

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5,309,642
MAT MARKING AND CUTTING APPARATUS
Michael J. McGinnis, Santa Rosa, Calif., assignor to Murray Borod, Santa Rosa, Calif.
Filed Mar. 4, 1992, Ser. No. 845,552
Int. Cl.[5] B26D *7/01*; B43L *13/00*
U.S. Cl. 33—32.2 18 Claims



1. An artwork mat marking and cutting apparatus for the marking and cutting of artwork mat and other sheet material, said apparatus including:
a guide having a longitudinal dimension and a proximal end;
an extension located at said guide proximal end, and being normal to said guide longitudinal dimension;
said extension including a conversion scale ruler having a first scale and a second scale with said first scale comprising markings having a ratio of two to one relative to said second scale;
said conversion scale ruler having means providing for normal and slidable attachment to said guide;
a mat cutting unit including a pivotable cutting head having a cutting blade;
said cutting unit further including conversion scale ruler retention means, mat marking means, blade retention means, means urging said cutting head away from said sheet material and means for securing said cutting unit to said conversion scale ruler;
said pivotable cutting head having a pivot axis disposed at an angle other than parallel to said sheet material;
said cutting blade having a plane perpendicular to said pivot axis, whereby said cutting unit is secured to said conversion scale ruler, said conversion scale ruler is slidably attached to said guide, and said mat marking means is sued to mark said sheet material as said conversion scale ruler and said cutting unit are slidably moved along said guide.

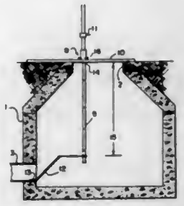
5,309,643
ADAPTER APPARATUS MOUNTED ON A MARKING INSTRUMENT TO ACHIEVE MOVEMENT IN A STRAIGHT LINE
Robert M. McCollom, 3101 N. Elizabeth, Pueblo, Colo. 81008
Filed May 19, 1992, Ser. No. 885,535
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—32.2 8 Claims

1. An adapter apparatus operable to be mounted on a marking instrument to achieve movement thereof in a straight line, comprising:
a) a support instrument having an elongated body member with a marking element on one end thereof;
b) an adapter assembly including a main support member mounted on said body member having an alignment and ruler member connected to said main support member and a support wheel assembly connected to said alignment and ruler member;
c) said alignment and ruler member placed in a usage position perpendicular to a longitudinal axis of said body member with said support wheel assembly and said marking element in contact with a support surface; and
d) a magnifying assembly connected to said alignment and



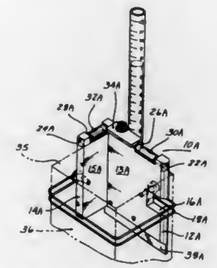
ruler member including a magnifying member movable from a storage position adjacent said alignment and ruler member to a usage position perpendicular to said alignment and ruler member operable to magnify indicia on the support surface while moving in a straight line;
whereby lateral movement of said support instrument causes said marking element and said support wheel assembly to move in parallel, straight lines.

5,309,644
SEWER INVERT ELEVATION MEASURING INSTRUMENT
Samuel P. Robinson, Jr., 400 NW. 214th St., No. 104, Miami, Fla. 33169, and Lionel G. Heroux, 1711 SW. 95th Ter., Miramar, Fla. 33025
Filed Nov. 18, 1992, Ser. No. 978,489
Int. Cl.[5] G01C *15/00*
U.S. Cl. 33—293 10 Claims



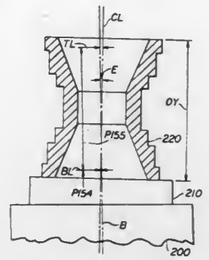
1. A surveying instrument for measuring the elevation of the invert of a sewer pipe relative to the top of a manhole, the instrument comprising:
A) elongate horizontal bar means for extending diametrally across a manhole and resting upon the upper rim diameter thereof, said bar means having a long axis;
B) vertical sleeve means rigidly connected to said horizontal bar means at an intermediate point thereof, said sleeve means arranged to slideably support a sight rod in a direction transverse to said long axis;
C) plumb indicating means removably connected to said sight rod above said sleeve means for indicating vertical position of said rod when supported by said sleeve means in operating position;
D) plumb adjusting means connected to said sleeve means for adjusting the rod to a true vertical position;
E) rigid elongate lateral arm means having a distal end, said arm means provided with attaching means for removably attaching to a lower end of said rod, said arm means extending laterally from said attaching means when attached to said rod; and
F) invert contact means connected to said distal end of said lateral arm means, said invert contact means extending below said lateral arm means, and having a lower portion for contacting said invert, said invert contact means being positioned below all other portions of said instrument when in operating position.

5,309,645
COMBINATION PLUMB OR LEVEL AND HEIGHT SETTING INSTRUMENTS
Randal V. Hoffmeyer, 40374 William, Sterling Heights, Mich. 48313
Filed Oct. 12, 1993, Ser. No. 135,075
Int. Cl.[5] G01C *5/04, 9/18*
U.S. Cl. 33—367 8 Claims



1. A combination plumb and height instrument set, comprising:
a first instrument having two sides extending orthogonally to each other, having respective inner faces adapted to be both placed against a vertical structural member;
a feature extending from at least one side into the included space between said inner faces of said two sides, said feature adapted to rest on a horizontal surface of a first vertical structural member against which said inner face of each of the two sides are placed, to be located on the first member at a predetermined position thereon;
a pair of bubble levels each mounted to extend along a respective side of said first instrument and readily viewable when said instrument is in said predetermined position on said first member to thereby allow plumbing of said first vertical structural member;
a second instrument having two sides extending orthogonally to each other, having respective inner faces adapted to be both placed against a vertical structural member; a feature extending from at least one of said two sides into the included space between said inner faces of said two sides and adapted to rest on a horizontal surface of a second vertical structural member in a predetermined position thereon;
an open topped first sight tube and means mounting said first sight tube to said first instrument to extend vertically up with said first instrument when on said first vertical structural member;
an open topped second sight tube and means mounting said second sight tube to said second instrument to extend vertically up with said second instrument in said predetermined position when on said second vertical structural member;
a fluid filled hose extending between said first and second sight tubes, said fluid partially filling both sight tubes to enable height comparison between said first and second vertical structural members.

5,309,646
TOOL POINT COMPENSATION FOR HARDWARE DISPLACEMENT AND INCLINATION
James E. Randolph, Jr., Wilmington, N.C., and R. David Hemmerle, Blue Ash, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Continuation of Ser. No. 801,335, Dec. 2, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,758
Int. Cl.[5] G01B *5/02*
U.S. Cl. 33—502 5 Claims



1. A method for compensating for any linear displacement and inclination offset of a workpiece relative to an axis of rotation of a computer numerically controlled (CNC) machine, said method comprising the steps of:
(a) positioning the workpiece on a rotatable mount of the CNC machine with a centerline of the workpiece proximate to the axis of rotation of the CNC machine;
(b) contacting an upper portion of the workpiece on at least two different upper portion locations with a probe mounted in a tool holder of a spindle mechanism of the CNC machine;
(c) recording an upper coordinate position of each of the at least two different upper portion locations;
(d) contacting a lower portion of the workpiece on at least two different lower portion locations with the probe;
(e) recording a lower coordinate position of each of the at least two different lower portion locations;
(f) determining any linear displacement and inclination offset of the workpiece centerline relative to the axis of rotation of the CNC machine from the at least two upper coordinate positions and the at least two lower coordinate positions; and
(g) adjusting the position of a machine tool point in response to any linear displacement and inclination offset with respect to said axis or rotation to compensate for the linear displacement or inclination offset during machining operation.

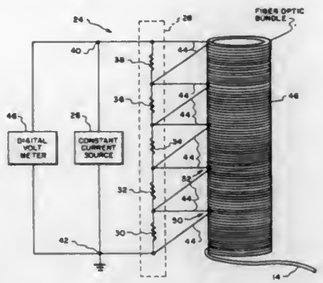
5,309,647
FIBER OPTIC CABLE FOOTAGE INDICATOR
Roman Kruchowy, Somis, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 21, 1992, Ser. No. 992,323
Int. Cl.[5] B65H *61/00*
U.S. Cl. 33—733 9 Claims

1. An apparatus for measuring the length of fiber optic cable being unwound from a winch for deployment in an underwater environment, said apparatus comprising:
a constant current source for generating a direct current, said constant current source having an output terminal and a ground terminal;
a resistor array having a plurality of resistors, the resistors of said resistor array being connected in series, said resistor array having an input connected to the output terminal of said current source and output connected to the ground terminal of said current source;

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a plurality of trip wires attached to said fiber optic cable, each of said trip wires being positioned at a precisely known location on said cable;

each of said trip wires being electrically connected across one of said resistors of said resistor array thereby allowing current to flow through said trip wire, said trip wire being electrically disconnected from said resistor when the



location on said fiber optic cable at which said trip wire is attached is unwound from said winch for deployment thereby allowing current to flow through said resistor; and

means for measuring the current flow through said resistors of said resistor array and in response to said measurement providing a visual readout indicating the length of fiber optic cable that has been deployed.

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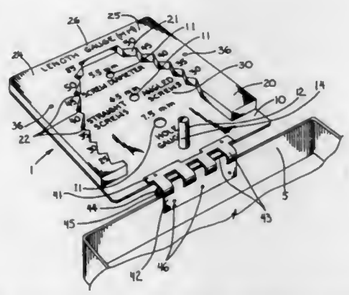
ORTHOPAEDIC GAUGE

Randall N. Allard, Plymouth, and Bradley T. Durcholz, Warsaw, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Apr. 15, 1993, Ser. No. 48,340

Int. Cl.[5] G01B *5/02*

U.S. Cl. 33—783 **12 Claims**



1. An orthopaedic gauge including a means for measuring a length dimension of an elongated orthopaedic device, wherein the means for measuring includes a base portion having a fixed reference point thereon and a raised platform extending from the base portion and spaced from the reference point, wherein the raised platform includes a plurality of stops, and wherein the means for measuring further includes a means for positioning one end of the elongated orthopaedic device about the fixed reference point to enable the device to be swung through an arc about the reference point until the other of the device abuts one of the plurality of stops on the raised platform, and wherein the gauge includes a scale thereon to identify a length dimension to correspond to at least one of the plurality of stops.

5,309,649

PROCESS AND CONTAINER FOR FREEZE DRYING UNDER STERILE CONDITIONS

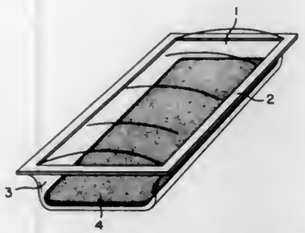
Thomas Bergmann, Penzberg, and Herbert Brustmann, Tutzing, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Division of Ser. No. 782,672, Oct. 25, 1991, abandoned, which is a division of Ser. No. 353,746, May 17, 1989, abandoned. This application Sep. 3, 1992, Ser. No. 940,050

Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817906

Int. Cl.[5] F26B *13/30*

U.S. Cl. 34—284 **12 Claims**



1. The method of freeze drying biological or pharmaceutical material under sterile conditions, which comprises introducing said material into a container the sides of which consist at least partly of a hydrophobic, porous, microorganism-impermeable and water vapor-permeable membrane, tightly closing the container and freeze drying said material under sterile conditions inside the closed container in a non-sterile ambient environment.

5,309,650

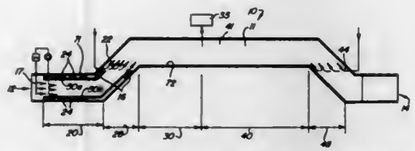
METHOD AND APPARATUS FOR VENTILATING A PAINT BAKING OVEN

Leif E. B. Josefsson, Sterling Heights, Mich., and Anders P. A. T. Persson, Vaxjo, Sweden, assignors to ABB Flakt, Inc., Auburn Hills, Mich.

Filed Aug. 29, 1991, Ser. No. 751,716

Int. Cl.[5] F26B *3/04*

U.S. Cl. 34—493 **14 Claims**



1. A paint baking oven having a bring up zone and an adjacent additional zone located between an entrance and an exit end of the oven, with articles to be baked moving therethrough from the entrance end to the exit end,

means for continuously ventilating said paint baking oven including a plurality of air inlets for introducing substantially all ventilation air into the oven in a direction substantially parallel to a direction of movement of the articles to be baked, at least one air inlet being located at the entrance end and at least one air inlet being located at the exit end for introducing the ventilation air into the oven is substantially opposite directions; at least a portion of said ventilation air being heated to provide the baking function of said paint baking oven and

exhaust means extending from said paint baking oven between said bring up zone and said additional zone for removing ventilation air.

5,309,651

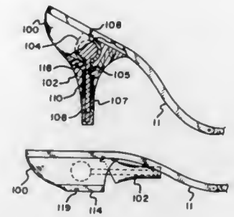
TRANSFORMABLE SHOE

David B. Handel, Margate, N.J., assignor to Fabulous Feet Inc., Margate, N.J.

Continuation-in-part of Ser. No. 706,245, May 28, 1991, abandoned. This application Sep. 9, 1991, Ser. No. 754,275

Int. Cl.[5] A43B *21/433, 21/42*

U.S. Cl. 36—100 **13 Claims**



1. In a shoe having a sole with a toe portion, a heel portion and an arch portion located between said heel and toe portions, the improvement comprised of a stowable heel comprising:

a) an upper heel section attached to the heel portion of said shoe sole;

b) a lower heel section attached to said upper heel section, said lower heel section having a central axis, and

c) means for rotating said lower heel section about its central axis and for pivoting the same relative to said sole so that said lower heel section can be moved between a first position wherein it underlies and is in substantial alignment with said upper heel section and a second position wherein it lies substantially beneath said arch portion of said sole.

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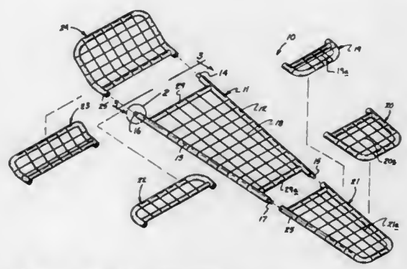
SNOW SHOE KIT

Lawrence W. Campbell, 28 Highview Dr., Utica, N.Y. 13502

Filed May 3, 1993, Ser. No. 55,284

Int. Cl.[5] A43B *5/04*; A63C *1/02*

U.S. Cl. 36—124 **3 Claims**



1. A snow shoe kit, comprising,

a base frame, the base frame including a head leg spaced from and parallel a base leg, and

the frame further having a first leg spaced from a second leg, with the first leg and the second leg integrally mounted to the head leg and the base leg, with a base web mounted coextensively within the first leg, second leg, base leg, and head leg, and

a first tail frame and a second tail frame arranged for securement at a first end of the base frame, and at least a first head frame and a second head frame, wherein an individual of said first head frame and said second head frame is arranged for securement to the base frame at a second end of the base frame, and

the first tail frame is of a first length, the second tail frame is of a second length, wherein the second length is greater than said first length, and the first head frame having a first head frame length, the second head frame having a second head frame length, wherein the second head frame length is greater than said first head frame length, and the second head frame is of an L-shaped configuration, and

locking means for securement of each of said first tail frame, said second tail frame, said first head frame, and said second head frame to said base frame, and

the head leg includes a head leg slot oriented intermediate the first leg and the second leg, and a rigid cleat plate, the cleat plate uppermost end is arranged for reception within the slot, and the cleat plate lowermost end includes an engaging surface, wherein the cleat plate further includes a cleat plate groove arranged for positioning within the slot, and the head leg includes a plurality of fasteners directed through the head leg and received within the groove.

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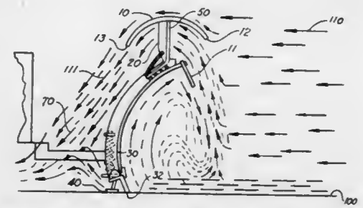
SNOW DEFLECTION SYSTEM

Walter G. Pease; Michael J. Collins, both of Barnes, and Arthur J. Smith, Gordon, all of Wis., assignors to Snow Visions, Inc., Solon Springs, Wis.

Continuation-in-part of Ser. No. 885,802, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 514,912, Apr. 16, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 986,174

Int. Cl.[5] E01H *5/06*

U.S. Cl. 37—266 **5 Claims**



1. On a snowplow vehicle for plowing snow having a moldboard with a top margin the combination comprising:

arcuate foil means attached to said moldboard for controlling generally all of the flow of said snow above said moldboard;

belt means permanently attached to said top margin of said moldboard and extending downwardly from said moldboard for controlling and maintaining the position of generally all of said snow in generally close proximity with said moldboard;

said arcuate foil means and said top margin of said moldboard defining an airflow space of approximately eight to twelve inches;

whereby said belt means keeps said snow close enough to said moldboard to allow said foil means to effectively direct said snow downwardly away from said snowplow vehicle.

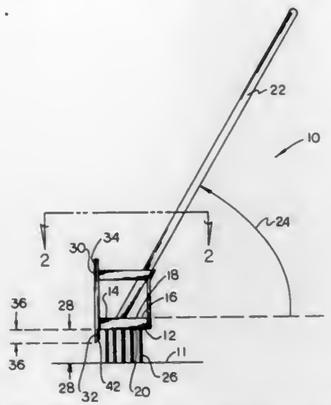
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,654

SNOW AND ICE BROOM

Johnny L. Mathis, 604 Pioneer Rd., Papillion, Nebr. 68128

Filed Apr. 15, 1993, Ser. No. 45,883
Int. Cl.[5] E01H *5/12*
U.S. Cl. 37—284 4 Claims



1. A new and improved snow pusher, ice chopper, and broom apparatus for clearing a surface, comprising:

a support element which includes a front, a back, a top, and a bottom,

a handle, supported by said support element, which projects upward from said top of said support element at a first acute angle with respect to said top of said support element,

a plurality of bristles, supported by said support element, which project downward from said bottom of said support element by a first distance,

a substantially flat plate panel element, supported by said support element at the front of said support element, said panel element including a bottom end and a top end, wherein said bottom end is connected directly to said support element and projects downward past said bottom of said support element by a second distance, wherein said second distance is less than said first distance, wherein said bottom end includes a sharp lower edge, and

bracing assembly means, connected between said panel element and said support element, for bracing said panel element against said support element, said bracing assembly means including a first bracing element and a second bracing element, a portion of said first bracing element being connected to said panel element substantially perpendicular to said panel element, a portion of said first bracing element being connected to a portion of said second bracing element substantially perpendicular to said second bracing element, and a portion of said second bracing element being connected to said support element,

wherein, in a first mode of operation, said panel element is used to push material out of a path on the surface, and said bristles are used to sweep material out of the path on the surface, when said bristles are placed on the surface, and said handle is pushed by a user toward said front of said support element in a direction substantially parallel to the surface, and

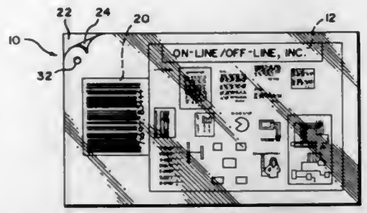
wherein, in a second mode of operation, said sharp edge of said panel element is moved toward the surface by a user who pushes said handle in a direction at a second acute angle with respect to the surface.

5,309,655

COMPACT RECORD OF HUMAN-READABLE DATA

Maxwell R. Mitchell, 3616 Morningside La., Bowie, Md. 20715

Continuation-in-part of Ser. No. 715,389, Jun. 14, 1991, abandoned. This application Dec. 10, 1991, Ser. No. 804,390
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—299 8 Claims



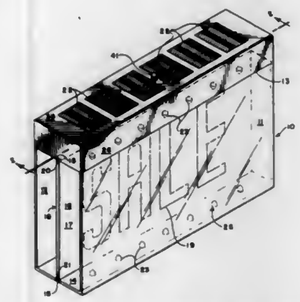
3. A compact record of human-readable data, the record comprising a pair of opaque sheets in back-to-back relation to each other, each bearing a positive, photographic print on photographic paper, said print reproducing human-readable data in a reduced size that is readable by a human if the photographic print is magnified at least several times, as by a pocket magnifier, and that is not readable by a human unless the photographic print is magnified at least several times.

5,309,656

FLASHING SIGN

Richard Montgomery, P.O. Box 8641, Amarillo, Tex. 79114

Filed May 6, 1992, Ser. No. 879,981
Int. Cl.[5] G09F *13/02*
U.S. Cl. 40—442 9 Claims



1. A photovoltaically powered flashing sign adapted for use in indoor merchandising displays, said sign comprised of:

a) a boxlike transparent housing having front and rear parallel panels and elongated parallel upper and lower panels, said upper and lower panels having facing retaining channels,

b) a substantially flat placard centrally disposed within said housing, having front and rear surfaces, each having an advertising message displayed thereupon, said placard having upper and lower edges slidably engaging said channels,

c) photovoltaic energy collection means directed upwardly from said sign,

d) a plurality of light emitting diodes disposed within said housing, and

e) circuitry encasement means containing:

1) a rechargeable battery adapted to store electrical energy from said collection means, and

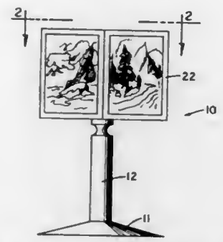
2) timing circuit means adapted to receive current from said battery and supply illumination current to said light emitting diodes, said timing circuit adapted to cause on- and off-flashing of said light emitting diodes in a recurring sequence.

5,309,657

ROTATABLE PICTURE FRAME

LaDarien Spencer, 8006 Coastway Dr., Rowlett, Tex. 75088

Filed Nov. 16, 1992, Ser. No. 976,957
Int. Cl.[5] G09F *11/02*; A47G *1/06*
U.S. Cl. 40—473 4 Claims



1. A new and improved rotatable picture frame apparatus comprising:

a horizontal base, a vertical hollow casing attached to the base, said hollow casing having an inner wall, an outer wall, a central longitudinal axis, and top and bottom edges; a horizontal turntable having a perimeter rotatably mounted on said top edge of said casing, a motor for producing a rotating motion, said motor being mounted within said hollow casing and having a rotatable output shaft extending along said axis, said output shaft being connected to said turntable proximal to said top edge of said casing, an on/off switch for the motor mounted within said hollow casing and extending through said inner wall and said outer wall, said hollow casing further including batteries as a power source for said motor, said on-off switch being connected between said batteries and said motor; and a plurality of picture frames mounted upon said turntable; said hollow casing being removably mounted on said base to permit said batteries to be inserted within said hollow casing through the opening defined by said bottom edge thereof; and said picture frames having faces and being mounted on the turntable in such a manner that the faces of the picture frames are directed in a plurality of directions.

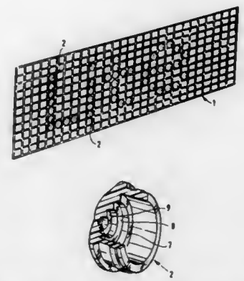
5,309,658

DISPLAY ELEMENT OF TRANSPARENT PLASTIC WITH FLUORESCENT COLORANT

Henri Coben, Lipperkerkstraat 373, NL 7533 AD Enschede; Gertjan R. Willemsen, Polluxstraat 29, NL-7521 JT Enschede, and Remco S. Schoppen, Lipperkerkstraat 375, NL-7533 AD Enschede, all of Netherlands

PCT No. PCT/NL90/00146, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/06461, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 8, 1990, Ser. No. 859,515
Int. Cl.[5] G09F *13/16*
U.S. Cl. 40—583 5 Claims

1. A one piece display element for displaying one or more portions of characters or shapes, said one piece display element formed of a partially transparent plastic having a fluorescent colorant incorporated therein, said one piece display element comprising a plastic head member integrally attached to a first end of a substantially cylindrical plastic member, said cylindrical plastic member having a second open end spaced from said first end and defining a hollow interior between said first end and said second open end, said plastic head member having a substantially rounded, conical outer surface overlapping said cylindrical plastic member wherein said plastic head member has a diameter greater than an outer diameter of said cylindrical plastic member, said plastic head member having an inner surface with stepped concentric, annular reflection surfaces, and wherein said cylindrical plastic member includes a raised



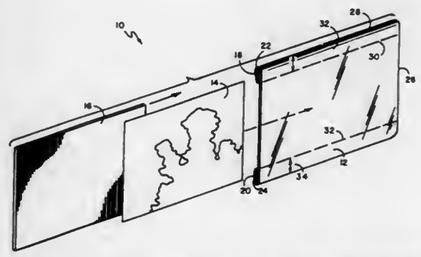
annular snap-in ridge extending from an outer surface of said cylindrical plastic member at a position spaced from said plastic head member, and said second open end of said cylindrical plastic member is positioned opposite from said inner surface of said plastic head member wherein said one piece display element is configured to allow light to enter said second open end and travel through said hollow interior within said cylindrical plastic member and exit said plastic head member.

5,309,659

FRAME

Richard H. Eastman, 36 Mallard Rd., Needham, Mass. 02192

Filed Nov. 12, 1992, Ser. No. 974,934
Int. Cl.[5] G09F *7/04*
U.S. Cl. 40—600 1 Claim



1. A frame member having a front for displaying a planar object on a metallic surface, comprising:

a transparent holder of stiff, resilient plastic having a top, a bottom, a front, a rear, a length and a width;

an upper lip retention member formed from the top of said holder being folded rearwards, around and behind said holder, said upper lip retention member having a width;

a lower lip retention member formed from the bottom of said holder being folded rearwards, around and behind said holder, said lower lip retention member having a width, said upper and lower lip retention members pressing against the rear of said holder towards the front of said holder;

an upper slot defined between said upper lip retention member and the rear of said holder;

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a lower slot defined between said lower lip retention member and the rear of said holder; and

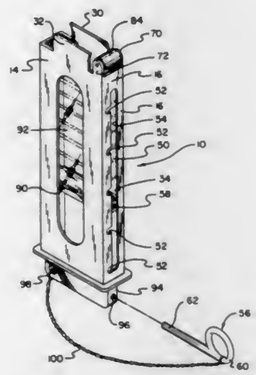
a sheet of magnetic material having a front and a rear and having approximately the same length and width as the length and width of said holder, said sheet of magnetic material slideably disposed within said upper slot and said lower slot for sandwiching said planar object between the rear of said transparent holder and the front of said sheet of magnetic material, said transparent holder from retaining said planar object when inserted within said frame member; said sheet of magnetic material being magnetically attracted to said metallic surface for retaining said frame member in a fixed position on said metallic surface when placed thereagainst.

5,309,660

CARTRIDGE MAGAZINE

James D. Blackamore, 25961 Pasofino, Laguna Niguel, Calif. 92677

Filed Nov. 16, 1992, Ser. No. 976,954
Int. Cl.[5] F41A 9/67
U.S. Cl. 42—50 **8 Claims**



1. A new and improved cartridge magazine for a firearm comprising in combination:

a housing, said housing having first and second opposed end walls, first and second opposed side walls, a bottom wall and a top end opening, said housing defining an interior cavity for storing a multiplicity of cartridge shells one on top of the other with the longitudinal axis of each cartridge shell being substantially orthogonal to the longitudinal extent of said housing,

said first end wall having a slot therein extending longitudinally between said top end and said bottom wall, said slot having at least one notch laterally extending from said slot in the plane of said end wall intermedially of the longitudinal extent of said slot,

elevator means disposed in said cavity for longitudinal movement therein, said elevator means having an end face confronting said slot in said first end wall and key receiving means in said end face,

resilient means in said cavity between said bottom wall and said elevator means for urging said elevator means toward said top end opening,

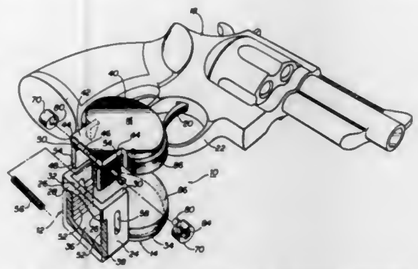
and key means for selective insertion into said key receiving means through said slot to engage said end face of said elevator whereby movement of said key enables movement of said elevator in said cavity and selective engagement of said key with said slot in said end wall and said at least one notch laterally extending from said slot, said key means further comprising a loop at one end thereof for engagement by the thumb of a user's hand when said bottom wall of said housing is resting in the palm of said user's hand with said housing in an upright position.

5,309,661

TRIGGER GUARD FOR A FIREARM

Ann D. Fuller, and Robert M. Fuller, both of P.O. Box 429, Sautee, Ga. 30571

Continuation of Ser. No. 848,704, Mar. 9, 1992, Pat. No. 5,191,158. This application Feb. 22, 1993, Ser. No. 20,761
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] F41A 17/54
U.S. Cl. 42—70.07 **4 Claims**



1. A safety device for a firearm, the firearm comprising a trigger, the safety device comprising:

(a) a frame having a pair of opposed side walls, each having an inner and an outer surface and a rear edge, the frame further also having an end wall interconnecting the side walls along their respective rear edges;

(b) a first element having a forward portion that extends laterally from the end wall on the frame;

(c) a second element selectively moveable on the frame, having a forward portion that is complementary in shape, and in opposed relationship, to the forward portion of the first element, a second portion laterally extending from a rear of the forward portion, and a pair of opposed, parallel legs having inner and outer surfaces extending perpendicularly from the second portion; and

(d) means for securing each of the parallel legs of said second element to the pair of opposed side walls on said frame at a selected distance from said first element so as to engage therebetween, and prevent access to, at least the trigger of the firearm, wherein said securing means comprises the legs being flexibly connected to the second element, creating a tension of opposing forces between the parallel legs and the opposed side walls.

5,309,662

ALIGNMENT GUIDE

David H. Goodwin, Hollis, and Richard W. Cressey, Biddeford, both of Me., assignors to Saco Defense Inc., Saco, Me.

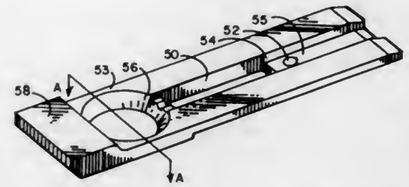
Filed Dec. 16, 1992, Ser. No. 991,839
Int. Cl.[5] F41A 9/79
U.S. Cl. 42—105 **2 Claims**

1. An alignment guide for the alignment of grenade rounds in the receiver of an MK19 grenade launcher, comprising:

a solid, elongated substantially rectangular body having a right side, a left side, an upper side, a bottom side, a substantially planar front face having a right and left portion and a substantially planar rear face having a right and left portion, said front face and said rear face being parallel to one another, said front face being separated from said rear face by a distance of approximately 0.25 inch;

an arm portion extending from said left portion of said front face of said rectangular body, said arm portion having a top and said arm portion and said rectangular body having a combined total depth between said rear face and the top of said arm portion of approximately 0.5 inch;

a bowl-shaped aperture defined in said rectangular body, said bowl-shaped aperture having concave sides extending between said front face and said rear face, said bowl-shaped aperture disposed adjacent to, and at the right of, said arm portion, said bowl-shaped aperture being open at both said front face and said rear face and forming, respectively, a front bowl opening and a rear bowl opening and each of said openings having a diameter, said front bowl opening being separated from said rear bowl opening by a distance of approximately 0.25 inch, said sides of said bowl-shaped aperture being generally concave between said front bowl opening and said rear bowl opening;



a channel defined in said front face of said rectangular body, said channel having a central portion, said channel extending centrally along said front face from said right portion of said front face to said bowl-shaped aperture defined in said rectangular body;

a single body aperture, being substantially rectangular, defined in said rectangular body extending from said front face to said rear face and disposed between said bowl-shaped aperture and said right side of said rectangular body; and

a screw aperture defined in said rectangular body in a central portion of said channel, said screw aperture extending between said channel and said rear face, said screw aperture positioned within said channel to the right of said body aperture.

5,309,663

LINEAR FISH CATCHING DEVICE

Edward S. Shirley, P.O. Box 181, Queen City, Tex. 75572-0181

Filed Apr. 26, 1993, Ser. No. 51,891
Int. Cl.[5] A01K 97/00
U.S. Cl. 43—15 **13 Claims**

1. A linear fishing device comprising:

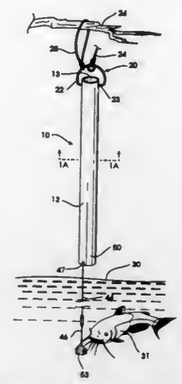
an elongated, generally tubular barrel adapted to be secured to a stationary support;

an elongated spring generally coaxially disposed within said barrel, said spring comprising an elongated, elastic tube having first and second spaced apart terminal ends;

a first coupling pivotally connecting said first end of said tube within said barrel;

a second coupling connected to said second end of said tube;

said first and second couplings each comprising an elongated body comprising a swivel end having a penetrable orifice and a tube receptive end secured to said elastic tube;



a leader adapted to be selectively coupled to a baited fish line, or lure said leader pivotally connected to said second coupling; and,

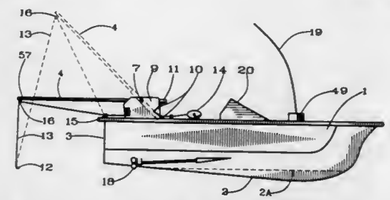
means for temporarily cocking said device until a fish bites.

5,309,664

RADIO-CONTROLLED FISHING BOAT

Jerry C. Wright, Gainesville, Ga., assignor to Robo Fishing, Inc., Woodstock, Ga.

Filed Jun. 18, 1993, Ser. No. 78,046
Int. Cl.[5] A01K 89/00
U.S. Cl. 43—26.1 **50 Claims**



1. A remote-control fishing vessel comprising:

a buoyant hull having a stern with a broad transom,

a ballast extended downward vertically from a bottom of the buoyant hull,

an autohook fishing pole extendable rearward from a top portion of the buoyant hull,

a motorized reel mounted on the buoyant hull linearly to the autohook fishing pole,

a first water-screw propeller having a first propeller shaft projecting rearward from and in rotational contact with a right bottom portion of the buoyant hull,

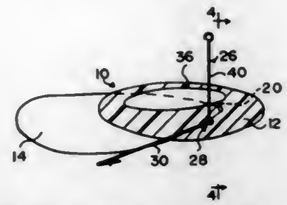
a second water-screw propeller having a second propeller shaft projecting rearward from and in rotational contact with a left bottom portion of the buoyant hull,

a source of propulsive power positioned on the buoyant hull and having rotational power output transmittal equally to the first propeller shaft and to the second propeller shaft as desired for straight propulsion and having rotational power transmitted variably to the first propeller shaft and to the second propeller shaft as desired for steering propulsion of the buoyant hull, and

a remote controller of the rotational power output transmitted from the source of propulsive power to the first propeller shaft and to the second propeller shaft.

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5,309,665
FLYING ACTION FISHING LINE
Mark Franciskovich, 26W421 MacArthur, Wheaton, Ill. 60188
Filed Apr. 1, 1993, Ser. No. 41,714
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.26 **4 Claims**



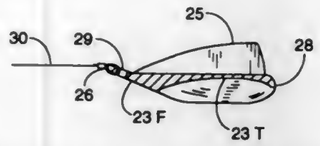
1. A fishing lure which dives into and flies above the water within which it is placed, rotates, and jogs to one side, simulating a water bound insect, the lure comprising:
a body having an elongate oval shape, the body having a hollow area of predetermined size therein within which a predefined volume of air is entrapped;
an elevated line eye extending upwardly from the body, and set approximately one third the distance back from a forward end of the body;
a pair of dished wings engaged to said body to extend upwardly along and away from an underside of said body opposite said line eye, the body being cupped within the dished area of each wing and the wings extending rearwardly past a rear end of said body;
and a hook fixedly engaged to said body in a manner to extend rearwardly downwardly from a rear portion of said body, said hook underlying said wings; and
the volume of the hollow area of the body being placed rearwardly within said body and being calculated from:

$$V_{air}=(\rho_w/\rho_p-1)V_{plastic}+(\rho_w/\rho_s-1)V_{hook}+(\rho_w/\rho_{wing}-1)V_{wing}$$

wherein
V_{air}=volume of air required for zero coefficient of flotation
ρ_p=density of plastic used
ρ_w=density of water
$V_{plastic}$=volume of plastic used
ρ_s=density of material of fishing hook
V_{hook}=volume of hook material
ρ_{wing}=density of wing material
V_{wing}=volume of wing material used
producing a zero coefficient of flotation for the lure.

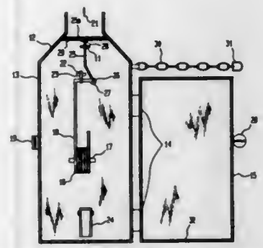
5,309,666
SWIMMING FISHING WEIGHT
Larry W. Prince, 4944 Via Ventura St., #5, Mesquite, Tex. 75150
Filed Oct. 16, 1992, Ser. No. 931,819
Int. Cl.[5] A01K *95/00*
U.S. Cl. 43—43.13 **2 Claims**

1. A fishing line weight which rises to the surface of the water upon retrieval comprising:
a flattened body with a leading and a trailing end and a longitudinal axis of symmetry and having upper and lower surfaces which have leading end portions and trailing end portions wherein the leading end portion of said lower surface is upwardly inclined and the trailing end portion of said lower surface is concavely cupped;
a vertical fin attached to said upper surface in alignment with said axis of symetry; and



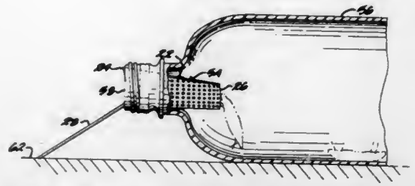
attachment means for connecting a fishing line at said leading end and for pulling said body through the water.

5,309,667
LACCHIA LEG SNARE
Matthew Ladzinski, 112 Hardwick Ave., Westfield, N.J. 07090
Filed Apr. 30, 1993, Ser. No. 54,222
Int. Cl.[5] A01M *23/34*
U.S. Cl. 43—87 **5 Claims**



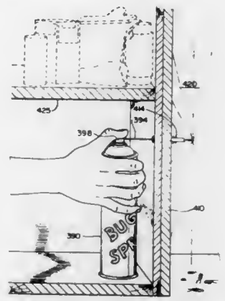
1. A snare trap for snaring the leg of an animal comprising a spring powered cable snaring device enclosed in a tapered plastic tubing which is open at the upper end and sealed at its lower end, the snaring device comprising
(a) a cable member having a stop member affixed to one end thereof and operatively connected to said stop member a sliding lock mechanism through which the cable is threaded to form a snare loop having a diameter greater than the opening at the upper end of said tubing, the snare resting inside, below and parallel with the opening at the upper end of the tubing,
(b) a torsion spring affixed tot he interior wall of the plastic tubing, said spring being adapted with a rotation arm in a plane normal thereto at its distal end and being parallel with coils of said spring and further adapted with means configured in the form of a loop for attaching the cable by means of the cable stop, thereby permitting rotation of said rotation arm 180° without impinging upon the interior walls of the tubing,
(c) a trigger affixed to the interior wall of the tubing by means of an eye screw which holds the rotation arm of the torsion spring when the snare is in a set position, and
(d) a cable guide through which the snare cable passes and upon which the snare catches, so preventing the snare loop from being pulled into the tubing while causing the snare loop to be closed around the leg of the animal as the result of the downward motion of the rotation arm pulling the cable snare.

5,309,668
DEVICE FOR TRAPPING INSECTS
F. W. Barton, Rte. 3 Box 439 Goodsprings Rd., Aiken, S.C. 29801
Filed Dec. 15, 1992, Ser. No. 990,427
Int. Cl.[5] A01M *1/10*
U.S. Cl. 43—121 **20 Claims**



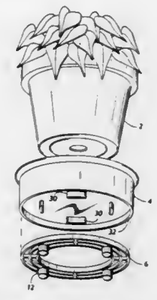
1. A device made by a process, said device for use with a container and for trapping insects, said process comprising the steps of:
forming a material into a shape having a first portion and a second portion, said first portion being approximately trapezoidal wherein said first portion has two parallel sides and two non-parallel sides and wherein one of said parallel sides is a long side, said second portion being approximately rectangular and having sides wherein one of said sides is a short side, said short side of said second portion being joined to said long side of said first portion;
forming a truncated cone having a large open end and a small open end from said first portion of said material, said second portion extending from said large open end of said truncated cone; and
fastening said cone near said small open end.

5,309,669
EXTERMINATION SYSTEM
John C. Jackson, Lake Worth, Fla., assignor to Insider Products, Inc., Lake Worth, Fla.
Continuation-in-part of Ser. No. 52,290, May 21, 1987, Pat. No. 4,823,505, and Ser. No. 343,009, Apr. 25, 1989, Pat. No. 5,058,312. This application Oct. 15, 1991, Ser. No. 777,699
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] A01M *7/00, 1/20*
U.S. Cl. 43—124 **2 Claims**



1. An extermination system for cavities substantially enclosed by walls and the like, comprising:
a fitting adapted to be positioned in an aperture in the wall, the fitting extending substantially to the wall cavity, the fitting having an interior fitting passage and comprising flexible fins for retaining said fitting in said wall aperture;
an aerosol insecticide supply can with an aerosol valve, and a spray tube adapted for detachable connection to an outlet portion of the spray valve, said spray tube being adapted for insertion into the fitting passage, whereby the spray tube can be connected to the aerosol can and positioned in the outlet of the fitting passage to permit the pressurized injection of an insecticide into the wall cavity.

5,309,670
PLANT STAND
Charles L. Bates, 1598 Hatteras Sound, Mt. Pleasant, S.C. 29464
Filed Oct. 27, 1992, Ser. No. 967,165
Int. Cl.[5] A01G *9/04*
U.S. Cl. 47—71 **10 Claims**



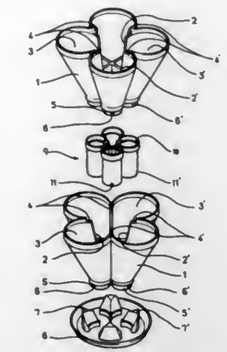
1. A potted plant stand, comprising:
a. a dish having a generally planar bottom surface and having a side wall extending above and vertically below a perimeter of said bottom surface so as to form a continuous wall about the perimeter which is generally perpendicular to said bottom surface, and having a plurality of lugs which are each located an equal distance from said wall and which extend vertically downward from said bottom surface; and
b. a nominally planar base having a void in a center thereof, wherein said base is located within said bottom surface of said dish between said wall and said lugs wherein said lugs extend through said void to retain said base within said dish.

5,309,671
STACK TYPE PLANT-POTS
Bok K. Byun, 949-1 Sibeung-Dong, Kuro-Ku, Seoul, Rep. of Korea
Filed May 13, 1992, Ser. No. 882,019
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—83 **10 Claims**

1. A stack type planter comprising:
a plurality of plant pot portions, each of said plurality of plant pot portions having an upper peripheral configuration larger than a lower peripheral configuration thereof and edges which are joined to edges of adjacent plant pot portions, said edges and said peripheral portions each defining an interior portion of said planter;
partition means for vertically separating interior portions of said plant pot portions from each other, said partition means intersecting said joined edges of said plant pot portions;
upper stepped portions formed at an upper edge of said partition means; and
a lower extension depending vertically from a bottom peripheral end of each of said plurality of plant pot portions, said lower extension including notched areas formed

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therein and diagonally offset from the joined edges of said plant pot portions;



wherein the notch of said lower extension engagingly mates with the upper stepped portion of said partition means for stacking said planter with an identical planter.

5,309,672

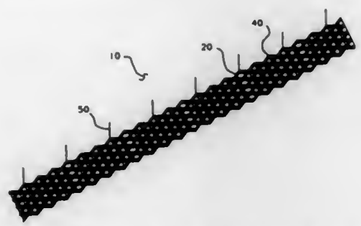
SUBMERGED PLATFORM STRUCTURE FOR OPEN OCEAN MACROALGAL FARM SYSTEMS

Dwain F. Spencer, Half Moon Bay, and Larry L. Lewis, San Rafael, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 5, 1992, Ser. No. 956,539

Int. Cl.[5] A01G *7/00*; A01H *13/00*; A01K *6/00*; E02B *3/06*

U.S. Cl. 47—1.4 **7 Claims**



1. A waterborne macroalgal farm structure for the attachment of macroalgal plants comprising a three dimensional truss formed from:

a. flexible, hollow tubes;

b. nodes abutting each end of said tubes;

c. rods contained within said tubes and attached to said nodes in an adjustable length method to tension said rods and compress said tubes, wherein macroalgal plants are attached to said tubes;

whereby connection of said tubes, rods and nodes forms a three dimensional waterborne platform.

5,309,673

PLANT CARRIER

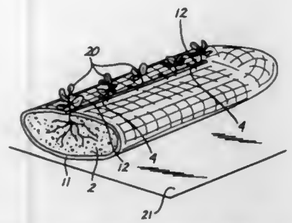
Hermann Stöver; Alfons Meyer, both of Twistringen; Hans Stender, Schermbeck, and Heinrich G. Hengstermann, Borken, all of Fed. Rep. of Germany, assignors to Blumen. Stender and MST Dränbedarf GmbH, both of Fed. Rep. of Germany

Filed May 1, 1992, Ser. No. 877,648

Claims priority, application Fed. Rep. of Germany, May 2, 1991, 4114294

Int. Cl.[5] A01G *9/00*

U.S. Cl. 47—59 **12 Claims**



1. Plant carrier for cultivating plants, seedlings, seeds, or the like, comprising:

at least one layer of plant-growing material;

an upper layer of natural fiber;

a lower layer of natural fiber, said upper and lower layers sandwiching the plant-growing layer in between;

natural fiber layer means combining the upper and lower fiber layers to produce a hose-like cover; and

thread means for stitching and sewing the upper and lower natural fiber layers together through the plant-growing layer.

5,309,674

PARKING PROHIBITION DEVICE

Clemens Welbel, Chemin de Corgeon 6, CH-1095 Lutry, Switzerland

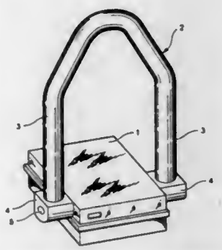
PCT No. PCT/CH91/00202, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/06247, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 24, 1991, Ser. No. 859,315

Claims priority, application Switzerland, Oct. 2, 1990, 3167/90

Int. Cl.[5] E01F *13/00*

U.S. Cl. 49—49 **15 Claims**



1. A parking prohibition device, comprising a case enclosing a shaft carrying a movable part having at least one leg, which the rotation of the shaft causes to pass from a substantially horizontal position to a substantially vertical position and vice-versa, and further comprising means allowing the forced lowering of the movable part in case of violation while the shaft remains immobilized in the position which it occupies

when the movable part is in a vertical position and said means further ensuring the return of the movable part to the vertical position, these means being formed so that the movable part acts like a crutch forming obstruction to the withdrawal of a violating vehicle that, in an extreme case, lifts an offending vehicle at the time of its withdrawal without rotating the shaft and without damage to the device.

5,309,675

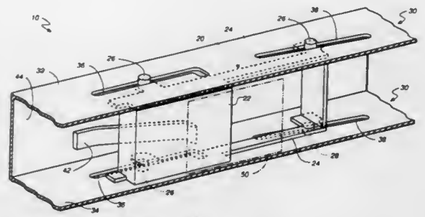
WINDOW STRUCTURE WITH A SLIDING DOOR

David Shen, Cupertino, and Robert A. Howard, Mountain View, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 31, 1993, Ser. No. 41,394

Int. Cl.[5] E05D *15/10*

U.S. Cl. 49—214 **9 Claims**



1. A window structure comprising:

a wall having a window;

a door structure which is slidable between an open position and a closed position, said door structure at said open position being parallel and adjacent to said wall and leaving said window open, and said door structure at said closed position covering said window completely;

a first pin and a second pin attached to said door structure;

a guide structure affixed to said wall, said guide structure having a first elongated passageway and a second elongated passageway, said first and second pins being inside and constrained to move between said open and closed positions inside and along said first and second passageways, respectively; and

biasing means for exerting a biasing force on said door structure so as to keep said window closed when said door structure is at said closed position and to prevent said door structure from starting to move from said open position when said door structure is in said open position.

5,309,676

BALANCED DOOR CLOSING APPARATUS

Horst J. Appelmann, Pickering, and Edmund Dee, Scarborough, both of Canada, assignors to C. J. Rush A Division Of Derlan Manufacturing Inc., Agincourt, Canada

Filed Jul. 23, 1992, Ser. No. 917,646

Int. Cl.[5] E05D *15/28*

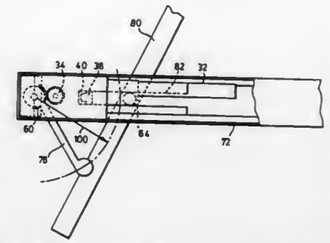
U.S. Cl. 49—253 **10 Claims**

1. A door closing apparatus for use in association with a balanced door having a door frame comprising a header, a base, and a pair of side jambs to define the door opening, one of said jambs having a hinge shaft disposed therein, and a door mounted in said door opening on an upper door pivot arm and a lower door pivot arm extending from said hinge shaft, said door having at least one guide roller guided by said frame, said door closing apparatus being mounted between the door and the frame, and comprising:

a door closer body having an operative element extending from one end of said body;

a first gear means having a first effective diameter connected to said operative element; and

a second gear means having a second effective diameter mounted on an end of said hinge shaft;



wherein said door closer body is mounted adjacent said hinge shaft and said first gear means engages said second gear means to operatively connect said door closer to said door.

5,309,677

ELECTRICALLY OPERATED VEHICLE WINDOW

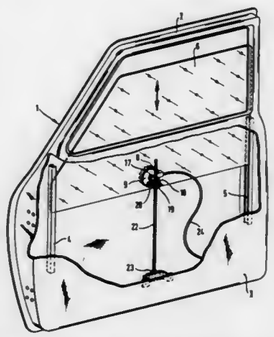
Heinz Kunert, Cologne, and Hans Ohlenforst, Aachen, both of Fed. Rep. of Germany, assignors to Saint Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 781,474, Oct. 23, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 82,330

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1990, 4033949

Int. Cl.[5] E05F *15/08*

U.S. Cl. 49—349 **13 Claims**



1. A motor driven vehicle window assembly comprising:

a transparent pane having an outer periphery mounted and adapted for vertical sliding motion in a window frame;

an aperture in said transparent pane at a location spaced from the outer periphery thereof;

electric motor drive means mounted at least partially within said aperture in the transparent pane to reduce the overall space requirements for the drive means; and

transmission means mounted within the vehicle wall and operatively associated with the drive means for causing the transparent pane to be raised or lowered in the window frame when the drive means is energized.

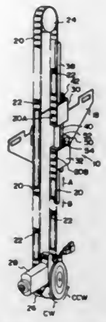
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,678

TENSION ADJUSTING APPARATUS

Tadashi Adachi, Aichi, Japan, assignor to Asmo Co., Ltd., Japan

Filed Jan. 21, 1992, Ser. No. 824,242
Claims priority, application Japan, Apr. 22, 1991, 3-090618
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 18 Claims



1. A tension adjusting apparatus for applying tension to an elongated member having a first end and a second end that are connected together such that the elongated member is substantially in the shape of a loop and is movable along a locus defined by the loop, comprising:

coupling means for movably coupling the first end of the elongated member to the second end of the elongated member such that said first end and said second end may move toward each other and/or apart in a longitudinal direction of the elongated member; and

urging means, retained by said coupling means, for urging at least one of said first end and said second end of said elongated member toward the other end, said urging means producing an urging force in order to urge at least one of said first and second ends of said elongated member;

wherein said coupling means comprises a pair of fastening members to which the first end and the second end of said elongated member are fastened, respectively, and an elongated supporting member coupled to said fastening members such that said fastening members are movable with respect to said supporting member in a direction of elongation of said supporting member and

wherein one of said fastening members is provide with a stopper member extending therefrom, said supporting member includes a protruding portion, and said urging means is disposed between a portion of said stopper member and said protruding portion of said supporting member such that said urging means urges said one of said fastening members, via the stopper member, toward the other of said fastening members.

5,309,679

REGULATING MECHANISM FOR MOTOR VEHICLE WINDOW

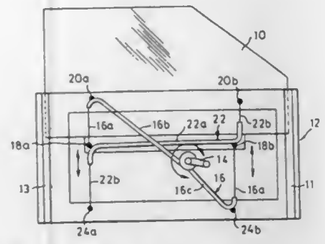
Marcus J. S. Ward, Billericay, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 773,862, Oct. 15, 1991, abandoned.
This application Jun. 22, 1993, Ser. No. 80,990
Claims priority, application United Kingdom, Apr. 15, 1989, 8908603
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 1 Claim

1. A regulating system for a window having generally vertical front and rear sides and positioned in a vehicle door for movement generally vertical with respect to a pair of longitudinally spaced window guides receiving the front and rear sides of the window; the regulating system comprising:

crank means reversibly rotatably mounted on the vehicle door and having a cable having a first end fixedly secured to the front side of the window and a second end fixedly secured to the rear side of the window, rotation of the crank means being operative to selectively pull the front or the rear of the window upon corresponding rotation of the crank means and;

a single Bowden cable having an outer sheath and an inner core slidably movable with respect to the sheath, the core



having one end fixedly secured to an upper portion of the vehicle door longitudinally proximate the front side of the window and another end fixedly secured to a lower portion of the vehicle door longitudinally proximate the rear side of the window and the sheath is fixedly secured to the window;

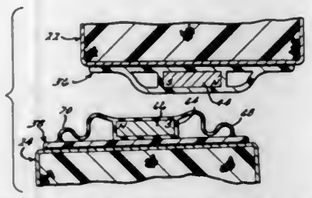
whereby rotation of the crank is operative to selectively raise or lower the window through exertion of the tension from the cable on the front or the rear edge of the window and the Bowden cable is operative guide the generally vertical movement of the window.

5,309,680

MAGNETIC SEAL FOR REFRIGERATOR HAVING DOUBLE DOORS

Lowell M. Kiel, Seymour, Ind., assignor to The Standard Products Company, Cleveland, Ohio

Filed Sep. 14, 1992, Ser. No. 944,498
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—478.1 11 Claims



1. A magnetic seal for releasably sealing a first and second door, said doors each being mounted to a thermally insulated cabinet by a first and second hinge for movement between a closed position and an open position, comprising:

a first retainer gasket extending in a lateral and longitudinal direction being affixed to said first door and enclosing a first magnet extending in said longitudinal direction, said first magnet being surrounded by said first retainer gasket, said first retainer gasket and said first magnet being affixed in a stationary position relative to said first door;

a second retainer gasket extending in said lateral and longitudinal directions being affixed to said second door and having a sleeve surrounding a longitudinally extending said second magnet and a laterally extending base portion, said sleeve being mounted to said base by first and second flexible webs so as to allow said sleeve to move in a transverse direction;

said retainer gaskets and magnets being arranged in opposing and proximate relationship when said doors are in said closed position, said retainer gaskets and magnets being spaced apart when said doors are in said open position;

said first and second magnets being arranged so as to impose an attracting force on each other and thereby to move said second magnet transversely toward said first magnet when said doors are in said closed position, thereby releasably sealing said door in said closed position; and

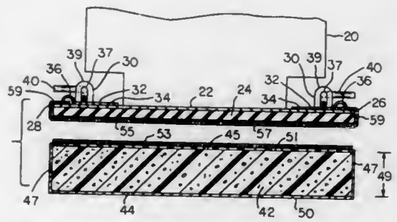
said magnets being arranged so as to impose substantially no force on each other when said doors are in said open position and so as to impose a repelling force on each other and to move said second magnet transversely inward toward said second door when said first door in said closed position and said second door is an intermediate position between said closed and said open position.

5,309,681

CONFORMABLE SANDING ASSEMBLY

Christopher Cheney, 51 Lawrence La., and Bryan Sharlow, 2 Pamela Dr., both of Portsmouth, N.H. 03801

Continuation-in-part of Ser. No. 733,340, Jul. 22, 1991, Pat. No. 5,220,752. This application Jun. 21, 1993, Ser. No. 80,002
Int. Cl.[5] B24B *23/00;* B24D *9/00, 11/00*
U.S. Cl. 51—170 R 10 Claims



1. A conformable sanding assembly, comprising:

a block formed of a foamed elastomeric material;

said block having a predetermined shape, and being flexible and deformable, in response to the application of localized pressures thereon, but being elastically returnable to its predetermined shape, when such localized pressures are withdrawn;

said block having two parallel flat major faces, and four connecting side edges, extending between said flat faces;

said block having a thickness dimension normal to its flat major faces;

a sheet of abrasive material secured to one of the major faces of said block;

said abrasive sheet being coextensive with said one major face;

a stiff panel secured to the other major face of said block;

said stiff panel being coextensive with said other major face;

a first sheet of hook and loop attachment material bonded to said stiff panel;

a second mating sheet of hook and loop attachment material having a front fibrous surface adapted to detachably mate with said first sheet of hook and loop attachment material; and

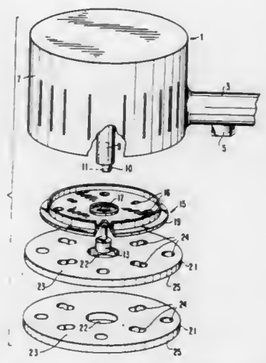
said second mating sheet of hook and loop attachment material having a back surface, and a film of pressure-sensitive adhesive thereon, whereby said second sheet of hook and loop material can be adhesively attached to a flat movable work surface of an orbital sanding machine.

5,309,682

HAND HELD POWER TOOL WITH WORKING DISC

Arnulf Gutknecht, Filderstadt; Guenther Berger, Notzingen; Manfred-Otto Staebler, Waldenbuch-Glashütte; Manfred-Wilhelm Staebler, Leinfelden-Echterdingen; Claus Kemmner, Aichtal-Neuenhaus; Albert Kleider, Schwaebisch Hall, and Martin Schmideder, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 661,851, Feb. 27, 1991, abandoned.
This application Aug. 13, 1992, Ser. No. 929,304
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1990, 4009876
Int. Cl.[5] B24D *17/00*
U.S. Cl. 51—358 20 Claims



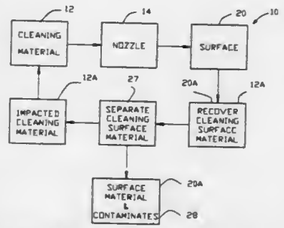
1. A hand held power tool comprising a working disc; a working sheet held on said working disc by a burdock connection, said working disc having a burdock surface; and an intermediate pad held on said burdock surface of said working disc, said intermediate pad having a first side provided with a velour coating and releasably connectable with said burdock surface of said working working disc and a second side releasably connectable with said working sheet, so that said working sheet is directly arranged on said releasably connectable intermediate pad and indirectly on said working disc and said intermediate pad is non-permanently and interchangeably connectable with said working disc and said working sheet.

5,309,683

RECOVERY SYSTEM

Wayne B. Hockett, Tampa, Fla., assignor to Sandroid Systems, Inc., Tampa, Fla.

Filed Jan. 28, 1992, Ser. No. 827,019
Int. Cl.[5] B24C *9/00, 3/06, 1/00*
U.S. Cl. 51—424 35 Claims



1. An apparatus for recovering a cleaning material and a surface material with a vacuum source, the surface material

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being removed from a surface by projecting the cleaning material from a nozzle to impact upon the surface, comprising in combination:

a housing having a housing opening;

housing mounting means for mounting said housing relative to the nozzle for enabling the nozzle to project the cleaning material through said housing opening to impact onto the surface;

fluid seal means defining a fluid sealing element;

fluid seal mounting means for mounting said fluid sealing element about said housing opening;

said fluid seal means being connected to a fluid pressure source for discharging a fluid under pressure through said fluid sealing element to provide a seal between said housing opening and the surface; and

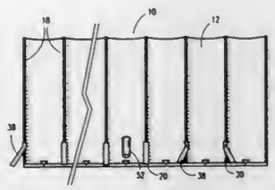
vacuum connection means for connecting the vacuum source to said housing for withdrawing the impacted cleaning material and the surface material removed from the surface from the housing.

5,309,684

MULTIPURPOSE DRY STORAGE SYSTEM

Shmuel Davidovici, Rehov Oranim 43/A, Tivon 36000, Israel

Filed Nov. 20, 1991, Ser. No. 795,138
Int. Cl.[5] E04H *15/20*
U.S. Cl. 52—2.17 **9 Claims**



1. A dry storage unit for use in storing an item, comprising:

(a) a tubular protective member made of a flexible material; and

(b) support elements capable of giving said protective member its desired shape, each of said support elements including a pair of support members detachably connected to each other and to an adjoining support element through a connecting member, said connecting member including:

(i) a first cylindrical section capable of detachably connecting at one or both of its axial ends to an adjoining connecting member or other connecting device, said first cylindrical section having an opening on its wall;

(ii) a transversely oriented first attachment member attached to said first cylindrical section, said first attachment member capable of detachably connecting to one of said pair of support members;

(iii) a second cylindrical section of smaller outer diameter than the inner diameter of said first cylindrical section, said second cylindrical section being rotatably mounted inside said first cylindrical section; and

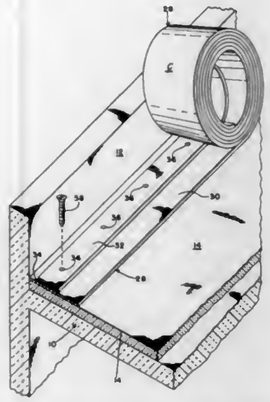
(iv) a transversely oriented second attachment member attached to said second cylindrical section at a point corresponding to said opening in said first cylindrical section, said second attachment member capable of detachably connecting to the one of said pair of support members.

5,309,685

ROOF PERIMETER COMPOSITE SECURING ELEMENT AND METHOD OF INSTALLING

Juergen O. Rathgeber, Arlington Heights; Frederick A. Kish, Lockport; Syed R. Hasan, and Craig A. Hindman, both of Palatine, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 5, 1992, Ser. No. 831,412
Int. Cl.[5] E04D *1/36*
U.S. Cl. 52—58 **16 Claims**



1. A composite roof securement element, comprising:

a flexible membrane of elastomeric material having a first surface thereof engaged with a roof substrate;

a flexible batten strip inseparably bonded to a second surface of said flexible membrane so as to extend substantially parallel to and atop said flexible membrane; and

a plurality of openings defined through said batten strip at uniformly spaced points along its length for receiving fasteners so as to secure said composite element to said roof substrate.

5,309,686

WORK SPACE PARTITION SYSTEM

Robert A. Underwood, Huntingburg, and Jay M. Henriott, Jasper, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Feb. 19, 1992, Ser. No. 837,725
Int. Cl.[5] E04H *6/06;* **E04B** *1/346*
U.S. Cl. 52—29 **14 Claims**

1. A work space partition system for defining a work area, said system comprising:

an existing permanent wall standing substantially vertical relative to a floor;

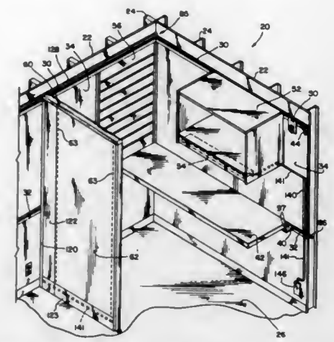
a first elongate mounting track attached generally horizontally to said wall;

a second elongate mounting track attached generally horizontally on said wall below said first track;

a wall tile is disposed between said tracks, said wall tile having vertical edges;

a movable office partition panel supported by said floor, said panel attached substantially perpendicular to at least one

said track at a variably selectable position therealong for defining and partitioning said work area; and



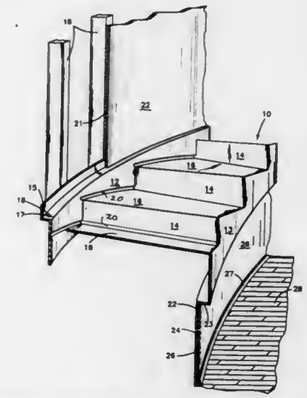
at least one modular furniture unit mounted to and supported by one of said track and said panel.

5,309,687

STAIRCASE PREFORM WITH WOOD TRIM

Richard Walston, 131 Nut Plains Rd., Guilford, Conn. 06437

Filed Aug. 26, 1992, Ser. No. 936,039
Int. Cl.[5] E04F *11/10*
U.S. Cl. 52—187 **11 Claims**



1. A unitary, seamless one piece curved stairway comprising:

a pair of spaced, curved, generally parallel stringer means extending vertically;

at least two tread means spaced vertically along and extending between the stringer means and formed integrally therewith whereby the at least two tread means follow the curve of the stringer means to define vertical steps; and

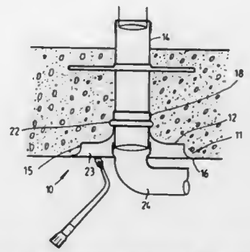
at least one riser means extending between the at least two tread means and the stringer means and formed integrally with the tread means and the stringer means wherein the stringer means, the tread means and the riser means form a unitary, seamless one piece curved stairway.

5,309,688

CONCRETE SLAB PENETRATION UNIT FOR PIPES

Paul Robertson, Lavel 15 Corporate Centre One Cnr Bundall R D2 Slayter Ave., Surfers Paradise, Australia

PCT No. PCT/AU90/00090, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO90/10169, PCT Pub. Date Sep. 7, 1990
PCT Filed Mar. 5, 1990, Ser. No. 752,499
Claims priority, application Australia, Mar. 3, 1989, PJ3022; Jun. 29, 1989, PJ4977; Sep. 29, 1989, PJ6618
Int. Cl.[5] F16C *5/00*
U.S. Cl. 52—220.8 **19 Claims**



1. A penetration assembly including a penetration unit adapted to be embedded in a slab of settable material, and a first tubular service line or pipe, said first service line or pipe being adapted to be connected to a second tubular service line or pipe, said first and second tubular service lines or pipe having complementary coupling means at their ends whereby said first and second service lines or pipes may be interconnected, said penetration unit including:

a hollow housing, said housing being adapted to be disposed within said slab of settable material adjacent one side thereof, said housing having:

first and second opposite ends, a first opening at said first end of said housing for receiving said first service line or pipe therethrough,

a second opening at said second end of said housing, said second opening being larger than said first opening,

side wall means between said first and second ends of said housing means and surrounding a hollow space within said housing;

flange means at said second end of said housing surrounding said second opening whereby said housing may be secured to formwork defining said one side of said slab during the formation thereof,

said first service line or pipe extending into said housing through said first opening and having an end terminating within said hollow space of said housing adjacent said second opening such that an open space surrounds said end of said first service line or pipe, said end of said first service line or pipe being adapted to be connected to said second said service line or pipe via said complementary coupling means in said open space.

5,309,689

SLIDE ON COVER FOR FRAMING SYSTEM

Bruce A. Croissant, Alpharetta, Ga., assignor to Kawneer Company, Inc., Norcross, Ga.

Filed Jun. 23, 1992, Ser. No. 902,934
Int. Cl.[5] E04H *1/00*
U.S. Cl. 52—235 **10 Claims**

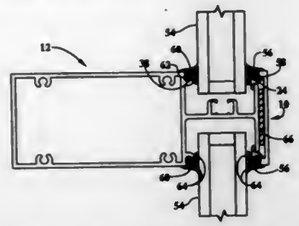
1. A framing system comprising:

a frame member having a longitudinal axis, an interior portion, an exterior portion, and at least one glazing pocket defined between said interior and exterior portions, said glazing pocket being configured to receive a lateral edge of a glazing panel therewithin; and

a cover having a longitudinal axis and being configured to

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engage said exterior portion of said frame member by relatively sliding said cover and said frame member along their respective longitudinal axes, said cover having gasket mounting means disposed on a lateral face thereof and configured to engage a glazing gasket for bearing against an exterior marginal face of a glazing panel received within said glazing pocket;



whereby a glazing gasket which engages said gasket mounting means and bears against an exterior marginal edge of a glazing panel received within said glazing pocket exerts an outward force on said cover which biases said cover into snug engagement with said exterior portion of said frame member, thereby to secure said cover with respect to said frame member.

5,309,690

COMPOSITE PANEL

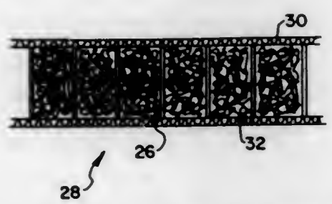
Michael W. Symons, Pretoria, South Africa, assignor to Plascon Technologies (Proprietary) Limited, Transvaal, South Africa

Filed Apr. 22, 1993, Ser. No. 50,778

Claims priority, application South Africa, Apr. 22, 1992, 92/2902

Int. Cl.[5] E04C *1/00*

U.S. Cl. 52—309.9 **12 Claims**



1. A composite panel comprises first and second sheets of a natural fibre material, each sheet having been impregnated with a liquid composition comprising a thermosetting resin, an extending liquid for the thermosetting resin and a catalyst for the thermosetting resin, the thermosetting resin having being polymerized, a cellular core of a natural fibre material sandwiched between and adhered to the first and second sheets, and a filler composition located in all of the cells of the core, the filler composition comprising a mixture of an inorganic insulating material and a material which releases water at elevated temperatures, in dry granular form.

5,309,691

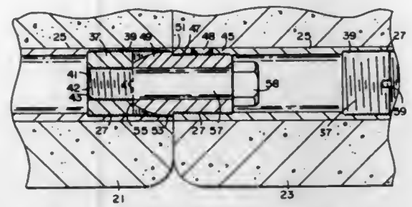
SHEAR CONNECTED STRUCTURAL UNITS

Wilbur E. Tolliver, 6371 Kuttshill, NE., Rockford, Mich. 49341, and Larry R. Magnuson, 5586 Grand Haven Rd., Muskegon, Mich. 49441

Filed Feb. 26, 1992, Ser. No. 842,086

Int. Cl.[5] E04C *5/18*

U.S. Cl. 52—583.1 **14 Claims**



1. A method for assembling concrete units together comprising the following steps:

providing first and second precast concrete units each with a plurality of spaced longitudinally aligned tubular members therein;

providing a guide member projecting from one end of each of said tubular members in said first precast concrete unit, each of said guide members having a first portion mounted in its associates said tubular member to fix said guide member against lateral movement with respect to said first precast concrete unit, and a second portion having a sloping surface to facilitate entry into a tubular member in said second precast concrete unit, said guide member having an axial aperture therein;

inserting an insert member into an end of each of said tubular members in said second precast concrete unit, each of said insert members having means for engaging a fastener member inserted therein;

bringing said first and second concrete units together so that said second portion of each of said guide members in said first concrete unit is inserted into the end of each of said tubular members having said insert member therein in said second concrete unit;

passing a fastener member through said axial aperture in said guide member into said engaging means in said insert member; and

securing said fastener member in said insert member to join said first and second precast concrete units together.

5,309,692

METHOD FOR INJECTING REPAIRING AGENT INTO CONCRETE CONSTRUCTION

Yuichiro Hayashi; Noboru Naito, and Osamu Ito, all of Sakata, Japan, assignors to Nihon Mente Kaihatsu Kabushiki Kaisha, Sakata, Japan

Continuation of Ser. No. 714,943, Jun. 13, 1991, abandoned. This application May 5, 1993, Ser. No. 56,933

Claims priority, application Japan, Jun. 30, 1990, 2-171381; Dec. 14, 1990, 2-410637

Int. Cl.[5] E04G *21/24*

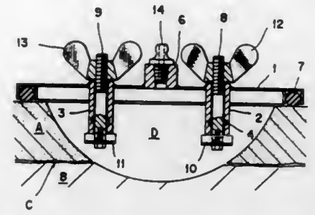
U.S. Cl. 52—743 **6 Claims**

1. A method for injecting a concrete repairing agent into a concrete construction comprising the steps of:

forming an injection groove which is arcuate in cross-section on an outer surface of the concrete construction, the arcuate groove having a first width, a length and a depth, said length being substantially larger than said first width;

placing a base member of an injection plug device which injects the repairing agent into the concrete construction onto the outer surface of the concrete construction and over an entire open portion of the injection groove;

fixing the injection plug device to the arcuate injection groove while sealingly covering the arcuate injection groove with said base member by attaching said injection device to walls of the injection groove with engageable means by inserting said engageable means into the injection groove and subsequently deforming the engageable means with means for deformation, the engageable means



having a second width, which is smaller than the first width, before deformation thereof by said deforming means and having a third width, which is larger than the first width, after deformation thereof by said deforming means; and

injecting the repairing agent, under pressure, into the injection groove through the injection plug device.

5,309,693

FRAME STRUCTURE

Lewis R. Harding, 55 Waratah Avenue, Dalkeith, Western Australia, Australia

Division of Ser. No. 831,072, Feb. 4, 1992, Pat. No. 5,159,790, which is a continuation of Ser. No. 505,417, Apr. 6, 1990, abandoned. This application Aug. 12, 1992, Ser. No. 929,263

Int. Cl.[5] E04B *1/32*; E04C *3/10*; E04G *21/14*

U.S. Cl. 52—745.08 **13 Claims**



1. A method of erecting a frame structure comprising the steps of positioning end to end first and second rigid frame sections and at least one rigid intermediate frame section positioned between said first and second rigid frame sections, pivotally connected together at their adjoining ends, in a generally horizontal relationship; guiding a cable through cable guideways located upon each rigid frame section, spacing at least one of the cable guideways apart from the rigid frame sections and supporting each cable guideway which is spaced apart from the frame sections on an arm mounted on, and extending downwardly of, the rigid frame sections; securing one end of said cable to said first rigid frame section; and, tensioning the other end of said cable at the second rigid frame section, thereby effecting relative pivotal movement between adjacent pivotally adjoined frame sections, raising said intermediate section off of the ground, and erecting the frame structure.

5,309,694

DEVICE FOR USE WITH A CLOSURE MAGAZINE FOR INTRODUCING CLOSURES INTO A CLOSURE CHANNEL

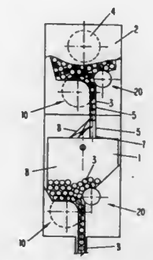
Herbert Bernhard, Wolfsheim, Fed. Rep. of Germany, assignor to Seitz Enzinger Noll Machinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 927,171

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126193; Sep. 16, 1991, 4130719; Dec. 23, 1991, 4142785

Int. Cl.[5] B65G *47/24, 47/80*

U.S. Cl. 53—64 **36 Claims**



1. A device, for use with a closure magazine of a capping machine, for introducing closures into a closure channel from a chamber that accommodates a plurality of said closures, with said closures being crown corks of ferromagnetic material and having a cap-like shape with a closed side and an open side, and with said closures being conducted in said closure channel in a successive manner and in single file, said device further comprising:

at least one magnetic conveying means that, at least at a transition formed partially in said chamber and partially in an entry region of said closure channel, exerts via a moving magnetic field, a conveying effect upon said closures in a first conveying direction for introducing said closures into said closure channel, whereby said magnetic field moves along a path of movement that is curved about an axis, and said chamber at least at said transition, is bounded by at least one first abutment and guide surface against which said open or said closed sides of said closure rest, with said first abutment and guide surface being disposed in a plane that extends perpendicular to said axis of said path of movement of said magnetic field, whereby said plane of said first abutment and guide surface as well as a plane of said path of movement of said magnetic field are disposed at an angle relative to a horizontal direction; and

an element that is rotatably driven about said axis of said path of movement of said magnetic field and is in the form of one of the group consisting of disks, rings, wheels, and drums, with said element forming said first abutment and guide surface, and with said element, for providing said magnetic field, carrying at least one magnet, preferably at least one permanent magnet, wherein said plane of said first abutment or guide surface and of said path of movement of said magnetic field forms with said horizontal direction an angle that is less than 90°, preferably an angle between approximately 55° and 65°, and preferably about 60°; wherein said transition is provided at an upper side of said chamber as viewed relative to said angle of inclination of said first abutment and guide surface; wherein said rotatable element is a drum that rotates about an axis thereof and forms said chamber, with said drum being provided with said first abutment and guide surface and said at least one magnet; wherein said path of movement of said at least one magnet is disposed within a second abutment and guide surface against which rims of said

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closures rest, with said second abutment and guide surface having the shape of a circular ring and surrounding said axis of said drum; wherein at said transition, said closure channel leads tangentially away from said second abutment and guide surface; wherein said drum has a base that is bounded by a plate or disk that rotates with said drum; and wherein at a periphery of said drum there is provided an annular channel that surrounds said axis of said drum, is open radially inwardly into said chamber, and is bounded radially outwardly by said second abutment and guide surface.

5,309,695

PACKET BANDING DEVICE

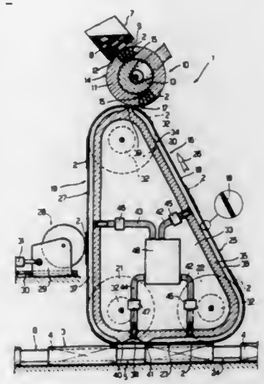
Fabio Frabetti, and Alessandro Minarelli, both of Bologna, Italy, assignors to G. D Societa' per Azioni, Bologna, Italy

Filed Oct. 8, 1992, Ser. No. 957,814

Claims priority, application Italy, Oct. 21, 1991, B091A 000385

Int. Cl.[5] B65B *57/12*

U.S. Cl. 53—136.1 **9 Claims**



1. A device for applying adhesive bands to substantially parallelepiped packets, said device comprising a first conveyor for feeding said packets at a predetermined frequency and speed along a first path; a second conveyor for feeding said bands, at said frequency and speed, along a given portion of said first path; a station wherein the bands are loaded onto said second conveyor; a device for feeding the bands, at said frequency, to said loading station; and a band gumming device; said second conveyor defining a second path, said second path being annular and comprising a first portion extending along said given portion of the first path and having an input end and an output end, and a second portion and third portion arranged in series and connecting said output end to said input end; the second conveyor providing for feeding the bands along the second path at said speed and frequency; the loading station being located between the second and third portions of the second path; the gumming device being located along the third portion of the second path; the second conveyor being a suction conveyor and comprising at least a first suction chamber extending along the first and second portions of the second path through said output end and up to said loading station; and a second suction chamber extending along the third portion of the second path from the loading station to said input end; and suction means being provided for maintaining a constant vacuum in the second chamber for feeding bands from the loading station to the input end and said suction means providing a selective vacuum in the first chamber for selectively feeding bands through the output end and up to said loading station, whereby bands may be recirculated through said loading station.

5,309,696

APPARATUS FOR TRANSPORTING CLOSING CAPS IN VESSEL CLOSING MACHINES

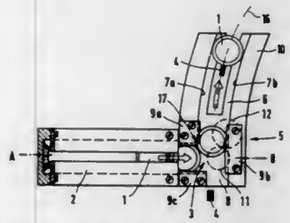
Gerhard Heudecker, Pentling-Poign, and Georg Setz, Hauzendorf, both of Fed. Rep. of Germany, assignors to Krones Ag Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Continuation of Ser. No. 862,713, Apr. 3, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 122,183

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 9104140

Int. Cl.[5] B67B *3/064;* **B65B** *7/28*

U.S. Cl. 53—306 **14 Claims**



1. In a vessel closing apparatus having means for transporting closing caps to a vessel closing cap position in said vessel closing apparatus from a closing cap supply source, said closing caps having top, bottom and side surfaces, said transpiration means including a conveying chute for feeding said closing caps from said source to a discharge position at a discharge end of the chute in line and in side-by-side relationship and engaging mans moving in a path of travel adjacent the discharge end of the chute and transverse to the direction of discharge of said closing caps from said chute for engaging closing caps discharged from the chute and conveying them one at a time in said path to said vessel closing cap position, the improvement comprising a guide channel having a slide surface over which said closing caps can slide and a pair of spaced guide elements extending parallel to each other along opposite sides of said path of travel of the engaging means, said guide elements being spaced apart a distance slightly larger than the distance between opposite side surfaces of said closing caps, said guide channel having an entrance end adjacent the discharge end of said chute and guiding said closing caps for sliding movement only in said path of travel while they are being conveyed by the engaging means to the vessel closing cap position, and transfer means for transferring closing caps from the discharge position at the discharge end of the conveying chute one at a time to a holding position at least partly into said entrance end of the guide channel and between the guide elements thereof, said transfer means holding a closing cap in said holding position until the closing cap is engaged by the engaging means.

5,309,697

CHEWING GUM PACKAGING MACHINE

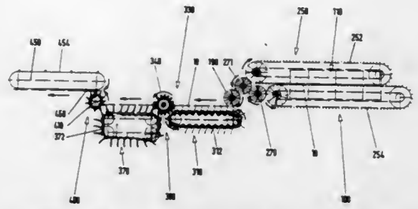
Heinz P. Hammacher, Bamberg, and Herbert Backes, Oberasbach, both of Fed. Rep. of Germany, assignors to PVT Piepenbrock Verpackungstechnik GmbH, Osnabruck, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 7,731

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202308

Int. Cl.[5] B65B *11/08, 11/18, 13/00*

U.S. Cl. 53—443 **28 Claims**



1. A method for supplying, wrapping and grouping individual flat, strip-like articles, comprising the steps of:

(a) supplying the individual articles along two continuous paths extending parallel to one another, with the individual articles on said paths having corresponding spacings relative to one another;

(b) thereafter continuously uniting the articles for movement along one path with mutual spacing between the individual articles;

(c) continuously individually wrapping the articles on said one path; and

(d) finally, on a further path, continuously combining the wrapped articles by retarding the movement of the articles to form groups of articles.

5,309,698

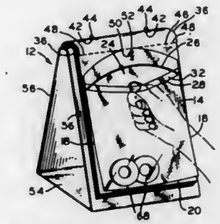
SNAP AND FILL PLASTIC FILM BAGS AND PROCESS

David C. Huseman, Brentwood, Tenn., assignor to Packaging Innovations, Inc., Nashville, Tenn.

Continuation of Ser. No. 536,528, Jun. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 513,013, Apr. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 296,439, Jan. 12, 1989, abandoned. This application Nov. 19, 1991, Ser. No. 795,288

Int. Cl.[5] B65B *43/26*

U.S. Cl. 53—468 **17 Claims**



1. A process for opening and placing product in a plastic film bag having a front wall and a back wall joined together and defining a bag cavity therebetween, an opening between the front and back walls leading to the bag cavity and complementary separable zipper profiles at the opening for opening and closing the bag, the profiles being joined to one another and the bag opening being closed, a lip attached to the front wall above the zipper profiles, a header portion attached to the back wall above the zipper profiles, a part of the header portion being supported on a support structure for carrying the bag, and a perforation on the header portion extending between header edges and located between the header portion supported part and the zipper profiles, said process comprising the steps of:

gripping a portion of the bag front wall lip;

pulling the lip away from the support structure and creating tension between the complementary zipper profiles substantially near the gripped portion of the lip and initially separating the complementary zipper profiles substantially near the gripped portion of the lip, wherein during this step of creating tension between the complementary zipper profiles substantially near the gripped portion, tension is also created in the header and along the perforation without causing separation of the bag and header thereat;

further causing the complementary zipper profiles to be separated by said pulling and by creating tension along the profiles being separated, thereby opening the bag;

further pulling the lip away from the support structure and causing tension between the gripped portion of the lip and generally along the lip and on the header edges and initially severing the bag from the header along the perforation at the header edges and thereafter along the remaining perforation thereby severing the bag from the header portion; and,

placing product in the bag cavity through the bag opening.

5,309,699

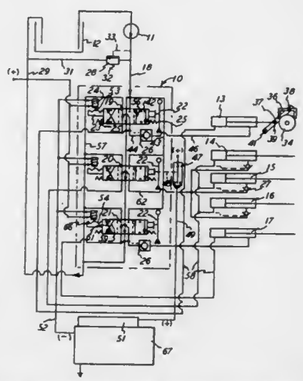
APPARATUS AND METHOD FOR ELEVATIONAL CONTROL OF A TRACTOR-SUPPORTED LAWN MOWER

Byron N. Ehn, Jr., Menomonee Falls, Wis., assignor to Textron Inc., Providence, R.I.

Filed Jul. 31, 1992, Ser. No. 922,239

Int. Cl.[5] A01D *47/00*

U.S. Cl. 56—10.2 **22 Claims**



1. A tractor type lawn mowing machine which has a mower and a hydraulic system for lifting said mower and with said mower-lifting system including a hydraulic valve and a hydraulic cylinder assembly and hydraulic hoses connected between said valve and said assembly, and said cylinder assembly being extendable between a ground-supported mower position and an elevated lifted mower transport position, a manual control connected to said hydraulic valve for actuating said valve and thereby positioning said mower between said ground-supported position and said transport position, mower-lifting sensor means operatively connected with said manual control for sensing when said system is actuated for lifting said mower, said sensor means having an operative sensing position

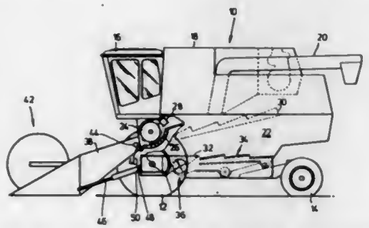
VOL 1162 ISS 2 MY 10 1994 UMI

arranged to operate in coordination with movement of said manual control at a position intermediate said ground-supported mower position and said elevated lifted mower position, automatically operative valve control means operatively connected with said sensor means for operating in response to said sensor means being in said operative sensing position for controlling a mower-lifting operating position of said valve to have said valve direct hydraulic fluid to said cylinder assembly for lifting said mower to said intermediate position.

5,309,700
HARVESTING MACHINE

Guenter Winkels, and Juergen Schlachter, both of Zweibrücken, Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Aug. 25, 1992, Ser. No. 935,497
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128475
Int. Cl.[5] A01D *45/00*; G01L *1/02*
U.S. Cl. 56—10.2 **2 Claims**



1. In a harvesting machine having a mobile main frame and a forward harvester attachment for removing crop from a field as the machine advances and pivotally connected to the main frame by a transverse pivot means for vertical adjustment of the attachment relative to the ground, the combination therewith of an improved control system for controlling the vertical adjustment of the attachment and comprising:

at least one hydraulic cylinder having one end connected to the attachment;

a transverse pivot pin means connecting the other end of the cylinder to the main frame so that extension and retraction of the cylinder respectively rises and lowers the attachment, the pivot pin means also comprising an electronic force sensor means operative to generate an electric signal in proportion to the radial force exerted on the pin means by the hydraulic cylinder resulting from the weight of the attachment supported by the cylinder;

a source of hydraulic pressure;

a solenoid actuated control valve means connected to the hydraulic pressure source and operative to control the extension of the hydraulic cylinder; and

an electronic control means operatively connected to the solenoid of the control valve means and the electronic force sensor means to actuate the control valve means in response to the electronic signal generated by the force sensor means.

5,309,701
LAWN MOWER AND EDGER CARRIAGE

Frank J. McGuerty, 525 W. El Norte Pkwy. #105, Escondido, Calif. 92026

Filed Jun. 28, 1993, Ser. No. 82,720
Int. Cl.[5] A01D *34/43, 34/64*
U.S. Cl. 56—16.9 **1 Claim**

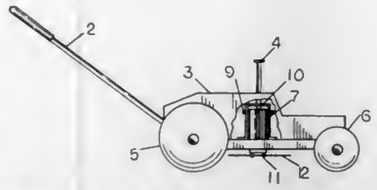
1. A wheeled lawn mower having an electric motor, powered by a storage battery, with rotating flexible cutting lines affixed thereto wherein the improvements comprise:

(a), a substantially rectangular lawn mower carriage supported by four wheels;

(b), a cross bar arranged between two of said wheels and having a handle bar assembly extending rearwardly and upwardly therefrom;

(c), a motor support structure having a horizontal pivot axis centrally located on said carriage;

(d), said motor support structure pivotally supporting a motor thereon, said motor being rotatable about said horizontal pivot axis from a vertical position to a transverse horizontal position;



(e), said motor having an axial power shaft extending away from said motor and terminating at an end remote from the motor;

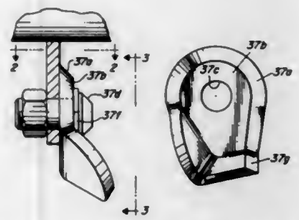
(f), a flexible line attachment fixture on said end; and,

(g), a hand lever, mounted on said motor parallel to said axial power shaft, extending in a direction opposite from said end of said power shaft, said hand lever being operable to rotate said motor from said vertical position to said transverse horizontal position.

5,309,702
CUTTING TOOTH

E. Cordell Lundahl, Providence, and Lanrel H. Jensen, Hyrum, both of Utah, assignors to Lundahl Research, Inc., Logan, Utah

Filed Aug. 20, 1992, Ser. No. 932,602
Int. Cl.[5] A01D *34/44*
U.S. Cl. 56—156 **6 Claims**

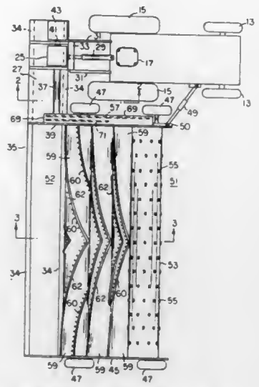


1. Teeth for attachment to the flighting of an auger on an auger cutter comprising; cutting teeth having a metal base plate of essentially horse shoe shape, including a circular portion and converging side portions, a hole towards the circular end of the base plate for attaching said teeth to auger flighting, said base plate having bevels on a major portion of a first flat surface, a portion of said bevels forming a cutting edge, said base plate being bent in the direction of said first flat surface, material added to the base plate on the converging side portion opposite the cutting edge connecting the bent portion and the side of the converging portion of said first flat surface opposite the cutting edge.

5,309,703
MOBILE APPARATUS FOR TURNING AND AERATING COMPOST MATERIALS IN A COMPOST WINDROW

William F. Brinton, Mt. Vernon, Me., assignor to Wood's End Research Laboratory, Inc., Mount Vernon, Me.

Filed Mar. 30, 1992, Ser. No. 860,427
Int. Cl.[5] A01D *78/00*
U.S. Cl. 56—370 **4 Claims**



1. A mobile apparatus for turning and recombining subdivided compost material in an elongated compost windrow, wherein the compost windrow has a length dimension, a width dimension, and a height dimension;

said apparatus being adapted for movement into and along the windrow in the direction of the windrow length;

said apparatus comprising a chute means having a centerline defining the movement axis of the apparatus;

said apparatus being operable so that the chute means is advanceable into and along a compost windrow with its movement axis coincident with the longitudinal centerline of the windrow;

said chute means having a leading end and a trailing end;

a transversely-extending rotary drum at the leading end of said chute means, said drum having teeth thereon for propelling compost materials upwardly over the drum as said drum penetrates the windrow;

a conveyor means located within said chute means;

said conveyor means having a leading end in near proximity to said rotary drum, and a trailing end at the trailing end of said chute means;

said conveyor means being inclined from its leading end to its trailing end so that compost materials are caused to move progressively upwardly as they are transported by the conveyor means from said rotary drum to the trailing end of the chute means;

a first power means for rotatably driving said drum so that the drum deposits compost materials on the leading edge of the conveyor means;

a second power means for driving the conveyor means so that said conveyor means transports the compost materials through the trailing end of the chute means;

the trailing end of said conveyor means being elevated to at least the windrow height so that the entire windrow is churned and relocated as the apparatus advances into and along the windrow length;

means for injecting pressurized air into the compost materials while they are being transported by said conveyor means;

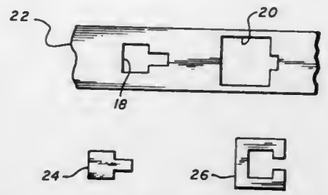
said air injecting means being located within said conveyor means for directing jets of air through the conveyor means into the compost materials while they are located on the conveyor means; and

said air injecting means comprising an array of perforations occupying the space between the leading and trailing ends of said conveyor means, so that air is injected into the compost materials for a significant percentage of the time that said materials are locate don the conveyor means.

5,309,704
METHOD OF PRODUCING CHAIN LINKS AND CHAIN LINKS PRODUCED THEREFROM

Stefano Grando, 1131 Alta Loma Rd., #501, Los Angeles, Calif. 90069

Continuation of Ser. No. 629,120, Dec. 17, 1990, abandoned. This application Jul. 17, 1992, Ser. No. 916,793
Int. Cl.[5] B21L *17/00*
U.S. Cl. 59—13 **10 Claims**



1. The process of producing a chain link suitable for use in a type of chain in which a plurality of links are intertwined to form what appears to be a double helix and which is commonly known as a "rope" chain comprising the steps of:

a. producing a sheet of metal of an appropriate thickness, determined by the size the link to be produced;

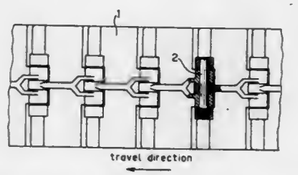
b. piercing said sheet with a first punch and die set having both a piercing punch and a first aperture therein of predetermined shaped to create the interior of the link and piercing said sheet with a blanking punch and a second die aperture therein of a predetermined shape to create the exterior of the link whereby said finished link is separated from said sheet,

said finished link being produced with planar upper and lower surfaces and planar sides that are orthogonal to said surfaces.

5,309,705
FLAT TOP CONVEYOR CHAIN

Toshio Takahashi, Toyonaka; Masaaki Ikeda, Daito; Katsutoshi Shibayama, Osaka, and Kenji Kose, Higashi-Osaka, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Jul. 6, 1993, Ser. No. 87,608
Int. Cl.[5] F16G *13/00*; B65G *17/40*
U.S. Cl. 59—78 **2 Claims**



1. A flat top conveyor chain comprising a plurality of flat top links, each link having flat top surface for carrying articles, said links being chained by means of connecting pins to form a conveyor chain, said flat top link each being made from a polyacetal resin material having a long chain alkyl ester based lubricant therein.

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5,309,706

SHACKLE-TYPE CONNECTOR

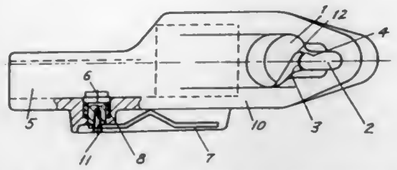
Christoph Lasaroff, Niederndorf; Dieter Hesse, Erlangen, and Wolf Kuhlmann, Nürnberg, all of Fed. Rep. of Germany, assignors to Lukas Hydraulik GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1993, Ser. No. 93,786

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1992, 9209655

Int. Cl.[5] F16G *15/00*

U.S. Cl. 59—93 **10 Claims**



1. A shackle-type connector for the rapid attachment of a linked chain to an external device, comprising:

a body;

means in said body capable of removably attaching the connector to the external device;

means in said body for securing the chain to the connector, said securing means comprising a chain passage hole and a holding slot communicating with said hole through a transition region; and

a securing nose arranged in said transition region for defining a passage channel through which a given link of the chain can pass from said passage hole and into said holding slot, and further for blocking the exit of said link from the holding slot; said securing nose is approximately tangential to said chain passage hole and transverse to said holding slot.

5,309,707

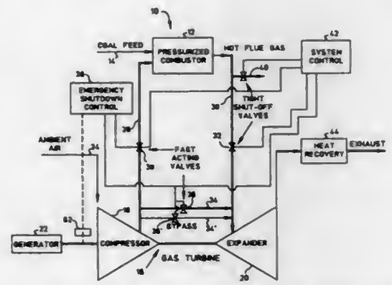
CONTROL METHODS AND VALVE ARRANGEMENT FOR START-UP AND SHUTDOWN OF PRESSURIZED COMBUSTION AND GASIFICATION SYSTEMS INTEGRATED WITH A GAS TURBINE

Steve J. Provol, Carlsbad; David B. Russell, San Diego, both of Calif., and Matti J. Isaksson, Karbula, Finland, assignors to Pyropower Corporation, San Diego, Calif.

Filed Mar. 12, 1993, Ser. No. 30,701

Int. Cl.[5] F02C *3/26, 9/18*

U.S. Cl. 60—39.03 **15 Claims**



1. A power plant having a system for converting coat to power in a gas turbine, comprising:

coal fed pressurized means for converting coal to pressurized gases for powering a gas turbine;

a gas turbine having a compressor for pressurizing combustion air for said pressurized means and expander means for receiving and expanding hot combustion gases for powering a generator for generating electrical power;

control means including first fast acting valve means for controlling flow of pressurized air from said compressor to said pressurized means, and second fast acting valve means for controlling flow of pressurized air from said compressor to said expander means for rapidly diverting flow of pressurized combustion air around said pressurized means to said expander means for emergency shutdown of said turbine during emergency conditions,

first tight shutoff valve means for isolating flow between said pressurized means and said expander; and

second tight shutoff valve means for venting gases from said pressurized means, wherein said first fast acting valve means is a butterfly valve.

5,309,708

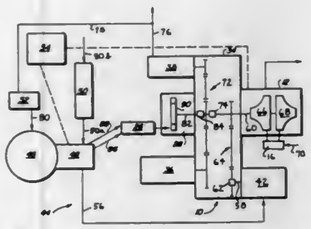
MULTIFUNCTION INTEGRATED POWER UNIT

Donald B. Stewart, Jr., and James A. Rhoden, both Phoenix, Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jun. 3, 1988, Ser. No. 202,723

Int. Cl.[5] F02C *7/268*

U.S. Cl. 60—39.142 **22 Claims**



1. Multi function integrated power unit apparatus comprising; a first combustion turbine engine having a rotary dynamic compressor inducting and pressurizing ambient air, a first combustor receiving said pressurizing air along with a first supply of jet engine fuel to support combustion producing a first flow of motive gas, a first turbine expanding said first flow of motive gas substantially completely to ambient to rotatably drive only said compressor and a first rotatable power output shaft, a second combustion turbine engine including an inlet for receiving pressurized air from a storage source thereof, a second combustor receiving said pressurized air from said storage source via said inlet along with a second supply of jet engine fuel from a respective fuel storage source dedicated only to said integrated power unit to support combustion producing a second flow of motive gas, a second turbine expanding said second flow of motive gas substantially completely to ambient to rotatably drive only a second power output shaft, a plurality of accessory devices for consuming all shaft power from said power output shafts, gear train means drivingly connecting said plurality of accessory devices for delivery of shaft power thereto only from said first power output shaft and said second power output shaft, and one-way overrunning clutch means for drivingly connecting the one of said first power output shaft and said second power output shaft having the higher rotational speed to drive said gear train means while overrunning with respect to the other of said first power output shaft and said second power output shaft.

5,309,709

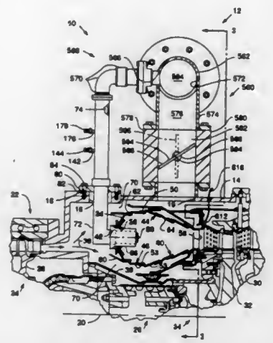
LOW EMISSION COMBUSTION SYSTEM FOR A GAS TURBINE ENGINE

Philip J. Cederwall; Kenneth O. Smith, and Graham E. Ogborne, all of San Diego, Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Jun. 25, 1992, Ser. No. 904,294

Int. Cl.[5] F23R *3/32*

U.S. Cl. 60—39.23 **26 Claims**



1. A control system for reducing the formation of exhaust emissions during operation of a gas turbine engine, the engine including a source of compressed air, a combustor and a turbine arranged in serial order, a plurality of fuel injection nozzles for directing a combustible fuel and compressed air into the combustor, each fuel injection nozzle having a chamber therein in which air and fuel is premixed prior to entering into the combustor; said control system comprising:

means for directing a portion of the flow of compressed air exiting the compressor section through the plurality of injection nozzles into the combustor in an amount sufficient, with the addition of an appropriate amount of fuel, to support full fuel operation of the gas turbine engine at rated speed, said means for directing including a manifold encircling the gas turbine and positioned externally thereof, said manifold being in communication with the flow of compressed air exiting the compressor section by way of a duct positioned between the manifold and the gas turbine engine, each of said plurality of injection nozzles being in communication with the manifold;

means for controllably varying the amount of air directed into the combustor by directing a portion of the air from the compressor section into the manifold and into each of the plurality of injection nozzles when the engine is operated at power levels between low fuel and high fuel conditions, said means for controllably varying being operatively positioned within the duct between the source of compressed air and the manifold.

5,309,710

GAS TURBINE COMBUSTOR HAVING POPPET VALVES FOR AIR DISTRIBUTION CONTROL

Robert A. Corr, II, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,657

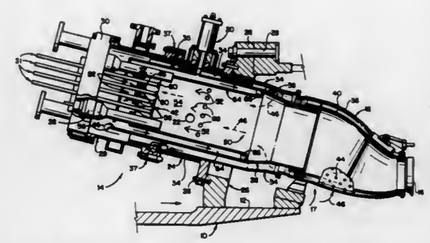
Int. Cl.[5] F02C *9/16*

U.S. Cl. 60—39.23 **7 Claims**

1. A gas turbine having a compressor, a combustor receiving compressed air from said compressor, and a turbine receiving combustion gases from said combustor, wherein said combustor comprises;

a casing coupled to said gas turbine for receiving air from the compressor and for exhausting heated combustion gases to said turbine;

a combustor liner mounted within said casing and having zones for mixing fuel and air, combusting the fuel/air mixture and for dilution air, said liner having at least one mixing air entry hole upstream of said zone for mixing fuel and air, said air entry hole being substantially perpendicular to a flow of air into said zone for mixing fuel and air, and said combustor liner having a dilution air entry hole downstream of said zone for combusting the fuel/air mixture;



an air distribution manifold receiving air from said casing through a poppet valve opening and directing air into said zone for dilution air in said liner; and

a poppet valve slidably mounted in said casing between said poppet valve opening in said air distribution manifold and said mixing air entry hole in said liner, said poppet valve moving linearly between said poppet valve opening and mixing air entry hole, and said poppet valve alternatively sealing said poppet valve opening and mixing air entry hole.

5,309,711

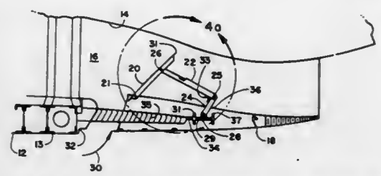
CASCADE TYPE THRUST REVERSER FOR FAN JET ENGINES

Gregory H. Matthias, Chula Vista, Calif., assignor to Rohr, Inc., Chula Vista, Calif.

Filed Aug. 21, 1991, Ser. No. 749,329

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.2 **9 Claims**



1. A cascade type fan jet engine thrust reverser having an improved actuation system which comprises;

a fan jet engine cowl having a radially arranged opening adjacent to a fan case portion of the fan cowl, the fan case being disposed at the aft end of the fan cowl;

cascade sets having a plurality of turning vanes secured within said opening;

sleeve means substantially coextensive with the outer surface of said fan jet engine cowl and adapted to close said opening and cover said cascade sets during normal engine operation and adapted to being moved aft to uncover said cascade sets during reverse thrust operation;

a plurality of blocker doors lying substantially coextensive with the inner wall of said sleeve adjacent to said opening, each of said blocker doors having a forward edge and a pivot connection adjacent to said forward edge to said

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sleeve means for translating said pivot connection with the translation of said sleeve means; and

a linkage assembly at the center of each blocker door connected between each blocker door and a pivot means secured to said fan case, through said cascade set, said linkage lying substantially entirely out of the path of air flow through said fan cowl during normal engine operation and adapted to cause said blocker door to simultaneously rotate as said sleeve means is moved aft rotating said blocker door into a position blocking air flow through said fan cowl and directing said airflow toward said cascade set during reverse thrust operation; and

each of said linkage assemblies including two links, a short link connected to a pivot means on a bracket secured to said engine and a long link pivotably connected between the free end of the short link and said door whereby translation of said sleeve means causes said door to translate, the translation of said door being resisted by said links, to move said door toward the deployed position with translation of said sleeve means in the opposite direction moving the door back to the stowed position.

5,309,712

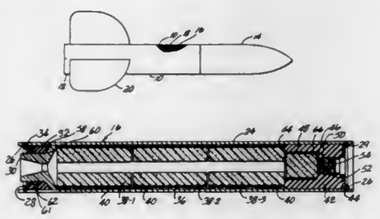
SOLID FUEL ROCKET MOTOR SEALS

Charles J. Mund, Jr., 215 Main Ave., Clarks Summit, Pa. 18411

Filed May 3, 1991, Ser. No. 695,605

Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—253 **3 Claims**



1. In a rocket motor having an outer hollow casing with a substantially cylindrical interior for containing at least one fuel cartridge and a nozzle for directing combustion gasses generated by the fuel cartridge out an exhaust end of the casing, a deformable rubber nozzle gasket comprising a cylindrical exterior for sealing against the casing interior and an inner bore adapted to receive at least a portion of the nozzle, the inner bore being adapted to maintain the nozzle in place with respect to the casing interior during use of the motor, said inner bore having a cylindrical portion for receiving a cylindrical portion of the nozzle and a frusto-conical portion adjacent the cylindrical portion for receiving a frusto-conical portion of the nozzle.

5,309,713

COMPRESSED GAS ENGINE AND METHOD OF OPERATING SAME

Franklin A. Vassallo, 1273 Ransom Rd., Lancaster, N.Y. 14086

Filed May 6, 1992, Ser. No. 879,846

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—370 **10 Claims**

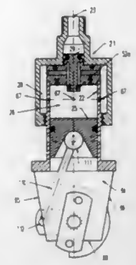
1. A compressed gas engine adapted to be associated with a source of compressed gas, said engine comprising:

a body having a cylinder and having an inlet adapted to receive compressed gas from said source;

a piston mounted for reciprocating movement within said cylinder and defining a variable-volume chamber;

a plenum chamber on said cylinder and means for continuously communicating said plenum chamber with said variable-volume chamber; and

a valve mounted on said body for controlling the flow of compressed gas with respect to said plenum, said valve being moveable between a closed position at which said valve prevents fluid flow between said inlet and said plenum and an open position at which said valve permits fluid flow from said inlet to said plenum, said valve being biased to move toward said closed position and being



arranged to be selectively engaged by said piston and moved to its open position when said piston is in its top dead center position, said valve communicating said plenum chamber with said variable-volume chamber in said closed position and effectively preventing flow to said variable-volume chamber in said open position.

5,309,714

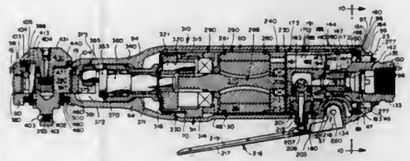
RATCHET TOOL WITH EXHAUST CHAMBER MANIFOLD WITH SOUND DAMPENING PROPERTIES

Gordon A. Putney, Lake Geneva, and Kenneth C. Happ, Silver Lake, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Division of Ser. No. 526,498, May 21, 1990, Pat. No. 5,142,952. This application Jul. 21, 1992, Ser. No. 916,374

Int. Cl.[5] F16D *31/02;* **F01N** *3/02*

U.S. Cl. 60—407 **18 Claims**



1. A ratchet tool comprising: an elongated housing including a front end and a rear end, motor means in said housing having an axis extending between the front and rear ends, a manifold in said rear end of said housing and disposed entirely rearwardly of said motor means, said manifold including a front end and a rear end and a transverse end wall at said front end of said manifold extending substantially perpendicular to said axis and a transverse intermediate wall and a longitudinal intermediate wall extending between said transverse intermediate wall and said transverse end wall, said manifold including an exhaust chamber extending longitudinally through said manifold along one side thereof substantially parallel to said axis, said manifold including a first passageway and a bore communicating with said first passageway and a second passageway communicating with said bore for delivering air to said motor means, said bore being formed in the side of said manifold opposite said one side and terminating short of said one side, said second passageway extending from said bore and terminating in an inlet aperture in said transverse end wall, the air flowing through said first passageway and said bore and said second passageway and said inlet aperture, said first passageway being located in said transverse intermediate wall, said manifold including an exhaust chamber bounded by said longitudinal intermediate wall to exhaust air from said motor means, drive means in said front end of said housing, and means in said housing for coupling said motor means to said drive means and thereby transferring power from said motor means to said drive means.

5,309,715

STIRLING ENGINES

Richard F. Kinnersly, Romsey, United Kingdom, assignor to ESD Engines Limited, United Kingdom

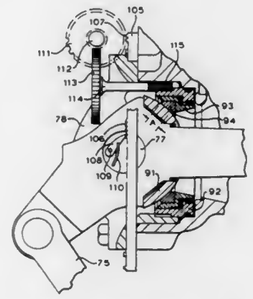
PCT No. PCT/GB91/00600, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/16534, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 17, 1991, Ser. No. 949,482

Claims priority, application United Kingdom, Apr. 17, 1990, 9008523

Int. Cl.[5] F01B *29/10;* **F02G** *1/04*

U.S. Cl. 60—517 **10 Claims**



1. A Stirling Engine comprising a housing, a drive member, a cylinder defined within the housing whereby the housing defines a cylinder wall, an aperture defined in the cylinder wall, a piston mounted for reciprocation in the cylinder, a pivot bearing having a pivot axis fixed with respect to the housing, a connection between the piston and the drive member comprising a lever arm having two ends and being pivotally mounted about the pivot bearing intermediate the ends of the lever arm and extending through the aperture, and a gas seal arranged to prevent escape of pressure from the cylinder through the aperture around the lever arm, the seal comprising a part spherical seat on the lever arm with its centre coincident with the pivot axis, an annular seal member sealingly mounted with respect to the housing and having a part spherical sealing surface in sealing contact with the part spherical seat and means for urging the seal member into sealing engagement with the seat.

5,309,716

ROTARY PUMP OR ENGINE WITH SPHERICAL BODY

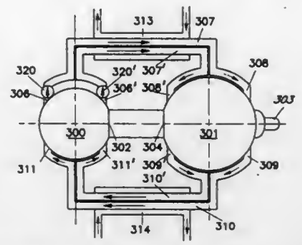
Herman J. Kolbinger, 690 S. Main St., New City, N.Y. 10956

Filed Apr. 27, 1992, Ser. No. 873,811

Int. Cl.[5] F02G *1/04*

U.S. Cl. 60—519 **8 Claims**

1. A combined device comprising first and second spherical positive displacement devices; each of said devices comprising a housing having a cavity therein shaped to form the major portion of a sphere, a disc having a circular periphery and fitted within the cavity for pivotal movement therein and dividing the cavity into first and second sections, first and second wedge-like members, said first wedge member being pivotally connected at one side of the disc and lying within the first cavity section, the second wedge member being pivotally connected at the opposite disc side and lying within the second cavity section, fluid inlet and outlet means coupled to the cavity, the pivotal axes of the first and second wedge members being orthogonal to one another and extending in the same plane and intersecting at the sphere center, and means for journalling for rotation both the first and second wedge members in the housing; said first device having one output shaft and the second device having two output shafts with one of the latter connected to the output shaft of the first device; a heat exchanger connecting together the respective outlet and inlet means of the first and second devices.



5,309,717

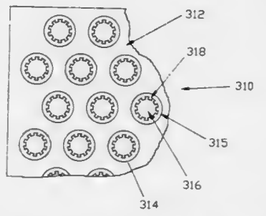
RAPID SHAPE MEMORY EFFECT MICRO-ACTUATORS

Richard B. Minch, 15410 N.E. 144th Pl., Woodinville, Wash. 98072

Filed Mar. 22, 1993, Ser. No. 34,113

Int. Cl.[5] F03G *7/06*

U.S. Cl. 60—527 **19 Claims**



1. A rapid shape memory effect micro-actuator with internal cooling means, comprising:

(a) a body fabricated from a shape memory effect material;

(b) at least one micro-heat pipe contained within said body;

(c) heating means for at least one portion of said body;

(d) cooling means for at least one portion of said body complementary to said heated portions of said body;

whereby said micro-actuator operates during a cooling portion of its thermal/mechanical cycle by transporting thermal energy from the heating portion to the cooling portion internally.

5,309,718

LIQUID FUEL TURBOCHARGED POWER PLANT AND METHOD

Ronald E. Loving, Simi Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 14, 1992, Ser. No. 944,558

Int. Cl.[5] F02C *1/00*

U.S. Cl. 60—722 **9 Claims**

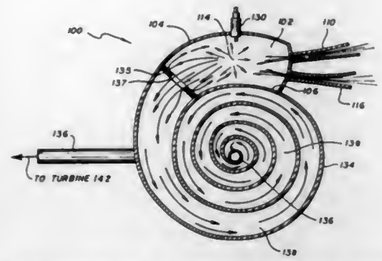
1. A liquid fuel power plant comprising:

a combustion chamber having an ignition region for receiving combustible liquid fuel and an oxidizer, and having means for igniting said fuel in said ignition region, the combustible fuel being ignited in said ignition region to

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produce hot pressurized gases in said combustion chamber;

an extension combustion chamber having a first end and a second end, said extension combustion chamber being coupled at the first end to the combustion chamber to receive said hot pressurized gases from said combustion chamber, said extension combustion chamber providing a reaction region for further combustion of said hot pressurized gases received from said combustion chamber, said



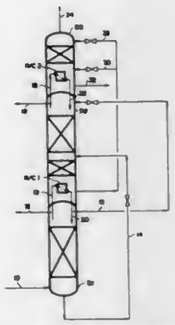
further combusted hot pressurized gases being exhausted at the second end of said extension combustion chamber, said extension combustion chamber being a spiral-shaped chamber having an inner wall and an outer wall and being formed by one of said walls being wrapped on itself to provide a plurality of spirals, whereby said spiral-shaped chamber has an outside end and an inside end; and

means for delivering said combustible liquid fuel to said ignition region; and charging means for delivering compressed air as said oxidizer to said ignition region.

5,309,719
PROCESS TO PRODUCE A KRYPTON/XENON ENRICHED STREAM FROM A CRYOGENIC NITROGEN GENERATOR

Rakesh Agrawal, Emmaus, and Steven L. Feldman, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 16, 1993, Ser. No. 17,555
Int. Cl.[5] F25J 3/04
U.S. Cl. 62—22 **4 Claims**



1. In a process for the cryogenic distillation of an air feed using a multiple column distillation system comprising a high pressure column and a low pressure column wherein:

(a) at least a portion of the air feed is fed to the high pressure column in which the air feed is rectified into a high pressure nitrogen overhead and a high pressure crude liquid oxygen bottoms;

(b) at least a portion of the high pressure crude liquid oxygen bottoms is fed to the low pressure column in which the high pressure crude liquid oxygen bottoms is rectified into a low pressure nitrogen overhead and a low pressure liquid oxygen bottoms;

(c) a first portion of the low pressure liquid oxygen bottoms is boiled in a first sump located in the bottom of the low pressure column; and

(d) a second portion of the low pressure liquid oxygen bottoms is boiled in a second sump located above the low pressure column by indirect heat exchange against condensing low pressure nitrogen overhead;

a method for producing a stream enriched in krypton and xenon comprising:

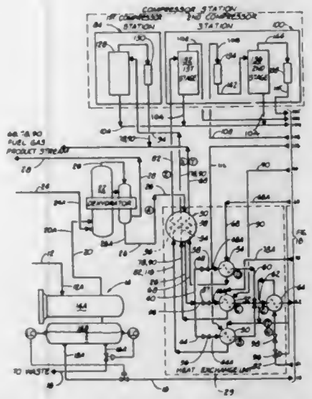
(i) distilling the vapor generated from said boiling of the second portion of the low pressure liquid oxygen bottoms in step (d) in a third distillation column having the second sump located in its bottom wherein a third portion of the low pressure liquid oxygen bottoms is used to provide reflux for the third distillation column; and

(ii) withdrawing the krypton/xenon enriched stream from the bottom of the second sump.

5,309,720
CRYOGENIC SYSTEM FOR PROCESSING A HYDROCARBON GAS STREAM

Lory L. Johnson, Oklahoma City, Okla., and Donald V. Nicol, Plano, Tex., assignors to Q. B. Johnson Manufacturing, Inc., Oklahoma City, Okla.

Filed Oct. 30, 1992, Ser. No. 968,955
Int. Cl.[5] F25J 3/06
U.S. Cl. 62—23 **20 Claims**



1. A process for recovering a gas product stream and a liquid product stream from a hydrocarbon gas stream comprising:

(a) separating the hydrocarbon gas stream into a first liquid stream and an inlet vapor stream;

(b) cooling the inlet vapor stream in a heat exchange means to a preselected processing temperature of at least below about −50° F.;

(c) separating the cooled inlet vapor stream into a first non-condensible vapor stream and a second liquid stream;

(d) flashing the second liquid stream to form an outlet vapor stream and a refrigerating fluid stream;

(e) expanding at least a portion of the refrigerating fluid stream to reduce the pressure of the refrigerating fluid stream to less than about 25 psig and the temperature of the refrigerating fluid stream below about −70° F.;

(f) passing the portion of refrigerating fluid stream through the heat exchange means in heat exchange relationship to the inlet vapor stream;

(g) compressing and separating the refrigerating fluid stream to provide a compressed vapor stream, a fluid stream and a third liquid stream;

(h) expanding the third liquid stream of step (g) to produce a cooled third liquid stream;

(i) passing the cooled third liquid stream of step (h) to the heat exchange means in heat exchange relationship to the inlet vapor stream;

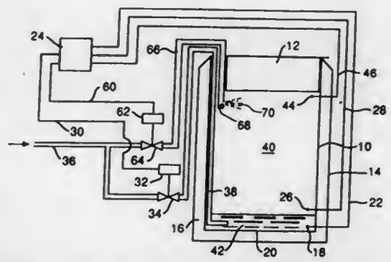
(j) stabilizing the first liquid stream of step (a) and the fluid stream of step (g) to produce a second non-condensible vapor stream and the liquid product stream; and

(k) removing the first non-condensible vapor stream of step (c), the outlet vapor stream of step (d) and the second non-condensible vapor stream of step (j) as the gas product stream.

5,309,722
TEMPERATURE CONTROL SYSTEM FOR LIQUID NITROGEN REFRIGERATOR

Harry L. Phillips, Jr., Fairhope, Ala., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Nov. 6, 1992, Ser. No. 972,904
Int. Cl.[5] F25D 25/00, 17/02
U.S. Cl. 62—49.1 **6 Claims**



1. A liquid nitrogen refrigerator in which materials may be stored in a nitrogen gas atmosphere of a vapor-stage storage area above a body of liquid nitrogen having a top free surface including a refrigeration chamber having a closed bottom and an open top normally closed by a door, a fill tube having an outlet adjacent the bottom of the refrigeration chamber for admitting liquid nitrogen into the chamber below the level of the top free surface of the body of liquid nitrogen, high and low level sensors in the chamber to sense the level of liquid nitrogen and produce a signal in response to the liquid nitrogen reaching predetermined high and low levels, conduit means connecting a supply of liquid nitrogen to the fill tube through a power operated valve, and a controller responsive to signals from the high and low level sensors for actuating the power operated valve to maintain the liquid nitrogen in the chamber between an upper and a lower level determined by the high and low level sensors, the improvement comprising:

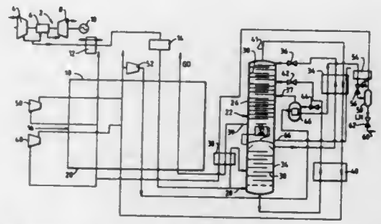
temperature sensing means in the refrigeration chamber for sensing the temperature at a predetermined location above the top free surface of the body of liquid nitrogen and producing a signal representative of the temperature sensed, and

gas temperature control means responsive to said temperature sensing means for producing turbulence in the nitrogen gas atmosphere in the chamber when the sensed temperature exceeds a predetermined level to thereby reduce the temperature of the gaseous nitrogen atmosphere at said predetermined location, said gas temperature control means including means providing a supply of nitrogen gas, means connecting said supply of nitrogen gas to said fill tube for admission into the refrigeration chamber below the top free surface of the body of liquid nitrogen to thereby produce turbulence in the nitrogen gas atmosphere of the vapor-phase storage area, said means providing a supply of nitrogen gas including means for gasifying nitrogen from the liquid nitrogen supply, said fill tube discharging said gasified nitrogen below the surface of liquid nitrogen in the refrigeration chamber.

5,309,721
AIR SEPARATION

Thomas Rathbone, Farnham, England, assignor to The BOC Group plc, Windlesham, England

Filed Apr. 6, 1993, Ser. No. 43,426
Claims priority, application United Kingdom, Apr. 22, 1992, 9208645
Int. Cl.[5] F25J 3/02
U.S. Cl. 62—39 **12 Claims**



1. A method of separating air comprising the steps of:

a) reducing by heat exchange the temperature of a compressed air feed stream to a level suitable for its separation by rectification;

b) separating the air stream by rectification in a double rectification column comprising a higher pressure column and a lower pressure column, wherein the pressure at the top of the lower pressure column is at least 2 bar;

c) withdrawing a stream of gaseous oxygen product from the lower pressure column and warming it by heat exchange countercurrently to the feed air stream;

d) withdrawing a product stream of nitrogen from the lower pressure column and warming it by heat exchange countercurrently to the feed air stream;

e) withdrawing at different temperatures from one another first and second side streams of nitrogen from the product nitrogen stream being heat exchanged countercurrently to the feed air, expanding the first and second side streams in, respectively, first and second expansion turbines, and warming the resultant expanded side streams by heat exchange countercurrently to the feed air stream;

f) compressing at least part of the warmed product stream of nitrogen; and

g) cooling the compressed product stream of nitrogen by heat exchange countercurrently to the oxygen product stream and then condensing the cooled product stream of nitrogen to form a liquid nitrogen product.

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5,309,723

METHOD OF FREEZING RED BLOOD CELLS

Michael J. G. Thomas, Surrey; Susan H. Bell; Stuart G. Nash, both of Hampshire, and Ernest S. Parry, Wiltshire, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, England

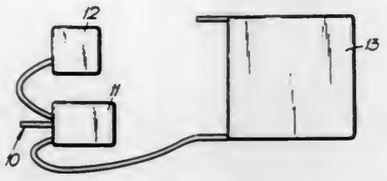
PCT No. PCT/GB90/00140, § 371 Date Aug. 7, 1991, § 102(e) Date Aug. 7, 1991, PCT Pub. No. WO90/09184, PCT Pub. Date Aug. 23, 1990

PCT Filed Jan. 31, 1990, Ser. No. 741,485

Claims priority, application United Kingdom, Feb. 8, 1989, 8902791

Int. Cl.[5] F25D *25/00*

U.S. Cl. 62—62 **48 Claims**



1. A method of freezing red blood cells using HES as a cryoprotectant comprising the steps of centrifuging a unit of blood to separate plasma and platelets from red blood cells, mixing the red blood cells with HES, and then freezing the mixture, wherein said red blood cells have prior to mixing, a Packed Cell Volume of not less than 90%, and said HES is present in the resultant mixture at no more than 7% w/v HES/red blood cell unit.

5,309,724

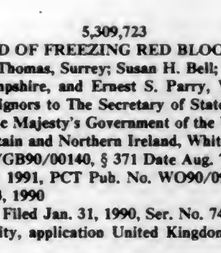
SWITCHABLE HEAT EXCHANGER CONFIGURATION FOR AIR CYCLE COOLING APPARATUS

Melvin Schreiber, Roslyn, and Richard Yurman, Bethpage, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 16, 1992, Ser. No. 945,709

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—87 **7 Claims**



1. An air cycle switching apparatus comprising:

a bleed source of airflow;

first and second heat exchangers for cooling the airflow;

means for compressing the airflow; and

valve means responsive to temperature for switching the position of the heat exchangers relative to an input of the compressing means wherein a first state of the valve means connects the first heat exchanger upstream of the compressing means while the second heat exchanger resides downstream thereof, and a second state wherein the first and second heat exchangers both exist downstream of the compressing means;

turbine means having its intake connected to an outlet of the secondary heat exchanger; and

means for delivering cooling airflow from an outlet of the turbine means to a utilization point, the airflow being finally cooled as a consequence of expansion in the turbine means.

5,309,725

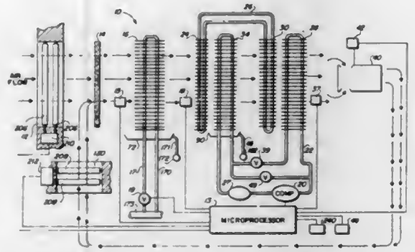
SYSTEM AND METHOD FOR HIGH-EFFICIENCY AIR COOLING AND DEHUMIDIFICATION

James L. Cayce, 103 Pine Crest, Longwood, Fla. 32750

Filed Jul. 6, 1993, Ser. No. 86,125

Int. Cl.[5] F25B *29/00*

U.S. Cl. 62—90 **30 Claims**



1. A system for performing and controlling outside air ventilation cooling and dehumidification in a building space, the system having an upstream side and a downstream side, comprising:

means for admitting air into the system, positioned at the upstream side of the system;

means for cooling, positioned downstream of the air flow admitting means;

means for channeling air flow from the air flow admitting means to the cooling means;

a first passive heat exchanger means, positioned downstream of the cooling means;

means for channeling air flow from the cooling means to the first passive heat exchanger means;

a vapor compression cycle air conditioning means, comprising:

a first evaporator coil having an inlet and an outlet, positioned downstream of the first passive heat exchanger means;

a first condenser coil having an inlet and an outlet, in fluid communication with the evaporator coil; and

a first refrigeration compressor having an inlet and an outlet, in fluid communication with the first evaporator coil and the first condenser coil, the fluid communication forming a closed loop leading from the first refrigeration compressor outlet to the first condenser coil inlet, through the first condenser coil, from the first condenser coil outlet to the first evaporator coil inlet, through the first evaporator coil, from the first evaporator coil outlet to the first refrigeration compressor inlet, and through the first refrigeration compressor;

means for channeling air flow from the first passive heat exchanger means to the first evaporator coil;

a second passive heat exchanger means, positioned downstream of the first evaporator coil and upstream of the first condenser coil, the second passive heat exchanger means in fluid communication with the first passive heat exchanger means;

means for channeling air flow from the first evaporator coil to the second passive heat exchanger means;

means for channeling air flow from the second passive heat exchanger means to the first condenser coil;

means for creating air flow through the system;

means for permitting air flow to exit the system; and

means for directing exiting air flow to the building space, positioned at the downstream end of and exterior to the system.

5,309,726

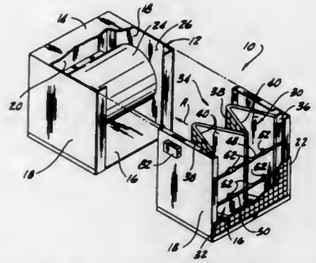
AIR HANDLER WITH EVAPORATIVE AIR COOLER

Timothy M. Asbridge, Fenton, Mo., assignor to Southern Equipment Company, St. Louis, Mo.

Filed Dec. 15, 1992, Ser. No. 991,369

Int. Cl.[5] F28C *1/00*

U.S. Cl. 62—91 **15 Claims**



1. In an air handler for conditioning recirculated or make-up space air and including a conditioning chamber and air flow means for moving air therethrough, and further comprising an evaporative air cooler having air permeable pad means extending across the chamber on one side of said air flow means and spray means for maintaining a moist condition of such pad means; the improvement which comprises said spray means being constructed and arranged to discharge plural cooling fluid spray patterns covering the upstream side of said pad means in a plurality of predefined zones, and further includes a plurality of moisture sensors positioned at predetermined locations on the downstream side of said pad means, and control means responsive to a sensed low moisture level condition by any one of said moisture sensors for controlling the activation of said spray means whereby to maintain at least a preselected minimum moisture content throughout the zones of said pad means.

5,309,727

REACTIVE CONTROL FOR DISCRETE CHILLER UNITS

Paul J. Duff, Lebanon, and Keith G. Michaelsen, Winsted, both of Conn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 7, 1993, Ser. No. 58,000

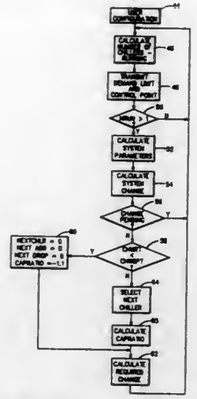
Int. Cl.[5] F25B *7/00*

U.S. Cl. 62—117 **10 Claims**

1. A process for selectively adding or dropping stages of compression within discrete chiller units each having dedicated control units for normally adding or dropping stages of compression, said process comprising the steps of:

defining a demand limit on the compression capacity in each respective chiller unit that may be activated by the dedicated control unit for that respective chiller unit;

changing the demand limit on the compression capacity of a chiller unit when a desired coolant temperature is not being achieved by the collective compression capacity of all discrete chiller units that have been activated by their respective control units, whereby the dedicated control unit for the chiller unit changes the number of stages of compression in that respective chiller unit; and



changing the demand limits on the compression capacities of all chiller units when the returning coolant temperature is below a predefined threshold value.

5,309,728

CONTROL APPARATUS FOR MULTIPLE UNIT AIR CONDITIONING SYSTEM

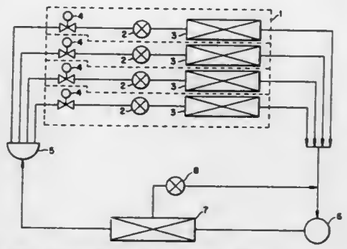
Y. Byoung Chae, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 824,541, Jan. 23, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 47,361

Claims priority, application Rep. of Korea, Jan. 30, 1991, P91-1354

Int. Cl.[5] F25B *7/00, 41/04*; G05D *23/32*

U.S. Cl. 62—158 **2 Claims**



1. An air conditioning system comprising:

an outdoor device having a compressor, a condenser, and a conduit leading from the condenser to the inlet of the compressor, said conduit having a valve being opened upon exceeding a predetermined pressure;

a plurality of indoor devices connected in parallel each other and operatively connected to said outdoor device, each indoor device having an evaporator and an expansion valve;

an operation sensing means, operatively connected to each of the indoor units, for sensing the operation state of the indoor devices and outputting an ON signal if at least one indoor device is in operation and outputting an OFF signal if all indoor devices are out of operation;

a delay means, operatively connected to the operation sensing means, for receiving the ON signal and the OFF signal

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from the operation sensing means and outputting the ON signal and the OFF signal after a predetermined delay; and,

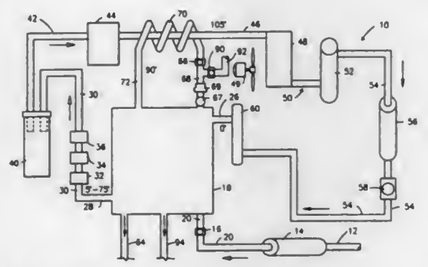
a relay drive means, operatively connected to the delay means and the compressor of the outdoor device, for turning ON and OFF the compressor of the outdoor device according to the delayed ON/OFF signals of the delay means.

5,309,729

THERMAL PURGE SYSTEM

Christopher L. Sagar, 1823 Hicks Rd., Rolling Meadows, Ill. 60008

Filed Jun. 23, 1993, Ser. No. 81,771
Int. Cl.[5] F25B *43/04*
U.S. Cl. 62—195 **18 Claims**



10. A thermal purge system, comprising:

a purge vessel having a top and a bottom;

said purge vessel further having a first, a second, and a third inlet and a first, a second, a third, and a fourth outlet;

said first inlet being in fluid communication with an outlet conduit of a chiller means, said outlet conduit carrying hot gaseous refrigerant fluid;

a central conduit disposed in said purge vessel, substantially centrally thereof, said central conduit being in fluid communication with said outlet conduit of said chiller means;

a plurality of openings formed in said central conduit so that said hot gaseous refrigerant fluid escapes into an interior of said purge vessel through said plurality of openings;

a condensation means disposed in said vessel interior for cooling said hot gaseous refrigerant fluid and causing said hot gaseous refrigerant fluid to at least partially condense and collect on said bottom of said purge vessel;

an artesian well means disposed in fluid communication with said vessel first outlet so that liquid refrigerant that collects on the bottom of said purge vessel is routed by said artesian well means to a bottom of said chiller means when said liquid refrigerant attains a predetermined depth on said vessel bottom;

a refrigeration means for delivering cold refrigerant to said purge vessel second inlet;

said condensation means including a first evaporator coil disposed in said purge vessel, said first evaporator coil being disposed in fluid communication between said purge vessel second inlet and said purge vessel second outlet so that said cold refrigerant flows through said first evaporator coil before exiting said vessel at said second outlet;

said condensation means causing condensation of said hot gaseous refrigerant fluid by impingement of said hot gaseous refrigerant fluid on said first evaporator coil;

said hot gaseous refrigerant fluid containing at least some condensibles that are not condensed when said hot gaseous refrigerant fluid contacts said first evaporator coil and containing at least some noncondensibles;

said purge vessel further comprising means to cause said noncondensed condensibles and said noncondensibles to collect within said purge vessel interior in a space between said top of said purge vessel and a surface of liquid refrigerant collected atop said bottom of said purge vessel;

said refrigerant means for delivering cold refrigerant to said purge vessel second inlet including a compressor that delivers hot, compressed compressor discharge gas to a compressor outlet conduit that forms a part of said refrigerant circuit;

a reheating and re-expansion coil disposed in heat exchanging relation to said compressor outlet conduit;

said reheating and re-expansion coil having an inlet disposed in fluid communication with said purge vessel third outlet and having an outlet disposed in fluid communication with said purge vessel third inlet so that reheated and re-expanded noncondensed condensibles and noncondensibles are reintroduced into the interior of said purge vessel;

a second evaporator coil disposed in said purge vessel interior, said second evaporator coil being in heat-transfering relation to said first evaporator coil;

said second evaporator coil having an inlet in fluid communication with said purge vessel third inlet disposed in fluid communication downstream of said reheating and rexpansion coil so that reheated and re-expanded gases enter said second evaporator coil;

said second evaporator coil having an outlet in fluid communication with the interior of said purge vessel slightly above said surface of said liquid refrigerant collected atop said vessel bottom so that condensed condensibles enter said purge vessel interior and accumulate on said bottom thereof until returned to said chiller means by said artesian well means and so that noncondensibles collect in said purge vessel interior above said surface of said liquid refrigerant; and

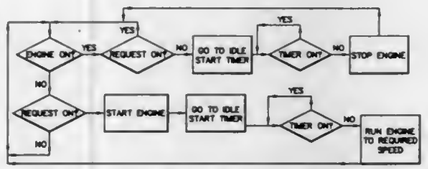
purge means for purging said noncondensibles from said purge vessel interior.

5,309,730

THERMOSTAT FOR A GAS ENGINE HEAT PUMP AND METHOD FOR PROVIDING FOR ENGINE IDLE PRIOR TO FULL SPEED OR SHUTDOWN

Rolf L. Strand, Crystal, and Daniel T. Uhrich, Mayer, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 28, 1993, Ser. No. 68,866
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—228.4 **13 Claims**



1. A method of controlling a gas engine heat pump comprising the steps of:

A. determining current status of said gas engine heat pump;

B. determining whether a request for heating or cooling is present;

C. when a request for heating or cooling is present and the current status of said gas engine heat pump is off, idling said gas engine heat pump for a predetermined period of time;

D. stepping said gas engine heat pump up to a load level provided by load-sensing means; and

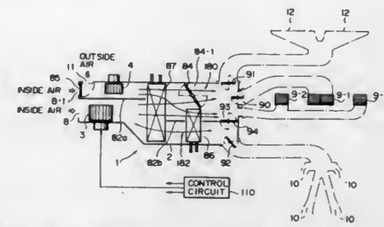
E. returning to step A.

5,309,731

AIR CONDITIONING APPARATUS

Hiroshi Nonoyama, Toyota; Koichi Ban, Toukai; Tadashi Suzuki, Toyota; Hikaru Sugi, Nagoya; Takahisa Suzuki, Kariya; Keita Honda, Okazaki, and Kenichi Fujiwara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 28, 1992, Ser. No. 997,364
Claims priority, application Japan, Dec. 27, 1991, 3-345974; May 29, 1992, 4-139380; Oct. 28, 1992, 4-290023
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—244 **13 Claims**



8. An air conditioning apparatus for a vehicle having a passenger cabin and a windshield, comprising

an air duct having at an inlet side, an inside air inlet for introduction of air from the cabin and an outside air inlet for introduction of the air from the outside, and having at an outlet side, a defroster outlet for discharging a first air flow toward the windshield, a lower outlet for discharging a second air flow toward a lower part of a passenger, and an upper outlet for discharging a third air flow toward an upper part of the passenger;

means for forcing said flows of air in the duct; and

a circuit of refrigerant comprising:

i) inside heat exchanging means arranged in the duct for obtaining a heat exchange between the refrigerant in the inside heat exchanging means and the air flows in the duct;

ii) outside heat exchanging means arranged outside the duct for obtaining a heat exchange between the refrigerant in the outside heat exchanging means and outside air;

iii) pressure reducing means for reducing a pressure of the refrigerant;

iv) compression means for obtaining a compressed flow of the refrigerant, and;

v) switching means for reversing a direction of flow of the refrigerant between a heater position, where the compressed refrigerant is introduced into the inside heat exchanging means, and a cooler position where the compressed refrigerant is introduced into the outside heat exchanging means;

said air duct being divided into a first air passageway for connecting the inside air inlet to the lower outlet and a second air passageway for connecting the outside air inlet to the defroster outlet;

said inner heat exchanging means being divided into a first section contacting the first air flow in the first air passageway and a second section contacting said second air flow in said second air passageway; and said second section located in series with the first section in the direction of the flow of the refrigerant in a refrigerant cycle;

wherein the refrigerant from the first section is subjected to a heat exchange with the second air flow in the second air passageway;

wherein, upon switching said switching means into said heater position, the compressed refrigerant from the compressor is first introduced into the first section and then to the second section of the inside heat exchanging means and, after passing through the pressure reducing means, is introduced into the outside heat exchanging means for recirculation to the compression means; and

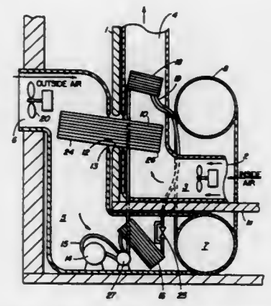
wherein, upon switching said switching means into said cooler position, the compressed refrigerant from the compressor is first introduced into the outside heat exchanging means and, after passing through the pressure reducing means, is introduced into the second and then the first section of the inside heat exchanging means for recirculation to the compression means.

5,309,732

COMBINED CYCLE AIR/AIR HEAT PUMP

Samuel Sami, Moncton, Canada, assignor to University of Moncton, Moncton, Canada

Filed Apr. 7, 1992, Ser. No. 864,760
Int. Cl.[5] F25B *13/00, 47/00*
U.S. Cl. 62—277 **10 Claims**



1. An air-to-air heat pump for a building comprising:

a first passageway having an inlet and an outlet both communicating with air outside the building, and means for moving air through the first passageway from the inlet to the outlet, said first passageway having a first heat exchanger constituting an evaporator for a first refrigerant contained therein during a heating cycle;

a second passageway having an inlet and an outlet both communicating with relatively warm air inside the building, and means for moving air from the inlet to the outlet, said second passageway having a second heat exchanger constituting a condenser for said first refrigerant contained therein during a heating cycle;

means for pumping said first refrigerant in an active heat pump circuit which includes said first and second heat exchangers, and pressure reducing means for maintaining the pressure of refrigerant higher in the second heat exchanger than in the first heat exchanger during the heating cycle;

a reversing valve for reversing the flow of said first refrigerant during a cooling cycle;

a heat pipe containing a second refrigerant, said heat pipe having a first normally higher end in the first passageway and a second, normally lower end in the second passageway, said second refrigerant being capable of being evaporated by said relatively warm air in the second passageway and being capable of being condensed by cold air in the said first passageway;

said first end being positioned in the first passageway upstream of the first heat exchanger whereby cold air is pre-heated by condensation of said second refrigerant before contacting said first heat exchanger so that frosting on the first heat exchanger in cold air is inhibited; and

said second end being positioned in the second passageway upstream of said second heat exchanger.

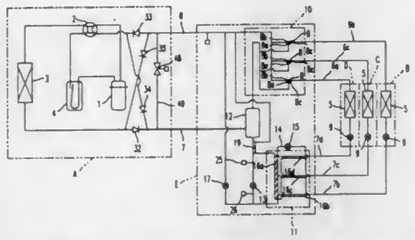
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,733

AIR-CONDITIONING SYSTEM

Noriaki Hayashida; Takashi Nakamura; Hidekazu Tani; Tomohiko Kasai; Junichi Kameyama, and Shigeo Takata, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 814,558, Dec. 30, 1991, Pat. No. 5,237,833.
This application Mar. 24, 1993, Ser. No. 36,255
Claims priority, application Japan, Jan. 10, 1991, 3-001616; Jan. 21, 1991, 3-004841; Jan. 28, 1991, 3-008360; Jan. 31, 1991, 3-010415; Jan. 31, 1991, 3-010710; Jan. 31, 1991, 3-010711; Feb. 5, 1991, 3-014031; Feb. 5, 1991, 3-014162; Feb. 5, 1991, 3-014200; Feb. 20, 1991, 3-026000; Feb. 20, 1991, 3-026001; Mar. 28, 1991, 3-064631; Nov. 15, 1991, 3-300615
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—278 2 Claims



1. An air-conditioning system wherein a single heat source unit having a compressor, a four-way valve, a heat source unit side heat exchanger and an accumulator is connected to a plurality of indoor units having an indoor side heat exchanger and a first flow rate controller through first and second connection pipes;

a first branch joint including a valve device for selectively connecting one of said plurality of indoor units to said first connection pipe or said second connection pipe and a second branch joint connected to another of said indoor side heat exchangers of said plurality of indoor units through said first flow rate controller and connected to said second connection pipe through a second flow rate controller are connected to each other through said second flow rate controller and a gas-liquid separating unit;

said second branch joint and said first connection pipe are connected through a fourth flow rate controller;

said second branch joint and said first connection pipe are connected through a bypass pipe having a third flow rate controller therein; and

said air conditioning system comprises;

a first heat exchanger portion for carrying out the heat-exchanging between said bypass pipe between said third flow rate controller and said first connection pipe and pipings connecting said second connection pipe and said second flow rate controller;

a flow path change over unit for allowing, when said heat source unit side heat exchanger is operated as a condenser, a flow of a refrigerant from a refrigerant outlet side of said condenser only to said second connection pipe and a flow of the refrigerant from said first connection pipe only to said fourth-way valve side, and allowing, when said heat source unit side heat exchanger is operated as an evaporator, a flow of the refrigerant from said first connection pipe only to a refrigerant inlet side of said evaporator and a flow of the refrigerant from said four-way valve only to said second connection pipe; and

a junction unit disposed between said heat source unit and said plurality of indoor units, said intermediate unit comprising said first branch joint, said second branch joint, said gas-liquid separator, said second flow rate controller, said third flow rate controller, said fourth flow rate controller, said first heat exchanging portion and said bypass pipes;

characterized by the provision of:

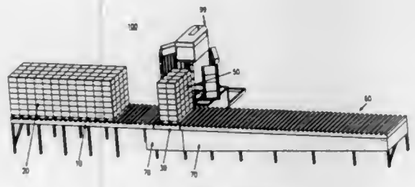
a first bypass circuit which is connected between said first connection pipe and said second connection pipe and which is opened during the defrosting operation, wherein said second connection pipe is maintained at a high pressure and said first connection pipe is maintained at a relative low pressure with respect to said second connection pipe and upon opening of said first bypass circuit for a defrosting operation refrigerant from the high pressure second connection pipe flows through said first bypass circuit and flows directly into the low pressure first connection pipe.

5,309,734

AUTOMATIC IN-FEED CONVEYOR SYSTEM FOR AN ICE INJECTOR SYSTEM

Richard V. Crabb, Jr., Pacific Grove; Rich Fischer, Aromas, and Kevin Nobusada, Salinas, all of Calif., assignors to Post-Harvest Technologies, Inc., Salinas, Calif.

Continuation of Ser. No. 832,460, Feb. 6, 1992, Pat. No. 5,199,268. This application Apr. 5, 1993, Ser. No. 43,194
Int. Cl.[5] F25D *17/02*
U.S. Cl. 62—374 2 Claims



1. An automatic icing system comprising:

conveyor means for receiving an on-loaded pallet carrying a plurality of containers and for conveying said pallet longitudinally;

an ice injection enclosure disposed adjacent said conveyor means and adapted to receive said pallet and to automatically inject an ice slurry in said containers carried by said pallet; and

shuttle means for automatically transferring said pallet from said conveyor means into said ice injection enclosure and back again after the ice slurry has been injected in said containers carried by said pallet.

5,309,735

FOUR WHEEL AIR CYCLE MACHINE

John F. Maher, Jr., Enfield, Conn.; Brent J. Merritt, Westfield, Mass.; Christopher McAuliffe, Windsor, and Paul J. Dziorny, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 757,889, Sep. 11, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 96,712
Int. Cl.[5] F25D *9/00*
U.S. Cl. 62—402 8 Claims

1. An air cycle machine for conditioning air for supply to an enclosure, comprising:

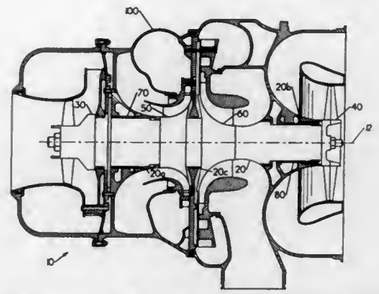
shaft means disposed for rotation about a longitudinally extending axis;

a first wheel mounted to a first end portion of said shaft means for rotation therewith;

a second wheel mounted to a second end portion of said shaft means for rotation therewith;

a third wheel mounted to a central portion of said shaft means in spaced relationship from said first wheel and from said second wheel for rotation with said shaft means;

a fourth wheel mounted to the central portion of said shaft means in back-to-back relationship with said third wheel between said second wheel and said third wheel for rotation with said shaft means, one of said centrally disposed third and fourth wheels comprising a compressor rotor operative to compress the conditioning air passing therethrough and the other of said centrally disposed third and fourth wheels comprising a turbine rotor operative to expand the conditioning air passing therethrough thereby cooling the expanded conditioning air and extracting



energy therefrom for driving said shaft means in rotation about the axis;

first journal bearing means for supporting said shaft means for rotation about the axis, said first bearing means disposed about the first end portion of said shaft means between said first wheel and said third wheel; and

second journal bearing means for supporting said shaft means for rotation about the axis, said second bearing means disposed about the second end portion of said shaft means between said second wheel and said fourth wheel.

5,309,736

HYDROCARBON FLUID, EJECTOR REFRIGERATION SYSTEM

Gregory J. Kowalski, Beverly, and Arthur R. Foster, Braintree, both of Mass., assignors to Northeastern University, Boston, Mass.

Continuation of Ser. No. 978,368, Nov. 18, 1992, Pat. No. 5,239,837, which is a continuation-in-part of Ser. No. 889,615, May 27, 1992, abandoned, which is a continuation of Ser. No. 598,141, Oct. 16, 1990, Pat. No. 5,117,648. This application Aug. 25, 1993, Ser. No. 111,653
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] F25B *1/06*
U.S. Cl. 62—500 26 Claims

1. A refrigeration system comprising:

a working fluid having a property such that entropy of the working fluid when in a saturated vapor state decreases as pressure decreases;

a condenser located along a common fluid flow path for condensing the working fluid to a saturated liquid;

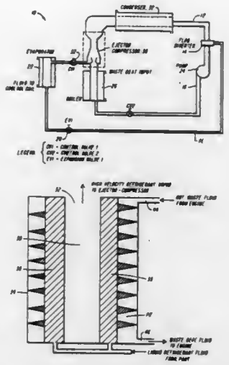
a diverter located downstream of the condenser for diverting the working fluid into a primary fluid flow path and a secondary fluid flow path parallel to the primary fluid flow path;

an expansion device located along the secondary fluid flow path for decreasing the pressure of the working fluid;

an evaporator located along the secondary fluid flow path downstream of the expansion device for evaporating the working fluid;

means located along the primary fluid flow path for boiling the working fluid to produce a near sonic velocity saturated vapor; and

an ejector located at a junction of the primary and secondary flow paths, the ejector including means, located downstream from the boiling means and sufficiently close to the boiling means to minimize a pressure drop between the boiling means and the ejector, for receiving the working fluid from the boiling means in the near sonic velocity of the working fluid to a supersonic velocity, the ejector



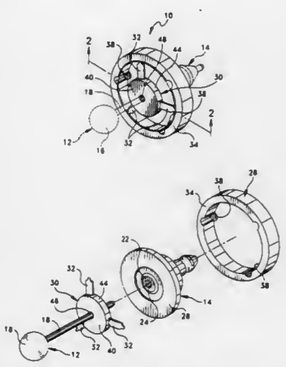
further including a section downstream from the receiving and velocity increasing means to mix the working fluid from the boiling means with the working fluid from the evaporator and to increase the pressure of the mixed working fluid to at least the pressure at the condenser.

5,309,737

TAMPER PROOF DEVICE FOR A PIERCED EARRING

Marcos Fountoulakis, 192 Wentworth Ave., Cranston, R.I. 02905

Filed Jul. 30, 1993, Ser. No. 99,448
Int. Cl.[5] A44C *7/00*
U.S. Cl. 63—12 10 Claims



1. A tamper proof device for a pierced earring assembly that includes a post portion and a clutch portion comprising:

an outer frame portion including means for engaging said clutch portion of said pierced earring assembly;

an inner body portion including means for engaging said post portion of said pierced earring assembly; and

a plurality of break-away gates which integrally join said outer frame portion and said inner body portion, said break-away gates breaking and thereby separating said

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inner body portion from said outer frame portion when said post portion is pulled apart from said clutch portion.

5,309,738

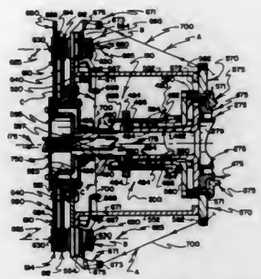
YARN FEEDING SYSTEM FOR HIGH SPEED KNITTER

Paul H. Morris, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 7, 1993, Ser. No. 58,724

Int. Cl.[5] D04B *15/48, 1/22*

U.S. Cl. 66—132 T **29 Claims**



1. A method of uniformly, evenly and concurrently feeding a plurality of strands of material such as yarn along an array of feedpaths to a workstation of a knitter machine while the array of feedpaths rotates about an imaginary center axis that extends through the workstation, comprising the steps of:

a) providing feedpath defining means including structure for extending about and for being rotated about an imaginary center axis that extends through a workstation of a knitter machine and for defining an array of feedpaths that extends about the center axis for directing a plurality of strands of material such as yarn to the workstation, with each of the strands being directed along a separate one of the feedpaths;

b) providing rotatable capstan means including a plurality of capstans that are connected to said structure for being rotated together with said structure about the center axis, and for being rotated relative to said structure about a plurality of spaced capstan axes that are arranged in an array that extends about the center axis, with each of the capstans being rotatable about a separate one of the capstan axes, and with each of the capstans being associated with a separate one of the feedpaths by being positioned therealong and by being adapted to drivingly engage a taut wrapping of a separate one of the strands as such strand moves along the associated feedpath to the workstation;

c) providing first rotary drive means for rotating said structure together with said capstans about the center axis;

d) providing second rotary drive means for rotating said capstans concurrently and in unison about the respective capstan axes relative to said structure to effect positive concurrent feeding, in unison, of each of a plurality of strands along said array of feedpaths to the workstation;

e) operating the first rotary drive means to rotate said structure together with said capstans about the center axis, whereby said array of feedpaths is caused to rotate about the center axis; and,

f) operating the second rotary drive means concurrently with the operation of the first rotary drive means to rotate said capstans concurrently and in unison to effect feeding of a plurality of strands of material such as yarn along the rotating array of feedpaths, with each of the strands extending along a separate associated one of the feedpaths and having a wrapping that extends tautly about a separate associated one of the capstans so that the feeding of each strand is effected by transmitting rotary movement of the associated capstan to the associated strand wrapping that extends tautly about the associated capstan, whereby the plurality of strands are fed uniformly, evenly and concurrently to the workstation.

5,309,739

ULTRASONIC CLOTHES WASHING MACHINE CONTAINING A TOURMALINE CERAMIC COATING

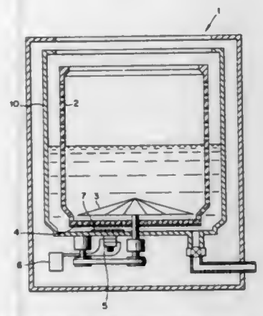
Ok K. Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Japan

Filed May 11, 1993, Ser. No. 59,855

Claims priority, application Rep. of Korea, May 30, 1992, 92-9364

Int. Cl.[5] D06F *39/02*

U.S. Cl. 68—3.055 **12 Claims**



10. A clothes washing machine comprising:

a water container;

a wash tub disposed in said water container such that an internal surface of said water container is spaced from an external surface of said wash tub to form a space therebetween for containing wash water; and a tourmaline material disposed in said space for reacting with the wash water to form therein hydroxyl ions for reducing surface tension of the wash water.

12. A clothes washing machine comprising:

a water container;

a wash tub disposed in the water container;

an agitator disposed in the wash tub; and

a tourmaline material affixed to said agitator for reacting with the wash water to form therein hydroxyl ions for reducing surface tension of the wash water.

5,309,740

INK TACK

Norman B. Hansen, Highland Beach, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Continuation of Ser. No. 867,812, Apr. 13, 1992, abandoned. This application May 24, 1993, Ser. No. 67,163

Int. Cl.[5] A44B *9/00*

U.S. Cl. 70—57.1 **10 Claims**

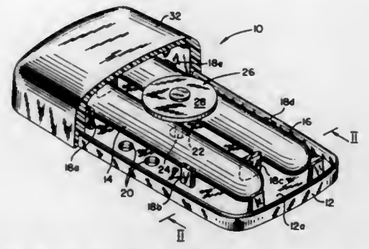
1. A theft-deterrent tack for application to an article to be protected against theft, said tack comprising:

A) a first housing having an open end and ceiling and wall structure bounding an interior space extending to the open end, the ceiling and wall structure being continuous,

B) a second housing secured to the first housing and closing the interior space except for at least one opening extending therethrough into the interior space, said second housing having a flat undersurface facing said interior space and a plurality of vial-confining members extending upwardly from said surface into said interior space,

C) at least one frangible vial disposed in said interior space located in preselected position by said vial-confining members, said vial having a cylindrical central portion and respective end portions contiguous with said central portion, said cylindrical central portion being in generally linewise contact along its length with said second housing flat undersurface of said second housing, said vial having an article staining substance contained therein, and

D) vial-fracturing means comprising a flat surface and a pin member, said flat surface of said vial fracturing means disposed in said interior space between said vial and the ceiling of said first housing and supported for movement therein to come into direct compressive contact with said vial, said pin member having one end attached to said flat surface of said vial fracturing means and being of sufficient length to protrude through an opening in said second housing, said opposite end of said pin member being pointed to pass through an article to be protected, the disposition of said vial cylindrical central portion in linewise contact along its length with said flat undersurface of said second housing and said flat surface of said vial fracturing means giving rise to vial compressive fracture, to release said article staining substance upon movement of said vial-fracturing means into fracturing relation with said vial.



5,309,741

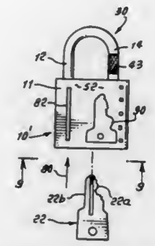
PADLOCK WITH KEY INDICATOR

Henry P. Nava, 443 Potrero Grande Dr., Monterey Park, Calif. 91754

Filed May 10, 1993, Ser. No. 58,312

Int. Cl.[5] E05B *15/08*

U.S. Cl. 70—38 B **8 Claims**



1. In combination with a padlock having a body, a U-shaped keeper at one end of the body, and a key receptor at the opposite end of the body, the body containing a row of pins to be engaged by key teeth, the combination comprising:

a) an indicator device on the body,

b) said device having a location on the body relative to the pins to indicate the left or right directional orientation of key teeth insertion into said receptor, to effect opening of the padlock keeper,

c) said indicator device extending in the direction of key insertion,

d) said device presenting a shoulder extending in said direction,

e) said shoulder being at the side of the key away from the key teeth.

5,309,742

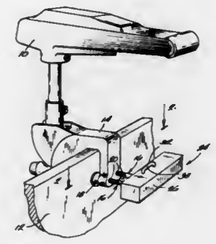
LOCKING DEVICE FOR BOAT MOTOR

Stephen B. Lawrence, N2166 ParFrey Ville Rd., Waupaca, Wis. 54981

Continuation-in-part of Ser. No. 518,848, May 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 106,318, Oct. 8, 1987, abandoned. This application Sep. 30, 1992, Ser. No. 954,014

Int. Cl.[5] F16B *41/00*

U.S. Cl. 70—232 **9 Claims**



1. In combination:

a support;

clamps for an outboard motor-carrying bracket;

transversely spaced apart clamp securing screws for securing said clamps to said support, each clamp securing screw having a head and a shank;

a one-piece housing of greater length than a line extending between said clamp securing members, said one-piece housing having a single, continuous slot formed in one side thereof, said slot being closed on both ends, to permit transverse sliding application of said housing axially onto said securing screws, with the heads of the latter being received by said housing slot and confined within said housing without the requirement of any swinging or sideways sliding of the housing or rotation of the screws;

a padlock, including a shackle and a body, said shackle having at least two legs and said body having means for locking said shackle legs therein;

at least one of the legs of said shackle being insertable through at least one leg opening formed for that purpose in said housing and into said body, said at least one leg opening being positioned so that said heads are trapped in said slot by said padlock.

5,309,743

DOOR UNLOCKING DEVICE

Sadao Kokubu; Hisashi Aoki, and Yoshiyuki Mizuno, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jul. 17, 1992, Ser. No. 914,354

Claims priority, application Japan, Jul. 23, 1991, 3-206405

Int. Cl.[5] E05B *65/20*

U.S. Cl. 70—257 **10 Claims**

1. A door unlocking device comprising:

an electric operating mechanism responsive to a door-unlocking signal for unlocking a door;

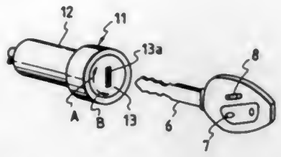
a lock including a rotor casing and a rotor having a key inserting inlet corresponding to the door;

detecting means responsive to an insertion of a key into the key inserting inlet of the rotor for generating a key-detection signal;

signal generating means responsive to a forward rotation and

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a reverse rotation of the rotor for generating a rotor-turning-pattern signal; and



rotor-turning-pattern discriminating means responsive to the generated rotor-turning-pattern signal and the generated key-detection signal for generating the door-unlocking signal for unlocking said door.

5,309,744

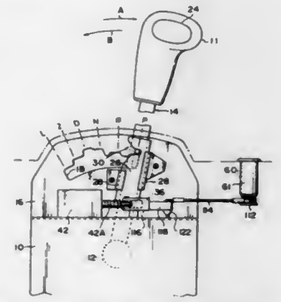
LOCKING APPARATUS FOR SHIFT LEVER OF AUTOMATIC TRANSMISSION

Shozo Kito; Shoichi Harada, and Misoru Morikawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Japan

Continuation of Ser. No. 565,244, Aug. 10, 1990, abandoned. This application Sep. 17, 1992, Ser. No. 946,165

Int. Cl.[5] B60R *25/06*

U.S. Cl. 70—247 **4 Claims**



1. A locking apparatus for an electrically operated shift lever of an automatic transmission, in which shifting of the shift lever is locked in a specified shift position, and the locking of the shift lever is released by a predetermined operation of an operator, comprising:

(a) a detent pin adapted to be moved to a lock releasing position from a lock position by the operator when the shift lever is shifted from said specified shift position to another shift position;

(b) an electrically operated actuator for retaining said detent pin in said lock position and for withdrawing said detent pin to said lock releasing position upon said predetermined operation of said operator; and

(c) a shift lock releasing means including a key for withdrawing said detent pin from said lock position by said electrically operated actuator, when said key is operated in a specified position by the operator, such that said detent pin can be moved to said lock releasing position even when electric power is not available to operate said actuator, thereby permitting the shifting of the shift lever, wherein said shift lock releasing means includes a manual operating means for releasing said detent pin from the lock position by the operation of the operator and a key cylinder interlocking means which permits movement of said manual operating means by inserting key and operating it to a specified position, said key cylinder interlocking means adapted to permit the movement of said manual operation means by pushing-in the key after operation thereof to said specified position.

5,309,745

INTERLOCKING DEVICE FOR DOORS OF A MOTOR VEHICLE

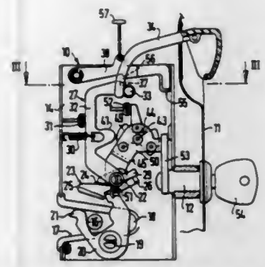
Eckhard Ursel, Buehl, and Uwe Schaper, Buehl-Vimbuch, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 24, 1992, Ser. No. 950,944

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131891

Int. Cl.[5] E05B *53/00*

U.S. Cl. 70—264 **13 Claims**



1. An interlocking device for doors and other elements of a motor vehicle, comprising a plurality of locks associated at least with doors, at least one of said locks being a locking cylinder which is actuatable from outside with a key; a holding element; a blocking element; unlocking means; an inner door handle and an outer door handle, said lock having a locking element cooperating with said holding element, said locking element in a closed position being blockable by said blocking element and being unblockable under the action of said unlocking means; a motor; and a control member displaceable by said motor so that a movement of said unlocking means from its position is influenced by said control member, said unlocking means including two independently turnable unlocking levers, one of said unlocking levers being actuatable by said outer door handle and another of said unlocking levers being actuatable by said inner door handle, said control member having control segments with which said unlocking levers individually cooperate.

5,309,746

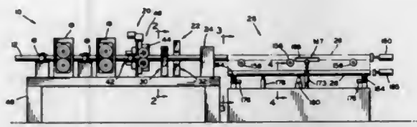
AUTOMATIC TUBE STRAIGHTENING SYSTEM

Nelson D. Abbey, III, Monclova, Ohio, assignor to Abbey Etna Machine Company, Perrysburg, Ohio

Filed Jan. 28, 1993, Ser. No. 10,290

Int. Cl.[5] B21D *3/05*

U.S. Cl. 72—9 **20 Claims**



1. A method of straightening continuous seam-welded tube wherein the formed and welded tube advances along a path through a straightener between first and second pairs of opposed rollers and thereafter through an alignment checker, the first and second pairs being disposed along axes substantially perpendicular to one another, comprising determining the actual position of the outer surface of the advancing tube within the alignment checker relative to a predetermined desired position therein, generating a signal indicative of the deviation of the actual position from the desired position, and adjusting the positions of the first and second pairs of opposed rollers along the axes in response to said signal to bend the tube within the straightener so that the outer surface of the tube tends to assume the predetermined desired position at the alignment checker.

5,309,747

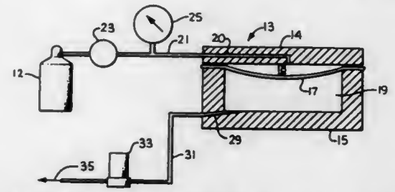
USING EXHAUST GAS MASS FLOW RATE TO CONTROL SUPERPLASTIC FORMING

Ken K. Yasui, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 801,050, Dec. 3, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 12,788

Int. Cl.[5] B21D *26/02*

U.S. Cl. 72—60 **30 Claims**



1. An apparatus for superplastically forming a blank into an object during a forming cycle period comprising:

a forming die containing the blank;

means for controlling the superplastic forming of the blank;

an exhaust gas being exhausted from the forming die at an actual mass flow rate;

means for measuring the actual mass flow rate of the exhaust gas;

means for determining an average mass flow rate of the exhaust gas for the forming cycle period; and

means for continuously comparing the average mass flow rate and the actual mass flow rate of the exhaust gas; wherein

said control means is responsive to said comparison means.

5,309,748

METAL EXTRUSION

Martin R. Jarrett, Southam, and William Dixon, Egremont, both of Great Britain, assignors to Alcan International Limited, Montreal, Canada

PCT No. PCT/GB90/01434, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO91/04110, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 18, 1990, Ser. No. 836,347

Claims priority, application United Kingdom, Sep. 18, 1989, 8921079

Int. Cl.[5] B21C *23/01*

U.S. Cl. 72—256 **13 Claims**



1. A method of producing an extrusion, which method comprises providing a billet of extrudable metal said billet having an untapered part towards its front end and a back end which has a reduced cross section along at least part of its length, the cross-sectional area of the billet at the back end being up to 90% of the cross-sectional area of the untapered part of billet, compressing the billet along its length such that the metal of the back end of the billet is upset in a transverse direction, and extruding the compressed billet.

5,309,749

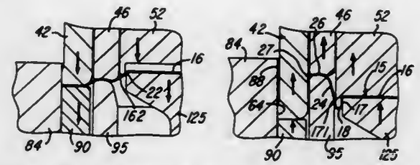
METHOD AND APPARATUS FOR FORMING A CAN SHELL

Ralph P. Stodd, 6450 Poe Ave., Suite 213, Dayton, Ohio 45414

Filed May 3, 1993, Ser. No. 55,274

Int. Cl.[5] B21D *51/44*

U.S. Cl. 72—336 **20 Claims**



1. A method of forming a can end wall or shell from a flat metal sheet, the shell including a center panel having a peripheral panel radius and connected by an annular panel wall to an annular countersink having a countersink radius and with the countersink connected to an annular crown by a tapered annular chuckwall, the method comprising the steps of blanking a disk from the sheet, gripping a peripheral portion of the disk, moving the peripheral portion axially in one direction relative to a center portion of the disk, pressing the center portion of the disk with a panel punch against an annular nose portion defining a cavity within a die center to define the center panel and at least part of the panel radius between the nose portion and the panel punch, moving the center panel in the same direction with the die center and panel punch to wrap the center portion of the disk around the nose portion and to form the chuckwall against an annular die core ring surrounding the panel punch, and pressing the center panel in the opposite direction and into the cavity with the panel punch while moving the die center in the opposite direction to form the panel wall and to form the countersink around the nose portion of the die center.

5,309,750

POUCH TESTER

David C. Riley, 39 Holland Crescent, Kingston, Ont., Canada K7M 2V7

PCT No. PCT/CA91/00115, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO91/16611, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 5, 1991, Ser. No. 937,871

Claims priority, application Canada, Apr. 18, 1990, 2014813

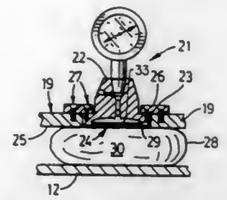
Int. Cl.[5] G01M *3/36*

U.S. Cl. 73—52 **2 Claims**

1. A portable apparatus for testing a pouch which contains a flowable material and is made from a flexible substantially gas impermeable thermoplastic polymeric film, said apparatus comprising two plates, at least one of which is moveable towards the other plate, a first plate of said plates having a pressure sensing device located thereon, said pressure sensing device having a diaphragm flush with a portion of said first

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plate which is intended to be in contact with said pouch, such that when the pouch is placed between the two plates and



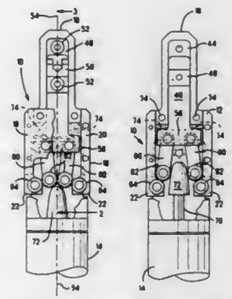
squeezed therebetween by said plates, the film of the pouch presses against the pressure sensing device.

5,309,751

PORTABLE CRIMPING TOOL

Dale R. Ryan, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 29, 1993, Ser. No. 38,406
Int. Cl.[5] B21J *9/18*
U.S. Cl. 72—450 **9 Claims**



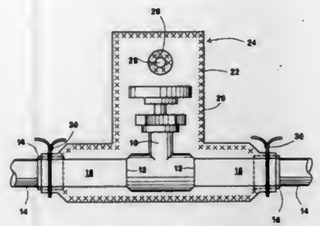
1. A portable crimping tool for crimping a terminal to a conductor, comprising:
a frame;
a mating pair of crimping dies, one of which is attached to said frame, the other of which is attached to a slide member arranged to reciprocate within said frame for effecting sliding movement of said other die along an axis toward and away from said one die;
a pair of links each having one end pivotally attached to and carried by said slide member;
a first pair of rollers each journaled for rotation at an end of a respective one of said links opposite to said pivotal attachment thereof, said first pair of rollers being on opposite sides of said axis;
a second pair of rollers journaled for rotation in said frame on opposite sides of said axis, said first and second pairs of rollers having mutually parallel axes of rotation; and,
a linear actuator attached to said frame and operable to move a wedge along said axis, said wedge arranged to engage said first pair of rollers during extension of said linear actuator such that said first pair of rollers roll on opposite sides of said wedge and are urged into rolling engagement with said second pair of rollers, wherein each of said first pair of rollers moves along an arcuate path about a corresponding one of said second pair of rollers, thereby effecting said sliding movement of said other die toward said one die.

5,309,752

LEAKAGE MEASUREMENT INTO A GAS-CHARGED COLLAPSIBLE CONTAINER

Erwin S. Beckinghausen, Jr., East Amherst, and Francis E. Pritchard, Buffalo, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jul. 17, 1992, Ser. No. 914,397
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—40.7 **8 Claims**



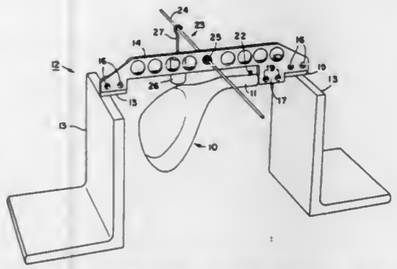
7. A collapsible container for enclosing a vessel for leakage rate measurement, said container comprising:
(a) at least one flexible sheet folded around the vessel with the mating edges of said sheet sealed to each other to seal the container around the vessel;
(b) a port located opposite a portion of the container which is capable of being collapsed against said port so as to close said port and
(c) an opening in said container for protrusion of and means for sealing around an extension from the vessel, said means for sealing comprising a layer of tape affixed to the protruding extension, a coating of vacuum sealant applied to the tape, the edges of the container openings conformed to the tape, and a band placed therearound.

5,309,753

APPARATUS AND METHOD FOR DETERMINING THE INERTIA MATRIX OF A RIGID BODY

Stanley H. Johnson, Bethlehem, Pa., assignor to U.S. Golf Association, Far Hills, N.J.

Filed Apr. 8, 1993, Ser. No. 44,942
Int. Cl.[5] A63B *53/00*
U.S. Cl. 73—65.03 **6 Claims**



6. A method of determining the inertia matrix of a rigid body comprising the steps of
establishing a reference coordinate system for the body having three mutually perpendicular axes (X, Y, Z)
balancing said body about a reference axis parallel to and in a common vertical plane with one of said axes (Z) with the remaining axes (X, Y) in a vertical plane to obtain a first coordinate of the center of mass of said body;
balancing said body about said one axis (Z) with said remaining axes (X, Y) in a horizontal plane to obtain a second coordinate of said center of mass;
balancing said body about said reference axis with said one axis perpendicular to said reference axis to obtain a third coordinate of said center of mass;
thereafter determining a moment of inertia of said body about each of said axes (X, Y, Z)
mathematically calculating a moment of inertia (I_{xx}, I_{yy}, I_{zz}) of said body about each axis through said center of mass parallel to said three axes using the parallel-axis theorem

$$I_{kk}=I_{KK}+md^2$$

wherein I_{KK} is the moment of inertia about an axis of rotation kk, m is the mass of the body, d is the distance of the center of mass of the body f rom the kk axis and I_{KK} is the moment of inertia through the center of mass;
thereafter determining the products of inertia (I_{XY}, I_{XZ}, I_{YZ}) with respect to each said axis passing through said center of mass from said moments of inertia about each said axis and the moments of inertia calculated with respect to a second reference coordinate system (X'Y'Z') at said center of mass;
obtaining an inertia matrix [I] for said body wherein

$$[I] = \begin{matrix} I_{XX} & I_{YY} & I_{ZZ} \\ I_{XY} & I_{YY} & I_{YZ} \\ I_{XZ} & I_{YZ} & I_{zz} \end{matrix}$$

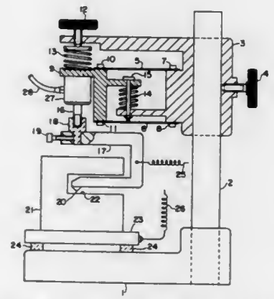
calculating three principal moments of inertia of said body from said inertia matrix and principal-axis direction cosines with respect to said axes of said body; and
graphically representing said three principal moments of inertia about arbitrary axes with said principal axes being along the axes of an ellipsoid to form an inertia ellipsoid.

5,309,754

HARDNESS TESTER AND METHOD FOR MEASURING THE HARDNESS OF METALLIC MATERIALS

Alfred Ernst, Via Ronchetto, 3, CH-6814 Cadenpino, Switzerland

PCT No. PCT/EP91/01965, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO92/08119, PCT Pub. Date May 14, 1992
PCT Filed Oct. 16, 1991, Ser. No. 859,726
Claims priority, application Italy, Oct. 24, 1990, 83639 A/90
Int. Cl.[5] G01N *3/48*
U.S. Cl. 73—81 **4 Claims**



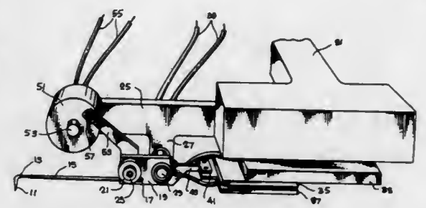
1. A method for determining the hardness of a metal sample by using a hardness tester provided with an indenter having an indenting tip of a hard and undeformable material and means for loading said indenter with a certain load for producing the penetration of said tip in the metallic sample, the depth of penetration and/or the width of the indentation produced under a given load providing a measure of the hardness of the material, characterized by comprising:
utilizing an electrically conductive indenting tip and connecting said indenter and said metallic sample to the input terminals of an electric resistance measuring apparatus;
loading said indenter up to a preset load on a reference metallic sample having a known hardness and detecting the contact resistance under said load;
functionally setting the tester on a metallic sample to be tested and gradually loading the indenter until the same electrical contact resistance as detected on said reference sample is measured by said electrical resistance measuring apparatus and reading the load which is actually applied to the indenter;
determining the hardness of the tested sample through a proportionality relationship between said preset load applied to the reference sample and the load applied to the tested sample for attaining the same electrical contact resistance on the reference sample and on the test sample.

5,309,755

PROFILOMETER STYLUS ASSEMBLY INSENSITIVE TO VIBRATION

William R. Wheeler, Saratoga, Calif., assignor to Tencor Instruments, Mountain View, Calif.

Filed Oct. 2, 1992, Ser. No. 955,507
Int. Cl.[5] G01B *7/28*
U.S. Cl. 73—105 **13 Claims**



1. A profilometer assembly comprising,
an elongated stylus arm and counterbalance having a first end with a hard stylus mounted for contact with a substrate disposed below the arm and a second end, opposite the first end having a vane for motion between two parallel plates, the stylus arm having a pivot between the first and second ends, said parallel plates forming a stylus displacement measurement transducer with said vane, and
a variable force member associated with the first end of the stylus arm for urging the first end into contact with said substrate.

5,309,756

DEVICE FOR DETERMINING MALFUNCTION OF AN ENGINE CYLINDER

Kouichi Osawa, and Kenichi Harada, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 1, 1992, Ser. No. 907,417
Claims priority, application Japan, Jul. 4, 1991, 3-164731; Jul. 12, 1991, 3-172799; Aug. 13, 1991, 3-202762; Sep. 9, 1991, 3-229167
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **26 Claims**

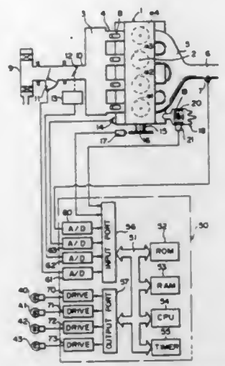
1. A device for determining a malfunction of a cylinder of an internal combustion engine including a plurality of cylinders, the device comprising:
first detection means for detecting a first engine speed at a predetermined first crank angle, wherein the first crank angle is within a portion of a power stroke of a first cylinder, and a second engine speed at a predetermined second

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crank angle, wherein said second predetermined crank angle is within a corresponding portion of a power stroke of a second engine cylinder;

difference calculating means for calculating a difference between said first and second engine speeds;

misfire determining means for determining that a misfire has occurred in the engine cylinder in which the engine speed is smaller when said difference is larger than a predetermined limit;



malfunction determining means for determining that a malfunction has occurred in an engine cylinder when a frequency at which said misfire determining means determines that a misfire has occurred in the particular cylinder is larger than a predetermined frequency;

second detection means for detecting a current engine load; and

first changing means for changing at least one of said predetermined limit and said predetermined frequency in accordance with the current engine load.

5,309,757

CYLINDER IDENTIFYING APPARATUS FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

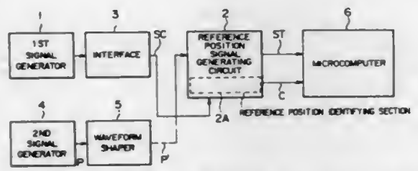
Atsuko Hashimoto, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 908,467

Claims priority, application Japan, Jul. 4, 1991, 3-164493; Jul. 4, 1991, 3-164494; Jul. 5, 1991, 3-165837

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **5 Claims**



1. A cylinder identifying apparatus for a multi-cylinder internal combustion engine having a crankshaft and a camshaft operatively coupled to the crankshaft for rotation therewith, said apparatus comprising:

a single, first signal generator (**1**; **101**) provided on the camshaft for generating a cylinder identifying signal in synchronization with the rotation of the camshaft;

a second signal generator (**4**; **104**) provided on the crankshaft for generating, in synchronization with the rotation of the crankshaft, a pulse signal containing a series of pulses each corresponding to a predetermined crank position of each cylinder; and

reference position signal generating means (**2**; **102**) for generating, based on the output signals from said first and second generators, a reference position signal containing a series of pulses each exactly indicating the predetermined crank position of each cylinder, and a cylinder identifying information signal indicative of the cylinder corresponding to each pulse of the reference position signal, wherein said cylinder identifying signal comprises a series of a plurality of rectangular-shaped pulses each corresponding to a specific cylinder and having pulse widths different from each other.

5,309,758

STEERING ANGLE SENSOR FOR AUTOMOBILE

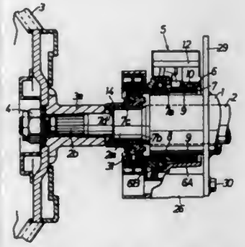
Hajime Kubota; Atsushi Makino; Nobuyuki Tanaka; Kazuto Chisaka, and Masaru Abe, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,135

Claims priority, application Japan, Apr. 25, 1991, 3-095614

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.1 **19 Claims**



1. A steering angle sensor for an automobile, comprising:

a stator supported on a steering column fixed to a vehicle body, and a rotor mounted to a steering shaft rotatably carried in said steering column,

said stator having a pickup means provided thereon for detecting the rotational angle of said rotor from a predetermined rotational neutral position thereof, wherein

said sensor further includes a locking means which is adapted to lock said rotor with respect to the vehicle body in a neutral position when a steering wheel is not mounted to the steering shaft, and is adapted, when the steering wheel is mounted to the steering shaft, automatically to disengage the lock of said rotor and to connect said rotor to said steering shaft.

5,309,759

PEDAL CALCULATOR

Brian P. Marshall, Fort Wayne, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Jun. 23, 1993, Ser. No. 81,764

Int. Cl.[5] G01M *15/00*

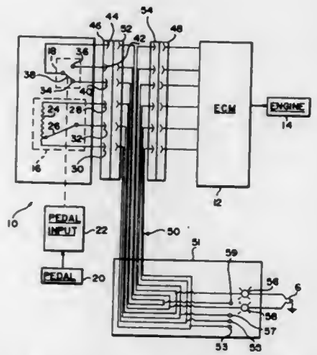
U.S. Cl. 73—118.1 **18 Claims**

1. For testing an accelerator pedal sensor for an automotive vehicle accelerator pedal that operates over a range extending from idle to full throttle to correspondingly operate a powerplant for powering the vehicle, said accelerator pedal sensor comprising an accelerator pedal position sensing device for providing an accelerator pedal position signal and an idle validation switch for validating idle and non-idle positions, said sensing device comprising means that presents a certain electric circuit parameter via first terminal means of said sensor to which a reference electrical input is applied, and selection means that is operated by an accelerator pedal input to present via second terminal means of said sensor an electrical output representing pedal position over a range extending from a closed throttle position to a full throttle position, said idle validation switch comprising first and second fixed switch contacts and a third movable switch contact that is operated by the pedal input to switch between said first and second fixed switch contacts at a position proximate closed throttle position, a method comprising the steps of:

measuring the value of the reference electrical input applied to said first terminal means to determine if it is within a specified acceptable range;

if the value of the reference electrical input to said first terminal means is within such specified acceptable range, measuring the value of the electrical output at said second terminal means with the pedal input in idle position, and measuring the value of the electrical output at said second terminal means with the pedal input in full throttle position;

converting the measured values of the electrical output at said second terminal means with the pedal input in idle and full throttle positions into a range of acceptable values at which said third movable switch contact should switch between said first and second fixed switch contacts;



operating the pedal input from idle position to a non-idle position and during such operation measuring the value of the electrical output at said second terminal means at which said third movable switch contact ceases to make contact with one of said first and second fixed switch contacts and the value of the electrical output at said second terminal means at which said third movable switch contact begins to make contact with the other of said first and second fixed switch contacts;

operating the pedal input from a non-idle position to idle position and during such operation measuring the value of the electrical output at said second terminal means at which said third movable switch contact ceases to make contact with said other of said first and second fixed switch contacts and the value of the electrical output at said second terminal means at which said third movable switch contact begins to make contact with said one of said first and second fixed switch contacts;

and comparing the measured values of the electrical output at said second terminal means obtained during the first-mentioned operating step of operating the pedal input from idle to non-idle and during the second-mentioned operating step of operating the pedal input from non-idle to idle with said range of acceptable values at which said third movable switch contact should switch between said first and second fixed switch contacts.

5,309,760

METHOD AND APPARATUS FOR MEASURING THE CONTENT OF A STORAGE VESSEL

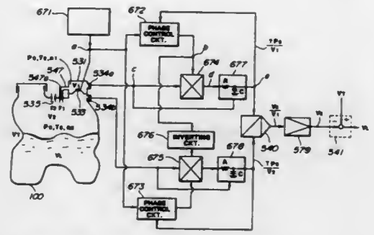
Kajiro Watanabe, Tokyo, and Katushi Ohneda, Saitama, both of Japan, assignors to Kanto Seiki Co., Ltd., Omiya, Japan

Continuation-in-part of Ser. No. 376,665, Jul. 7, 1989, abandoned. This application Aug. 12, 1991, Ser. No. 743,515

Claims priority, application Japan, Jul. 7, 1988, 63-169633; Jul. 7, 1988, 63-169634; Jul. 7, 1988, 63-169635; Feb. 7, 1989, 1-27808; Feb. 7, 1989, 1-27809; Mar. 14, 1989, 1-28948[U]

Int. Cl.[5] G01F *17/00*

U.S. Cl. 73—149 **5 Claims**



1. A measuring arrangement comprising:

a vessel of known volume;

an air bleed, said air bleed providing restricted fluid communicating between the interior of said vessel and the atmosphere;

means defining a chamber;

a displacement device disposed in said chamber, said displacement device being arranged to vary the pressure in said chamber, said displacement device dividing said chamber into first and second portions, the first portion being enclosed within said chamber and said second portion being fluidly communicated with the interior of said vessel;

means providing a limited amount of fluid communication between the first portion of said chamber and the interior of said vessel;

a first pressure sensor, said pressure sensor being responsive to the pressure in the first portion of said chamber and arranged to produce a first output indicative thereof;

a second pressure sensor, said second pressure sensor being responsive to the pressure in said vessel and arranged to produce a second output indicative thereof;

circuit means for receiving the outputs of said first and second pressure sensors and for filtering out first and second data, respectively, said circuit means including means for processing the first and second data in a manner which produces a signal indicative of the contents of said vessel.

5,309,761

METHODS AND APPARATUS FOR MEASURING THE ERODABILITY OF DRILLING FLUID DEPOSITS

Kris M. Ravi, Duncan, and Robert M. Beirute, Tulsa, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 939,235, Sep. 9, 1992, abandoned. This application May 21, 1993, Ser. No. 65,295

Int. Cl.[5] E21B *49/00*

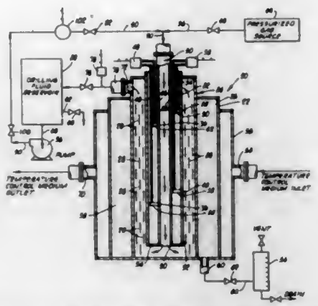
U.S. Cl. 73—151 **20 Claims**

1. A method of measuring the shear stress required at the walls of a well bore to erode drilling fluid deposits formed thereon as a result of the well bore containing a drilling fluid and penetrating one or more permeable formations comprising the steps of:

(a) introducing said drilling fluid into a permeable section of a test apparatus which simulates a permeable wall section of a well bore;

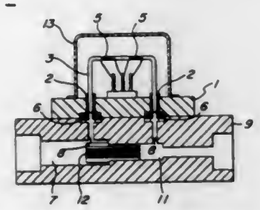
VOL 1162 ISS 2 MY 10 1994 UMI

(b) maintaining said drilling fluid in a static state in said permeable section at a pressure and for a time period such that drilling fluid deposits are formed therein;
(c) circulating said drilling fluid through said permeable section at progressively increasing flow rates and maintaining each of said flow rates for a time period whereby a pressure drop of said drilling fluid through said permeable section stabilizes while measuring said flow rate, said pressure drop, the viscosity, the temperature and the density of said drilling fluid;



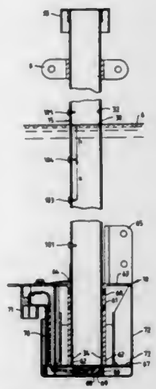
(d) determining the stabilized pressure drop measured in step (c) below which no significant erosion of said deposits takes place by calculating and comparing the well bore size equivalents to said stabilized pressure drops; and
(e) determining the minimum shear stress required to erode said drilling fluid deposits corresponding to the pressure drop below which no significant erosion takes place determined in step (d).

5,309,762
MASS FLOWMETER WITH HERMETICALLY SEALED HOUSING
Kiyoshi Satoh, and Noriyuki Kimura, both of Miyanohigashi, Japan, assignors to Stec Inc., Kyoto, Japan
Filed Nov. 19, 1990, Ser. No. 615,069
Claims priority, application Japan, Nov. 27, 1989, 1-307897
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.22 **6 Claims**



1. An improved mass flowmeter assembly for measuring a fluidic flow comprising:
a housing body having a fluid passageway extending therethrough;
a capillary tube;
means on the housing body for providing a conduit from and to the fluid passageway for operative connection with the capillary tube;
a base member mounted on the housing body;
a pair of metallic sleeves mounted on the base member and welded respectively to each end of the capillary tube;
means for measuring fluid flow through the capillary tube including a pair of sensor coils connected to the capillary tube, and
a metal sensor case having a peripheral flange welded airtight to the base member to encapsulate the capillary tube.

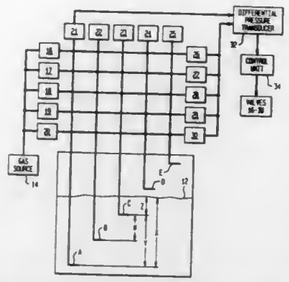
5,309,763
LIQUID-LEVEL GAUGING
David Sinclair, Chineham, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Mar. 5, 1993, Ser. No. 26,767
Claims priority, application United Kingdom, Mar. 21, 1992, 9206202
Int. Cl.[5] G01F *23/28*
U.S. Cl. 73—290 V **11 Claims**



1. A liquid-level gauging system comprising: an ultrasonic liquid-level sensor, the sensor including an ultrasonic transducer mounted towards a lower end of the sensor and arranged to direct ultrasonic energy generally upwards through a liquid, at least three reflectors, and means mounting the at least three reflectors at known fixed positions and spacings one above the other along the entire height of the sensor such that each reflector submerged in liquid reflects ultrasound energy back to the transducer; and processing means operative to identify reflections from the uppermost two of the submerged reflectors, operative to derive information about the time of arrival of pulses, and operative to determine the height of the liquid above the uppermost one of the submerged reflectors from the times of arrival of pulses reflected from the liquid surface and the two uppermost submerged reflectors,

7. A method of liquid-level gauging including the steps of: energizing an ultrasound transducer submerged in liquid to produce bursts of ultrasound energy directed upwardly towards the liquid surface and toward a series of at least three reflectors mounted at known fixed positions and spacings one above the other along the entire length of an elongated sensor; receiving ultrasound energy reflected from the liquid surface and submerged ones of said reflectors; identifying reflections from the uppermost two of the submerged reflectors and the liquid surface, and calculating the height of liquid from the spacing of the reflectors and the times of arrival of pulses reflected from the liquid surface and the two uppermost submerged reflectors.

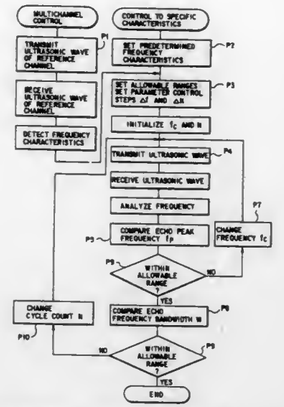
5,309,764
TANK GAUGING SYSTEM
Mark S. Waldrop, Mt. Baldy; Peter P. Elderton, Fountain Valley, and Raymond S. Ohashi, Riverside, all of Calif., assignors to ITT Corporation, New York, N.Y.
Filed May 26, 1993, Ser. No. 66,846
Int. Cl.[5] G01F *23/16*; G01N *9/18*
U.S. Cl. 73—302 **28 Claims**



1. A method of determining the amount of fluid in a tank comprising the steps of:
measuring the pressure at a plurality of vertically fixed locations within the tank;
comparing the measured pressures to identify a location that is immersed in the fluid;
calculating the depth of the fluid above the immersed location from the fluid induced pressure at the immersed location and the density of the fluid;
adding the calculated depth to a height of the immersed location; and in which
one of said vertically fixed locations is the next location below the immersed location and one of said vertically fixed locations is above the fluid.

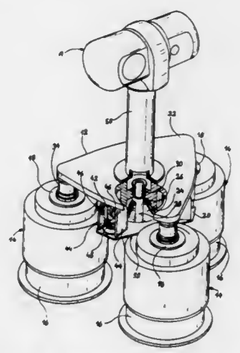
5,309,765
METHOD AND APPARATUS FOR PERFORMING ULTRASONIC FLAW DETECTION BY CONTROLLING PEAK FREQUENCY AND FREQUENCY BANDWIDTH
Hidekazu Horigome; Hideya Tanabe, and Katsuyuki Nishifuji, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan
Filed Nov. 12, 1991, Ser. No. 790,471
Claims priority, application Japan, Nov. 14, 1990, 2-309901; Jul. 1, 1991, 3-160676
Int. Cl.[5] G01N *29/10*
U.S. Cl. 73—602 **12 Claims**

1. A method of performing ultrasonic flaw detection, comprising the steps of:
outputting a pulse signal having a carrier frequency and a cycle count, both of which are designated, to an ultrasonic probe attached to an object to be tested and causing an ultrasonic wave to be incident on the object;
causing said ultrasonic probe to receive a reflected wave of the ultrasonic wave incident on the object to obtain an echo signal;
changing the carrier frequency of the pulse signal so that a peak frequency of the received echo signal becomes a predetermined frequency;
changing the cycle count of the pulse signal so that a frequency bandwidth of the received echo signal becomes a predetermined bandwidth; and



detecting a defect present in the object in accordance with the echo signal output from said ultrasonic probe.

5,309,766
HELICOPTER SHAFT VIBRATION SIMULATOR
Christophe Touzeau, Savigny S/Orge, and Henri Ladrange, Villejuif, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France
Filed Jun. 17, 1992, Ser. No. 899,990
Claims priority, application France, Jun. 24, 1991, 91 07721
Int. Cl.[5] B06B *3/00*
U.S. Cl. 73—663 **5 Claims**



1. Simulator of the vibrations of the shaft supporting the rotor of a helicopter comprising:
a fixed reference structure;
a shaft-carrying mobile structure fitted on the fixed reference structure so as to have one degree of translational freedom in a vertical direction and two degrees of rotational freedom about two horizontal axes, namely the roll and pitch axes, which are perpendicular to one another;
three linear exciters integral with the fixed reference structure and having parallel vertical axes and acting on the shaft-carrying mobile structure at three points forming an equilateral triangle, whose centre is located on the axis of the shaft; and

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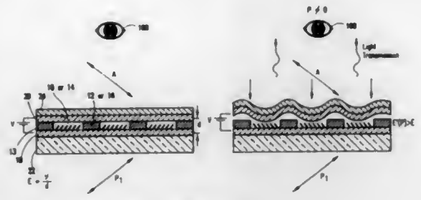
three horizontal, pneumatic cushions between mobile shaft-carrying structure and the fixed reference structure.

5,309,767

PRESSURE SENSOR USING LIQUID CRYSTALS

Devendra S. Parmar, Hampton, and Harlan K. Holmes, Newport News, both of Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Oct. 9, 1992, Ser. No. 959,931
Int. Cl.[5] G01L 9/00
U.S. Cl. 73—705 15 Claims



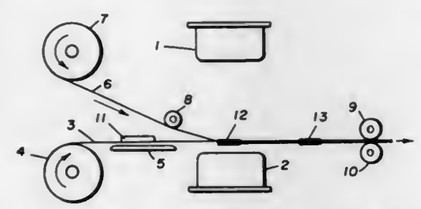
1. A pressure sensor, comprising:
an electrical component having
(i) first and second, spaced apart, electrically conductive films, at least one of said first and second, spaced apart, electrically conductive films allowing light transmission therethrough, said first electrically conductive film capable of movement under the influence of an applied pressure relative to said second electrically conductive film,
(ii) a liquid crystal positioned between said first and second, spaced apart, electrically conductive films, and
(iii) a means for applying a voltage between said first and second, spaced apart, electrically conductive films; and
an optical component having
(i) a means for directing polarized light towards said liquid crystal, and
(ii) a means for detecting polarized light emanating from said liquid crystal.

5,309,768

AUTOMATION OF TEST INSTRUMENTS

Michael Mathews; David G. Rusling; Michael J. Stolc, all of Wiltshire, England, and Robert I. Barker, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 23, 1992, Ser. No. 872,205
Claims priority, application United Kingdom, Apr. 26, 1991, 9108960; Oct. 29, 1991, 9122869
Int. Cl.[5] G01N 3/24
U.S. Cl. 73—846 14 Claims



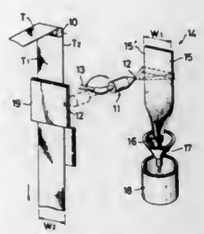
1. A method of operating an instrument for testing the physical properties of materials in which each of a series of samples of the material to be tested is placed in a test position located between dies, the dies are closed to mould the material to a test shape, a test is carried out on the sample in the mould and after the completion of the test the dies are opened and the sample is removed from the test position, characterised in that a film of material which is substantially non-adhesive to the dies under the conditions of the test covers those surfaces of the sample which, in the absence of the film, would be in contact with the dies during the test, each sample in turn is conveyed to the test position and removed by mechanical means from the test position after the completion of the test.

5,309,769

METHOD OF METERING THE RATE OF FLOW OF A DYE SOLUTION

Yoshimichi Yamakita, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,122
Claims priority, application Japan, Apr. 1, 1992, 4-109363
Int. Cl.[5] G01S 1/00
U.S. Cl. 73—861 5 Claims



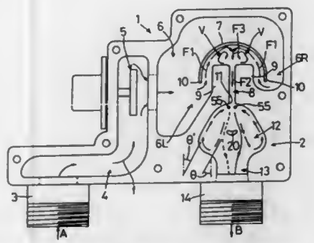
1. A method of metering the rate of flow of a dye solution from a spray nozzle for dyeing an elongate fabric material, which method comprises positioning said spray nozzle rotatably between a vertically supported plate member and a vertical run of said fabric material, spraying a test liquid equivalent to said dye solution over said plate member substantially equal in width to said fabric material to be dyed, allowing said test liquid to flow by gravity down said plate member, and measuring the rate of flow of said liquid per unit length of time as it is accumulated in a reservoir.

5,309,770

FLUID VIBRATING TYPE FLOWMETER

Makoto Okabayashi, Nabari, Japan, assignor to Osaka Gas Co., Ltd., Osaka, Japan

Filed Mar. 6, 1992, Ser. No. 848,425
Claims priority, application Japan, Mar. 6, 1991, 3-039761; Mar. 6, 1991, 3-039762
Int. Cl.[5] G01F 1/20
U.S. Cl. 73—861.19 6 Claims



1. A fluid vibrating type flowmeter comprising:
a nozzle disposed in a flow passage and defining a nozzle outlet plane extending perpendicular to said flow passage;
an enlarged passage disposed downstream of said nozzle and including divergent inner wall surfaces symmetric about an axis of said nozzle;
a target disposed centrally of said enlarged passage for obstructing straight movement of streams jetting out of said nozzle; and
a constricted passage disposed downstream of said enlarged passage and having a smaller passage width than a rear end of said enlarged passage;
wherein each of said divergent inner wall surfaces includes a main arcuate section continuous from said nozzle outlet plane and having a first radius R, a straight diverging wall section smoothly continuous from said main arcuate section, and an auxiliary arcuate section continuous at an upstream end thereof from said straight diverging wall section and at a downstream end thereof with said constricted passage, said auxiliary arcuate section having a second radius r,
said straight diverging wall section being formed as a common tangent of said main arcuate section and said auxiliary arcuate section, and
said first radius R and said second radius r are in relations expressed by

$$r/R = 0.5$$
$$L/R = 1.5, \text{ and}$$
$$x/R = (\sqrt{3})/2,$$

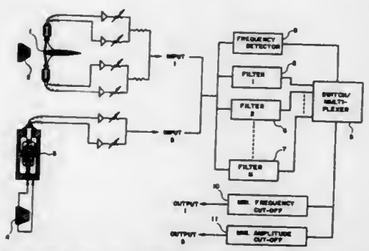
where L is a first distance in a passage direction of said nozzle outlet plane to the center of curvature of said auxiliary arcuate section, and x is a second distance transversely of said passage of the center of curvature of said auxiliary arcuate section to a passage axis.

5,309,771

METHOD FOR PROCESSING SIGNALS IN VORTEX FLOWMETERS

Yon S. Lew, and Hyok S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Mar. 9, 1992, Ser. No. 848,291
Int. Cl.[5] G01F 1/32
U.S. Cl. 73—861.22 6 Claims



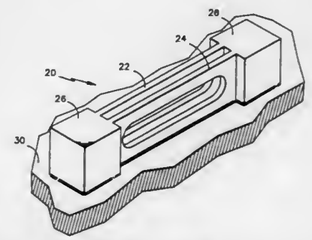
1. A method for processing a vortex generated electrical signal comprising in combination:
a) supplying an input electrical signal generated by a transducer included in a vortex sensor and conditioned by a preamplifier to an input end of a plurality of electronic filters disposed in a parallel arrangement; wherein each of said plurality of electronic filters includes each of a plurality of normally open switches closing and opening depending on a control signal generated as a function of frequency band of an alternating electrical signal, said each of the plurality of electronic filters transmitting the input electrical signal through and to an output end of said each of plurality of electronic filters at a desired efficiency when said each of the plurality of switches is closed and cutting off transmission of the input electrical signal through said each of the plurality of electronic filters when said each of the plurality of switches is open;
b) detecting a dominant frequency of the input electrical signal taken off prior to the input end of the plurality of electronic filters and before being transmitted through the plurality of electronic filters; and
c) generating the control signal as a function of said dominant frequency of the input electrical signal taken off prior to the input end of the plurality of electronic filters and before being transmitted through the plurality of electronic filters, and supplying the control signal to the plurality of switches respectively controlling transmissions of the input electrical signal through the plurality of electronic filters; wherein the control signal closes only one of the plurality of normally open switches belonging to one of the plurality of electronic filters, said one of the plurality of electronic filters transmitting the input electrical signal at a desired efficiency within a frequency band characterized by said dominant frequency of the input electrical signal generating the control signal.

5,309,772

SELF-EXCITING OPTICAL STRAIN GAGE

Bruce Hockaday, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 3, 1992, Ser. No. 923,770
Int. Cl.[5] G01L 1/10
U.S. Cl. 73—862.59 3 Claims



1. An optical strain gage comprising:
first and second bridges, each bridge extending between first and second end supports, said bridges and supports having been cut from a single, uniformly doped silicon wafer;
said first bridge including a reflective wall facing the second bridge;
said second bridge including a reflective wall parallel to and facing the first bridge wall, the parallel bridge walls defining cavity therebetween;
means for transmitting light transversely into the first bridge, wherein the transmitted light is reflected between the first bridge wall and the second bridge wall, resulting in a buildup of the intensity of light energy within the cavity, aid buildup inducing vibration in said first and second bridges, the frequency of vibration being related to the strain imposed on the wafer, and
means, disposed adjacent the bridges, for sensing the vibration frequency of the bridges by measuring the frequency of the variation in the intensity of light energy within the cavity.

5,309,773

POWDER AND GRANULE INSPECTION APPARATUS

Katsumi Tokoyama, Osaka, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,064
Claims priority, application Japan, Sep. 13, 1990, 2-97154[U]
Int. Cl.[5] G01N 1/12, 1/34, 21/85
U.S. Cl. 73—863.01 6 Claims

1. A powder granule inspection apparatus for sampling powder granules flowing through an online tube having means for removing a sample of said powder granules by a sampling

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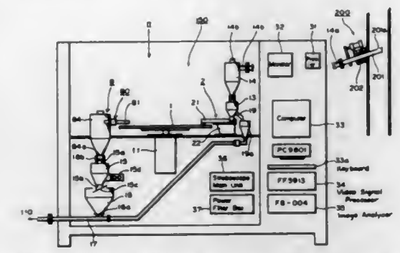
nozzle, means for automatically inspecting for foreign particles contained in said sampled powder granules and means for removing such foreign particles, if any, comprising:

a) a supply hopper for continuously storing at least a predetermined amount of powder granules sampled by said sampling nozzle;

b) a feeder device for cutting out a small amount of powder granules from said supply hopper and continuously feeding the cut-out powder granules onto an upper surface of a the rotary table in the form of a single layer;

c) a photosensing device for optically viewing and detecting the foreign particles contained in said sampled powder granules that are loaded onto the rotary table surface;

d) a foreign particle remover for removing the foreign particles from the rotary table surface;



e) a good product remover for removing the powder granules from which the foreign particle has been removed from the rotary table surface;

f) a weighing hopper for temporarily storing a desired amount of the powder granules that have been removed by said good product remover; and

g) means for maintaining said predetermined amount of powder granules in said supply hopper such that said predetermined amount of powder granules in said supply hopper is selected to be slightly larger than the amount of powder granules cutout by said feeder device, and the sampled amount of powder granules removed by said sampling nozzle is selected to be larger than the amount of powder granules cutout by said feeder device.

5,309,774

INSTALLATION FOR TAKING FLUID SAMPLES IN A CONFINED AREA

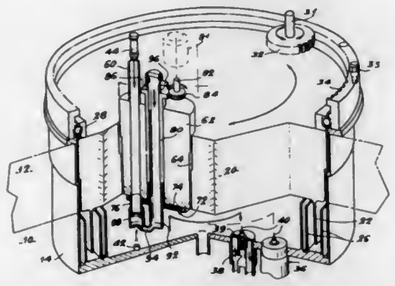
François Conche, Cherbourg, France, assignor to Cogema-Compagnie Generale Des Matieres Nucleaires, France

Filed Apr. 20, 1992, Ser. No. 870,835

Claims priority, application France, Apr. 23, 1991, 91 04995

Int. Cl.[5] G01N *1/10, 1/14*

U.S. Cl. 73—863.32 **15 Claims**



1. Installation for taking fluid samples in a confined area located below a protective slab, said installation comprising a sampling vessel located below the slab, at least one sampling needle traversing a bottom of the slab and remote handling means for transferring individually sampling pots into and out of the vessel through the slab and for engaging each pot individually on a said at least one sampling needle in order to perform a sampling operation, wherein said remote handling means comprise:

a pot transfer duct, traversing a slab element, which is vertically mobile between an upper waiting position and a lower sampling position;

a drum rotatably mounted beneath said slab element, about an axis displaced with respect to that of the duct, and having a pot reception nacelle which can be brought, by the rotation of the drum, into an angular pot reception and evacuation position, in which the nacelle is placed below the duct, and into at least one-angular sampling position, in which the nacelle can be brought above the said at least one sampling needle; and

means for the pneumatic transfer of the pots upwards and downwards in said duct.

5,309,775

APPARATUS FOR ANALYSIS OF SAMPLES OF FLUIDS

Joergen Andersen, Herlev; Kristian J. Hvidtfeldt, Virum, and Ib O. Sinnerup, Humlebaek, all of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

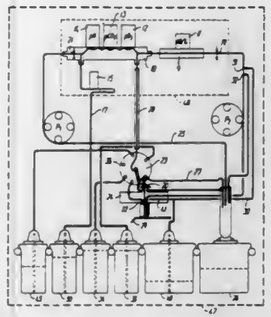
PCT No. PCT/DK90/00147, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/00520, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 13, 1990, Ser. No. 778,850

Claims priority, application United Kingdom, Jun. 23, 1989, 8914456

Int. Cl.[5] G01N *35/06*

U.S. Cl. 73—864.22 **23 Claims**



1. Apparatus comprising an analyzer for conducting measurements of properties of samples of physiological fluids involving transmission of electrical signals by the analyzer, and a reagent liquid storage vessel mountable on the analyzer, said analyzer comprising a fluid conduit system comprising a sample inlet section, a measuring section positioned downstream of the inlet section, a reagent liquid conduit, and means for directing a flow of reagent liquid from the reagent liquid storage vessel and through the measurement section after discharge of a sample therefrom, said directing means comprising a reagent liquid input mechanism for directing a flow of reagent liquid from the storage vessel through the reagent liquid conduit to the measurement section, said analyzer further comprising support means capable of supporting the liquid storage vessel in position for co-operation with said reagent liquid input mechanism, and pump means arranged in the fluid conduit system for pumping reagent liquid from the storage vessel to the measurement section, said storage vessel having a sealed laterally facing outlet aperture, the support means supporting the storage vessel in position for use with the laterally facing outlet aperture toward the top of the vessel and positioned relative to the input mechanism for aligning said input mechanism with said laterally facing outlet aperture, said storage vessel having an internal liquid conduit extending from the aperture into the liquid near to the bottom of the vessel, said input mechanism of the apparatus comprising an open ended tube fixed with respect to the analyzer and extending from the analyzer for penetrating the aperture seal of the laterally facing outlet aperture as the storage vessel is mounted on the analyzer and for communicating with said liquid conduit inside the storage vessel, the reagent liquid conduit of the analyzer, the open ended tube and the liquid conduit of the vessel thereby providing a continuous channel for liquid from the vessel to the measurement section.

5,309,776

METHOD OF DIAGNOSING DETERIORATION OF INSULATING PAPER IN OIL-FILLED ELECTRIC APPARATUS

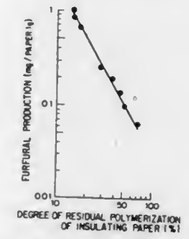
Sadao Nanba, and Teruo Miyamoto, both of Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1992, Ser. No. 818,875

Claims priority, application Japan, Jan. 14, 1991, 3-2719

Int. Cl.[5] G01N *33/34;* **G01M** *19/00*

U.S. Cl. 73—866 **3 Claims**



1. A method of diagnosing the deterioration of insulating paper in an insulating oil-filled electric apparatus, comprising the steps of:

a) determining the amount of furfural dissolved in the insulating oil;

b) determining the amount of furfural adsorbed on the insulating paper in the oil-filled electric apparatus;

c) determining the total amount of furfural by adding the amount of dissolved furfural to the amount of adsorbed furfural;

d) calculating the furfural production per gram of insulating paper from said total amount of furfural and the amount of the insulating paper in a highest-temperature portion of said oil-filled electric apparatus; and

e) determining the degree of residual polymerization of said insulating paper from a previously obtained relationship between furfural production and the degree of residual polymerization of said insulating paper, so as to diagnose the degree of deterioration of said insulating paper.

5,309,777

MEASURING INSTRUMENT PARTICULARLY USEFUL FOR MEASURING WASTE GASES FROM HEATING INSTALLATIONS

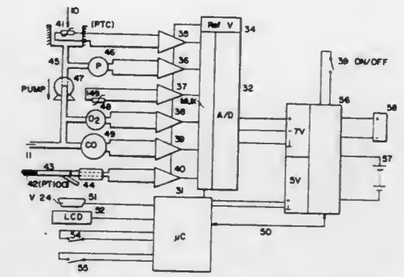
Rudi Schmitt, and Werner Schmitt, both of Ludwigshafen, Fed. Rep. of Germany, assignors to S & G Schmitt Messgeraetebau GmbH, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 28, 1991, Ser. No. 750,947

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1990, 4027715

Int. Cl.[5] G01D *7/00, 3/08*

U.S. Cl. 73—866.3 **15 Claims**



1. A compact measuring instrument for measuring waste from heating installations, comprising at least one sensor and pump arranged in a measuring channel, a microcomputer for controlling the measuring sequence and for processing sensor signals, and connected to the microcomputer an alphanumeric display device and two control elements, wherein one control element serves to page in a selection menu by which one menu item is displayed on the display device, and wherein the other control element serves to input the menu item displayed, said compact measuring instrument is carried by an operator using only one hand and is easily operated by the same one hand, wherein said control elements comprise push-buttons and wherein an additional push-button is connected to an on/off switch, and wherein each of said push-buttons are arranged in the vicinity of one edge of a front side of the measuring instrument, which side also bears the display device.

5,309,778

GEAR BOX WITH CONTINUOUSLY VARIABLE GEAR

Roumen Antonov, Paris, France, assignor to Antonov Automotive North America B.V., Rotterdam, Netherlands

PCT No. PCT/FR89/00231, § 371 Date Jan. 4, 1991, § 102(e) Date Jan. 4, 1991, PCT Pub. No. WO89/11405, PCT Pub. Date Nov. 30, 1989

PCT Filed May 12, 1989, Ser. No. 603,739

Claims priority, application France, May 16, 1988, 88 06515; Dec. 21, 1988, 88 16988

Int. Cl.[5] F16H *1/38*

U.S. Cl. 74—15.86 **3 Claims**

1. In a vehicle having an engine, a supercharging compressor, and at least one drive wheel, an automatically variable ratio transmission that comprises:

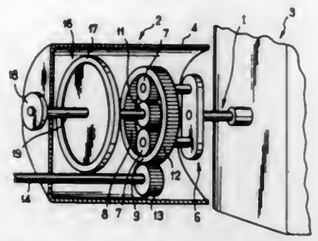
an input shaft connected for receiving power from the engine;

an output shaft drivingly coupled to the at least one drive wheel;

a gear train having an input element connected to the input shaft, an output element coupled to the output shaft, a third element, and at least one gear arranged to distribute

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power, supplied from the engine, between the output element and the third element; and



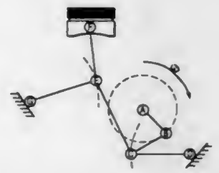
means for coupling the third element to the supercharging compressor.

5,309,779

FOUR DEAD CENTERS CRANK MECHANISM

Cosimo Sarno, Via San Filippo, 32, 1-84062 Olevano Sul Tusciano, Italy

PCT No. PCT/IT89/00075, § 371 Date Jul. 3, 1991, § 102(e) Date Jul. 3, 1991, PCT Pub. No. WO90/05862, PCT Pub. Date May 31, 1990
PCT Filed Nov. 13, 1989, Ser. No. 721,427
Claims priority, application Italy, Nov. 16, 1988, 64821 A/88
Int. Cl.[5] F16H *21/18*
U.S. Cl. 74—44 **4 Claims**



1. A crank mechanism for the transformation of a rotary movement of a crank supported in a crankcase into reciprocating movement of a piston in a cylinder, said mechanism comprising:

an open kinematic chain comprised of first, second and third rods, pivotally connected together, said first and third rods being pivotally connected at their outer ends to said crankcase, said first rod being pivotally connected to said second rod at a first pivotal connection and said second rod being pivotally connected at a second pivotal connection to said third rod;

a fourth rod connecting said piston to said first pivotal connection; and

a fifth rod connecting a crank pin of said crank mechanism to said second pivotal connection.

5,309,780

TORQUE LIMITING HEADLAMP ADJUSTOR

Karl R. Schmitt, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Filed Oct. 15, 1992, Ser. No. 962,490
Int. Cl.[5] B60Q *1/06*; F16H *25/24*
U.S. Cl. 74—89.13 **19 Claims**

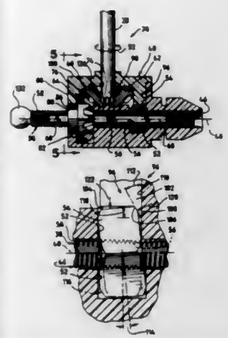
1. A headlamp adjusting mechanism comprising:

a housing having a passage formed therein;

an internally threaded member non-rotatably retained in said housing member, said internally threaded member having a threaded aperture extending therethrough, said threaded aperture being positioned substantially coincident with said passage;

an elongated adjusting shaft having a threaded surface disposed on an outer surface thereof, said threaded surface cooperatively engaging said threaded aperture in said internally threaded member, said adjusting shaft being disposed in said passage of said housing and cooperatively engaging said threaded aperture of said internally threaded member;

means for driving said elongated adjusting shaft, said driving means being operatively associated with said shaft for



transferring driving forces provided thereby to drive said shaft cooperatively engaged with said threaded aperture in said internally threaded member, driving of said shaft in said internally threaded member producing axial displacement of said shaft; and

means for increasing friction between said shaft and said internally threaded member, said friction increasing means applying forces to said internally threaded member to cant said internally threaded member in said housing for increasing frictional forces between said member and said shaft.

5,309,781

STEPLESS SPEED CHANGE GEAR

Nobuo Takata, 87, Kurotani 5-chome, Yao-shi, Osaka 581, Japan

PCT No. PCT/JP92/00719, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/21895, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 1, 1992, Ser. No. 969,264
Claims priority, application Japan, Jun. 3, 1991, 3-131332
Int. Cl.[5] F16H *29/08*
U.S. Cl. 74—119 **3 Claims**

1. A stepless speed change gear comprising:

an input shaft;

an input shaft crank fitted to said input shaft at a right angle and provided with a connecting part;

an input connecting rod connected to said connecting part at one end side and being provided with another end side connecting part;

an output connecting rod connected to said other end side connecting part at one end side and provided with another end side connecting part;

a one-way clutch to transmit torque in one direction only and being provided with an output shaft disposed in the same direction to said input shaft and an input side member being connected to said other end side connecting part of said output connecting rod at one end side swingably about a center of said output shaft;

a speed change link connected to said other end side connecting part of said input connecting rod at one end side

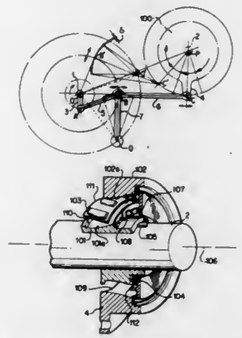
and positioned at an optional position in a given moving range at the other end side;

fixing means to fix said other end side of said speed change link;

said input connecting rod, said output connecting rod, said input side member and said speed change link being swingable in each plane a direction of which is the same as the direction of rotation of said input shaft crank;

said other end side of said speed change link moving a given locus range from a position where said output connecting rod becomes substantially orthogonal to both said speed change link and said input side member to a position where said output connecting rod and said speed change link substantially line up in a straight line;

said one-way clutch being a rolling bearing clutch comprising an inner rotation body, an outer rotation body, a plurality of intermediate rotation bodies and energizing means; said inner rotation body being provided with an inner raceway surface of a mono-hyperboloid of revolution about an axis of said output shaft; said outer rotation



body being provided with an outer raceway surface of a mono-hyperboloid of revolution about said axis; said inner rotation body and said outer rotation body facing each other to form a raceway; said intermediate rotation bodies having cylindrical rolling surfaces and being disposed in the circumferential direction of said raceway with their center lines slanting at a predetermined angle to a section including said axis; the surface of each intermediate rotation body contacting in line with said inner and outer raceway surfaces; said energizing means energizing either said inner rotation body or said outer rotation body in the direction of said axis to narrow the spacing of said raceway; said inner and outer rotation bodies being provided with an annular member at an opposite side of said axis which brings the movement of said intermediate rotation bodies in said axial direction to a stop; said outer rotation body being connected to said input side member so that both rotate in one body; said inner rotation body being connected to said output shaft so that both rotate as one body.

5,309,782

MULTIPLE RATIO MANUAL TRANSMISSION

Robert L. Seaman, Farmington Hills, Mich., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Sep. 25, 1992, Ser. No. 951,279
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—359 **8 Claims**

1. A multiple ratio transmission having:

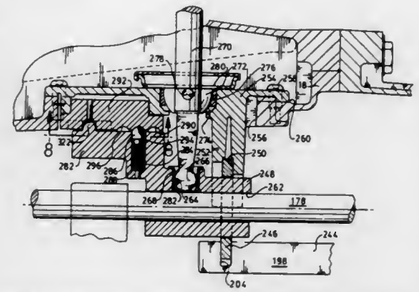
a low speed gear ratio, at least two intermediate speed gear ratios, a direct drive gear ratio and an overdrive gear ratio;

a torque input shaft, a driven shaft, a mainshaft having a mainshaft axis, said mainshaft being connected to said driven shaft, a countershaft assembly having a countershaft axis;

a torque input gear connected to said input shaft, torque delivery gears mounted on said mainshaft axis and countershaft gear elements disposed about the axis of said countershaft assembly, said gear elements being in meshing engagement with said torque delivery gears;

first synchronizer clutch means for selectively connecting said input gear to said mainshaft to effect a direct drive transmission ratio;

second synchronizer clutch means for selectively connecting a torque input gear element of said countershaft assembly to an overdrive gear element of said countershaft assembly;



third synchronizer clutch means for selectively connecting each of two intermediate ratio underdrive gear elements of said countershaft assembly to said torque input gear element;

fourth synchronizer clutch means for selectively connecting a low ratio underdrive gear element of said countershaft assembly to said torque input gear element;

a first shift fork adapted to actuate said first and second synchronizer clutch means;

a second shift fork adapted to actuate said third synchronizer clutch means;

a third shaft fork adapted to actuate said fourth synchronizer clutch means; and

a single shift rail disposed in offset parallel relationship with respect to said mainshaft, said shift rail supporting each of said shift forks.

5,309,783

SIMPLIFIED AUTOMATIC TRANSMISSION SHIFTER

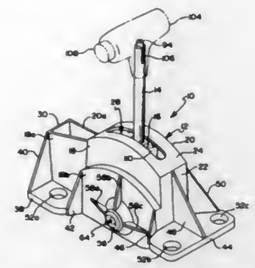
Miles G. Doolittle, Royal Oak, Mich.; Anthony R. Gurney, Toledo, Ohio; Stephanie J. Riffle, Hartland, and Arnold Schultes, Shelby Township, Macomb County, both of Mich., assignors to Dura Mechanical Components, Inc., Troy, Mich.

Filed Feb. 6, 1992, Ser. No. 831,982
Int. Cl.[5] G05G *9/12*; F16C *11/06*
U.S. Cl. 74—473 P **20 Claims**

1. A housing for an automatic transmission shifter comprising a unitary piece of plastic having spaced upper, side and end walls and a bottom having an opening, said walls defining a housing interior surface, a straight-sided slot formed in the upper wall for receiving a shifter control lever therethrough, a pair of aligned bosses formed in the side walls for mounting a shift lever pivot pin, position control means defining a plurality of discrete transmission control positions formed on the inte-

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rior surface of the housing, and flanges extending from the side and end walls for mounting the housing to vehicle structure



wherein the shift control lever can only move unilinearly along said slot.

5,309,784

SHIFT APPARATUS

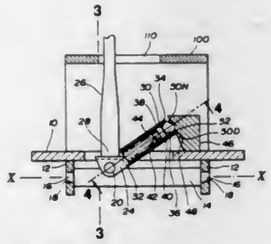
Satoshi Kobayashi, Isehara; Sadahiro Kawahara, Ebina; Hiroshi Yamazaki; Takumi Watanabe, both of Yokohama; Yasushi Asano, and Yoshimasa Kataumi, both of Kosai, all of Japan, assignors to Nissan Motor Co., Ltd.; Ohi Seisakusho Co., Ltd., both of Yokohama and Fuji Kiko Co., Ltd., Tokyo, all of Japan

Filed May 4, 1993, Ser. No. 56,631

Claims priority, application Japan, May 8, 1992, 4-116347

Int. Cl.[5] B60K *20/00*

U.S. Cl. 74—475 **9 Claims**



1. A gear shift apparatus, comprising:
- a shaft having a predetermined first axis and rotatable about said predetermined first axis;
- a bracket;
- a gear shift lever secured to said bracket for unitary motion therewith;
- a sleeve fixed to said gear shift lever for unitary motion therewith;
- a check ball supported by said sleeve;
- a stationary position plate with a cam surface cooperating with said check ball; and
- means for supporting said bracket on said shaft for enabling tilting of the bracket and the gear shift lever about a second axis extending laterally with respect to said predetermined first axis in such a manner as to keep said check ball in contact with said cam surface.

5,309,785

SHIFTING ARRANGEMENT FOR A SPEED CHANGING TRANSMISSION OF A MOTOR VEHICLE

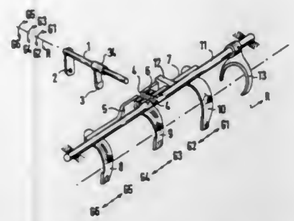
Dieter Knape, Heilbronn, Fed. Rep. of Germany, assignor to Dr. Ing. H.C.F. Porsche AG, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 947,481

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131162

Int. Cl.[5] F16H *59/04, 63/36*

U.S. Cl. 74—477 **11 Claims**



1. A shifting arrangement for a synchronized speed changing transmission of a motor vehicle comprising:
- a plurality of shiftable forward gears;
- swinging forks that engage in synchronizer clutches to shift the forward gears the swinging forks being pivotally disposed in a transmission case;
- a shifting shaft disposed in a longitudinally displaceable and rotatable manner in the transmission case in parallel to a bearing axis of the swinging forks;
- shift tongues fastened to the swinging forks and having mutually aligned grooves;
- a shift finger fastened to the shifting shaft and longitudinally displaceable in the grooves, the shift interacting with the shift tongues such that by longitudinal displacement in the grooves and a rotating of the shift finger, the transmission gears are selected; and
- a shift rod having a guide rail, wherein the shift tongues are longitudinally guided on the guide rail.

5,309,786

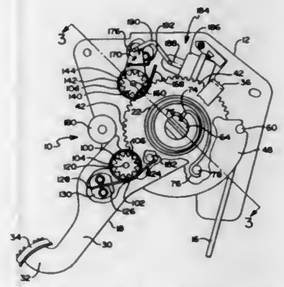
SELF-ADJUSTING PARKING BRAKE ACTUATOR

Thomas E. Paré, Dearborn Heights; J. Frank Mack, Rochester Hills, and Michael L. Stenzel, Holly, all of Mich., assignors to Dura Mechanical Components, Inc., Troy, Mich.

Filed Mar. 8, 1993, Ser. No. 27,962

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—512 **12 Claims**



1. A parking brake actuator for variably tensioning a cable, comprising:
- a mounting bracket,
- a drive plate having an outer periphery attached to the cable and mounted on the mounting bracket for rotation between positions variably tensioning the cable,
- an operating lever mounted on the mounting bracket for rotation between a brake release position and a plurality of brake apply positions,
- a prestressed spring extending between the drive plate and the operating lever to bias the drive plate rotatably relative to the operating lever to apply an initial cable tension,
- a drive clutch including connecting means connecting the lever to the outer periphery of the drive plate for movement therewith immediately upon rotation of the lever out of brake release position thereby enabling further rotation of the lever to increase cable tension,
- a drive clutch release mounted on the vehicle for automatically releasing the clutch upon movement of the lever to brake release position, and
- a position control device for releasably maintaining the drive plate in brake apply position.

5,309,787

LOCKING PIN FOR SECURING A SHIFT LINKAGE

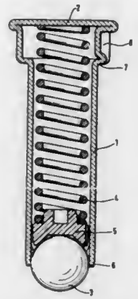
Wilfried Soyka; Manfred Winkler, and Wolfgang Steinberger, all of Herzogenaurach, Fed. Rep. of Germany, assignors to Ina Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Apr. 29, 1992, Ser. No. 875,343

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1991, 9105258[U]

Int. Cl.[5] G05G *5/06*

U.S. Cl. 74—527 **4 Claims**



1. A pin for securing shift positions of a shift linkage in automobile transmissions comprising a hollow cylindrical shaft portion (1) made by drawing from thin-walled sheet metal and closed at one end by a bottom (2) which projects radially beyond the shaft portion (1) in which a locking element (3) projecting out of an open end thereof is mounted for longitudinal displacement while being retained secure against loss and urged by a spring (4), characterized in that the shaft portion (1) comprises a diameter enlargement (7) which serves as a stop and is disposed at a predetermined distance both from the open end of the shaft portion (1) and from the bottom (2).

5,309,788

TILT COUPLING

Michael D. Summerfield, Furze Cottage, West Beer, Cheriton Bishop, Exeter, Devon., England EX6 6HF

PCT No. PCT/GB91/00203, § 371 Date Oct. 1, 1992, § 102(e) Date Oct. 1, 1992, PCT Pub. No. WO91/12143, PCT Pub. Date Aug. 22, 1991

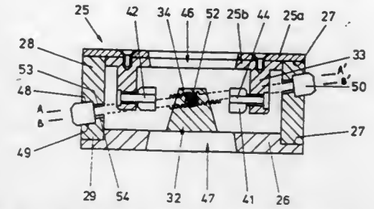
PCT Filed Feb. 8, 1991, Ser. No. 934,733

Claims priority, application United Kingdom, Feb. 8, 1990, 9002779; Feb. 8, 1990, 9002780

Int. Cl.[5] F16H *53/00*

U.S. Cl. 74—568 R **2 Claims**

1. A tilt coupling device comprising first and second mounting members having two wedge-shaped cam members, at least one of the cam members being rotatable relative to the other cam member and to the adjacent mounting member in order to change the inclination of one mounting member relative to the



other, the device further comprising a series of teeth formed on one of the cam members, and a pinion meshed with said series of teeth and carried on an operating shaft such that rotation of the operating shaft causes rotation of said one cam member relative to the other.

5,309,789

POWERTRAIN FOR AN AUTOMOTIVE VEHICLE

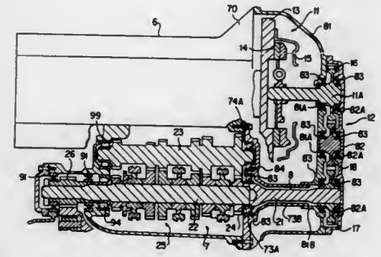
Osamu Kameda, Hiroshima; Hitoshi Akutagawa, Hiroshima; Junichi Okita, Iwakuni, and Ichiro Hirose, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 25, 1992, Ser. No. 857,579

Claims priority, application Japan, Mar. 25, 1991, 3-060516; Mar. 25, 1991, 3-060532; Mar. 25, 1991, 3-060533; Jul. 31, 1991, 3-192255; Feb. 13, 1992, 4-026400

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—606 R **10 Claims**



1. A structure of a powertrain disposed in an engine compartment of an automotive vehicle, comprising:
- an engine placed within the engine compartment, said engine having a crankshaft directed in a transverse direction of a vehicle body;
- a transmission placed within the engine compartment, said transmission having an input shaft and an output shaft which are arranged coaxially with each other and directed parallel to said crankshaft;
- an engine clutch disposed adjacent to said engine, said engine clutch being directly connected to said crankshaft;
- power transfer means, disposed oppositely to said engine with respect to said engine clutch, for operationally transferring power from said engine clutch to said input shaft of said transmission so as to transmit an output from said engine to said transmission,
- casing means, having a plurality of separate oil sealed chambers, for independently housing each of said transmission, said engine clutch and said power transfer means in a separate one of said chambers, and
- sleeve means, attached at one end to said transmission and at

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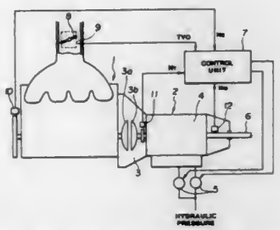
its other end to said power transfer means, for surrounding said input shaft, said sleeve means passing through the chamber independently housing said engine clutch, being supported at said other end by said casing, and being radially spaced from said input shaft to define an oil passage communicating on one end with the chamber in which said transmission is housed and on its other end with the chamber in which said power transfer means is housed for allowing oil to flow between the chamber in which the transmission is housed and the chamber in which the power transfer means is housed.

5,309,790

SYSTEM AND METHOD FOR CONTROLLING WORKING HYDRAULIC PRESSURE FOR AUTOMATIC TRANSMISSION WITH FLUID TRANSMISSION DEVICE

Yoshikazu Tanaka, Isezaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Sep. 9, 1991, Ser. No. 756,197
Claims priority, application Japan, Sep. 11, 1990, 2-239055
Int. Cl.[5] F16H *59/14*
U.S. Cl. 74—731.1 **12 Claims**



1. A system for controlling a working hydraulic pressure supplied to a mechanical power transmission applicable to an automotive vehicle, comprising:

a) first means for detecting an input revolutional speed of a fluid power transmitting device linked to an output axle of an engine;

b) second means for detecting an output revolutional speed of the fluid power transmitting device;

c) third means for rewritably storing a characteristic value of the fluid power transmitting device with respect to a speed ratio between the input and output revolutional speeds of the fluid power transmitting device;

d) fourth means for detecting an actual duration of time during which a shifting operation occurs;

e) fifth means for storing a target duration of time during which the shifting operation occurs, according to an operating state of the fluid power transmitting device;

f) sixth means for comparing the target duration of time during which the shifting operation occurs retrieved from the fifth means with the actual duration of time during which the actual shifting operation occurs and correcting and rewriting the characteristic value retrieved from third means on the basis of the comparison result;

g) seventh means for estimating an input torque of the mechanical power transmission on the basis of the learned characteristic value; and

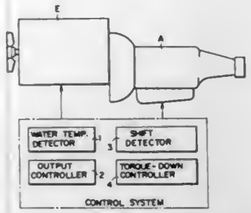
h) eighth means for setting the working hydraulic pressure supplied to the mechanical power transmission on the basis of the estimated input torque.

5,309,791

CONTROL SYSTEM FOR BOTH ENGINE AND AUTOMATIC TRANSMISSION

Mitsuru Takada, Aichi, and Jun Harada, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 10, 1992, Ser. No. 988,806
Claims priority, application Japan, Dec. 11, 1991, 3-350791; Dec. 29, 1991, 3-359006
Int. Cl.[5] F16H *59/00*
U.S. Cl. 74—858 **8 Claims**



1. A control system for controlling both an engine capable of assuming a plurality of output characteristics having different output torques for a throttle opening and of dropping a selected output torque temporarily, and an automatic transmission connected to said engine, comprising:

first decide means for deciding on the basis of data inputted thereto, and independently of a gear change in the automatic transmission, that the output characteristics of said engine should be changed;

second decide means for deciding on the basis of input data thereto, including a vehicle speed and a throttle opening, that a gear change in the automatic transmission should be performed;

third decide means for deciding, when said second decide means decides that a gear change should be performed, that a torque-down is to be temporarily effected, the torque-down having a value determined according to the output characteristics of said engine decided by the first decide means; and

means for reducing engine torque by said torque-down value.

5,309,792

DEVICE FOR CUTTING A SHEET MATERIAL AND PROCESS FOR ITS MANUFACTURE

Joergen Gerbardt, Dragoer, and Ib Groenbjerg, Herlev, both of Denmark, assignors to Gerhardt International A/S, Kastrup, Denmark

Division of Ser. No. 806,289, Dec. 13, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,446
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132120
Int. Cl.[5] B21K *5/12*
U.S. Cl. 76—115 **5 Claims**

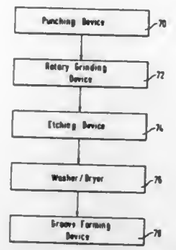
1. A process of manufacturing annular cutting disks, comprising the steps of:

(A) punching blanks of said cutting disks from a metal plate; then

(B) placing a plurality of said blanks on a shaft adjacent to one another; then

(C) clamping said plurality of blanks to one another to form a pack; then

(D) rotating said shaft and grinding the blanks of said pack; then



(E) individually conveying said blanks through an etching system which sprays said blanks from above and below with an etching liquid to produce cutting disks; and then

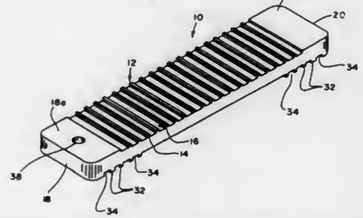
(F) washing and drying said cutting disks.

5,309,793

COMPACT TOOL FOR OPENING BOTTLE CAPS

Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806

Continuation-in-part of Ser. No. 946,888, Sep. 18, 1992. This application Mar. 8, 1993, Ser. No. 28,700
Int. Cl.[5] B25B *13/52*
U.S. Cl. 81—3.43 **11 Claims**



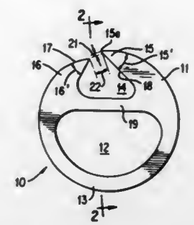
1. A pocket tool for opening bottle caps comprising a flexible, elongated, narrow and flat body having two end portions and an elongated mid-portion extending between the end portions, said body having a length and width small enough for said tool to fit into a user'pants pocket; said body having a first side containing a plurality of transverse alternating ribs and grooves located only on said elongated mid-portion and extending substantially completely along the length of said elongated mid-portion between the two end portions; said body having a second side containing transverse alternating ribs and grooves located only along each end portion and an elongated flat surface extending between the ribs and grooves thereof substantially completely along the length of said elongated mid-portion; said end portions providing parallel finger-contacting surface means shaped to be contacted by the user's thumb and finger and pressed against a bottle cap whereby said tool may be engaged with the bottle cap and the bottle cap twisted open as a result of thumb and finger pressure on said surface means causing said tool to be pressed against the bottle cap; the first and second sides of said body being so constructed and arranged with respect to one another whereby said tool is reversible and either side may be employed to contact a bottle cap to be removed with the other side being presented for engagement by a user's thumb and finger.

5,309,794

OPENING DEVICE FOR CANS HAVING TEAR-AWAY CLOSURE PANELS WITH RING TABS

Theodore D. Kelly, 1306 Seaton La., Falls Church, Va. 22046

Filed Nov. 13, 1992, Ser. No. 976,392
Int. Cl.[5] B67B *7/16*
U.S. Cl. 81—3.55 **20 Claims**



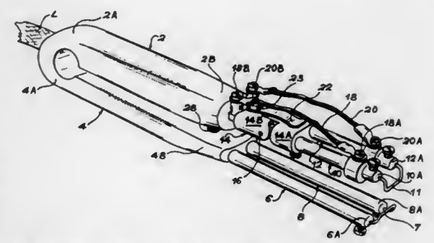
1. An opener for cans having tear-away closure panels with ring tabs, comprising a generally circular outer perimeter having an exactly circular portion which is at least about half of said perimeter, a handle hole that is spaced inwardly from a portion of said perimeter and provides a handle therebetween, a tab recess that is disposed opposite to said handle, has a mouth which divides said perimeter, and is within said perimeter, and at least one prong at said mouth of said tab recess, said at least one prong having two sides which are separated by an acute angle and one said side being coincident with said exactly circular portion of said perimeter, wherein there is an additional prong, said at least one prong and said additional prong having outer and inner sides separated by differing angles.

5,309,795

THERMAL STRIPPING TONGS

Michel Pierrot, Les Mureaux, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 10, 1992, Ser. No. 974,240
Claims priority, application France, Nov. 15, 1991, 91 14104
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.4 **5 Claims**

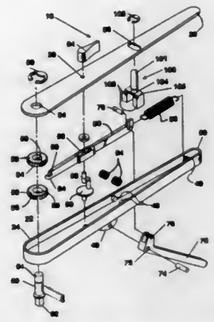


1. In tongs for stripping electrical cables comprising at least two heating elements (7,11) mounted, respectively, on the free ends of rods (6,8,10,12), which rods in turn are fitted, respectively, to the free ends (4B, 2B) of a pair of handles (2,4), said handles (2,4) being articulated at their other ends (2A, 2B), and connection means (16) for establishing a flexible connection between first and second portions of one of said rods, the improvement wherein said flexible connection comprises an articulation between the first and second portions of said one of said rods, a stop means (24) carried by one portion of said articulation for limiting movement of the other portion of said articulation towards the other handle and rod, and elastic means (22) acting between said first and second portions in order to maintain the first heating element in a position close to

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the other heating element, whilst still permitting a movement of said first heating element away from the other heating element, so as to impose on the contact force of the heating elements on the electrical cable a predetermined force of constant intensity and said elastic means limiting movement of the first heating element away from the second heating element to a predetermined value.

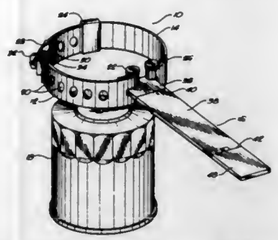
5,309,796
RATCHET WRENCH
George B. Jones, Rte. 15, Box 125 C, Fayetteville, N.C. 28306
Filed May 4, 1993, Ser. No. 55,876
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—57.39 8 Claims



1. A ratchet wrench comprising:
an elongate housing defining a chamber having a proximal end and a distal end;
a drive means adapted to mount a wrench member positioned proximate the distal end of said housing, said drive means including a ratchet wheel means having a first set of ratchet teeth oriented in a first direction and a second set of ratchet teeth ratchet teeth oriented in a direction opposite that of the first set of ratchet teeth;
a handle connected to said housing and being spaced apart from said drive means;
a pawl arm having a first end and a second end, said pawl arm being positioned between said drive means and said handle and being mounted for reciprocating movement therebetween, and wherein the first end of said pawl arm is in operative association with said handle and the second end of said pawl arm has a first pawl pointing in a first direction adapted to contact the first set of ratchet teeth, and a second pawl adapted to contact the second set of ratchet teeth;
whereby upon movement of the handle, the pawl arm moves so that at least one of the pawls moves into contacting relation with the corresponding ratchet teeth to rotate the drive means.

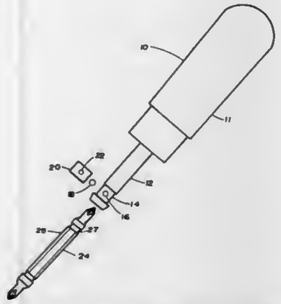
5,309,797
OIL FILTER WRENCH
Ri R. Nguyen, 11315 Sandstone St., Houston, Tex. 77072
Continuation-in-part of Ser. No. 925,214, Aug. 3, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 83,309
Int. Cl.[5] B25B *13/52*
U.S. Cl. 81—64 18 Claims

1. A wrench for use on an oil filter comprising:
a first curved member having a plurality of apertures formed therein at spaced intervals along a length of said first curved member;
a second curved member having a slot at one end, said first curved member extending within said slot in generally overlapping relationship with said first curved member, said slot having a locking member affixed thereto, said locking member for fixing one of said curved members with respect to the other of said curved members, said locking member removably engaging one and only one of said apertures of said first curved member, said locking



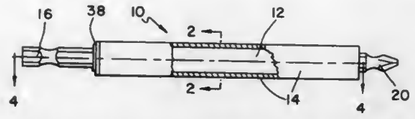
member comprising a locking screw threadedly received by said slot, said locking screw rotatably engaging said one of said apertures; and
a handle extending outwardly of said first and second curved members, said first and second curved members having an end affixed to said handle.

5,309,798
TOOL BIT RETAINING ASSEMBLY
Ronald Markwart, Burnaby, and Leslie Markwart, North Burnaby, both of Canada, assignors to Inno-Ware Enterprises Limited, Burnaby, Canada
Filed Mar. 17, 1993, Ser. No. 32,495
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—438 12 Claims



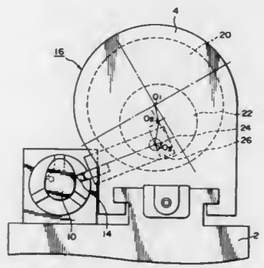
1. A tool bit retaining assembly for a tool of a type having a tool bit receptacle and a spring receiving region with a hole opening into the receptacle and a tool bit insertable into receptacle and the tool bit having a transverse groove proximate an insertion end thereof, comprising:
(a) a ball bearing having a diameter only slightly larger than that of the hole such that upon being pressed against the hole the ball bearing extends through the hole into the receptacle and engages the transverse groove in said tool bit;
(b) a split ring spring having a split extending from one end to the other with a portion substantially transverse to the axis thereof and positionable around said spring receiving region such that the transverse portion of the split is opposite the ball bearing, said spring also having a hole on a side opposite the split of a diameter smaller than that of the ball bearing, such that with the hole in the spring against the ball bearing, the latter is pressed against the hole in the tool and engages a tool bit groove of a tool bit positioned in the receptacle.

5,309,799
TRANSPARENT-SLEEVE SCREW HOLDING AND DRIVING TOOL
Matthew B. Jore, 45000 Hwy. 93 S., Ronan, Mont. 59864
Filed Aug. 5, 1993, Ser. No. 102,640
Int. Cl.[5] B25B *23/08*
U.S. Cl. 81—451 7 Claims



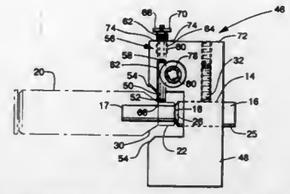
1. An improved screw holding and driving device for use with a power drill and with conventional socket bits, the device comprising:
a shaft having a socket at one end thereof for receiving the socket bit and a shank at the other end thereof to be received by the power drill;
a transparent sleeve having an internal diameter sized to slidably rotate on the shaft;
the sleeve being adapted to be positioned on the shaft in surrounding relation to the shaft; and
the sleeve having a fluted interior surface.

5,309,800
NONAXISYMMETRIC SHAPE CUTTING LATHE
Hidco Yuhara, Aichi, Japan, assignor to Okuma Corporation, Japan
Filed Jan. 11, 1993, Ser. No. 2,725
Claims priority, application Japan, Jan. 10, 1992, 4-021834
Int. Cl.[5] B23B *5/36, 7/14*
U.S. Cl. 82—18 7 Claims



1. A lathe for processing a workpiece into a nonaxisymmetric shape, comprising:
means for rotating the workpiece about an axis;
a tool rest comprising a first support shaft rotatably supported around a first axis parallel with the workpiece rotation axis;
a second support shaft rotatably supported on the first support shaft around a second axis off-centered from and in parallel with the first axis, with a cutter bit having a knife edge and being secured to the second support shaft;
first drive means for driving the first support shaft;
second drive means for driving the second support shaft; and
means for electronically controlling a position of the knife edge by changing rotation positions of the first drive means and the second drive means.

5,309,801
MICRO-ADJUSTABLE CASE NECK TURNING TOOL
Kenneth E. Markle, 2525 Primrose La., York, Pa. 17404
Filed Apr. 21, 1992, Ser. No. 871,807
Int. Cl.[5] B23B *5/00*
U.S. Cl. 82—128 30 Claims



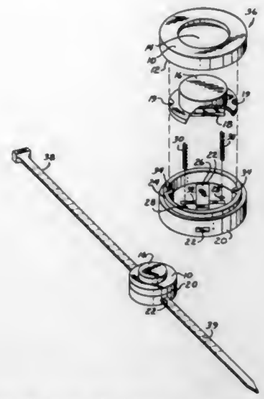
1. A micro-adjustable case neck turning tool wherein said tool has a tool body having a generally E-shaped configuration and mounted therein a slidably adjustable case mounting spindle adapted to insertably receive and support a cartridge case through the case neck opening thereof and position the same perpendicularly to a vertically adjustable case neck trimming blade adapted for trimming and trueing the outside diameter of a cartridge case neck wherein the improvement comprises a trimming blade adjustment means embodying two cooperatively operational threaded systems of differing threaded pitches to effect measured micrometer adjustment of a cutting edge of said trimming blade with respect to said case neck wherein a first of said two cooperatively operational threaded systems is comprised of a blade body threaded shaft and a complementary internal threaded bore axially aligned within an externally threaded micro-adjustment barrel and a second of said two cooperatively operational threaded systems is comprised of said externally threaded micro-adjustment barrel and a complementary tool body threaded opening therefor whereby said cutting edge of said trimming blade with respect to said case neck is slidably adjustable vertically within a conformingly shaped top E-leg blade channel of said tool body and is prevented from rotational movement thereby.

5,309,802
APPARATUS FOR REMOVING TIE WRAPS
Mark W. Mammosser, 106 E. Jefferson St., Apt. 134, Shorewood, Ill. 60436
Continuation of Ser. No. 685,724, Apr. 15, 1991, abandoned. This application May 22, 1992, Ser. No. 888,247
Int. Cl.[5] B26D *1/06*
U.S. Cl. 83—13 16 Claims

16. A method for severing tie wraps after installation wherein said tie wraps include securing means disposed at one end thereof and a means for engaging the securing means at the opposite end thereof, said securing means allowing passage of the opposite end of the tie wrap in a first direction, but preventing passage of the tie wrap in a second direction opposite to the first direction, comprising the steps of:
a. mounting a severing means on the tie wrap between said

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securing means and said opposite end before said opposite end engages said securing means;



b. engaging said securing means with said opposite end; and

c. operating said severing means to sever said tie wrap.

5,309,803

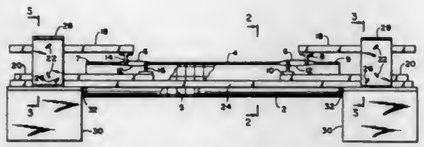
SYSTEM INCLUDING METHOD AND APPARATUS FOR CUTTING EACH LAYER OF A DOUBLE-LAYERED ROLL OF SHEET TO DIFFERENT LENGTHS AND WIDTHS

David T. Penniman, Roaring Brook Rd., Prospect, Conn. 06712

Continuation-in-part of Ser. No. 518,179, May 3, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 970,478

Int. Cl.[5] B26D *3/12*

U.S. Cl. 83—13 **2 Claims**



1. A portable apparatus for simultaneously cutting each layer of a double layered roll of 0.004–0.006 inch (0.10–0.15 mm) thick plastic sheeting comprising means for supporting said roll for rotation with its axis horizontal; upper and lower left cutting assemblies and upper and lower right cutting assemblies; said upper left cutting assemblies and said upper right cutting assemblies being horizontally aligned with and mirror images of each other; said lower left and said lower right cutting assemblies being horizontally aligned with and mirror images of each other; upper adjustable left and right support arms to support said upper left and upper right cutting assemblies respectively; lower adjustable left and right support arms to support said lower left and right cutting assemblies respectively; a spreader bar to space said left adjustable support arms from said right adjustable support arms; left and right channel assemblies connected to said spreader bar which respectively support said upper and lower left and upper and lower right support arms, said left and right upper support arms extend toward each other, and said left and right lower support arms extend toward each other, said left and right channel assemblies slidably engage said spreader bar, said left and right channel assemblies having first clamping means to lock said lower left and right and upper left and right adjustable support arms to said channel assemblies and said left and right channel assemblies having second clamping means to lock said channel assemblies to said spreader bar.

2. A method of simultaneously cutting each layer of a roll of double layered 0.004–0.006 inch (0.10–0.15 mm) thick plastic sheeting to a different width utilizing the portable apparatus of claim 1 comprising mounting said roll onto a shaft, inserting said mounted roll and shaft into the apparatus in horizontal position, adjusting and clamping the left and right channel assemblies on the spreader bar, adjusting and clamping the upper left and upper right support arms and cutting assemblies mounted thereon to the desired width, adjusting and clamping the lower left and lower right support arms and cutting assemblies mounted thereon to the desired width, separating each of said layers at their right and left edges, to form upper left and right sheet edges and lower left and right sheet edges, inserting said upper left and right sheet edges into said upper left and right cutting assemblies respectively and inserting said lower left and right sheet edges into said lower left and right cutting assemblies respectively, pulling said double layered sheeting with separated upper left and right and separated lower left and right edges into and through said cutting assemblies to sever each of said layers of sheeting to customized widths.

5,309,804

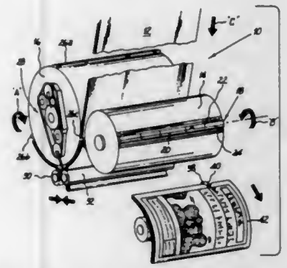
ROTARY CUTTING APPARATUS AND METHOD FOR CUTTING NEWSPAPERS OR THE LIKE

James H. Norris, Huntington, and Thomas M. Cunningham, West Islip, both of N.Y., assignors to Newsday, Inc., Melville, N.Y.

Filed Mar. 11, 1992, Ser. No. 849,524

Int. Cl.[5] B26D *1/62*

U.S. Cl. 83—37 **21 Claims**



1. A method for cutting newspapers or the like from stacks of continuous printed sheet material comprising providing a cutting cylinder adapted for rotation in a manner such that the printed sheet material passes thereby, said cylinder having at least one cutting means extending generally along as least a portion of the length thereof on the outer surface thereof for periodic cooperation with corresponding support means adjacent thereto for cutting the sheet material when positioned therebetween, said at least one cutting means having at least one generally linear cutting blade supported on said cutting cylinder and defining at least one void along a cutting edge thereof and having at least one generally non-linear cutting blade independently supported on said cutting cylinder and complementary to said void to form a continuous cutting edge with the cutting edge of said at least one generally linear cutting blade, rotating said cutting cylinder a manner to periodically cooperate with said backup means, passing said sheet material between said cutting cylinder and said backup means whereby said sheet material is cut into sections of distinct width whenever said cutting means cooperates with said backup means.

5,309,805

CUTTING KNIFE

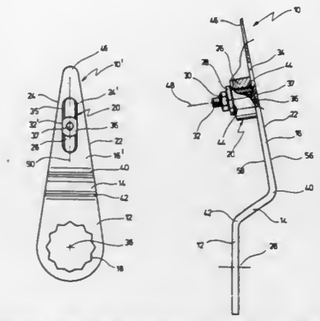
Dieter Mezger, Güglingen, Fed. Rep. of Germany, and Maurice Dilasseur, Pontoise, France, assignors to C. & E. Fein GmbH & Co., Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 930,919, Aug. 17, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,652

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127239

Int. Cl.[5] B26B *29/00;* **B23P** *19/04*

U.S. Cl. 83—821 **15 Claims**



1. Cutting knife for a cutting tool equipped with an oscillating drive, for cutting off a cement bead of a glass pane cemented in place, in particular in a motor vehicle, said cutting knife comprising:

a mounting element provided with a mounting opening for mounting said cutting knife on said oscillating drive for oscillatingly driving said cutting knife at a small angular amplitude about a rocking shaft of said oscillating drive; and

at least one cutter element extending from said mounting element, said cutter element having at least one cutting edge, a slot extending longitudinally within said cutter element, and a depth stop projecting laterally from said cutter element and functioning to limit a depth of penetration of said cutter element when cutting off a cement bead of a glass pane, said stop comprising

a rotatable roller; and

holding means engaging said slot in said cutter element for guiding said rotatable roller longitudinally displaceable along said slot and for setting said rotatable roller in any desired position along said slot;

wherein said holding means comprise a supporting part supporting said rotatable roller extending from a first surface of said cutter element, and a guiding part engaging said slot in substantially flush relationship with respect to a second surface of said cutter element which is opposite said first surface such that a surface of said guiding part is substantially coplanar with said second surface; and

wherein said mounting element and said cutter element are integral.

5,309,806

WOODWIND MUSICAL INSTRUMENT

John C. Stavash, 21211 Kenwood Ave., Rocky River, Ohio 44116

Filed Oct. 28, 1991, Ser. No. 783,534

Int. Cl.[5] G10D *7/04*

U.S. Cl. 84—380 R **6 Claims**

1. In an ocarina bore whistle flute comprising a fipple head and a globular bore having tone holes;

the improvement comprising fill means to reduce said bore in a bore region above said tone holes to values lying in the range of 0–7″ to 0.8″,



said fill means improving the intonation of at least one tone of said ocarina bore whistle flute.

5,309,807

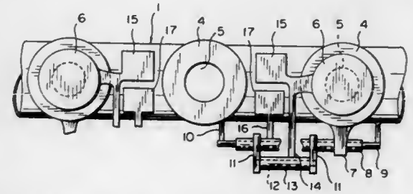
FLUTE

Eva K. Kingma, Hoofdstraat 10, 944 PB Grolloo, Netherlands

Continuation-in-part of Ser. No. 558,872, Jul. 30, 1990, abandoned. This application Oct. 14, 1992, Ser. No. 959,925

Int. Cl.[5] G10D *7/02*

U.S. Cl. 84—384 **3 Claims**



1. A flute comprising:

a tubular body having a plurality of openings therein;

a plurality of flaps each of which move into and out of engagement with a respective one of said tubular body openings, wherein at least one of said plurality of flaps is an annular flap having an opening therein;

a secondary flap movable into and out of engagement with said annular flap opening;

a first means for moving said annular flap independently from said secondary flap and said plurality of flaps into and out of engagement with said respective one of said tubular body openings such that said respective one of said tubular body openings is partially closed and opened, respectively; and

a second means for moving said secondary flap, independently of said plurality of flaps including independently of said annular flap, into and out of engagement with said annular flap opening such that said annular flap opening is closed and opened, respectively.

5,309,808

ACOUSTIC PRACTICE MUTE

James K. Tarrant, 9722 Railton, Houston, Tex. 77080

Filed Jul. 12, 1993, Ser. No. 89,180

Int. Cl.[5] G10D *9/06*

U.S. Cl. 84—400 **12 Claims**

1. An acoustic practice mute for a brass musical wind instrument having a bell end comprising,

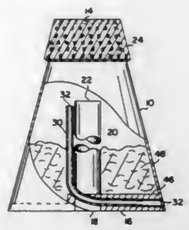
a hollow body having a side wall, a sound entry opening at one end and a closed base end having a sound outlet opening,

a sound conduit attached to the base end having a sound passage aligned with the sound entry and sound outlet openings and extending inwardly in the body from the base end short of the sound entry opening providing an unobstructed sound passage from the sound entry opening throughout the sound conduit and out the sound outlet opening,

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means adjacent the sound entry opening on the body for sealingly connecting the body to the bell end,

an acoustic tube disposed within the body extending exteriorly of the body and including at least one earpiece adapted to be placed in an ear of a player of the brass musical wind instrument,



sound adsorption material in the body between the sound conduit and the side wall,

whereby sound from the bell end enters the body throughout the sound entry, is dampened, and then passes through the sound conduit, out the sound outlet opening, and through the acoustic tube to the earpiece.

5,309,809

WINDCHIME APPARATUS

Kenneth E. Sambuchi, 428 Ballwin Ave., Winchester, Mo. 63021

Filed Jun. 14, 1993, Ser. No. 75,406

Int. Cl.[5] G10D *13/08*

U.S. Cl. 84—404 **5 Claims**



1. A windchime apparatus, comprising,

a central support tube, the central support tube having a first end spaced from a second end, with a support member mounted to the first end, and

a first tether line extending from the second end, and

a cylindrical tuning disc mounted to the first tether line spaced from the support member, and a second tether line secured to the tuning disc spaced from the first tether line, and

a balance plate mounted to the second tether line spaced from the tuning disc, with the balance plate, the second tether line, the tuning disc, and the first tether line and the central support tube coaxially aligned relative to one another, and

a plurality of tonal tubes mounted to and in a surrounding relationship about the central support tube in a spaced relationship arranged for communication with the tuning disc,

wherein each of the tonal tubes includes a through-extending bore directed through each of said tonal tubes and a plurality of support lines with an individual support line of said plurality of support lines directed through one of said through-extending bores of an individual tonal tube of said plurality of tonal tubes, with a plurality of support pins fixedly mounted in an annular array to and about the central support tube, with each of said support lines secured to a pair of adjacent of said plurality of support pins.

5,309,810

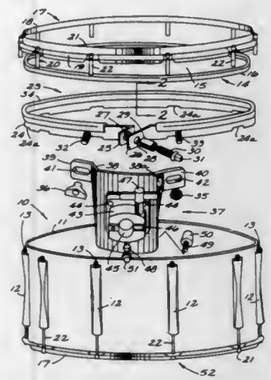
MOUNTING BRACKET AND RESONANCE MODIFIER FOR DRUMS

Randall L. May, 7712 Talbert Ave., Suite B, Huntington Beach, Calif. 92648

Filed Dec. 29, 1992, Ser. No. 997,953

Int. Cl.[5] G10D *13/02*

U.S. Cl. 84—413 **18 Claims**



1. A mounting and resonance adjusting bracket for drums of the type comprising a hollow drum shell, a plurality of lugs, a drum head fitted over at least one end of said shell, and a counterhoop fitted over said drum head and adjustable secured to said lugs, said bracket comprising

an arcuate member adapted to be secured in a position substantially surrounding a drum shell and having a split portion movable between an opened position and a closed position,

said arcuate member encircling substantially the entire circumference of a drum shell when installed in said closed position,

means on said arcuate member operable to adjust the same between said opened and said closed positions, and

means attached to said arcuate member for attachment to a conventional fixed support

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5,309,811

SUPPORT STRUCTURE FOR A DRUM

Yoshiki Hoshino, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Jun. 18, 1992, Ser. No. 900,415

Claims priority, application Japan, Nov. 1, 1991, 3-315334

Int. Cl.[5] G10D *13/02*

U.S. Cl. 84—421 **13 Claims**

9. A support structure for a musical instrument drum, wherein the drum includes: a drum body with a top end and a bottom end; a top drum hoop extending around the drum body toward the top end, a bottom drum hoop extending around the drum body toward the bottom end;

the support structure comprising:

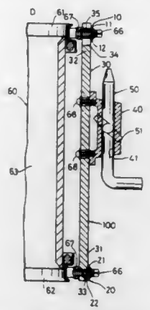
an upper installation part at a top hoop of a drum, a lower installation part at a bottom hoop of the drum; the upper and lower installation parts being fixed to the top hoop and the bottom hoop, respectively, so as to project radially therefrom;

a support plate extending between and attached to the upper and lower installation parts and the support plate being

otherwise out of supporting engagement with a drum body of the drum, whereby the support plate supports the drum body via the installation parts;

a bracket on the support plate for receiving a drum support by which the bracket and thereby the drum is supported on the drum support, wherein each of the upper and lower installation parts includes:

a hoop clamp, the hoop clamp being fixed on the respective drum hoop so as to project radially therefrom;



a support plate engaging part attached to the hoop clamp, the support plate engaging part of the upper installation part extending downwardly and the support plate engaging part of the lower installation part extending upwardly; the respective support plate engaging parts having means for separably attaching the support plate to the respective installation parts; and

a connector for fixing the hoop clamp to the respective drum hoop.

5,309,812

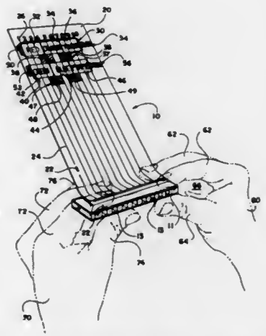
METHOD AND DEVICE TO AID IN LEARNING TO PLAY CHORDS ON A HARMONICA

Edward M. Shelton, P.O. Box 8659, Atlanta, Ga. 30306

Filed May 11, 1992, Ser. No. 881,224

Int. Cl.[5] G10G *1/00*

U.S. Cl. 84—471 R **12 Claims**



1. A device to aid in learning to play cords on a harmonica comprising:

an elongated flexible sheet having a top edge and a bottom edge;

means for attaching said bottom edge of said elongated flexible sheet to a top surface of the harmonica adjacent holes of the harmonica through which air is passed for playing;

a first display of numerals proximate said bottom edge of said elongated flexible sheet corresponding to and spaced in relation to the holes of the harmonica so such that said numerals are aligned adjacent the respective holes of the harmonica when said flexible sheet is attached to the harmonica;

a second display of numerals identical to and in vertical alignment with said first display of numerals proximate said top edge of said elongated flexible sheet;

a plurality of lines displayed on said elongated flexible sheet respectively corresponding in number to said first and second display of numerals, each said line extending along a length of said elongated sheet between corresponding identical numerals of said first display of numerals and said second display of numerals;

a first row of blocks displayed on said elongated flexible sheet adjacent said second display of numerals, each said block extending transversely to encompass a series of said lines which correspond to holes of the harmonica which form a chord, each said block having indicia denoting a color and each color being different;

first breath indicia denoting whether a player is to blow or draw air displayed on said elongated flexible sheet adjacent said first row of blocks;

a second row of blocks displayed on said elongated flexible sheet adjacent said first row of blocks, each said block extending transversely to encompass a series of said lines which correspond to holes of the harmonica which form a chord, each said block having indicia denoting a color of one of said blocks of said first row of blocks and displaying the letter "B;"

a third row of blocks displayed on said elongated flexible sheet adjacent said second row of blocks, each said block extending transversely to encompass a series of said lines which correspond to holes of the harmonica which form a chord, each said block having indicia denoting a color and each color being different than colors denoted in said first row of blocks;

second breath indicia denoting whether a player is to blow or draw air displayed on said elongated flexible sheet adjacent said third row of blocks; and

a fourth row of blocks displayed on said elongated flexible sheet adjacent said third row of blocks, each said block extending transversely to encompass a series of said lines which correspond to holes of the harmonica which form a chord, each said block having indicia denoting a color of one of said blocks of said third row of blocks and displaying the letter "B."

5,309,813

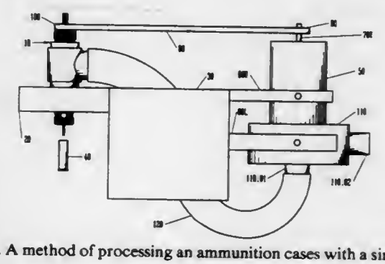
SEMI-AUTOMATIC AMMUNITION CASE PROCESSING APPARATUS

Roy J. Henley, 617 S. Adams, Stillwater, Okla. 74074-4322

Filed Aug. 17, 1993, Ser. No. 108,072

Int. Cl.[5] F42B *33/02*

U.S. Cl. 86—23 **3 Claims**



3. A method of processing an ammunition cases with a single

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apparatus integrating the separate operations of resizing said ammunition case, trimming said ammunition case to length, evacuating said ammunition case trimmings, and decapping a detonated primer from said ammunition case, comprising the steps of:

(a) inserting said ammunition case into a sizing die,

(b) decapping of said detonated primer from said ammunition case with a depriming pin mounted coaxially therethrough said sizing die,

(c) trimming said ammunition case to length with a rotating milling cutter mounted coaxially therein said sizing die, powered by an electric vacuum motor, and

(d) evacuating said ammunition case trimmings by means of a suction produced by said electric vacuum motor.

5,309,814

HOME SECURITY BARREL ASSEMBLY

Alan I. Mossberg, St. Petersburg, Fla., assignor to O. F. Mossberg & Sons, Inc., North Haven, Conn.

Filed Jan. 10, 1992, Ser. No. 896,306

Int. Cl.[5] F41A *21/46*

U.S. Cl. 89—14.6 **11 Claims**



1. A home security shotgun barrel assembly comprising an axially elongate barrel having a shell chamber at its rear end for receiving a shotgun shell containing a propellant charge, a wad forward of said propellant charge and a shot charge forward of the wad, and said barrel having a muzzle at its forward end, a bore extending in an axial direction through said barrel from said shell chamber and opening through said muzzle, wad engaging means exposed within said bore for retarding the advance of a wad through said bore and including moveable member supported for angular movement relative to said barrel and defining a finite projection extending into said bore and a flat spring mounted in cantilever position on said barrel in overlying relation to said member and retaining said member in assembly with said barrel, a gas vent port defined by and opening outwardly through said barrel and communicating with said bore, and passageway means externally of said barrel and communicating with said vent port for receiving from said vent port gases of combustion under pressure generated by the detonation of a shotgun shell within said shell chamber and discharging gases of combustion externally of the barrel forward of said muzzle and in a transverse direction relative to and across the axis of said bore.

5,309,815

FIREARM, PARTICULARLY HANDGUN

Tilo Möller, Oberndorf/Neckar; Rudolf Brandl, Dornhan-Weiden, and Helmut Weidle, Oberndorf/Beffendorf, all of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Oberndorf/Neckar, Fed. Rep. of Germany

Filed Mar. 24, 1992, Ser. No. 857,028

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1991, 4109777

Int. Cl.[5] F41A *25/12*

U.S. Cl. 89—163 **19 Claims**

1. A firearm comprising:

a housing including a magazine shaft to receive a plurality of cartridges;

a frame;

a barrel;

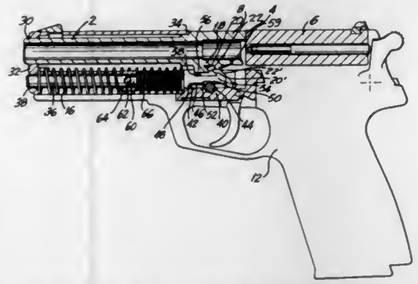
a breechblock slidable along a travel path with respect to said frame and barrel;

first force receiving means for locking said barrel with said breechblock for a first position of the travel path and for unlocking the breechblock from the barrel after reaching an end of the first position of the travel path so that the breechblock can continue movement along a remainder of the travel path on its own;

second force receiving means with said breechblock being mounted so as to be movable over a second predetermined path so as to take up a part of the fire recoil and transmit it, after passage over the second predetermined travel path, to the second force receiving means;

first buffering means provided between the frame and the barrel for buffering movement of the unlocked barrel so as to avoid unbuffered impact of the barrel onto the frame;

automatic loading means for automatically introducing a cartridge into the barrel after each shot, said automatic loading means including said barrel, said first force receiv-



ing means and said first buffering means, with the breechblock being provided so as to, upon firing, carrying out a return, opening movement past the magazine shaft up to a rear point of reversal and then an opposite forward, closing movement into a "ready-to-fire" position, the barrel, when locked to the breechblock in the ready-to-fire position, moves together with the breechblock through an initial phase of the opening movement, travels, after passing over the first portion of the travel path, onto the first force receiving means and is unlocked thereby, releases the breechblock for loading and, finally, after loading, returns together with the breechblock to the ready-to-fire position, and the first force receiving means including a spring-loaded barrel stop, the barrel having an attachment part that engages the barrel stop.

5,309,816

ROTARY ACTUATOR WITH EXTERNAL BEARINGS

Paul P. Weyer, P.O. Box 398, Enumclaw, Wash. 98022

Filed Apr. 27, 1993, Ser. No. 55,035

Int. Cl.[5] F01B *3/00*

U.S. Cl. 92—32 **37 Claims**

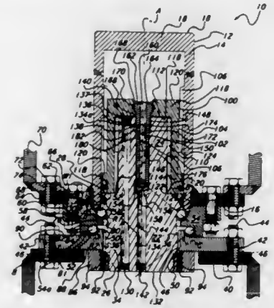
25. The actuator of claim 20 wherein said shaft first fluid conduit includes first and second orifices, said first orifice being positioned in a sidewall of said central aperture at an end portion thereof toward said shaft free end opening, and the actuator includes a seal located within said central aperture and axially positioned between said first orifices and an end limit of travel position of said tube first opening reached when said piston reaches an end limit of travel toward said body second end, said seal providing a fluid-tight seal between said shaft and said tube, said tube having an enlarged-diameter exterior sidewall portion toward said piston, said enlarged-diameter sidewall portion being sized and positioned such that when said piston is in position toward an end limit of travel toward said body first end, said first orifice is within said enlarged-diameter sidewall portion and said enlarged-diameter sidewall portion substantially blocks the flow of fluid through said first orifice while permitting continued flow through said second orifice.

34. A fluid-powered rotary actuator attachable to a support

member, the rotary actuator being usable with a work implement having a selectively operable work implement actuator associated therewith, the work implement actuator having a pair of fluid ports for operation of the work implement actuator in response to selective application of pressurized fluid thereto, comprising:

a body having a longitudinal axis, and first and second ends, said body having a first attachment portion configured for attachment of the work implement thereto for rotation with said body, and a second attachment portion configured for attachment of the work implement actuator thereto for application of a counter force upon actuation of the work implement actuator to operate the work implement;

a shaft having a first portion positioned at and extending axially outward of said body beyond said body first end, and a second portion extending longitudinally and generally coaxially within said body toward said body second end, said shaft first portion having first and second end portions with said second end portion of said shaft first portion being adjacent to said body first end and said first end portion of said shaft first portion being axially outward of said body first end, said shaft first portion also having an intermediate portion between said first and second end portions of said shaft first portion and axially outward of said body first end, said second end portion of said shaft first portion having an axially outward-facing



bearing race formed thereon extending circumferentially thereabout, said first end portion of said shaft first portion being threaded and said intermediate portion of said shaft first portion having at least one first torque-transmitting elements;

a mounting member adapted for coupling to the support member to transfer rotational force thereto, said mounting member having an aperture with said intermediate portion of said shaft first portion extending therethrough and at least one second torque-transmitting element engaging said first torque-transmitting element of said intermediate portion to transmit rotational force therebetween while permitting adjusting longitudinal movement of said mounting member relative to said shaft first portion, said mounting member having an axially inward-facing bearing race formed thereon about said mounting member aperture;

an adjustable retaining nut threadably mounted on said threaded first end portion of said shaft first portion axially outward of said mounting member and engaging said mounting member, said retaining nut being adjustably rotatable on said threaded first end portion;

an annular bearing carrier mounted coaxially with and fixedly attached to said body at said body first end axially outward of said body first end, said carrier having a central aperture with said shaft first portion extending therethrough for rotation of said carrier relative to said shaft first portion, said carrier further having an axially inward-facing bearing race formed thereon about said carrier aperture and confronting and corresponding to said second end portion bearing race to form a first set of races extending circumferentially about said shaft first portion at said body first end to rotatably support said shaft and limit outward longitudinal movement of said shaft, and an axially outward-facing bearing race formed thereon about said carrier aperture and confronting and corresponding to said mounting member bearing race to form a second set of races extending circumferentially about said shaft first portion axially outward of said first set of races to rotatably support said shaft and limit inward longitudinal movement of said shaft, said first and second sets of races providing the rotational support for said shaft relative to said body at a location at or outward of said body first end, with adjustable rotation of said retaining nut on said threaded first end portion of said shaft first portion to longitudinally move said retaining nut inward preloading said first and second sets of races, said carrier further having first and second fluid conduits with said carrier first fluid conduit being in fluid communication with said first set of races and with said carrier second fluid conduit being in fluid communication with said second set of races, said carrier first and second fluid conduits terminating in carrier first and second fluid ports, respectively, in an outer circumferential sidewall of said carrier, each connectable to one of the pair of work implement actuator ports;

one or more bearings seated in each of said first and second sets of races;

a shaft first fluid conduit extending from a shaft outer first port through said shaft first portion and terminating in a shaft inner first port in alignment and fluid communication with said first set of races and remaining in fluid communication therewith as said carrier rotates relative to said shaft first portion, said shaft outer first port being connectable to the source of pressurized fluid;

a shaft second fluid conduit extending from a shaft outer second port through said shaft first portion and terminating in a shaft inner second port in alignment and fluid communication with said second set of races and remaining in fluid communication therewith as said carrier rotates relative to said shaft first portion, said shaft outer second port being connectable to the source of pressurized fluid;

a piston mounted for reciprocal longitudinal movement within said body in response to selective application of pressurized fluid thereto; and

a torque-transmitting member mounted for reciprocal longitudinal movement within said body, said torque-transmitting member engaging said body and said shaft second portion to translate longitudinal movement of said piston toward one of said body first or second ends into clockwise relative rotational movement between said shaft and said body, and longitudinal movement of said piston toward the other of said body first or second ends into counterclockwise relative rotational movement between said shaft and said body, whereby relative rotational movement between said body carrying the work implement and the support member results.

5,309,817

LINEAR BRAKE FOR FLUID ACTUATOR

James O. Sims, 1100 Brooks St., Decatur, Ala. 35601

Filed Mar. 5, 1993, Ser. No. 28,934

Int. Cl.[5] F01B *11/02*

U.S. Cl. 92—85 A **10 Claims**

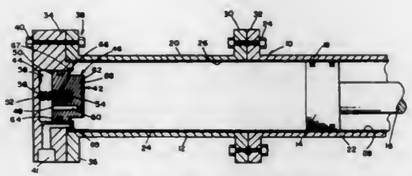
1. A fluid actuator having a cylinder enclosing a cavity having a piston/piston rod assembly disposed therein for reciprocal travel, said fluid actuator comprising:

an end sealing member disposed in secured relation with one end of said cylinder, said end sealing member having a first cavity therein, said cavity defined by a base surface and an annular wall extending from said base surface;

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brake means carried in said cavity of said end sealing member and including a single circular body member having an outer surface and first and second end surfaces, said outer surface having a shoulder thereon, said member disposed for reciprocal movement between a first extended position whereby said first end surface of said body is disposed in spaced-apart relation with said base surface of said recess and a second retracted position wherein said first end surface of said body is proximate said base surface, said brake means including retarding means for maintaining said body in said first extended position prior to engagement by said piston and for providing a retarding action to said piston responsive to engagement thereby as said body is moved to said second retracted position;

fluid metering means disposed in said body for metering fluid flow through said body to substantially equalize fluid



pressure on said first and second surfaces of said body responsive to engagement and movement of said body means by said piston, said fluid metering means defined by a continuous bore extending through said member and communicating with said cylinder cavity and said recess of said end sealing member;

retaining means for retaining said body in said recess of said end cap, said retaining means defined by a projection inwardly extending from said annular wall surface of said cavity of said end sealing member for engagement with said annular shoulder of said body responsive to the reciprocal movement thereof to limit the movement of said body in said cavity and to retain said member in said cavity; and

suction prevention means provided on said second surface of said body to prevent undesirable suction from occurring between said piston and aid second surface of said body.

5,309,818

METHOD FOR THE MANUFACTURE OF A COOLED PISTON

Jose A. C. Mendes; Jose M. M. Leites, and Andre Lippai, all of Sao Paulo, Brazil, assignors to Metal Leve S/A Industria E. Comercio, Sao Paulo, Brazil

Continuation of Ser. No. 777,900, Oct. 17, 1991, abandoned.
This applicatioo Jan. 11, 1993, Ser. No. 3,841
Claims priority, application Brazil, Oct. 18, 1990, 19005370
Int. Cl.[5] F01B *31/08*
U.S. Cl. 92—176 **8 Claims**

1. Method for manufacture of a cooled piston head of the type having a closed cooling chamber, comprising the steps of:

providing a top member having a first circumferential groove facing in a first direction and a central recess with a first rib therebetween and a first wall outwardly of such first circumferential groove;

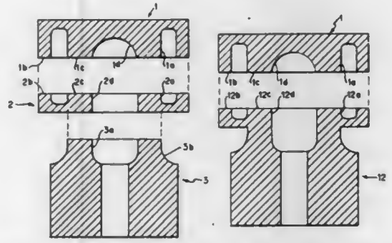
providing an intermediate annular member having on its upper face a second circumferential groove facing in a second direction opposite to said first direction, and a central through hole with a second rib therebetween and a second wall outwardly of said second circumferential groove, said intermediate member having a flat lower face;

providing a lower member having a central recess and a peripheral recess with a third circumferential rib on its upper face, at least one pin boss extending from the bottom part of said lower member;

joining by welding said top member to said intermediate member to form an integral structure with said first and second walls and said first and second ribs juxtaposed and welded together, said first and second grooves facing each other and forming the closed cooling chamber between said first and second walls and said first and second grooves, and the intermediate through hole and said intermediate member and said pin boss central recess being aligned;

joining by welding on the lower face of said intermediate member the circumferential third rib of said lower member to the assembly of said top member and said intermediate member.

5. A method for manufacture of a cooled piston head of the type having a closed cooling chamber, comprising the steps of:



providing a top member having on the lower face thereof a first circumferential groove and central recess with a first rib therebetween and a first wall outwardly of said first groove,

providing a pin boss member having on the upper face thereof a second circumferential groove and a central recess with a second rib therebetween, a second wall outwardly of said second groove and a bottom wall, a relieved circumferential portion below said bottom wall, and at least one pin boss on the lower part thereof below said relieved portion;

joining said lower face of said top member to said upper face of said pin boss member by welding to form an integral structure with said first and second walls and said first and second ribs juxtaposed and welded together and said first and second grooves facing each other forming the closed cooling chamber between said first and second walls and said first and second grooves.

5,309,819

DUAL MOTOR DRIVE AUTOMATIC BEVERAGE BREWING APPARATUS

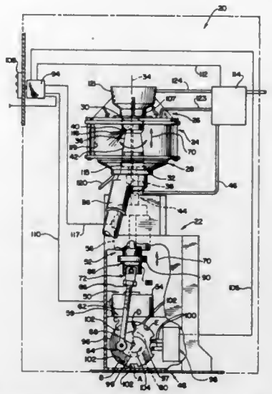
David F. Ford, Springfield, Ill., assignor to Bunn-o- Matic Corporation, Springfield, Ill.

Filed Jun. 10, 1993, Ser. No. 74,387
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—28 **14 Claims**

1. A beverage brewing apparatus of the type having a brew chamber with a brewing component being shiftable relative to said brew chamber, drive means being operatively associated with said brewing component for controllably moving said brewing component in at least two orientations, said drive means comprising:

a first driving assembly of said drive means shifting said brewing component in a first orientation relative to said brew chamber;

a second driving assembly of said drive means being selectively operable and driving said brewing component independent of said first driving assembly for shifting said



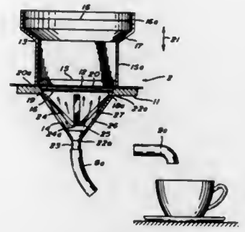
brewing component in a second orientation relative to said brew chamber.

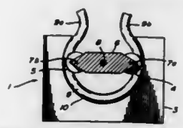
5,309,820

BEVERAGE PREPARING ASSEMBLIES

Royden L. Baxter, 5444 Marceau, Pierrefonds, Quebec, Canada H8Z 2V1 ; David A. Pelling, 705 Devon Place, Baie D'Urfe, Quebec, Canada H9X 2T3 , and Timothy S. Mackinnon, 72 Upper Edison, Saint-Lambert, Quebec, Canada J4R 2R1

Continuation of Ser. No. 872,000, Apr. 22, 1992, abandoned.
This application Jul. 9, 1993, Ser. No. 88,717
Claims priority, application Canada, Feb. 12, 1992, 2061106
Int. Cl.[5] A47J *31/24*
U.S. Cl. 99—280 **19 Claims**





1. A brew chamber assembly for an apparatus for preparing a beverage from an aqueous medium and a particulate beverage material, said apparatus operating with a brewing cycle including the air agitation of a mixture of the aqueous medium and the particulate beverage material in a brew chamber, said brew chamber assembly comprising

a brewing vessel having a floor,

a compartment having a top wall, and

a common partitioning wall, said common partitioning wall defining said top wall of said compartment and defining said floor of said brewing vessel,

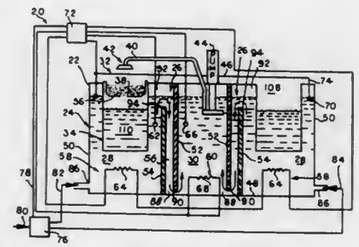
at least a portion of said common partitioning wall being configured as a filter for the evacuation of beverage from said vessel and being permeable to air, said compartment having opening means for the entry of air thereinto and for the exit of beverage therefrom, said compartment having a hopper configuration having a sloped floor for gathering beverage for discharge therefrom by the opening means and said brew chamber assembly being characterized in that air diffuser means is disposed in said compartment.

5,309,821

COFFEE BREWING URN

John T. Knepler, Chatham, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed May 28, 1992, Ser. No. 889,790
Int. Cl.[5] A47J *31/14*
U.S. Cl. 99—282 **12 Claims**



1. A beverage brewing apparatus comprising:

a tank for containing heater water;

means for dividing said tank defining a holding section which receives water and a brewing section, said dividing means defining a baffle passage allowing water to flow from said holding section to said brewing section;

a beverage brewing assembly disposed in said holding section, said beverage brewing assembly including a reservoir for holding a brewed beverage, said reservoir being surrounded by water retained in said holding section;

a dispensing head communicating with said brewing section and said beverage brewing assembly for dispensing water from said brewing section into said beverage brewing assembly;

first means for controllably heating water operatively associated with said holding section;

second means for controllably heating water operatively associated with said brewing section independent of said first means for heating water.

5,309,822

AUTOMATIC COFFEE MACHINE

Peter Sager, Boppelsen, Switzerland, assignor to HGZ Maschinenbau AG, Dallikon, Switzerland

Filed Oct. 9, 1992, Ser. No. 958,954
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 4133697
Int. Cl.[5] A47J *31/043*
U.S. Cl. 99—289 R **13 Claims**

1. An automatic coffee machine for the preparation of individual cups and small pots of coffee, comprising:

a housing;

a flow heater supported in said housing;

a percolator, said percolator further comprising:

a stationary tube section having an upper and a lower end, said tube section forming a percolating chamber around an axis;

an upper stopper, wherein said stopper is sealingly received within the upper end of said tube section; and

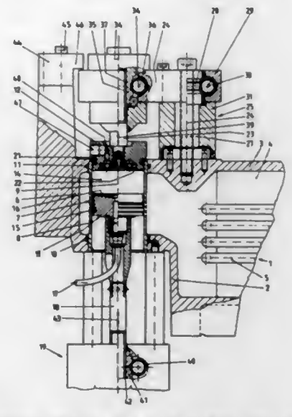
VOL 1162 ISS 2 MY 10 1994 UMI

a lower stopper, wherein said stopper is slidably and sealingly supported within said tube section;

wherein said percolator is at least partially disposed within said housing and at least part of said tube section is surrounded by hot water heated by said flow heater; means for feeding coffee powder into said percolator; a pivot arm, said pivot arm further comprising:

a fixed position bearing mounted upon said housing, said pivot arm being connected to said bearing;

means for rotating the pivot arm about said bearing,



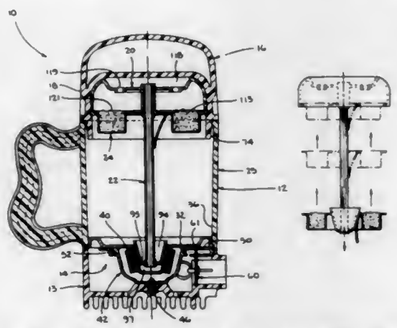
whereby said pivot arm is rotated into parked and standby positions with respect to said tube section axis;

upper stopper axial drive means mounted upon said pivot arm for moving said upper stopper toward and away from the upper end of said tube section;

lower stopper vertical drive means for moving said lower stopper along the axis within said tube section;

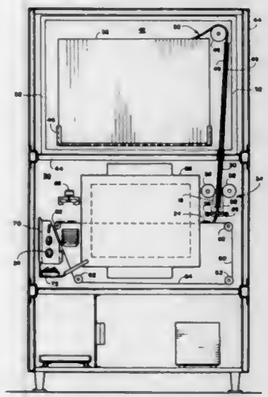
and wherein said upper stopper is constructed as an integrated assembly and is driven by said upper stopper axial drive means into said tube section for being sealingly received within said tube section.

5,309,823
COFFEE BREWING ASSEMBLY
Dillis V. Allen, 31 W. 211 Rte. 58, Elgin, Ill. 60120
Filed Apr. 15, 1992, Ser. No. 868,667
Int. Cl.[5] A47J *31/053*
U.S. Cl. 99—295 **12 Claims**



6. A disposable coffee containing insert for a coffee brewing device having an insert holder with a downwardly opening annular recess with flanges to releasably hold the insert in position, comprising: a somewhat flexible annular frame constructed of a fairly rigid plastic material so the frame does not collapse when held in position by the holder flanges, said frame having a generally annular coffee receiving and supporting portion area, coffee in the coffee receiving area, a water permeable cover fixed to the frame enclosing the coffee in the coffee receiving area, and means for hanging the insert in the coffee brewing device flange portions integral with said frame engageable with the holder flanges to releasably hold the insert in the holder, said frame having a central opening through which a percolation tube passes freely therethrough, said percolation tube being unfixed to the frame.

5,309,824
SYSTEM FOR FORMING, STORING, BAKING AND VENDING FRESH BAKED FOOD PRODUCTS
James A. Dromgoole; Kenneth H. Hall, and Robert Noga, all of 7847 Dunbrook Rd., Suite C & D, San Diego, Calif. 92126
Filed Feb. 10, 1992, Ser. No. 833,157
Int. Cl.[5] A21B *1/48, 3/07*
U.S. Cl. 99—326 **9 Claims**



1. The system for preparing, storing, baking and delivering a plurality of food product units which comprises:

mixing means for mixing a quantity dough comprising ingredients selected to produce a desired dough-based food product upon baking;

means for preforming said dough into a plurality of discrete food product units;

means for directing said product units onto a first sheet in a selected spaced pattern;

means for laminating a second sheet over said product units;

means for placing a selected length of said laminated sheets into a shipping container;

cutting means for transversely cutting said sheets when a selected quantity of said product units are in said container;

a vending machine including means for receiving said container;

feed means for feeding said laminated sheet out of said container;

stripping means for separating said sheets from a selected number of product units;

a movable belt for receiving said separated product units;

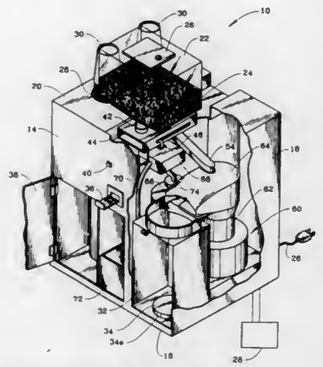
a convection oven;

belt moving means for moving said belt through and beyond said oven at a rate selected to allow said product to bake while in said oven;

cooling means adjacent to said belt beyond said oven to cool the resulting baked product units to a selected temperature; and

delivery means to move the resulting baked food product units to a delivery area.

5,309,825
POPCORN VENDING MACHINE
Anthony J. Pinone, Boca Raton, Fla., assignor to Show-Pop International, Inc., Boca Raton, Fla.
Filed Mar. 4, 1993, Ser. No. 27,295
Int. Cl.[5] A23L *1/18*
U.S. Cl. 99—323.6 **8 Claims**



1. A popcorn vending machine for cooking fresh popcorn comprising:

a housing, said housing having a base wall, a front wall, a back wall, two side walls, and a top wall, all of said walls connected together forming an enclosure;

a raw kernel reservoir attached through the top wall of said housing, said raw kernel reservoir having a top and a base, said raw kernel reservoir including a sealable top opening and a conduit attached to an opening in its base;

means for metering said raw corn connected to said conduit;

vending actuating means having a first portion connected to the front wall of said housing and a second portion connected inside said housing to said raw kernel metering means;

raw kernel dispensing means connected to said metering means, said raw kernel dispensing means having an input and an output;

raw kernel chute means connected to the output of said raw kernel dispensing means, said chute means having an output;

means for cooking popcorn connected to the output of said raw kernel chute;

means for diverting cooked popcorn to a predetermined area;

a cup receiving chamber having a base, said cup receiving chamber connected to the front wall of said housing and mounted inside said housing, said cup receiving chamber having an open top in communication with an output of said cooked popcorn diverting means;

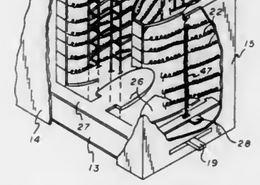
a turntable rotatably mounted in the base of said cup receiving chamber;

power means for electrical power;

circuit means connected to said power means for providing electrical power to said means for cooking popcorn, to said turntable, and to a switch means activated by said vending actuating means; and

electrical timing means connected to said circuit means for providing power to said cooking means and to said turntable for a prescribed amount of time relative to said vending actuation.

5,309,826
TORTILLA TOASTER APPARATUS
Carlos R. Ortiz, P.O. Box 8135, Tyler Pk. Station, North Bergen, N.J. 07047
Filed Jul. 9, 1993, Ser. No. 88,382
Int. Cl.[5] A47J *37/08*
U.S. Cl. 99—391 **4 Claims**



1. A tortilla toaster apparatus, comprising,

a toaster housing having a top wall spaced from a bottom wall, and a plurality of spaced side walls, and a first end wall spaced from a second end wall, the first end wall includes a push bar slot having a push bar slidably received therethrough, and a temperature lever slot having a temperature lever directed slidably therethrough, and

the toaster housing top wall includes a plurality of top wall U-shaped openings, each of the U-shaped openings includes an opening apex, and each apex positioned intermediate adjacent of said U-shaped openings is in an alternating orientation relative to said adjacent U-shaped openings, and

a sineusoidal heating plate mounted within the toaster housing between the top wall and the bottom wall, and

the sineusoidal heating plate includes a row of spaced heating elements oriented parallel relative to one another between the top wall and the bottom wall and extending from the first end wall to the second end wall along the sineusoidal heating plate, and

a plurality of U-shaped positioning cages are fixedly mounted to the bottom wall and oriented within the sineusoidal heating plate, wherein each of the U-shaped positioning cages is positioned below and aligned relative to one of the U-shaped openings within the top wall, wherein each of the U-shaped positioning cages are arranged to receive a tortilla shell therewithin.

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5,309,827

APPARATUS FOR PRODUCING LONG PASTA PRODUCTS INCLUDING AN IMPROVED DRIER

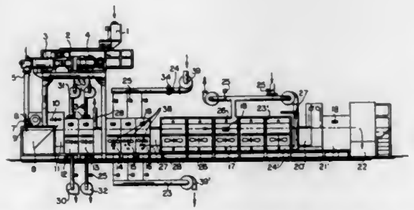
Josef Manser, Uzwil; Friedrich Egger, Niederuzwil, and Werner Seiler, Zuberwangen, all of Switzerland, assignors to Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 760,857, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 607,248, Oct. 23, 1990, abandoned, which is a continuation of Ser. No. 436,938, Nov. 14, 1989, Pat. No. 5,101,717, which is a continuation of Ser. No. 48,628, May 11, 1987, abandoned, which is a division of Ser. No. 703,101, Feb. 15, 1985, abandoned, which is a continuation of Ser. No. 188, Jun. 23, 1984, abandoned. This application Dec. 9, 1992, Ser. No. 988,354

Claims priority, application Switzerland, Jun. 24, 1983, 3459/83-2; Fed. Rep. of Germany, Jan. 5, 1984, 3400300

Int. Cl.[5] F26B *21/06*

U.S. Cl. 99—468 14 Claims



1. In an apparatus for the production of long pasta products having a press, a bar hanging arrangement from which the products are suspended while being moved longitudinally through the apparatus, and a long pasta product drier, the drier being constructed as a single level drier having a rapid heating zone and an intense drying zone, the rapid heating zone having several different climate zones of differing temperatures and at least one longitudinal duct for exhaust air and at least one longitudinal duct for fresh air and ducts which connect to said longitudinal fresh and exhaust air ducts having controllable regulating valves, the intense drying zone having a plurality of ventilated elements including longitudinal ducts for ventilation and installable slides in each ventilated element, the long pasta drier including a climate controller for each climate zone, said controller operating by blowing in air and by exhausting air for controlling said climate zones individually, the improvement comprising:

a. said rapid heating zone and said intense drying zone being formed as a circulating system for fresh and exhaust air;

b. inside the drier, means for individually controlling air flow in each different climate zone and for directing said air flow in each climate zone from top to bottom or bottom to top, said means including individual fans and heat exchangers;

c. a supplemental air system for said plurality of climate zones and ventilated elements wherein the air is directed by ducts within the drier which ducts are interconnected external to the drier to control fresh air and exhaust air over the entire length of the drier; and

d. at least part of the circulating air, by way of regulating means operating through said ducts of the supplementary air system external to the drier, being blown in by turbo means for automatic control of fresh and exhaust air and for maintaining an optimum ambient condition within each climate zone and ventilated element.

5,309,828

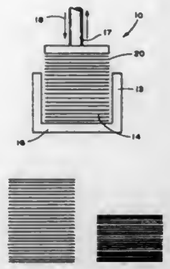
METHOD OF COMPACTING FLAT, STACKED NON-WOVEN ARTICLES

Wayne M. Merry, 431X Park Ridge La., Winston-Salem, N.C. 27104

Filed Feb. 21, 1992, Ser. No. 840,951

Int. Cl.[5] B30B *13/00*

U.S. Cl. 100—35 2 Claims



1. A method of compacting a plurality of substantially flat, stacked, nonwoven, cotton articles from a normal size to a significantly reduced size comprising the steps of: positioning the stacked articles in a shaping environment; subjecting the stacked articles to an elevated pressure for a predetermined period of time so that the stacked articles are compacted and reduced in size, and removing the pressure from the articles in the compacted condition whereby the articles can be individually removed from the stacked relationship and will thereafter return to their original, uncompacted condition without the application of additional substances, wherein the stacked articles are cotton T-shirts and the pressure applied to compact the articles and achieve a volume reduction of up to 50% is in the range of from 30 psi to 200 psi.

5,309,829

APPARATUS FOR PRODUCING JUICE FROM A FRUIT MASH

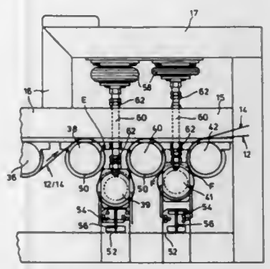
Martin Gahlmann, Freudenberg; Michael Schmidt, Betzdorf, and Erhard Kohles, Wissen, all of Fed. Rep. of Germany, assignors to Alb. Klein GmbH & Co. KG, Niederfischbach, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,561

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1992, 4213843

Int. Cl.[5] B30B *9/24*

U.S. Cl. 100—118 11 Claims



1. Apparatus which comprises:

circulating screening belts of a screening belt press for producing juice from a layer of fruit mash therebetween;

at least one of drums and rollers guiding the screening belts therearound in at least one pressing zone forming a meander-like pressing path;

a high pressure pressing zone including at least one pair of stationary pressing rollers and at least one pressure roller, wherein the screening belts are guided in the high-pressure pressing zone around both the at least one pair of pressing rollers and the at least one pressure roller, between said at least one pair of pressing rollers and said at least one pressure roller, wherein said pressure roller is linearly toward and away from the pressing rollers; and

means for linearly moving the at least one pressure roller into a pressing position wherein the at least one pressure roller forms with each of the pressing rollers a line pressure gap which acts on the cross-section of the layer of fruit mash.

5,309,830

ROTARY PRINT DRUM FOR A POSTAGE METER INCLUDING REVOLVING ELECTRONIC CIRCUITS

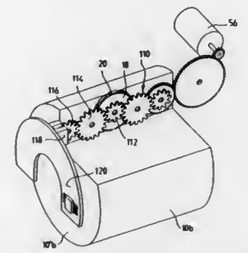
Bernard Vermesse, L'Hay Les Roses, France, assignor to Societe Anonyme Dite: Neopost Industrie, Bagneux, France

Filed Dec. 15, 1992, Ser. No. 991,538

Claims priority, application France, Dec. 17, 1991, 9115665

Int. Cl.[5] B41J *29/00*

U.S. Cl. 101—91 2 Claims



1. A rotary print drum in combination with a postage meter, comprising:

a first end for connection to a driven shaft, a second end opposite to said first end, and a rotation axis extending through said first and second ends;

at least one print wheel rotatably mounted on said drum and having an outside generally cylindrical surface with a plurality of characters in discreet positions on said outside surface;

motor means, a gear train drivingly connecting said motor means to said print wheel to rotate said print wheel into a print position;

electronic circuit means for controlling said motor means for causing rotation of said print wheel, said electronic circuit means being disposed on a printed circuit fixed to the second end of the drum and being disposed in a plane perpendicular to the print drum rotation axis; and

detecting means operatively coupled to said gear train and operatively connected to said electronic circuit means for informing said electronic circuit means of the print position of said print wheel.

5,309,831

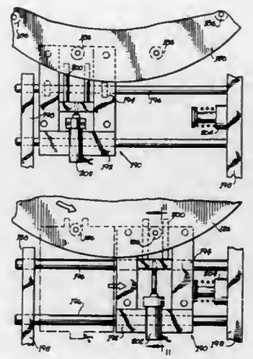
ROTATABLE, MULTI-COLOR SCREEN PRINTING APPARATUS

Rick L. Fuqua, Chicago; Salvatore Prainito, Highland Park; David Pelko, Bridgeview, and Alex Iaccino, Mount Prospect, all of Ill., assignors to American M & M, Oshkosh, Wis.

Division of Ser. No. 592,037, Oct. 3, 1990, Pat. No. 5,154,119. This application Oct. 8, 1992, Ser. No. 958,278

Int. Cl.[5] B05C *17/06*

U.S. Cl. 101—126 4 Claims



1. An indexing apparatus, for a screen printing apparatus having a platen turntable and a plurality of print stations, the platen turntable having a plurality of platens, which index from station to station with a predetermined frequency comprising:

a roller cam follower means for every station of said screen printing apparatus;

a powered carriage means for linear reciprocal movement to index the platens of the platen turntable from station to station and having linear guide means for guiding the carriage means for such linear reciprocal movement; and

a transversely reciprocal powered shifting fork attached to said powered carriage means for engaging successively each of said roller cam follower means for indexing and being powered independently of the carriage means for movement relative to the powered carriage means.

5,309,832

PLATE CHANGING DEVICE AND ASSEMBLY

Gerd Merkel, Dielheim-Horrenberg; Christian Compera, Dossenheim, and Rudolf Hutzenlaub, Mannheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 937,528

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128538; Jun. 5, 1992, 4218602

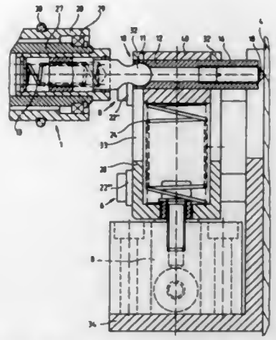
Int. Cl.[5] B41F *27/00*

U.S. Cl. 101—216 14 Claims

1. Plate changing device comprising a roller disposed parallel to a plate cylinder having a plate lock-up device, positioning means for pressing the roller against the plate cylinder and for inserting a rear edge of a printing plate into said plate lock-up device, and guide means extending in a direction in which the rear edge of the printing plate is insertable in said plate lock-up device and displaceably supporting said roller at ends thereof, said guide means comprising a pair of guides secured to a machine frame, said positioning means comprising two positioning elements firmly connected to said machine frame and supporting said roller at each of said ends thereof, respectively, a pair of displaceable bearings respectively holding said roller in said pair of guides, said roller being removable from said bearings, said bearings being formed of respective

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journals, and receptacles wherein said journals are receivable, at least one of said journals being mounted so as to be axially displaceable, and including spring means for biasing said one journal a distance in axial direction so that, due to an axial



displacement of said roller, the journal for said one journal receptacle is located outside said one journal receptacle, said journal and said one journal receptacle in mutually engaging condition, having, respectively, a matching spherical and concave construction enabling outward swiveling of said roller.

5,309,833

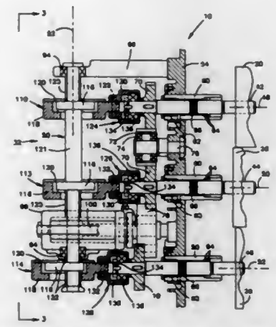
PRINTING UNIT WITH VIBRATOR MECHANISM

Glenn A. Guaraldi, Kingston, N.H., assignor to Heidelberg Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 4, 1993, Ser. No. 27,286

Int. Cl.[5] B41F *5/22, 31/14*

U.S. Cl. 101—217 **2 Claims**



1. Apparatus (**200**) for printing on a web (**206**), said apparatus (**200**) comprising:

a first plate cylinder (**202**) and a first blanket cylinder (**204**) supported on a frame in positions for said first blanket cylinder (**204**) to transfer an image from said first plate cylinder (**202**) to one side of the web (**206**) upon rotation of said first plate cylinder (**202**) and said first blanket cylinder (**204**);

a first ink distributor assembly including a pair of first ink distributor rolls (**230, 232**) supported on said frame in positions to transfer ink to said first plate cylinder (**202**) upon rotation of said first ink distributor rolls (**230, 232**), said first ink distributor rolls (**230, 232**) being further supported on said frame for reciprocating longitudinal movement;

a second plate cylinder (**208**) and a second blanket cylinder (**210**) supported on said frame in positions for said second blanket cylinder (**210**) to transfer an image from said second plate cylinder (**208**) to the other side of the web (**206**) upon rotation of said second plate cylinder (**210**) and said second blanket cylinder (**208**);

a second ink distributor assembly including a pair of second ink distributor rolls (**242, 244**) supported on said frame in positions to transfer ink to said second plate cylinder (**208**) upon rotation of said second ink distributor rolls (**242, 244**), said second ink distributor rolls (**242, 244**) being further supported on said frame for reciprocating longitudinal movement;

gear means for rotating said cylinders (**202, 204, 208, 210**) and said ink distributor rolls **230, 232, 242, 244**) simultaneously, said gear means including a gear train (**214**) supported on said frame, said gear train (**214**) being common to said cylinders (**202, 204, 208, 210**) and said ink distributor rolls (**232, 234, 242, 244**); and

vibrator means for reciprocating said ink distributor rolls (**232, 234, 242, 244**) upon rotation of said ink distributor rolls (**232, 234, 242, 244**), said vibrator means including a first vibrator shaft (**228**) supported on said frame for rotation about a first shaft axis (**229**), and eccentric members mounted on said first vibrator shaft (**228**) to rotate with said first vibrator shaft, said eccentric members consisting of a pair of first eccentric members (**224, 226**), each of said first eccentric members (**224, 226**) moving a respective one of said first ink distributor rolls (**230, 232**) axially upon rotation of said first vibrator shaft (**228**);

said vibrator means further including a second vibrator shaft (**240**) supported on said frame for rotation about a second shaft axis (**241**), and eccentric members mounted on said second vibrator shaft (**240**) to rotate with said second vibrator shaft (**240**), said eccentric members mounted on said second vibrator shaft (**240**) consisting of a pair of second eccentric members (**242, 244**), each of said second eccentric members (**242, 244**) moving a respective one of said second vibrator rolls (**242, 244**) axially upon rotation of said second vibrator shaft (**240**);

each one of said first and second eccentric members (**224, 226, 236, 238**) being circumferentially offset from each other one of said first and second eccentric members (**224, 226, 236, 238**) by at least 90°.

5,309,834

ROTARY PRINTING MACHINE

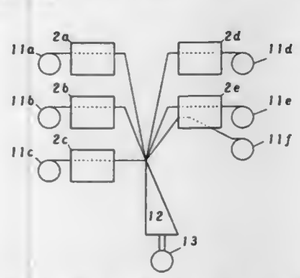
Dieter Koch, Oberrohrdorf, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Mar. 19, 1993, Ser. No. 34,807

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214394

Int. Cl.[5] B41F *13/24*

U.S. Cl. 101—248 **11 Claims**



1. A rotary printing machine, comprising a plurality of cylinders having individual drives in the form of respective electric motors such that the plurality of cylinders are driven individually by the respective electric motors, and at least one

folding unit which is also driven individually by an electric motor, wherein:

a) the individual drives of the cylinders are controlled by respective drive controllers, the individual drives of the cylinders and their drive controllers forming a printing-station group, and wherein the printing machine includes a plurality of printing-station groups;

b) the plurality of printing-station groups are assigned to at least one folding unit and acquire a position reference from said at least one folding unit wherein management of the printing-station groups taking place by means of a master control system, wherein the master control system includes an operating and data-processing step;

c) the individual drives of the cylinders and their drive controllers of a printing-station group are connected by a high-speed drive bus system;

d) the plurality of printing-station groups are connected to one another and to the operating and data-processing unit by a data bus, the operating and data-processing unit managing the printing-station groups;

e) wherein the management comprises presetting of desired values and desired-value deviations, and a processing of actual values and coordinating a desired-value command of the printing-station groups relative to one another and relative to at least one folding unit; and

f) wherein the at least one folding unit is connected to the printing-station groups by the data bus.

5,309,835

DEVICE FOR DRAWING AND BENDING PRINTING PLATES

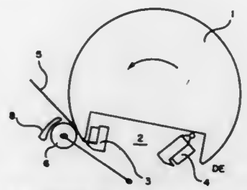
Georg Hartung, Seligenstadt; Helmut Schild, Steinbach/Taunus, and Manfred Herold, Offenbach Main, all of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Apr. 30, 1993, Ser. No. 56,026

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214207

Int. Cl.[5] B41F *1/28*

U.S. Cl. 101—415.1 **12 Claims**



1. A device for drawing and bending the trailing edge of a printing plate onto a plate cylinder of a sheet-fed rotary printing press wherein said plate cylinder includes an elongated channel disposed longitudinally in the periphery thereof for receiving and supporting means for gripping the leading edge of said printing plate adjacent the print start portion thereof and for receiving and supporting means for clamping and tensioning said trailing edge of said printing plate adjacent the print end portion thereof, said drawing and bending device comprising, in combination,

means including a pressure roller engageable with said plate cylinder for drawing said printing plate around the outer periphery of said plate cylinder as said plate cylinder is rotated with said leading edge held by said gripping means,

means including a folding strip disposed parallel to said pressure roller and in advance thereof with respect to the direction of rotation of said plate cylinder,

means for mounting said folding strip for movement relative to said pressure roller and into engagement with said trailing edge of said printing plate, and

actuating means for moving said folding strip relative to said pressure roller and into engagement with said trailing edge of said printing plate so as to bend said trailing edge inwardly with respect to said cylinder channel.

5,309,836

CLEANING DEVICE FOR OFFSET PRINTING MACHINE

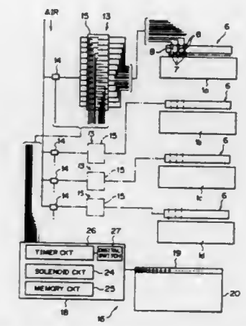
Hideo Takeuchi, Chiba, Japan, assignor to Comtec Co., Ltd., Japan

Filed Dec. 2, 1992, Ser. No. 984,362

Claims priority, application Japan, Dec. 3, 1991, 3-318836

Int. Cl.[5] B41F *35/00*

U.S. Cl. 101—423 **12 Claims**



1. A cleaning device for an offset printing machine, comprising:

a plurality of scrapers arranged along a surface of a printing drum of the printing machine for scraping hickeys on the surface of the printing drum;

a plurality of associated air cylinders for bringing the respective scrapers into contact with and away from the surface of the printing drum;

a plurality of solenoid valves disposed for the associated air cylinders; and

a control unit having an operation board and a control board, said control board receiving signals generated by the operational board, the control board including a solenoid valve drive circuit, a memory circuit, and a timer circuit, said solenoid drive circuit turning on and off the valves, said memory circuit storing received signals indicating the positions of hickeys on the printing drum, said timer circuit setting a period of time for opening the valves to cause said scrapers to remove said hickeys.

5,309,837

METHOD FOR SCREEN PRINTING OF PASTE

Takashi Nanzai, Tokyo, Japan, assignor to Tani Denkikogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 902,963, Jun. 23, 1992. This application Jul. 26, 1993, Ser. No. 97,286

Claims priority, application Japan, Jun. 24, 1992, 3-77831; Dec. 6, 1992, 3-36040

Int. Cl.[5] B41F *35/00*

U.S. Cl. 101—425 **11 Claims**

1. A method for printing onto a surface of a board through a screen comprising the steps of:

feeding paste into a chamber of a dispenser from a paste supply device connected to the dispenser;

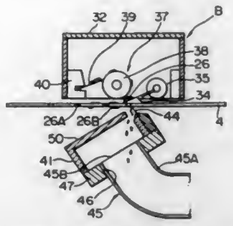
dispensing the paste contained in said chamber onto a first side of the screen and onto the surface of the board from the dispenser through a slit-like aperture therein;

removing residue from the first side of the screen by a transversely extending blade means extending from first clean-

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ing apparatus so as to be in contact with the first side of the screen;

removing residue from a second side of the screen by a transversely extending blade means extending from second cleaning apparatus so as to be in contact with the second side of the screen; and



sucking and transporting the residue adhered to inner peripheral surfaces of openings in said screen as well as the residue being removed from the second side of said screen by a vacuum means connected to the second cleaning apparatus.

5,309,838

SYSTEM FOR KEEPING THE PRINTING PLATES OF A PRINTING PRESS AT A MODERATE TEMPERATURE

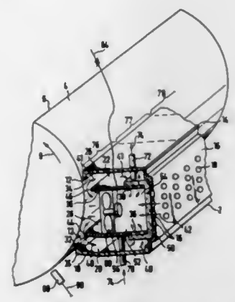
Hans-Joachim Kurz, Gessertshausen, Fed. Rep. of Germany, assignor to Baldwin-Gegenheimer GmbH, Augsburg, Fed. Rep. of Germany

Filed Jan. 26, 1993, Ser. No. 9,549

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202544

Int. Cl.[5] B41F *23/04, 30/00*

U.S. Cl. 101—480 **12 Claims**



1. A system for keeping cylinders of a printing press at a moderate temperature, with blast-air cooling equipment, which comprises at least one heat exchanger, through which cooling liquid flows and which has a heat exchanger air inlet and a heat exchanger air outlet, and at least one blower, which drives air from the heat exchanger air inlet through the heat exchanger to the heat exchanger air outlet and from the heat exchanger air outlet as cold air onto the surface of a rotating cylinder of a printing press, characterized in that an air recirculation cycle is formed, in which the heat exchanger, the blower, and at least one air return duct are located, through which a first portion of the cold air, blown onto the surface, subsequently is guided back from this surface to the air inlet of the heat exchanger where the first portion of the air, which has been guided back, is mixed with fresh air, which has been aspirated by the blower and, together with the fresh air, is blown once again through the heat exchanger onto the surface.

5,309,839

METHOD AND APPARATUS FOR FACILITATING THE PRINTING OF VERSO SIDES AND THE VARNISHING OF RECTO SIDES OF SHEETS

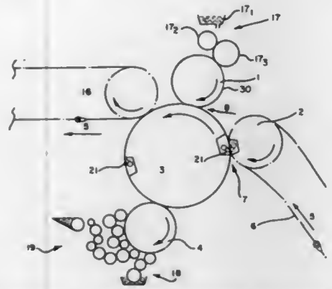
Georg Hartung, Seligenstadt, and Michael Rother, Urberach, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Apr. 7, 1993, Ser. No. 44,274

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211638

Int. Cl.[5] B41F *5/02;* **B05C** *11/00;* **B05D** *1/00*

U.S. Cl. 101—483 **19 Claims**



15. A method of printing and varnishing sheets in a printing machine having a rotatable impression cylinder, a feed drum for transferring sheets to the impression cylinder and including a counterpressure section in pressure contact with the impression cylinder forming a first nip through which sheets must pass, and a rotatable varnishing cylinder in pressure contact with said impression cylinder forming a second nip through which sheets must pass, comprising the steps of:

supplying ink to the impression cylinder;

supplying varnish to the varnishing cylinder;

feeding successive sheets to said impression cylinder;

transporting the sheets on the impression cylinder through the first nip such that ink is transferred from the impression cylinder to a verso side of the sheets;

carrying sheets on the impression cylinder through the second nip such that varnish is transferred from the varnishing cylinder to the recto side of the sheets at a later time than the transferring of ink to the verso side; and

transferring sheets away from said impression cylinder.

5,309,840

IMPASTO PATTERN FORMING METHOD

Toru Takamura; Tsutomu Yoneyama, and Kazuhiko Tomaru, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,184

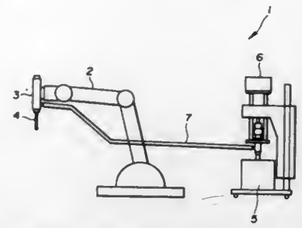
Claims priority, application Japan, Jun. 30, 1992, 4-168482

Int. Cl.[5] B41L *35/14*

U.S. Cl. 101—488 **4 Claims**

1. A method for forming an impasto pattern, comprising the steps of:

extruding a high viscosity liquid silicone rubber composition which is a thermosetting or ultraviolet-curable, one part, self-adhesive silicone rubber composition to a support through a nozzle of a robotic applicator having a picture drawing function to form a predetermined pattern of impasto extrudate on the support, and



curing the extrudate to form an impasto pattern of silicone rubber representing a desired character or mark wherein said support is stretchable.

5,309,841

ZENER DIODE FOR PROTECTION OF INTEGRATED CIRCUIT EXPLOSIVE BRIDGE

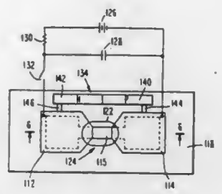
J. Keith Hartman, and Carroll B. McCampbell, both of Albuquerque, N. Mex., assignors to SCB Technologies, Inc., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 771,983, Oct. 8, 1991, Pat. No. 5,179,248. This application Dec. 24, 1992, Ser. No. 996,745

The portion of the term of this patent subsequent to Nov. 12, 2010, has been disclaimed.

Int. Cl.[5] F42B *3/13, 3/182*

U.S. Cl. 102—202.4 **18 Claims**



1. In combination, an integrated circuit bridge comprising a substrate of non-electrically conductive material and a semiconductor layer carried by the substrate; first and second metal lands forming contacts of the integrated circuit bridge, the metal lands being arranged so that there is a gap between them; an explosive charge on the lands bridging the gap; the lands, gap, integrated circuit bridge, and charge being dimensioned and arranged so that in response to a current or voltage equal to or in excess of a predetermined level having a time duration equal to or in excess of a predetermined value being applied to the gap, a plasma having sufficient energy to energize the charge is formed in the gap; the predetermined current having a predetermined minimum firing voltage associated therewith, the integrated circuit bridge being one of a lot having a minimum firing voltage standard deviation of about no greater than 0.05 volts; and means for preventing energization of the explosive by (a) electrostatic discharge currents having associated therewith voltages higher than the firing voltage of the integrated circuit bridge and (b) electromagnetic induced AC currents; said means for preventing including a zener diode having anode and cathode electrodes respectively connected to said first and second lands, said zener diode conducting (a) in the forward direction in response to a voltage of about −0.6 volts being applied across the cathode and anode and (b) in the backward (reverse) direction in response to a positive voltage slightly in excess of the predetermined minimum firing voltage being applied across the cathode and anode.

5,309,842

DEVICE FOR FIRING A DIABOLO FORM BULLET FROM A FIREARM

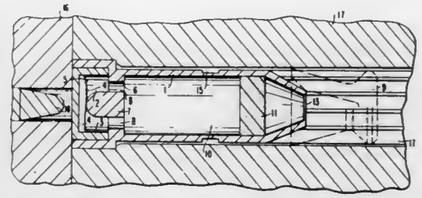
Peter Matysik, Springe, and Walter Heitz, Rastatt, both of Fed. Rep. of Germany, assignors to Wilhelm Brenneke KG Fabrikation von Jagdgeschossen, Langenhagen and Dianawerk GmbH & Co. KG, Rastatt, both of Fed. Rep. of Germany

Filed Oct. 23, 1992, Ser. No. 965,225

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135248

Int. Cl.[5] F42B *5/00;* **C06D** *5/00*

U.S. Cl. 102—430 **5 Claims**



1. Device for firing a diabolo form bullet from a firearm with a rifled barrel, wherein said device consists of a cartridge comprising a housing, a detonation cap connected to one end of the housing in a gas-tight manner, said detonation cap containing a gas-forming propellant means, said gas-forming propellant means providing the sole source of gas in said cartridge on ignition of the gas-forming propellant means, said housing having an expansion compartment for expansion of said gas and said housing having an outer surface tapered toward another end of said housing remote from said detonation cap, said tapered outer surface aligning said diabolo form bullet loaded coaxially in said rifled barrel of said gas pressure operated fire arm by engaging a tapered recess provided in said diabolo form bullet, whereby said diabolo form bullet is forced into said rifled barrel so as to calibrate said diabolo form bullet; and a membrane covering said other end of said housing remote from said detonation cap, wherein said housing has at least one breakthrough region, in addition to said membrane, said at least one breakthrough region rupturing when a gas pressure of said gas generated on ignition of the gas-forming propellant means exceeds a predetermined maximum value.

5,309,843

WARHEAD WITH A TANDEM CHARGE

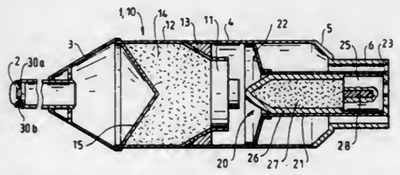
Max Rentzsch, Schnaittach; Manfred Schildknecht, Friedrichsdorf; Werner Rudenauer, Roth; Klaus Lindstadt, Schwaig, and Michael Hahn, Nurnberg, all of Fed. Rep. of Germany, assignors to DIEHL GmbH & Co., Nürnberg, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 89,714

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1992, 4225704

Int. Cl.[5] F42B *12/16*

U.S. Cl. 102—476 **7 Claims**



1. A warhead comprising a housing; a tandem charge in said housing; a fuze for sensing a target; said tandem charge includ-

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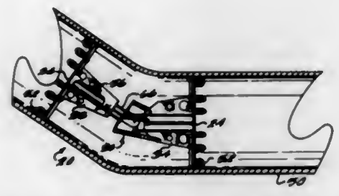
ing a hollow charge which is stationarily fixed in said housing; a follow-up charge of caliber smaller than that of the hollow charge being axially displaceable in a guide tube for the subsequent flight of the follow-up charge, said guide tube and said follow-up charge being located rearwardly of said hollow charge; and safety means for said charges providing for a firing delay for the follow-up charge; said follow-up charge being in the form of a fragmentation projectile accelerateable in the direction of flight in the absence of a separate propellent charge responsive to the mass inertia thereof upon impact of the warhead and notwithstanding a detonation of the hollow charge, and means for concurrently activating a pyrotechnic delay detonator, upon firing of said hollow charge, for the time-delayed firing of the follow-up charge.

5,309,844

FLEXIBLE PIPE CRAWLING DEVICE HAVING ARTICULATED TWO AXIS COUPLING

William T. Zollinger, Martinez, Ga., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 24, 1993, Ser. No. 64,880
Int. Cl.[5] B61B *13/10*
U.S. Cl. 104—138.2 **20 Claims**



1. Apparatus for moving through a pipe having an axis and a wall, said pipe having bends wherein said axis curves, said apparatus comprising:

a front leg assembly defining a first plane generally perpendicular to said axis, said front leg assembly having

a first plurality of feet, and

a first plurality of actuators, each actuator in operative connection with one foot of said first plurality of feet, said each actuator moving said foot radially with respect to said axis between an extended position and a retracted position;

a rear leg assembly defining a second plane generally perpendicular to said axis, said front leg assembly separated from said rear leg assembly by a distance, said front and rear leg assemblies having a nominal alignment whereby said first and second planes are parallel, said rear leg assembly having

a second plurality of feet, and

a second plurality of actuators, each actuator in operative connection with one foot of said second plurality of feet, said each actuator moving said foot radially with respect to said axis between an extended position and a retracted position; and

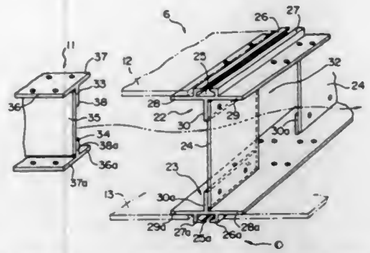
means connected to said front and rear leg assemblies for changing said distance and said alignment of said front and rear leg assemblies with respect to each other, said front and said rear leg assemblies moving between a retracted position and an extended position as said changing means changes said distance, said distance being greater when said front and said rear leg assemblies are in said extended position than when in said retracted position, said alignment of said first and said second planes changing from said nominal alignment in response to lateral pressure on said apparatus by a bend in said pipe, said changing means including a joint rotatable about at least two axes of rotation.

5,309,845

VEHICLE BODY

Hiroyuki Onishi, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 830,899, Feb. 4, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 48,588
Claims priority, application Japan, Feb. 5, 1991, 3-014587
Int. Cl.[5] B61D *17/00*
U.S. Cl. 105—422 **21 Claims**



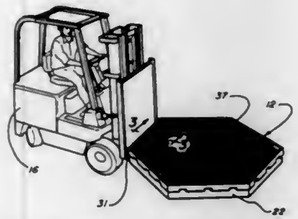
1. A vehicle body comprising first and second beams connected together, said second beams extending perpendicular to said first beams and arranged at intervals longitudinally along said first beams, at least one of said first beams having first and second members each having a locking grove for receiving a head of a bolt, and a web connecting said first and second members with each other, said first and second members also including mounting sections, each having an outwardly facing surface which defines a plane, and a portion of each of said first and second members in which said locking groove is formed projecting outwardly from each of said outwardly facing surfaces.

5,309,846

TEMPORARY GRASS PLAYING FIELD

Douglas L. Peterson, Lake Orion, Mich., assignor to 3-Dimensional Services, Rochester, Mich.

Filed Dec. 31, 1992, Ser. No. 999,118
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.1 **7 Claims**



1. A system for creating a temporary grass playing field comprising:

a plurality of substantially identical pallets, each pallet having a base with a top surface and a bottom surface,

each of said pallet bases having a regular hexagonal shape,

means secured to said bottom surface of each said pallet base for elevating said pallet base a predetermined distance above a ground support surface,

grass sod corresponding in shape to said pallet base supported on said top surface of said pallet base,

a sidewall extending upwardly from said top surface of said base, said sidewall extending around substantially the entire outer periphery of said base,

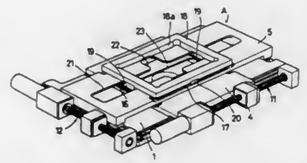
means for enabling grass on adjacent pallets to knit together comprising an elongated edge member and means for detachably securing said edge member to an upper edge of said sidewall so that said edge member extends upwardly form said sidewall.

5,309,847

ADJUSTABLY MOVABLE WORK TABLE

Hiroshi Matsumoto, Iwata, Japan, assignor to NTN Corporation, Osaka, Japan

Continuation of Ser. No. 691,919, Apr. 26, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 19,341
Claims priority, application Japan, Apr. 27, 1990, 2-45308[U]
Int. Cl.[5] A47B *1/00*
U.S. Cl. 108—143 **4 Claims**



1. A movable table comprising:

a generally rectangular base defining a plane having mutually perpendicular X and Y directions;

a first pair of elongated guides mounted on a first pair of opposite ends of a top surface of said base and extending parallel to each other in said X direction;

a second pair of elongated guides mounted on the other pair of opposite ends of said base and extending parallel to each other in said Y direction;

a first yoke mounted on said base and engaged with said first pair of guides for linear movement with respect to said base in said X direction, said first yoke having a first pair of elongated parallel spaced stage guides on a top surface of said first yoke and extending in said Y direction;

a second yoke mounted on said base above said first yoke and engagable with said second pair of yoke guides for linear movement with respect to said base in said Y direction, said second yoke having a second pair of spaced, elongated, parallel stage guides on a top surface of said second yoke and extending in said X direction, said second yoke being formed with an elongated, light-passing hole extending in the direction of length of said second stage guides and having a length determined by the length of said second stage guides;

a generally rectangular stage mounted on said base above said second yoke;

a first pair of parallel slide bearings extending in the Y direction from a first pair of opposite sides of a bottom surface of said rectangular stage and through said light passing hole in said second yoke and engagable with said first pair of stage guides on said first yoke; and

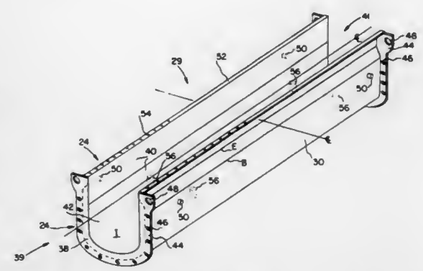
a second pair of parallel slides bearings extending in said X direction from a bottom surface of said stage and engaged with said second pair of stage guides on said second yoke.

5,309,848

REVERSIBLE, WEAR-RESISTANT ASH SCREW COOLER SECTION

Kenneth L. Santelmann, Guilford Twp., Medina County; Avelino G. Bolumen; Roger A. Clocker, both of Wadsworth; Thomas L. Garabedian, Stow; Donald C. Housley, Barberton; Russell A. Stanley, Green, and James M. Tanzosh, Silver Lake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 29, 1992, Ser. No. 953,631
Int. Cl.[5] F23J *1/02*
U.S. Cl. 110—171 **3 Claims**



1. A replaceable, wear-resistant ash screw cooler section for the feed end of an ash screw cooler, comprising:

a U-shaped, carbon steel liner plate having a pair of identical, outwardly facing flanges at each end of the U and a high chrome, high carbide overlay emplaced on an inner surface of the liner plate;

a U-shaped, carbon steel trough jacket partially surrounding an outer surface of the U-shaped liner plate and welded along a lateral edge of the trough jacket to the liner plate to partially define a water jacket therebetween which has a first and a second end;

a pair of flanged plates, one welded at each end of the water jacket, which, together with the U-shaped liner plate and the trough jacket serve to completely define the water jacket; and

a plurality of cooling water hookups symmetrically located on the trough jacket near the ends of the ash screw cooler section, for providing cooling water to and from the water jacket.

5,309,849

SLUDGE DRYING SYSTEM WITH RECYCLING EXHAUST AIR

Georg Krebs, Waldshut, Fed. Rep. of Germany, assignor to Andritz TCW Engineering GmbH, Waldshut-Tiengen, Fed. Rep. of Germany

Filed May 22, 1992, Ser. No. 887,016
Int. Cl.[5] F23G *5/04*
U.S. Cl. 110—224 **36 Claims**

1. A furnace assembly for use with a sludge drying system, comprising:

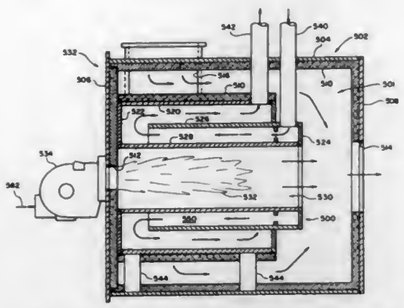
a housing having an exhaust air chamber, a first inlet for providing recycled exhaust air into said exhaust air chamber, a first outlet for discharging hot exhaust air from said exhaust air chamber to a dryer, and a first passageway extending between said first inlet and said first outlet for passing the recycled exhaust air therethrough;

a burner coupled to said housing for producing a flame within said housing to heat said recycled exhaust air; and

a deodorizing chamber for deodorizing off-gases to be discharged to the environment, and having a second inlet for providing the off-gases into said deodorizing chamber, a second outlet for discharging the off-gases from said de-

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odorizing chamber to the environment, and a second passageway extending between said deodorizing chamber's inlet and said deodorizing chamber's outlet for maintaining the off-gases passing through said deodorizing chamber for a predetermined period of time, said second



passageway being separate from said first passageway to maintain the off-gases to be discharged separate from the exhaust air to be recycled to the dryer;

said deodorizing chamber being coupled to said housing adjacent the flame produced by said burner to heat the off-gases passing through said deodorizing chamber.

5,309,850

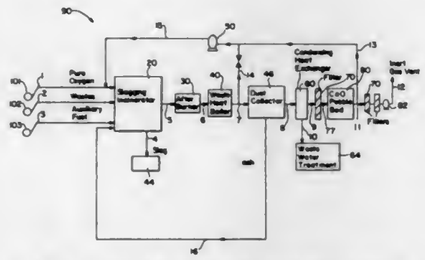
INCINERATION OF HAZARDOUS WASTES USING CLOSED CYCLE COMBUSTION ASH VITRIFICATION

William Downs; Stanley J. Vecci; James J. Warchol; Steve C. Datsko, all of Alliance, and George H. Hay, Eindlay, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 18, 1992, Ser. No. 977,931

Int. Cl.[5] F23J *11/00*

U.S. Cl. 110—235 **16 Claims**



1. A closed system for incinerating hazardous wastes, the system comprising:

a combustion incinerator for combusting the hazardous wastes into a combusted product comprising gases, liquids, solids, slag and ash;

an oxygen source connected to the incinerator for providing substantially pure oxygen to the incinerator;

a waste source connected to the incinerator for supplying waste to the incinerator for combustion;

a fuel source connected to the incinerator for supplying fuel to the incinerator;

first gas recycling means for recirculating combusted product by channeling combusted product back into the incinerator, said first gas recycling means positioned after the incinerator;

a dust collector positioned after the incinerator for collecting ash from the combusted product received from the incinerator;

means for recycling ash from the dust collector back into the incinerator;

a condensing heat exchanger positioned after the dust collector for receiving combusted product from the dust collector and removing liquids from the combusted product;

means for treating liquids collected by the condensing heat exchanger;

a filter positioned after the heat exchanger for filtering the combusted product;

means for removing CO_2 from the combusted product;

second gas recycling means for recirculating combusted product by channelling combusted product back into the incinerator, said second gas recycling means positioned after the CO_2 removing means; and

means for bleeding inert gases from the system.

5,309,851

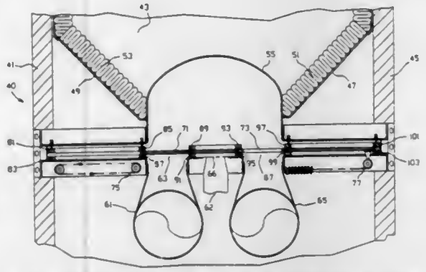
REGENERATIVE THERMAL OXIDIZER WITH GATE MANIFOLD PRESSURIZATION

Richard G. Reimlinger, 24 Hunter Ave., Fanwood, Union County, N.J. 07023, and James L. Nester, 1601 Moyer Rd., Upper Salford Township, Montgomery County, Pa. 18969

Filed Jul. 15, 1993, Ser. No. 91,268

Int. Cl.[5] F27D *17/00*; F28D *17/04*

U.S. Cl. 110—304 **18 Claims**



1. In a regenerative thermal oxidation apparatus for purifying gases by thermal oxidation and for exchange of heat between inleting and outleting gases, said apparatus having a plurality of thermal chamber units, each such unit having a gate with at least one gate orifice movably located in a linear fashion against a base surface so as to alternatively align with various inlet and outlet openings, the improvement which comprises:

a plurality of seals located between said gate and said openings and having sufficient sealing capabilities between said gate and said openings to maintain each chamber at an elevated pressure and so as to reduce leakage of gases from each of said chambers during operation.

5,309,852

SEED DRILL

Robert Zimmerman, Box 6, Almira, Wash. 99103

Filed Mar. 5, 1992, Ser. No. 847,784

Int. Cl.[5] A01B *35/16*

U.S. Cl. 111—121 **47 Claims**

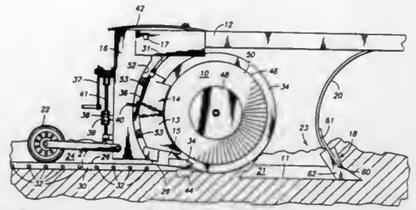
1. A seed drill planting assembly comprising:

press wheel means rotatably mounted about a transverse axis for packing a longitudinal furrow;

the press wheel means further including a circumferential coulter;

a runner extending rearwardly from beneath the press wheel means, the runner being transversely guided on the circumferential coulter of the press wheel means to maintain

it in longitudinal alignment within the furrow while forming a vertical slot that intersects the longitudinal furrow; and



delivery means on the runner for dropping seed into the vertical slot.

5,309,853

APPARATUS FOR THE AUTOMATIC POSITIONING OF STOCKINGS IN A PANTYHOSE-SEWING MACHINE

Vinicio Gazzarrini, deceased, late of Impruneta, Italy by Alma Gazzarrini, executrix , assignor to Solis S.r.l., Tavarnuzze, Italy

Filed Mar. 12, 1993, Ser. No. 30,570

Claims priority, application Italy, Mar. 13, 1992, FI92 A 000067

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.15 **5 Claims**



1. An apparatus for automatically positioning stockings in a pantyhose-sewing machine, the apparatus comprising:

a shape having first and second arms in substantially a same plane;

a bow having an end slidably engaged with one end of said first arm, said bow extending from said end of said first arm to an end of said second arm, said bow being substantially coplanar with said arms;

driving and guiding means for sliding said bow in and out of said first arm between a retraction position and an extraction position, said driving and guiding means including a bored rod attached to a shoe and a stem of said bow, said driving and guiding means also including a first hose and a second hose, said first hose being fitted on said second hose, said second hose defining an internal gauge for guiding said shoe of said bored rod, an end of said second hose having a push means for guiding an end of said bored rod, a spring positioned on said bored rod and inside said second hose, said spring also being positioned between said shoe and said brushing means;

garter line detection means positioned spaced from said shape and for detecting a garter line of a stocking positioned on said shape when said bow is in said extraction position.

5,309,854

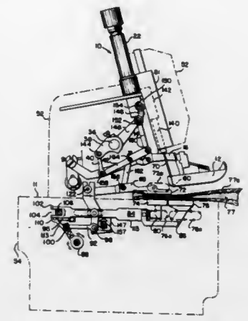
HIGH LIFT SEWING MACHINE

Charles E. Mulcahey, Beverly; John J. Kirby, South Hamilton, and Michael R. Porter, Topsfield, all of Mass., assignors to Porter Sewing Machines, Inc., Beverly, Mass.

Filed Aug. 19, 1992, Ser. No. 854,373

Int. Cl.[5] D05B *27/04*

U.S. Cl. 112—314 **7 Claims**



I. A walking foot assembly for a sewing machine for advancing material between stitches, comprising:

first and second lower walking feet mounted on first and second lower walking foot bars, respectively,

an upper walking foot positioned directly above said second lower walking foot and mounted on an upper walking foot bar,

means for driving said first lower walking foot bar and foot to travel through an elliptical path at a first speed,

means for driving said second lower walking foot to travel through an elliptical path at a second speed different from said first speed,

a member directly connecting said upper walking foot bar to said second lower walking foot bar such that the motion of said upper walking foot bar and foot is responsive to the motion of said second lower walking foot bar.

5,309,855

SUBMARINE WEAPON

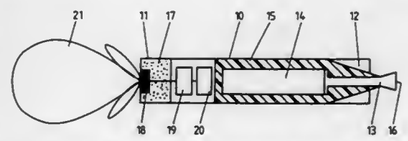
Wolfgang Böttger, Dusseldorf; Uwe Kellermeier, Weyhe; Gerrit Plümecke, Bremen, and Rainer Schöffl, Odenthal, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,009

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041457

Int. Cl.[5] F42B *19/00, 19/01*

U.S. Cl. 114—20.2 **7 Claims**



1. A submarine weapon for combating submarines which comprises a rocket engine and an actively locating, acoustic target seeking device said rocket engine providing a continuous rocket thrust jet and comprising a drive unit for said weapon, and said target seeking device having a ranging frequency that is selected so that an echo level to be expected

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from a detection zone of the acoustic target seeking device lies above a noise level of the rocket engine.

5,309,856
HULL FOR SMALL BOAT

Noboru Kobayashi, Kosai, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

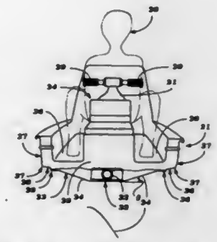
Continuation of Ser. No. 816,848, Jan. 2, 1992, Pat. No. 5,170,735, which is a continuation of Ser. No. 610,463, Nov. 6, 1990, abandoned, which is a continuation of Ser. No. 145,678, Jan. 14, 1988, abandoned, which is a continuation of Ser. No. 933,624, Nov. 21, 1986, abandoned. This application Sep. 11, 1992, Ser. No. 943,864

Claims priority, application Japan, Nov. 21, 1985, 60-261833; Nov. 21, 1985, 60-261834; Nov. 21, 1985, 60-261836

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] B63B *1/00*

U.S. Cl. 114—56 **3 Claims**



1. In a planing hull for a small watercraft having an upper deck with a rearwardly positioned seat configured to accommodate at least a single rider seated thereon, said hull being configured for facilitating stability under turning and reducing resistance upon straight ahead running when planing, said hull being formed with an underside having a first horizontally extending uninterrupted area that is normally submerged in a straight ahead planing running condition, a pair of upwardly inclined uninterrupted second portions each extending directly from a respective side of said first portion and terminating at the outer sides of said hull of a first pair of longitudinally extending generally horizontally extending chines for assisting in running stability at the outer edges of said second portions and a pair of third portions angularly disposed relative to said second portion and in close proximity to said second portion and each disposed outwardly of said second portion on respective opposite sides thereof at the side edges of said hull and adapted to become submerged in the body of water upon either or both of turning or side leaning of the rider seated upon said seat for increasing the stability of the watercraft during turning, and a second pair of chines disposed transversely outwardly of said third portions and having a generally straight portion at their outer periphery, said second pair of chines extending in a substantially horizontal direction and terminating at the outer periphery of said hull.

5,309,857
APPARATUS FOR TRANSFERRING BUOYANCY IN A NAUTICAL VESSEL

Raymond Brosseuk, Box 389, Bevelstoke, B.C. V0E 2S0, Canada

Filed Mar. 16, 1992, Ser. No. 852,111

Int. Cl.[5] B63B *39/03*

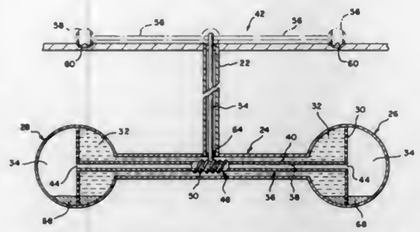
U.S. Cl. 114—125 **21 Claims**

21. Apparatus for reducing the extent of heel of a nautical vessel having a hull extending in a force and aft direction comprising:

supports coupled to and extending laterally beneath said hull on opposite sides thereof,

hollow enclosed, confining bulbs both capable of being alternatively windward and leeward bulbs, depending upon wind direction relative to said hull, located on said supports,

means defining a passage between said bulbs,



a buoyant fluid enclosed and confined within said bulbs and said passage therebetween,

fluid transfer means to operable to selectively shift a portion of said buoyant fluid from a windward one of said bulbs to the other leeward one of said bulbs, while isolating said buoyant fluid within said bulbs and said passage therebetween.

5,309,858
STEERING DEVICE FOR SAILBOATS

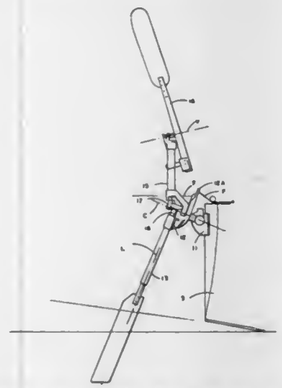
Stellan Knoos, 5933 Avenida Chamnez, La Jolla, Calif. 92037

Filed May 4, 1993, Ser. No. 59,078

Claims priority, application Sweden, May 6, 1992, 9201426-5

Int. Cl.[5] B63H *25/10*

U.S. Cl. 114—144 C **2 Claims**



1. A steering device for sailboats, comprising:

a bracket (**11, 15A**) adapted for attachment to a sailboat(S),

a rocker (**12**) which is pivotally mounted on the bracket for pivotal movement relative to the bracket about a rocker axis (C) which in use of the steering device extends generally in the fore-and-aft direction of the sailboat, the rocker including means (**12A**) for connecting the rocker to a rudder member such that the rudder member is deflected in response to pivotal movement of the rocker about the rocker axis,

a servo oar (**13**) supported by the rocker (**12**) and pivotally movable together with the rocker about the rocker axis (C), the servo oar being rotatable relative to the rocker axis about an oar axis (L) which includes an angle with the rocker axis,

a steering lever (**17**) mounted on the bracket (**11**) for pivotal movement about a steering lever axis (T) including an angle with the rocker axis (C) and the oar axis (L), the steering lever including a lever arm (**17A**),

steering control means (**16**) for pivotally moving the steering lever (**17**) about the steering lever axis (T), and

linkage means (**17B,18,23**) coupling the lever arm (**17A**) of the steering lever (**17**) to the servo oar (**13**) such that the servo oar is rotated about the oar axis (L) in response to pivotal movement of the steering lever about the steering arm axis (T), the linkage means comprising a link rod (**18**) extending generally transversely of the oar axis and generally forwardly from the servo oar to the lever arm of the steering lever, said link rod (**18**) being connected with the lever arm (**17A**) of the steering lever (**17**) by means of a joint (**17B, 18A**) having a longitudinal axis which is along the rocker axis (C), said rocker axis (C) intersecting the steering lever axis (T) at a point (A) which is rearward of the oar axis (L).

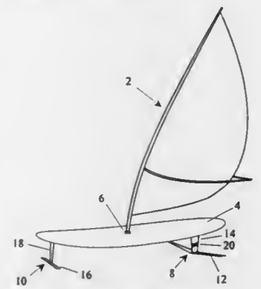
5,309,859
HYDROFOIL DEVICE

Richard T. Miller, 1521 Posen Ave., Albany, Calif. 94706

Filed Apr. 13, 1993, Ser. No. 46,150

Int. Cl.[5] B63B *1/24*

U.S. Cl. 114—274 **8 Claims**



1. A sail powered watercraft comprising:

(a) a sailboard hull, a sail assembly, and sail attachment means for joining said sail assembly to said sailboard hull

(b) a main hydrofoil assembly comprising a main hydrofoil and main support means for mounting said main hydrofoil to said sailboard hull at a location rearward from the location of said sail attachment means

(c) a canard hydrofoil assembly comprising a canard hydrofoil and canard support means for mounting said canard hydrofoil to said sailboard hull at a location forward from the location of said sail attachment means

(d) said canard hydrofoil assembly comprising bubble shedding means for quickly removing air bubbles that may lodge on said hydrofoil during operation, whereby plunging may be inhibited and whereby lift from said canard hydrofoil may be controlled.

5,309,860
FLEXIBLE HINGE ASSEMBLY

Robert R. Shearer, Bradenton, Fla., assignor to Aldon Industries, Inc., Bradenton, Fla.

Filed Sep. 30, 1992, Ser. No. 954,636

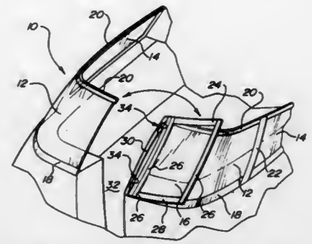
Int. Cl.[5] B63B *17/00*

U.S. Cl. 114—361 **23 Claims**

1. A flexible hinge for mounting a first panel to a second panel, said hinge comprising:

first and second hinge brackets, said first hinge bracket being mounted to said first panel and said second hinge bracket being mounted to said second panel, said hinge brackets having adjoining openings defined by knuckles with an interior bore;

a flexible pin received within said interior bores to interconnect said first and second brackets, permitting said brackets to pivot with respect to one another, said flexible pin bending as said brackets pivot permitting said brackets to



deflect with respect to one another along the longitudinal centerline of said adjoining openings;

whereby the first and second panels can freely pivot with respect to each other; and

wherein said first and second panels have a complex contoured surface and said first panel is a windshield and said second panel is a door panel pivotally mounted to an opening in said windshield by said flexible hinge.

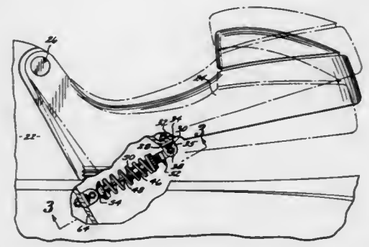
5,309,861
SHOCK-ABSORBER MOUNTED SEAT FOR PERSONAL WATERCRAFT AND BOATS

Albert Mardikian, Corona Del Mar, Calif., assignor to Mardikian 1991 Irrevocable Trust, Corona Del Mar, Calif.

Filed Aug. 5, 1992, Ser. No. 926,476

Int. Cl.[5] B63B *29/00*

U.S. Cl. 114—363 **12 Claims**

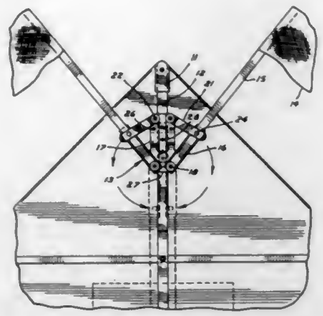


1. A personal watercraft of the type which accommodates its driver in a seated position, comprising a hull section, and a seat mounted to the hull in a cantilevered position by mounting means which permit movement of the seat relative to the hull, the seat being configured for accommodating a driver of the watercraft in said seated position, and

shock absorber means including an enclosed fluid filled cylinder having a piston moving therein against resistance of the fluid, the shock absorber means being mounted to the hull and to the seat for being positioned between the hull and the seat with a substantially inclined longitudinal axis and for absorbing forces generated by movement of the seat relative to the hull when the personal watercraft travels on the water, the shock absorbing means being the only force absorbing means which supports the seat in a vertical direction.

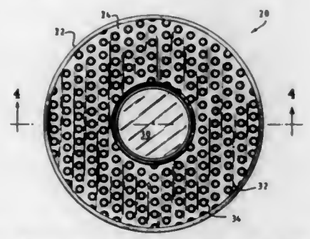
VOL 1162 ISS 2 MY 10 1994 UMI

5,309,862
FLAG HOLDER FOR HIGHWAY SIGN
Paul A. Lang, 555 14th St., Newport, Minn. 55055
Filed Aug. 17, 1993, Ser. No. 107,533
Int. Cl.[5] G09F *17/00*
U.S. Cl. 116—173 18 Claims



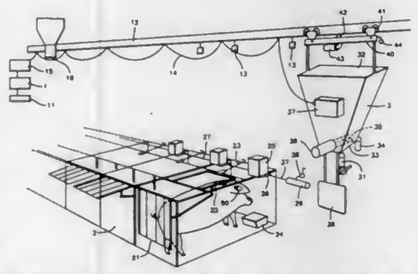
1. A flag holder for attachment to a standard temporary highway warning sign, for holding a pair of symmetrically arrayed warning flags at a top of the sign, said holder comprising:
a) an elongated rigid holder body adapted for attachment in vertical alignment adjacent to the top of a standard highway warning sign,
b) means for fixedly securing the holder body to the sign,
c) a pair of elongated flag staffs pivotally attached at one end to said body and having a warning flag at the other end,
d) a pair of elongated spring clips extending, when the flag holder is in open operable, position, between a point on said body spaced from points of pivotal attachment of the flag staffs to the body and a point on said flag staffs spaced from the points of pivotal attachment of the flag staffs to the body,
e) a pivotal connection at one end of each of said spring clips between said clips and one of said body and said flag staffs and
f) a separable male-female stud-aperture connection at the other end of each of said spring clips between said clips and one of said body and said flag staffs.

5,309,863
FIRE SAFETY WINDOW AND INTERIOR DOOR MARKER
Robert H. Leeb, Jr., 324 Fourteenth St., West Babylon, N.Y. 11704
Filed Feb. 1, 1993, Ser. No. 11,771
Int. Cl.[5] G01D *11/00*
U.S. Cl. 116—205 8 Claims



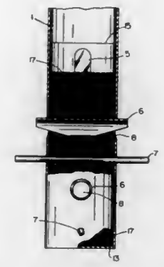
1. A fire safety interior door and window exit marker comprising:
a plate having a front side and a rear side;
said front side having a reflective surface area and a tactile surface area, one of which is bounded by the other, said tactile surface area including a multiplicity of spacedapart protrusions disposed in a multi-line array; and
means for attaching said rear side of said plate to an exit door or beneath a window.
wherein said attaching means includes an adhesive backing affixed to said rear side of said plate with an outer covering release sheet.

5,309,864
METHOD AND APPARATUS FOR FEEDING ANIMALS
Jan H. Harmsen, Hengelo, and Antoon Kuip, Groenlo, both of Netherlands, assignors to N.V. Nederlandsche Apparatenfabriek NEDAP, De Groenlo, Netherlands
PCT No. PCT/NL91/00228, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO92/08344, PCT Pub. Date May 29, 1992
PCT Filed Nov. 12, 1991, Ser. No. 910,368
Claims priority, application Netherlands, Nov. 12, 1990, 9002465
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—51.02 19 Claims



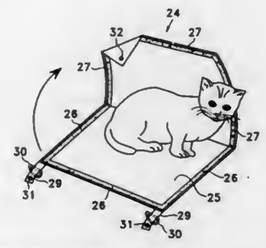
10. Feeding apparatus for feeding animals, suitable for unconfined livestock, comprising:
electronic responder means associated with each of said animals for generating a unique code for each animal in an electromagnetic interrogation field;
a plurality of feeding stalls, each having an entrance opening for an individual animal;
door means operatively mounted on each of said feeding stalls for opening and closing said entrance opening;
locking means for each feeding stall operatively connected with said door thereof for locking said door in said closed position;
feeding station means movable to positions adjacent to each of said feeding stalls;
transmitter/receiver means mounted on said feeding station means for generating said electromagnet interrogation field adjacent to each feeding stall and identifying an animal present in said feeding stall in response to a respective unique code for each animal;
computer means operatively connected to said transmitter/-receiver means containing information relating to individual ones of said animals;
a feed container on each feeding stall for receiving feed supply from said feeding station means;
computer-controllable feed supply means for depositing feed into said containers from said feeding station means;
a movable closing member operatively mounted on each of said feed containers for movement between a closed position for retaining feed therein and an open position for discharging feed in said container to a respective feeding stall on which said container is mounted;
an operating element connected to said closing members so that said closing members are jointly coupled for simultaneous operation so that feed in all of said containers is simultaneously discharged into all of said feeding stalls upon opening of said closing members simultaneously by said operating element; and
operating means for operating said operating element.

5,309,865
BIRD FEEDER CONSTRUCTED OF METAL CYLINDERS
Stewart Hardison, P.O. Box 333, Bainbridge, N.Y. 13733
Filed Jun. 9, 1993, Ser. No. 74,330
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—57.8 2 Claims



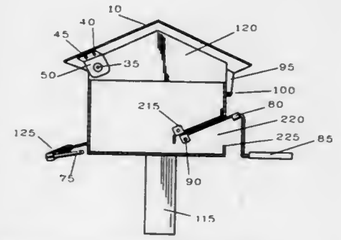
1. A bird feeder comprising a metal cylinder oriented vertically and suspended from a nearly circular metal hoop, the free ends of which attach near the top rim of said cylinder, whereas the underside of said cylinder is plugged with a metal disc and the top of said cylinder is protected with a removable metal cover, a plurality of smaller metal cylinders oriented horizontally which intersect the vertical one on its center line in a staggered vertically spaced relation, the intersecting points being round apertures equal to the outside diameter of the horizontal cylinders, whereby said cylinders are of such a length that their ends protrude from the outside wall of the vertical cylinder and of such design that their ends are cut on an angle with the cut away portions being on the underside of said tubes and extending into the interior of the vertically aligned tube, whereby the intersection points of the horizontal and vertical cylinders provide access to bird seed stored in the vertical cylinder.

5,309,866
ANIMAL TREATMENT AND HANDLING DEVICE
Vincent J. A. Santoro, 220 Strong Rd., Ferndale, N.Y. 12734
Division of Ser. No. 16,844, Feb. 12, 1993, Pat. No. 5,230,304.
This application Apr. 30, 1993, Ser. No. 54,623
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—156 10 Claims



1. An animal treatment and handling device comprising:
a blanket formed from substantially flexible material;
said blanket having an outer surface and an inner surface and being capable of being foldable about a central axis which defines a right half and a left half;
a strip of first connector means being fixedly attached to the entire outer periphery of the right half of the inner surface and a strip of second connector means being fixedly attached to the entire outer periphery of the left half of the inner surface such that when the blanket is spread open on a flat surface and an animal is placed on the inner surface of the blanket along the central axis the left and right halves can be brought together and the first and second connector means can coact to form a case about the animal whereby only its head is without the case and access to the animal can be accomplished by separating a portion of the connector means at any point along the closure.

5,309,867
SQUIRREL-PROOF BIRD FEEDER
Julio V. Cruz, 7712 A Ray Street, Fort G. Meade, Md. 20755
Filed Jun. 14, 1993, Ser. No. 77,220
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—52.3 14 Claims



1. A squirrel-proof bird feeder comprising:
(a) a feed containment structure having spaced and parallel side walls, a front wall spaced and parallel to a rear wall, a retaining plate attached to an inside of said front wall, and a floor mounted perpendicular to and between of said side walls, front wall, and rear wall, and
(b) a roof plate mounted on said side walls covering said feeder containment structure, said roof plate having an open position and a closed position, said roof plate being secured to said front wall by a latch means, and
(c) a feeding cavity created by the joining of said sidewalls, front wall, said floor and said retainer plate together, and
(d) an opening on said front wall to expose said feeding cavity, and
(e) a fence created by a lower edge of said opening for the purpose of retaining nourishment within said feeding cavity, and
(f) a balancing frame that circumvents said side walls and said rear wall, said balancing frame being mounted to supporters attached to respective left and right trunions located on said side walls, said balancing frame having a platform attached to its upper end terminal and a weight attached to its lower end terminal, said balancing frome being capable of tilting from an open feeding position to a closed feeding position depending on the weight of the bird sitting on said platform, and
(g) a rod parallel to said front wall and said floor, said rod being placed in proximity to said retainer plate, said rod extending beyond said side walls and outwards through holes on said side walls to create a self-supporting hanging structure, and
(h) a gate plate adjacent to and operationally associated to said platform, said gate plate having a lower end terminal tethered to said rod and an upper end terminal that extends beyond said front wall and upwards through said opening and that attaches to respective left and right sections of said balancing frame, said gate plate being

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substantially placed inside of said feeding cavity in an angular fashion to effect an open feeding position corresponding to that of said platform and in which it contacts the upper edge of said opening, said gate plate having a closed feeding position corresponding to that of said platform and in which it contacts the lower edge of said opening, and

(i) an adjustable weight attached to the lower end terminal of said balancing frame to effect a balancing action against said platform, said weight being repositioned along a plane of said balancing frame to control the tilting action of said platform, and

(j) a latch means for securing said roof plate to said front wall, and

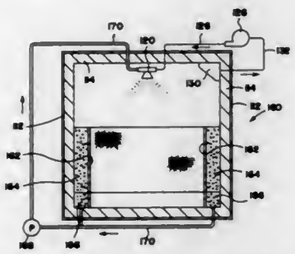
(k) a stand centrally mounted to said floor.

5,309,868

CONTAINER FOR LIVE MARINE ANIMALS

Yoshimi Tomiyama, Nagasaki, Japan, assignor to Sanki Kogyo Co., Ltd., Japan

Filed Nov. 3, 1992, Ser. No. 970,940
Claims priority, application Japan, Mar. 24, 1992, 4-95980
Int. Cl.[5] A01K *63/02*
U.S. Cl. 119—203 **2 Claims**



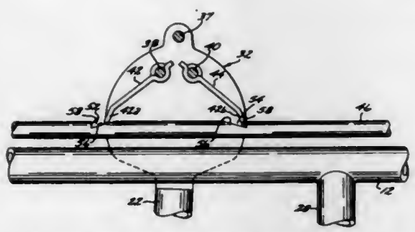
1. A container for live marine animals which have a lower metabolic function comprising a housing formed by outer walls of sheet metal and inner walls of thermal resistant material, means for cooling the interior of the container including ice boxes formed around the inner walls to maintain an inner temperature of between about 2° and about 10° C., each of said ice boxes being provided with a water receiver, and nozzle means connected with the water receiver and a blower for spraying a mixture of water and air in the form of a heavy fog into the interior housing of the said ice boxes.

5,309,869

CATTLE STANCHION APPARATUS

Teo Albers, Jr., 13437 Mountain Ave., Chino, Calif. 91710

Filed Mar. 16, 1993, Ser. No. 33,164
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—735 **6 Claims**



1. In cattle stanchion apparatus including fixed and release stanchions laterally spaced apart to define a head opening for an animal; fixed structure including mounting means mounting said release stanchion for pivotal movement from an open position in which the upper part of said head opening is enlarged to enable an animal to place its head through said opening, to a closed position in which said upper part of said head opening is narrowed to hold the animal's head in said opening, and beyond said closed position to a downed cow position in which said upper part of said opening is further narrowed and wherein the lower part of said opening is enlarged to enable a downed cow to withdraw its head; and a generally horizontally extending axially slidable positioner rod rotatable about its longitudinal axis between a first position and a second position; the improvement comprising:

a bracket secured to the upper end of said release stanchion;

a pair of latch fingers having their upper ends pivotally attached to said bracket, with their lower ends slidable along the upwardly-facing surface of said positioner rod; and

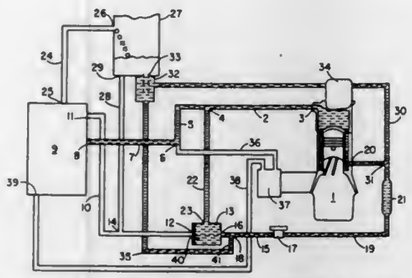
a pair of axially aligned notches formed on one surface of said positioner rod to releasably receive the lower end of said latch fingers to transfer axial movement of said positioner rod to the upper end of said release stanchion when said positioner rod is in said first position, with the lower end of said latch fingers being free to slide along said positioner rod when said rod is rotated to said second position wherein said notches are out of alignment with the lower end of said notches whereby said release stanchion may automatically then pivot to either its open or to its downed cow position as a cow's neck lowers its neck into the lower part of said opening thereby preventing injury to the cow, and with the lower end of one of the latch fingers being selectively removable from its respective notch to free said release stanchion for manual pivotal movement to its downed cow position even when said positioner rod is in its first position.

5,309,870

METHOD AND APPARATUS FOR COOLING A HEAT ENGINE OF WIDELY VARIABLE POWER

Ngy S. Ap, Villepinte, France, assignor to Valeo Thermique Moteur, Le Mesni-Saint-Denis, France

Filed Dec. 4, 1992, Ser. No. 986,138
Claims priority, application France, Dec. 6, 1991, 91 15173
Int. Cl.[5] F01P *9/02*
U.S. Cl. 123—41.21 **10 Claims**



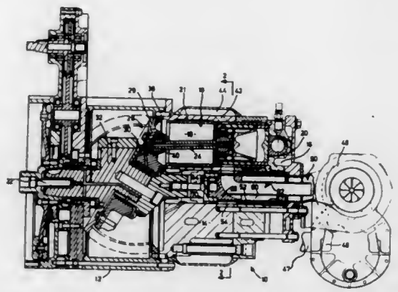
1. A method of cooling an internal combustion engine of widely variable power, in which a coolant fluid flows between the engine and a heat exchanger whereby the engine yields heat to the fluid and the fluid then yields heat in the heat exchanger to an external environment, the method comprising the steps of introducing the fluid into the engine in the liquid state at a volumetric flow rate which is substantially independent of the power and working mode of the engine, whereby when the engine is running at low power the fluid reaches the heat exchanger entirely in the liquid state, and when the engine is running at high power the fluid reaches the heat exchanger at least partly in the gaseous state, causing a fraction of the fluid flow, variable according to the power output of the engine, when the coolant fluid reaches the heat exchanger entirely in the liquid state, to pass through the heat exchanger, and causing all of the fluid flow to pass through the heat exchanger when the coolant fluid reaches the heat exchanger at least partly in the gaseous state.

5,309,871

ROTATING EXHAUST VALVE

George Kadlicko, Mississauga, Canada, assignor to 814405 Ontario Ltd., Canada

Filed Nov. 12, 1992, Ser. No. 974,951
Int. Cl.[5] F01L *7/12*
U.S. Cl. 123—80 BB **14 Claims**



1. A reciprocating piston internal combustion engine having a plurality of pistons each in respective cylinders disposed about an exhaust valve assembly, said valve assembly including an exhaust duct communicating through respective exhaust ports with said cylinders and an exhaust conduit located within said duct and rotatable relative to said cylinders, said conduit having a conduit inlet alignable with successive ones of said exhaust ports as said conduit rotates to allow communication therewith and a conduit outlet located within said duct, said conduit having a lesser cross sectional area than said duct whereby the velocity of exhaust gas in said conduit is higher than in said duct and, upon ejection from said conduit outlet, while said conduit is in communication with an advanced cylinder, induces flow through said duct from a preceding cylinder communicating with said duct.

5,309,872

DEVICE FOR OPERATING A VALVE IN AN INTERNAL COMBUSTION ENGINE

Renato Filippi, Vinovo, and Francesco Vattaneo, Pancalieri, both of Italy, assignors to Centro Ricerche Fiat Societa' Consortile Per Azioni, Turin, Italy

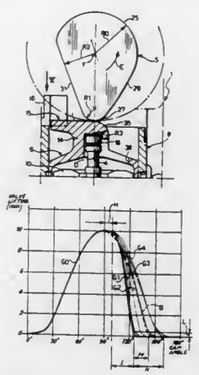
Filed Jun. 11, 1993, Ser. No. 75,819
Claims priority, application Italy, Jun. 19, 1992, 000525 A/92
Int. Cl.[5] F01L *1/34, 1/08*
U.S. Cl. 123—90.15 **8 Claims**

1. A device for controlling a valve in an internal combustion engine, of the type including:

a valve which is movable between a position in which a duct is closed and a position in which the duct is open,

resilient means for biasing the valve towards its closure position,

valve-operating means for cyclically controlling the movement of the valve towards its opening position against the action of the resilient means, the operating means including a rotary cam with an asymmetric profile including a first portion with an eccentric profile for controlling the movement of the valve towards its opening position and a second portion with an eccentric profile steeper than the eccentric profile of the first portion, for controlling the movement of the valve towards its closure position, and a tappet operatively interposed between the cam and the valve and having an active surface facing the cam, the active surface being engageable by the profile of the cam, at least during the movement of the valve towards its opening position so that, when the speed of rotation of the cam exceeds a threshold value, the active surface of the tappet loses contact with the profile of the cam and the



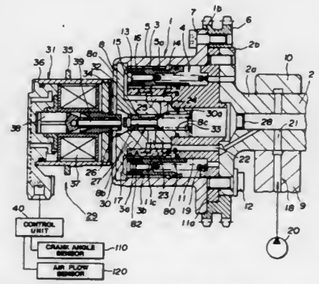
closure movement of the valve is therefore unrelated to the rotation of the cam and is completed within a substantially fixed period of time, regardless of the speed of rotation of the cam, wherein the active surface of the tappet has a first, flat portion substantially perpendicular to the line of movement of the tappet and a second, curved portion which is connected to the first, flat portion and has a uniform radius of curvature, so as to have a convex region facing the cam.

5,309,873

VALVE TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Seiji Suga, and Hiroaki Imai, both of Atsugi, Japan, assignors to Atsugi Unisia Corporation, Atsugi, Japan

Filed Nov. 27, 1992, Ser. No. 982,695
Claims priority, application Japan, Nov. 28, 1991, 3-97575[U]
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **8 Claims**



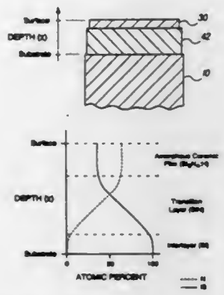
4. A valve timing control system for an internal combustion engine, comprising;

a fluid power source;

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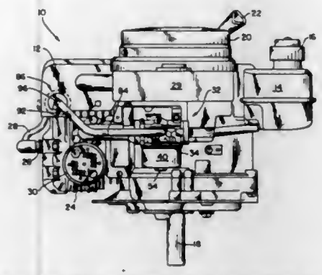
a rotary member;
a camshaft joined with said rotary member;
phase angle adjusting means for effecting adjustment of a phase angle relationship of said rotary member relative to said camshaft,
said phase angle adjusting means including a pressure chamber;
said rotary member including a bore and a first hydraulic fluid passage having a first end opening to said bore and an oppositely disposed second end opening to said pressure chamber,
said rotary member also including a second hydraulic fluid passage having a first end opening to said bore and an oppositely disposed second end always connected to said fluid power source; and
a valve including a valve element disposed in said bore, said valve element having a first position in which there is established a fluid flow communication between said first ends of said first and second hydraulic fluid passages and a second position in which said valve element covers said first end of said second hydraulic fluid passage to block said fluid flow communication.

5,309,874
POWERTRAIN COMPONENT WITH ADHERENT AMORPHOUS OR NANOCRYSTALLINE CERAMIC COATING SYSTEM
Pierre A. Willermet, Livonia; Arup K. Gangopadhyay, Novi, both of Mich.; Michael A. Tamor, Toledo, Ohio; William C. Vassell, and Margherita Zanini-Fisher, both of Bloomfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 8, 1993, Ser. No. 2,190
Int. Cl.[5] F01L *1/16*
U.S. Cl. 123—90.51 **18 Claims**



1. A powertrain component in an internal combustion engine, the powertrain component comprsing:
a coating system including a film and an interlayer;
the film being selected from a first group comprising at least one of amorphous or nanocrystalline silicon nitride, silicon carbide, silicon dioxide, silicon oxy-nitride, silicon-aluminum-oxy-nitride, titania, and zirconia, the film being formed on the powertrain component, the film imparting the characteristics of low friction and wear resistance to the component;
the interlayer being formed between the film and the component, the interlayer accommodating stresses engendered by formation of the film, providing mechanical support to the film, and chemical compatibility between the film and the substrate, thereby improving adherence of the film to the substrate.

5,309,875
INTERNALLY VENTED FLOAT BOWL CARBURETOR HAVING A COLD START VENT CONDUIT
Roger T. Gault, Chilton, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Dec. 24, 1992, Ser. No. 996,680
Int. Cl.[5] F02M *1/10*
U.S. Cl. 123—179.16 **10 Claims**

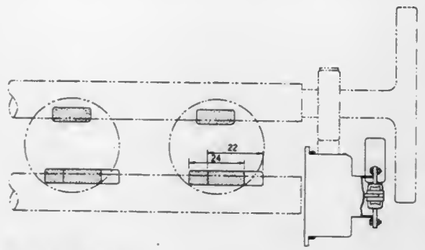


1. A carburetor for providing a fuel/air mixture to an internal combustion engine, comprising:
a carburetor body having a bore formed therein, said bore including an air inlet passage having an air inlet opening defining a fuel/air mixture passage, wherein a vacuum condition exists in said bore upon engine operation;
a float-regulated fuel supply bowl adapted to contain a quantity of liquid fuel and having a headspace above said fuel;
a fuel nozzle for conveying fuel from said fuel supply bowl to said fuel/air mixture passage;
an internal vent passageway for providing air communication between said headspace and said bore;
an external vent passageway extending from said headspace to the atmosphere external of the carburetor; and
a thermally-actuated valve in said external vent passageway, said valve being in an open position while the temperature of the engine is less than a given temperature, thereby permitting said headspace to be in direct communication with the atmosphere, said valve being moved to a closed position upon the attainment of said given temperature, thereby preventing said headspace to be in direct communication with the atmosphere.

5,309,876
AUTOMATIC VARIATOR OF VALVE OVERLAP AND VALVE SECTION
Miljenko Schiattino, Rivadavia 986, Piso 9, of. 33, (1002), Buenos Aires, Argentina
Filed Jan. 21, 1993, Ser. No. 6,944
Claims priority, application Argentina, Jul. 20, 1992, 322785; Jul. 31, 1992, 322862
Int. Cl.[5] F01L *7/18*
U.S. Cl. 123—190.2 **9 Claims**

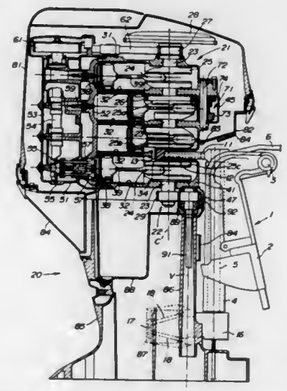
1. An automatic variator assembly for varying a valve shaft opening section and valve timing of a double effect distribution sequential valve shaft system in an internal combustion engine which includes an engine block, a cylinder formed in the engine block, the cylinder having a cylinder head, a piston slidable within the cylinder, and a combustion chamber bounded by the cylinder and the piston, and a distribution system consisting of twin rotary valve shafts located within cylindrical jackets within the cylinder head, each shaft having openings from side to side, at different angles in respect of a vertical plane and each jacket having openings in an even way, at a single angle in respect of a vertical plane, establishing a clear conduit whenever the openings match at each half-turn of the shafts, to provide a passage for intake of the fuel mixture or exhaust of combustion gases between the respective cylinder

head openings and the intake and exhaust manifolds, the variator assembly comprising:
an automatic mechanism controlled by a microprocessor which is activated by a signal received from a tachometer and gas analyzer;
a spindle for moving one of said valve shafts;
a motor reducer or a step motor or a servo motor activated by said automatic mechanism which turns a number of predetermined turns or steps, causing an end of said spindle to advance and push the valve shaft forward or pull it back;



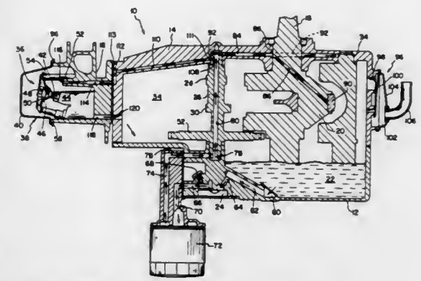
an axle box; and
a multiple-entrance grooved screw etched in at one end of the valve shaft, turning inside said axle box, in such a way that a differential and controlled turn is produced in the shaft when said spindle moves the shaft, causing a rotation of the shaft and longitudinal displacement of the shaft within the jacket surrounding the shaft, thereby varying the valve shaft opening section opening and the valve timing.

5,309,877
OUTBOARD ENGINE ASSEMBLY AND INTERNAL COMBUSTION ENGINE THEREFORE
Hideo Shigedomi; Shinichi Miyakoshi, both of Saitama, and Hiroyuki Nakayama, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 17, 1992, Ser. No. 977,538
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—19.5 P **27 Claims**



1. An outboard engine assembly for use on a boat, comprising;
an engine mechanism including in an upper region thereof an engine having a substantially vertical crankshaft and a vertical array of substantially horizontal cylinders, said crankshaft having a plurality of axially space crankshaft counterbalances; and
an attachment for mounting said engine mechanism on the stern of the boat, said attachment comprising a stern bracket adapted to be fixed to the stern of the boat, a swivel case supported on said stern bracket for vertical angular movement, a substantially vertical swivel shaft supported on said swivel case for horizontal angular movement, and a pair of upper and lower supports mounted no said swivel shaft and supporting said engine mechanism;
said engine having a pair of horizontally spaced apart joint members coupled to said upper support at a position vertically spaced between and adjacent two of said crankshaft counterbalances which correspond to adjacent two of said cylinders, said crankshaft having an axial portion extending generally vertically and between said spaced apart joint members.

5,309,878
PULSED PRESSURE LUBRICATION SYSTEM FOR AN OVERHEAD VALVE ENGINE
William C. Kandler, New Holstein, and John C. Whitton, Kiel, both of Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.
Filed Mar. 22, 1993, Ser. No. 34,293
Int. Cl.[5] F01M *1/06*
U.S. Cl. 123—196 M **11 Claims**



1. An internal combustion engine comprising:
a crankcase having an oil sump therein;
a cylinder head secured to said crankcase;
a camshaft disposed in said crankcase and being journalled in a bearing in said crankcase for rotational movement therein, said camshaft including a main oil passageway extending axially therethrough and being in flow communication with said oil sump, said camshaft further including an auxiliary oil passageway therein extending from said main oil passageway to a sidewall outer surface of said camshaft disposed in said bearing;
an oil pump for delivering oil under pressure from said oil sump to said auxiliary oil passageway via said main oil passageway;
an intake valve and an exhaust valve;
a valve rocker mechanism disposed on said cylinder head and being operatively connected to said intake and exhaust valves;
a rocker box housing said valve actuating mechanism;
a lubricating passageway extending from said camshaft bearing to an upper portion of said rocker box and being aligned with said auxiliary oil passageway in said camshaft such that said lubricating passageway is in momentary flow communication with said auxiliary oil passageway upon each rotation of said camshaft to provide a pulsed flow of oil through said lubricating passageway and into

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said rocker box to lubricate said valve rocker mechanism; and

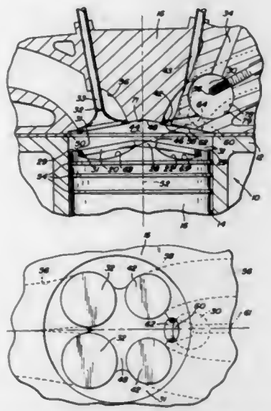
a return passageway extending from a lower portion of said rocker box to the interior of said crankcase for returning the oil from the rocker box to said sump.

5,309,879

DOUBLE OVERHEAD CAMSHAFT FOUR VALVE DIESEL ENGINE WITH SIDE PRECHAMBER

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1993, Ser. No. 28,064
Int. Cl.[5] F02B *19/18*; F02F *3/28*
U.S. Cl. 123—286 **14 Claims**



4. In an internal combustion engine having a cylinder and a piston movably disposed in said cylinder for reciprocal motion, a cylinder head secured over said cylinder and piston to form a combustion chamber, a pair of intake ports extending through said cylinder head and an intake valve operably mounted in a respective intake port for allowing air to be admitted into said combustion chamber, and a pair of exhaust ports extending through said cylinder head and an exhaust valve operably mounted in a respective exhaust port for allowing exhaust gases to exit said combustion chamber; the improvement characterized by:

a pre-combustion chamber having a tapered transfer passage communicating with said combustion chamber with a narrow open end of said passage being in proximity to said pre-combustion chamber and a wide open end of said passages being in proximity to said combustion chamber;

said tapered transfer passage having a longitudinal axis acutely angled with respect to an upper surface of said piston;

said piston having a plurality of recessed lobes circumferentially spaced about a central axis of said piston;

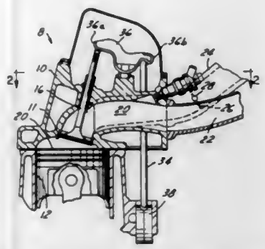
each intake and exhaust valve being aligned along its stem axis over a respective recessed lobe and sized to fit within said recessed lobe when in the partially open position and when said piston is at or near TDC.

5,309,880

DUAL INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING SPLAYED INTAKE PASSAGES

Richard S. Mazzella, Eastpointe; William F. Stockhausen, Northville, and Gordon W. Sweetnam, Milford, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1992, Ser. No. 993,533
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—306 **7 Claims**



1. A multicylinder reciprocating internal combustion engine with a dual induction system, with said engine comprising:

a cylinder head having at least one exhaust poppet valve and a single intake poppet valve for each cylinder, with the intake valve being located so as to control the flow of charge into the cylinder;

a plurality of intake ports for conducting fresh charge to each intake valve, with each of said ports extending through said cylinder head and having a dividing wall for separating the port into primary and secondary passages, with the primary passage being oriented so as to cause rotational flow about the outermost portion of the cylinder, and the secondary passage being oriented so as to cause flow directed about a radially inward portion of the cylinder; and

a plurality of secondary throttle valves, with one such valve being located within each of said secondary passages upon a common secondary throttle shaft extending through said secondary passages, but not through said primary passages, for selectively controlling the flow through said secondary passages.

5,309,881

ENGINE BRAKE FOR A MULTICYCLINDER INTERNAL COMBUSTION ENGINE

Franz Pawellek, Marktheidenfeld, and Egon Eisenbacher, Karlstadt, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr am Main, Fed. Rep. of Germany

Continuation of Ser. No. 906,281, Jun. 29, 1992, Pat. No. 5,257,605. This application Aug. 3, 1993, Ser. No. 101,562
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121435; Nov. 22, 1991, 4138447
Int. Cl.[5] F02D *13/04*
U.S. Cl. 123—321 **46 Claims**

1. An engine brake for a multicylinder internal combustion engine comprising:

(a) a decompression valve connected to each cylinder of the multicylinder internal combustion engine;

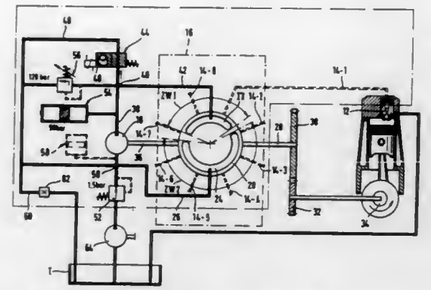
(b) a plurality of hydraulic pistons, each of said plurality of hydraulic pistons being connected to one of said decompression valves;

(c) a positive displacement pump, having an inlet line and an outlet line, being actuated synchronously with a camshaft of said multicylinder internal combustion engine;

(d) a hydraulic pressure distributor being actuated synchronously with said camshaft and being in fluid communication with said outlet line; and

(e) a plurality of control lines extending out of said hydraulic

pressure distributor and providing fluid communication with said plurality of hydraulic pistons, said hydraulic pressure distributor being in selective fluid communication with each of said control lines and a low pressure region, said selective fluid communication being synchronous with said camshaft of said internal combustion engine so that each of said decompression valves is opened in the vicinity of a compression and ignition reversal point of an operating piston of the multicylinder internal combustion engine, said low pressure region being in fluid communication with said inlet line of said positive displacement pump.

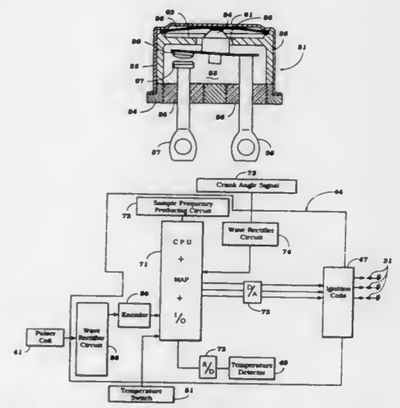


5,309,882

OPERATIONAL CONTROL SYSTEM FOR ENGINE

Akihiko Hoshiba; Masaki Okazaki, and Hiroyuki Tsunekawa, all of Hamamatsu, Japan, assignors to Sansbin Kogyo Kabushuki Kaisha, Hamamatsu, Japan

Filed Feb. 25, 1993, Ser. No. 23,055
Claims priority, application Japan, Feb. 28, 1992, 4-75941
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—339 **18 Claims**



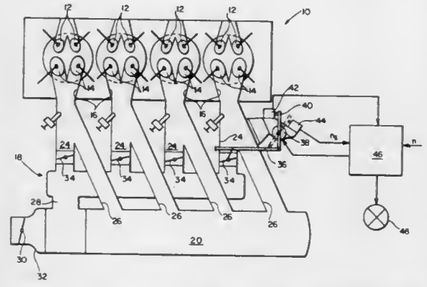
1. A device for controlling a system of an internal combustion engine in response to temperature comprising first temperature sensing means for sensing actual temperature and providing a signal indicative thereof, means for mounting said first temperature sensing means in proximity to said engine for sensing the temperature at said proximate location, second temperature sensing means for sensing only when the temperature exceeds a predetermined value, means for mounting said second temperature sensing means in said engine for sensing actual engine temperature and providing a signal only when actual engine temperature exceeds a predetermined temperature, and means for controlling the engine system in response to the output of said first temperature sensing means unless said second temperature sensing means outputs a signal.

5,309,883

METHOD FOR OPERATING AN INTERNAL COMBUSTION ENGINE

Reiner Pischke, Bad Friedrichshall, Fed. Rep. of Germany, assignor to Audi AG, Ingolstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/01251, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/04535, PCT Pub. Date Mar. 19, 1992
PCT Filed Jul. 4, 1991, Ser. No. 975,925
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028443
Int. Cl.[5] F02D *7/00*; F02M *51/00*
U.S. Cl. 123—397 **8 Claims**



1. In a motor vehicle having an internal combustion engine, said engine comprising a plurality of combustion chambers, an induction manifold for supplying air to the combustion chambers, at least one arbitrarily controllable throttle valve for controlling the air supplied to the manifold, the manifold including one short pipe for each chamber, one long pipe for each chamber and a means for switching between the short and long pipe for tuned induction pressure charging, a method for operating the engine comprising the steps of:

determining the pressure of the air fed to the manifold by the at least one throttle valve;

monitoring the switching means of the induction manifold for maladjustment;

upon maladjustment, outputting an error message; and

intervening with the engine control, and

wherein the step of monitoring the switching means comprises the steps of:

predetermining a regular combustion air flow rate;

determining the actual combustion air flow rate in the induction manifold; and

comparing the actual flow rate to the regular flow rate;

upon determining that the actual flow rate is less than the regular flow rate, indicating a maladjustment, and

wherein said internal combustion engine has fuel injection and engine capacity is computed using the following equation:

$$\lambda_a = K(m/n)$$

where

λ_a = engine capacity,

K = a constant

m = air mass/amount

n = engine speed;

wherein the step of monitoring the switching means comprises the steps of:

determining a regular capacity value of the engine,

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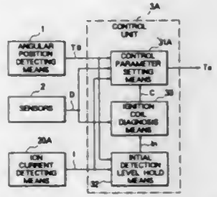
determining an actual capacity value of the engine;
comparing the actual capacity value to the regular capacity value; and
upon determining that the actual capacity value is less than the regular capacity value, reporting a maladjustment, and
wherein the step of comparing the actual capacity value to the regular capacity value comprises the steps of:
generating at least one capacity curve of the induction manifold comparing the capacity λ_d to the engine speed n;
storing the at least one capacity curve in an operating map;
comparing the desired capacity value to the actual capacity value using the at least one capacity curve; and
upon determining that the actual capacity value is less than a predetermined threshold value, reporting a maladjustment.

5,309,884

INTERNAL COMBUSTION ENGINE CONTROL APPARATUS WITH IGNITION COIL DIAGNOSIS FUNCTION

Wataru Fukui, and Toshio Ohsawa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,558
Claims priority, application Japan, Feb. 19, 1992, 4-032007
Int. Cl.[5] F02P *15/00*
U.S. Cl. 123—481 **6 Claims**



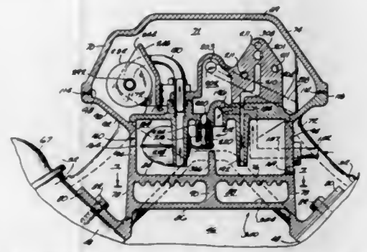
1. A control apparatus for an internal combustion engine, comprising:
angular position detecting means for generating a reference position signal corresponding to a predetermined crank angle of an engine cylinder in synchronism with the rotation of said engine;
sensor means for acquiring running state information of said engine;
an ignition coil having a primary winding and a secondary winding to which a spark plug of the associated engine cylinder is connected;
ion current detecting means connected to the secondary winding of said ignition coil for detecting an ion current generated in said engine cylinder in each combustion cycle and outputting a corresponding ion current signal;
control parameter setting means for setting a control parameter of said engine on the basis of said reference position signal and said engine running state information and correcting said control parameter on the basis of said detected ion current;
detection level hold means for holding an initial level of said detected ion current signal; and
ignition coil diagnosis means for generating an abnormality decision signal indicating occurrence of abnormality in said ignition coil on the basis of said initial level of said detected ion current signal;
wherein said control parameter setting means validates a function for protecting said engine in dependence on the output signal of said ignition coil diagnosis means.

5,309,885

MARINE PROPULSION DEVICE INCLUDING A FUEL INJECTED, FOUR-CYCLE INTERNAL COMBUSTION ENGINE

David E. Rawlings, Palatine; Gene F. Baltz, Lake Villa, and Mark D. Whiteside, Zion, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 835,220, Feb. 13, 1992, abandoned. This application Jan. 25, 1993, Ser. No. 7,839
Int. Cl.[5] F02M *55/02, 31/20, 37/04*
U.S. Cl. 123—509 **57 Claims**



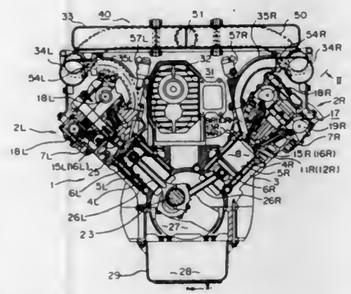
36. An internal combustion engine comprising an engine block, a wall extending outwardly therefrom and defining a compartment, a fuel tank, a fuel vapor separator housed in said compartment and communicating with said tank, means for pumping fuel from said tank to said fuel vapor separator, fuel injector means adapted for supplying fuel to a combustion chamber provided in said engine block and being housed in said compartment, means for pumping fuel from said fuel vapor separator to said fuel injector means, said means for pumping fuel to said fuel injector means being housed in said compartment, and means for conducting fuel from said fuel injecting means to said fuel vapor separator.

5,309,886

SUPERCHARGED INTERNAL COMBUSTION ENGINE

Mitsuo Hitomi; Shunji Masuda; Toshihiko Hattori; Kenji Kashiyama; Junson Sasaki; Noriyuki Iwata, and Naoyuki Yamagata, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 23, 1992, Ser. No. 949,226
Claims priority, application Japan, Sep. 26, 1991, 3-247219; Sep. 26, 1991, 3-274597; Sep. 27, 1991, 3-249422; Jan. 14, 1992, 4-024476
Int. Cl.[5] F02B *33/42*
U.S. Cl. 123—570 **35 Claims**



1. A supercharged internal combustion engine comprising:
a throttle valve for controlling an amount of intake air introduced into a combustion chamber of the engine;
a supercharger for supercharging intake air;

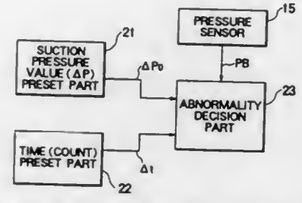
a recirculation passage for recirculating a portion of exhaust gases discharged from the engine into an intake system;
a control valve for controlling an amount of the exhaust gases to be recirculated from the recirculation passage;
a first control means for controlling an air-fuel ratio of a mixed fuel to be made a lead air-fuel ratio which is leaner than a stoichiometric air-fuel ratio when the supercharger exists in a supercharging region; and
a second control means for controlling the control valve so as to recirculate the exhaust gases into the intake system at the time of the lean air-fuel ratio in the supercharging region.

5,309,887

METHOD OF DETECTING ABNORMALITY IN EXHAUST GAS RECIRCULATION CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE AND APPARATUS FOR CARRYING OUT THE SAME

Katsuhiko Kondo, and Kouichi Nishimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1993, Ser. No. 101,735
Claims priority, application Japan, Aug. 7, 1992, 4-211636; Sep. 30, 1992, 4-261892
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—571 **19 Claims**



1. In an internal combustion engine equipped with an exhaust gas recirculation control system which includes an exhaust gas recirculation passage connected between an exhaust pipe and an intake pipe of said engine, and an exhaust gas recirculation control valve disposed in said exhaust gas recirculation passage for controlling an exhaust gas flow through said recirculation passage,
a method of detecting occurrence of an abnormality in said exhaust gas recirculation system on the basis of a change in a pressure within said intake pipe which is brought about by actuation of said exhaust gas recirculation control valve, said method comprising the steps of:
temporarily opening or closing said exhaust gas recirculation control valve when the engine is decelerated, to thereby decide whether a change as brought about in the pressure within said intake pipe reaches a preset value within a predetermined time; and
determining occurrence of an abnormality in said exhaust gas recirculation system unless said change in the pressure within said intake pipe reaches said preset value within said predetermined time.

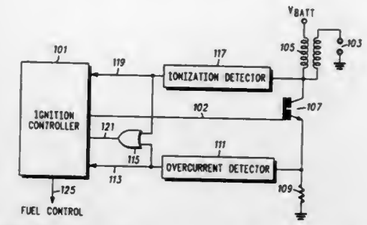
5,309,888

IGNITION SYSTEM

Robert W. Deutsch, Sugar Grove, and Kousbun Sun, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1991, Ser. No. 739,572
Int. Cl.[5] F02P *3/055*
U.S. Cl. 123—609 **29 Claims**

1. An ignition system generating at least one ignition dwell signal having charge and discharge states for driving at least one ignition coil having a primary winding and a secondary winding, the secondary winding being coupled to at least one spark plug, said system comprising:
means for determining ionization information for said at least one spark plug including means for measuring a voltage at the primary winding of said ignition coil;



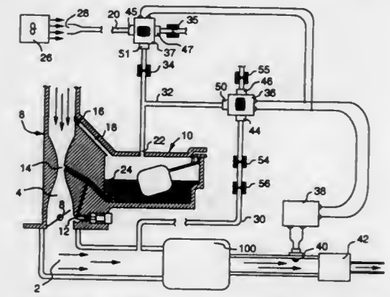
means for determining overcurrent information for said at least one ignition coil; and
means for discharging energy in said at least one ignition coil during the charge state of the ignition dwell signal responsive to said means for determining ionization information and said means for determining overcurrent information.

5,309,889

CARBURETOR KIT FOR IMPROVED AIR-FUEL MIXTURE

Richard M. Tofel, 6221 North Cadena De Montnas, Tucson, Ariz. 85718, and Jon A. Petty, 2767-B West Anklam, Tucson, Ariz. 85745

Continuation-in-part of Ser. No. 16,047, Feb. 10, 1993. This application Jun. 28, 1993, Ser. No. 82,487
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—682 **20 Claims**



1. Apparatus for improving the emissions of internal-combustion engines having an engine fan generating a first air stream and a carburetor wherein an air-fuel mixture is produced by drawing fuel from a fuel float chamber into a second air stream flowing through a venturi tube as a result of a vacuum provided at an intake manifold, comprising:
(a) first pneumatic passage means for connecting the float chamber of the carburetor and the first air stream, so that a positive pressure differential is available for application to the float chamber;
(b) second pneumatic passage means for connecting the float chamber and the intake manifold, so that a negative pressure differential is available for application to the float chamber;
(c) first valve means for controlling the flow rate through said first pneumatic passage means;
(d) second valve means for controlling the flow rate through said second pneumatic passage means;

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(e) sensor means for measuring the oxygen content of the exhaust gases of the engine and for generating a signal corresponding to said oxygen content; and

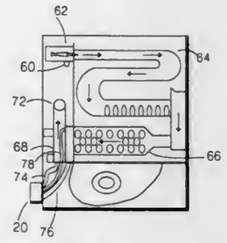
(f) electronic control means for actuating said first valve means in response to the signal generated by said sensor means, such that a flow rate through said first valve means is progressively reduced as the oxygen content in the exhaust gases decreases and is progressively increased as the oxygen content in the exhaust gases increases; and for actuating said second valve means in response to the signal generated by said sensor means, such that a flow rate through said second valve means is progressively reduced as the oxygen content in the exhaust gases increases and is progressively increased as the oxygen content in the exhaust gases decreases.

5,309,890

DUAL-SIDED CONDENSATE TRAP FOR FURNACE

Larry D. Rieke, Zionsville, and Eric A. Harvey, Greenwood, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 30, 1993, Ser. No. 100,619
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 R **9 Claims**



1. A condensate trap for simultaneously receiving liquid condensate forming in first and second gaseous environments that are respectively under positive and negative pressure relative to a third gaseous environment, comprising:

a container having first and second inlet ports through an upper portion thereof that respectively access the first and second gaseous environments, a first fluid reservoir in a bottom portion thereof, and an outlet port through a lower portion thereof for conducting overflow of said first fluid reservoir into the third gaseous environment;

a first duct extending from said first inlet port and terminating in said interior of said container below a surface of said first liquid reservoir; whereby said first liquid reservoir establishes a first liquid seal between said first gaseous environment and said third gaseous environment;

a second duct extending from said second inlet port to an interior of said container and a reflexively directed portion to contain a second liquid reservoir therein, a portion of said second liquid reservoir being disposed above said outlet port to establish a second liquid seal between said second gaseous environment and said third gaseous environment.

5,309,891

DIRECT EVACUATION GAS HEATER OR FIREPLACE AND SAFETY RELEASE VALVE FOR SAID HEATERS

Ernest Savoie, Bois des Filion, Canada, assignor to Cheminees Securite LTEE, Quebec, Canada

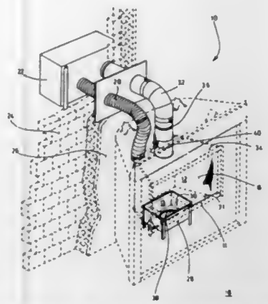
Filed Jan. 6, 1993, Ser. No. 1,516
Claims priority, application Canada, Jan. 17, 1992, 2059753
Int. Cl.[5] F24C *03/00*
U.S. Cl. 126—85 B **8 Claims**

1. A direct evacuation heater comprising:

(a) a combustion chamber;

(b) a closed enclosure separating the combustion chamber from its environment;

(c) an air intake pipe and a gas outlet pipe connected to and leading outside of said enclosure, wherein said intake and outlet pipes have portions outside of said enclosure that are separate from each other so that air in said air intake pipe never comes in contact with said gas outlet pipe and gas in said gas outlet pipe comes in contact with said air intake pipe; and



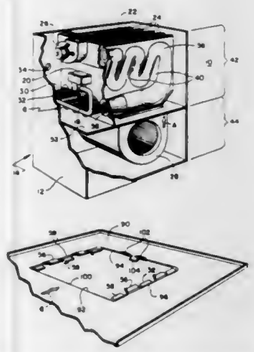
(d) a safety release valve positioned adjacent said combustion chamber within said enclosure, said valve releasing excess pressure within said outlet pipe to said enclosure in case of gas explosion; wherein said safety release valve comprises at least one lateral opening provided in said outlet pipe, a spring-actuated door peripheral to said gas outlet pipe closing said opening, said door being hermetically shut when pressure in said pipe is substantially atmospheric and opening upon a sudden raise in pressure.

5,309,892

BLOWER DECK FOR UPFLOW OR DOWNFLOW FURNACE

Timothy J. Lawlor, Philadelphia, Pa., assignor to American Standard Inc., New York, N.Y.

Filed Aug. 27, 1992, Ser. No. 937,326
Int. Cl.[5] F24H *3/02, 3/10*
U.S. Cl. 126—110 AA **15 Claims**



1. An upflow or downflow furnace comprising:

a housing;

a heat exchanger section in the housing, the heat exchanger section including at least one heat exchanger;

a blower section in the housing, the blower section including a blower for moving air through the heat exchanger section;

a blower deck in the housing having an upward side and a downward side, the blower deck separating the blower section and the heat exchanger section, the blower deck including an aperture and means in proximity to the aperture, for either

mounting the blower to the downward side of the blower deck for an upflow furnace configuration wherein air is blown upwardly across the heat exchanger section, the heat exchanger section being located on the upward side of the blower deck or

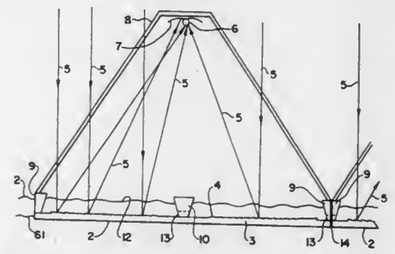
mounting the blower to the upward side of the blower deck for a downward furnace configuration wherein air is blown downwardly across the heat exchanger section, the heat exchanger section being located on the downward side of the blower deck.

5,309,893

SOLAR ENERGY COLLECTING APPARATUS

Allan J. Yeomans, 60 Sunrise Blvd., Surfers Paradise, Gold Coast City, QLD 4217, Australia

Continuation-in-part of Ser. No. 842,657, Feb. 27, 1992, abandoned. This application Aug. 13, 1992, Ser. No. 929,665
Int. Cl.[5] F24J *2/42*
U.S. Cl. 126—565 **25 Claims**



1. A radiant energy collecting apparatus, comprising:

a fluid reservoir;

a platform floating on fluid in said fluid reservoir;

means for moving said platform within said reservoir;

radiant energy collector means supported on said platform, said collector means carrying an energy transfer medium;

means on said platform for concentrating radiant energy on said radiant energy collector means, said concentrating means comprising reflectors positioned to reflect solar energy toward said collector means, each said reflector comprising a plurality of side-by-side elongated reflector elements defining a substantially parabolic reflecting trough having a focal line, and said collector means being supported substantially at the focal line of said reflectors; and

means for selectively submerging said reflectors beneath fluid to protect said reflector elements against inclement weather conditions;

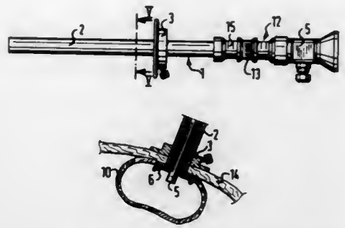
said collector means remaining above the fluid in which said reflectors are submerged so that energy is not lost from said collector means.

5,309,894

ENDOSCOPE FOR INTRODUCTION INTO A HOLLOW ORGAN OF A LIVING THING

Helmut Heckele, Knittlingen, and Rudolf Heimberger, Oberderdingen, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 923,697
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1991, 4125806
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **14 Claims**



1. Endoscope for introduction through a body structure and into a hollow organ of a living thing, comprising a hollow outer shaft having a proximal region and a distal end, an optical system arranged in the shaft, retaining means guided in the outer shaft and having a plurality of resiliently deformable hook elements which can be moved by said retaining means in and out of the shaft at the distal end, adjustable and fixable stop means arranged on the outer shaft, adjusting means provided in the proximal region of the outer shaft for displacing the retaining means in the outer shaft, and indicator means for reading the position of the adjusting means, each of said deformable hook elements having an immanent bend and a major arm extending distally of said bend, said bend causing said major arm to extend radially outwardly from said shaft when said hook elements are moved out of the shaft at the distal end, such that said major arms when fully extended cooperate with said stop means to pull and hold a hollow organ against a body structure between said arms and said stop means.

5,309,895

ENDOSCOPE APPARATUS PRODUCING VIDEO SIGNALS FROM IMAGING SIGNALS AT ILLUMINATING AND NON-ILLUMINATING PERIODS

Hisao Yabe, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,595
Claims priority, application Japan, Oct. 4, 1991, 3-257871
Int. Cl.[5] A61B *1/06*; H04N *7/18*
U.S. Cl. 128—6 **17 Claims**

1. An endoscope apparatus comprising:

an insertable part adapted to be inserted into an object;

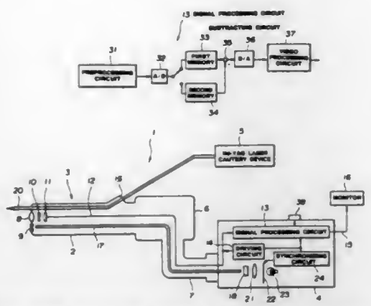
illuminating means transmitting illuminating light through said insertable part, for periodically illuminating an object according to a cycle having an illuminating period and a non-illuminating period;

imaging means for imaging the object during said illuminating period and said non-illuminating period;

means for at least partially removing the effect of illumination other than said illuminating light including signal operating means for producing a difference signal between an imaging signal from said imaging means in a first period, including at least a part of said illuminating period in a cycle of said illuminating period and said non-illuminating period, and an imaging signal from said imaging means in a second period, including at least a part of

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said non-illuminating period in a cycle of said illuminating period and said non-illuminating period; and



video signal producing means for producing a video signal from said difference signal of said signal operating means.

5,309,896

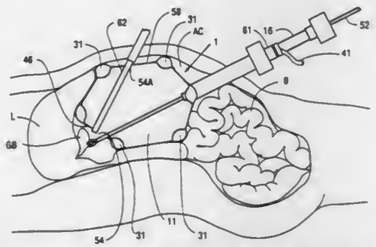
RETRACTION METHODS USING ENDOSCOPIC INFLATABLE RETRACTION DEVICES

Frederic H. Moll; Charles Gresl, Jr., both of San Francisco; Albert K. Chin, Palo Alto, and Philip K. Hopper, Laverne, all of Calif., assignors to Origin Medsystems, Inc., Menol Park, Calif.

Continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application Nov. 19, 1991, Ser. No. 794,590

Int. Cl.[5] A61M *29/02*

U.S. Cl. 128—20 **35 Claims**



1. A method for retracting an organ inside the body in the course of adjacent tissue, the method comprising the steps of:

providing an inflatable retractor including:

a flexible wall which may be expanded into place within the body, the flexible wall enclosing a main chamber; and

an envelope attached to the flexible wall, the envelope and part of the flexible wall enclosing an additional chamber,

placing the inflatable retractor adjacent to the organ, the retractor being in a collapsed state,

inflating the inflatable retractor to expand the flexible wall and to retract the organ, and

piercing an aperture in a part of the flexible wall of the retractor remote from the additional chamber to provide access to the tissue.

5,309,897

APPARATUS FOR GENERATING ACOUSTIC RAREFACTION PULSES

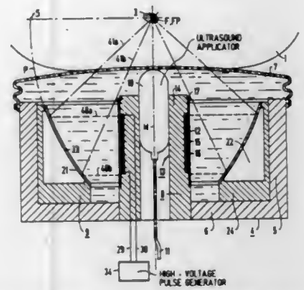
Dietrich Hassler, Uttenreuth; Helmut Reichenberger, Eckental; Hubert Schwark, Buckenhof, and Georg Koebler, Geisfeld, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich

Filed Aug. 1, 1991, Ser. No. 739,179

Claims priority, application European Pat. Off., Aug. 2, 1990, 90114880.9

Int. Cl.[5] A61B *17/22*

U.S. Cl. 601—4 **13 Claims**



1. A medical therapy apparatus for generating rarefaction pulses comprising:

a housing;

means for generating shockwave pulses disposed in said housing;

reflector means, disposed in said housing spaced from said means for generating shockwave pulses, having a negative reflection factor for converting said shockwave pulses into rarefaction pulses;

an acoustic propagation medium filling the space in said housing between said means for generating shockwave pulses and said reflector means; and

said reflector means containing an acoustically soft medium having a boundary surface at which reflection of said shockwave pulses occurs facing said acoustic propagation medium and said means for generating shockwave pulses, said acoustically soft medium being acoustically soft relative to said acoustic propagation medium, and said reflector means having a wall consisting of material impenetrable by said acoustic propagation medium, said wall disposed between said acoustic propagation medium and said boundary surface of said acoustically soft medium.

5,309,898

ULTRASONIC BONE-THERAPY AND ASSESSMENT APPARATUS AND METHOD

Jonathan J. Kaufman, 112 Willow St. - #1-A, Brooklyn, N.Y. 11201, and Alessandro E. Chiabrera, Viale Cambiaso 1/15, 16145 Genoa, Italy

Continuation-in-part of Ser. No. 922,136, Jul. 30, 1992, Pat. No. 5,259,384. This application Oct. 13, 1993, Ser. No. 136,571

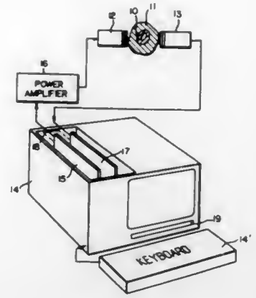
Int. Cl.[5] A61N *1/00*

U.S. Cl. 601—2 **2 Claims**

1. The method of non-invasively therapeutically treating bone tissue in vivo, using an ultrasonic transducer that is non-invasively adapted for acoustic coupling to nearby skin and for transmission through a bony part of a living body, which method comprises the steps of:

(a) acoustically coupling said transducer to nearby skin in a direction toward said bony part;

(b) driving said transducer with a finite-duration composite sine-wave excitation signal meeting the requirements of the following relationship:



$$v(t) = \sum_{i=0}^{N} a_i \sin(2\pi f_i t + \phi_i),\ 0 \leq t \leq T \quad (1)$$

where a_i and ϕ_i are the amplitude and phase, respectively, associated with frequency f_i, i=1, . . . ,N, and T is chosen to be at least two times longer than the period of the lowest frequency f_i; where said composite sine-wave signal consists of plural discrete frequencies that are spaced in the ultrasonic spectral region to approximately 2 MHz and repeating said excitation signal at a rate in the range 1 to 1000 Hz; and where the amplitudes a_i are chosen according to the relationship:

$$a_i \propto \frac{\exp(Bf_i)}{|H_A(f_i)|} \quad (2)$$

wherein B is the attenuation of an average bony member and $|H_A(f_i)|$ is the magnitude transfer function of said ultrasonic transducer, thereby producing a bone-transmitted acoustic signal for bone therapy.

5,309,899

AUTOMATED EAR CLEANSING DEVICE

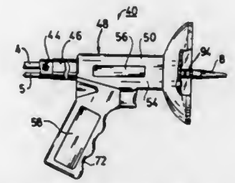
Irwin A. Ginsberg, 897 Delaware Ave., Buffalo, N.Y. 14209

Continuation-in-part of Ser. No. 815,524, Jan. 9, 1992, Pat. No. 5,170,779, which is a continuation-in-part of Ser. No. 643,484, Jan. 21, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 984,368

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] A61H *9/00*; A61M *5/178, 37/00*

U.S. Cl. 604—38 **15 Claims**



1. A system for cleaning a patient's ear, wherein said system is comprised of a control unit, a portable applicator, means for producing a lighted image of a patient's ear connected to said portable applicator, means for magnifing said lighted image of a patient's ear connected to said means for producing a lighted image of said patient's ear, means for producing a signal by actuating a control device operatively connected to said portable applicator, wherein said control device is comprised of means for limiting fluid flow when a fluid pressure exceeds a certain limit connected to said portable applicator and means for stopping fluid flow when a fluid temperature exceeds a certain limit connected to said portable applicator, and wherein:

(a) said control unit is further comprised of a heater means and heater control means for maintaining the temperature of fluid within present limits, a fluid supply line, and flow control means for limiting the pressure and flow rate of said fluid;

(b) said portable applicator is operatively connected to said control unit and is comprised of a handpiece, a flow-directing first orifice connected to said fluid supply line, and a signal generator to generate said control signal to said flow control means;

(c) said means for limiting fluid flow when the fluid pressure exceeds a certain limit is connected to said fluid supply line and is configured to divert a portion of the fluid flow when fluid pressure limits are exceeded.

5,309,900

ATOMIZER PARTICULARLY FOR USE IN DEVICES FOR INHALATION THERAPY

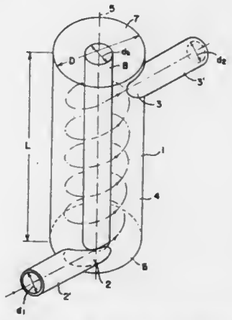
Martin Knoch, Berg, and Stephan Brugger, Starnberg, both of Fed. Rep. of Germany, assignors to Paul Ritzau Pari-Werk GmbH, Fed. Rep. of Germany

Filed Oct. 9, 1991, Ser. No. 774,080

Claims priority, application European Pat. Off., Mar. 21, 1991, 91104439.4

Int. Cl.[5] A61M *11/00*

U.S. Cl. 128—200.14 **14 Claims**



1. An inhalation therapy atomizer for supplying a vaporized liquid to a patient, said atomizer comprising:

a tubular housing having a wall, a first end and a second end spaced from said first end and a longitudinal axis extending from said first end to said second end, said housing having an interior wall surface of substantially constant radius around said axis;

a central member with a cylindrical exterior surface disposed within said housing with the axis of said cylindrical surface co-axial with said axis of said housing, said cylindrical exterior surface having a radius less than said radius of said interior wall surface, said cylindrical exterior surface and said interior wall surface defining an atomizing space therebetween;

said tubular housing having a first opening at said first end for supplying vaporized liquid to said atomizing space and a second opening at said second end for withdrawing vaporized liquid from said atomizing space, at least one of said first opening and said second opening extending through said wall; and

vapor directing means connected to said one of said first opening and said second opening for directing said vapor along a spiral path extending from said one of said first opening and said second opening to the other of said first

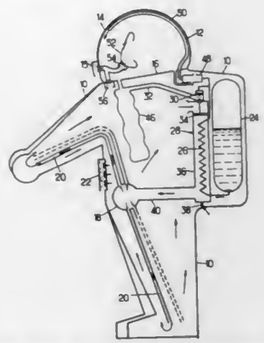
VOL 1162 ISS 2 MY 10 1994 UMI

opening and said second opening, said path being spaced from said axis and extending around said axis.

5,309,901
INDIVIDUAL PROTECTIVE EQUIPMENT INCLUDING A PRESSURE SUIT AND A SELF-CONTAINED BREATHING APPARATUS

Raymond Beaussant, Bretigny, France, assignor to Intertechnique, France

Filed Jul. 9, 1992, Ser. No. 867,685
Claims priority, application France, Nov. 27, 1990, 90 14812
Int. Cl.[5] A61G *10/00*
U.S. Cl. 128—202.12 **12 Claims**



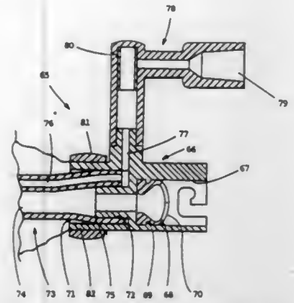
1. Individual protective equipment comprising:
a protective suit having a flexible garment, a helmet provided with a transparent visor surrounding the head, sealing means separating a volume of gas around a wearer's face within the helmet from an additional volume defined by the garment around a body of the wearer, and an oro-nasal mask provided with a valve for inhaling from said volume of gas around the face within the helmet and means for exhaling directly to ambient, said means including rate non-return valve means; and
a self-contained breathing apparatus having a supply of gas connected to a breathing circuit opening out into said helmet, said breathing circuit including a regulator maintaining said volume of gas around the face at an overpressure relative to the pressure in said additional volume.

5,309,902
RESPIRATORY SUPPORT SYSTEM AND SUCTION CATHETER DEVICE THEREFOR

Kok-Hiong Kee; James G. Schneider; Neal G. Koller, all of St. Louis, Mo., and Robert H. Bruno, Avon, Conn., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Oct. 19, 1992, Ser. No. 962,756
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—202.27 **6 Claims**

1. A respiratory support system comprising:
a ventilator manifold adapted to be connected for fluid flow attachment between a patient and a ventilator circuit,
a sleeved suction catheter device including a catheter, a distal end connector and a proximal end connector, and
a suction control valve,
said distal end connector being adapted for connection with said ventilator manifold and said proximal end connector being adapted for connection with said suction control valve, and
a normally closed catheter valve in said proximal end connector of said sleeved catheter device, said normally closed catheter valve being operative between a normally closed sealing position and an open operative position, said normally closed catheter valve preventing fluid flow through said catheter in sid closed sealing position and allowing fluid flow through said catheter in said open operative position,

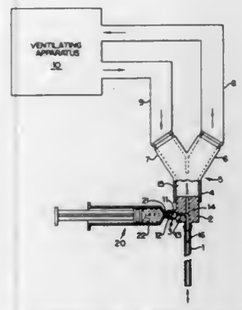


means responsive to attachment of said suction control valve to said proximal end connector to move said normally closed catheter valve from said sealing position to said open operative position.

5,309,903
METHOD FOR ADMINISTERING SURFACTANT TO THE LUNGS WHILE CONCURRENTLY PROVIDING ONE-LUNG VENTILATION

Walker A. Long, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 860,200, Mar. 26, 1992, Pat. No. 5,207,220, which is a continuation of Ser. No. 742,148, Aug. 1, 1991, abandoned, which is a continuation of Ser. No. 448,887, Dec. 12, 1989, abandoned. This application Apr. 30, 1993, Ser. No. 56,260
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] A61M *15/00, 16/10;* A62B *9/06*
U.S. Cl. 128—203.12 **8 Claims**

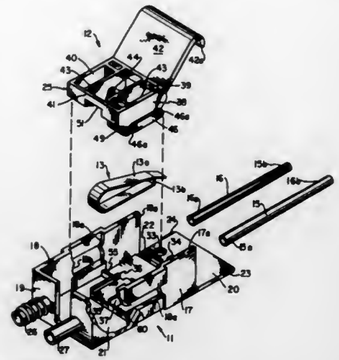


1. A method of administering a liquid surfactant formulation to at least one lung of a subject in need of such treatment while ventilating at least one lung of the subject, the method comprising simultaneously administering the liquid surfactant formulation into at least one lung of the subject, and ventilating said at least one lung of the subject.

5,309,904
INSUFFLATING/SUCTIONING VALVE

Blaine E. Beck, 1895 Ledieu Rd., Roswell, Ga. 30075

Continuation of Ser. No. 646,581, Jan. 28, 1991, Pat. No. 5,191,881. This application Feb. 25, 1993, Ser. No. 22,179
Int. Cl.[5] A62B *9/02*
U.S. Cl. 128—205.24 **7 Claims**

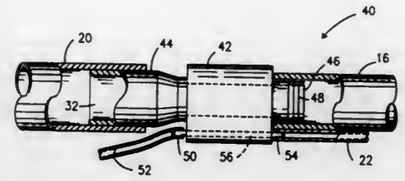


1. An insufflating valve comprising:
a) a valve body;
b) two fluid connectors attached externally to said valve body and a catheter connector extending externally from said body;
c) two hollow resilient plastic tubes extending through the interior of said body and interconnecting in fluid tight relationship each of said fluid connectors to said catheter connector;
d) valve actuating means for selectively shutting off fluid flow by crimping each of said tubes and for permitting flow therethrough by discontinuing said crimping;
e) abutment means transversely of and in contact with each of said plastic tubes;
f) said valve actuating mechanism including two tube contact means each being adapted to be in contact with one of said tubes and such that said tubes are between said abutment means and said tube contact means and an actuating arm connected to said tube contact means, said arm extending from said valve body;
g) movement of said actuating arm into a first position effecting movement of one of said tube contact means toward one of said abutment means to cause crimping of one of said tubes to prohibit fluid flow therethrough; said movement of said actuating arm also effecting movement of the other of said tube contact means away from the other of said abutment means;
h) movement of said actuating arm into a second position effecting movement of the other of said tube contact means into contact with the other of said abutment means to cause crimping of the other of said tubes and the release of the first of said tube contacting means from crimping contact with the first of said abutment means;
i) movement of said actuating arm into a third position effecting crimping movement of both tube contacting means against both abutment means to prevent fluid flow through both of said tubes;
j) said third position of said actuating arm being intermediate said first and second positions; and
k) said valve actuating mechanism is spring-biased toward said third position such that said actuating arm will automatically seek said third position upon release of said actuating arm.

5,309,905
CONNECTOR FOR ENDOTRACHEAL TUBES

Leonides Y. Teves, Bradenton, Fla., assignor to Advanced Medical Concepts, Inc., Bradenton, Fla.

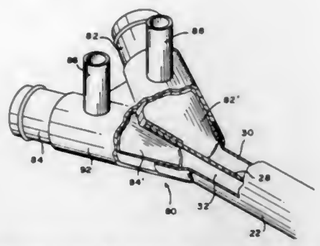
Filed Jun. 10, 1992, Ser. No. 896,257
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 **1 Claim**



1. A connector, comprising:
a base member of predetermined longitudinal extent having a proximal end and a distal end;
a first tubular projection, having a predetermined diameter, disposed on said proximal end of said base member;
a second tubular projection, having a predetermined diameter, disposed on said proximal end of said base member;
said predetermined diameter of said first tubular projection being substantially greater than the predetermined diameter of said second tubular projection;
said first and second tubular projections being disposed in closely spaced parallel relation to one another;
a third tubular projection, having a predetermined diameter, disposed on said distal end of said base member;
a fourth tubular projection, having a predetermined diameter, disposed on said distal end of said base member;
said predetermined diameter of said third tubular projection being substantially greater than the predetermined diameter of said fourth tubular projection;
said second and fourth tubular projections being disposed in closely spaced parallel relation to one another;
a first bore means formed in said base member for providing fluid communication between said first and third tubular projections;
a second bore means formed in said base member for providing fluid communication between said second and fourth tubular projections;
said first and second bore means being disposed in parallel relation to one another;
said first tubular projection disposed in axial alignment with said third tubular projection;
said second tubular projection disposed in axial alignment with said fourth tubular projection;
an anesthesia supply tube;
an auxiliary tube;
an endotracheal tube;
an auxiliary lumen integrally formed with said endotracheal tube;
said anesthesia supply tube being releasably connected to said first tubular projection and said auxiliary tube being releasably connected to said second tubular projection;
said endotracheal tube being releasably connected to said third tubular projection and said auxiliary lumen being releasably connected to said fourth tubular projection;
whereby a single connector interconnects said anesthesia supply tube to said endotracheal tube and said auxiliary tube to said auxiliary lumen and wherein said anesthesia supply tube, endotracheal tube, auxiliary tube, and auxiliary lumen are substantially free of constrictions.

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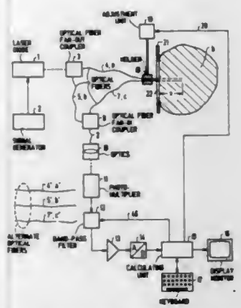
5,309,906
ENDOBRONCHIAL TUBE ASSEMBLY
Denis LaBombard, Georgetown, Mass., assignor to Smiths Industries Medical Systems, Inc., United Kingdom
Filed Oct. 28, 1992, Ser. No. 967,631
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 **5 Claims**



1. A surgical device for conducting a gas between a patient's mouth and lungs comprising:
a) an elongated flexible tubular member adapted to extend within said patient's respiratory system and having a proximal end portion for positioning at a patient's mouth and a distal end portion for positioning in a bronchus of a patient's lungs, said distal end portion having first and second orifices and said tubular member having first and second lumens for conducting gas from said proximal end portion to said first and second orifices at said distal end portion;
b) seal means at said distal end portion for directing said gas from said orifices into desired regions of the a patient's lungs;
c) adapter means formed integrally with said flexible tubular member at said proximal end portion thereof for connecting said lumens with a source of said gas, said adapter means comprising a Y-shaped member having first and second hollow branch portions which have center lines which define a plane and which converge to meet said first and second lumens and, with said first and second lumens, form first and second gas passages which extend between said hollow branch portions and the orifices at the distal end portion of said flexible tubular member, and first and second hollow stem members in fluid communication with and intersecting said plane defined by the center lines of the first and second hollow branch portions at about a right angle, and adapted to extend upwardly in front of a patient's face, said hollow stem members being in fluid communication with said first and second passages;
d) connection means for introducing said gas from a gas source into said hollow stem members; and,
e) a flexible plastic member encasing said Y-shaped member and the junction of said hollow stem members and said Y-shaped member.

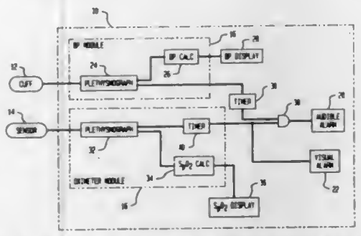
5,309,907
MEASURING ARRANGEMENT FOR EXAMINING A SUBJECT WITH VISIBLE, NIR OR IR LIGHT
Ming Fang, Plainsboro, N.J., and Hans-Erich Reinfelder, Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 26, 1992, Ser. No. 935,878
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129438
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **80 Claims**

1. An apparatus for optically analyzing tissue in vivo comprising:
means for directing a measuring chirp signal at a tissue-containing subject, said measuring chirp signal being a coherent optical signal of light selected from the group consisting of visible, NIR and IR light, a part of said measuring chirp signal emerging from said subject after interacting therein with tissue to be analyzed and forming an emerging signal;
means for generating a reference chirp signal having a defined phase relationship to said measuring chirp signal;
means for superimposing said emerging signal with said reference chirp signal to form a superposition signal having sets of beats, each set of beats having a respective beat frequency;



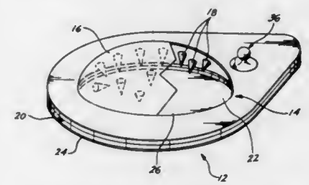
filter means, for receiving said superposition signal and having a transmission range with an upper limit frequency, for generating from said superposition signal a filtered signal having at least one beat frequency within said transmission range; and
means for dimensioning parameters including the transit time of said measuring chirp signal outside said subject, the transit time of said reference chirp signal, and said upper limit frequency of said filter means for causing said filtered signal to represent substantially only parts of said emerging signal which have traversed an optical path length in said subject which does not exceed a defined maximum optical path length.

5,309,908
BLOOD PRESSURE AND PULSE OXIMETER MONITOR
Bruce A. Friedman, Tampa; Daryl L. Bordon, Temple Terrace, and Richard Medero, Tampa, all of Fla., assignors to Critikon, Inc., Tampa, Fla.
Division of Ser. No. 807,537, Dec. 13, 1991, Pat. No. 5,253,645. This application May 14, 1993, Ser. No. 62,919
Int. Cl.[5] A61B *5/021*
U.S. Cl. 128—633 **11 Claims**



1. An apparatus for producing an audible alarm in a patient monitoring system which includes a blood pressure module having a cuff and a pulse oximeter locatable on the same limb of the patient, said apparatus comprising:
first plethysmograph means for measuring oscillations of the pressure in said cuff on said patient and producing an output having a logic level value equal to zero when said measurements are in the range between a first minimum level P_{min} and a threshold level P_{thr} less than the patient's systolic pressure and producing an output having a logic level value equal to one when said measurements are outside of said range;
second plethysmograph means connected to said pulse oximeter for measuring the pulse and oxygen saturation level (SpO_2) of said patient and producing an output indicative thereof; and,
gate means having inputs connected to the outputs of said first and second plethysmograph means respectively and an output producing an audible alarm,
wherein when said first plethysmograph means logic level is equal to zero, the output from said gate means does not produce said audible alarm.

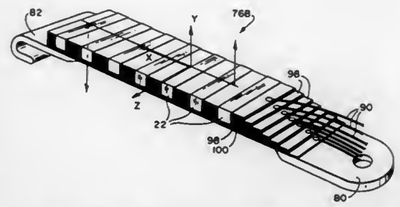
5,309,909
COMBINED SKIN PREPARATION AND MONITORING ELECTRODE
Peter D. Gadsby, Duvall; Robert A. Niskanen, and David S. Paeth, both of Seattle, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Filed May 22, 1992, Ser. No. 888,041
Int. Cl.[5] A61B *5/0408*
U.S. Cl. 128—639 **20 Claims**



1. A skin preparation and monitoring electrode for application to a patient's skin to receive biopotentials conducted by the skin, the electrode comprising:
(a) an electrode body including support means for moving from a first position to a second position upon application of a force to the support means and for returning to the first position upon removal of the force from the support means;
(b) conductive means, attached to the electrode body, for receiving biopotentials; and
(c) skin penetration means, attached to the support means, for penetrating the patient's skin when the support means moves from the first position to the second position and withdrawing from the patient's skin when the support means moves from the second position to the first position.

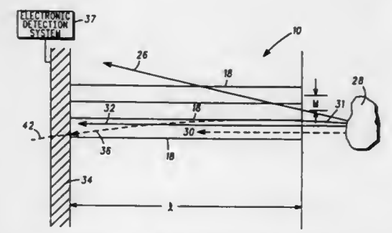
5,309,910
CARDIAC MAPPING AND ABLATION SYSTEMS
Stuart D. Edwards, Los Altos; Thomas F. Kordis, Sunnyvale, and David K. Swanson, San Jose, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Filed Sep. 25, 1992, Ser. No. 951,157
Int. Cl.[5] A61B *5/042*; A61N *1/05*
U.S. Cl. 128—642 **5 Claims**

1. An electrode assembly for use in an intraventricular multi-electrode cardiac mapping probe comprising:
at least one elongated spline having a distal end and a proximal end and carrying a plurality of spaced apart electrodes thereon, means for attaching said spline to a distal end of a catheter which has a proximal end and a distal end, said spline comprising a plurality of alternating electrically conductive layers and electrically non-conductive layers, a plurality of electrical conductors located within said spline, one of said conductors being electrically connected to each of said electrodes and connecting each of said electrodes to a different one of said conductive layer, each of said conductors being electrically insulated except at its



ends, and a plurality of electrical conductors each electrically connected to one of said conductive layers for electrically connecting each of said electrically conductive layers to an electrical signal processing device.

5,309,911
RADIONUCLIDE ANGIOGRAPHIC COLLIMATOR SYSTEM
Raymond P. Greiner, Milwaukee, Wis., assignor to Scinticor Incorporated, Milwaukee, Wis.
Filed Oct. 29, 1990, Ser. No. 605,722
Int. Cl.[5] A61B *6/00*; H01J *35/00*
U.S. Cl. 128—653.1 **16 Claims**



1. A gamma ray collimator assembly in a cardiac inspection system for resolving desired gamma rays emitted from a patient and for removing inelastic scattered gamma rays, comprising:
a plurality of collimator elements with each of said collimator elements having walls, each of said walls absorbing said inelastic scattered gamma rays and said walls of each said collimator element defining an elongated longitudinal passageway comprised of a first material covered by a layer of a second material, said second material having a large absorption coefficient for said inelastically scattered gamma rays generated in said first material responsive to said gamma rays emitted from said patient.

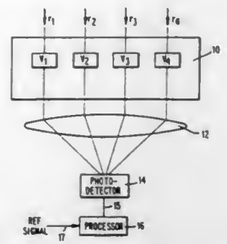
5,309,912
MULTIDIMENSIONAL IMAGING USING A SINGLE POINT DETECTOR FOR A PHASE ENCODED MODULATED OPTICAL CARRIER
Alexander Knüttel, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.
Filed Nov. 8, 1991, Ser. No. 789,517
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653.1 **17 Claims**

1. In an apparatus for imaging attenuation and phase shift characteristics of an object including applying means for applying to a surface of the object a plurality of electromagnetic

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rays each having a carrier frequency in an optical frequency spectrum, each of said rays modulated by a modulation frequency, and detecting means for detecting the electromagnetic rays after attenuation and phase shifting by each of a plurality of voxels (volume elements of interest),

the improvement wherein said voxels are disposed in an array of n dimensions where n is at least equal to 1 and said



detecting means comprises only a single optical detecting cell for detecting electromagnetic radiation resulting at a single point from attenuation and phase shift of said plurality of rays by said plurality of voxels, and

processing means for processing an output signal from said single cell to provide data identifying optical attenuation and phase shift characteristics of each of said voxels thereby to image said plurality of voxels.

5,309,913

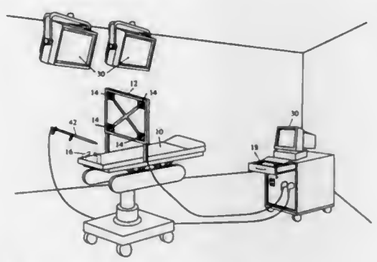
FRAMELESS STEREOTAXY SYSTEM

Donald W. Kormos, Parma; Gene H. Barnett, Shaker Heights, and Charles P. Steiner, Euclid, all of Ohio, assignors to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed Nov. 30, 1992, Ser. No. 983,390

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—653.1 **19 Claims**



1. A stereotaxy system comprising:

a subject support;

a means for securing a preselected portion of a subject to the subject support;

a frame assembly which mounts at least three receivers in a fixed relationship to the subject support closely adjacent the means for securing a portion of the subject to the subject support;

at least one reference emitter mounted a fixed, known distance from the receivers, the reference emitter emitting a reference signal which travels from the reference emitter the fixed distance to the receivers;

a calibration means for measuring a reference travel time of the reference signal over the preselected distance and generating a corresponding calibration factor;

a wand having a pointer and at least two emitters mounted thereto, the two wand emitters selectively emitting wand signals which are received by the at least three receivers;

a wand position determining means for determining a position of the wand pointer by measuring wand signal travel times of the wand signals between the two wand emitters and the at least three receivers, the wand position determining means being connected with the calibration means for calibrating the wand signal travel times with the reference travel time.

5,309,914

ULTRASONIC IMAGING APPARATUS

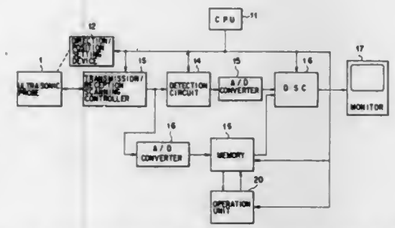
Kazuhiro Iinuma, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 868,117, Apr. 14, 1992, abandoned. This application Feb. 26, 1993, Ser. No. 26,191

Claims priority, application Japan, Apr. 17, 1991, 3-85510

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.07 **19 Claims**



1. An ultrasonic imaging apparatus having an ultrasonic probe for transmitting ultrasonic beams to a subject along a plurality of ultrasonic scanning lines, for receiving ultrasonic beams reflected from the subject along the plurality of ultrasonic scanning lines, the reflected ultrasonic beams including reflected pulses, and for obtaining ultrasonic information about the subject based on ultrasonic reflection data items contained in the reflected ultrasonic beams, the ultrasonic imaging apparatus comprising:

designation means for designating a time interval including one of the reflected pulses;

phase information calculation means for calculating phase information based on ultrasonic reflection data items corresponding to at least two of the ultrasonic scanning lines, which are near to each other, based on a phase shift in the time interval between the at least two ultrasonic scanning lines; and

boundary position information generation means for generating boundary position information about a specified part of the subject for each of the plurality of ultrasonic scanning lines, based on the phase information calculated by the phase information calculation means and on boundary position information of a predetermined reference scanning line.

5,309,915

APPARATUS FOR LOCATING VEINS AND ARTERIES

Charles T. Ember, Marion County, Ind., assignor to MTE, Inc., Indianapolis, Ind.

Filed Jun. 7, 1993, Ser. No. 73,151

Int. Cl.[5] A61B *8/06*

U.S. Cl. 128—661.07 **10 Claims**

1. Apparatus for locating a visually inaccessible pulsating flow of fluid within a body, said apparatus being self-contained, compact, non-invasive and freely movable about the body, said apparatus comprising:

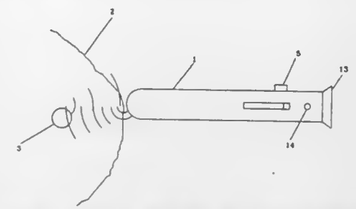
(a) a housing having a distal end and a proximal end,

(b) a source of electrical power mounted within said housing,

(c) an electrical oscillator mounted within said housing and connected to said source of electrical power, said electrical oscillator being adapted to produce high-frequency electrical signals,

(d) a first ultrasonic transducer mounted within said housing closely adjacent the distal end thereof and connected to said electrical oscillator, said first ultrasonic transducer being adapted to produce and project ultrasonic signals toward a narrow area of said body in response to the high-frequency electrical signals received from said electrical oscillator,

(e) a second ultrasonic transducer mounted within said housing closely adjacent the distal end thereof and adapted to detect ultrasonic echoes from said body and to generate high-frequency electrical signals in response to said ultrasonic echoes,



(f) means connected to said electrical oscillator and adapted to receive electrical signals from said electrical oscillator of the same high frequency as received by said first ultrasonic transducer from said electrical oscillator, said means also being connected to said second ultrasonic transducer and adapted to receive high-frequency electrical signals generated by said second ultrasonic transducer, said means mixing both of said high-frequency electrical signals to produce a differential signal,

(g) a speaker mounted adjacent the proximal end of said housing and connected to said means and adapted to receive said differential signal and produce an audible output signal in response thereto,

(h) whereby, upon the distal end of said housing becoming proximate to said pulsating flow of fluid within said body, the speaker will generate an audible signal indicating the presence of said pulsating flow of fluid.

5,309,916

BLOOD PRESSURE MEASURING DEVICE AND METHOD

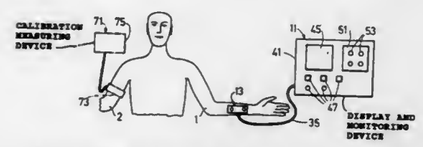
Rudolf A. Hatschek, Fribourg, Switzerland, assignor to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Jul. 16, 1991, Ser. No. 730,596

Claims priority, application Switzerland, Jul. 18, 1990, 2390/90

Int. Cl.[5] A61B *5/026*

U.S. Cl. 128—672 **25 Claims**



1. A device for measuring blood pressure of a living body having a pulse beat with a rhythm and producing a pulse wave propagating with a pulse wave velocity, comprising:

sensor means for generating sensor data when the sensor means is attached to the living body; and

electronic circuit means for determining the blood pressure of the living body from the sensor data, the electronic circuit means including

first means, responsive to the sensor data, for determining a measurement value which is a measure for a first variable that can assume a plurality of first variable values, the first variable changing over time in the rhythm of the pulse beat and being correlated with at least one of the blood pressure and a change in the blood pressure,

second means, responsive to the sensor data, for determining another measurement value which is a measure for a second variable that can assume a plurality of second variable values, the second variable being correlated with at least one of the pulse wave velocity and a change in the pulse wave velocity,

third means for receiving calibration data during a calibration procedure and for storing at least one constant determined by the calibration data,

fourth means for determining a function value on the basis of the measurement value for the first variable and the measurement value for the second variable; and

fifth means for using the function value and said at least one constant to determine a value for the blood pressure.

5,309,917

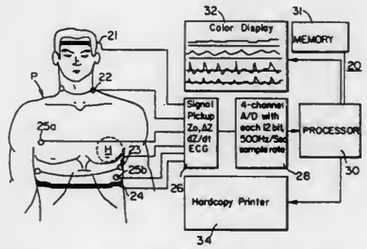
SYSTEM AND METHOD OF IMPEDANCE CARDIOGRAPHY AND HEARTBEAT DETERMINATION

Xiang Wang, Jenkintown, and Hun H. Sun, Blue Bell, both of Pa., assignors to Drexel University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 758,034, Sep. 12, 1991, abandoned. This application Feb. 12, 1992, Ser. No. 834,425

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **30 Claims**



1. A method of processing a time-derivative, thoracic impedance signal generated from a patient to identify events in the time-derivative impedance signal associated with beats of the patient's heart, the method comprising the steps of:

generating a time-frequency distribution of data from the time-derivative impedance signal for a selected portion of the time-derivative impedance signal spanning a single heartbeat of the patient; and

identifying a time of occurrence of at least one cardiac event in the selected portion of said time-derivative impedance signal from the time-frequency distribution.

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5,309,918

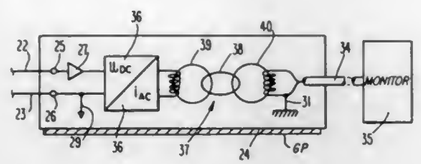
TRANSDUCER FOR CONVERTING FLOATING GROUND POTENTIAL SIGNALS TO NON-FLOATING SIGNALS AND METHOD OF USE

Martin Schraag, Sindelfingen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 676,884, Mar. 28, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,498

Int. Cl.[5] A61B *5/0428*

U.S. Cl. 128—696 **18 Claims**



1. A transducer, comprising:

a box and cable means for electrically coupling said box to a medical monitor, said box containing:

(a) a first section having a non-floating ground potential, said first section electrically coupled to said cable means;

(b) a second section having a floating ground potential, said second section comprising means for electrically coupling said floating ground potential to a sensor which produces floating signals; and

(c) conversion means coupled to said first and second sections for converting floating signals provided to said second section into non-floating signals, said conversion means comprising a transformer having a primary winding coupled to said first section and a secondary winding coupled to said second section, the connection between said primary winding and cable means consisting essentially of a direct electrical connection without further electronic components between said primary winding and cable means, whereby floating signals are convertible to non-floating signals at or near a patient.

5,309,919

METHOD AND SYSTEM FOR RECORDING, REPORTING, AND DISPLAYING THE DISTRIBUTION OF PACING EVENTS OVER TIME AND FOR USING SAME TO OPTIMIZE PROGRAMING

Jeffery D. Snell, Northridge; Harold C. Schloss, Los Angeles; Brian M. Mann, Beverly Hills; John W. Poore, South Pasadena, and Roy B. Medlin, West Hills, all of Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 2, 1992, Ser. No. 846,461

Int. Cl.[5] A61B *5/0452*

U.S. Cl. 128—697 **55 Claims**

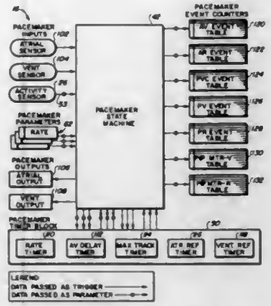
1. A method for displaying event counts associated with the operation of an implantable medical device, said implantable medical device including a plurality of event counters that respectively count the occurrence of a plurality of event types associated with the operation of the implantable medical device, sensing and sorting circuits that sense a rate for each event type counted by each of the plurality of event counters, a memory circuit, means for storing and retrieving data from specified memory storage locations within said memory circuit, and a telemetry circuit coupled to the memory circuit for selectively sending event/rate data retrieved from said memory circuit to an external display device, said method comprising the steps of:

(a) counting the occurrence of each of the plurality of specified event types associated with the operation of said implantable medical device in respective ones of said plurality of event counters so that an event count for each event type of said plurality of specified event types is maintained;

(b) determining, using said sensing and sorting circuits, a corresponding rate for each event type of said plurality of specified event types counted in step (a);

(c) storing in said memory circuit said event count and its corresponding rate for each event type of said plurality of specified event types;

(d) selectively retrieving at least a plurality of the event type



counts and their corresponding rates stored in said memory element, and sending through said telemetry circuit said retrieved event type counts and their corresponding rates to said external display device; and

(e) displaying, and hence reporting, said retrieved event type counts and their corresponding rates with said external display device;

whereby the distribution over time of a plurality of specified event types associated with the operation of the implantable medical device is reported.

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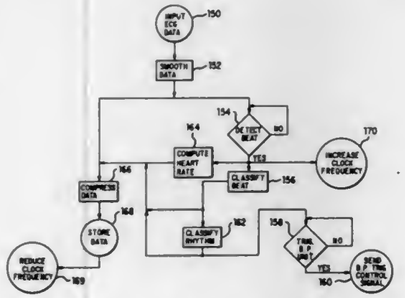
AMBULATORY ELECTROCARDIOGRAPHIC PATIENT MONITORING SYSTEM AND METHOD THEREFOR

Stuart L. Gallant, Owings Mills; Paul R. Caron, Laurel, and Walter E. Palmer, Catonsville, all of Md., assignors to Stuart Medical Inc., Owings Mills, Md.

Division of Ser. No. 780,500, Nov. 12, 1991, Pat. No. 5,238,001. This application May 21, 1993, Ser. No. 64,454

Int. Cl.[5] A61B *5/0432*

U.S. Cl. 128—710 **7 Claims**



1. An ambulatory patient monitoring system for measuring and storing a plurality of electrocardiographic signals, comprising:

a housing;

a portable power supply disposed within said housing;

microprocessor means disposed within said housing and being coupled to said portable power supply, said microprocessor having a plurality of operational speeds for (1) identifying a heart beat from said electrocardiographic signals at one of said plurality of operational speeds, and (2) identifying and categorizing abnormalities in said electrocardiographic signals at another of said plurality of operational speeds for generating abnormality data;

memory means disposed within said housing and coupled to said microprocessor means for storing said electrocardiographic signals and said abnormality data;

variable clocking means disposed within said housing and coupled to said microprocessor means for varying said plurality operational speeds thereof responsive to a signal from said microprocessor representing a respective one of (1) said identification of said heart beat, or (2) said storage of said electrocardiographic signals and said abnormality data to thereby conserve power from said portable power source;

signal conditioning means disposed within said housing and coupled to said microprocessor means for providing said electrocardiographic signals thereto; and,

lead means coupled to said signal conditioning means on end thereof for coupling said electrocardiographic signals from a patient to said signal conditioning means.

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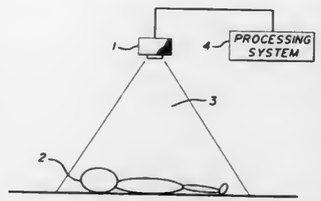
APPARATUS AND METHOD FOR RESPIRATORY MONITORING

Roger A. Kisner, Knoxville; Steven P. Baker, Powell, both of Tenn., and R. Bennett Muskin, Wyndmoor, Pa., assignors to Spectrum Medical Technologies, Knoxville, Tenn.

Filed Feb. 11, 1992, Ser. No. 833,762

Int. Cl.[5] A61B *5/08*

U.S. Cl. 128—719 **25 Claims**



1. A passive, non-invasive, non-contacting apparatus for monitoring the respiration of a subject in a monitored environment, comprising:

first sensor means for operative communication with said monitored environment, said first sensor means detecting changes in infrared energy signifying and corresponding to changes in a concentration in said monitored environment of a component to be monitored, said first sensor mans generating a first signal, wherein said first sensor means includes a first pyroelectric crystal and a first optical filter which filter admits infrared energy in a range of between about 14 to about 16 microns;

second sensor means for operative communication with said monitored environment, said second sensor means detecting changes in infrared energy signifying reference infrared energy in said monitored environment, said second sensor means generating a second signal, wherein said second sensor means includes a pyroelectric crystal and an optical filter which admits a selected range of infrared wavelengths; and

processing means for converting said first and second signals into a third signal, said third signal signifying a change in the concentration of said monitored component in said monitored environment.

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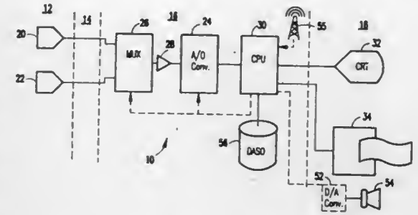
RESPIRATORY SOUND ANALYZER FOR USE IN HIGH NOISE ENVIRONMENTS

Gary L. Scbechter, Norfolk, and Robert F. Coleman, Virginia Beach, both of Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Sep. 21, 1992, Ser. No. 948,677

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—721 **14 Claims**



1. A respiratory sound analyzer, comprising:

first accelerometer means adapted to be placed on the chest wall of a patient, said accelerometer means generating a breathing signal corresponding to physical vibrations of said chest wall of said patient;

second accelerometer means adapted to be placed on said patient near said chest wall, at a location where physical vibrations caused by respiratory activity are not detected, said second accelerometer means generating an ambient signal corresponding to physical vibrations of said patient caused by the ambient environment; and

means or subtracting said ambient signal from said breathing signal;

processing means for processing said breathing signal and providing a graphic signal representative of said breathing signal; and

means for visually presenting said graphic signal to attending health care personnel.

5,309,923

METHOD AND APPARATUS FOR DETERMINING BRAIN ACTIVITY INCLUDING THE NATURE OF BRAIN LESIONS BY ELECTROENCEPHALOGRAPHY

Andrew F. Leuchter, Los Angeles, and Ian A. Cook, Beverly Hills, both of Calif., assignors to The Regents of the University of California, Alameda, Calif.

Continuation-in-part of Ser. No. 745,872, Aug. 16, 1991, Pat. No. 5,269,315. This application Aug. 12, 1992, Ser. No. 929,192

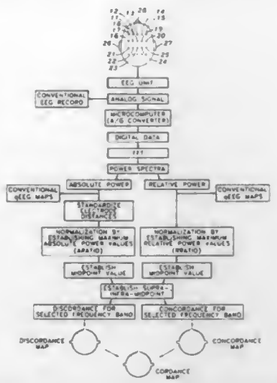
Int. Cl.[5] A61B *5/0476*

U.S. Cl. 128—731 **52 Claims**

1. A method of determining the electrical output of a brain region in the head of a subject comprising applying electrodes from an EEG unit about the head of a human, obtaining from the electrodes an electrical signal being first data representative of energy in the brain region in a primary frequency domain, determining from the electrodes an electrical signal being second data representative of energy in the primary

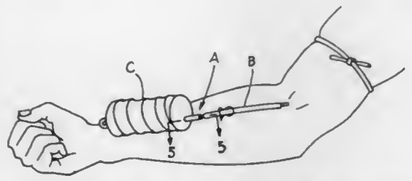
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frequency domain relative to the energy in a secondary frequency domain, relating the first data with the second data



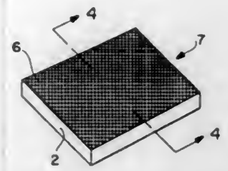
thereby obtaining a value representative of electrical output in the brain region, and presenting such value.

5,309,924
SPILL-PROOF BLOOD COLLECTION DEVICE
Alan M. Peabody, 204 Pebble Creek Way, Taylors, S.C. 39687
Filed Apr. 29, 1992, Ser. No. 875,312
Int. Cl.[5] A61M *1/00*
U.S. Cl. 128—765 **14 Claims**



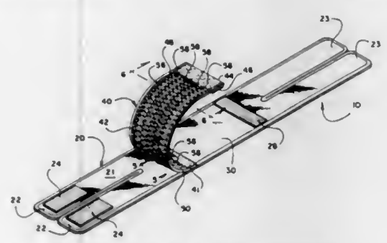
1. A blood collection device for collecting blood without spillage comprising:
a blood collection tube having a venipuncture needle carried on one end;
an open end formed on an opposing end of said collection tube in fluid communication with said needle;
a removable specimen collection container including means for attachment in fluid communication to said blood collection tube and for removal from said collection tube after collection of a prescribed blood amount;
a transfer tube carried by said specimen container in fluid communication with an interior of said container;
positive blood flow control means carried within said blood collection tube which prevents the outward flow of blood from said collection tube from said person's vein; and
a hollow needle carried by a free end of said transfer tube which engages said flow control means when said needle is inserted into said collection tube to facilitate said attachment of said collection container and open said flow control means and allow the flow of blood outwardly through said collection tube when said needle is inserted in said collection tube so that a plurality of said collection containers may be attached to and removed from said blood collection tube without blood spillage.

5,309,925
DIFFUSE REFLECTIVE LASER BARRIER
Peter P. Pollcastro, Coral Springs, Fla., assignor to Med-Genesis, Inc., Miami, Fla.
Filed Jun. 15, 1993, Ser. No. 76,792
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—849 **20 Claims**



1. A reflector for diffusing a laser beam including:
a metallic layer;
said metallic layer having surface features for dispersing an incident laser beam in plural directions;
said surface features including irregularities in the form of protrusions and indentations;
said protrusions rising an average of from 0.3 to 10,000 microns above said metallic layer base and having an average diameter of from 1 to 1,000 microns;
said indentations between said protrusions having an average width of from 0.2 to 5,000 microns.

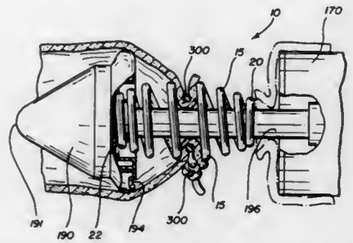
5,309,926
RESTRAINT FOR CHANGING AN INFANT
Lisa H. Mayton, 6346 McCollum La., Acworth, Ga. 30301
Filed Mar. 24, 1992, Ser. No. 856,517
Int. Cl.[5] A61B *19/00*; A61F *5/37*
U.S. Cl. 128—869 **14 Claims**



1. A restraint for changing an infant comprising:
a first band having a top surface, a bottom surface, a first end and a second end, and material adapted for enhancing friction therewith with respect to a surface to which said first band is attached, attached to said bottom surface of said first band proximate said first end of said first band and said second end of said first band, and intermediate said first and second ends, respectively;
a second band longitudinally elastically extendable having a first end and a second end, said first end of said second band attached to said top surface of said first band; first hook and loop fastener material attached to said top surface of said first end of said first band;
second hook and loop fastener material attached to said bottom surface of said second end of said first band for receiving said first hook and loop fastener material;
third hook and loop fastener material attached to said top surface of said first band a distance from the attachment of said first end of said second band to said top surface of said first band slightly less than a length of said second band from attachment to said first band to said second end of said second band; and

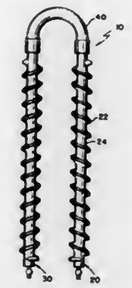
fourth hook and loop fastener material attached at said second end of said second band for receiving said third hook and loop fastener material.

5,309,927
CIRCULAR STAPLER TISSUE RETENTION SPRING METHOD
Robert F. Welch, Downingtown, Pa., assignor to Ethicon, Inc., Somerville, N.J.
Filed Oct. 22, 1992, Ser. No. 964,734
Int. Cl.[5] A61B *17/115*
U.S. Cl. 128—898 **13 Claims**



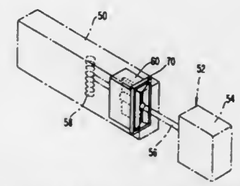
1. A method of using a circular stapler having an anvil, an anvil shaft, a staple cartridge and an actuating means to connect sections of intestine, comprising:
positioning a tissue retention spring onto anvil shaft, wherein the spring comprises: a plurality of connected helical coils members defining a spring member, the coils separated by spaces, said spring member having a proximal end and a distal end and an axial length, said spring member having an axial passageway therethrough for mounting onto the anvil shaft;
inserting the anvil and cartridge into adjacent sections of an intestine;
tying at least one section of the intestine to the spring so that the intestine extends into at least one of the spaces between the coils of the spring; and, actuating the actuating means to staple the sections of the intestine together.

5,309,928
SPIRAL PERMANENT RODS
Irma A. Longoria, 2006 Oaklawn Dr., Conroe, Tex. 77301
Filed Aug. 4, 1993, Ser. No. 101,217
Int. Cl.[5] A45D *2/14*
U.S. Cl. 132—268 **4 Claims**



1. A hair curler device for winding hair strands in the application of spiral permanents, comprising:
A. a first rod member including a first thread thereon, and said first rod member having a first end and a second end;
B. a second rod member including a second thread thereon, and said second rod member having a first end and a second end;
C. elongated flexible connector means having two ends mounted to said first ends of said first and second rod members;
D. locking means for embracing said first and second rod members substantially at the ends of said hair strands; and
E. elastic means for urging the second ends of said first and second rod members toward each other, and wherein said first and second threads are wound in opposite directions with respect to each other to allow hair strands to be separately wound about each of said rod members.

5,309,929
EYELASH MASCARA CASE AND APPLICATOR
Charlotte Toll, 312 S. Bedford Dr., Beverly Hills, Calif. 90212
Continuation-in-part of Ser. No. 808,238, Dec. 16, 1991, Pat. No. 5,188,131. This application May 14, 1993, Ser. No. 61,039
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—218 **25 Claims**



8. An eyelash mascara applicator comprising a wand and a handle attached to said wand, said wand including a first rod portion extending from said handle, and a second rod portion extending transversely relative to said first rod portion, bristles projecting outwardly around the outer circumference of said second rod portion, said second rod portion including first and second opposite ends, said first rod portion intersecting said second rod portion at a junction spaced from both of said first and second ends, so that bristles are situated on opposite sides of said junction, said first rod portion including an inner section extending from said handle, and an outer section joined to said second rod portion, said outer and inner sections being oriented at an angle relative to one another.

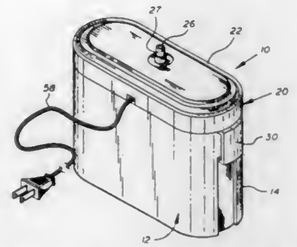
5,309,930
CURLER STEAMER
Mark Presser, New York, N.Y., assignor to Celeste Company, Inc., Warminster, Pa.
Filed Jul. 2, 1992, Ser. No. 907,844
Int. Cl.[5] A45D *19/16*
U.S. Cl. 132—272 **7 Claims**

1. A curler steamer which comprises:
a tank having a side wall, a bottom wall and an open top, the side wall having at least one latch capturing step;
a tank closure assembly having a lid portion shaped to close said open top, and electrode means depending from said lid portion for extending into the tank to generate steam when the tank contains an electrolyte and when electrical power is applied to the electrode means, the lid portion including a steam aperture for discharging steam generated in the tank;
and at least one latch captured by said tank closure assembly for limited movement, said latch having a hook for engagement with said step when said lid portion closes said open top, and for detachable fixing said assembly to said

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tank, said latch being moveable only to an extent to allow said hook to disengage from said step for removing the assembly from the tank;

said closure assembly including means defining a depression, said latch including a leg, said leg being positioned in said depression, said lid portion including a retaining member over said depression and capturing said latch leg for limited movement of said latch to said closure assembly;



said tank including a recess at its open top, for receiving said latch leg, said recess being spaced from said step by distance which is substantially equal to a distance between said leg and said hook on said latch;

said depression including a recess, said leg having a trunnion extending into said recess.

5,309,931

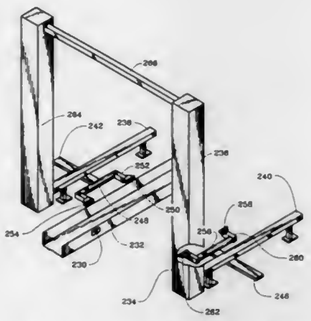
AUTOMATIC TIRE TREATMENT SYSTEM

Frank X. Meyer, III, Forest, Va., assignor to Armatics Incorporated, Lynchburg, Va.

Filed Apr. 21, 1992, Ser. No. 872,725

Int. Cl.[5] B60S *3/04*

U.S. Cl. 134—57 R **5 Claims**



1. A tire spraying system for treating tires mounted on a vehicle as the vehicle follows a prescribed path of travel, comprising:

first and second elongated guide tracks, each of said guide tracks having a first end and a second end;

first and second carriages, each having a longitudinal axis perpendicular to a respective guide track and slidably disposed thereon;

propelling means for moving each respective carriage from said first end to said second end of each of said first and second guide tracks;

front vending means for treating a front side wall of each tire;

rear vending means for treating a rear side wall of each tire;

a bracket means for rigidly attaching a front vending means and adjustably attaching a rear vending means to each of said respective first and second carriages;

means for positioning said front and rear vending means, associated with each of said carriages, between a first and second position, respectively, wherein both said first and second positions are adjacent to a tire wall;

means for enabling said system upon a tire reaching an associated activator means positioned relative to a front vending means; and

whereby said propelling means on each of said carriages is modulated to match vehicle velocity along said track while said front and rear vending means maintain spatial orientation with respect to said tire, so said tires are treated while rotating on said vehicle.

5,309,932

FOLDING COLLAPSIBLE FRAME ASSEMBLY FOR AN AUTOMATIC FOLDING UMBRELLA

Lue L. C. Chou, No. 1, Alley 9, Lane 250, Sec. 2, Cheng Gung Rd., Nei Hu Area Taipei, and Jonathan Cheng, 5F, No. 10, Lane 169, Sec 1, Ta-an Rd., Taipei, both of Taiwan

Filed Aug. 9, 1993, Ser. No. 103,230

Int. Cl.[5] A45B *25/14*

U.S. Cl. 135—22 **2 Claims**



1. A folding collapsible frame assembly for an automatic folding umbrella of the type comprising a two-section shaft frame assembly, said two-section shaft frame assembly comprising a lower shaft, an upper shaft made to slide in said lower shaft, a fixed member fastened to said upper shaft at the top, and upper runner and a lower runner made to slide along said lower and upper shafts, a stretch control spring retained between said upper runner and said lower runner, an inside spring received inside said lower shaft and stopped against said upper shaft, and a top spring fastened inside said top shaft at the bottom and releasably engaged into a hole on said lower shaft to stop said upper shaft out of said lower shaft; and a handle fastened to said lower shaft at the bottom, said handle comprising a bottom spring releasably hooked in said lower runner, a control button having a push block moved to release said bottom spring from said lower runner; the improvement comprising:

an inside projection made on said lower shaft at the top and moved to slide along a longitudinal dent on said upper shaft;

a lock ring made to slide on said upper and lower shafts and stopped above said upper runner, said lock ring having a hook hole on the periphery;

a guide control mechanism fastened inside said upper shaft, said guide control mechanism comprising a hook fixed inside said upper shaft and constantly retained inwards by a spring element, a sliding key having a top recess moved to push the hook thereof out of a hole on said upper shaft in hooking the hook hole on said lock ring, a guide rod at one side stopped against said inside projection of said lower shaft at the top, a transmission device having one end connected to said sliding key by a pull wire and an opposite end connected to said control button of said handle by a pull wire, and a top spring fastened inside said top shaft and projected out of a hole on said top shaft to stop said lower shaft above said lower shaft, said transmission element comprises projecting block moved to release said top spring from said lower shaft for permitting said top shaft to be moved inside said lower shaft;

a fail safe mechanism disposed above said fixed member, said fail safe mechanism comprising an actuating element supported on said fixed member by a spring and having an elongated hole vertically slidably fastened inside said fixed member by a pin, a cap fastened to said actuating element at the top by a packing nut;

whereby compressing said upper shaft against said lower shaft caused said collapse control spring to be compressed by said lock ring against said fixed member, and simultaneously causes the hook of said guide control mechanism to be moved upwards by said inside projection of said lower shaft via said sliding key into a hooked position hooking into the hook hole on said lock ring in holding the umbrella in the collapsed position; pushing said control button upwards causes said bottom spring to release said lower runner for allowing the umbrella to be opened; pushing said control button downwards to pull the linked pull wire caused the hook of said guide control mechanism to be released from said locking ring for permitting said collapse control spring to push said upper runner downwards and simultaneously to collapse the umbrella.

5,309,933

ONE-HAND OPENABLE AND CLOSABLE UMBRELLA

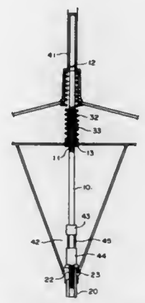
Hisao Nagai, 2-22-15 Gontasaka, Hodogaya-Ku, Yokohama, Japan, and Chiu-Hsiung Yang, 40-7, 452 Tayen Road, Peitou District, Taipei, Taiwan, assignors to Hisao Nagai, Yokohama, Japan; Chiu-Hsiung Yang, Taipei, Taiwan and Wakabayashi & Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 36,181

Claims priority, application Japan, Mar. 30, 1992, 4-26102; Mar. 30, 1992, 4-26103

Int. Cl.[5] A45B *25/14*

U.S. Cl. 135—24 **4 Claims**



1. A one-hand openable and closable umbrella comprising:

a double shaft composed of an inner shaft and an outer shaft which are smoothly slidable relative to each other;

a plurality of main ribs pivotally secured at one end to a mounting member on the tip of the inner shaft at predetermined angular intervals;

a plurality of auxiliary ribs having inner ends pivotally secured, at predetermined angular intervals, to a lower nest provided at the upper end portion of the outer shaft;

a plurality of lateral auxiliary ribs having outer ends pivotally supporting said plurality of main ribs substantially centrally thereof, the inner ends of which are pivotally secured to an upper nest provided at the upper end portion of the inner shaft, and which are pivotally supported at their intermediate portion by the outer ends of the plurality of auxiliary ribs;

a handle mounted on a lower end portion of the outer shaft;

an auxiliary handle attached to a lower end portion of the inner shaft;

a spring for providing an elastic force between the outer shaft and the inner shaft in a direction to cause the upper end portion of the outer shaft to approach the upper end of the inner shaft;

an releasable locking mechanism which temporarily inhibits the relative sliding movement of the outer shaft and the inner shaft in a first state in which the main ribs have been folded through the action of the auxiliary ribs by moving the handle toward the auxiliary handle against the elastic force of the spring; and

a stopper which temporarily inhibits the relative sliding movement of the outer shaft and the inner shaft in a second state in which the elastic force of the spring has been reduced by moving the handle away from the auxiliary handle to spread out the main ribs through the action of the auxiliary ribs;

the inner shaft having a U-shaped groove provided thereon extending lengthwise thereof and the outer shaft having a convex block provided inside the lower nest mounted on the top of the outer shaft for engagement with the U-shaped groove so that when the outer shaft slides on the inner shaft, they neither turn nor displace relative to each other.

5,309,934

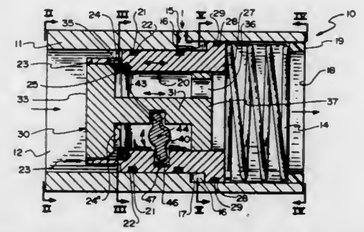
BALANCED PISTON FLUID VALVE

Robert A. Jaeger, 3822 Cloverhill Ct., Brandon, Fla. 33511

Filed May 21, 1993, Ser. No. 65,810

Int. Cl.[5] F16K *31/143, 11/065, 31/54*

U.S. Cl. 137—1 **17 Claims**



1. Fluid valving method, comprising the steps of providing a valve body for laterally confining fluid flow to an open-ended substantially cylindrical passageway having a linear axis extending lengthwise between an upstream inlet opening and a downstream outlet opening, through which fluid is enabled to flow in open valving positions but is precluded from flowing in closed valving position;

providing flow barriers disposed within said passageway and dividing the passageway cross-section into an inner flow-obtruding axial valve core portion whose maximum diameter is less than the passageway diameter and a complementary outer flowobtruding annular valve portion whose outside diameter equals the passageway diameter, said respective portions being movable one within the other to control the fluid flow;

providing position-adjustment means disposed intermediate and engaging said valve portions within said passageway

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for moving both valve portions one within the other between open and closed valving positions,

in an open valving position, when in non-juxtaposed mutually unseated positions of said valve portions lengthwise of the passageway, to extend across and to obtrude individually respective spaced parts of the passageway cross-sectional extent rather than its enter extent, to thereby allow fluid flow therethrough, and

in a closed valving position, when juxtaposed into mutually seated positions of said valve portions lengthwise of the passageway, extending together across and obtruding essentially the entire cross-sectional extent of the passageway and thereby precluding fluid flow therethrough.

5,309,935

DEVICE FOR CONVERTING AN ELECTRIC CURRENT SIGNAL INTO A MECHANICAL CORRECTING VARIABLE

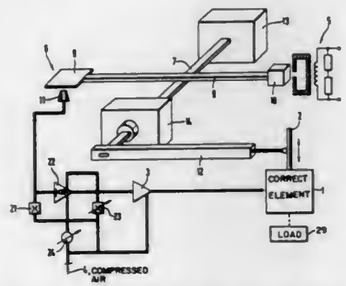
Heinrich Rienscbe, Bückeburg, Fed. Rep. of Germany, assignor to Sensycon Gesellschaft für Industrielle Sensorsysteme und Processleittechnik mbH, Hanover, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,737

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142269

Int. Cl.[5] F15B *13/16*

U.S. Cl. 137—85 **2 Claims**



1. A device for converting an electric current signal into a mechanical correcting variable, comprising

a pneumatic correcting element with slide rod, a feedback lever mechanically coupled to said slide rod, a pneumatic amplifier for driving said correcting element, and a compressed-air supply for operating said pneumatic amplifier;

an electromagnetic signal converter which includes a permanent magnet, a solenoid with coil, and an iron magnetic flux circuit with air gap;

a tensioning band, a nozzle/baffle-plate device, and a support lever which is mounted fixedly to said tensioning band for pivoting about a longitudinal axis of said band during a twisting of said band, said support lever bearing said baffle plate on a first end of said support lever and said permanent magnet on a second end of said support lever facing the air gap of said solenoid;

a pneumatic circuit interconnecting said correcting element with said amplifier and said compressed-air supply and said nozzle;

wherein a distance between baffle plate and nozzle of said nozzle/baffle-plate device is variable by a pivoting of said support lever in proportion to current flowing as input signal through said solenoid;

a change in dynamic air pressure in the nozzle is amplified by said pneumatic amplifier and applied via said pneumatic circuit to control said pneumatic correcting element;

one end of said tensioning band is fixedly mounted to allow for a pivoting of a second end of said tensioning band around its longitudinal axis;

said feedback lever is mounted fixedly to said tensioning band and spaced apart along said tensioning band from said support lever, said feed back lever extending perpendicular to the longitudinal axis of said tensioning band to be pivoted about the longitudinal axis by said slide rod upon displacement of said slide rod to communicate from said correcting element a feedback of the mechanical correcting variable via said tensioning band and said support lever into an electropneumatic signal;

a mechanical coupling between said feedback lever and said slide rod provides for reduction in a ratio of movement of said slide rod to movement of said baffle plate while minimizing mass of said feedback lever;

said mechanical coupling between said feedback lever and said slide rod comprises a spring coupled to said feedback lever, and a cam plate disposed on said slide rod; and

a free end of said feedback lever is urged by means of said spring against said cam plate.

5,309,936

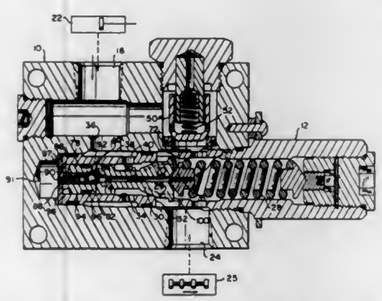
POPPET CONFIGURATION FOR COUNTERBALANCE VALVE

Norman B. Christensen, Sarasota, Fla., assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 30, 1993, Ser. No. 55,029

Int. Cl.[5] F15B *13/04*

U.S. Cl. 137—106 **13 Claims**



1. In a counterbalance valve assembly having at least one counterbalance valve, wherein the counterbalance valve is disposed between a first port for connecting the counterbalance valve to a hydraulic cylinder and a second port for connecting the counterbalance valve to a controller; wherein a poppet is disposed in the counterbalance valve, the poppet having a pilot pressure surface at a first end, a second end to which a spring force is applied, and a valve face engaged by a valve seat; wherein a spring biases the poppet to a blocking position preventing hydraulic operating fluid from flowing from the first port to the second port via a gap between the valve face and valve seat, the spring setting a relief pressure which allows the poppet to open when pressure applied to the valve face exceeds the pressure applied by the spring; the counterbalance valve further including a pilot hydraulic fluid chamber proximate the first end of the poppet for applying pilot hydraulic fluid pressure thereto in order to move the poppet against the bias of the spring when it is desired to open the valve, the improvement comprising:

a bore through the poppet, the bore allowing pressurized hydraulic fluid to flow from the second end of the poppet to the first end of the poppet, the bore having an internal valve for preventing pilot hydraulic fluid from passing from the first end of the poppet through the second end of the poppet, the bore further including means for allowing hydraulic operating fluid to flow past the internal valve when flowing from the second end of the poppet to the first end of the poppet so as to apply hydraulic operating fluid pressure at both ends of the poppet when hydraulic

operating fluid pressure on the second end of the poppet exceeds a selected level.

5,309,937

FLOAT VALVE FOR FILLING SYSTEMS, IN PARTICULAR, FOR FILLING ELECTRIC TRACTION BATTERIES

Daniel Rover, SchloBstr. 101, D-8037 Olching, Fed. Rep. of Germany

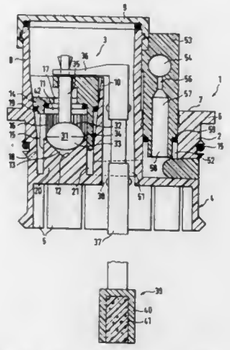
PCT No. PCT/DE91/00368, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/17577, PCT Pub. Date Nov. 14, 1991

PCT Filed May 2, 1991, Ser. No. 781,231

Claims priority, application Fed. Rep. of Germany, May 2, 1990, 4014103

Int. Cl.[5] F16K *31/24;* **H01M** *2/36*

U.S. Cl. 137—260 **16 Claims**



1. A vertical float valve for a container filling system comprising:

a valve chamber (**11**) having a plurality of inlets (**16**) for a filling fluid and an outlet (**17**) leading to a container,

a valve head (**31**) positioned in the valve chamber (**11**) and connected to a float (**39**) via a valve stem (**35**) and a float rod (**37**),

the valve head (**31**) being movable in the valve chamber (**11**) from an inlet open position to an outlet close position and vice versa,

a supply conduit (**51**), for supplying the fluid to the valve chamber (**11**), communicating with a distribution chamber (**21**) which surrounds the valve chamber (**11**) and communicates with the plurality of valve chamber inlets (**16**), the plurality of valve chamber inlets (**16**) being located within a side wall of the valve chamber (**11**) and being space about the entire perimeter thereof,

the outlet of the valve chamber (**11**) being a discharge opening (**17**) located in an upper portion of the valve chamber (**11**), through which extends the valve stem (**35**), whereby the valve stem (**35**) is movable within a certain area relative to an arm (**36**) of the float rod (**37**),

the valve head (**31**) having an upper and a lower part (**32, 33**) separated by a rim (**34**),

the upper part (**32**) of the valve head (**31**) being shaped for sealing engagement with a valve seat (**42**) surrounding the discharge opening (**17**),

the valve head (**31**), when in the open position, being in a recess (**13**) in the bottom of the valve chamber (**11**) with the rim (**34**) lying immediately below the plurality of valve chamber inlets (**16**), whereby the valve head (**31**) allows unobstructed fluid flow through the valve chamber (**11**),

the plurality of valve chamber inlets (**16**), the recess (**13**) and the valve head (**31**) being arranged such that the entire underside of the valve head (**31**) is exposed to essentially the entire flow of fluid of the valve chamber (**11**) as soon as the valve head (**31**) moves away from the recess (**13**) thereby boosting a closing action of the valve head (**31**) against the valve seat (**42**), whereby the rim (**34**) guides the valve head along the plurality of valve chamber inlets (**16**).

5,309,938

FRESH WATER SUPPLY SYSTEM FOR AN AIRCRAFT

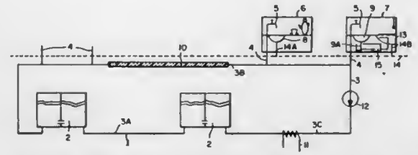
Hubert Ellgoth; Helge Frank, both of Hamburg; Gerd Grunwald, Neuenkirchen; Georg Mai, Bremen; Karolin Mau, and Ralf Schliwa, both of Hamburg, all of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,896

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1991, 4132491; Aug. 20, 1992, 4227516

Int. Cl.[5] F16K *49/00;* **E03B** *7/07*

U.S. Cl. 137—334 **13 Claims**



1. A fresh water supply system in an aircraft, comprising at least one fresh water supply tank, water tap means in said aircraft, main line means connecting said water tap means to said supply tank, said main line means being installed at a substantially horizontal level in said aircraft, said water supply tank being positioned substantially at the same horizontal level, at least one water conveying means connected to said system for transporting fresh water from said supply tank to said water tap, said main line means having at least one section formed as a ring conduit (**3**) having a horizontal length and at least one tap branch line (**4**) connecting said water tap means to said ring conduit, said water conveying means maintaining a water circulation in said ring conduit, said system further comprising heating means connected only to a portion of said ring conduit, said portion of said ring conduit having a short length relative to said horizontal length of said ring conduit, said system further comprising a heat insulation (**10**) provided on at least a portion of said ring conduit, said heat insulation in combination with said circulation optimally reducing said short length so that freeze-up is avoided with an optimally low heating energy input.

5,309,939

SAFETY DEVICE FOR WATER-CONDUCTING HOUSEHOLD APPLIANCES

Ernst Stickel, Giengen; Rüdiger Eiermann, Staufen, and Helmut Jerg, Giengen, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,458

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029543

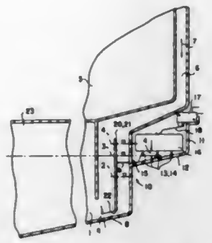
Int. Cl.[5] F16K *31/18, 33/00*

U.S. Cl. 137—387 **12 Claims**

1. In a water-conducting household appliance including a liquid container having a static content level, fill control means, a cycle control units, an inflow valve to be opened by the cycle control unit and closed by at least one of the fill control means and the cycle control unit, an evacuation pump, a switch having a switching position in which said switch turns on the evacuation pump and selectably closes the inflow valve, and a chamber disposed apart from the liquid container and

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hydraulically communicating with the liquid container and having an opening for the entry of water so as to establish corresponding liquid levels in the liquid container and the chamber, a safety device comprising a safety level switch device having a float disposed in the chamber apart from the liquid container, said float having a switching position in which said float acts upon the switch to switch on the evacua-



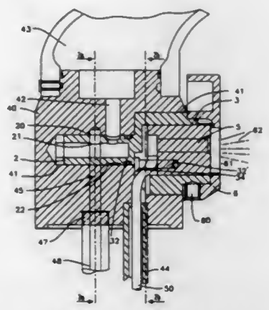
tion pump, and selectably close the inflow valve when the liquid level rises to a predetermined level above the static content level and means for supporting said float in position of repose in which said float is kept at a distance above the static content level and in which said float acts upon the switch to switch off the evacuation pump when the liquid level approaches the static content level.

5,309,940

FAUCET FOR A WASH BASIN OR OTHER SANITARY EQUIPMENT WHICH OPENS AND CLOSES AUTOMATICALLY

Gerard Delabie, Saint-Blimont, and Marcel Normand, Arrest, both of France, assignors to Delabie S.A., France

Filed Oct. 28, 1992, Ser. No. 967,657
Claims priority, application France, Oct. 31, 1991, 91 13656
Int. Cl.[5] F16K *11/076, 31/06*
U.S. Cl. 137—607 **7 Claims**



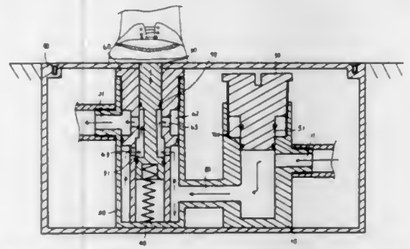
5. A faucet including an operating unit and a control unit for controlling the flow of water therefrom, said faucet comprising at least one water inlet, a water outlet opening into an outflow tank, a detection cell which utilizes rays which are emitted or received in order to activate at least one solenoid valve for automatically triggering the issuance of water from said faucet, and a cylindrical body housing said detection cell, said cylindrical body being placed within a primary cavity of said operating unit and being integrally joined to said control unit, said control unit including a window positioned facing said cylindrical body for the passage of said rays which effectuate the operation of said detection cell, said operating unit including a secondary cylindrical cavity coextensive with said primary cavity, said faucet including a mixing cam inserted in said secondary cylindrical cavity, said cylindrical body being integrally joined with said mixing cam by means of an angular part having a cross-section in the form of an arc of a circle and a base coextensive with said cylindrical body, and including two screws screwed into said cylindrical body, each of said screws including a flange overlapping the edge of said secondary cylindrical cavity, said flanges providing stops to limit the rotation of said mixing cam, and each of said screws further including an extension penetrating into said cylindrical body so as to prevent rotation of said detection cell, said at least one water inlet comprising first and second water inlets, said first and second water inlets being parallel and orthogonal to said mixing cam.

5,309,941

AUTO WATER SUPPLY CONTROL VALVE

Chion-Dong Lin, P.O. Box No. 96-173, Taipei, Taiwan

Filed Jun. 4, 1993, Ser. No. 71,489
Int. Cl.[5] F16K *31/62*; E03C *1/02*
U.S. Cl. 137—614.19 **1 Claim**



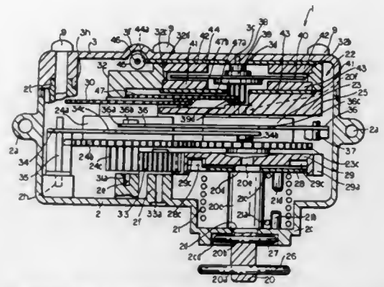
1. A foot actuated water supply control valve comprising:
a) a valve body comprising:
i) a first cylinder having an inlet to allow water to enter the first cylinder;
ii) a second cylinder having an outlet to allow water to exit from the second cylinder; and,
iii) channel means connecting the first and second cylinders so as to allow water to pass from the first cylinder into the second cylinder;
b) an adjustment valve connected to the first cylinder to adjust the flow of water into the first cylinder;
c) a sleeve attached to and extending into the second cylinder, the sleeve defining a passageway and at least one sleeve outlet opening communicating with the passageway and the second cylinder outlet, and having a wall defining at least one sleeve inlet opening to allow water to pass into the passageway;
d) a valve member slidably mounted in the passageway, the valve member having a first end extending externally of the valve body, a second end and a recessed portion between the first and second ends, the valve member movable in the passageway along a path of travel extending generally parallel to the wall of the sleeve and to a plane of the sleeve inlet opening between a first position wherein the second end of the valve member blocks the at least one inlet opening to prevent water from entering the passageway and a second position wherein the second end is displaced away from the sleeve inlet opening to allow water to pass between the sleeve inlet opening and the sleeve outlet opening via the recessed portion of the valve member; and
e) biasing means acting on the second end of the valve member to bias the valve member toward its first position.

5,309,942

TIMER UNIT FOR CONTROLLING VALVES

Makoto Orii, and Hiroyuki Iwasita, both of Suwa, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Japan

Filed Oct. 28, 1992, Ser. No. 968,045
Claims priority, application Japan, Nov. 1, 1991, 3-288091
Int. Cl.[5] G05B *19/06*; F16K *31/48*
U.S. Cl. 137—624.18 **3 Claims**



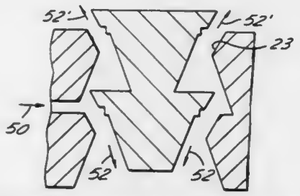
1. A timer unit for switching the operation times of plural valve mechanisms which open and close fluid passages, comprising:
a windup shaft mounted so as to be rotatable;
a spring which, when said windup shaft is rotated through a given angle, is wound and tightened so that energy is stored in the spring;
speed-adjusting means which adjusts the rotation of the windup shaft when the tightened spring is released, said speed-adjusting means being an eddy-current-generator governor mechanism comprising a metal sheet rotated by rotation of the windup shaft, a pair of magnets disposed on opposite sides of the metal shaft, and a pair of yokes disposed on opposite sides of the metal sheet; and
a plurality of cams to which rotation of the windup shaft driven by the releasing force of the spring is imparted so as to rotate the cams, said cams having profiles corresponding to operation times of the valve mechanisms.

5,309,943

MICRO-VALVE AND METHOD OF MANUFACTURING

Paul E. Stevenson, Livonia; Charles F. Eagen, Ann Arbor, and Carlton S. Avant, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1992, Ser. No. 986,313
Int. Cl.[5] F16K *31/02, 1/44*
U.S. Cl. 137—625.5 **1 Claim**



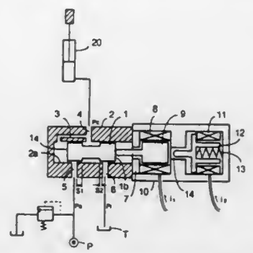
1. A microvalve comprised of a movable spool and/or seat comprising:
a silicious spool having three planes, and aligned with all of the spool's planes, a silicious seat conforming to the spool's planes,
wherein the spool and/or the seat may move to open or close the valve wherein the spool planes are 111 planes.

5,309,944

ELECTROMAGNETIC PROPORTIONAL PRESSURE REDUCING VALVE

Satoshi Chikamatsu; Noboru Kurita, both of Kani; Koji Morita, and Yoshiyuki Eto, both of Yokohama, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha and Nissan Motor Co., Ltd., both of Yokohama, Japan

Filed May 19, 1993, Ser. No. 64,198
Claims priority, application Japan, May 19, 1992, 4-126408
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 **3 Claims**



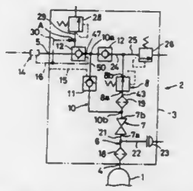
1. A pressure reducing valve comprising a supply port connected to an oil source, a tank port connected to a tank, a control port connected to a hydraulic actuator, a spool connecting said control port to said tank port depending on its axial position, a first plunger in contact with one end of said spool, a first solenoid which drives said first plunger axially by means of a driving force according to an magnetizing current provided, and a feedback oil passage for applying the pressure of said control port to the opposite end of said spool, wherein the pressure generated by said control port is increased and decreased according to the magnetizing current of said first solenoid, further comprising:
a second plunger arranged in series with said first plunger,
a spring which pushes said second plunger in the direction of said first plunger, and
a second solenoid for pulling said second plunger in opposition to the restoring force of said spring such that it is not in contact with said first plunger when said second solenoid is magnetized.

5,309,945

VALVE ASSEMBLY FOR GAS CYLINDER

Mitsunori Sakai; Masakatu Kawahara, and Teruo Hatori, all of Amagasaki, Japan, assignors to Kabushiki Kaisha Neriki, Hyogo, Japan

Filed Sep. 3, 1993, Ser. No. 115,738
Claims priority, application Japan, Sep. 9, 1992, 4-268197; Dec. 4, 1992, 4-350598
Int. Cl.[5] B65B *31/06*
U.S. Cl. 137—861 **10 Claims**



1. A valve assembly for a gas cylinder comprising a valve casing (3) within which a pressure reducing valve (8) is arranged in series relative to a stop valve (7) between a gas inlet (4) and a gas outlet (5), a gas charging mouthpiece (14) pro-

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vided with an actuating portion (30) being adapted to be attachable to said gas outlet (5);

a gas charging passage (10) arranged in parallel to said pressure reducing valve (8);

a check valve (11) disposed in said gas charging passage (10) so as to prevent a flow from said gas inlet (4) to said gas outlet (5);

a secondary safety valve (28) adapted to release an increased pressure outside said valve casing (3) when a pressure in said gas outlet (5) increases above a predetermined value;

a gas inducting passage (29) for making said gas outlet (5) communicate with said secondary safety valve (28); and

an opening or closing portion (A) provided in said gas inducting passage (29) and adapted to be closed by said actuating portion (30) of said gas charging mouthpiece (14).

5,309,946

FLOW RECTIFIER

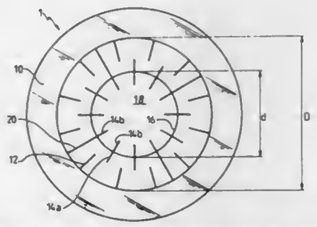
Patrice Ligneul, Chaville, France, assignor to Schlumberger Industries, S.A., Montrouge, France

Filed Oct. 15, 1992, Ser. No. 961,607

Claims priority, application France, Oct. 25, 1991, 91 13298

Int. Cl.[5] F15D *1/04*

U.S. Cl. 138—39 **8 Claims**



1. A flow rectifier for mounting in a circular section duct conveying a fluid in an axial flow direction, wherein the rectifier comprises, in a ring:

(a) a first means for creating a first series of vortices with a flow rotation velocity transverse to said axial flow direction, substantially all of said first series of vortices having a first direction of rotation, said first means comprising a first series of fins extending inward radially from an inner surface of said ring, each fin in said first series of fins having a substantially planar surface which is aligned substantially parallel to said axial flow direction, each of said fins in said first series of fins being regularly distributed around said inner surface of said ring and contained in a peripheral space region thereof; and

(b) a second means for creating a second series of vortices with a flow rotation velocity being transverse to said axial flow direction, substantially all of second series of vortices having a direction of rotation opposite to said first direction of rotation and paired with the vortices created by said first means, said second means comprising a substantially circular support generally centered on the center of said ring and a second series of fins extending radially outward from an outer surface of said substantially circular support, each of said fins in said second series of fins having a substantially planar surface which is aligned substantially parallel to said axial flow direction, each of said fins in said second series of fins being regularly distributed around an outer surface of said substantially circular support, each of said fins in said second series of fins pointing towards said inner surface of said ring and each of said fins in said second series of fins having an end which penetrates into said peripheral space region of said ring, said vortices of said first means and said second means being distributed substantially in said peripheral space region of said ring.

5,309,947

APPARATUS FOR LINING AN INSIDE WALL OF A SEWER PIPE

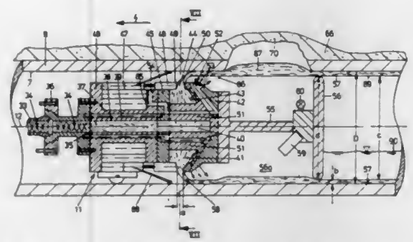
Klaus-Jürgen Hinger, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, GmbH, Fed. Rep. of Germany

Filed May 22, 1992, Ser. No. 888,340

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1991, 4119161

Int. Cl.[5] F16L *55/162*

U.S. Cl. 138—98 **18 Claims**



1. An apparatus for lining an inside wall (7) of a sewer pipe (8), wherein an extruder (1) with a central longitudinal axis (12) is provided, which extruder (1) fits inside said sewer pipe (8), is moved therealong in an operation direction (4) by means of a feed unit (9) operatively connected thereto and has a nozzle (11) radially directed with respect to said central longitudinal axis (12), which nozzle (11) is connected to the extruder by a channel for molten plastics and includes means for extrusion of a plastic tube (58), and wherein at least one hot-air nozzle (85) is directed outwardly of said apparatus to direct air towards the inside wall (7) of the sewer pipe (8), which hot-air nozzle (85) is arranged upstream of said nozzle (11).

5,309,948

APPARATUS FOR REPLACING FULL CLOTH ROLL ON WEAVING MACHINE WITH EMPTY CLOTH ROLL

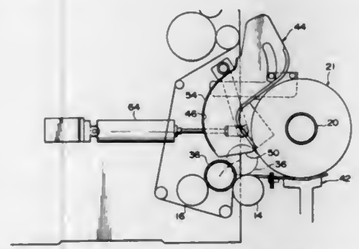
Hideki Banba, Ishikawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Ishikawa, Japan

Filed Apr. 22, 1993, Ser. No. 52,126

Claims priority, application Japan, Apr. 27, 1992, 4-131441

Int. Cl.[5] D03D *49/20*

U.S. Cl. 139—1 R **3 Claims**



1. An apparatus for replacing a full cloth roll loaded on a pair of mutually parallel rollers of a weaving machine and with a textile wound therearound, with an empty cloth roll disposed in an upper position above said full cloth roll, comprising:

a pair of oscillating members supported by said weaving machine to oscillate about an axis of a rod supported by said weaving machine, said axis being parallel to the axes of said pair of rollers; and

drive means for having said pair of oscillating members produce oscillating movement;

wherein each oscillating member includes: a contact portion exerting a pressing force to an end portion of said full cloth roll to roll said full cloth roll forward of said weaving machine while both said oscillating members are oscillating in one direction; and a guide wall disposed behind said contact portion for catching said empty cloth roll in cooperation with the peripheral surface of the textile of said full cloth roll, and for directing, during the oscillating movement of both said oscillating members, said empty cloth roll to an upper position right above said pair of rollers in cooperation with the peripheral surface of the textile of said full cloth roll.

5,309,949

KNIFE CONTROL MECHANISM FOR A WEAVING LOOM

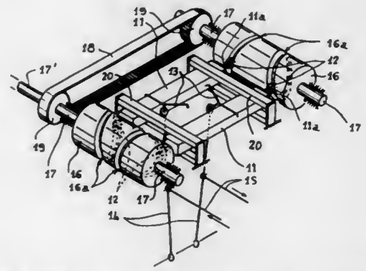
Siegmund H. Tremer, Eckersdorf, Fed. Rep. of Germany, assignor to Staubli-Trumpelt GmbH Maschinenfabrik, Bayreuth, France

Filed Mar. 26, 1993, Ser. No. 37,444

Claims priority, application France, Apr. 14, 1992, 92 04880

Int. Cl.[5] D03C *1/18, 1/26*

U.S. Cl. 139—79 **8 Claims**



1. In a knife control mechanism for a heavy closed-shed dobby for a weaving machine which includes two actuation knives which are movable in opposite reciprocating motions along a path in order to selectively engage a rocking double hook carried by pivoting levers coupled to a heddle frame, the improvement comprising, each of said knives having opposite ends, tracking means extending from each of said opposite ends, a pair of drums spaced adjacent said opposite ends of said knives and having central axes generally parallel to the path of motion of said knives, means for rotating said drums in synchronism with one another, each of said drums including a peripheral portion having two spaced profiled grooves therein, and said tracking means being guidingly received within said grooves whereby, when said drums are rotated, said knives will be reciprocately driven along the path of motion.

5,309,950

QUICK FASTENING HARNESS CORD CONNECTION

Dario Bassi, Venissieux, and Alexis Porte, Jons, both of France, assignors to Staubli-Verdol S.A., Chassieu, France

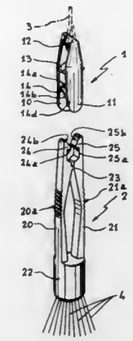
Filed Dec. 11, 1992, Ser. No. 989,146

Claims priority, application France, Dec. 12, 1991, 91 15684

Int. Cl.[5] D03C *3/40*

U.S. Cl. 139—88 **12 Claims**

1. A quick connect coupling for connecting at least one funicular element with respect to an end of a harness cord of a weaving loom to a cord of a shed-forming device of the loom, wherein the coupling comprises; an insert element having a pair of opposing members which are connected by at least one cross-piece to which the cord of the shed-forming device may be attached and by a bar oriented in spaced relationship to said cross-piece, a clamp having two branch elements extending from a base to which at least one funicular element of the harness cord may be secured, said branch elements having opposing hooked free ends opposite said base, a flexible joint connecting said branch elements in spaced relationship from



said hooked free ends, said hooked free ends being pivotable at said joint, and said branch elements having elastically yieldable intermediate portions between said base and said joint, whereby force applied to urge said intermediate portions towards one another will cause said opposing hooked ends to separate relative to one another to thereby permit the relative placement of said insert element therebetween.

5,309,951

CONTACT DROP WIRE FOR AN ELECTRIC WARP STOP

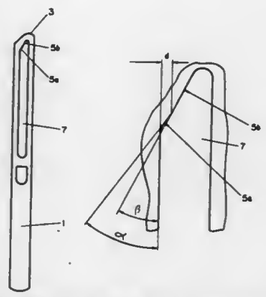
Ernst Steiner, Richterswil, Switzerland, assignor to Grob & Co., Horgen, Switzerland

Filed Jun. 15, 1992, Ser. No. 897,923

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119550

Int. Cl.[5] D03D *51/20*

U.S. Cl. 139—368 **5 Claims**



1. A contact drop wire for an electric warp stop, comprising an elongated body having a logitudinal axis, a chamfered head and a contact rail slot, the head having a sloped inner edge facing the slot whose incline is defined by continuous first and second differently chamfered sections, said first section being oriented at an angle β of between 20° and 28° to said longitudinal axis and said second section being oriented at an angle α of 30° to said longitudinal axis.

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5,309,952

ELECTRO MAGNETIC SHEDDING DEVICE FOR A TEXTILE MACHINE

Francisco Speich, Glpf-Oberfrick, Switzerland, assignor to Textilma AG, Switzerland

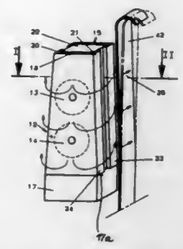
PCT No. PCT/CH92/00042, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO92/16679, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 2, 1992, Ser. No. 946,312

Claims priority, application Switzerland, Mar. 13, 1991, 731/91

Int. Cl.[5] D03C *3/20*

U.S. Cl. 139—455 **17 Claims**



1. A shedding device for textile machines, specifically jacquard machines, comprising oppositely movable lifting blades (41) and pulling elements (42) which are reciprocally movable between a lower shed position and an upper shed position and which are interconnected in pairs by a kinematic connecting member (1), said kinematic connecting member (1) being connected through a pulley block (2) to a heddle (7), a retention device (12) which comprises at least one electromagnet, said retention device (12) being located at the lower shed position and between the pulling elements (42) to control the pulling elements (42) in accordance with a pattern program in such a manner that the pulling element resting in its lower shed position on a detent (51) of the lifting blade (41) can be brought into or out of engagement with the lifting blade (41) in order to move the pulling element (42) into the upper shed position or to leave it in the lower shed position, said retention device (12) having a wedge shaped base (17) with a base edge (17*a*) thereat directed toward a harness string (6), said electromagnet having two defined magnet pole areas (23, 24) which are formed at inclined surfaces (20, 21) of said wedge shaped base (17) whereby the retention device (12) is arranged in such a manner that the inclined surfaces (20, 21) are located opposite the pulling elements (42), an air gap (A) of maximal 1 mm is present at a path of movement of the pulling elements (42) below the base edge (17*a*) formed by the inclined surfaces, each pulling element (42) has a strip-like form and a guiding portion (47) for guiding said pulling element (42) below said retention device (12) in an opening (50) of an abutment board (49), and each pulling element (42) has a coupling portion (46) which is operatively connected to the electromagnet (13, 14) in order to couple or uncouple each pulling element (42) relative to its associated lifting blade (41).

5,309,953

ENCLOSURES FOR ELECTROMAGNETS OF SHED-FORMING ASSEMBLIES

Dario Bassi, Chaponnay, and Damien Bouchet, Decines, both of France, assignors to Staubli-Verdol S.A., Chassieu, France

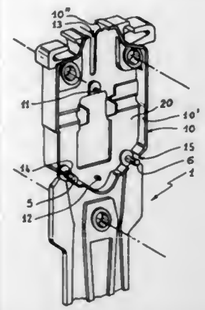
Filed Apr. 23, 1993, Ser. No. 51,392

Claims priority, application France, Apr. 30, 1992, 92 05612

Int. Cl.[5] D03C *3/20*

U.S. Cl. 139—455 **7 Claims**

1. In a device for forming a shed in a weaving loom which includes a plurality of assemblies each of which includes two movable hooks joined by a funicular element and which are selectively engagable by retaining hooks having first portions thereof mounted between a pair of partitions and second portions for engaging the movable hooks, the retaining hooks being controlled by an electro-magnet means mounted between the pair of partitions and intermediate the first portions of the retaining hooks, and wherein the partitions have opposing faces defined by lateral, upper and lower edges, the improvement comprising; enclosure means for substantially sealing each electro-magnet means from ambient atmosphere between each pair of partitions to thereby prevent contamination of the electro-magnet means.



5,309,954

METHOD FOR FORMING WIRE EYES

Daniel J. Franssen, 6666 State Rd. BB, Washington, Mo. 63090

Filed Sep. 1, 1992, Ser. No. 938,717

Int. Cl.[5] B21F *1/06*

U.S. Cl. 140—104 **3 Claims**



1. A method for forming an eye on a stripped end of a stiff insulated wire a selected distance from an end of insulation on said wire which comprises inserting the stripped end axially into an end opening of a tubular shank of a hand tool a preselected distance, bending said stripped end in the tubular shank by moving said tool while holding an end portion of said wire, said bending being effected by bending the wire at least ninety degrees, sliding the tool a slight distance toward the end of the wire and forming a second bend until a second substantially ninety degree bend is formed, inserting the bent end of said stripped wire into a side opening of said shank adjacent an end of the shank, both of said openings being of substantially the same size to receive loosely the stripped end of the wire, and forcefully bending said end of the stripped wire into the form of an eye.

5,309,955

PROCESS AND DEVICE FOR ADJUSTING THE QUANTITIES OF PRODUCT DOSED AND DISPENSED BY A DOSER-DISPENSER

Roland Torterotot, Longvilliers, France, assignor to Erca Holding, Cedex, France

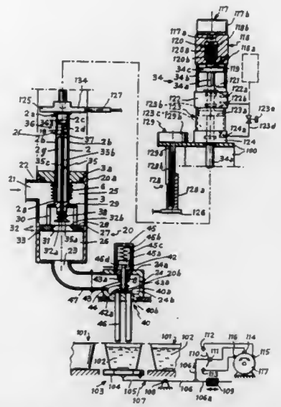
PCT No. PCT/FR91/00614, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO92/02414, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 25, 1991, Ser. No. 844,671

Claims priority, application France, Aug. 8, 1990, 90 10143

Int. Cl.[5] B65B *1/04*

U.S. Cl. 141—1 **24 Claims**



1. A process for adjusting the quantities of a liquid or pasty product dosed and dispensed by doser-dispensers, incorporated in an installation for packing dosed product in recipients made by thermoforming a thermoplastic web that are advanced with respect to said doser-dispensers, the doser-dispensers being arranged in a row extending above the thermoplastic web and transversely with respect to the direction of advance of said web containing successive transverse rows of recipients parallel to the doser-dispensers, the recipients advancing step by step with said web in the direction of advance thereof, each doser-dispenser being of the type comprising:

a first cylinder enclosure having an upper chamber, a lower dosing chamber, a doser piston and an admission valve, said upper chamber having a supply conduit for the product to be dosed, said dosing chamber having an outlet, said doser piston sliding tightly in said first enclosure and separating said upper chamber from said dosing chamber, the doser piston having a central passage which constitutes an admission valve seat in said upper chamber, said admission valve movably mounted to open and close said central passage, said doser piston being movable in said first enclosure between an ascending end-of-stroke position corresponding to an upper position of the doser piston and a descending end-of-stroke position corresponding to a lower position of the doser piston, at least one of the end-of-stroke positions being adjustable,

a first control tube, and a first control jack having a first piston, a first cylinder and a rod, said first control tube penetrating tightly in said first enclosure and being fixed in said first enclosure in said doser piston and outside said first enclosure to said rod and said piston of said jack, said cylinder of the first control jack being mounted on the first enclosure,

a second control tube, and a second control jack having a second piston slidably mounted in said first control tube, said second control tube having a lower end and an upper end, said lower end penetrating tightly in said first enclosure, being fixed to said admission valve and being guided in said first control tube, said upper end being fast with said second piston of the second control jack, said second control jack being formed in said first control tube,

a dispenser chamber, and an ejection valve having a flap and at least one ejection pipe, said dispensing chamber being connected to said outlet of the dosing chamber and to said at least one ejection pipe, said flap of the ejection valve being adapted to obturate said at least one ejection pipe and means for controlling said first jack, said second jack and said ejection valve such that when said doser piston moves during an ascending stroke, said ejection valve is closed and said admission valve is open to transfer the product from the upper chamber to the dosing chamber and when said doser piston moves during a descending stroke, said admission valve is closed and said ejection valve is open to transfer a determined quantity of product in the dosing chamber to the ejection pipe while simultaneously admitting another quantity of product into said upper chamber, said process comprising the following steps:

providing a standard value for the weight of at least one recipient filled with the product, and providing a limit value;

measuring the actual weight of at least every nth one of the recipients filled by the same doser-dispenser with a dosed quantity of the product, the number n being an integer between 1 and 1000,

comparing said actual weight measured with said standard value, and

adjusting said at least one end-of-stroke position of the doser piston to increase or decrease the stroke of said doser piston when the difference between the actual weight measured and the standard value exceeds said limit value and,

effecting said adjusting, step by step, during operation of the doser-dispenser until said difference disappears.

5,309,956

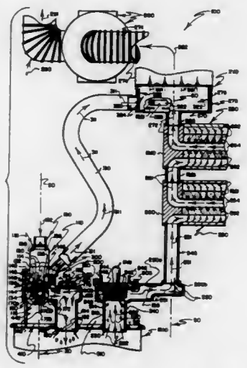
SYSTEM FOR PUNCTURING AEROSOL CANS, COLLECTING LIQUID CONTENTS, AND FILTERING ENVIRONMENTALLY OBJECTIONABLE CONSTITUENTS FROM RELEASED GASES

Louis G. Hajma, 24800 Emery Rd., Warrensville Hts., Ohio 44128

Filed Jun. 9, 1993, Ser. No. 73,801

Int. Cl.[5] B65B *31/00*; B67B *7/24*

U.S. Cl. 141—7 **61 Claims**



1. A method for puncturing aerosol spray cans, one at a time to discharge contents therefrom, for collecting liquid contents

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that discharge from the punctured cans for environmentally appropriate disposal, and for filtering gaseous contents that discharge from the punctured cans to remove environmentally objectionable constituents therefrom before releasing the filtered gas to atmosphere, comprising the steps of:

a) providing workstation means including structure for defining a workstation for receiving and guiding upright-oriented aerosol spray cans, one at a time, to a predetermined workstation location 1) wherein peripheral portions of the bottom end region of each received can are substantially centered about an imaginary vertical center axis that extends substantially centrally through the workstation, and 2) wherein peripheral portions of the bottom wall of each received can are centered and seated atop an annular resilient seal that forms a part of said structure and is positioned by said structure to present a upwardly facing seal surface that is substantially centered about said center axis and that extends substantially horizontally for engaging said peripheral portions of the bottom wall of each received can in a substantially contiguous ring-shaped region of engagement that encircles said center axis substantially concentrically at a location that surrounds a center opening that is defined by the annular resilient seal;

b) providing clamping means at a location along said center axis that is spaced above and overlies said workstation location for engaging upper end portions of each aerosol spray can that is received at the workstation location for exerting downwardly directed force on each such received can to clamp the received can in position at the workstation location, with said peripheral bottom wall portions of the clamped can being pressed into firm sealing engagement with said upwardly facing seal surface to form an uninterrupted ring-shaped seal between the seal surface and the bottom wall of the clamped can along said substantially contiguous ring-shaped region of engagement;

c) providing puncturing means that is operable to extend a pointed piercing pin upwardly along said center axis and through the center opening from a retracted position located beneath the upwardly facing seal surface to an extended position located above said upwardly facing seal surface to puncture the bottom wall of each aerosol spray can that is received and clamped in position at said workstation location, and to retract the pointed piercing pin along said center axis to said retracted position after effecting each such puncture, whereby contents from each punctured can that is received and clamped in position at the workstation location are caused to discharge through the center opening;

d) providing discharge passage means for receiving contents that discharge through the center opening from aerosol spray cans that are positioned, clamped and punctured one at a time at the workstation location for ducting such contents into a receiving container that has a lower region wherein discharged liquid contents can be collected for environmentally appropriate disposal, and having an upper region into which discharged gaseous contents can be received;

e) providing filtering means for communicating with upper region of the receiving container for ducting gaseous contents discharged from punctured aerosol cans through filter means that is capable of removing environmentally objectionable constituents therefrom;

f) providing reduced pressure plenum means 1) for defining a reduced pressure plenum wherein the gaseous contents of the plenum are maintained a pressure that is less than ambient atmospheric pressure, 2) for communicating with the filter means to receive filtered gas therefrom, and 3) for discharging contents of the reduced pressure plenum to atmosphere while maintaining said less than ambient atmospheric pressure within the plenum;

g) providing emissions collection means adjacent the workstation location for ducting a flow of ambient air from the region located above the upwardly facing seal surface and into the reduced pressure plenum so that, if gaseous emissions from contents that are discharged from aerosol spray cans at the workstation location should rise from the workstation location, such emissions will be entrained in said flow of ambient air that is ducted into the reduced pressure plenum; and,

h) processing aerosol spray cans, one at a time, to puncture each such can and to withdraw and treat its contents by 1) positioning aerosol spray cans, one at a time, so as to be received and centered about said center axis at the workstation location, 2) operating the clamping means to clamp each spray can that is positioned at the workstation location so that peripheral portions of the bottom walls of each such can are held in firmly sealed engagement with the upwardly facing seal surface, 3) operating the puncturing means to extend and retract the piercing pin to puncture the bottom walls of clamped cans and to thereby cause contents of each punctured can to discharge through the center opening and to be ducted through the discharge passage means into the receiving container, 4) collecting liquid contents in a lower region of the receiving container, 5) drawing gaseous contents from the upper region of the receiving container through the filtering means to filter environmentally objectionable constituents therefrom, 6) ducting filtered gas from the filter means into the reduced pressure plenum for discharge to atmosphere, and 7) drawing into the reduced pressure plenum a flow of ambient air through the emissions collection means from the region located above the upwardly facing seal surface so as to entrain in said flow of ambient air such gaseous emissions as may emanate from the workstation location from among contents discharged from aerosol cans that are punctured at the workstation.

5,309,957

FUEL DISPENSING APPARATUS CAPABLE OF AUTOMATICALLY DISCRIMINATING FUEL SORT

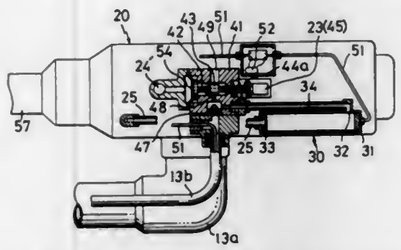
Yasushi Saisuu, Yokohama, Japan, assignor to Tatsuno Corporation, Tokyo, Japan

Filed Apr. 13, 1993, Ser. No. 45,205

Claims priority, application Japan, Apr. 13, 1992, 4-119657; Oct. 1, 1992, 4-286848

Int. Cl.[5] B65B *1/30, 3/26*

U.S. Cl. 141—83 **6 Claims**



1. A fuel dispensing apparatus capable of discriminating a sort of fuel, comprising a main body which is provided with means for supplying air under pressure to a fuelling nozzle which is formed with an opening at the tip end thereof and comprises a gas sensor chamber communicating with said opening and having a gas sensor contained therein, means connected to said chamber for allowing supplied air to burst into the atmosphere through an air ejecting port so as to generate negative pressure in the chamber connected thereto, and a change-over valve connected to said means having a rod fixedly mounted thereon with a valve body which is movable between a first position where said air ejecting port is closed thereby so that supplied air is compelled to flow into the gas sensor chamber for sweeping air contained therein and a second position whereby said air ejecting port is opened so that fuel vapor may be sucked from said gas sensor chamber by said generated negative pressure so that the gas sensor may identify a fuel sort by virtue of particular properties thereof.

5,309,958

FILLING APPARATUS FOR VISCOUS FOODS

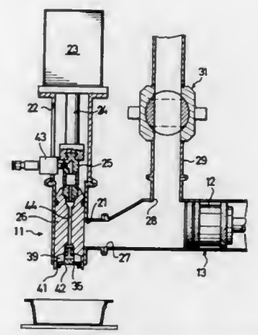
Michio Ueda; Takahiro Sawabuchi, and Masakatsu Kondo, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Itano, Japan

Filed Oct. 21, 1992, Ser. No. 964,013

Claims priority, application Japan, Oct. 23, 1991, 3-086552[U]

Int. Cl.[5] B65B *3/04, 3/12, 3/14;* **B67C** *3/02*

U.S. Cl. 141—90 **6 Claims**



1. A filling apparatus for viscous foods comprising:

a vertical tubular filling nozzle having a flow inlet formed in a tubular wall close to a lower end thereof and a piston-incorporating metering cylinder in communication with the flow inlet, and

a plunger accommodated in the filling nozzle so as to open or close the flow inlet,

the plunger having a skirt at a lower-end peripheral portion thereof, a food adhesion preventing member accommodated inside the skirt, an air discharge annular clearance formed between the skirt and the preventing member for blowing off adhering food, and a recess formed in a lower face of the preventing member and providing an air reservoir for preventing adhesion of the food.

5,309,959

DISPENSING APPARATUS

Kevin Shaw, Great Sutton, and Robert Hardie, Warrington, both of United Kingdom, assignors to British Nuclear Fuels plc, Warrington, England

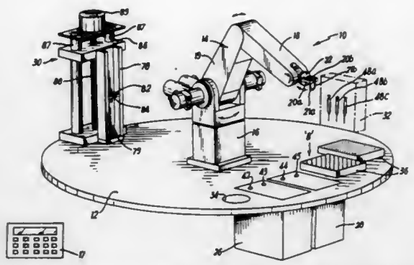
Filed Aug. 24, 1992, Ser. No. 933,373

Claims priority, application United Kingdom, Aug. 19, 1992, 9217616

Int. Cl.[5] B65B *43/50;* **G01N** *1/14*

U.S. Cl. 141—130 **17 Claims**

1. A dispensing apparatus comprising a base, a robot device on the base, the robot device having gripping means, a plurality of stations at the base, each station being arranged to cooperate with the robot device in a sequence of operations such as to produce a measured pharmaceutical dose from a supply of a pharmaceutically acceptable substance, one of the stations comprising means for locating in parallel a plurality of hypodermic syringes for containing the substance and for operating at least one of the syringes, and said one station including means for locating at least one container relative to said one syringe and for producing relative movement between said one syringe and said at least one container, thereby to arrange for



the syringe to penetrate the container and to withdraw from the container.

5,309,960

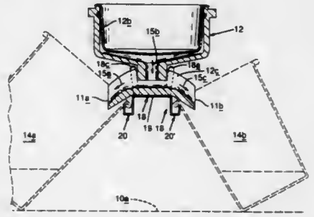
CUP HOLDER FOR USE IN A BEVERAGE PROCESSING MACHINE

David D. Boyd, Portland, Oreg., assignor to Boyd Coffee Company, Portland, Oreg.

Filed May 19, 1993, Ser. No. 64,821

Int. Cl.[5] A47J *31/54;* **B67D** *1/12*

U.S. Cl. 141—247 **10 Claims**



1. A cup holding device for use in a beverage processing machine which expels fluid into a lipped cup through a spout, the device comprising:

a base configured for securement to the machine's spout;

a cup-gripping member including a first side wall which extends downwardly from said base, a floor which extends generally horizontally from said first side wall, and a second side wall spaced from said first side wall, said second side wall extending upwardly from said floor and terminating arcuately to provide a seat for a cup's lip.

5,309,961

NOZZLE FOR FILLER PIPES IN PACKAGING MACHINES

Rickard Franke, Buffalo Grove, Ill., and Bengt Bengtsson, Eden Prairie, Minn., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Apr. 14, 1993, Ser. No. 45,701

Claims priority, application Sweden, Apr. 27, 1992, 9201307

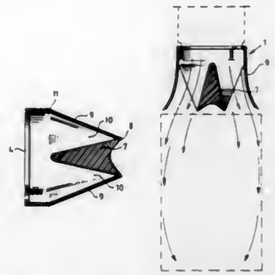
Int. Cl.[5] B65B *3/04;* **B65D** *5/72*

U.S. Cl. 141—286 **17 Claims**

1. A nozzle for filler pipes used in packaging machines in which open-topped packages are filled with a determined quantity of liquid contents, the nozzle being manufactured from flexible material and including at least two movable flaps disposed to be moved from a closed position to an open posi-

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tion by liquid contents flowing through the nozzle, said nozzle having at least one central, transverse rigidifying rib which



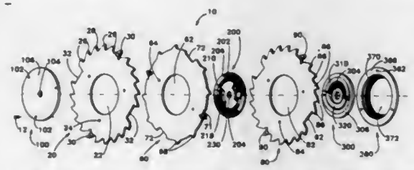
forms at least two discrete outlets, each of said outlets being positioned between the rib and one of the at least two flaps.

5,309,962

MULTIPLE SAW BLADE ADJUSTABLE DADO CUTTER ASSEMBLY INCLUDING A CAM ASSEMBLY AND NESTABLE DADO BLADES

Wilfred M. McCord, Jr., and David T. Brutscher, both of Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.

Filed May 13, 1993, Ser. No. 58,624
Int. Cl.[5] B27G *13/00*; B27B *33/00*
U.S. Cl. 144—237 **12 Claims**



1. An adjustable dado cutter mountable onto an arbor, the dado cutter comprising:

a. at least two circular saw blades, each of said blades having an equal diameter, each of said blades having at least one planar saw tooth and at least one off-set saw tooth, each of said blades having at least one circumferential gullet, where said at least two circular saw blades can be nested such that said at least one off-set saw tooth of one of said at least two circular saw blades can be received by said at least one circumferential gullet of another of said at least two circular saw blades; and,

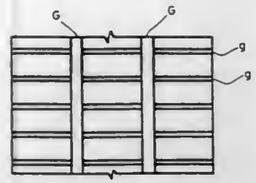
b. a cam assembly attached to said at least two circular saw blades, said cam assembly having an axial arbor bore therethrough, said cam assembly being adjustable to space said at least two circular saw blades for a desired dado cutting width, said cam assembly maintaining said at least two saw blades in a parallel relationship transverse to said axial arbor bore.

5,309,963

PNEUMATIC TIRE

Kiichiro Kakumu, Kobe; Masaki Shiraishi, Hiroshima; Hiroyuki Nakagawa, Tsuyama; Hiroaki Sakuno, Fukushima; Yoshiichiro Iwahashi, and Shigeaki Suzuki, both of Wako, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Oct. 9, 1990, Ser. No. 594,166
Claims priority, application Japan, Oct. 12, 1989, 1-265495
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R **4 Claims**



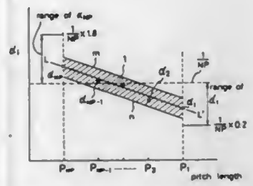
1. A pneumatic tire having in a tread part with first and second tread edges, a tread pattern divided by only first and second circumferential grooves extending substantially straight in the circumferential direction of a tire and at least eighty five lateral grooves, each of said lateral grooves extending between said first tread edge and said second tread edge and crossing said circumferential grooves, wherein the quotient S_T/S of the total groove area S_T which is the sum of a circumferential groove area S_G and a lateral groove area Sg in a ground contact surface S when the tire is mounted on a standard rim, inflated with a normal internal pressure and loaded with a normal load, to said ground contact area S, is in a range from 0.15 to 0.25, and the quotient Sg/S_G of said lateral groove area Sg to said circumferential groove area S_G is in a range from 0.33 to 0.53.

5,309,964

PNEUMATIC TIRE HAVING TREAD PATTERN ARRAYED FOR REDUCED NOISE

Tomohiko Kogure, Minami Ashigara, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 590,442, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 348,933, May 8, 1989, abandoned. This application Jul. 3, 1991, Ser. No. 725,109
Claims priority, application Japan, May 11, 1988, 63-112544
Int. Cl.[5] B60C *11/03*
U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire having a tread surface comprising: two to ten periods of 3 to 8 types of tread design elements having pitches different from each other in the length over the full circumference of the tread surface and, when the length of the pitch of the i-th type is assumed to be P_i, the total number of said pitches appearing on the whole circumference of the tire is assumed to be N_i, the proportion α_i of the pitch of the i-th type is represented by the formula $\alpha_i = (P_i \times N_i)/\text{whole perime-}$

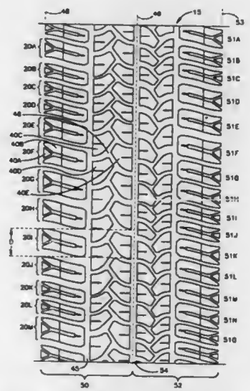
ter and NP is the number of types of the pitch length, wherein on a graph showing pitch lengths on an abscissa thereof and proportions of α_i of respective pitch lengths to a whole circumferential length of a tire on an ordinate of said graph, a line LL' is shown by connecting a proportion α_1, within a range of $(1/NP)\times 0.2 \sim (1/NP)$, of a pitch of a maximum length P_1 to the whole circumferential length of the tire and a proportion α_{NP}, within a range of $(1/NP) \sim (1/NP)\times 1.8$, of the pitch of pitches of a minimum length P_{NP} to the whole circumferential length of the tire, and the line LL' is then movable to positions at ± 10% of each of the proportions α_1 and α_{NP} to depict lines m and n, wherein the proportions α_1 to α_{NP} lie within a range between lines m and n, wherein the α_i value increases as pitch length is reduced.

5,309,965

MULTIPLE PITCH SEQUENCE OPTIMIZATION

Thomas A. Williams, North Canton, Ohio, assignor to General Tire, Inc., Akron, Ohio

Filed Aug. 20, 1991, Ser. No. 747,693
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R **15 Claims**



1. A tire having a tread with a plurality of base pitches arranged in at least two separate circumferential sections around the circumference of the tire, the base pitches in each circumferential section having at least two different pitch lengths which form preselected pitch sequences about the circumference of the tire, the pitch sequence in each of the circumferential sections being arranged relative to each other according to the following technique:

$$Ydiff = \sum_{x=0}^{Circ.} ABS[YA - YB]$$

Where:

x = Distance around tire circumference stepped in preselected increments

Circ. = Tire circumference

ABS = Absolute Value

YA = Pitch length in a pitch sequence A of a first circumferential section at a given x value

YB = Pitch length in a pitch sequence B of a second circumferential section at a given x value

Ydiff = Total difference between height of individual pitch sequence rectangle functions

Where a higher Ydiff indicates better match,

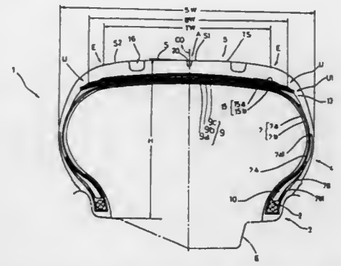
and the relative arrangement of the pitch sequences in the circumferential sections have the greatest Ydiff value compared to all other incremental stepped arrangements of pitch sequences for the tire tread.

5,309,966

PNEUMATIC RADIAL TIRE WITH HIGH CORNERING AND STEERING STABILITY

Kenji Saito; Akira Kajikawa, and Kazuo Asano, all of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 982,501, Nov. 27, 1992, which is a continuation-in-part of Ser. No. 598,390, Oct. 18, 1990, Pat. No. 5,222,537. This application Jul. 24, 1993, Ser. No. 91,814
Claims priority, application Japan, Oct. 19, 1989, 1-272460; Dec. 29, 1989, 1-341264
Int. Cl.[5] B60C *3/00, 3/04*
U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire comprising a carcass in radical structure extending from a tread part through side wall parts and folded at each edge around a bead core of a bead part, and a belt layer composed of more than two belt plies disposed radially outside said carcass, said belt layer having a pair of axial outer edges, each of said pair of axial outer edges being defined where the two widest belt plies overlap, wherein;

a tread surface is formed along a specific curvature plane which includes a first arc with the curvature radius R1 having a center on the tire's equatorial plane and passing through the tire's equatorial point, a second arc with the curvature radius R2 having a center on the tire's equatorial plane and intersecting with said first arc at an intersection distance from the tire's equatorial plane by 0.2 to 0.25 times the tire width SW, and a third arc with the curvature radius R3 passing through a ground contact outer edge point of the ground contact surface in the axial direction of a tire when a standard load is applied and a belt intermediate height point on the tread surface,

said belt intermediate height point on the tread surface being defined as a point at which a tire axial direction line crosses the tread surface extending in parallel with the tire's axis from a thickness center of one of said pair of axial outer edges; and

the tread surface is provided with a pair of main circumferential grooves, one of said main circumferential grooves extending on each side of the tire's equatorial plane at said intersection of the first arc and the second arc in the tire circumferential direction for dividing the tread surface into a crown part and an outer shoulder part, each said main circumferential groove having a groove width of 0.06 to 0.10 times the tire width SW, and with a plurality of narrow lateral grooves crossing the tire circumferential direction for dividing the crown part and the shoulder parts into a plurality of blocks, wherein

the specific curvature plane has a curvature radius ratio R2/R3 in a range from 4 to 12, and a curvature radius ratio R1/R2 in a range from 1.6 to less than 2.6 when the aspect ratio H/SW of the tire sectional height H to the tire width SW is more than 0.55 and less than 0.70.

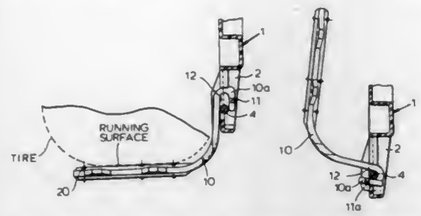
VOL 1162 ISS 2 MAY 10 1994 UMI

5,309,967

ANTISKID DEVICE FOR VEHICLE WHEELS

Werner Preusker, Sauldorf, Fed. Rep. of Germany, assignor to Confon AG, Rheineck, Switzerland

Filed Jan. 15, 1993, Ser. No. 4,999
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203612
Int. Cl.[5] B60C *27/02*
U.S. Cl. 152—216 7 Claims



1. An antiskid device for vehicle wheel having a running surface, the device comprising:

a retaining disk having a central axis and mountable coaxially with the wheel from one side thereof;

a plurality of projections formed at equal angular distances on and extending radially outwardly from the retaining device, each of the projections being provided with:

a respective recess facing the wheel and being formed with a respective pair of lateral surfaces extending radially outwardly toward the running surface and converging axially outwardly, and

a respective joint extending perpendicular to a radius of the respective projection transverse to the respective pair of lateral surfaces;

a respective arm extending transversely to a running direction of the wheel and formed with a respective inner end mounted on each of the projections and with a respective outer end extending across the running surface of the wheel; and

respective antiskid means for preventing a vehicle from skidding and formed on the respective outer end of the respective arm, each arm being pivotally mounted on the respective joint and also so as to pivot about a respective pivot axis parallel to the central axis, the lateral surfaces of the respective recess engaging the inner end for guiding same in an operative position of the respective arm upon engaging of the respective antiskid means with a ground.

5,309,968

TIRE CHAIN AND THE METHOD OF MOUNTING IT

Hirokazu Yoshida, 10-415, 13 Amijima-cho, Miyakojima-ku, Osaka-shi, Osaka 534, Japan

Filed Oct. 29, 1992, Ser. No. 968,574
Int. Cl.[5] B60C *27/10*
U.S. Cl. 152—219 4 Claims

1. A tire chain comprising an inside annular body having two opposite ends; and at least one contractile connector for connecting the ends of the inside annular body, each said contractile connector including

an elastic body having two ends connected to one of the ends of the inside annular body and to the other of the ends of the inside annular body, respectively,

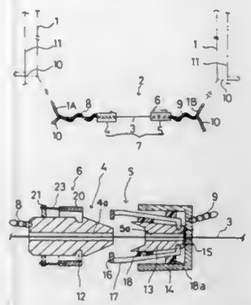
a first connecting member which is movable along said elastic body,

a first connecting chain having ends connected to said one of the ends of the inside annular body and to the first connecting member, respectively, so as to connect said first connecting member to said annular body,

a second connecting member which is movable along said elastic body, said first and said second connecting members being detachably engageable with one another,

a second connecting chain having ends connected to said other of the ends of the inside annular body and to the second connecting member, respectively, so as to connect said second connecting member to said annular body, and

a connecting and fixing tool including a lock mechanism which locks the first connecting member and the second connecting member together in a connected state and which maintains the connected state;



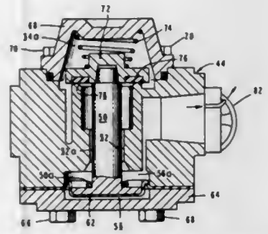
wherein when the tire chain is mounted on a tire, said one of the ends of the inside annular body and said other of the ends of the inside annular body are connected via the first connecting member, the first connecting chain, the second connecting member, the second connecting chain and the connecting and fixing tool.

5,309,969

APPARATUS FOR REPEATABLE ADJUSTMENT OF TIRE PRESSURE

Chander Mittal, 2363 S. Arcdale Ave., Rowland Heights, Calif. 91748

Filed Dec. 17, 1991, Ser. No. 809,584
Int. Cl.[5] B60C *23/00*
U.S. Cl. 152—415 6 Claims



1. An apparatus for adjusting the air pressure within the pneumatic tires of a vehicle having a plurality of tires, comprising:

(a) a source of air under pressure;

(b) a manifold assembly including:

(i) a manifold having a chamber;

(ii) a first valve connected to said manifold and to said source of air under pressure, said first valve being operable to place said chamber in communication with said source of air under pressure; and

(iii) a second valve connected to said manifold assembly in communication with said chamber and with atmosphere, said second valve being operable to place said chamber in communication with atmosphere;

(c) transducer means for measuring the pressure within said chamber and for generating a signal corresponding to the measured pressure;

(d) a valve means disposed between said chamber and each of the pneumatic tires of the vehicle for placing each of said pneumatic tires in fluid communication with said chamber, each said valve means comprising:

(i) a valve body having a valve seat and a first chamber defined by a sloping wall and a second chamber disposed proximate said first chamber;

(ii) a piston reciprocally movable within said valve body relative to said first and second chambers;

(iii) a poppet movable relative to said piston within said first chamber both longitudinally and laterally relative to said valve seat in a wobbling action;

(iv) a resiliently deformable diaphragm connected to said valve body and to said piston for movement with said piston; and

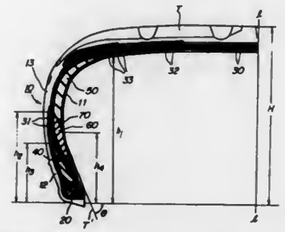
(e) control means connected to said transducer means, and to said first and second valves for receiving said signals generated by said transducer means and for operating said first and second valves in response to said signals in a manner such that said first valve is modulated so as to cause discrete pulses of air under pressure to be directed toward each of said valve means, whereby said poppet thereof will commence said wobbling action causing a self-cleaning wiping action between said valve seat and said poppet.

5,309,970

PNEUMATIC SAFETY TIRES

Misao Kawabata, Tokorozawa; Yutaka Yamaguchi, Urawa, and Takuo Yasuda, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,192
Claims priority, application Japan, May 22, 1991, 3-117572
Int. Cl.[5] B60C *17/00*
U.S. Cl. 152—517 4 Claims



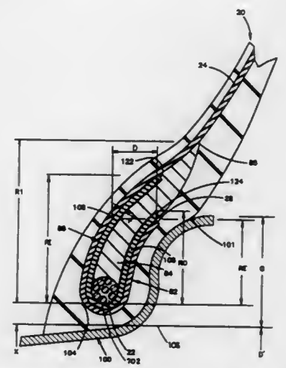
1. A pneumatic tire comprising; a cylindrical tread portion, a pair of sidewall portions radially inwardly extending from opposite ends of the tread portion and having respective bead rings buried at tip ends thereof, respectively, a radial carcass toroidally extending from one bead ring to the other bead ring through one sidewall portion, the tread potion and the other sidewall portion and also reinforcing the sidewall portions and the tread portion, each of opposite end portions of the carcass being turned u around the bead ring axially from inside to outside, rubber fillers each arranged between the turned-up portion and a main body of the carcass and extending from above the bead ring toward the tread portion such that the radially sectional shape of the rubber filler becomes narrower toward the tread portion, and a pair of thick rubber reinforcement layers arranged on respective axially inner sides of the carcass in the sidewall portions, wherein each of the rubber reinforcement layers is constituted by first and second reinforcing rubber layers, the first reinforcing rubber layer occupying a radially outer side of the sidewall portion and the second reinforcing layer being continued to a radially inner side of the first reinforcing rubber layer through an inclined joint surface and arranged on a radially outer side of the rubber filler through the main body of the carcass, and wherein a Shore A hardness of the first reinforcing rubber layer is less than the Shore A hardness of the second reinforcing rubber layer and the shore A hardness of the rubber filler is greater than that of the second reinforcing layer, and the rubber volumes of the rubber filler, the second reinforcing layer and the first reinforcing layer successively increases, wherein the volumes of the rubber filler, the second reinforcing rubber layer and the first reinforcing rubber layer of the total reinforcing rubber of the filler are 10 to 20%, 15 to 35% nd 45 to 70%, respectively.

5,309,971

TIRE FLIPPER STRUCTURE

William C. Baker, and Damon L. Christenbury, both of Greenville, S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Jun. 12, 1992, Ser. No. 897,727
Int. Cl.[5] B60C *15/06*
U.S. Cl. 152—541 13 Claims



1. An improved radial tire comprising a pair of axially spaced apart beads, a carcass ply extends between and is secured at axially opposite end portions to a respective one of said beads and a pair of bead filler, each of said pair of bead fillers is located radially outward of a respective bead which is located by a bead reference parallel to a rotational axis of the tire at the inner periphery of the bead and tapers to an apex, wherein the improvement comprises:

a pair of flippers with a first hysteretic property, each flipper replacing a predetermined portion of a respective one of said bead fillers having a second hysteretic property, each flipper having central portion partially enveloping a respective bead and a pair of leg portions engaging a respective bead filler, said leg portions extend radially outward from the bead reference to a location radially inward of said apex, said replacing of the predetermined portion being defined as specifying an axial distance between the carcass ply and a turnup portion of said carcass ply at a radial distance equal to the extent of an axial end portion of said turnup portion, said first hysteretic property being less than said second hysteretic property, whereas said replacing of the predetermined portion of said bead filler enables the reduction of rolling resistance of said tire by at least 2.6 percent without decreasing the vehicle ride comfort characteristics of said tire.

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5,309,972

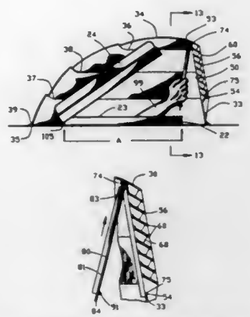
AIR VENT COVER

Allen C. Thomas, 4510 W. Alva, Tampa, Fla. 33614

Continuation of Ser. No. 877,732, May 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 659,937, Feb. 25, 1991, Pat. No. Des. 330,415. This application Jun. 22, 1993, Ser. No. 81,067

Int. Cl.[5] A47H *1/00*

U.S. Cl. 160—90 11 Claims



1. A cover for covering an aperture disposed in a horizontal surface, the cover having a substantially vertical sidewall means and a top surface with a lip defining a cover opening within the sidewall means, and means for affixing the cover to the horizontal surface;

the improvement comprising:

a first and a second guide rail extending from the cover;

said first and second guide rails being disposed on opposed first and second sides of the cover opening, respectively;

a slot defined in the cover and being disposed along a third side of the cover opening;

a frame defining a screened window; and

fastener projections extending outwardly from said frame enabling said frame to be inserted within said slot with a first and second side of said frame being guided by said first and second opposed guide rails and with said fastener projections engaging the lip defining the cover opening for retaining said frame with said screened window shielding the cover opening.

5,309,973

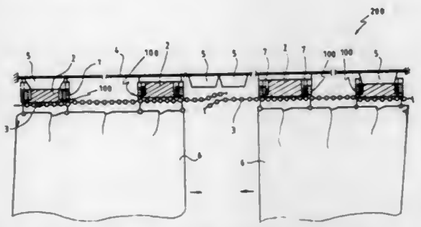
CURTAIN CARRIER SLIDE STRUCTURE

Su-Chin Huang, No. 46, Lane 315, Hwahsing St., Chu-Pei City, Hsincha Hsien, Taiwan

Filed Jun. 14, 1993, Ser. No. 77,247

Int. Cl.[5] A47H *1/00*

U.S. Cl. 160—126 2 Claims



1. In a curtain assembly comprising an elongated track having a first position and a second position along the length thereof and at least a curtain which has a width shorter than a section of the length of said track and is slidably attached to said track by a number of carrier slides which are movable along the track, said carrier slides having a structure comprising for each of said carrier slides a hollow body having an open top and bottom sides to slidably receive therein a slidable block which is spring-biased toward the top side of the hollow body, said hollow body being slidably mounted to said track to be movable along the length thereof, said hollow body having two opposite end walls each having an upper recess and a lower recess formed thereon, a bead string having a length with a number of beads secured therealong to define bead gaps between the beads, each of said bead gaps being large enough to receive therein one of the end walls so that when said bead string is disposed within said upper recess to have the end walls received within and engaged by the bead gaps of said bead string, said hollow body is movable in unison with said bead string along the length of the track to move said curtain between the first and the second positions along said track, a release block corresponding to each of said carrier slides being securely mounted to said track, said release block being receivable within the upper recesses of said hollow body and having inclined camming surface opposing said slidable block so that when said carrier slide is moved by said bead string along the length of the track to pass over said release block and thus receiving said release block into the upper recesses of said hollow body, the camming surface of said release block pushes the slidable block against the biasing spring toward the bottom side of said hollow body to release the bead string out of engagement with the lower recesses of said hollow body.

5,309,974

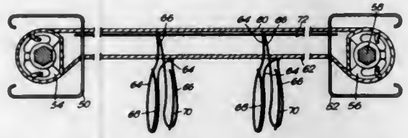
VENETIAN BLINDS

Donald E. Fraser, Owensboro, Ky., assignor to Hunter Douglas Inc., Upper Saddle River, N.J.

Division of Ser. No. 823,699, Jan. 21, 1992, Pat. No. 5,232,037. This application Apr. 14, 1993, Ser. No. 48,271

Int. Cl.[5] E06B *9/26*

U.S. Cl. 160—176.1 4 Claims



1. A venetian blind comprising a plurality of sets of slat supports, each slat support comprising a ladder comprising first and second longitudinally extending elongate flexible elements, a plurality of longitudinally spaced double rungs, first and second tilt means one at each of two opposite ends of said first and second flexible elements, means mounting-said first and second tilt means whereby said flexible elements extend horizontally, or inclined to the vertical, means guiding said first and second elements whereby said first element forms an upper element and a second element forms a closely adjacent lower element and said double rungs depend downwardly therebelow and a plurality of slats each engaged in a separate one of said double rungs and supported thereby to hang below said first and second flexible elements.

5,309,975

DIFFERENTIAL PRESSURE CASTING PROCESS

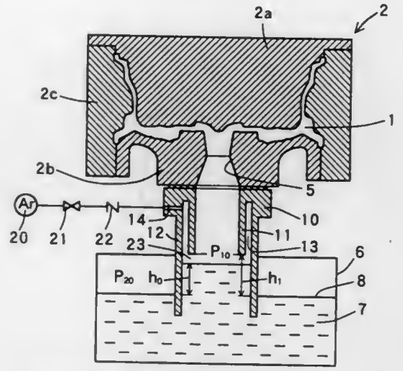
Nobuaki Ohnishi, Ibaragi; Yasuo Iizuka, Saitama, and Yoshihisa Konishi, Tochigi, all of Japan, assignors to Hitachi Metals, Ltd., Chiyoda, Japan

Filed Oct. 20, 1992, Ser. No. 963,489

Claims priority, application Japan, Oct. 22, 1991, 3-304257; Oct. 22, 1991, 3-304258; Nov. 1, 1991, 3-315412

Int. Cl.[5] B22D *18/04*

U.S. Cl. 164—66.1 5 Claims



1. In a casting process which comprises;

employing a split mold defining a cavity when closed and having in its lower portion a gate communicating with said cavity, and a stoke having an upper end connected to said gate and a lower end immersed in a bath of molten active metal or its alloy in a holding furnace,

increasing the pressure of said bath or decreasing the pressure of said cavity to create a pressure difference therebetween to introduce said molten metal or alloy into said cavity, and

allowing said molten metal or alloy in said cavity to solidify to yield a cast product;

the improvement wherein said stoke and said cavity are filled with an inert gas before said molten metal or alloy is introduced into said cavity, and said pressure difference is created at a rate of 0.001 to 0.006 $kgf/cm^2/s$.

3. In a casting process which comprises;

employing a split mold defining a cavity when closed and having in its lower portion a gate communicating with said cavity, and a stoke having an upper end connected to said gate and a lower end immersed in a bath of molten metal or its alloy in a holding furnace,

increasing the pressure of said bath or decreasing the pressure of said cavity to introduce said molten metal or alloy into said cavity,

allowing said molten metal or alloy in said cavity to solidify to yield a cast product, and

opening said mold to remove said product therefrom;

the improvement wherein an inert gas is supplied into said stoke to effect the separation of said molten metal or alloy from said product, and the surface of said separated molten metal or alloy in said stoke is kept above that of said molten metal or alloy in said holding furnace when said product is cooled to solidify and removed from said mold.

4. The process as set forth in claim 3 wherein said bath is reduced in pressure before said inert gas is supplied into said stoke.

5,309,976

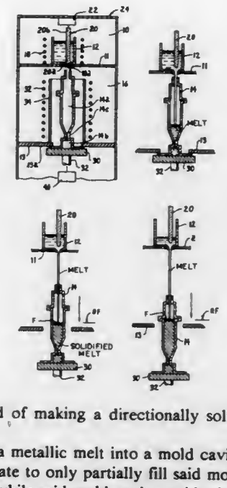
CONTINUOUS POUR DIRECTIONAL SOLIDIFICATION METHOD

Paul D. Prichard, and Paul R. Aimone, both of Muskegon, Mich., assignors to Howmet Corporation, Greenwich, Conn.

Filed Mar. 16, 1993, Ser. No. 33,274

Int. Cl.[5] B22D *25/00, 27/04*

U.S. Cl. 164—457 16 Claims



1. A method of making a directionally solidified casting, comprising:

introducing a metallic melt into a mold cavity at an initial mold fill rate to only partially fill said mold cavity with said melt while said mold cavity resides in a casting furnace, propagating a solidification front in a direction through the melt to provide a solidification rate, and introducing the remaining melt into said mold cavity at a second mold fill rate less than the first mold fill rate as the solidification front propagates through the melt to further fill the mold cavity with the melt, said second mold fill rate corresponding generally to the melt solidification rate.

5,309,977

PERMANENT MAGNET MATERIAL AND METHOD FOR MAKING

Tetsuhito Yoneyama, Narashino; Hideki Nakamura, Narita, and Akira Fukuno, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 755,188, Sep. 5, 1991, Pat. No. 5,209,789. This application Jan. 27, 1993, Ser. No. 9,948

Claims priority, application Japan, Aug. 29, 1991, 3-244476

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—463 13 Claims

1. A method for preparing a permanent magnetic material comprising the steps of melting an alloy composition comprising R which is at least one rare earth element including Y, Fe or Fe and co, and B, and injecting the melt through a nozzle against at least one chill roll rotating relative to said nozzle for contacting the melt with the circumference of the chill roll, thereby quenching the melt from one direction or two opposite directions,

wherein said chill roll includes a base and a surface layer around the base, said surface layer being formed solely of a metal selected from the group consisting of Cr, Ni, Co, Nb, V and alloy there of and having a lower heat conductivity than said base and a thickness of 10 to 100 μm.

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5,309,978

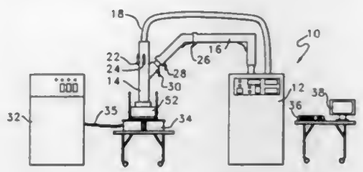
MULTIPLE DEVICE FIXTURE USED IN CONJUNCTION WITH A STANDARD TEMPERATURE FORCING UNIT

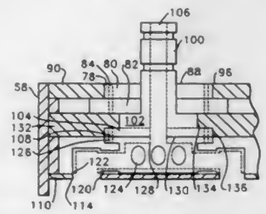
Don E. Noble, Jr.; Sterling T. Grice, both of Odessa, and Craig W. Rhodine, Midland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 825,206, Jan. 24, 1992, Pat. No. 5,220,956. This application Apr. 29, 1993, Ser. No. 54,818

Int. Cl.[5] F28F *7/00*

U.S. Cl. 165—1 **18 Claims**





1. A method of providing conditioned air to two or more electronic devices under test, comprising the steps of:

forming a multiple device fixture;

coupling said multiple device fixture to a temperature forcing unit;

placing said multiple device fixture over said electronic devices under test; and

evenly distributing through ducting conditioned air from said temperature forcing unit through two or more air nozzles to said electronic devices under test.

5. A method comprising the steps of:

providing a temperature forcing unit;

providing a coupling device; and

providing a fixture, including a base and a lid, said coupling device coupling said fixture to said temperature forcing unit, said fixture accurately distributing conditioned air from said temperature forcing unit to multiple locations simultaneously.

5,309,979

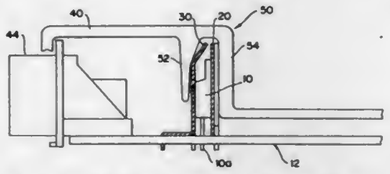
SELF CLAMPING HEAT SINK ASSEMBLY

Eric A. Brauer, Indianapolis, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Jun. 8, 1993, Ser. No. 72,962

Int. Cl.[5] F28F *7/00*; **H05K** *7/20*

U.S. Cl. 165—80.2 **3 Claims**



1. A heat sink for dissipating thermal energy from a heat generating electrical component mounted on a circuit board, said assembly comprising:

a heat sink means for dissipating heat from said electrical component, said heat sink means placed adjacent to said electrical component on a first side thereof;

a resilient means placed adjacent to said electrical component on a second side thereof opposite to said first side; and

biasing means including an angled surface affixed to a housing member, the angled surface engaging said resilient means for applying a biasing force to said resilient means when said housing member is positioned about said heat sink and component, thereby to resiliently press said electrical component against said heat sink means.

5,309,980

DEVICE FOR HEAT SUPPLY BY CONDUCTIVE HEAT TRANSFER

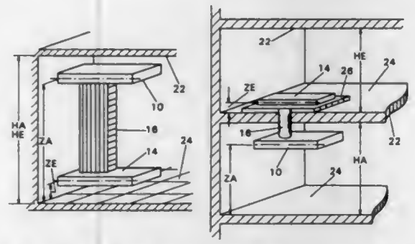
Oscar Mendeleev, Merkaz Klita 64, Mevasseret Zion, Jerusalem 90805, Israel

Continuation-in-part of Ser. No. 732,556, Jul. 19, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,474

Claims priority, application Israel, Apr. 15, 1991, 097846

Int. Cl.[5] F28F *7/00*; **F24J** *3/00*; **F24H** *7/06*

U.S. Cl. 165—53 **6 Claims**



3. A device for heat supply comprising:

a heat absorber having a metal body disposed within a room having a height HA and a floor, the heat absorber having a mass center which is vertically positioned at a height ZA from the floor of the room within which said heat absorber is located, said heat absorber for absorbing accumulated heat in the room;

a heat emitter disposed within a room having a height HE and a floor, the heat emitter having a mass center which is vertically positioned at a height ZE from the floor of the room within which said heat emitter is located, said heat emitter for emitting heat received from the heat absorber; and

a static heat conductor comprising a body of substantially high thermal conductive metal and an outer casing of substantially high thermal insulating material and extending between the heat absorber and the heat emitter, said conductor transferring to the heat emitter substantially all of the heat received by the heat conductor from the heat absorber by conductive heat transfer, wherein the following relationship is satisfied:

$$ZA/HA > ZE/HE.$$

5,309,981

HEATED CABINET

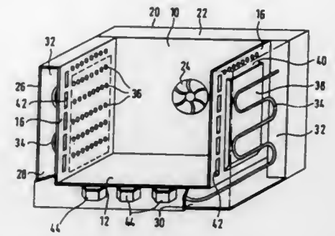
Peter M. Binder, Saentisstrasse 74A, D-7770 Ueberlingen, Fed. Rep. of Germany

Filed May 21, 1992, Ser. No. 886,288

Claims priority, application Fed. Rep. of Germany, May 21, 1991, 4116500

Int. Cl.[5] F24C *7/06*

U.S. Cl. 265—64 **10 Claims**



1. A heating cabinet, comprising:

(a) a cuboid-shaped inner housing having side walls, first and second opposed end walls, a rear wall, a front, and an opening at said front of said inner housing;

(b) a preheating chamber having a U-shaped cross-section comprising opposed vertically extending sections positioned outwardly of said side walls and a horizontally-extending section positioned outwardly of said first end wall;

(c) a heater in said preheating chamber positioned outwardly of and spaced from said side walls and said first end wall;

(d) a door for closing said opening;

(e) an air chamber positioned rearwardly of said rear wall, said air chamber opening into said horizontally-extending section of said preheating chamber;

(f) a fan for drawing air from said inner housing into said air chamber;

(g) first apertures in said side walls spaced from said opening for admitting a first part of heated air from said preheating chamber into said inner housing;

(h) second apertures formed in said inner chamber for admitting a second part of heated air from said preheating chamber into said inner housing; and

(i) air guidance surfaces in said vertically-extending sections of said preheating chamber, said air guidance surfaces being interposed between said heating and said first apertures of said side walls and covering only said first apertures for separating the first part of heated air from the second part of heated air and for guiding a first part of the air in said preheating chamber completely over said heater before the air passes through said first apertures into said inner housing.

5,309,982

HEAT EXCHANGER FOR EXPOSED PIPES

Sal Aliano, 83 Main St. Apt. 7A, Newington, Conn. 06111

Filed Jun. 21, 1991, Ser. No. 719,335

Int. Cl.[5] F28F *1/20*

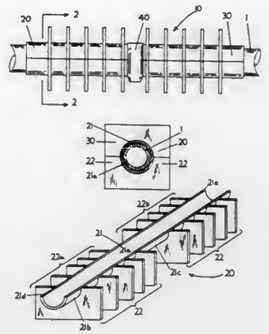
U.S. Cl. 165—76 **4 Claims**

1. A heat exchanger apparatus selectively attachable to a heat or hot water pipe to improve the effectiveness of the pipe as a radiant heat source, said heat exchanger apparatus comprising

a first element comprising a length of heat conductive material having a plurality of fine extending outwardly from an outer side thereof;

a second element comprising a length of heat conductive material having a plurality of fine extending outwardly from an outer side thereof,

said first element and said second element being respectively formed having a first end and a second end, said first end and said second end being mutually cooperable thereby permitting end-to-end engagement of a plurality of heat exchanger apparatuses, said second end being beveled; and



clamping means,

said first element and said second element being selectively attachable to a pipe having inner sides thereof disposed adjacent to the pipe and being fixedly attachable to the pipe by said clamping means.

5,309,983

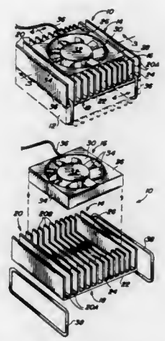
LOW PROFILE INTEGRATED HEAT SINK AND FAN ASSEMBLY

Norman W. Bailey, Sacramento, Calif., assignor to PCubid Computer Technology Inc., Reno, Nev.

Continuation-in-part of Ser. No. 902,924, Jun. 23, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 39,940

Int. Cl.[5] F28F *7/00*

U.S. Cl. 165—80.3 **27 Claims**



1. A low profile integrated assembly for dissipating heat from an electronic component, said assembly comprising:

(a) a heat sink for dissipating heat from an electronic component, said heat sink having a bottom base plate and means attached on said base plate and extending upwardly therefrom for defining a peripheral envelope and a cavity within said envelope; and

(b) a self-contained motorized fan unit disposed substantially within said cavity and said envelope of said heat sink, said fan unit being operable for generating a flow of air into

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said heat sink to effect impingement cooling of a portion of said heat sink located adjacent to the electronic component;

(c) said envelope and cavity defining means of said heat sink including a plurality of elements stationarily attached on said bottom base plate and extending upwardly therefrom for supporting said fan unit in spaced relation above said bottom base plate so as to define a passageway between said bottom base plate and said fan unit for passing the flow of air over said bottom base plate.

5,309,984

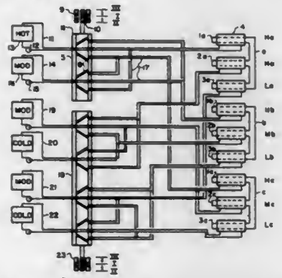
Patent Not Issued For This Number

5,309,985

STATIONARY CONTINUOUS MULTIMODULAR TRISORPTION HEAT PUMP

Donald C. Erickson, 1704 So Harbor La., Annapolis, Md. 21401

Filed Nov. 17, 1992, Ser. No. 976,467
Int. Cl.[5] F25B *17/08*
U.S. Cl. 165—104.12 **12 Claims**



1. A heat-actuated heat pump for the continuous production of at least one of heating and cooling comprised of:

a) at least three trisorption modules (TM), each TM comprised of a hermetically sealed container for a gaseous refrigerant, said container comprised of three zones of differing chemical affinity for said refrigerant, and at least two of said zones containing solid sorbents;

b) a first distributor section adapted to connect each of said high affinity zones sequentially in heat exchange relationship with a first moderate temperature heat transfer fluid; a hot temperature heat transfer fluid; and an idle fluid;

c) a second distributor section adapted to connect each of said medium affinity zones sequentially in heat exchange relationship with a first cold temperature heat transfer fluid, an idle fluid, and a second moderate temperature heat transfer fluid;

d) a third distributor section adapted to connect each of said low affinity zones sequentially in heat exchange relationship with an idle fluid, and a third moderate temperature heat transfer fluid, and a second cold temperature heat transfer fluid; and

e) at least one means for positioning said distributor sections, said means adapted to coordinate the movement of the respective sections whereby when the first distributor section connects the first moderate temperature heat transfer fluid to a given TM, the second distributor section connects the first cold fluid to the same TM, and the third distributor section connects the idle fluid to the same TM.

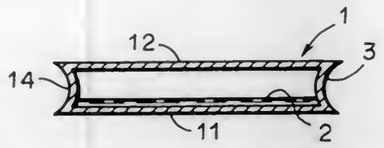
5,309,986

HEAT PIPE

Satomi Itoh, 14-2-306, Asahigaoka-machi, Ashiya-shi, Hyogo, Japan

Filed Nov. 30, 1992, Ser. No. 982,861
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—104.26 **9 Claims**

1. A heat pipe, comprising an air tight elongated container having a longitudinal axis, a flat bottom wall forming a heat receiving portion and a top wall opposite said bottom wall, and side walls interconnecting said top and bottom walls extending in a longitudinal direction; a heat carrier fluid sealed in said container; liquid passage means on inner wall surfaces of said container for moving by capillary action condensed heat carrier fluid in directions at a slant and in parallel to said longitudinal axis, at least one of said side walls having an inwardly concave shape with outwardly reaching side wall edges joined to said bottom wall and to said top wall to form an acute corner along each of said top wall and said bottom wall, each corner defining an inwardly open capillary groove for transporting condensed heat carrier fluid in a direction parallel to said longitudinal axis by capillary action.

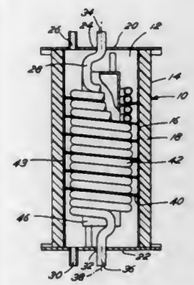


5,309,987

METHOD AND APPARATUS FOR HEATING AND COOLING FOOD PRODUCTS DURING PROCESSING

V. R. Carlson, Marion, Iowa, assignor to ASTEC, Cedar Rapids, Iowa

Filed Jul. 21, 1992, Ser. No. 918,209
Int. Cl.[5] F28D *7/00*; F28F *9/22*
U.S. Cl. 165—159 **10 Claims**



1. A method for heating fluid food products containing solid particles for purposes of processing, comprising:

flowing the food product through a coiled tube in a plug flow manner at a velocity of at least 1 foot per second such that Dean Turbulence are present in the flow of the food product, said coiled tube having an r/D ratio between 3 and 8;

flowing hot water under a pressure of between 15 and 150 pounds per square inch in a turbulent flow manner through a shell surrounding the coiled tube wherein the pressurized hot water substantially fills the entire shell and comes into heat transfer contact with the entire outer surface of the coiled tube, said shell including a center core within the coiled tube but not in contact with the coiled tube, where the hot water flows between the inner surface of the shell and the outer surface of the core, said shell further including baffles which extend substantially from the inner surface of the shell to the outer surface of the core and define a baffle port that allows the water to flow from one baffle to the next, said baffles being positioned at least at every third coil and in such a manner that the direction of flow of the pressurized hot water is changed and the flow is turbulent;

whereby the fluid food product is uniformly heated and any solid particles within the fluid are substantially undamaged.

5,309,988

ELECTROMECHANICAL SHIFTER APPARATUS FOR SUBSURFACE WELL FLOW CONTROL

Perry C. Shy, Arlington, and William R. Welch, Carrollton, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Nov. 20, 1992, Ser. No. 984,179
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—72 **33 Claims**



1. A shifter tool operative to axially shift an internally grooved sleeve of a movable sleeve type flow control device installed in a subsurface well flow conductor, said shifter tool comprising:

a hollow body extending along an axis and being axially movable through the well flow conductor into and through the sleeve;

key means carried by said body and configured to be lockingly engaged with the internal groove portion of the sleeve, said key means being movable relative to said body, in directions transverse to its axis, between a first position in which said key means project outwardly beyond said body and a second position in which said key means are inwardly retracted from said first position; and

drive means carried within said body and being operable to selectively and independently drive said key means:

(1) between said first and second positions thereof, and

(2) relative to a portion of said body in a direction parallel to said axis of said body.

5,309,989

OIL WELL FIRE EXTINGUISHING APPARATUS

Goodman Grimsley, c/o William S. Britt, Esq., Britt & Britt, P.O. Box 1525, Lumberton, N.C. 28359-1525

Filed Oct. 19, 1992, Ser. No. 962,778
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—76 **24 Claims**

1. An apparatus for controlling the flow of fluid from a well pipe comprising:

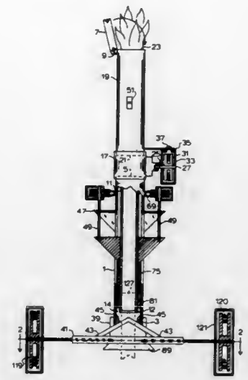
a. an extension pipe lowerably mounted as a part of the apparatus, and adapted to be connected to the upper end of a well pipe;

b. means attached to the extension pipe for controlling the flow of fluid through the extension pipe;

c. means for positioning the extension pipe over the well pipe;

d. means included in the apparatus for lowering the extension pipe over the well pipe;

e. means for securing the apparatus, with the extension pipe, to the well pipe; and



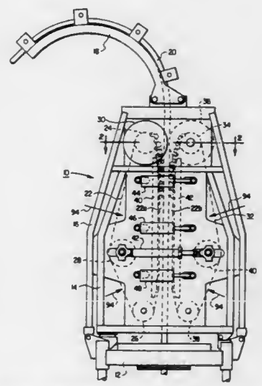
f. means for sealing one end of the extension pipe with its controlling means to the well pipe.

5,309,990

COILED TUBING INJECTOR

Raymond E. Lance, Fort Worth, Tex., assignor to Hydra-Rig, Incorporated, Ft. Worth, Tex.

Filed Jul. 26, 1991, Ser. No. 736,698
Int. Cl.[5] E21B *19/08, 19/22*
U.S. Cl. 166—77 **20 Claims**



1. Apparatus for injecting and withdrawing a length of flexible cylindrical tubing into and from a well bore, comprising:

first and second sets of gripper shoes,

drive means for moving the first and second sets of gripper shoes around first and second endless paths, respectively, the paths including first and second parallel sections disposed on opposite sides of a length of the tubing during which the gripper shoes are pressed against the tubing with sufficient force to hold the tubing therebetween,

each gripper shoe including:

a base portion connected to the drive means,

at least two substantially non-deformable gripper elements each having a cylindrical gripping surface, each cylin-

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drical surface having a radius of curvature corresponding to the outer surface of the tubing,

at least one of the gripper elements being connected to the base portion by connection means permitting movement of the element relative to the base portion between a closed position where the cylindrical gripping surface engages the tubing and an open position which facilitates engagement and disengagement of the gripping shoe elements with the tubing so as not to scuff the tubing during engagement;

wherein the connection means comprises resilient means biasing the gripper element into the open position and wherein the movable gripper elements are normally disposed in an open position with outer corners of the elements spaced apart a distance greater than the distance between the corner of the elements when gripping the tubing and are moved into closed position against the tubing in response to the gripper elements being pressed against the tubing as the gripper shoes enter the parallel sections of the endless paths and move back to the open position as the gripper elements move away from the tubing as the gripper shoes leave the parallel sections of the endless paths; and

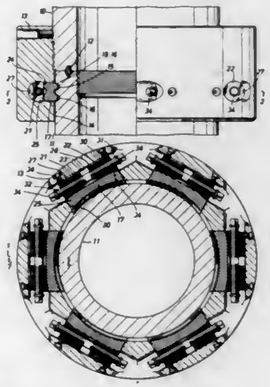
wherein the gripping elements, when in the closed position, apply substantially even pressure to the surface of the tubing over substantially the entire length of the gripping element so as not to substantially deform the tubing.

5,309,991

WELLHEAD CONNECTOR

Bruce J. Watkins, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Mar. 4, 1993, Ser. No. 26,511
Int. Cl.[5] E21B *33/038*
U.S. Cl. 166—77.5 **5 Claims**



1. A wellhead connector, comprising

a first tubular wellhead member,

a second tubular wellhead member having a conical locking surface about the outer surface,

a ring surrounding the first tubular member having a bore therein fittable closely surrounding the outer surface of the second member when the members are in end-to-end relation,

locking segments having locking shoulders on their inner ends and guidably mounted in circumferentially spaced relation about the ring to dispose the locking shoulders opposite the locking shoulder on the second member,

means for moving the segments between outer positions in which their inner ends are removed from the bore and inner positions in which their locking shoulders slidably engage the locking shoulder on the second member to urge the ends of the members tightly against one another, including

wedges mounted on the body for guided movement generally transversely of the direction of movement of the locking segments in first directions toward one another and second directions away from one another, and having wedging surfaces which are engagable with wedging surfaces on the locking segments to force the locking segments from their outer to their inner positions, as the wedges are moved in their first directions, but permit them to move to their outer positions as the wedges are moved in their second directions, and

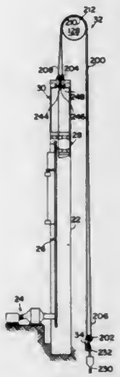
means for moving the wedges between their first and second positions.

5,309,992

PULLEY-DRIVE LIFTING SYSTEM

Jerry L. Watson, Odessa, Tex., assignor to Evi-Highland Pump Company, Inc., Odessa, Tex.

Filed Jul. 3, 1991, Ser. No. 725,200
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—68.5 **11 Claims**



1. A lifting apparatus for reciprocating a sucker-rod string coupled to an underground pump comprising:

(a) a flexible band having first and second loop ends;

(b) a first end-roller assembly coupled to and supported by the first loop end of the band;

(c) a second end-roller assembly coupled to and supported by the second loop end of the band;

(d) means for coupling a polished rod assembly to the first end-roller assembly;

(e) means for coupling a counterweight assembly to the second end-roller assembly;

(f) at least one central pulley rotatably mounted about an axis near the top of a derrick structure, the central pulley supporting an intermediate length of the flexible band; and

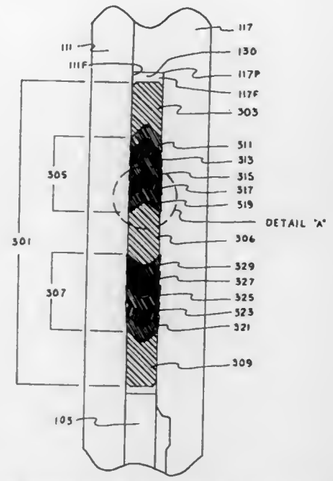
(g) drive means coupled to the counterweight assembly for reciprocating the counterweight assembly and for causing the intermediate length of the flexible band and the central pulley to rotate about the axis of the central pulley, thereby driving the polished rod assembly.

5,309,993

CHEVRON SEAL FOR A WELL TOOL

Robert J. Coon; Steve Jennings, both of Houston, and Mark E. Hopmann, Alvin, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 573,581, Aug. 27, 1990, Pat. No. 5,156,220, and a continuation-in-part of Ser. No. 751,350, Apr. 28, 1991. This application Feb. 10, 1992, Ser. No. 832,928
Int. Cl.[5] E21B *33/10*; F16J *15/16*
U.S. Cl. 166—115 **31 Claims**



9. A seal member for use in a sealing apparatus which is used in a wellbore tool to sealingly engage a moveable surface of a noncontinuously mating moveable member to prevent a flow of a wellbore fluid along said moveable surface of said noncontinuously mating moveable member, said seal member comprising:

a dynamic engagement wing defining a portion of said seal member which is disposed to engage said noncontinuously mating moveable member, said dynamic engagement wing at least in part defined by:

an active end surface which faces said flow of said wellbore fluid;

a passive end surface which is oppositely disposed across said outer wing from said active end surface;

a dynamic engagement wing surface which includes a sealing surface which sealingly engages said noncontinuously mating moveable member;

wherein said active end surface which faces said flow of said wellbore fluid at least in part being defined by:

an inwardly protruding surface which is shaped to provide a sealing energization so that when said inwardly protruding surface is pressed by said wellbore fluid said sealing surface is pushed into sealing engagement with said moveable surface of said noncontinuously mating moveable member; and

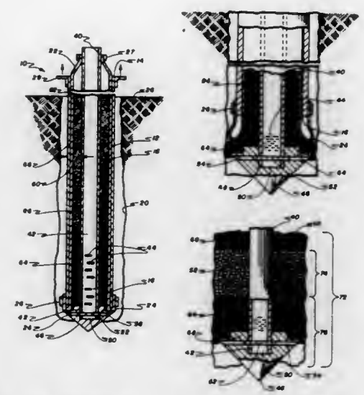
a blunt wing surface which is disposed intermediate of said active end surface and said dynamic engagement wing surface, and which is sized to provide a balance in a rigidity of said dynamic engagement wing which is stiff to prevent displacement of said dynamic engagement wing into a path of said moveable surface of said noncontinuously mating moveable member, and flexible to allow said sealing energization of said wellbore fluid pushing said sealing surface into sealing engagement.

5,309,994

METHOD AND APPARATUS FOR INSTALLING A WELL

Donald H. Douglas, Clinton; Stafford S. Cooper, and Philip G. Malone, both of Vicksburg, all of Miss., assignors to U.S. Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 17, 1993, Ser. No. 77,583
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 **11 Claims**



1. A well installation preform for locating and dispensing granular materials into a bore hole around the screen of a well casing comprising:

a cylindrical sleeve member adapted to be removable located about the casing adjacent the screen for insertion into the borehole with the casing;

A closure member for the sleeve having one end arranged to be held secured to the casing adjacent the screen and being separable from the sleeve;

a flexible liner arranged along an inner wall of said sleeve, said liner having one end wrapped around the end of the sleeve adjacent the closure and attached to an outer surface of said sleeve, and its other end secured for relative movement with respect to the sleeve, said sleeve and liner defining an annular space about said casing for containing the granular materials therein, said granular materials disposed in said annular space in a multilayered arrangement comprising a layer of filter material extending from the closure in a sufficient amount to bridge the screen, a layer of capping or sealing material adjacent to the filter material above the screen and a layer of filler material adjacent the capping material; and

means for separating the sleeve from the closure and for extracting the cylindrical member from the bore hole and everting the sleeve such that the granular material is uniformly dispensed from the annular space in the preform to between the casing and borehole and is maintained in said multilayered arrangement by the everting action of said liner in accordance with extraction of said sleeve, said layered arrangement for establishing an isolated filtration zone in the borehole about the screen said filtration zone being isolated by said capping material.

10. A method for constructing a well with granular material comprising the steps of:

locating a preform adjacent a closed screen end of a well casing, said preform including a cylindrical sleeve opposite ends and having a flexible liner arranged therein with one end secured to an end of the sleeve adjacent the closed screen end and its other end being open and positioned beyond the other end of the sleeve;

filling the member with granular materials at said open end,

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wherein said granular materials comprise a layer of a filter material extending from the closure and above the screen in bridging relation, a sealing material above the screen and adjacent the filter material and a filler material above the sealing material; and

extracting said sleeve from the bore hole while holding the other end of the liner against movement whereby the liner everts to uniformly dispense the granular material in the bore hole during the eversion of the liner for establishing a filtration zone in the bore hole about the filter isolated by said capping material.

5,309,995

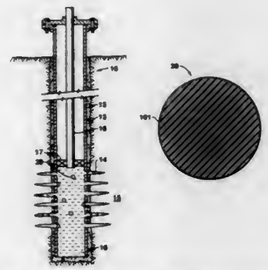
WELL TREATMENT USING BALL SEALERS

Manuel E. Gonzalez, Kingwood; James R. Bailey, Houston, and Walter J. Lamb, The Woodlands, all of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 664,711, Mar. 5, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 33,993

Int. Cl.[5] E21B *33/138*

U.S. Cl. 166—284 **9 Claims**



1. A method of treating a subterranean formation surrounding a cased wellbore wherein the casing has an interval provided with a plurality of perforations, said interval being in a hostile environment, including a temperature in the range of 177°–316° C. and a pressure in the range of 350–1758 kg/cm^2, said method comprising:

(a) flowing down said casing to said perforated interval a plurality of ball sealers suspended in a liquid medium, said ball sealers having a density less than the density of said liquid and being sized to significantly seal said perforations, said ball sealers comprised of a carbon-fiber reinforced polyetheretherketone polymer and having been aerated to reduce said density of said ball sealer to a density in the range of 1.1 g/cc–1.3 g/cc; and

(b) continuing the flow of said liquid until said ball sealers seal at least a portion of said perforations.

5,309,996

METHODS OF PRIMARY CEMENTING OF WELLS

David L. Sutton, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 27, 1992, Ser. No. 874,776

Int. Cl.[5] E21B *33/14*

U.S. Cl. 166—286 **6 Claims**

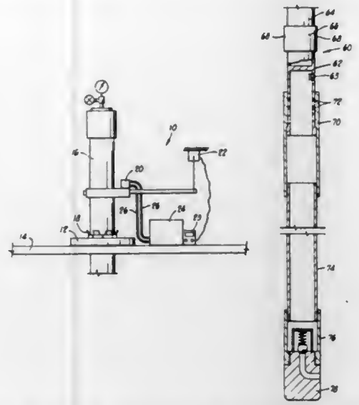
1. A method of substantially preventing the flow of gas from a gas-containing subterranean formation into a cement slurry in a well bore which penetrates said formation while cementing a pipe in said well bore, said method being comprised of the steps of:

a. placing a hydraulic cement slurry in the annulus between said pipe and said well bore;

b. maintaining the hydrostatic pressure exerted by said slurry on said formation during the transition period of said slurry by movement of said pipe during said transition period; and

c. terminating said movement of said pipe when said slurry develops sufficient gel strength to substantially block said flow of said gas;

wherein said movement of said pipe is performed at a rate which will maintain a thin layer of said slurry next to said pipe in a fluid state, but which will not disturb the column



of cement to the point which would prevent attainment by said slurry of said sufficient gel strength wherein said movement of said pipe comprises continuously rotating said pipe at a peripheral surface speed in the range of from about 7 to about 30 feet per minute.

5,309,997

WELL FLUID FOR IN-SITU BOREHOLE REPAIR

James J. W. Nahm, and Reece E. Wyant, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,982

Int. Cl.[5] E21B *33/138, 33/14*

U.S. Cl. 166—292 **18 Claims**

1. A method for consolidating a formation penetrated by a borehole, comprising:

drilling the borehole using an aqueous drilling fluid comprising microfine-ground blast furnace slag;

applying sufficient hydraulic pressure to force said drilling fluid to flow into said formation and lay down a filter cake on the borehole walls; and

contacting said filter cake with an activator which is added to said drilling fluid.

7. A method for consolidating a formation penetrated by a borehole, comprising:

drilling the borehole using an aqueous drilling fluid comprising microfine-ground blast furnace slag and an activator; and

applying sufficient hydraulic pressure to force said drilling fluid to flow into said formation and lay down a self-setting filter cake on the borehole walls.

5,309,998

PUMPING SYSTEM INCLUDING FLOW DIRECTING SHOE

Olegario Rivas, Maracaibo, and José L. Sandoval, San Antonio de Los Altos, both of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Nov. 19, 1992, Ser. No. 978,736

Int. Cl.[5] E21B *43/38*

U.S. Cl. 166—265 **24 Claims**

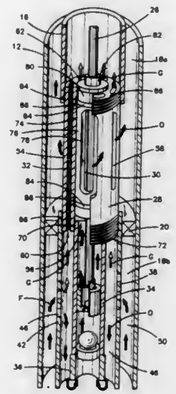
13. A flow directing shoe comprising:

a hollow tubular having a substantially cylindrical wall defining a first flow passage, a second flow passage being formed within the wall of the shoe, the first flow passage having a first inlet and a first outlet, the first outlet passing radially through the wall of the shoe, the second flow passage having a second inlet and a second outlet, the second outlet being located at an end of the shoe and wherein the shoe has a first end and a second end, the first inlet and the second inlet being located at the first end of the shoe, the second outlet being located at the second end of the shoe; and

a stuffing box comprising an additional tubular article associated with the shoe so as to seal the second end of the shoe.

18. A method for pumping a fluid including a liquid and a gas from a well, the method comprising the steps of:

providing a well casing in the well;



providing a production tube within the well casing so as to define an annular space between the well casing and the production tube, the production tube including a shoe comprising a hollow tubular article having a substantially cylindrical wall defining a first flow passage, a second flow passage being formed within the wall of the shoe, the first flow passage having a first inlet for the liquid and a first outlet to the annular space, the second flow passage having a second inlet for a gas and a second outlet to the production tube;

directing the liquid to the first inlet of the shoe; and

directing the gas to the second inlet of the shoe, whereby the liquid is produced through the annular space and the gas is produced through the production tube.

5,309,999

CEMENT SLURRY COMPOSITION AND METHOD TO CEMENT WELLBORE CASINGS IN SALT FORMATIONS

Kenneth M. Cowan, Sugar Land; Arthur H. Hale, and James J. W. Nahm, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,992

Int. Cl.[5] E21B *33/13, 33/138;* **C09K** *7/00*

U.S. Cl. 166—293 **17 Claims**

1. A method to cement a cashing into a wellbore within a salt or potash formation comprising the steps of:

a) providing a cement slurry comprising blast furnace slag, water and salt in an amount effective to essentially saturate the slurry with the salt and further comprising a polymer containing acid functional groups and a cross-linker which is a metal oxide;

b) placing the cement slurry in the wellbore juxtaposed to the salt or potash formation; and

c) allowing the cement slurry to set.

5,310,000

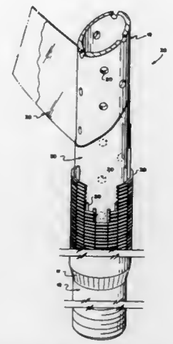
FOIL WRAPPED BASE PIPE FOR SAND CONTROL

Bryant A. Arterbury, and Holley M. Cornette, both of Houston, Tex., assignors to Halliburton Company, Houston, Tex.

Filed Sep. 28, 1992, Ser. No. 952,558

Int. Cl.[5] E21B *43/10*

U.S. Cl. 166—296 **23 Claims**



1. A well screen for separating particulated material from formation fluid comprising, in combination:

an elongated, tubular mandrel having a longitudinal bore defining a production flow passage, said mandrel being radially intersected by a flow aperture;

a fluid-porous, particulate-restricting member mounted on said mandrel and overlying said flow aperture; and,

a sacrificial foil disposed intermediate said particulate-restricting member and said mandrel, said foil covering said flow aperture.

5,310,001

METHOD OF RETRIEVING A DOWNHOLE TOOL UTILIZING NON-ROTATIONAL WORKSTRINGS

Timothy D. Burns, Sr., and Kenneth D. Caskey, botb of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 693,495, Apr. 30, 1991, Pat. No. 5,224,547. This application Feb. 4, 1993, Ser. No. 13,749

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—301 **5 Claims**

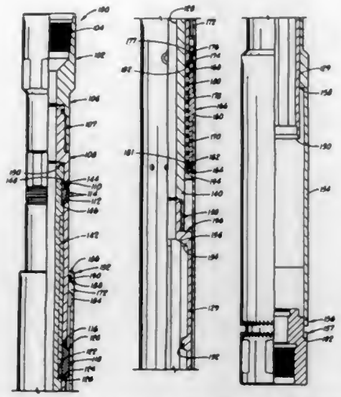
1. A method of retrieving a downhole tool in a wellbore comprising the steps of:

running into the wellbore with a retrieving apparatus comprising a lug on one portion thereof and a plurality of ratchet teeth on a second portion thereof;

engaging the downhole tool with said ratchet teeth and thereby preventing relative rotation between said downhole tool and said second portion of said retrieving apparatus;

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positioning said lug into a J-slot member in said downhole tool; and



rotating said first portion of said retrieving apparatus relative to said downhole tool to locate the lug with respect to said downhole tool.

5,310,002

GAS WELL TREATMENT COMPOSITIONS AND METHODS

Matthew E. Blauch; Tommy R. Gardner; Karen L. King, and James J. Venditto, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 17, 1992, Ser. No. 870,546
Int. Cl.[5] E21B *43/22, 43/26, 43/27*
U.S. Cl. 166—307 **40 Claims**

1. A method of treating a subterranean formation to increase the production of gas therefrom comprising:

contacting said formation with a water external microemulsion foam well treatment composition, said well treatment composition including:

(a) about 90% to about 99.95% by volume of a treatment fluid selected from the group consisting of an aqueous acid solution and an aqueous non-acid solution;

(b) about 0.0125% to about 5% by volume of a microemulsion generating component for enhancing the ability of said well treatment composition to be recovered from said formation, said microemulsion generating component including:

(i) an alkyl alcohol having in the range of from 4 to 18 carbon atoms microemulsified into said treatment fluid;

(ii) a microemulsifying agent present in an amount sufficient to form and maintain a stable microemulsified dispersion of said alcohol in said treatment fluid;

(iii) a microemulsion mutual solvent selected from the group consisting of glycol ethers and alkyoxylates of glycol ethers; and

(iv) a microemulsion co-solvent selected from the group consisting of polyethylene glycol, primary alcohols and alkyoxylates of alkyl alcohols, each of said components (i)–(iv) being different compounds or different mixtures of compounds;

(c) a gas component; and

(d) about 0.025% to about 7.5% by volume of a foaming agent component for generating a foam in the presence of said treatment fluid and said gas component and enhancing the ability of said well treatment composition to be recovered from said formation, said foaming agent component including at least one nonionic surface active agent having a HLB of from 12 to 22, each of said components (a) –(d) being different compounds or different mixtures of compounds; and

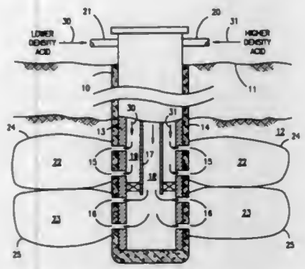
recovering said well treatment composition from said formation.

5,310,003

METHOD FOR ACID FRACTURING A SUBTERRANEAN FORMATION

Alfred R. Jennings, Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 19, 1993, Ser. No. 47,987
Int. Cl.[5] E21B *43/26, 43/27*
U.S. Cl. 166—307 **6 Claims**



1. A method for the acid fracturing of a hydrocarbon reservoir within a subterranean formation surrounding a wellbore, comprising the steps of:

a) injecting a lower density fracturing acid into an upper zone of said reservoir surrounding said wellbore at a pressure sufficient to initiate the propagation of a fracture within said upper zone, and

b) injecting a higher density fracturing acid into a lower zone of said reservoir surrounding said wellbore at a pressure sufficient to initiate the propagation of a fracture within said lower zone such that the upper portion of the fracture within the lower zone of the reservoir intersects the lower portion of the fracture within the upper zone of the reservoir, the lower density fracturing acid remaining in the upper zone of the reservoir propagating the fracture therein and the higher density fracturing acid remaining in the lower zone of the reservoir propagating the fracture therein.

5,310,004

FAIL SAFE GAS BIAS SAFETY VALVE

Dwayne D. Leismer, Pearland, Tex., assignor to Camco International Inc., Houston, Tex.

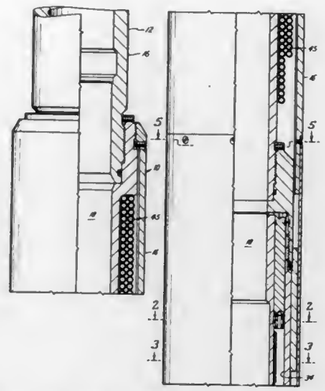
Filed Jan. 13, 1993, Ser. No. 3,922
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—321 **6 Claims**

1. In a subsurface well safety valve for controlling the fluid flow through a well conduit and including a housing having a bore and a valve closure member moving between open and closed positions for controlling the fluid flow through the bore, a flow tube telescopically moving in the housing for controlling the movement of the valve closure member, a first hydraulic piston and cylinder assembly in the housing engaging and moving the flow tube and having first and second sides, the first side of the assembly adapted to be in communication with control fluid at the well surface, and a gas chamber in the housing in communication with the second side of the assembly acting on the assembly in a direction to close said valve, and spring means between the housing and the flow tube acting on the flow tube in a direction to close said valve, the improvement in means for failsafe closing of the safety valve in event of a loss of gas pressure comprising,

a second piston telescopically positioned in the first piston,

a first small seal and a second larger seal between the second and the first piston,

said first piston having a hydraulic fluid passageway extending from the first side of the assembly to the second piston at the smaller seal, and



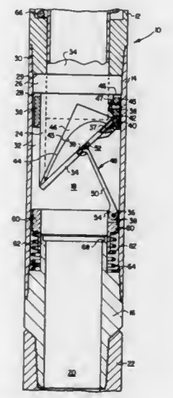
said larger seal being exposed to the gas chamber whereby on a loss of gas pressure the second piston will move relative to the first piston in response to the hydraulic fluid and equalize hydraulic pressure across the first piston.

5,310,005

FLAPPER VALVE ASSEMBLY WITH FLOATING HINGE

William W. Dollison, Dallas, Tex., assignor to Halliburton Company, Houston, Tex.

Continuation-in-part of Ser. No. 692,193, Apr. 26, 1991, Pat. No. 5,145,005. This application Jun. 19, 1992, Ser. No. 900,665
Int. Cl.[5] E21B *34/14, 34/12*
U.S. Cl. 166—334 **8 Claims**



5. A valve assembly comprising:

a generally cylindrical body with a longitudinal bore;

a valve seat sleeve member coaxially aligned within said longitudinal bore, said valve seat sleeve member having one end defining a valve seating area;

an annulus space between said body and said valve seat sleeve member;

a hinge member disposed in said annulus, said hinge member comprising means for providing limited sliding engagement between said hinge member and said valve seat sleeve member in the longitudinal direction, thereby minimizing interference between a valve closure member and the valve seating area near said hinge member;

said valve closure member pivotally connected to said hinge member, said valve closure member further comprising a sealing area having a configuration adapted to provide sealing engagement with said valve seating area;

said valve closure member being a section of a cylinder having a constant radius of curvature substantially the same as the radius of said valve seat sleeve member;

said valve closure member positioned within said annulus space behind said valve seat sleeve member when said valve assembly is in an open position; and

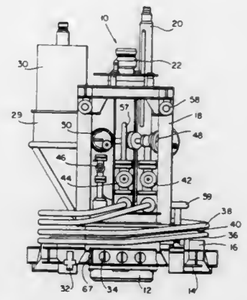
said means for providing limited sliding engagement between said hinge member and said valve seat sleeve member comprises a pin projecting from said hinge member into a slot in said valve seat sleeve member for limited longitudinal travel therein.

5,310,006

SATELLITE TREE MODULE AND FLOW LINE STRUCTURE FOR INTERCONNECTION OF A SATELLITE WELL TO A SUBSEA PRODUCTION SYSTEM

André Luiz V. Freitas; Cezar A. S. Paulo, and José Eduardo M. Silva, all of Rio de Janeiro, Brazil, assignors to Petróleo Brasileiro S.A. -Petrobrás, Rio de Janeiro, Brazil

Filed Aug. 7, 1992, Ser. No. 925,631
Claims priority, application Brazil, Aug. 9, 1991, 9103429
Int. Cl.[5] E21B *23/04, 33/038, 43/01*
U.S. Cl. 166—339 **15 Claims**



1. A satellite tree module (STM) having a top and a bottom and comprising:

a lower structure, an upper structure;

an internal-latch type, hydraulically activated connector mounted to said lower structure and located at the bottom of the STM;

said lower structure comprising a central ring, said connector (12) passing through said ring and being coupled to a vertical connection block (52), and said lower structure further comprising a plurality of arms extending outwardly of said lower structure and terminating in guide-funnels (16);

a flow system contained inside said upper structure (18) at a level above said lower structure (14) and comprising pipes for production and production testing and valves coupled to said pipes for controlling the flow of production/injection, production testing and lift-gas fluids therethrough;

a control system mounted to one of said lower structure and

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said upper structure for controlling activation and deactivation of components of the satellite tree module during the operational phase;

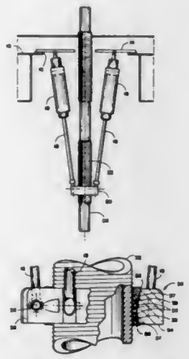
said satellite tree module also including a re-entry pole (20) integrated to an assembly of said satellite tree module (10) by means of an orientation key; a re-entry mandrel (22) and a cap (24) mounted to said upper structure, said cap (24) protecting the external profile of said re-entry mandrel (22), and said satellite tree module further comprising a flow line terminal (26) connected to said set of pipes.

5,310,007

TENSIONING RING AND RISER ASSEMBLY FOR AN OIL WELL PLATFORM TENSIONING APPARATUS

Mahendra Parikh, Houston, Tex., assignor to Paul Munore Engineering International, Orange, Calif.

Filed Apr. 9, 1993, Ser. No. 45,615
Int. Cl.[5] E21B *17/00*
U.S. Cl. 166—355 **18 Claims**



1. A tensioning ring and riser assembly for use in a riser tensioning apparatus which comprises:

a riser having male threads formed on the exterior surface;

a tensioning ring having female threads formed on the interior surface;

said female threads configured and sized to thread onto said male threads with a loose fit;

said female threads having leading faces adapted to be axially forced against the corresponding trailing faces of said male threads in a first direction along the centerline of said assembly of tensioning ring and riser;

the leading faces of said female threads and trailing faces of said male threads extending in said first direction having an angle to said centerline in said first direction of less than about 30°;

the trailing faces of said female threads and leading faces of said male threads having an angle to said centerline in said first direction of at least about 70°;

the thread roots of said male and female threads having a rounded cross section;

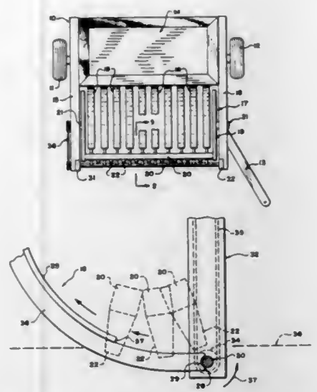
whereby when said tension ring is forced in said first direction only the low angle faces of the threads are in contact and when there is no force in said first direction the only contact is at the trailing face of the female thread root and the leading face of the male thread crest permitting rotation of the tensioning ring around the riser with minimal effort.

5,310,008

PICKER GRATE FOR A ROCK PICKER

George A. Dauvin, Box 134, Redvers, Saskatchewan, Canada S0C 2H0

Filed Sep. 29, 1992, Ser. No. 952,987
Int. Cl.[5] A01B *43/00, 39/19*
U.S. Cl. 171—64 **16 Claims**



1. An agricultural rock picker comprising a frame, ground wheels on the frame for moving the frame across the ground in a direction of working moving, a picker grate mounted on the frame for movement across the ground for lifting rocks from the ground onto the grate for collection, the picker grate comprising a plurality of grate bars arranged in parallel relationship parallel to the direction of movement and spaced apart transversely to the direction of movement, each grate bar having a forward end and extending rearwardly and upwardly therefrom for transporting rocks lifted over the forward end rearwardly for collection, a rod mounted transversely to the grate bars at the forward ends thereof so as to engage the ground and any rocks therein immediately forwardly of the forward ends of the grate bars, means for drivingly rotating the rod in a direction such that a forward part of the surface of the rod moves upwardly and support means for supporting the rod at ends thereof and at a plurality of spaced positions across the width of the picker grate.

5,310,009

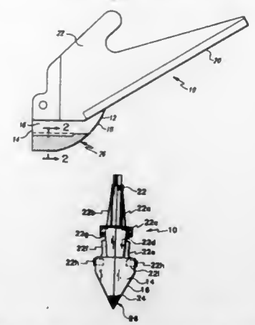
AGRICULTURAL INSERT

Don C. Rowlett, Bedford, Pa., assignor to Kennametal, Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 651,662, Feb. 6, 1991, Pat. No. 5,159,985. This application Jul. 21, 1992, Ser. No. 918,301
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] A01L *5/06, 23/02*
U.S. Cl. 172—723 **18 Claims**

1. An agricultural tool for forming a furrow comprising an essentially syncline shaped slicer having a leading member, a trailing member and a pair of sides tapered from said trailing member toward a sharp convex cutting edge extending longitudinally upwardly and forwardly from said trailing member toward said leading member, a leading deflector extending upwardly and forwardly from said cutting edge and formed integral with said slicer by a mounting web, said mounting web having a pair of sides extending rearwardly from said leading deflector and expanding to a heel having first and second sides adjoining respective sides of said syncline shaped slicer and a rear portion, each of said first and second sides having formed therein a notch and said sides having affixed thereto a wear

insert, said cutting edge including a slot having secured therein a cutting insert comprising an elongated wedge shaped member including a leading end; a trailing end of a generally triangular form; a first side surface and a second side surface contiguous therewith extending longitudinally from said trailing end



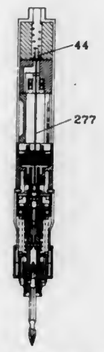
to said leading end and defining a lowermost edge including a substantially linear portion adjoining a sloped curvilinear front portion; and a top surface between said first side surface and said second side surface extending linearly from said trailing end to said leading end and having a contour which converges from said trailing end to form a v-shaped leading end.

5,310,010

AUTOMATIC OVERLOAD RELEASE AND POWER STOPPAGE DEVICE

Juey Y. Lo, 3F, No. 2-1, 160 Alley, Yu Hsi Street, Yung Ho City, Taipei, Taiwan

Filed Aug. 5, 1993, Ser. No. 102,603
Int. Cl.[5] B25B *23/14*
U.S. Cl. 173—178 **8 Claims**



1. An automatic overload release and power stoppage device installed in a power tool having a power switch, a rectifier circuit, a motor, a fan, and a speed reducing gear, comprising;

a central control mechanism consisting of a central control rod, a first stop ring, a first metal ring, a first spring, a sliding bushing, a spring pin, a switch control lever, a second spring, and a second stop ring, wherein said central control rod has a through hole into which said spring pin is inserted to link said switch control lever for controlling said power switch;

a power switching mechanism consisting of said sliding bushing, a ring-shaped upper driven member, a roller set, a first steel ball set, and a main shaft, wherein said sliding bushing is controlled by said central control rod to move said first steel ball set radially, causing said first steel ball set to control the engagement between said main shaft and said roller set for power transmission;

a power output mechanism consisting of a third stop ring, a second metal ring, a second steel ball set, a fourth stop ring, a lower driven member, a lower thrust bearing, a third steel ball set, a fourth steel ball set, a third metal ring, an output shaft, and a steel ball, wherein said upper driven member, said lower driven member, and said output shaft are linked and turned by said main shaft as said central control mechanism and said power switching mechanism are started upon depression of said output shaft;

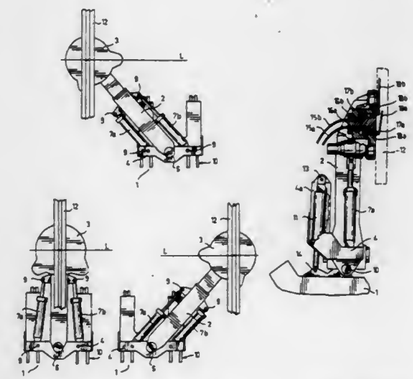
a torque control mechanism consisting of a fifth stop ring, a sixth stop ring, a torque regulating ring, a round rod, a seventh stop ring, a torque member holder, a spring washer, a torque control spring said third stop ring, said second metal ring, said second steel ball set, said fourth stop ring said lower thrust bearing, said third steel ball set, said fourth steel ball set, and said upper and lower driven members, wherein said torque regulating ring is moved to change its position relative to said torque member holder so as to set a predetermined critical torque for permitting said upper and lower driven members to disconnect from each other as the torque from said power output mechanism surpasses said critical torque; and a release control mechanism consisting of a third spring, a release control ring, a fifth steel ball set, said central control rod, said first stop ring, said first metal ring, said first spring, and said sliding bushing, wherein said release control ring is pushed by said lower driven member to carry said central control rod downwards as the torque of said power output mechanism surpasses said critical torque.

5,310,011

VERTICAL DRILLING BOOM

Jouko Kaakkurivaara, Vuorentausta, Finland, assignor to Tamrock Oy, Tampere, Finland

PCT No. PCT/FI91/00189, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/00439, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 17, 1991, Ser. No. 955,720
Claims priority, application Finland, Jun. 28, 1990, 903284
Int. Cl.[5] E21B *15/04*
U.S. Cl. 173—194 **6 Claims**



1. A vertical drilling boom for rock drilling equipment, comprising:

a frame;

a vertical boom pivotally mounted at its lower end to said

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frame for pivoting movement about a generally horizontal axis and having a longitudinal axis;

said vertical boom including two boom portions longitudinally slidable relative to one another and a first actuating device for displacing the boom portions relative to one another to adjust the length of the boom;

a second actuating device for pivoting the boom about the horizontal axis;

a boom head carried by said boom for rotating a feeding beam of rock drilling equipment mounted to the boom about a shaft having a transverse axis perpendicular to the longitudinal axis of the boom; and

means for rotating the boom head about said shaft;

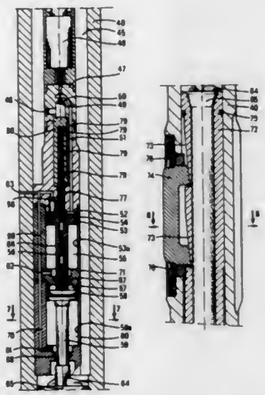
said boom head including pressure fluid lines extending therethrough for transmitting pressure fluid to the rock drilling equipment.

5,310,012

ACTUATING DEVICE ASSOCIATED WITH A DRILL STRING AND COMPRISING A HYDROSTATIC DRILLING FLUID CIRCUIT, ACTUATION METHOD AND APPLICATION THEREOF

André Cendre, Cosne sur Loire; Jean-Baptiste Fay, Paris, and Benoit Amaudric du Chaffaut, Voisins le Bretonneux, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Filed Jul. 16, 1992, Ser. No. 914,550
Int. Cl.[5] F21B *7/06, 17/10*
U.S. Cl. 175—38 **11 Claims**



10. A method comprising:

setting, by pumping from the surface, the value of a differential pressure DP to a determined value;

controlling a distribution means so as to allow circulation of a drilling fluid under pressure between an inner space and a displacement means;

actuating an equipment by activating said displacement means when mechanical energy of the drilling fluid is higher than energy developed by a return means of said displacement means;

controlling said distribution means so as to shut off communication between the inner space and said displacement means and to lock said displacement means in position; and

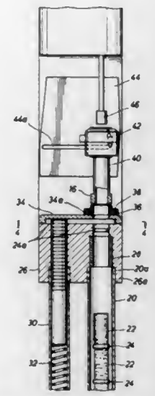
controlling said distribution means so as to open communication between the inner space and said displacement means, and decreasing the differential pressure DP, by adjusting pumping, until the energy developed by said return means is higher than said mechanical energy.

5,310,013

CORE MARKING SYSTEM FOR A SIDEWALL CORING TOOL

Ashley C. Kishino, Houston, Tex., and David O. Turner, Oklahoma City, Okla., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 24, 1992, Ser. No. 935,090
Int. Cl.[5] E21B *25/16*
U.S. Cl. 175—44 **21 Claims**



1. A sidewall coring tool adapted to be disposed in a wellbore for retrieving core samples from a wall of said wellbore and storing said core samples in a core storage tube, comprising:

core marking means for separating successive ones of the core samples retrieved from said wall of said wellbore and storing the separated core samples in said core storage tube, said core marking means including,

marker means comprised of a first magnetic material for separating said successive ones of the core samples when said core samples are stored in said core storage tube, and

block means comprised of a second magnetic material which is magnetically attracted to said first magnetic material and connected to said core storage tube for magnetically attracting said marker means to said core storage tube, the marker means being inserted between said successive ones of the core samples in said core storage tube thereby separating the core samples.

5,310,014

WATER WELL DRILLING ACCESSORY, MOUNTABLE ON CABLE TOOL WATER WELL DRILLING MACHINERY, TO PROVIDE FOR THE SIMULTANEOUS DRIVING OF WATER WELL CASING PIPE SECTIONS, WHILE CONCURRENTLY UNDERTAKING DRILLING OPERATIONS

Harlan F. Mueller, P.O. Box 366, Duvall, Wash. 98019

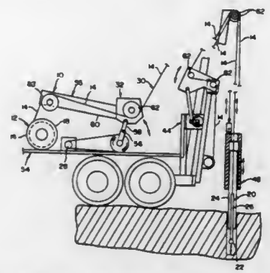
Filed Apr. 1, 1993, Ser. No. 40,461
Int. Cl.[5] E21B *7/00*
U.S. Cl. 175—171 **20 Claims**

1. A water well drilling accessory, mountable on cable tool drilling machinery, in turn mounted on a vehicle, and when so mounted operated to drive water well casing pipe sections into the ground without interfering with the prior and continuing placement and operation of the drill bit and the overall drill string thereof, and thereby at times operating at the same time the water well drill is operating, comprising:

a. a reciprocally guided hammer-head-ram integrally formed to provide:

i. an axially aligned cylindrical chamber having a bottom entry to pass down over the top of the then uppermost water well casing pipe section and slidably continue on down to preferably surround at least a substantial length of the then guiding and aligning top portion of the exterior of this water well casing pipe section;

ii. an axially aligned cylindrical chamber arranged concentrically above the axially aligned chamber that slides down the top portion of the uppermost water well casing pipe section, and having a bottom entry that will not pass over the top of the uppermost water well casing pipe section, but will allow the passing of the drill bit and the overall drill string thereof, other debris



removing cylindrical units, and their respective supporting and operating cables;

iii. an axially aligned impact transferring shoulder structure having a larger diameter matching the diameter of the axially aligned cylindrical chamber which receives the top portion of a water well casing pipe section, and a smaller diameter matching the diameter of the axially aligned cylindrical chamber which does not receive this top portion of the water well casing pipe section;

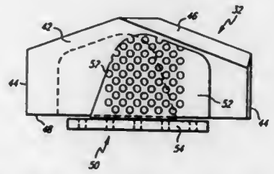
iv. a top portion utilized during the securement of this reciprocally guided hammer-head-ram to a supporting and operating cable.

5,310,015

INSERT SPACER ASSEMBLY

Gerald L. Woods, Bedford, and Steven D. Shirk, New Enterprise, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 819,423, Jan. 10, 1992, Pat. No. 5,226,489. This application May 10, 1993, Ser. No. 60,380
Int. Cl.[5] E21B *10/52*
U.S. Cl. 175—420.1 **19 Claims**



1. A center vacuum rotary drill bit comprising:

(a) a rotary drill bit body having a top working surface including a slot extending transversely across said top working surface, said slot including a first sidewall, an opposite second sidewall and a generally horizontal bottom surface extending between said first sidewall and said second sidewall;

(b) an insert including a pair of oppositely facing generally parallel side surfaces, a pair of oppositely facing generally parallel end surfaces extending between and interconnecting said side surfaces, a pair of oppositely inclined top surfaces extending between and interconnecting said side and end pairs of surfaces, and a bottom surface extending transversely to and interconnecting the side and end pairs of surfaces; and

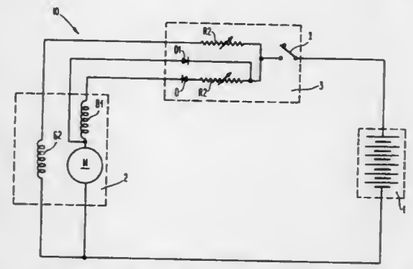
(c) an insert spacer assembly interposed between said insert and said slot, said insert spacer assembly including a shim and a spacer bar, said shim having a pair of upstanding spaced sidewalls and a bottom wall extending in transverse relation between and integrally connecting said sidewalls, and said spacer bar having a coefficient of expansion greater than or equal to 10 micro in./in./degree C. and of a generally parallelogram configuration, wherein said insert spacer assembly adjusts the elevation of said insert with respect to said top working surface.

5,310,016

ELECTRICAL DRIVING UNIT FOR ROLLING VEHICLES AND MOTOR VEHICLES PROVIDED WITH SUCH A UNIT

Leonce Rudelle, Puech D'Antenc, Andouque, 81350 Valderies, France

Filed May 7, 1992, Ser. No. 879,344
Claims priority, application France, May 23, 1991, 91-06257
Int. Cl.[5] B60K *1/00*
U.S. Cl. 180—65.1 **7 Claims**



1. An electrical driving unit for rolling motor vehicles, the driving unit comprising an electrically motorized subassembly made up of a motor including a rotor having a speed, a series excitation winding and a parallel excitation winding, said motor being fed by a direct current supply subassembly and controlled by an electrically regulated control subassembly, said electrical driving unit characterized in that:

the series excitation winding and the parallel excitation winding are both connected between the direct current supply subassembly and the electrically regulated control subassembly,

the direct current supply subassembly comprising a series of accumulator batteries, and

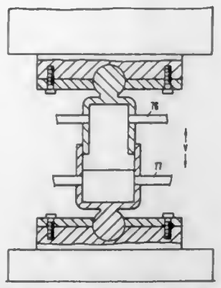
the electrically regulated control assembly comprising a feed circuit for said series excitation winding and a first rheostat installed on the feed circuit of said series excitation winding of the electrically motorized subassembly allowing for a drop in voltage at the terminals of said series excitation winding in order to modulate the rotor speed of the motor.

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5,310,017
VIBRATION ISOLATION SUPPORT MOUNTING SYSTEM

Jaromir Tobias, 322 E. 57th St., New York, N.Y. 10022

Division of Ser. No. 474,329, Feb. 2, 1990, Pat. No. 5,101,929, which is a continuation-in-part of Ser. No. 381,197, Jul. 18, 1989, Pat. No. 5,062,498, and Ser. No. 414,254, Sep. 29, 1989, Pat. No. 5,050,835, and Ser. No. 463,259, Jan. 9, 1990, Pat. No. 5,168,703. This application Mar. 20, 1992, Ser. No. 855,845
Int. Cl.[5] B62D *21/00*
U.S. Cl. 180—291 **18 Claims**



1. A vibration isolating support mounting system for supporting a load of a first member on a second member and for attenuating transmission of vibrations between said members, said system comprising:

a plurality of load support vibration isolation mounts for disposal at spaced apart locations between the first and second members, each of said mounts including a first mount part securable to the first member, a second mount part securable to the second member, guide means for guiding relative movement of the first and second mount parts, and first spring cushion means and a high pressure hydraulic fluid medium means acting in series between the first and second mount parts for attenuating vibration induced force transfer between said first and second mount parts,

a hydraulic fluid accumulator,

means for maintaining a predetermined pressure of hydraulic fluid in the accumulator, and

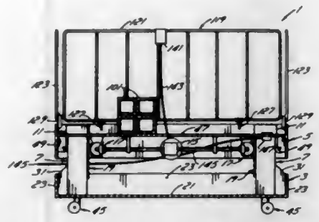
high pressure fluid line means for communication the accumulator pressure with high pressure hydraulic fluid medium means of the load support mounts, said high pressure hydraulic fluid medium means of the mounts being arranged in series along said high pressure fluid line means.

5,310,018
SCAFFOLD

Jean J. Lahaie, Apt. 328 1421 Brookdale, Cornwall, Ontario K6J 5E8, Canada

Filed Dec. 17, 1992, Ser. No. 992,162
Int. Cl.[5] E04B *1/20*
U.S. Cl. 182—141 **1 Claim**

1. A scaffold having in its working position: a base; a working platform on top of the base; vertical support posts at the corners of the base, each post comprising a relatively short post base section fixed to a corner of the base; a plurality of relatively long, post extension sections; interconnecting means on the free end of the post base section, and on the ends of the post extension sections, to rigidly interconnect one or more of the post extension sections to each post base section and to each other to extend the support posts; guide means at the corners of the working platform for the support posts, the guide means comprising a short guide sleeve fixed on the platform and aligned with a hole on the platform through which the support post passes; cooperating drive means on the platform and posts for use in raising or lowering the platform on the posts relative to the base, the drive means also supporting the platform on the posts; motor means on the platform, the motor means selectively operable to operate the drive means to raise or lower the platform; casters for the scaffold; means in

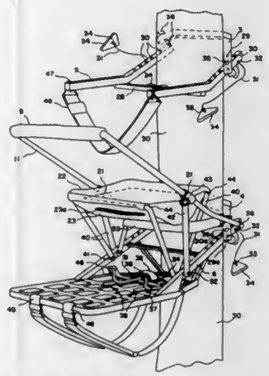


the bottom of the base, at the corners, for removably receiving the casters; means in one side of the scaffold for removably receiving the casters; the casters adapted to be mounted in the bottom of the base when the scaffold is being used, and in the side of the scaffold when the scaffold is being stored.

5,310,019
TWO PART TREE STAND

Donald L. Paul, 9559 Foley La., Foley, Ala. 36535

Filed Feb. 18, 1992, Ser. No. 837,213
Int. Cl.[5] A47F *3/026*
U.S. Cl. 182—187 **7 Claims**



1. A tree stand having a base comprising;

(a) a gun rest support arm pivotally connected to said base by a pivot;

(b) a means for maintaining the position of said support arm to said base attached to said pivot and wherein the means for maintaining the position of said support arm further comprises a means for adjusting tension for restricting the movement of the support arm and wherein the means for adjusting tension further comprises;

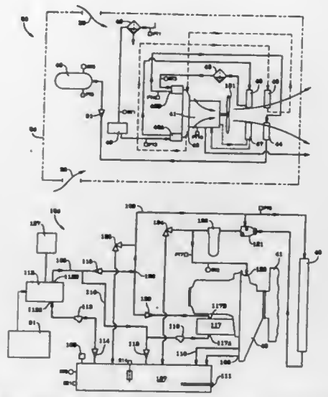
(a) a sleeve having exterior threads said sleeve encircling the support arm;

(b) a cap having interior threads for cooperating with the sleeve thread said cap defining a reduced diameter at a point farthest from the sleeve so that when the sleeve is threaded into the cap, the diameter of the sleeve is reduced.

5,310,020
SELF CONTAINED LUBRICATING OIL SYSTEM FOR A CENTRIFUGAL COMPRESSOR

Daniel T. Martin, Clemmons, and Donald G. Smith, Mocksville, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 9, 1993, Ser. No. 74,235
Int. Cl.[5] F01M *9/00*
U.S. Cl. 184—6.3 **5 Claims**



1. A self-contained lubrication system for a compressor, the lubrication system comprising:

a compressor having an inlet port, a discharge port, and an oil supply port:

engine means for providing a motive force to the compressor;

a lubricant reservoir;

a first, electric-driven, self-priming pump, having an inlet and a discharge, for providing a supply of lubricant to the compressor prior to starting the engine means and for a predetermined period of time after the engine is operating, the first pump means flow connected in fluid receiving relation with the lubricant reservoir;

first electronic controller means for directing compressor operations, including directing operation of the first pump;

second electronic controller means, external to the first controller means, for directing operation of the first pump for a predetermined period of time after engine operation;

a second, compressor-driven, self-priming pump having an inlet and a discharge, the second pump providing a primary lubricant pumping function during engine operation at predetermined run speeds, the second pump means flow connected in fluid receiving relation with the lubricant reservoir;

valve means flow connected intermediate the discharge of the first pump and the discharge of the second pump for preventing lubricant cross flow between the first and second pumps during simultaneous operation thereof;

conduit means for flow connecting the discharge of the first pump with the inlet of the second pump such that the first pump preprimes the second pump to facilitate the self-priming duty of the second pump; and

air cooled lubricant temperature regulator.

5. A self-contained lubrication system for a compressor, the lubrication system comprising:

a compressor having an inlet port, a discharge port, and an oil supply port;

engine means for providing a motive force to the compressor;

a lubricant reservoir;

a first, electric-driven, self-priming pump, having an inlet and a discharge, for providing a supply of lubricant to the compressor prior to starting the engine means and for a predetermined period of time after the engine is operating, the first pump means flow connected in fluid receiving relation with the lubricant reservoir;

first electronic controller means for directing compressor operations, including directing operation of the first pump;

second electronic controller means, external to the first controller means, for directing operation of the first pump for a predetermined period of time after engine operation;

a second, compressor-driven, self-priming pump having an inlet and a discharge, the second pump providing a primary lubricant pumping function during engine operation at predetermined run speeds, the second pump means flow connected in fluid receiving relation with the lubricant reservoir;

valve means flow connected intermediate the discharge of the first pump and the discharge of the second pump for preventing lubricant cross flow between the first and second pumps during simultaneous operation thereof;

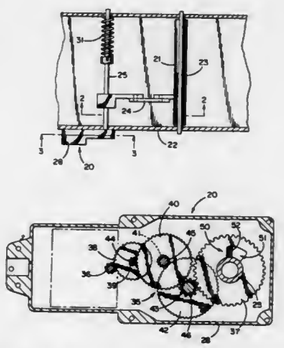
conduit means for flow connecting the discharge of the first pump with the inlet of the second pump such that the first pump preprimes the second pump to facilitate the self-priming duty of the second pump; and

air cooled lubricant temperature regulator, and wherein during operation, the first pump means is actuated by the first electronic controller means for a predetermined period of time before the engine means is cranked to start, the first pump operating continuously during cranking and during engine operation at predetermined engine idle speeds at which the first pump and the second pump operate simultaneously to deliver lubricant to a predetermined fluid point in the system, and when the compressor is loaded and the engine is accelerated to a predetermined speed, the first pump is deactivated, and when the engine is stopped, the second electronic controller means causes the first pump to instantly start and to run for a predetermined period of time after the engine has ceased operating.

5,310,021
MOTOR-DRIVEN, SPRING-RETURNED ROTARY ACTUATOR

Peter C. Hightower, Belvidere, Ill., assignor to Barber-Colman Company, Loves Park, Ill.

Filed Feb. 18, 1993, Ser. No. 18,813
Int. Cl.[5] F03G *1/08*; F24F *7/00*
U.S. Cl. 185—40 R **7 Claims**



1. A reversible actuator comprising a selectively energizable electric motor having a rotatable drive shaft, a rotatable output

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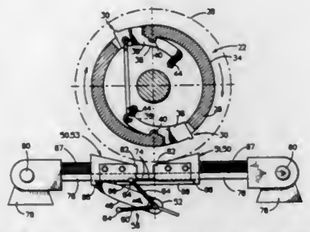
shaft, a gear train having an input gear adapted to be rotated by said drive shaft and having an output gear adapted to rotate said output shaft in one direction when said motor is energized, a torsion spring connected to said output shaft and adapted to be wound when said output shaft is rotated in said one direction, said torsion spring unwinding and rotating said output shaft in the opposite direction in response to de-energization of said motor, and lost-motion connection means between said output shaft and said output gear, said lost-motion connection means causing said output gear to rotate said output shaft in said one direction when said motor is energized, causing said output shaft to rotate said output gear when said spring rotates said output shaft in said opposite direction, and permitting said output gear to rotate relative to said output shaft when the latter is stopped against rotation in said opposite direction whereby the energy imparted to said output gear by said spring is dissipated through said gear train.

5,310,022

MECHANICAL OVERSPEED SAFETY DEVICE

William Sheridan, Southington, and Anthony Cooney, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 20, 1992, Ser. No. 854,528
Int. Cl.[5] D66B *5/16*
U.S. Cl. 187—89 **13 Claims**



1. A bidirectional overspeed governor for an elevator having a rope supported elevator car in a hoistway and a drive means having a rotational shaft and a brake surface fixed to said shaft, for driving said elevator car within said hoistway, said governor comprising:

a pair of wedge brakes, for selectively acting against the brake surface in either direction of rotation;

mechanical maintaining means for maintaining said wedge brakes in a normal position, out of engagement with the brake surface; and

centrifugal actuating means for displacing said maintaining means from said normal position if the rotational velocity of the drive means exceeds a predetermined limit in either direction of rotation, thereby allowing one of said wedge brakes to engage the brake surface.

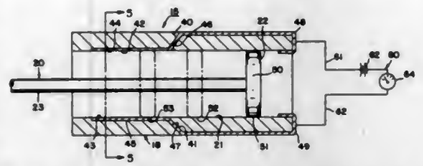
5,310,023

SENSOR AND WARNING INDICATOR FOR AIRBRAKE RODS

Antonio Martinez, 11231 Fineview St., El Monte, Calif. 91733

Filed May 27, 1992, Ser. No. 889,220
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 188—1.11 **2 Claims**

1. A sensor for detecting overtravel of a brake rod relative to a housing of a brake actuator, said brake rod being movable relative to said housing for the purpose of applying vehicular brakes, whereby to detect an unsafe brake condition respective to overtravel of said brake rod, said sensor comprising a first and second part joined together for relative sliding movement, with one part connected to said housing, and the other part connected to said rod, and switching means interlinking said parts adapted to change its switching conditions when one part has reached or passed a predetermined limit respective to braking conditions, one of said parts being a case having a passage therein, and the other being a post slidably mounted in said case, said switching means comprising a pair of angularly spaced apart axially-extending conductive strips in said pas-



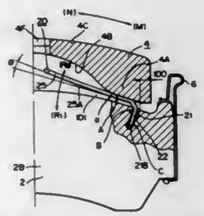
sage, and a conductive portion on a head to which said post is mounted, said head fitting in said passage, and said conductive portion being adapted to conductively bridge said strips at and beyond said predetermined limit.

5,310,024

DISK BRAKE RETURN SPRING

Yuichi Takagi, Yamanashi, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Mar. 26, 1993, Ser. No. 37,357
Claims priority, application Japan, Mar. 27, 1992, 4-016858[U]
Int. Cl.[5] F16D *55/22*
U.S. Cl. 188—72.3 **4 Claims**



1. A disk brake having a pair of friction pads provided at respective positions which face each other across a disk, a caliper having a disk pass portion extending across said friction pads and moving both said frictions pads toward said disk, and a return spring connecting said friction pads and biasing them away from said disk, wherein the improvement comprises

said return spring having engagement portions respectively provided at both ends thereof and retained by being inserted into respective retaining holes formed in said friction pads at ends thereof which are closer to the outer periphery of said disk, and a spring function portion provided between said engagement portions to connect them together,

said engagement portions being disposed so that after said caliper has been mounted, said engagement portions lie inside said disk pass portion of said caliper in a state where said engagement portions are retained by said retaining holes,

a protuberance provided on the inner side of said disk pass portion of said caliper circumferentially of said disk along a side edge of said disk pass portion,

a recess formed on the inner side of said disk pass portion so as to extend continuously from said protuberance toward a central portion of said caliper, and

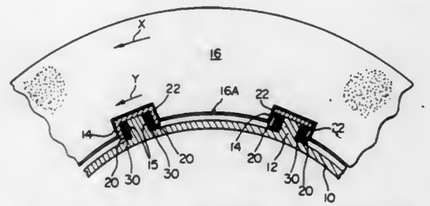
first and second angularly bent portions formed at each end of said return spring in the portion between said engagement portion and said spring function portion so that after said caliper has been mounted, said return spring is in contact at said first bent portion with an entrance portion of said retaining hole, while said spring function portion is in contact with said protuberance at a region including said second bent portion, and said return spring is in contact at a distal end of said engagement portion with an innermost portion of said retaining hole.

5,310,025

AIRCRAFT BRAKE VIBRATION DAMPER

Bruce W. Anderson, Niles, Mich., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Jul. 23, 1992, Ser. No. 918,994
Int. Cl.[5] F16D *3/14, 13/68, 65/02*
U.S. Cl. 188—73.37 **12 Claims**



6. In an aircraft brake having rotatable discs connected with a wheel and stationary discs connected with a torque tube, the stationary discs having at an inner diameter thereof a plurality of circumferentially spaced-apart complementary shaped axial openings which receive respectively axially extending splines of the torque tube, the axially extending splines each having a pair of substantially radially extending circumferentially spaced-apart walls extending along the axial length of the spline and connected by a circumferentially extending radially outer surface of the spline, a vibration dampening mesh material located adjacent each of the spaced-apart walls, and metal covers each extending axially and disposed over a respective spline so that the mesh material is located between the respective spline and metal cover which is located within the respective complementary shaped axial openings of the stationary discs, the mesh material able to transmit braking torque loads from the metal covers to the splines, so that during operation of said brake the mesh material effects a dampening of vibrations generated during braking operation.

5,310,026

ELECTRIC DRUM BRAKE

Schuyler S. Shaw, Dayton; Donald E. Schenk, Vandalia; Linda L. Hallinan, Centerville, all of Ohio, and Jerry L. Newton, Richmond, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1992, Ser. No. 963,179
Int. Cl.[5] B60T *13/74*
U.S. Cl. 188—156 **8 Claims**

1. A drum brake for a wheel of an automotive vehicle comprising:

a brake drum for connection to the vehicle wheel;

a backing plate for connection to the vehicle;

first and second brake shoes with means of pivotal mounting with respect to the backing plate for frictionally engaging the brake drum;

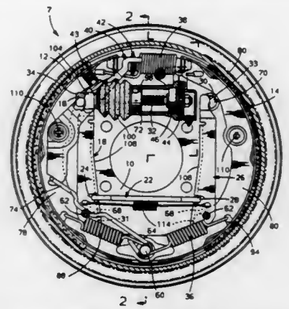
a first threaded member mounted for linear motion with respect to the backing plate;

a primary apply lever with means of pivotal mounting with respect to the first threaded member and with means of pivotal mounting with respect to the first brake shoe for imparting an actuation force to the first brake shoe;

a secondary apply lever having one end with means of pivotal mounting with respect to the backing plate and a second end with means of pivotal mounting with respect to the second brake shoe for imparting an actuation force to the second brake shoe;

a generally fixed-length strut with means of mounting with respect to and extending between the primary and secondary apply levers for imparting an actuation force from the primary lever to the secondary lever;

a second threaded member threadably engaged with the first



threaded member for translating the first threaded member to impart an actuation force to the primary lever to effect both a service brake and a parking brake application;

electric motor means for driving the second threaded member; and

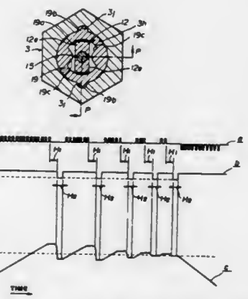
means providing for torsionally restraining motion of the second threaded member.

5,310,027

CONTROL SYSTEM FOR ADJUSTING DAMPING FORCE COEFFICIENT OF SHOCK ABSORBER FOR AUTOMOTIVE SUSPENSION

Michiya Nakamura; Mitsuo Sasaki, and Makoto Kimura, all of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Japan

Filed Aug. 5, 1992, Ser. No. 924,967
Claims priority, application Japan, Aug. 6, 1991, 3-196721; Aug. 27, 1991, 3-068103[U]
Int. Cl.[5] F16F *9/50;* B60G *17/00*
U.S. Cl. 188—299 **20 Claims**



1. A control system for a vehicular suspension, comprising:

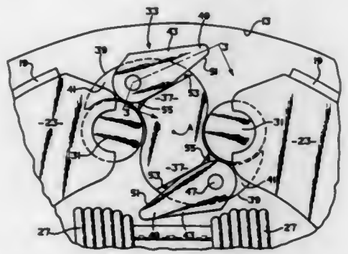
a shock absorber disposed between a vehicular body and a wheel;

an adjusting member installed in said shock absorber and changing the damping force coefficient of said shock absorber;

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a step motor connected to said adjusting member so as to rotatingly drive said adjusting member;
a stopper restricting rotation of said adjusting member;
means for detecting vehicle behavioral information and outputting a signal indicative of the vehicle behavioral information; and
means for controlling said adjusting member through said step motor into a desired state on the basis of the signal from said detecting means, said controlling means including a correcting means which sets said adjusting member at a home position relative to said stopper by outputting predetermined drive signals by installments to said step motor.

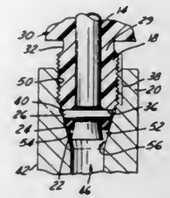
5,310,028
S-CAM FOR DRUM BRAKE
Ernest C. Sampson, Bunnel, Fla., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 15, 1992, Ser. No. 991,055
Int. Cl.[5] F16D *51/22*
U.S. Cl. 188—329 **14 Claims**



1. A cam assembly for expanding internal shoe brakes of the type comprising a pair of pivotably mounted brake shoes located interiorly of a brake drum, each of said brake shoes carrying a cam follower urged into direct engagement with a cam member working surface, rotation of said cam assembly in a first direction of rotation from the fully disengaged condition forcing at least one of said brake shoes radially outwardly relative to said brake drum; said cam assembly comprising a cam member pivotable about an axis of rotation (A), said cam member comprising a working portion, said working portion defining said working surface and further defining a nominal lift circle having a first diameter (D1), characterized by:
(a) said working portion including a ramp member movably fixed relative thereto;
(b) said ramp member defining a ramp surface and having a retracted position in which said ramp surface is disposed radially within said nominal lift circle thereby said ramp surface being out of engagement with said cam follower; and
(c) said ramp member having an extended position in which said ramp surface is disposed radially outward from said nominal lift circle, and in direct engagement with its respective cam follower.

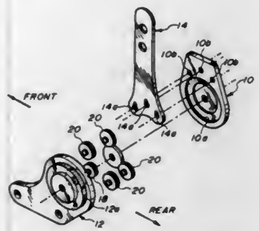
5,310,029
BRAKE TUBE COUPLING
Rick A. Kujawski, Mount Clemens, Mich., assignor to Bundy Corporation, Warren, Mich.
Filed Oct. 19, 1992, Ser. No. 962,780
Int. Cl.[5] F16L *25/00*
U.S. Cl. 188—352 **18 Claims**

1. A coupling for releasably and sealingly connecting a brake tube with a flange adjacent an outwardly flared and circumferentially continuous end portion, comprising, a first fitting having an end face and a passage therethrough constructed and arranged to telescopically receive a brake tube with the flange adjacent said end face, a second fitting having a passage therethrough with a conical cavity therein having a circumferentially continuous sidewall with a taper reversed relative to the taper of the flared end of the tube and inclined to the axis of said flared end portion of the tube, an annular seal of a flexible resilient material which is circumferentially continuous and constructed and arranged to be received in assembly over the flared end of the brake tube and bearing on said conical sidewall of said second fitting, male threads on one of said fittings, female threads in the other of the said fittings and complementary to said male threads for mating threaded engagement therewith, said threads of said second fitting having a diameter



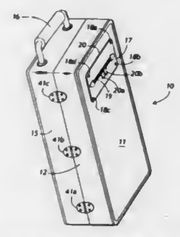
larger than the outside diameter of said annular seal and said flange, and said fittings are constructed and arranged so that in assembly with the male and female threads interengaged, said first fitting disposes the flared end of the tube in said conical cavity of the second fitting with said end face bearing on the flange of the tube and said annular seal is received over the flared end of the tube and bearing on all three of said flange, said tube and said sidewall of said conical cavity of said second fitting to provide a fluid tight seal between said second fitting and the tube at a fluid pressure of at least 12,000 psi with said fittings threaded together with a torque of not more than three foot pounds.

5,310,030
ENERGY-ABSORBING FASTENED STRUCTURE
Tadashi Kawakita, and Yukihisa Sugiyama, both of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase City, Japan
Filed Apr. 22, 1992, Ser. No. 871,999
Claims priority, application Japan, Apr. 25, 1991, 3-038141[U]
Int. Cl.[5] F16F *7/12*
U.S. Cl. 188—371 **6 Claims**



1. An energy-absorbing fastened structure comprising:
a first member having a first circular through hole;
a second member having a second circular through hole which is mated with the first circular through hole;
a fastener, having a head portion and a shaft portion, for fastening the first and second members together, wherein the shaft portion of said fastener extends through the mated first and second circular through holes; and
a first arcuate boss portion formed on the first member so as to be positioned at a periphery of the first circular through hole, the first arcuate boss portion being concentric with the first circular through hole and defining a flat portion between two open ends thereof on top of the first circular through hole for absorbing an energy of a load which exceeds a predetermined magnitude and is applied to the fastened structure, the flat portion of the first member being constructed so as to be deformed by the shaft portion of the fastener which is forced to move together with the second member relative to the first member;
said first arcuate boss portion having an inner arcuate surface which is in direct abutment with the head portion of said fastener such that the head portion is substantially encircled by said first arcuate boss portion.

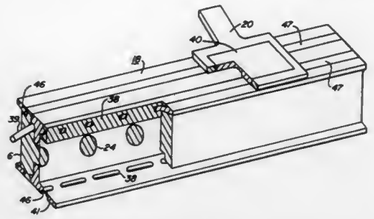
5,310,031
HARD SIDED LUGGAGE WITH SOFT COVERED EXTERNALLY ACCESSIBLE POUCH AREAS
Robert V. Plath, 3030 NE. 44th St., Lighthouse Point, Fla. 33064
Filed Mar. 27, 1992, Ser. No. 859,151
Int. Cl.[5] A45C *5/14, 13/00*
U.S. Cl. 190—18 A **47 Claims**



31. In a suitcase of the type having at least one semi-rigid, substantially planar side panel and a plurality of wheels disposed in said substantially planar side panel with at least a portion of the arc of each of said wheels extending above said substantially planar side panel to form a wheel base plane that is substantially parallel to said planar side panel, the improvement comprising:
wall means defining a well on said planar side panel, said well extending above said planar side panel and having a well periphery that is co-planar with said wheel base plane;
a pouch having a substantially planar pouch upper surface;
means for securing said pouch within said well so that said pouch upper surface is substantially co-planar with the top of said well and substantially coextensive with said well periphery; and
means disposed on said pouch upper surface for selectively providing access to the interior of said pouch.

5,310,032
POWER CONDUCTOR RAIL
Dietmar G. Plichta, 410 Highland Ct., Clyde, Calif. 94520
Continuation-in-part of Ser. No. 49,893, Apr. 20, 1993, Pat. No. 5,263,561, which is a continuation-in-part of Ser. No. 791,809, Nov. 13, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 73,364
Int. Cl.[5] B60M *1/30*
U.S. Cl. 191—29 DM **11 Claims**

1. A power conductor rail system comprising:
a steel rail including a longitudinal axis, a flange having an upper surface, a web integrally formed with the flange, and a groove formed in the flange, the groove penetrating the upper surface and extending parallel to the longitudinal axis; and
an aluminum portion secured to the steel rail, the aluminum portion filling the groove so that the aluminum portion is substantially flush with the upper surface of the steel rail,



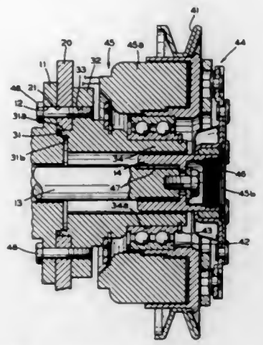
the aluminum portion in the groove and the upper surface forming an electrical contact surface.

5,310,033
LOCK-UP TYPE TORQUE CONVERTER
Takashi Shibayama, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 5, 1992, Ser. No. 892,823
Claims priority, application Japan, Jun. 7, 1991, 3-136132
Int. Cl.[5] F16H *45/02*
U.S. Cl. 192—3.29 **10 Claims**

1. A lock-up type torque converter, comprising:
a pump impeller associated with an input shaft;
a turbine runner associated with an output shaft;
a lock-up clutch capable of directly connecting said input and output shafts, said lock-up clutch further having an orifice formed therein in the vicinity of a facing thereof, said orifice communicating with a fluid chamber of said lock-up clutch and a converter fluid chamber; and
flow restriction means for adjusting a flow rate through said orifice in a temperature dependent manner and mounted on a surface of said lock-up clutch proximate said orifice, said flow restriction means comprising a temperature sensitive arm portion mounted on said surface and having, at an end opposite a mounted end, a shutter portion arranged such that said flow restriction means is operable in at least three modes wherein, at substantially low fluid temperatures said arm portion is caused to bend in a first direction such that said shutter portion completely covers said orifice and, at medium fluid temperatures said arm assumes a relatively straight, neutral configuration whereat said shutter partially covers said orifice to allow partially restricted fluid flow therethrough and, at substantially high fluid temperatures said arm portion is caused to bend in a second direction opposite said first direction such that said shutter portion is moved completely away from said orifice so as to allow unrestricted flow of fluid through said orifice.

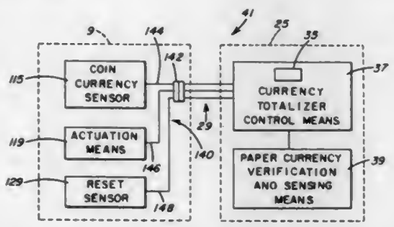
VOL 1162 ISS 2 MAY 10 1994 UMI

5,310,034
SUPPORTING HUB FOR CLUTCH AND PUMP ASSEMBLY
Louis M. Bernabei, S. Beloit, Ill., assignor to Dana Corporation, Toledo, Ohio
Filed Nov. 9, 1992, Ser. No. 973,291
Int. Cl.[5] F16D *13/58, 27/00*
U.S. Cl. 192—115 **16 Claims**



1. An assembly comprising:
a supporting bracket having an opening formed therethrough defining an inner surface;
a hub including a first mounting portion having an inner surface and an outer surface and a second mounting portion, said outer surface of said first mounting portion engaging said inner surface of said opening to support said hub on said supporting bracket;
a pump including a rotatable shaft and an outer mounting surface, said pump outer mounting surface engaging said inner surface of said first mounting portion of said hub to support said pump thereon; and
a clutch including a first member adapted to be rotatably driven, a second member adapted to be selectively connected to said first member for rotation therewith, and a mounting surface, said clutch mounting surface engaging said second mounting portion of said hub to support said clutch therein, said second member being connected to said pump shaft for rotation therewith.

5,310,035
PAPER AND COIN CURRENCY TOTALIZER FOR AN EXISTING VENDING MACHINE
Bernard J. Dobransky, Jr., and Raymond G. Stoken, both of Irwin, Pa., assignors to Revenco Corporation, North Huntingdon, Pa.
Filed Sep. 23, 1992, Ser. No. 948,660
Int. Cl.[5] G07F *7/04*
U.S. Cl. 194—206 **15 Claims**

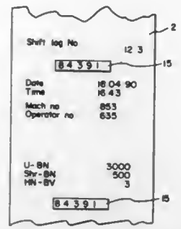


1. The improved paper and coin currency totalizer for being installed on an existing vending machine of the type having an existing totalizer unit which includes an existing coin receiving channel, an existing movable mechanical release means for being moved to a release position to allow an item in the existing vending machine to be dispensed, and an existing movable mechanical reset means which is for being moved to a reset position after the item is dispensed, said improved paper and coin currency totalizer comprising:
an electronic coin currency sensor mounted in the existing totalizer unit in alignment with the coin receiving channel;
said electronic coin currency sensor for producing a coin signal when a coin currency passes through the coin receiving channel and by said electronic coin currency sensor;
an electronic paper currency sensor for producing a paper signal when a paper currency is deposited in and verified by said electronic paper currency sensor;
currency totalizer control means for receiving each said paper signal from said electronic paper currency sensor and each said coin signal from said electronic coin currency sensor;
said currency totalizer control means including currency amount means for determining by a total of said paper signals and said coin signals when a predetermined amount of currency has been deposited in said electronic paper currency sensor and through the coin receiving channel;
actuation means mounted in the existing totalizer unit for moving the mechanical release means in the existing totalizer unit to the release position;
said currency totalizer control means including actuation signal means for sending an actuation signal to said actuation means from said currency amount means when said predetermined amount of currency has been deposited in said electronic paper currency sensor and through the coin receiving channel;
a reset sensor mounted in the existing totalizer unit in alignment with the movable mechanical reset means for producing a reset signal when the movable mechanical reset means is moved to the reset position;
said currency totalizer control means for receiving said reset signal and for discontinuing said actuation signal to the actuation means when said reset signal is received from said reset sensor;
said currency totalizer control means including variable selection means for selectively varying said predetermined amount of currency needed to produce said actuation signal by said currency amount means;
said electronic coin currency sensor, said actuation means, and said reset sensor being mounted on a support plate which is installed within the existing totalizer unit;
a housing secured to an outside wall of the existing vending machine; and
said electronic paper currency sensor and said currency totalizer control means being mounted within said housing.

5,310,036
METHOD FOR CHECKING THE CORRECT PROCESSING OF BANK NOTES
Wilhelm Hell, Mering, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 690,779, Apr. 26, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,119
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013585
Int. Cl.[5] G07D *7/00*; B07C *5/34*; B42D *15/10*
U.S. Cl. 194—206 **19 Claims**

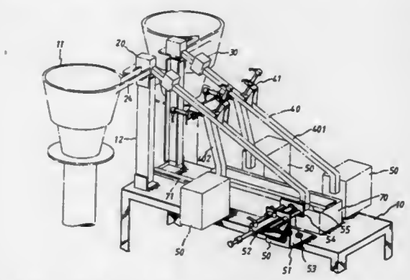
1. A method for checking correct processing of bank notes in an automatic bank note sorter, comprising:
introducing bank notes into said bank note sorter;
sorting said bank notes into categories;

preparing and printing a log report in accordance with said log data, including calculating, generating and printing an



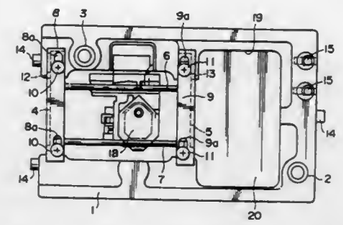
encrypted authenticity marking on said log report, said authenticity marking being related to said log data by an algorithm.

5,310,037
AUTOMATIC LOADING MECHANISM FOR ELECTROPLATING
Yu C. Guey, P.O. Box 82-144, Taipei, Taiwan
Filed Oct. 15, 1992, Ser. No. 961,415
Int. Cl.[5] B65G *21/20*
U.S. Cl. 198—345.2 **1 Claim**



1. An automatic loading mechanism for electroplating comprising:
a platform having two racks connecting two vibrators with said platform, said racks being fixedly mounted on a bracket and each said rack provided with an inspecting means, a turning means and a separating means, said inspecting means being connected with an outlet of one of said vibrators via an outlet plate so that a workpiece may be transmitted to a fixing frame, said bracket having a sliding plate which is provided at one end with a cylinder and a plurality of pins on a top;
an elevating means mounted on said platform and disposed near a front passage and a branch passage and under supporting rods, said elevating means including a plate on which there are two seats, two guiding rods mounted on the seats, an upper plate, a lower plate, a cylinder arranged on the plate on which are mounted said two seats, and a universal joint pivotally connected with a driving member engaged with two clamping arms, said clamping arms being in turn connected with the upper plate and having a spring therebetween and being provided at the end with a recess engaged with the supporting rod; and
a pushing mechanism having a bracket fixedly mounted on said platform and a cylinder connected with a plate, said cylinder being provided with a push rod extending through the plate and disposed against the outlets of the front passage and the branch passage and two supporting rods of a hook.

5,310,038
POSITIONING MECHANISM FOR POSITIONING A PALLETIZED DEVICE ON A PROCESSING APPARATUS
Yoshifumi Akaike, Tokyo, and Katsunori Ishii, Kanagawa, both of Japan, assignors to Sony Corporation, Japan
Filed Aug. 4, 1992, Ser. No. 924,463
Claims priority, application Japan, Aug. 16, 1991, 3-229645
Int. Cl.[5] B65G *21/00*
U.S. Cl. 198—345.3 **3 Claims**



1. A positioning mechanism for supporting a device on a pallet which has an upper major face and positioning holes which are adapted to receive positioning pins, comprising:
first and second parallel support seats which respectively project upwardly from the upper major face of the pallet, said first support seat having first and second holes formed therein, said second support seat having third and fourth holes formed therein;
first and second positioning shafts for supporting the device on the pallet, said first and second positioning shafts being parallel to one another and extending between and loosely supported by said first and second support seats, said first positioning shaft being disposed in said first and third holes, said second positioning shaft being disposed in said second and fourth holes, said first and third and said second and fourth holes having diameters which are respectively greater than said first and second positioning shafts; and
a positioning member which is supported on the pallet and movable upwardly toward said first and second positioning shafts, said positioning member being directly engageable with a device which is supported on said first and second positioning shafts.

5,310,039
APPARATUS FOR EFFICIENT TRANSFER OF ELECTRONIC DEVICES
Richard R. Butera, Palo Alto; Robert S. Childress, Sunnyvale; Amin Heydarpour, Mountain View, all of Calif., and Jagdish Sagar, Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.
Filed Aug. 19, 1992, Ser. No. 932,656
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—346.2 **15 Claims**

1. An apparatus for the fast and efficient transfer of integrated circuits between three locations, a first input location, a second test site location, and a third output location, wherein each of said three locations reside in a first XY-plane comprising:
a first work press assembly for transferring integrated circuits between said three locations and for applying pressure while the integrated circuits are being tested at said test site location, said first work assembly comprising:
a variable length shaft;
an arm rigidly coupled perpendicularly to said variable length shaft;
a work press coupled to said arm;
said first work press assembly capable of moving between three horizontal positions, a first position associated with said input location, a second position associated with said

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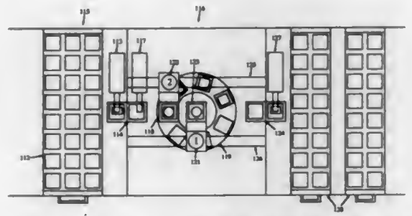
test site location, and a third position associated with said output location, said shaft of said first work press assembly located in a second plane whenever said work press assembly is in one of said three positions, said second plane substantially parallel to said first plane; and

a second work press assembly for transferring integrated circuit between said locations and for applying pressure to integrated circuits while circuits are being tested at said test site location, said second work press assembly comprising:

a variable length shaft;

an arm rigidly coupled perpendicular to said variable length shaft;

a work press coupled to said arm; said second work press assembly capable of moving between three horizontal positions, a first position associated with said input



location, a second position associated with said test site location, and a third position associated with said output location, said variable length shaft of said second work press assembly located in a third plane whenever said second work press assembly is in one of said three positions, wherein said third plane is parallel to said first plane;

said first work press assembly capable of moving from said third position associated with said output location to said first position associated with said input location while said second work press assembly is at said second position associated with said test site location, and said second work press assembly capable of moving from said third position associated with said output location to said first position associated with said input location while said first work press assembly is located at said second position associated with said test site location.

5,310,040

PROCESS AND DEVICE FOR POSITIONING A BOBBIN

Bernhard Högen; Ludwig Braun, both of Ingolstadt; Ottmar Kovacs, Berching, and Michael Ueding, Ingolstadt, all of Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

PCT No. PCT/EP92/00950, § 371 Date May 21, 1993, § 102(e) Date May 21, 1993, PCT Pub. No. WO92/19519, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 30, 1992, Ser. No. 64,137

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—409 **28 Claims**

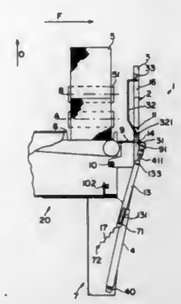
1. A process for positioning textile bobbins delivered by a conveying device for subsequent grasping by a grasping device, said process comprising the steps of:

delivering the bobbin to a tilting device with the conveying device, the axis of the bobbin oriented substantially horizontal with respect to the conveying device;

supporting the bobbin in its horizontal position upon a support surface of the tilting device;

actuating the tilting device so that the bobbin is tilted approximately 90 degrees, wherein the bobbin axis is substantially vertical;

substantially simultaneously with said tilting, positioning the bobbin on the tilting device so that the bobbin axis is essentially placed at a relatively constant position with respect to the tilting device regardless of the diameter of



the bobbin, bobbins of varying diameters thus being positioned at the relatively same position for suitable grasping by a grasping device.

5,310,041

DEVICE FOR EQUALLY-SPACED TRANSPORTATION OF RANDOMLY ARRANGED INCOMING PRODUCTS

Florenzo Draghetti, Medicina, Italy, assignor to G. D Societa' per Azioni, Bologna, Italy

Filed Jun. 16, 1992, Ser. No. 899,298

Claims priority, application Italy, Jun. 21, 1991, B091A000220

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—412 **14 Claims**

1. A device for equally spaced transportation of randomly arranged incoming products, said device comprising a first conveyor for transporting products successively and in a randomly arranged manner along a first portion of a first path and with a first orientation; a second conveyor for transporting the products at a constant rate along a second path and with a second orientation rotated by 90° relative to said first orientation; transfer means for removing the products at a predetermined rate from said first path; braking means located along a second portion of said first path, for receiving the products from said first conveyor and for forming an orderly line of products for supply, at a predetermined rate to said transfer means; said first and second paths being arranged in series at any predetermined angle to each other; and said transfer means being located between the output end of said first path and said second conveyor, for successively removing the products from said output end in a substantially transverse pickup direction in relation to said first traveling direction; first drive means being provided for operating both said transfer means and said second conveyor in time with each other; second drive means being provided for operating said brake means; and control sensor means being arranged at said output end of said first path to control said second drive means, whereby each product is fed by said brake means to said output end in time with said transfer means.

5,310,042

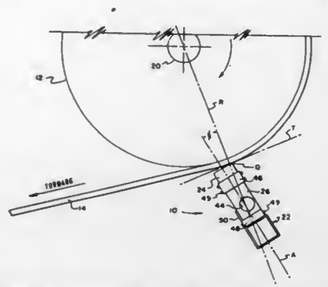
CONVEYOR BELT STRIPPER

Willem D. Veenhof, El Cajon, Calif., assignor to Martin Engineering Company, Neponset, Ill.

Continuation of Ser. No. 761,287, Sep. 17, 1991, abandoned. This application Jnn. 10, 1993, Ser. No. 75,049

Int. Cl.[5] B65G *45/00*

U.S. Cl. 198—497 **26 Claims**



1. A scraper assembly for use in combination with a conveyor belt, said scraper assembly including:

a crossbar member adapted to be mounted adjacent to the conveyor belt;

a scraper block supported by the crossbar member for engagement against the conveyor belt;

a deflectable connecting arm coupling the scraper block to the crossbar member, the connecting arm comprising a body of resilient material having a longitudinal axis, said body of resilient material being intersected by an aperture which extends transversely with respect to the longitudinal axis and which is located off center with respect to the longitudinal axis.

5,310,043

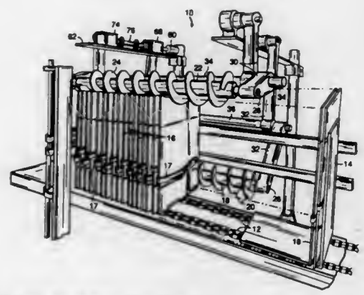
FEED APPARATUS WITH TWO FEEDSCREWS

William J. Alcorn, Rockland, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Feb. 16, 1993, Ser. No. 17,859

Int. Cl.[5] B65G *33/06*

U.S. Cl. 198—625 **25 Claims**



1. A feed apparatus comprising:

a linearly moving conveyor for moving articles placed thereon in a linear direction;

a first feedscrew mounted longitudinally in said linear direction alongside said conveyor and at least partially higher than said conveyor;

a second feedscrew mounted parallel to said first feedscrew proximate to said conveyor and mounted at a different vertical height from said conveyor than said first feedscrew, said first and second feedscrews both acting to support said articles in an upright position relative to said conveyor as said articles move on said conveyor;

feedscrew drive means for rotating said first and second feedscrews at equal speeds;

means for driving said conveyor at a linear speed; and

means for coupling said feedscrew drive means and said means for driving said conveyor so as to control said feedscrew drive means as a function of the linear speed of said conveyor.

5,310,044

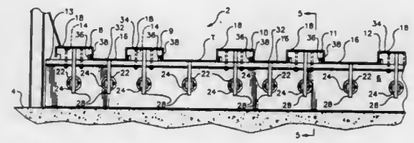
RECIPROCATING FLOOR CONVEYOR HAVING SLATS OF VARIED SIZE AND DRIVE SYSTEM THEREFOR

Manfred Quaeck, 1515 - 210th Ave. NE., Redmond, Wash. 98053

Filed Sep. 24, 1993, Ser. No. 125,770

Int. Cl.[5] B65G *25/04*

U.S. Cl. 198—750 **34 Claims**



1. A reciprocating floor construction comprising:

a supporting frame;

a plurality of base means on said supporting frame;

a plurality of elongated, slidable slats mounted side-by-side and divided into at least a first group and a second group interleaved with said first group, at least one of said slats in each of said first group and said second group having a surface area greater than the surface area of each of the remainder of said slats in said first group and said second group; and

drive means for causing longitudinal reciprocative movement of said plurality of slats.

5,310,045

SPIRAL CONVEYOR BELT WITH RIDGED DRIVE CAPSTAN

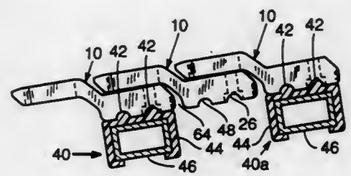
Karl V. Palmaer, 108 Winding Canyon, Folsom, Calif. 95630, and Eric K. Palmaer, 11749 Melones Cir., Gold River, Calif. 95670

Filed Dec. 2, 1992, Ser. No. 985,681

The portion of the term of this patent subsequent to Dec. 2, 2008, has been disclaimed.

Int. Cl.[5] B65G *13/02*

U.S. Cl. 198—778 **9 Claims**



1. In a driving cage for a modular plastic conveyor belt in a spiral conveyor, the improvement comprising:

a plurality of generally vertical cage bars positioned on the outer radius of the driving cage,

at least some of the cage bars having means providing generally vertical protrusion on the vertical cage bar, generally rounded and smooth in the lateral direction, such that the

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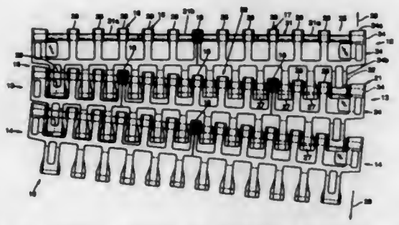
vertical protrusions smoothly engage with and disengage from gaps in the belt's edge or vertical grooves provided in side plates of the belt, thus establishing momentary engagement of the vertical protrusions with the belt to assist in driving engagement between the driving cage and the spiral conveyor belt.

5,310,046

PLASTIC CONVEYOR BELT WITH ENHANCED EDGE STRENGTH FOR TRAVEL ON CURVES

Karl V. Palmaer, 108 Winding Canyon La., Folsom, Calif. 95630, and Eric K. Palmaer, 1641 Klamath River Dr., Rancho Cordova, Calif. 95670

Continuation of Ser. No. 594,623, Oct. 9, 1990, Pat. No. 5,181,601. This application Dec. 31, 1992, Ser. No. 999,301
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] B65G *15/02*
U.S. Cl. 198—831 **1 Claim**



1. In a plastic conveyor belt capable of following a path including straight and curving sections and including a series of connected and serially interdigited elongated molded plastic belt module rows each including one or more belt modules in the row, the belt module rows being connected by rods extending transversely to the length of the conveyor belt, each belt module row having a set of first aligned spaced projections extending in one direction from the row and a set of second aligned spaced projections extending an opposite direction and arranged generally in staggered relationship with the first projections, the first and second projections of serially adjacent module rows being longitudinally overlapping and juxtaposed when the modules are connected serially in the conveyor belt by the connecting rods extending through transverse openings in the projections, the transverse openings of one of said sets of spaced projections being longitudinally elongated slotted holes to accommodate lateral curves wherein the module rows become angularly shifted and collapse together at the inside of the curve, with substantially the entire longitudinal tension of the belt from module to module carried at the outside of a curve, the improvement comprising,

at one side of each of a series of belt modules which include first and second spaced projections, integral means including at least the outermost first and second spaced projections for resisting essentially all the longitudinal tension in the belt at the outside of a curve when said one side of the modules is at the outside of a curve, and for increasing the longitudinal tension bearing capability at the outside of the belt on a curve as compared to inner portions of the belt.

5,310,047

REVERSIBLE CONVEYOR RETURN GUIDE SHOE

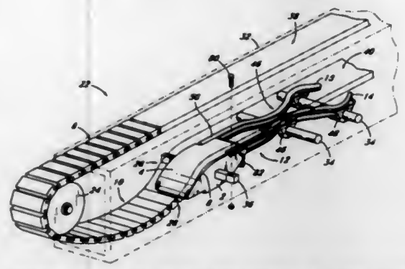
Stuart J. Ledingham, Coto de Caza, Calif., assignor to Valu Engineering, Inc., Irvine, Calif.

Filed Nov. 6, 1992, Ser. No. 972,744
Int. Cl.[5] B65G *15/60*
U.S. Cl. 198—841 **14 Claims**

1. A conveyor return way guide shoe being attachable to the return way of a conveyor system for guiding a conveyor belt or chain from the catenary sag to the return way wear strips, comprising:

a first surface adapted to be engaged by said conveyor belt or chain, said first surface having a forward portion and a rearward portion, said forward portion having a curvature sufficient to guide said conveyor belt or chain from said catenary sag onto said wear strips, and said rearward portion being substantially planar;

a second surface substantially similar in shape to said first



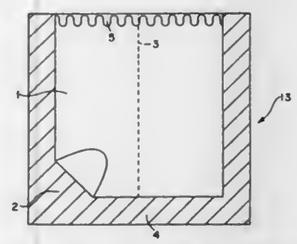
surface, said second surface also having a forward portion and a rearward portion, said second surface being located on said guide shoe on a side opposite that of said first surface and being oriented such that said forward portion of said second surface is proximate said rearward portion of said first surface, and said rearward portion of said second surface is proximate said forward portion of said first surface, said shoe being reversible such that said shoe can be utilized with either said first surface or said second surface engaging said belt or chain.

5,310,048

CUSHIONED EYEGLASS CASE

Bernard G. Stechler, 36-20 34th St., Long Island, N.Y. 11106

Filed Nov. 20, 1992, Ser. No. 979,335
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—5 **9 Claims**



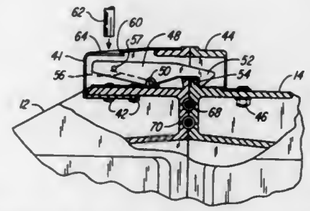
1. An open-end cushioned eyeglass case comprising an outer cover of heat-sealable polyvinyl chloride and an eyeglass protecting inner cushioning layer having a width and length which are each smaller than the width and length, respectively, of the outer cover, said cover and said cushioning layer being assembled in overlying relationship with the longitudinal axes thereof being in at least substantial alignment with each other, and at least the upper edge of the cushioning layer being sealed to the inner surface of the cover in proximity to the upper edge thereof forming a composite sheet assembly, said assembly being folded over upon itself along the at least substantially aligned longitudinal axes such that the opposed inner peripheral side edges of the heat sealable polyvinyl chloride outer cover are in direct contact with each other and the folded over inner peripheral bottom edge of the outer cover is also in direct contact, said opposed inner contacting peripheral side edges and contacting bottom edge being electronically heat sealed and form a fused side edge opposite the folded over side edge and a fused bottom edge opposite the upper edge which defines the open end of said eyeglass case, and wherein the cushioning layer does not interfere with the electronically heat sealed and fused bottom and side edges.

5,310,049

FILM OR PAPER CASSETTE

Donald O. Bigelow, Webster; Craig A. Caprio, Rochester, and John B. Chemelli, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 633,506, Dec. 28, 1990. This application Sep. 18, 1992, Ser. No. 947,642
Int. Cl.[5] B65D *85/66, 85/67*
U.S. Cl. 206—53 **8 Claims**



1. A cassette for a roll of web material and for opening with a tool, said cassette comprising:

first and second cassette parts each having a peripheral side wall, said cassette parts adapted to engage each other in a closed condition to enclose the roll of web material;

releasible latch means for retaining said cassette parts in engagement in said closed condition, said latch means including an abutment member on the sidewall of one of said cassette parts and a latch member on the sidewall of the other of said cassette parts for engagement with said abutment member;

housing means enclosing said latch means to prevent inadvertent release of said latch means, said housing means including a first housing part on one of said cassette parts and a second housing part on the other of said cassette parts, said housing parts have complemental interfacing surfaces which engage in said closed condition of said cassette parts to define a unitary housing substantially totally enclosing said latch means; and

an opening in one of said housing parts permitting insertion of the tool to release said latch means.

5,310,050

WRAP-AROUND CARRIER WITH FLEXIBLE HEEL APERTURE

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jun. 24, 1993, Ser. No. 83,128
Int. Cl.[5] B65D *75/06*
U.S. Cl. 206—147 **20 Claims**

1. A wrap-around carrier package containing a plurality of articles having bottom portions which include spaced support feet, comprising:

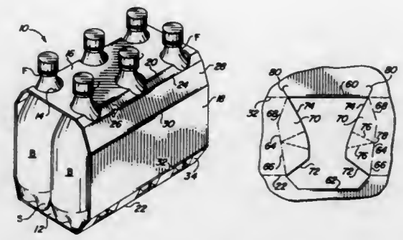
opposite side panels foldably connected to top and bottom panels;

the side panels having bottom portions containing apertures opposite the bottom portions of adjacent articles;

each aperture being partially covered by opposed side flaps each connected to the side panel along a fold line, each side flap having an outer side edge portion spaced from the outer side edge portion of an opposed flap wherein each aperture is uncovered between the outer side edge portions of it's associated flaps.

The side flap fold lines of each aperture having upper portions which are curved toward each other and have an upper end portion, the upper end portions of the side flap fold lines of each aperture being spaced from each other;

each side flap being in contact with a support foot of an adjacent article, at least some of the side flaps being outwardly pivoted thereby;



the curved portions of the side flap fold lines biasing the side flaps toward the interior of the carrier to assist in holding the articles in place within the carrier; and

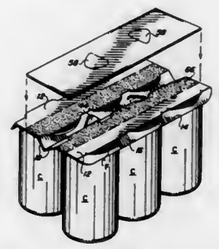
flex enhancing fold lines extending from the outer side edge portion of each of the side flaps to the side flap fold lines, said flex enhancing fold lines acting to enhance the ability of the side flaps to flex along the length of said side flaps.

5,310,051

CLIP-TYPE ARTICLE CARRIER

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jun. 24, 1993, Ser. No. 83,139
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—153 **15 Claims**



1. A carrier containing adjacent rows of articles, each article having an upper portion which includes an outwardly projecting lip, comprising:

a support panel including two spaced parallel inner fold lines extending longitudinally of the panel and two outer fold lines parallel to and outwardly spaced from the inner fold lines;

the support panel including downwardly extending outer support sections connected thereto along the outer fold lines and downwardly extending inner support sections connected thereto along the inner fold lines, the inner support sections converging toward each other and being connected to each other along a central fold line;

each inner and outer fold line being interrupted by spaced slits forming slots in the support sections through which at least portions of the projecting lips of the articles protrude;

the slots having lower surfaces engaging the underside of the

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protruding portions of the article lips to thereby support the articles;

a reinforcing strip attached to the support panel and spanning the inner fold lines;

spaced finger holes in the inner support sections and in the reinforcing strip, the finger holes in the reinforcing strip overlying the finger holes in the inner support sections;

each inner support section finger hole having an inner transverse edge and being at least partially covered by tabs connected to the inner support sections by fold lines extending along said inner transverse edges; and

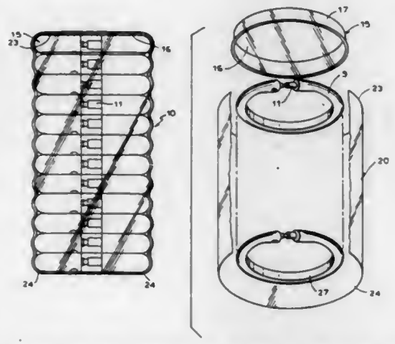
the inner support sections including second transverse fold lines located adjacent the first transverse fold lines, the ends of each second transverse fold line extending substantially from the ends of the first transverse fold lines.

5,310,052

SHOWER CURTAIN RING PACKAGE

Stanley Bindman, Roslyn Heights, N.Y., assignor to Creative Bath Products, Inc., Islip, N.Y.

Filed Jun. 29, 1993, Ser. No. 58,311
Int. Cl.[5] A44B *21/00*
U.S. Cl. 206—304.1 **2 Claims**



1. A unitary totally transparent package of shower curtain rings comprising:

a. a stack of ring shaped articles, each of which articles has at least one predetermined discontinuity therein, said discontinuities being aligned one with the other in a manner whereby each of the articles in the stack is congruently aligned with the other;

b. a cylindrical transparent PVC cap element disposed tightly over an uppermost ring shaped article in intimate contact therewith;

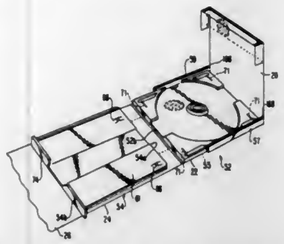
c. an elongated tubular transparent polyvinyl chloride plastic sleeve enveloping the stack of ring shaped articles from top to bottom and being shrunken into intimate contact with the outer surfaces of each of said ring shaped articles and said cap element to provide a package having a corrugated appearance and providing visual access to the inner and outer portions of said entire stack of ring shaped articles.

5,310,053

TELESCOPING COMPACT DISC HOLDER AND FOLDABLE COVER

Alan Lowry, Caton, Mass.; Robert Steller, Old Orchard Beach, Me.; William F. Fitzsimmons, Kennebunkport, Me., and Craig Lovecky, Old Orchard Beach, Me., assignors to Shape Inc., Biddeford, Me.

Filed Mar. 20, 1992, Ser. No. 854,687
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 **13 Claims**



1. A CD package including a CD holder having a base in telescoping relationship with a tray having side walls, wherein the tray and base can be moved from a first telescoped configuration to a second untelescoped configuration, and a foldable cover, said CD holder being affixed to the foldable cover, comprising:

means for temporarily locking the base and tray in the first telescoped configuration, and

a cap affixed to the cover and being engageable with the tray, said cap including two side walls, each side wall having a recess formed thereon and a rounded projection formed on each side of the recess, each of said recesses being engageable with a corresponding projection formed on the tray,

wherein said rounded projections on the cap create a two point low friction contact surface between the cap side walls and tray side walls.

7. A CD package including a CD holder having a base in telescoping relationship with a tray, wherein the tray and base can be moved from a first telescoped configuration to a second untelescoped configuration, and a foldable cover, said CD holder at the base being affixed by glue to the foldable cover, comprising:

means for temporarily locking the base and tray in the first telescoped configuration; and

a cap affixed by glue to the cover and being engageable with the tray,

wherein a bottom portion of the cap and a bottom portion of the base include a waffle texture to prevent glue leakage from between the cap and the cover, and the base and the cover.

5,310,054

STORAGE CONTAINER FOR DISK-SHAPED OBJECT

David L. Stumpff, and Yoshiko Taniyama, both of Alpharetta, Ga., assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,815
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 **4 Claims**

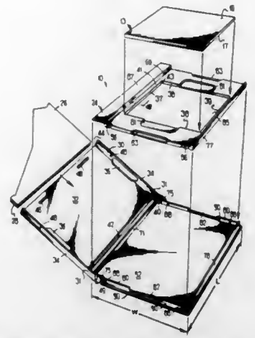
1. An apparatus for storing a disk-like object, said apparatus comprising:

a base tray including a bottom portion having an inside surface, a pair of side walls protruding upwardly from said inside surface of said bottom surface, and a rear wall portion extending upwardly from said inside surface of said bottom surface;

a cover including a top portion having an inside surface, and a pair of parallel side walls protruding downwardly from said inside surface of said top portion;

means for hingedly connecting said base tray to said cover;

a disk tray for receiving the disk-like object including a pair



of side walls, a front wall, a rear wall, and a rear ledge extending outwardly from said rear wall, in which said rear wall, front wall and side walls of said disk tray are arranged so as to form a window; and

means for connecting said disk tray to said base tray.

5,310,055

MAGAZINE AND SHIPPING TRAY FOR LEAD FRAMES

Hsiang Chu, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 899,828, Jun. 16, 1992, abandoned, which is a continuation of Ser. No. 571,377, Aug. 21, 1990, abandoned. This application Mar. 24, 1993, Ser. No. 37,516
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—328 **12 Claims**

1. A magazine utilizable for receiving discrete semiconductor lead frame strips from an inspection machine that is dispensing the lead frame strips, the magazine comprising:

(a) a receptacle adapted for receiving a plurality of lead frame strips directly from an inspection machine via a conveyor, wherein the receptacle includes a base for supporting a received plurality of lead frame strips, a top with a top opening providing access therethrough, an end with an end opening providing access therethrough, and at least one side with a plurality of side openings providing access through each thereof, and wherein the at least one side comprises a plurality of posts extending from the base, each one of the plurality of posts includes a sloped region for guiding each one of a plurality of lead frame strips from an inspection machine into the receptacle; and

(b) a removable cover adapted for placement on the receptacle for substantially covering a received plurality of lead frame strips by covering the top opening, the end opening and the plurality of side openings, wherein the removable cover includes a substantially planar top panel and a plurality of mutually abutting side panels in juxtaposition therewith;

whereby the receptacle with the removable cover placed thereon forms a polyhedral enclosure which is utilizable for transport of a received plurality of lead frame strips to a preselected destination.

5. A shipping package utilizable for loading discrete semiconductor lead frame strips into a packaging machine, the shipping package comprising:

(a) a container adapted for transporting and loading a plurality of lead frame strips directly into a packaging machine, wherein the container includes a base for supporting a plurality of lead frame strips, a top with a top opening providing access therethrough, an end with an end opening providing access therethrough, and at least one side with a plurality of side openings providing access through each thereof, and wherein the at least one side comprises a plurality of posts extending from the base; and

(b) a removable cover adapted for placement on the container for substantially covering a plurality of lead frame strips during transport thereof by covering the top opening, the end opening and the plurality of side openings, and which is removable for facilitating loading of a plurality of lead frame strips from the container into a packaging machine, wherein the removable cover includes a substantially planar top panel and a plurality of mutually abutting side panels in juxtaposition therewith;

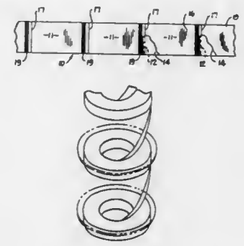
whereby the container with the removable cover placed thereon forms a polyhedral enclosure.

5,310,056

PACKAGING MATERIAL, APPARATUS AND METHOD

Joseph F. Ball, Stow, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation of Ser. No. 809,408, Dec. 16, 1991, Pat. No. 5,174,449, which is a continuation-in-part of Ser. No. 593,335, Oct. 1, 1990, abandoned, which is a continuation of Ser. No. 864,026, May 16, 1986, abandoned. This application Mar. 5, 1992, Ser. No. 847,662
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] B65D *85/67*
U.S. Cl. 206—390 **2 Claims**



1. For use in packaging in which products are placed in bags, an improved packaging material comprising:

a. an elongated plastic web of preopened bags in interconnected end-to-end relationship;

b. the web including a plurality of lines of weakness each extending transversely of the web, at least one such line of weakness being located between each contiguous pair of bags to delineate the ends of the contiguous bags and a parting line for facile separation of an adjacent bag from the web;

c. a plurality of transversely extending bag ply interconnections, at least certain of said interconnections each delineating the bottom of a space in a different one of the bags, the spaces being for receiving products during packaging operations;

d. each bag having an opening near a top end of the bag;

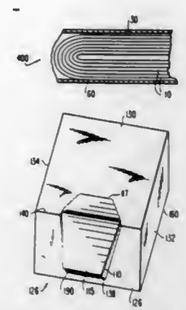
e. the web being flattened and wound in an annular coil having, prior to dispensing, a center opening from which the web is free to be fed for packaging operations, the opening being sized such that a web comprised of a series of such bags may be fed from the coil center opening to a packaging station without causing premature separation along one or more of such lines of weakness;

f. The flattened web being coiled tightly so that it will not collapse; and,

g. the coiled web being oriented such that as the web is fed from the center opening it will be fed along a path of travel with bags of the web being fed closed end first.

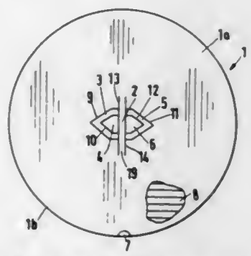
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,057
FABRIC SOFTENER SHEET DISPENSER
Lawrence W. Caldwell, Hanover, Pa., and Kara Sturdy, Reisterstown, Md., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Dec. 10, 1991, Ser. No. 805,275
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—494 **7 Claims**



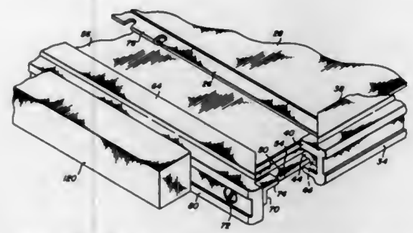
1. A carton containing therein a stack of individual, separate fabric softener sheets which are not interleaved, said stack overall forming a generally U-shape having a bight, said carton including a top panel and a front panel, said front and top panels including lines of weakness defining a reclosable access flap, one of said front or top panels including a first scoreline defining a hinge by which said access flap is permanently attached to said top or front panel, a panel-separating scoreline separating said front and top panels, at least a portion of said panel separating scoreline traversing said access flap whereby said portion of the panel-separating scoreline traversing said access flap is positioned to act as a second hinge for opening and reclosure of said access flap, said bight facing the access aperture, said carton not containing an insert supporting the stack of individual sheets.

5,310,058
COVER FOR ROLL OF CONVOLUTED SHEET MATERIAL
Jakob Hannen, Willich, and Frank Rostek, Meerbusch, both of Fed. Rep. of Germany, assignors to Sulzer Papertec Krefeld GmbH, Krefeld, Fed. Rep. of Germany
Filed Feb. 1, 1993, Ser. No. 12,009
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202916
Int. Cl.[5] B65D *85/66*
U.S. Cl. 206—415 **33 Claims**



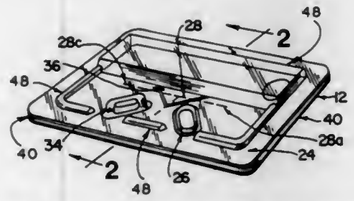
1. A cover for use as a part of an envelope for a roll of convoluted sheet material, comprising a stiff panel disposed in a predetermined plane and including a first section and at least one second section, said panel having a through cut disposed between first portions of said sections, a bending score between second portions of said sections, and at least one breakable web connecting said sections across said through cut, said at least one second section being pivotable out of said plane along said bending score upon breakage of said at least one web.

5,310,059
CASSETTE FOR X-RAY STORAGE PHOSPHOR PLATE
Jeffrey C. Robertson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 728,432, Jul. 11, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,070
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—455 **7 Claims**



1. A cassette for an image retaining photographic element, the cassette comprising:
a first cassette portion having a rectangular panel and edge walls extending around three side edges of the panel, each of the side walls having a projection facing each other,
a second cassette portion comprising a rectangular panel, the photographic element being permanently secured to the panel of the second cassette portion, the panel of the second portion being slideable on the projections of the first cassette portion to move the second portion into and out of the first portion, and
latching means carried by the first and second portions for latching the portions in the assembled relationship and for releasing the portions so that the second portion can be removed from the first portion.

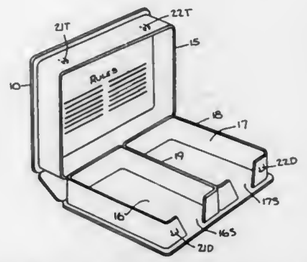
5,310,060
TAMPER-EVIDENT, CHILD-RESISTANT BLISTER PACKAGES FOR MEDICAMENTS AND NON-MEDICAMENTS
John M. Bitner, Naperville; Craig T. Vanderburg, Buffalo Grove, and Curtis E. Hart, North Chicago, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.
Filed Oct. 13, 1992, Ser. No. 960,067
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—532 **29 Claims**



1. A tamper-evident, child-resistant blister package for medicaments and nonmedicaments comprising:
(a) a top layer;
(b) a nonrupturable film layer attached to an inner surface of said top layer;

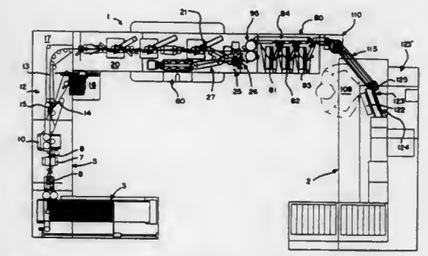
(c) a rupturable film layer attached to that side of said nonrupturable film layer which is not attached to said top layer;
(d) a blister sheet attached to that side of said rupturable film layer which is not attached to said nonrupturable film layer, said blister sheet containing one or more article-receiving pockets which are not separable from said blister package;
(e) perforation means located adjacent to each article-receiving pocket and extending through each of said top layer, said nonrupturable film layer, said rupturable film layer and said blister sheet, said perforation means, when punctured, commencing the opening of said blister package, and generating one or more pull tabs which extend towards and across their adjacent article-receiving pocket, but not across other article-receiving pockets;
(f) one or more depressions present in said blister sheet proximately located to said perforation means, in which said rupturable film layer is not adhered to said blister sheet; and
(g) at least one stop means located between each perforation means and its adjacent article-receiving pocket, and extending through each of said top layer, said nonrupturable film layer, said rupturable film layer and said blister sheet, for selectively separating said nonrupturable film layer from said rupturable film layer and exposing said rupturable film layer extending over said article-receiving pocket when said nonrupturable film layer is directionally pulled across said article-receiving pocket so that the contents of said article-receiving pocket can be pushed through said rupturable film layer, with said blister package remaining intact at each of its outer edges.

5,310,061
WORD-PUZZLE GAME CARTRIDGE
Maurice S. Kanbar, 4 E. 77th St., New York, N.Y. 10021
Filed May 11, 1992, Ser. No. 881,169
Int. Cl.[5] B65D *1/34, 6/04*
U.S. Cl. 206—555 **6 Claims**



1. A cartridge in a book format accommodating at least one deck of word-puzzle cards having predetermined dimensions, said cartridge comprising:
(a) a top plate and a substantially-identical base plate simulating the front and rear covers of a book, the top plate and the base plate each having an inner surface, which when the book is closed lie in parallel relation;
(b) a slat interhinging the base plate to simulate a spine of the book;
(c) a rectangular flange integral with the inner surface of the top plate and projecting therefrom to engage the inner surface of the base plate when the book is in a closed state; and
(d) a compartment loaded with said deck of cards and having dimensions substantially corresponding to the dimensions of the deck formed by a wall integral with the inner surface of said base plate, said wall at its front end having a notch therein extending to the base plate to provide access to all cards in the deck so that they may be withdrawn from the compartment one card at a time, the dimensions of said compartment being such that the compartment nests within the rectangular flange when the book is in said closed state, and said flange then simulates the pages of a book sandwiched between its covers.

5,310,062
APPARATUS FOR AUTOMATED MAIL EXTRACTION AND REMITTANCE PROCESSING
Albert F. Stevens, Moorestown; Mark A. Stevens, Medford; Robert R. DeWitt, Marlton; William R. Lile, Medford; Michael E. York, Sicklerville, all of N.J.; Jeffrey L. Chodack, Newark, Del., and Roy E. Patterson, Nr. Manchester, Great Britain, assignors to Opex Corporation, Moorestown, N.J.
Continuation-in-part of Ser. No. 363,511, Jun. 8, 1989, Pat. No. 5,115,918, which is a division of Ser. No. 904,966, Sep. 5, 1986, Pat. No. 4,863,037. This application May 22, 1992, Ser. No. 887,621
Int. Cl.[5] B07C *5/02*
U.S. Cl. 209—584 **118 Claims**



1. An apparatus for presenting selected documents to a remittance processing device, comprising:
means for extracting the documents from a plurality of envelopes for containing the documents prior to extraction;
means for separating the documents extracted from the envelopes for serial presentation to the remittance processing device; and
means for receiving the extracted documents from the separating means and for conveying the extracted documents to the remittance processing device for introduction to the remittance processing device, thereby permitting remittance processing of the documents extracted from the envelopes.

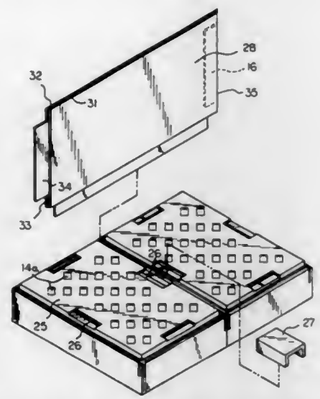
5,310,063
PALLET DISPLAY APPARATUS
Lauraine K. Skolasinski, 4214 Columbine Way, #5, Vail, Colo. 81657
Filed Jul. 30, 1993, Ser. No. 99,472
Int. Cl.[5] B65D *19/00*
U.S. Cl. 206—600 **2 Claims**

1. A pallet display apparatus, comprising,
a platform base, the platform base having a continuous side wall, with the side wall including a side wall top surface,
the platform base further having a base top wall spaced from the side wall top surface, with the base top wall including a top surface continuous groove directed therein,
a plurality of enclosure panel members arranged for securement relative to one another and to the continuous groove,
the enclosure panel members are each of an L-shaped configuration, having a panel top wall, the panel top wall including a top wall groove and a panel bottom wall, with the panel bottom wall having a bottom wall engaging

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flange for reception and securement within the continuous groove, and the panel members each including a first end wall having a first end wall groove, and a second end wall having a second end wall flange, wherein the first end wall groove of one of said panel members is arranged for reception within the second end wall flange of a further of said panel members, wherein the panel members are continuous about the base top wall, and are substantially orthogonally oriented relative to the base top wall projecting thereabove,

a floor plate mounted upon the base top wall, wherein the floor plate is coextensive with the base top wall, and a jack assembly mounted within the base, with the jack assembly including a jack assembly piston, and the base top wall having a central opening directed medially of the base top



wall, with the jack assembly piston arranged for reception through the central opening, and the continuous side wall having a side wall opening, and a jack handle directed through the side wall opening to permit actuation of the jack assembly exteriorly of the platform base, and the jack assembly piston mounted fixedly and orthogonally relative to the floor plate to permit selective lifting of the floor plate relative to the base top wall,

and

a further platform base, wherein the further platform base includes a further platform base top wall, wherein the base top wall and the further base top wall each include a facing registration opening, and a U-shaped latch member arranged for mounting within each said facing registration opening to secure the platform base and the further platform base together.

5,310,064

METHOD AND APPARATUS FOR SORTING COMPONENT PARTS OF AN ASSEMBLY PROCESS

Edward A. Neff, Ranco Santa Fe, and Wayne D. Shapiro, Placentia, both of Calif., assignors to Systems, Machines, Automation Components, Corp., Carlsbad, Calif.

Continuation-in-part of Ser. No. 765,130, Sep. 21, 1991, Pat. No. 5,175,456. This application Feb. 28, 1992, Ser. No. 843,575

Int. Cl.[5] B07C *5/08*

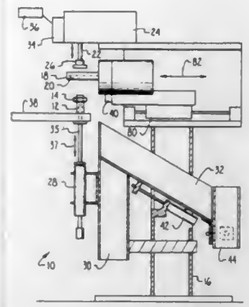
U.S. Cl. 209—604 **33 Claims**

1. An apparatus for measuring and sorting parts, comprising:

holding means for holding a part for measurement and having a reference surface associated therewith;

contact means including a contact member mounted for precisely controlled movement by a high speed electromagnetically driven actuator for contacting the reference surface and for contacting the part in the holding means;

measuring means for precisely determining a first position of the contact member while in contact with the reference surface and a second position of the contact member while in contact with the part in order to determine a measurement of the part; and



sorting and transport means for removing the part from the holding means and for sorting the part according to the measurement.

5,310,065

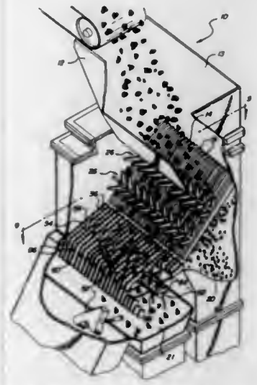
SELF-CLEANING COAL BYPASS AND DEBRIS SEPARATION GRID ASSEMBLY WITH ROTARY CLEARING MECHANISM

Rickey E. Wark, Lake Angelus, Mich., assignor to Sure Alloy Steel Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 560,076, Jul. 30, 1990, Pat. No. 5,133,852. This application Mar. 31, 1992, Ser. No. 861,274

Int. Cl.[5] B07C *5/06*

U.S. Cl. 209—627 **25 Claims**



1. In a material segregating apparatus for particulate material such as coal:

an inlet structure disposed to accept particulate material, a first outlet and a second outlet;

a segregating grid interposed between the inlet structure and the first and second outlets comprising a plurality of parallel bars spaced apart to pass material less than a predetermined size between the bars and toward the first outlet and to divert material greater than the predetermined size toward the second outlet;

first grid-clearing means for the segregating grid;

a debris-separating grid interposed between the segregating grid and the second outlet comprising a plurality of parallel bars spaced apart to pass the particulate material diverted by the segregating grid and to divert debris greater than the size of the particulate material away from the second outlet; and

a debris-clearing comb comprising a plurality of parallel fingers mounted radially on an axle shaft and disposed between the bars, and means for continuously rotating the debris-clearing comb about an axis below the bars of the debris-separating grid such that the fingers of the debris-clearing comb pass between and through the bars as they rotate to sweep debris from the surface.

5,310,066

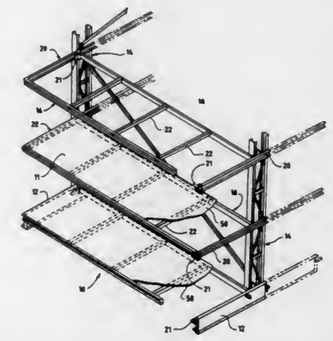
CANTILEVER RACK STORAGE SYSTEM

Anthony N. Konstant, Winnetka, Ill., assignor to Konstant Products, Inc., Skokie, Ill.

Filed Oct. 28, 1992, Ser. No. 967,809

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—193 **8 Claims**



1. An improved cantilever rack storage system comprising:

at least one pair of horizontally spaced cantilever arms projecting from at least one pair of vertical columns, said cantilever arms having a front end and a rear end;

at least one front beam extending transversely between said front end of said cantilever arms;

at least one rear beam extending transversely between said rear end of said cantilever arms;

mounting means to releasably secure said front beam to the front end of said cantilever arms;

mounting means to releasably secure said rear beam to the rear end of said cantilever arms; and

at least one cross arm extending between and releasably secured at one end to said front beam and at the other end to said rear beam.

5,310,067

COMPENSATING CRANE AND METHOD

William D. Morrow, 16350 Park Ten Pl., Ste. 202, Houston, Tex. 77084

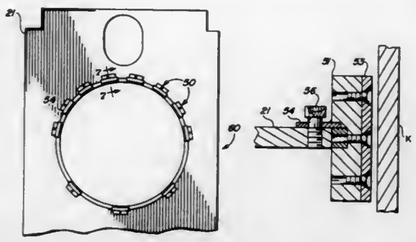
Filed Aug. 20, 1991, Ser. No. 747,747

Int. Cl.[5] B66C *23/84*

U.S. Cl. 212—253 **3 Claims**

3. In a crane having a central support and rotatable upperworks with an opening in the rotatable upperworks for receiving said central support, said rotatable upperworks including a boom mounted thereon for handling loads, a bearing assembly disposed in said opening between the rotatable upperworks and said central support comprising:

a plurality of sub-assemblies, each subassembly including a retainer, attachment means for removably attaching the retainer on the rotatable upperworks, a backing member attached to said retainers, wear material mounted on said backing member, said wear material disposed between said backing member and said central support;



each subassembly radially moveable within predetermined limits when said crane is placed under load; and

means for mounting each sub-assembly to the rotatable upperworks to prevent circumferential movement of the subassemblies relative thereto.

5,310,068

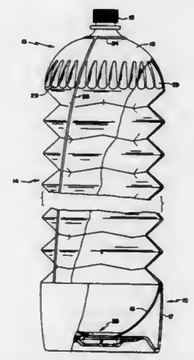
DISPOSABLE COLLAPSIBLE BEVERAGE BOTTLE

Abdolhamid Saghri, 8207 Stonetrail Dr., Bethesda, Md. 20817

Continuation-in-part of Ser. No. 766,781, Sep. 27, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,363

Int. Cl.[5] B65D *1/02, 23/00*

U.S. Cl. 215—100 R **16 Claims**



1. A collapsible bottle of the type including a base portion, a top portion having a bottle neck and cap, and a pleated central body portion joining the base and top portions, the improvement comprising:

a circular collar received about the neck of said bottle;

a plurality of flexible straps extending from said collar to said base portion; and

means provided at said base portion, and secured to said straps, for selectively applying force to said bottle causing the central portion to compress.

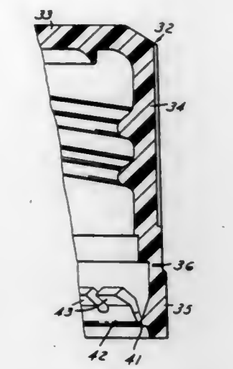
VOL 1162 ISS 2 MY 10 1994 UMI

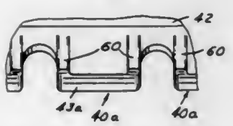
5,310,069

TAMPER INDICATING PACKAGE

Keith W. Ingram, Centerville, Ohio, and Daniel J. Crowley, Jr., Portage, Mich., assignors to Owens-Illinois Closure Inc., Toledo, Ohio

Division of Ser. No. 822,001, Jan. 16, 1992, Pat. No. 5,219,507, which is a division of Ser. No. 386,391, Jul. 27, 1989, Pat. No. 5,090,788. This application Dec. 7, 1992, Ser. No. 987,035
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 10 Claims





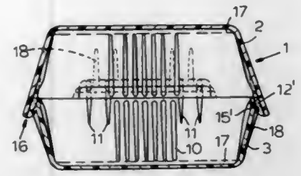
1. A tamper indicating package comprising
a container having a neck with a threaded finish,
an annular bead on the neck,
a plastic closure including a base wall and a depending peripheral skirt having threads interengaging the threads of the container,
said closure having a longitudinal axis,
a tamper indicating band attached to the skirt by at least one weakened portion defining a line of severing, and
said tamper indicating band having an inner surface,
an annular flange extending axially upwardly and inwardly from the tamper indicating band toward the base wall of the closure and having a free end,
said flange comprising a first continuous annular flange portion connected to the inner surface of the tamper indicating band by a hinge spaced radially inwardly from the inner surface of the band, and
said flange being bent intermediate its free end and said hinge to form a second portion that extends inwardly at a greater angle to said axis of the closure than the continuous flange portion, said free end of said second portion engaging beneath said bead on the container when the closure is threaded onto the container,
said second portion comprising a plurality of circumferentially spaced segment portions separated by narrow slots extending axially upwardly and inwardly from the continuous annular flange portion,
said segment portions including means thereon for increasing the rigidity of each segment portion in an axial direction while permitting circumferential flexing of each segment portion so that it may tend to conform with the finish of the container.

5,310,070

CONTAINER OF READILY BIODEGRADABLE MATERIAL

Johann Haas, Klosterneuburg; Franz Haas, Leobendorf, and Franz Haas, Vienna, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Leobendorf, Austria

Filed Sep. 30, 1992, Ser. No. 953,993
Claims priority, application Austria, Oct. 1, 1991, 1973/91
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—4.24 14 Claims



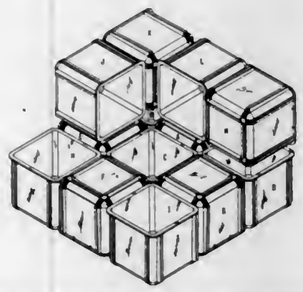
1. A container, comprising:
a pair of identical half shells composed of a readily biodegradable material, each of said half shells being formed unitarily from said material with two pairs of mutually opposite side walls and a bottom wherein one of said half shells is inverted over the other of said half shells to form a base from said other half shell and a cover from said one of said half shells, one pair of side walls of each half shell being formed with flaps projecting beyond a plane of a rim of another pair of side walls of the half shell, each of said one pair of side walls being provided with a respective plurality of inwardly projecting and spaced apart ribs, said ribs terminating beyond said plane of the rim on said flaps and being generally parallel to generatrices thereof and formed with detent notches, said another pair of side walls each being externally formed with rectilinear bulges extending along said rim, said bulges of said one half shell being engageable in the detent notches of the flaps of the other half shell upon engagement of said cover on said base.

5,310,071

DUAL-PURPOSE FOOD CONTAINER/BUILDING BLOCK ELEMENT

Eitan Rivlin, 22 Zondek Street, Jerusalem, and Yossi Walker, 15 Hagoren Street, Efrat, both of Israel

Filed Oct. 26, 1992, Ser. No. 966,310
Claims priority, application Israel, Oct. 28, 1991, 99872; Oct. 21, 1992, 103482
Int. Cl.[5] B65D *81/00*
U.S. Cl. 220—23.4 18 Claims



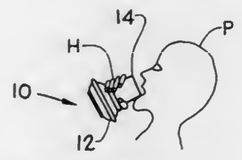
1. A dual-purpose sealable food container/building block element comprising an upper portion extending along a longitudinal axis and a bottom portion, said upper portion being open and having a lip protruding outwardly therefrom for sealing purposes when said container element is used as a food container, characterized in that each of said upper portion and said bottom portion has mounted thereon at least one set of engageable rails and sockets, said upper portion rails and sockets extending parallel to said longitudinal axis and said bottom portion rails and sockets extending perpendicular to said longitudinal axis, such that a plurality of said container/block elements are directly connectable to one another in proximate fashion without interstitial gaps therebetween by engaging said sets of rails and sockets and sliding toward each other to a stop engagement position defined by said lip, for use of said container/block elements as a toy after completing original use as a food container.

5,310,072

BEVERAGE AND SNACK HOLDER

Luba Matusovsky, and Edward Lopoyan, both of 1530 N. Poinsettia Pl., Apt. 312, Los Angeles, Calif. 90046

Filed Aug. 2, 1993, Ser. No. 101,541
Int. Cl.[5] B65D *3/00*
U.S. Cl. 220—23.83 11 Claims



1. Apparatus that enables the drinking of a beverage from a beverage container of predetermined size, and the holding of a solid snack, using one hand, comprising:
a snack food container having a vertical axis and having a vertically extending passage which opens in an upward direction and which is of a size to closely receive said beverage container so said food and beverage containers can be handled as a unit, said snack container having walls forming a closed food-holding chamber for holding the solid snack, with said snack container walls including a door that can be opened and then closed, to enable a person to open the door to remove the solid snack and then close the door to prevent spillage of the solid snack when tipping the unit formed by said containers to drink the beverage.

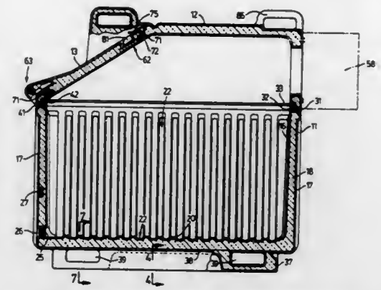
5,310,073

FREEZING CONTAINER

Sigurdur Johannsson, Farwal, Canada, assignor to Dynoplast Ltd., Saint John, Canada

Filed Oct. 21, 1993, Ser. No. 139,034
Int. Cl.[5] B65D *6/24*
U.S. Cl. 220—254 12 Claims

1. A freezing container, comprising:
a plastic molded container box having a capacity of at least 25 cubic feet (0.71 m^3), said box having four sides and a bottom all being of double wall construction with an inner and outer wall defining a space which is filled with a foam insulting material, the insulating material also providing structural support for the walls of the box, the inner and outer walls being joined about a top peripheral rim of the box, the inner wall being corrugated to define a plurality of flutes in the inner sides and bottom of the box;
a cover for the box, the cover being completely detachable from the box, the cover having four sides and a top all being of double wall construction with an inner and outer wall defining a space which is filled with a foam insulating material, the insulating material also providing structural support for the walls of the cover, the inner and outer walls being joined about a peripheral bottom rim of the cover, wherein the peripheral edges of the cover and box are shaped to be in mating relation to one another when the cover is on the box, the cover having an upright rear side defining an opening for a refrigeration unit and having a rearwardly slanted front side defining a hatch for access to the container;
a hatch lid hinged to the cover about the hatch, the lid being of double wall construction with an inner and outer wall defining a space which is filled with a foam insulating material, the insulating material also providing structural



support for the walls of the lid, the inner and outer walls being joined about a peripheral edge of the lid, the periphery of the lid being provided with a flange which engages the front side of the cover about the hatch when the lid is closed;
means for releasably attaching the cover to the box;
sealing means about the periphery of the assembled hatch and lid, and about the periphery of the assembled cover and box for restricting the flow of air between the interior and exterior of the container; and
handle means attached to the cover for assisting the movement of the cover relative to the box.

5,310,074

CANISTER WITH LID-RELEASE CONTROL MECHANISM

David J. Jochem, Evansville, Ind., and Timmy L. Willett, Waverly, Ky., assignors to Berry Plastics Corporation, Evansville, Ind.

Filed Jun. 25, 1993, Ser. No. 82,982
Int. Cl.[5] B65D *55/02*
U.S. Cl. 220—296 29 Claims



1. A canister for holding a product, the canister comprising a container formed to include a productreceiving chamber having an open mouth, a rim around the open mouth, a first lid guide having a leading end portion at one end and a trailing end portion at an opposite end, and a second lid guide having a leading end member at one end and a trailing end member at an opposite end, the first and second lid guides being helical in shape and appended to the rim to lie about the rim in series,

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the first and second lid guides being inclined on the rim to position the leading end member of the second lid guide vertically above the trailing end portion of the first lid guide in a location between the open mouth of the product-receiving chamber and the trailing end portion of the first lid guide to define a first lock tab channel therebetween, and to position the leading end portion of the first lid guide vertically above the trailing end member of the second lid guide in a location between the open mouth of the productreceiving chamber and the trailing end member of the second lid guide to define a second lock tab channel therebetween, and

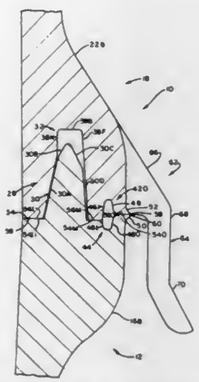
a lid including closure means for closing the open mouth of the product-receiving chamber and engagement means for rotatably engaging the first and second lid guides to retain the closure means on the container, the engagement means including first guide follower means for following a first helical path established by the first and second lid guides during rotation of the lid in a lid-removal direction about an axis of rotation and first lock tab means for engaging the trailing end portion of the first lid guide during rotation of the lid in the lid-removal direction to block further rotation of the lid relative to the container, the closure means including handgrip means for lifting the engagement means away from the container once the first lock tab means engages the trailing end portion of the first lid guide to pass the first lock tab means upwardly through the first lock tab channel so that the first lock tab means disengages the trailing end portion of the first lid guide and moves to a position above the first lid guide to permit continued rotation of the lid in the lid-removal direction relative to the container.

5,310,075

WATERPROOF, GASKETLESS ENCLOSURE

Craig S. Wyler, Stark County, Ohio, assignor to Distribution Control Systems, Inc., Hazelwood, Mo.

Filed Nov. 27, 1992, Ser. No. 982,633
Int. Cl.[5] B65D *43/06*
U.S. Cl. 220—355 **19 Claims**



1. A waterproof, gasketless enclosure for housing electrical equipment which is used out of doors and is therefore subject to a variety of atmospheric conditions, comprising:

a box having a base, sidewalls extending upwardly from the base, and an open, upper face defined by the sidewalls, the box being sized to receive an item of equipment to be housed therein;

a cover fitting over the open face of the box to enclose the item in the box;

closure means formed on the box and the cover and cooperating with each other to close the cover over the box and hold the cover in place; and,

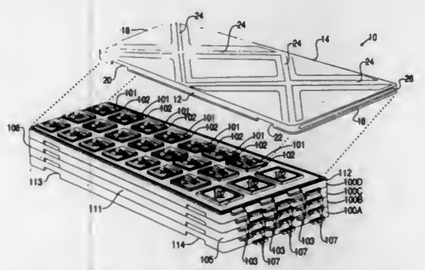
gutter means formed on the box and cover for preventing moisture from seeping into the interior of the box and harming the equipment, wherein the closure means includes a lip and a channel for receiving the lip respectively formed on abutting surfaces of the box and the cover when the cover is placed over the box, and the gutter means includes respective gutters formed in the respective abutting surfaces.

5,310,076

SNAP-ON LID FOR COMPUTER CHIP TRAY

Don E. Burton, and Richard Vazquez, both of Melville, N.Y., assignors to Arrow Electronics, Inc., Melville, N.Y.

Filed Oct. 19, 1992, Ser. No. 963,123
Int. Cl.[5] B65D *51/00*
U.S. Cl. 220—377 **2 Claims**



1. A lid for snap engaging a tray holding electronic components, said tray including sidewall notches used with automatic assembly equipment, said lid comprising:

a substantially planar panel with two opposed longer ends and two opposed shorter ends in a rectangular configuration, said panel further including reinforcing ribs;

a downwardly extending skirt around a periphery of said panel, including an outwardly extending tongue along at least a portion of a lower edge of said downwardly extending skirt, said downwardly extending skirt including notches along a lower edge directly below said longer ends of said panel, to along with corresponding notches on said tray, and an inwardly extending ridge formed only on an inner surface on said downwardly extending skirt directly below at least one of said two opposed shorter ends of said panel such that said ridge is absent from said downwardly extending skirt directly below said two opposed longer ends of said panel.

5,310,077

BASKET LINER

Susan M. McDermott, 12216 Izard St., and Mary J. Ellis, 1405 N. 125th Cir., both of Omaha, Nebr. 68154

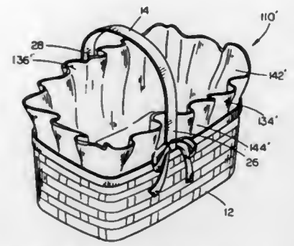
Continuation-in-part of Ser. No. 890,443, May 27, 1992, Pat. No. 5,240,134, which is a division of Ser. No. 842,217, Feb. 26, 1992, Pat. No. 5,181,627, which is a continuation-in-part of Ser. No. 690,109, Apr. 23, 1991, Pat. No. 5,097,979. This application Apr. 1, 1993, Ser. No. 41,694
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—404 **5 Claims**

1. In combination:

a basket having front and rear upstanding panels each having an upper edge, opposing upstanding first and second side panels, a bottom, and a handle having a front leg projecting upwardly from the front panel and a rear leg projecting upwardly from the rear panel; and

a basket liner connected to said basket handle, comprising: a sheet having front and rear edges, opposing first and second side edges, an upper surface and a lower surface;

first means adjacent the front edge of said sheet and extending outwardly from the lower surface thereof, for connecting said sheet to said first leg of said handle at a location such that the front edge is positioned above said front panel upper edge; and



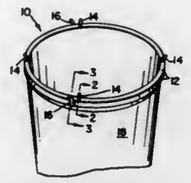
second means adjacent the rear edge of said sheet and extending outwardly from the lower surface thereof, for connecting said sheet to said rear leg at a location such that the rear edge is positioned above said rear panel upper edge.

5,310,078

RECEPTACLE FOR SUPPORTING ADJACENT BAGS

Glenn G. Strawder, 11800 Beltsville Dr., #507, Beltsville, Md. 20705

Continuation-in-part of Ser. No. 780,996, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 468,157, Jan. 22, 1990, Pat. No. 5,085,342, which is a continuation-in-part of Ser. No. 307,912, Feb. 9, 1989, Pat. No. 4,905,853. This application Aug. 12, 1993, Ser. No. 104,924
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—404 **14 Claims**



1. A device for holding at least two plastic bags each of which bags has an inner face and an outer face, comprising:

a receptacle having a bottom and also having a side wall extending upwardly from said bottom and having an upper end defining a geometric boundary, said side wall defining a single un-divided open cavity extending to at least the height of said upper end,

first and second pairs of projections mounted on said geometric boundary and extending away from the receptacle, said projections engaging said outer faces of the bags to hold the bags,

first means for supporting a first bag in said receptacle including one projection of each of said pairs,

second means for supporting a second bag in said receptacle including the remaining projections of each of said pairs,

the two projections of each said pairs being adjacent each other and comprising means so that the bags will be carried adjacent to each other in said receptacle,

at least one projection on said geometric boundary spaced from said first means, for providing a further support for the first bag so that the first bag is held in the receptacle with an open upper end, and

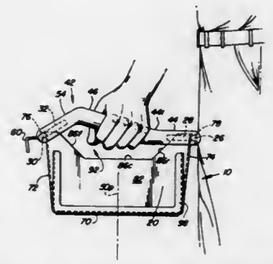
at least one projection on said geometric boundary spaced from said second means, for providing a further support for the second bag so that the second bag is held in the receptacle with an open upper end.

5,310,079

PARTS HANDLING CONTAINER

Charles M. Sandy, Geneseo, Ill.; Gregory G. Gooch, Davenport, Iowa, and Gary E. Lovested, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.

Filed May 3, 1993, Ser. No. 56,005
Int. Cl.[5] B65D *8/00, 5/46*
U.S. Cl. 220—476 **19 Claims**



1. A tote to be used by a person for carrying articles by hand, the tote comprising:

a tray having a horizontal bottom with front and rear walls extending upwardly from the bottom, and fore-and-aft extending outside walls located between the front and rear walls, the tray defining a centerline extending transversely between the side walls;

handle structure comprising a pair of hand grip portions having a generally rounded cross-section of diameter substantially greater than one inch; and

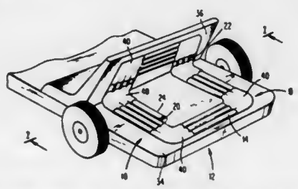
an upper handle frame supporting the hand grip portions at locations transversely spaced a distance of approximately 20 inches with the hand grip portions extending upwardly in the forward direction at an angle of approximately 17 degrees from the horizontal, and means supporting the tray below the hand grip portions such that a vertical plane extending upwardly through the centerline passes through the hand grip portions.

5,310,080

CONFORMAL FUEL TANK

Irving E. Figge, Sr., Manassas, Va., assignor to Atlantic Research Corporation, Vienna, Va.

Filed Mar. 16, 1993, Ser. No. 31,975
Int. Cl.[5] B65D *88/22*
U.S. Cl. 220—563 **14 Claims**



1. Conformal fuel tank, comprising an elongate tubular member having a storage chamber therein, said tubular member being bent into a coiled configuration, means for maintain-

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ing said tubular member in said coiled configuration, and means for closing said tubular member storage chamber at end portions thereof, thereby enabling fuel to be stored in said storage chamber, said means for maintaining said coiled configuration including a pre-formed saddle member which is positioned around a bent portion of said coiled configuration, said saddle member including curved channels thereon which receive portions of said tubular member therein, thereby maintaining said tubular member portions in a bent condition which corresponds to said curved channels.

5,310,081

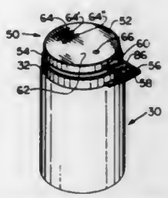
INTEGRAL BEVERAGE CONTAINER CLOSURE

Brad M. McCabe, 18346 Kingsbury St., Northridge, Calif. 91326

Continuation-in-part of Ser. No. 600,665, Oct. 22, 1990. This application Jun. 8, 1992, Ser. No. 895,278

Int. Cl.[5] B65D *51/18*

U.S. Cl. 220—715 **17 Claims**



1. An integral closure suitable for sealing an open beverage container, comprising;

a resilient cap configured to be sealingly fittable over the beverage container top with a slot and a dispensing aperture defined in said cap;

a resilient tongue defined on said cap and extending therefrom with a dispensing aperture defined in said tongue;

said tongue configured to be bent and slidably inserted through said slot to a beverage dispensing position wherein said tongue aperture and said cap aperture align; and

to a sealed position wherein said tongue aperture is spaced from said cap aperture.

5,310,082

APPARATUS FOR DISPENSING MEDICATIONS IN CAPSULE OR PILL FORM

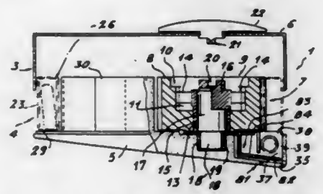
Jean-Pierre Coustenoble, Puteaux, France, assignor to Physior, Puteaux, France

Filed Jan. 27, 1993, Ser. No. 9,943

Claims priority, application France, Jan. 29, 1992, 92 00958

Int. Cl.[5] G07F *11/00*

U.S. Cl. 221—2 **9 Claims**



1. Dispenser apparatus for medications in capsule or pill form, comprising:

a case having an exit orifice for said medications,

a loader removable from said case comprising a plurality of transverse compartments forming a continuous longitudinal chain, each of said compartments being capable of containing at least one of said medications, each of said compartments having an open end located on one side in the direction of the exit orifice and a closed end on its other side,

said case comprising:

means for driving the loader in a given direction, in order to bring each of the said medications successively, one by one, above the exit orifice of the case, and

optical detection means disposed in proximity to said orifice, arranged in order to detect a passage of each of said medications at the moment of its exit from the case and connected to electronic means for storing, computing and retrieving data relating to said exit of medications, said loader and said orifice being arranged in order to allow said exit of each of said medications, directly and successively, under gravity, through said orifice.

5,310,083

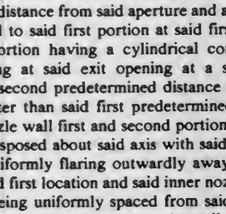
CENTER-PULL NOZZLE WITH MODIFIED CONE

Jack A. Rizzuto, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Apr. 8, 1993, Ser. No. 44,152

Int. Cl.[5] B65H *3/26*

U.S. Cl. 221—63 **3 Claims**



1. Apparatus for dispensing individual sheets form the center of a coreless roll product comprised of a plurality of said sheets forming a wound web having a lead end projecting outwardly from the roll center, said apparatus comprising, in combination:

support means for supporting said coreless roll; and

a dispenser nozzle of unitary construction defining an aperture for receiving said lead end fixedly positioned relative to said support means and having an inner nozzle wall defining a passageway leading form said aperture away from said support means, said dispenser nozzle having a distal end defining an exit opening, said exit opening being spaced from said aperture and said aperture and said exit opening being disposed along a common axis extending away from said support means and through said passageway, said inner nozzle wall including a first portion having a truncated cone-like configuration and leading from said support means to a first location spaced a first predetermined distance from said aperture and a second portion connected to said first portion at said first location, said second portion having a cylindrical configuration and terminating at said exit opening at a second location spaced a second predetermined distance from said aperture greater than said first predetermined distance, said inner nozzle wall first and second portions being concentrically disposed about said axis with said inner wall first potion uniformly flaring outwardly away from said axis above said first location and said inner nozzle wall second portion being uniformly spaced from said axis along the entire length of said inner nozzle wall second portion between said exit opening and said first location, said inner nozzle wall first portion radiating uniformly upwardly and outwardly from said inner nozzle wall second portion at a predetermined angle falling within the range of from about 10 degrees to about 45 degrees, and said inner nozzle wall second portion extending upwardly form said exit opening a distance of at least ¼ millimeter.

5,310,084

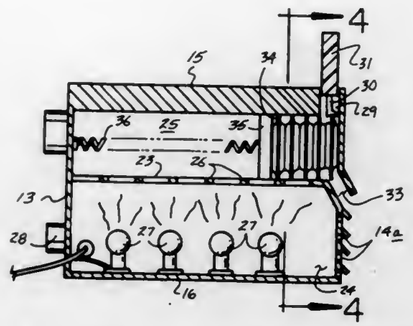
COMBINATION CONDOM WARMING AND RADIO APPARATUS

Daniel J. Pittman, 236 3rd St. #8, Juneau, Ak. 99801

Filed Jun. 14, 1993, Ser. No. 75,612

Int. Cl.[5] G07F *11/72*

U.S. Cl. 221—150 A **3 Claims**



1. A combination condom warming and radio apparatus, comprising,

a unitary housing, having a rear wall spaced from a front wall, a bottom wall spaced from a top wall, and a first side wall spaced from a second side wall, wherein a clock radio member projects through the front wall, with radio controls directed through the first side wall, and

an intermediate wall directed coextensively between the first side wall and the second side wall, and the top wall and the bottom wall defining a first chamber between the intermediate wall and the front wall, with the clock radio member mounted within the first chamber, and

a partition wall extending from the intermediate wall to the rear wall, and from the first side wall to the second side wall, with a second chamber oriented between the partition wall and the bottom wall, and a third chamber oriented between the partition wall and the top wall, and

dispensing means mounted within the third chamber for dispensing condom package units, and

heating means for heating the third chamber, with the heating means mounted within the second chamber, and

the dispensing means includes an abutment plate mounted between the second side wall and the first side wall, with an abutment plate spring directed between the abutment plate and the first side wall, with the abutment plate arranged for communication with said condom package units to direct the condom package units against the second side wall within the third chamber, and a top wall slot directed through the top wall in communication with the third chamber, wherein the slot is positioned in adjacency relative to the second side wall, with the top wall slot having a push bar, with the push bar including a push bar handle projecting through the top wall slot extending above the top wall, and at least one spring extending between the push bar and the top wall within the third chamber to bias the push bar in adjacency to the top wall within the third chamber, and a second side wall chute directed through the second side wall extending through the second side wall into communication with the partition wall, with the chute oriented below the top wall slot to receive one of the condom package units when the push bar is directed onto one of said condom package units.

5,310,085

METHOD AND PACKAGING FOR PRESERVING AND DISPENSING PORTIONS OF A STERILE LIQUID

Jean-Pierre Loutrade, and Henri Chibret, both of Clermont-Ferrand, France, assignors to Transphyto SA, Clermont-Ferrand, France

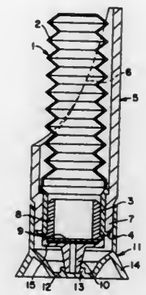
PCT No. PCT/FR91/00291, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO91/16868, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 10, 1991, Ser. No. 946,355

Claims priority, application France, Apr. 27, 1990, 90 05369

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **14 Claims**



1. A method for dispensing portions of sterile liquid enclosed in a container having a neck in which is positioned a microfiltering membrane for control of dispension of liquid, said membrane having an inner face and outer face and being permeable to the liquid but impermeable to air when said membrane is in a wet state, said method comprising:

moistening said membrane with liquid contained in said container prior to first delivery of a liquid portion,

exerting pressure on liquid within said container to deliver a quantity of liquid through said membrane,

after delivery of said quantity of liquid, selectively sucking liquid remaining in contact with said outer face of said membrane into said container without any suction of air, and keeping said membrane moistened with liquid between successive deliveries, whereby contamination of liquid remaining within said container between deliveries is prevented.

4. A device for dispensing sterile liquid comprising:

a container having a wall which is elastically deformable by manual compression, a delivery opening, and a microfiltering membrane which controls dispension of liquid through said delivery opening, said membrane having an inner face and outer face and being permeable to liquid but impermeable to air when said membrane is in a wet state,

wherein elastic shape recovery of said wall of said container after manual compression thereof produces between said faces of said membrane a differential pressure lower than the differential pressure of the bubble point which permits the flow of air through said membrane when wet, whereby, after expulsion of liquid through said membrane due to compression of said wall of said container, liquid remaining in contact with said outer face of said membrane is selectively returned into said container through said membrane by suction induced by the negative pressure produced within said container by said elastic shape recovery of said wall without any suction of external air;

said device further comprising means imposing storage of said container in an inverted position, thereby keeping said membrane moistened with liquid between successive deliveries.

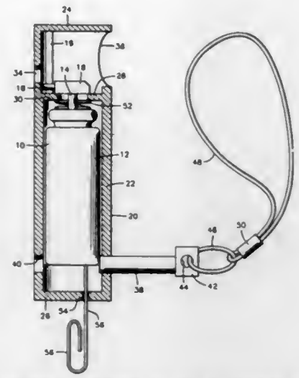
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,086

METHOD AND APPARATUS FOR AUTOMATICALLY DISARMING SELF DEFENSE SPRAY DEVICE

Helmut Julinot, 860 Cottage Hill Ave., Mobile, Ala. 36693

Filed May 27, 1993, Ser. No. 69,446
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—1 **16 Claims**



1. An automatic disarming device for portable apparatuses which require manual manipulation of an actuator, said disarming device including a housing enclosing the apparatus, said housing including an access opening providing access to the actuator for the apparatus, and means supporting said apparatus within the housing for positioning the apparatus with the actuator in relation to the access opening to enable manual manipulation of the actuator through the access opening, said means supporting said apparatus in position with the actuator associated with the access opening to enable manual manipulation thereof being connected to a device externally of the housing to render the support means for the apparatus ineffective when the housing is moved away from the external device.

11. A method of automatically disarming a self defense spray device having a pressurized container with a push button valve and dispenser nozzle assembly at its upper end to enable discharge of spray material toward an assailant, said method consisting of the steps of enclosing the spray device within a housing having a support means for the spray device to retain the valve and nozzle assembly in registry with a discharge opening and access opening in the housing to enable discharge of spray material by inserting a finger or thumb through the access opening for actuating the valve and nozzle assembly and tethering the support means to the user of the spray device to move the support means to a position in nonsupporting relation to the spray device when the spray device and housing are separated from the user thereby enabling the valve and nozzle assembly to be unsupported and enabling movement thereof to a position that the valve and nozzle assembly on the spray device cannot be manually manipulated through the access opening.

5,310,087

CONTINUOUS FEED, CHEMICAL SWITCHING UNIT

Steven Fulton, Arlington; Lyle T. Orthman, Mesquite, and Eric R. Snodgrass, Arlington, all of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 24, 1992, Ser. No. 934,936
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—65 **6 Claims**

1. A continuous feed, chemical system for supplying an uninterrupted flow of chemical fluid to a process tool comprising in operative combination:

a) a plurality of removable bottles, each containing a quantity of chemical fluid and having a fluid outlet line, said plurality of bottles including a first chemical fluid bottle and a second, alternate standby chemical fluid bottle;

b) a reservoir disposed downstream of said plurality of chemical fluid bottles for holding a predetermined amount of chemical fluid, said reservoir having an air outlet port, a fluid outlet port and a plurality of fluid inlet ports, each of said fluid inlet ports are communicatively coupled with respective ones of said chemical fluid bottle fluid outlet lines;

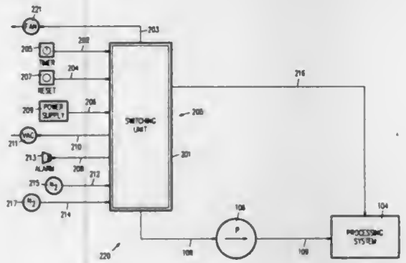
c) conduit means for communicatively coupling said fluid outlet port of said reservoir to a chemical fluid receiving port of said process tool;

d) pump means disposed along said conduit means for transferring chemical fluid from said reservoir to said process tool via said conduit means;

e) vacuum means connected to said air outlet port of said reservoir and operative to generate a negative pressure within said reservoir sufficient to draw chemical fluid from an active chemical fluid bottle;

f) a plurality of bottle selector valve means each of which are associated with individual ones of said chemical fluid bottle fluid outlet lines, each of said valve means having two operational modes including

i) a first active mode for permitting fluid flow from an associated chemical fluid supply bottle to said reservoir, and



ii) a second nonactive mode for preventing fluid flow from an associated chemical fluid supply bottle to said reservoir;

g) sensor means for monitoring the fluid level within said reservoir, said sensor means comprises a float level sensor array including a first full-level sensor, a second fill-level sensor and a third empty-level sensor, wherein:

i) activation of said full-level sensor disables said vacuum means;

ii) activation of said fill-level sensor re-enables said vacuum means and signals an alarm condition to a control means to selectively operate said valve means for bottle switching operation from said first bottle to said second standby alternate bottle;

iii) activation of said empty-level sensor disables all of said bottle selector valve means and said vacuum means, and provides an interlock signal to said process tool to stop continued processing; and

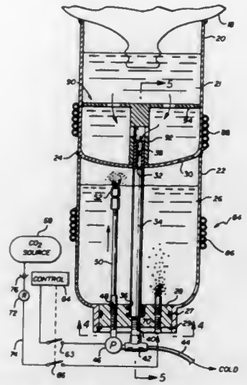
h) an electronic control means communicatively coupled with each of said valve means and said sensor means for selectively enabling the mode operation of each of said valve means to switch the status of a bottle from which chemical fluid is actively being withdrawn to a nonactive status and the standby status of a full alternate bottle to active withdrawal of chemical fluid therefrom in response to signal information received from said sensor means.

5,310,088

BOTTLED WATER STATION FOR DISPENSING CARBONATED AND UNCARBONATED WATER

Bruce D. Burrows, Valencia, Calif., assignor to Ebtech, Inc., Columbus, Ohio

Filed May 24, 1993, Ser. No. 64,872
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—67 **19 Claims**



1. A water supply station, comprising:

upper and lower reservoirs mounted in stacked relation and adapted to receive and store uncarbonated water within said upper reservoir and carbonated water within said lower reservoir;

first and second faucet valves for respectively dispensing water from said upper and lower reservoirs;

a first dispense conduit connected between said upper reservoir and said first faucet valve, said first dispense conduit extending from a lower end of said upper reservoir and through at least a portion of the interior of said lower reservoir;

means for delivering a portion of the uncarbonated water from said upper reservoir to said lower reservoir;

means for delivering a carbonating gas to said lower reservoir for mixture with the water therein to form carbonated water; and

a second dispense conduit connected between said lower reservoir and said second faucet valve.

5,310,089

LIQUID DISPENSING SYSTEM

Richard G. Hudgins, 1852 N. Wilton Pl., No. 6, Hollywood, Calif. 90028

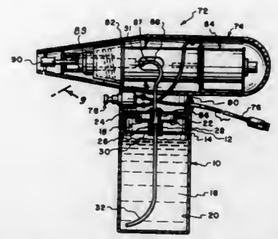
Filed Mar. 22, 1993, Ser. No. 35,069
Int. Cl.[5] A63H *3/18*
U.S. Cl. 222—79 **4 Claims**

1. A liquid dispensing system comprising:

a first container having an internal compartment, said internal compartment adapted to contain a quantity of a liquid to be dispensed, said first container having a single access opening providing access into said internal compartment;

a dispensing valve mounted in conjunction with said single access opening, said dispensing valve having an inductor tube, said inductor tube extending within said internal compartment and adapted to conduct therethrough the liquid contained within said internal compartment, said dispensing valve having a valve seat with a portion of said inductor tube projecting exteriorly of said internal compartment and within said valve seat, pump means operable to dispense a liquid, said pump means including a connector, said connector to matingly engage with said valve seat forming a liquid tight connection there between, said pump means being normally disengageable from said valve seat to permit said pump to reconnect with a second container;

said dispensing valve being secured by being force fitted within said single access opening; and



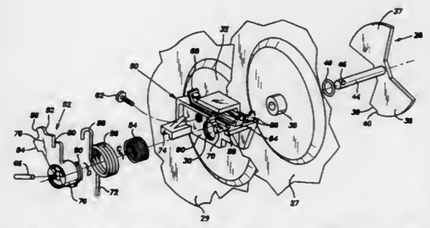
there being a said second container, said second container being identical to said first container, said dispensing valve of said second container being covered by a cap, said cap being press fitted with said dispensing valve, said cap preventing leakage of the liquid contained within said second container prior to connection with said pump means.

5,310,090

DISHWASHER DETERGENT DISPENSER

Marion L. Taylor, Jr., Kinston, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 30, 1993, Ser. No. 39,956
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129 **12 Claims**



1. A detergent dispenser, said detergent dispenser being attached to a dishwasher access door, said dispenser comprising:

a rotary biasing spring, said spring comprising proximal and distal ends;

a detergent dispenser door, said dispenser door including a user manipulated section and a generally centrally located shaft, said user manipulated section being designed and sized to selectively cover a detergent-receiving compartment provided by said access door, said shaft providing a transverse bore near a terminal end thereof, said bore having a first diameter and being adapted to loosely and slidably receive a mounting pin, said mounting pin having a second diameter, wherein said second diameter is less than said first diameter and said mounting pin is sized such that opposite ends of said pin project out of said transverse bore;

a stationary actuating member, said actuating member comprising a main body and a selectively actuatable latch, said main body providing a spring receiving projection and a

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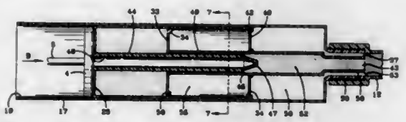
stop member, said projection receiving a proximal end of said rotary biasing spring;

a rotary cam and latch member, said cam and latch member comprising a cylindrical hub and an outwardly extending projection, said outwardly extending projection including a latch engaging surface, a stop member engaging surface, and a notch, said notch receiving the distal end of said rotary biasing spring, said cylindrical hub comprising a cylindrical outer wall, and a camming surface, wherein said outer wall extends above and surrounds said camming surface and defines an opening to allow insertion of the mounting pin into the transverse bore provided by the shaft while the upstanding wall prevents the mounting pin from unintentionally or accidentally falling out of the transverse bore, said hub also defining a lengthwise-directed bore through which the dispenser door shaft projects, wherein when the dispenser door and cam and latch member are in an at-rest position, the stop member engaging surface is in engagement with the stop surface of the main body and, when the dispenser door and cam and latch member are in a spring-loaded position, the latch engaging surface is in engagement with, and retained by, the actuatable latch provided by the stationary actuating member, said actuatable latch releasing said latch engaging surface at a predetermined time to allow the user manipulated section of said dispenser door to move from a position generally covering the detergent-receiving compartment to a position generally exposing said detergent-receiving compartment.

5,310,091
DUAL PRODUCT DISPENSER

Walter B. Dunning, Sonora, Calif., and Robert L. Bundschuh, Miami Lakes, Fla., assignors to Tremco, Inc., Beachwood, Ohio

Filed May 12, 1993, Ser. No. 60,894
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—135 **13 Claims**



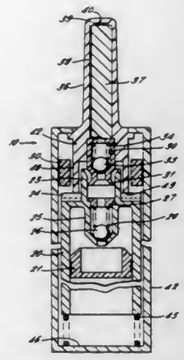
1. A dual product dispenser including:

first and second chambers having hollow interiors, each of said chambers having a piston for discharging a first and a second product respectively, from the interiors of said chambers; said second chamber being slidably mounted within the interior of the first chamber wherein movement of the second chamber effects synchronous movement of both pistons with respect to their respective chambers for discharging the products therefrom; each of said chambers having an exit port through which the respective products are discharged upon movement of the second chamber into the first chamber; a product delivery tube extending through the interior of the first chamber, said delivery tube having a first open end communicating with the interior of the second chamber and a second open end providing the exit port for said second chamber; and an elongated post mounted on the second chamber moveable into the delivery tube of the first chamber upon movement of the second chamber into said first chamber.

5,310,092
PUMP DISPENSING DEVICE

David J. Targell, Cambridge, United Kingdom, assignor to Bespak Plc., Norfolk, United Kingdom

PCT No. PCT/GB91/00677, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO91/16993, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 29, 1991, Ser. No. 941,060
Claims priority, application United Kingdom, May 1, 1990, 9009715
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—167 **4 Claims**

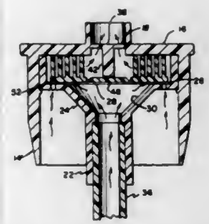


1. A pump dispensing device comprising a piston sliding in a cylinder, a fluid inlet to the cylinder for product to be dispensed and a fluid outlet through the piston, valve means normally closing the fluid outlet and being opened in operation of the device, cooperating first and second cam surfaces being provided connected to the piston and cylinder respectively and means being provided for effecting relative movement of the cam surfaces to cause the piston to slide axially relative to the cylinder through a predetermined stroke, said valve means being resiliently urged into a closed position and opened by fluid pressure as the piston slides in the cylinder, in which the cooperating cam surfaces are axially directed and extend peripherally around the piston and cylinder, the movement effecting means operating to rotate the first cam surface relative to the second cam surface to cause the piston to slide axially in the cylinder.

5,310,093
FOAM DISPENSER

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06612

Filed Mar. 3, 1993, Ser. No. 25,675
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—190 **5 Claims**



1. An attachment adapted to be inserted into the open neck of an elongated squeezable container having air and a foamable liquid therein whereby when the container is squeezed, the attachment converts the air and liquid to a thick foam, said attachment comprising:

a vertical hollow cylinder having an open bottom end and a closed top end with a first opening therein;

a vertical hollow tube open at both ends;

a vertical inverted truncated hollow cone open at both ends, the smaller open end of the cone being connected to the upper open end of the tube, the larger open end of the cone being disposed above said smaller open end;

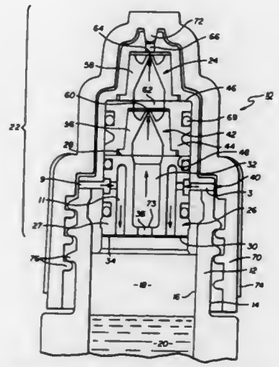
a vertical cup shaped element having a first flat horizontal surface having a central hole coincident with said larger open end of said cone and a first plurality of small holes spaced from each other and from the central hole, said element having a second flat horizontal surface spaced slightly above the first surface and disposed around the central hole and the first plurality of small holes, the top surface of the element engaging the top end of the cylinder; the tube, cone and element being aligned with the first opening; and

a flat flexible disc having a flapper valve disposed in the center thereof and also having a plurality of short vertical flexible fingers closedly spaced from each other, the fingers being secured at lower ends to the disc and extending upward therefrom, said disc being disposed in the element and resting on said second horizontal surface with the prongs extending upward to engage the top end of the cylinder and the flapper valve being aligned with the first opening, the disc being separated from the first horizontal surface thereby defining a plurality of flat narrow horizontal channels.

5,310,094
PRESERVATIVE FREE STERILE FLUID DISPENSING SYSTEM

F. Jesus Martinez, Mission Viejo; Steven R. Bystrom, El Toro, and Peter W. Chan, Northridge, all of Calif., assignors to JSP Partners, L.P., Northridge, Calif.

Filed Nov. 15, 1991, Ser. No. 792,989
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—212 **19 Claims**



1. A fluid dispensing system for dispensing sterile preservative free solution comprising:

a container having an outer surface and an inner surface;

said container further having a reservoir compartment for storing a sterile solution and a tip compartment adapted to dispense the sterile solution;

said container further having at least part of it elastically deformable;

a dual self-sealing valve dispensing assembly sealed to the inside surface of said tip compartment;

wherein said dual self-sealing valve dispensing assembly further comprises:

a membrane assembly having a membrane housing;

a hydrophobic membrane support connected to said membrane housing;

said hydrophobic membrane support further having a top surface, a bottom surface and a central fluid channel to allow the sterile solution to pass through;

a hydrophobic membrane hermetically sealed to said bottom surface of said hydrophobic membrane support separating said reservoir compartment from said tip compartment, said membrane further connected to a central solution flow port which in turn communicates with said fluid channel of said hydrophobic membrane support to allow the solution to pass through;

a passageway located in said hydrophobic membrane support for ingress of air from outside said container through said hydrophobic membrane;

a valve assembly comprising a vale housing support with a top surface and a bottom surface;

said bottom surface of said valve housing support further connected to said top surface of said hydrophobic membrane support;

a first self-sealing valve hermetically sealed to said bottom surface of said housing support;

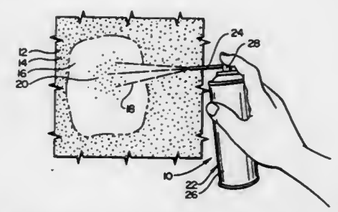
a second self-sealing valve hermetically sealed to said top surface of said valve housing support and in series with said first self-sealing valve wherein an outlet of said first valve opened to an inlet of said second valve to allow the solution to pass through; and

a system outlet from which the solution from an outlet of said second valve passes through.

5,310,095
SPRAY TEXTURING APPARATUS AND METHOD HAVING A PLURALITY OF DISPERSING TUBES

Donald J. Stern, Bellingham, and James A. Tryon, Seattle, both of Wash., assignors to DJS&T Limited Partnership, Bellingham, Wash.

Filed Feb. 24, 1992, Ser. No. 840,795
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—402.1 **70 Claims**



1. A method of applying a hardenable liquid texture material as a spray onto a surface area to form a textured surface of a predetermined spray pattern, said method comprising:

a. providing an aerosol texture material dispensing apparatus which has a material containing portion containing said texture material and a discharge nozzle means and which is adapted to discharge said liquid material under pressure from said containing portion and through said nozzle means;

b. providing a plurality of dispensing tube means, each defining an elongate dispensing passageway having an inlet and an outlet, with the passageways of the plurality of tube means each having different cross sections to obtain differing spray texture patterns, and selecting one of said tube means and locating the inlet of said selected dispensing tube means adjacent to said discharge nozzle means so that the liquid texture material is able to flow from the dis-

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charge nozzle means into the inlet of said tube means and through said dispensing passageway;

c. positioning the apparatus with said selected dispensing tube means spaced from said surface area so that the outlet of the dispensing tube means is directed toward said surface area and spaced therefrom;

d. causing said liquid texture material to be delivered by said apparatus under pressure from said nozzle means and into said selected dispensing tube passageway to be discharged from the outlet of the tube means as a spray that is deposited on said surface area as said predetermined pattern, with said texture material on said surface area hardening to form said textured surface.

5,310,096

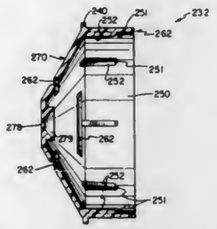
GARBAGE DISPOSAL CLEANER

William Rogers, Kingsville, Md., and Keith E. Williams, Rochester, N.Y., assignors to Cello Corp., Harve de Grace, Md.

Continuation-in-part of Ser. No. 780,272, Oct. 15, 1991, Pat. No. 5,209,380, and a continuation-in-part of Ser. No. 822,187, Jan. 16, 1992. This application Oct. 15, 1992, Ser. No. 961,778

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—402.13 **15 Claims**



1. A device for spraying a material into a garbage disposal, said device comprising an aerosol propellant container of substantially cylindrical shape and a substantially cylindrical adaptor removably attached to said container, and wherein:

(a) said aerosol propellant container comprises an inverted vertical action valve having a valve stem;

(b) said substantially cylindrical adaptor comprising an upwardly-extending rim section and, integrally joined to said upwardly-extending section, a downwardly and inwardly extending bottom section, wherein:

1. the bottom portion of said downwardly and inwardly extending bottom section comprises an orifice;

2. said upwardly extending rim section comprising an upwardly-extending cylindrical flange and at least one inwardly extending rib integrally joined to an interior surface of said upwardly extending cylindrical flange, and wherein:

(a) said at lest one rib is tapered such that the radial dimension of said rib is greater adjacent the inwardly extending bottom section,

(b) said bottom portion also comprising a receiver for said valve stem, said receiver surrounding said orifice and extending upward from said bottom portion;

(c) said container engaging said at least one rib such that said container is biased toward a first position by said rib in which said valve stem is disengaged from said receiver.

5,310,097

TWO-PART CAPTIVE DISPENSING CAP DEVICE FOR USE WITH A CONTAINER OR THE LIKE

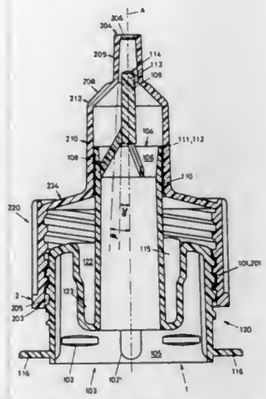
Gerhard Leuenberger, Oberrieden, Switzerland, assignor to S. Kisling & Cie AG, Zürich, Switzerland

Continuation of Ser. No. 565,603, Aug. 10, 1990. This application Oct. 1, 1992, Ser. No. 955,212

Claims priority, application Switzerland, Aug. 11, 1989, 2952/89-1

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—521 **7 Claims**



1. A two-part captive dispensing cap device for use with a container, which comprises:

a lower part slidable onto a container and rotationally symmetrical about a longitudinal axis of the cap device, a lower portion of the lower part having an inner side and an outer side where the outer side includes a plurality of external threads and the inner side of the lower portion of the lower part includes an organ which attaches to the container, the lower part defining a substantially central aperture therethrough and including an upper end and a lower end each having an opening communicating with the longitudinal aperture, the lower part further including a non-perforated surface area extending between the upper and lower ends consistent with the longitudinal aperture and substantially centered about the longitudinal axis of the cap device;

an upper part substantially symmetrical around the axis of the cap device and including a lower portion having an inner side and an outer side, the inner side having a plurality of internal threads designed and configured for mating with the external threads of the lower part, the upper part further defining a longitudinal aperture which extends therethrough and being substantially centered about the longitudinal axis of the cap device, the upper part including an upper end and lower end having an opening communicating with the longitudinal aperture, the upper part including a non-perforated surface area between the upper and lower ends;

a valve pin extending substantially upwards from the upper end of the lower part and positioned about the longitudinal axis of the cap device and held in a substantially stationary position by at least two connecting bars coupled at one end to the valve pin and at an opposite end connected proximal the upper end of the lower part;

a valve tube extending substantially upwards from the upper end of the upper part, said valve tube having a valve tube opening at an upper end thereof, and positioned about the longitudinal axis of the cap device, the valve tube being integral with an intermediate conical portion attached to

the upper end of the upper part, the valve pin cooperates with the valve tube and the internal threads of the upper part cooperate with the external threads of the lower part when the upper and the lower parts are engaged to axially displace the valve pin in relation to the valve tube by turning the upper part in relation to the lower part;

an upper cylinder section positionable about the longitudinal axis of the cap device between the lower end and the upper end of the upper part, the cylinder section being integral with the lower end of the upper part and integral with the intermediate conical portion of the upper part;

a lower cylinder section positionable about the longitudinal axis of the cap device between the lower and the upper ends of the lower part;

an inner surface of the upper cylinder section being in spaced relation from an outer surface of the lower cylinder section when the upper part is at its lowest position respective to the lower part, and when the upper part is at a most elevated position with respect to the lower part, the upper cylinder and the lower cylinder are not axially coextensive;

a sealing bulge positioned about the upper end of the lower part and substantially circumferentially continuous about the upper end and extending radially outward towards the inner surface of the upper cylinder section of the upper part when the upper and lower parts are in a mounted state such that the sealing bulge of the lower part substantially communicates with the inner surface of the upper cylinder section of the upper part when the upper and lower parts are mounted such that a substantial seal is provided continuously along the upper cylinder section of the upper part when the upper and lower cylinder sections are displaced axially in relation to each other, the upper part and the lower part communicating such that the internal threads of the upper part and the external threads of the lower part cooperate such that the upper part rotates and elevates itself or lowers itself in relation to the lower part, and when the upper part is in its lowest position respective to the lower part, the upper ends of the upper part upper cylinder section and the lower part lower cylinder section are facing each other along a portion of the axis and when the upper part is at a most elevated position with respect to the lower part the valve pin and the valve tube are not axially coextensive; and

a sealing piece positioned at an upper end of the valve pin is axially positioned above the valve pin, such that when the upper part is mounted on the lower part and when the upper part is in its lowest position relative to the lower part the sealing piece is introduced into the upper part of the valve tube.

5,310,098

BUSH FOR DIRECTING A STREAM OF MOLTEN METAL INTO A MOLD

David J. Edwards, Zola Predosa, Italy, assignor to Reynolds Wheels S.p.A., Zola Predosa, Italy

Filed Feb. 17, 1993, Ser. No. 18,691

Claims priority, application European Pat. Off., Nov. 27, 1992, 92830643.0

Int. Cl.[5] B22D *35/00*

U.S. Cl. 222—591 **12 Claims**

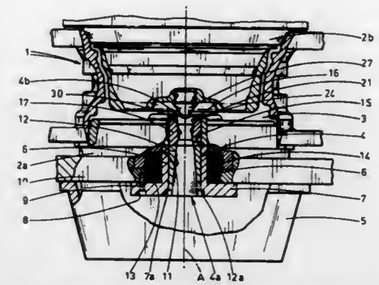
1. A bush for directing a stream of molten metal into a mold, comprising:

(a) a metal sleeve secured to the mold;

(b) a first ceramic tubular element disposed within said metal sleeve, said first tubular element having an outer surface of cylindrical shape and an inner surface of frustoconical shape;

(c) a second ceramic tubular element disposed adjacent to said first tubular element, said second tubular element having an outer surface of cylindrical shape and an inner surface having at least three frustoconical shaped portions;

(d) a metal annular element disposed adjacent to said second tubular element such that said second tubular element is disposed between said first tubular element and said annular element, said annular element having an outer surface, a portion of said annular element outer surface having a



frustoconical shape, one of said frustoconical shaped portions of said second tubular element mating with said frustoconical outer surface of said annular element to form a seal.

5,310,099

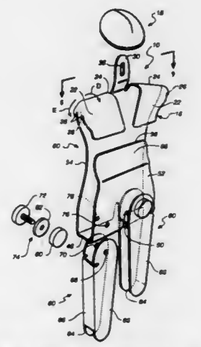
MANNEQUIN-TYPE CLOTHING DISPLAY ASSEMBLY COMPOSED OF RUBBERIZED ACRYLIC MATERIAL

Stephen J. Claas, 1255 Zephyr Ave., Hayward, Calif. 94544-7825

Filed Nov. 2, 1992, Ser. No. 969,954

Int. Cl.[5] A41H *5/00*

U.S. Cl. 223—66 **12 Claims**



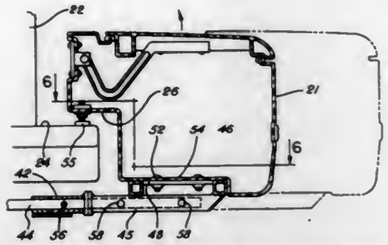
1. A mannequin for the display of clothing comprising:

a substantially planar single sheet of thermoplastic material having a frontal shape simulating a human torso and permanently formed by heating and bending into a three-dimensional body form including a torso portion having an upper end with a pair of shoulder portions integrally formed with and extending from said upper end, each of said shoulder portions including an upwardly facing transversely extending arcuate shoulder top and an outwardly and downwardly facing smooth arcuate shoulder end, each said shoulder end being provided by a pair of flanges extending downwardly in a smooth arcuate surface from said shoulder top and defining a vertically extending slot therebetween, said flanges forming a compound curve with said shoulder top, said compound curve being provided by a bend of said sheet in a fore-and-aft direction providing said shoulder top and a downward bend of each

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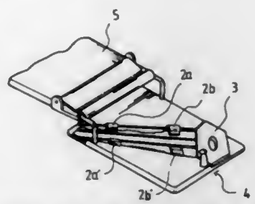
of said flanges in a direction transverse to said shoulder tops to provide said smooth arcuate shoulder end.

5,310,100
CARRIER FOR MOUNTING ON VEHICLE HITCH
Mark E. Liscinsky, 2175 Garry, Troy, Mich. 48084
Filed Jan. 8, 1993, Ser. No. 2,330
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.01 **12 Claims**



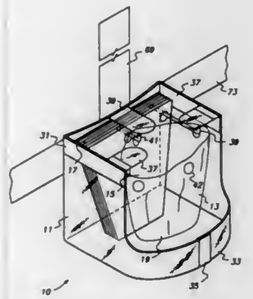
1. A carrier for use on a vehicle having a bumper disposed rearwardly thereof, the combination comprising:
a hitch attached to the vehicle;
a support structure attached to the hitch for supporting the carrier rearwardly of the vehicle;
a storage compartment having a selectively openable access door, vertical adjustment means for supporting at least part of said storage compartment over said bumper, said vertical adjustment means being adjustable to bear down on said bumper and support said at least part of said storage compartment at a predetermined distance above said bumper, and securing means to secure said carrier to said support structure, said securing means adapted to be spaced from said vehicle;
horizontal positioning means for selectively positioning said support structure between a first position at a first predetermined location adjacent rearwardly of the vehicle and a second position at a second predetermined location more rearwardly of the vehicle; and
horizontal adjustment means for adjusting the spacing of said support structure from said vehicle to change the respective predetermined locations of said first position and said second position.

5,310,101
BELT BUCKLE FOR STORING A SPARE KEY FOR AN AUTOMOBILE
Bae-Wook Park, 105-303 Chugong Apt., 210 Kao-dong, Tong-gu, Taejon-City, and Seong-Yeo Kim, Taejon, both of Rep. of Korea, assignors to Bae-Wook Park, Taejon, Rep. of Korea
Filed Jan. 14, 1992, Ser. No. 820,342
Claims priority, application Rep. of Korea, Jan. 14, 1991, 91-408
Int. Cl.[5] A44B *11/00*
U.S. Cl. 224—163 **1 Claim**



1. A belt buckle for storing a spare key for an automobile comprising a plate having a front side and a rear side, said buckle having a fitting to accommodate a belt adjacent to the rear side of said plate, said rear side of said plate having a diagonal groove which extends into said plate from a rear surface of said plate to a prescribed depth into said plate, said diagonal groove being configured in general conformance with the size and shape of said spare key, so that said key, when inserted into said groove, does not protrude beyond edges of said plate, and a plurality of retention lugs arranged along sides of said groove, said retention lugs holding said key in place in said groove.

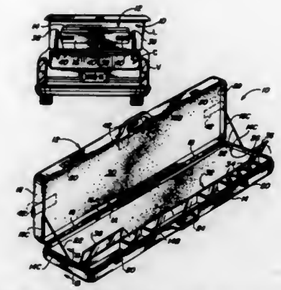
5,310,102
APPARATUS FOR FIELD SLEEVING OF LETTUCE AND OTHER VEGETABLES
John K. Hougham, P.O. Box 223381, Carmel, Calif. 93923
Filed Jun. 1, 1992, Ser. No. 890,805
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—267 **4 Claims**



1. An apparatus for field sleeving produce into plastic sleeves comprising:
a "U"-shaped frame having a rear surface, two side surfaces, and a front opening;
hangar means connected to and projecting from the rear surface of the frame towards the front opening for holding and dispensing the plastic sleeves through the front opening;
front shroud means attached to the two side surfaces of the frame and descending downwardly from the frame approximately the distance of the plastic sleeves, and joining below the front opening of the frame for substantially enclosing and protecting the sleeves; and
protector means attached to the frame and covering the hangar means to prevent damage to the produce from contact with the hangar means during sleeving.

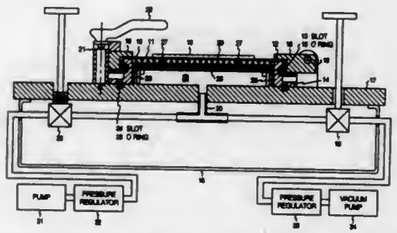
5,310,103
VEHICLE TRUCK LID MOUNTED ACCESSORY CARRIER CASE ASSEMBLY
Melvin W. Weber, 142 Oakland, Rapid City, S. Dak. 57701, and Robert L. Olson, R.R. 8, Box 2210, both of Rapid City, S. Dak. 57702
Filed Jan. 26, 1993, Ser. No. 9,546
Int. Cl.[5] B60R *7/02*
U.S. Cl. 224—311 **20 Claims**

1. An accessory carrier case assembly mountable on a support structure, comprising:
(a) an elongated carrier case having a bottom tray and top lid and being adapted for containing items therein, said bottom tray and top lid of said carrier case being hinged together for movement between opened and closed positions, said carrier case also having a pair of handles mounted respectively on said bottom tray and top lid and being disposed in side-by-side relationship with one another when said bottom tray and top lid are in said closed position;
(b) a plurality of mounting brackets attachable on a support structure;



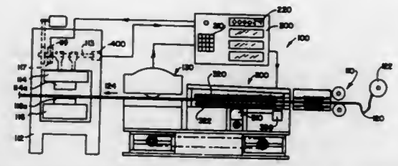
(c) a plurality of flexible holding straps attached on said mounting brackets; and
(d) a plurality of releasable fastening means for releasably securing said holding straps in a predetermined arrangement on said carrier case for supporting said carrier case on the support structure.

5,310,104
METHOD AND APPARATUS FOR CLEAVING A SEMICONDUCTOR WAFER INTO INDIVIDUAL DIE AND PROVIDING FOR LOW STRESS DIE REMOVAL
Simon A. Zaidel, Manlius; Walter Fabian, Fayetteville; Brian G. Baxter, Hastings, and Albert J. Manoni, Syracuse, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed Dec. 16, 1991, Ser. No. 807,584
Int. Cl.[5] B26F *3/00;* **H01L** *21/78*
U.S. Cl. 225—2 **6 Claims**



4. A method of cleaving a semiconductor wafer into individual die and providing for low stress die removal, the wafer including an active surface, comprising the steps of:
A) mounting a planar semiconductor wafer with the active surface exposed upon an adherent first resilient membrane supported along its perimeter by a hoop and scribing the exposed surface in scribe lanes along die boundaries, the first membrane being supported in a planar configuration during scribing; and
B) applying uniform air pressure to said first hoop supported membrane for spherical inflation of said membrane thereby forming a convex surface of the first membrane with the wafer disposed on the convex surface, adherence of the wafer to said inflating first membrane causing ending and tensile stresses on said wafer, internal strains resulting from the stresses cleaving the wafer at predetermined scribed lanes into individual die; and
C) applying uniform vacuum pressure to said hoop supported membrane while supported against an undulatory surface to cause said first membrane to conform to said undulatory surface to provide decreased surface contact between the first membrane and die to reduce adhesive forces to facilitate low stress die removal.

5,310,105
STOCK MATERIAL STRIP FEED CONTROLLER
William D. Mills, 11105 Frederick Pike, Vandalia, Ohio 45377
Continuation of Ser. No. 667,574, Mar. 11, 1994, abandoned. This application May 17, 1993, Ser. No. 63,125
Int. Cl.[5] B65H *23/04*
U.S. Cl. 226—24 **14 Claims**



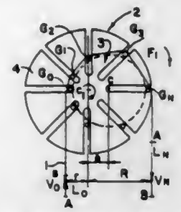
1. An apparatus for measuring the movement of a continuous intermittently advanced stock material strip, comprising:
a base having a guide surface over which said strip travels;
a support positioned adjacent to said base and movable relative thereto;
reciprocating means associated with said support for reciprocally moving said support between a first position adjacent to said guide surface and a second position away from said guide surface, said reciprocating means comprising:
a cam having a first pin fixedly connected thereto and an outer camming surface on its outer periphery, said cam being pivotably connected to said support via a second pin;
roller means associated with said base for engaging with said outer camming surface of said cam; and
actuating means for acting upon said first pin to rotate said cam about said second pin thereby causing said outer camming surface to travel over said roller means to reciprocally move said support between said first and second positions; and
rotatable sensor mounted to said support for sensing the movement of said strip, said rotatable sensor means engaging said strip for sensing strip movement when said support is in said first position and being removed from said strip when said support is in said second position.

5,310,106
APPARATUS FOR OBTAINING DIFFERENTIAL TANGENTIAL VARIABLE SPEEDS AT DIFFERENT POINTS OF A DEFORMABLE FILM
Hubert Thimon, and Paul Jacquier, both of Aix les Bains, France, assignors to Societe Des Etablissements Thimon, Paris, France
Continuation of Ser. No. 671,115, Mar. 15, 1991, abandoned, which is a division of Ser. No. 488,404, Feb. 28, 1990, Pat. No. 5,000,364, which is a continuation of Ser. No. 372,103, Jun. 28, 1989, abandoned, which is a continuation of Ser. No. 62,315, Jun. 8, 1987, abandoned, which is a division of Ser. No. 546,034, Oct. 27, 1983, abandoned. This application Jun. 22, 1993, Ser. No. 80,988
Int. Cl.[5] B65H *20/02*
U.S. Cl. 226—175 **3 Claims**

1. An apparatus for stretching a deformable film comprising:
first and second plate members rotatably mounted for rotation about a first axis and separated by a predetermined distance along the first axis, each first and second plate member including a plurality of channels spaced apart from each other and extending radially outward away from said first axis; and

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a plurality of first longitudinal members each being mounted on one end in a channel in the first plate member and mounted on the other end in a corresponding channel in the second plate member such that each longitudinal member may move radially in the respective channel, and such that, upon rotation of the first and second plate members about the first axis, the longitudinal members rotate about a second axis oriented substantially parallel to



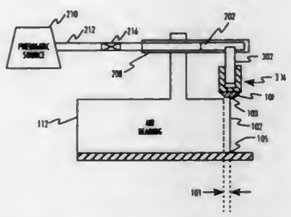
the first axis and displaced a predetermined distance from the first axis, so that a first longitudinal member separated from the first axis by a first distance and a first portion of the film supported thereon move at a tangential space which is less than the tangential speed of a second portion of the film supported on a second longitudinal member separated from the first axis by a distance greater than the first distance, thereby supporting and stretching the deformable film.

5,310,107

PNEUMATIC COMPLIANT TAPE GUIDANCE DEVICE

Christian A. Todd, Thornton; Lynn C. Jacobs, Louisville, and Brian P. Egan, Thornton, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 16, 1992, Ser. No. 977,706
Int. Cl.[5] B65H *20/14*
U.S. Cl. 226—196 **18 Claims**



1. A pneumatic compliant edge guidance apparatus for pneumatically applying a biasing load to a passing tape media, comprising:

guide means for contacting a first edge of the tape media and limiting the movement of the tape media in a first direction, said guide means configured to be pneumatically controlled;

pneumatic means, coupled to said guide means, for pneumatically controlling the biasing load applied by said guide means to said first edge of the tape media; and

reference means for contacting a second edge of the tape media opposite said first edge and for limiting the movement of the tape media in a second direction, said second direction being substantially opposite said first direction;

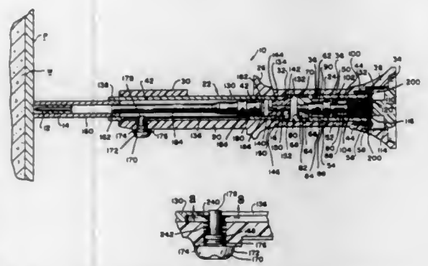
wherein the distance between said guide means and said reference means depends upon the degree of pneumatic control of said guide means by said pneumatic means.

5,310,108

HAMMER-STRIKABLE, POWDER-ACTUATED, FASTENER-DRIVING TOOL

Michael S. Popovich, Schaumburg; Richard J. Ernst, Palatine, and Edward D. Yates, Chicago, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 15,927, Feb. 10, 1993, Pat. No. 5,269,450.
This application Jun. 21, 1993, Ser. No. 79,293
Int. Cl.[5] B25C *1/14*
U.S. Cl. 227—10 **23 Claims**



1. A powder-actuated, fastener-driving tool, comprising:

a substantially tubular body defining a longitudinal axis;

a breech block mounted within a rear end portion of said substantially tubular body;

a barrel mounted within a front end portion of said substantially tubular body so as to be axially movable toward and away from said breech block, said barrel having an axially extending slot defined therein;

a fastener, to be driven into a substrate, disposed within a forward portion of said barrel;

driving means disposed within said barrel at a position rearwardly of said fastener for driving said fastener into said substrate;

charge means, disposed within a rear end portion of said barrel, for propelling said driving means, which will in turn, drive said fastener-to-be-driven into said substrate when said charge means is fired;

a firing pin mounted within said breech block so as to be axially movable between a dormant position, and a firing position at which said firing pin fires said charge means so as to cause said driving means to move within said barrel and thereby, in turn, cause said fastener to be driven into said substrate; and

means mounted within said substantially tubular body and engaging said barrel for imparting frictional drag upon said barrel as said barrel moves relative to said substantially tubular body when moving toward and away from said breech block, said frictional drag imparting means comprising a stud mounted upon said tubular body and extending radially inwardly such that a radially inner shank portion of said stud is disposed within said axially extending slot of said barrel, and an annular washer, disposed about said radially inner shank portion of said stud so as to bridge said axially extending slot of said barrel, is biased against said barrel so as to impart said frictional drag thereto.

5,310,109

FOLDED SIMULATED VEHICLE CONTAINER SYSTEM

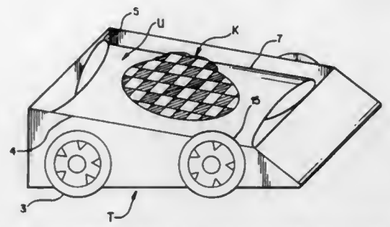
Phillip L. Prime, and Cynthia J. Prime, both of 29 Highland Manor Ct., No. Dr., Indianapolis, Ind. 46208

Filed May 4, 1992, Ser. No. 877,755
Int. Cl.[5] B65D *5/60*
U.S. Cl. 229—8 **10 Claims**

1. A folded receptacle which simulates a vehicle comprising:

a piece of semiflexible material folded to form a receptacle in the shape of a simulated vehicle; said receptacle having an upper edge which slopes from the rear to the front, an outside surface, a front, a rear and a first cavity which holds a first container;

said first container is constructed of a semiflexible material and has front corners, rear corners, a top, and a top edge;



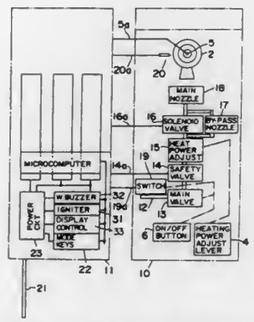
said receptacle includes notches formed in said semiflexible material, said notches being positioned to engage the rear corners of said first container, whereby the top edge of said first container is parallel to said upper edge of said receptacle.

5,310,110

HEATING APPARATUS AND HEATING POWER CONTROL METHOD

Yoshio Akamatsu, Nara; Misugi Yagi, Kyoto; Mitsuo Yokohata, Habikino; Yoshisato Wakashima, Sakurai, and Mitsuo Ikeda, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 50,996, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 884,004, May 18, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 111,736
Claims priority, application Japan, May 17, 1991, 3-113203
Int. Cl.[5] A47J *27/00*; F23N *1/08*; F24C *3/00*
U.S. Cl. 236—20 A **19 Claims**



1. A heating apparatus for heating material in a water contained vessel by heating said vessel, said apparatus comprising:

a heating means for heating said vessel;

a temperature detection means for detecting the temperature of said vessel;

a first temperature change detection means for detecting a first temperature gradient of said detected temperature while the temperature of said vessel is in a first temperature range below a predetermined temperature;

a quantity determining means for determining the quantity of said materials based on said detected temperature gradient and for producing a quantity factor indicative of said quantity;

a boiling maintained temperature determining means for determining a boiling maintained temperature based on said detected temperature gradient;

a second temperature change detection means for detecting a second temperature gradient of said detected temperature range above said predetermined temperature and below said detected boiling maintained temperature;

a material determining means for determining the temperature gradient and for producing a material factor indicative of said heating material; and

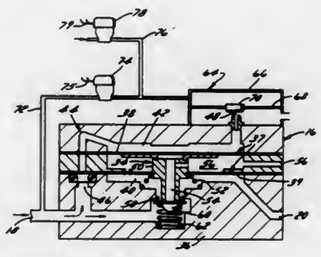
a heating control means for controlling the heat quantity of said heating means according to said quantity factor and said material factor.

5,310,111

PNEUMATIC CONTROLLER

Keith S. Linck, Austin, Tex., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Mar. 19, 1993, Ser. No. 33,838
Int. Cl.[5] F24F *7/06*
U.S. Cl. 236—49.4 **21 Claims**



13. A pneumatic controller comprising:

a gas supply inlet;

a gas outlet;

a pneumatic relay connected between the inlet and the outlet for selectively relaying a pressurized gas, the relay including a valve controlled by an established pressure in a pilot circuit, the pilot circuit having a pilot gas inlet through which a portion of the pressurized gas enters and a control port through which the portion exits, wherein the pressure is regulated by controlling the amount of gas flow through the control port;

an inflatable bladder disposed proximate the control port, wherein inflating the bladder restricts the gas flow through the control port, thus increasing the pressure in the pilot circuit, and deflating the bladder allows increased gas flow through the control port, thus decreasing the pressure in the pilot circuit; and

a regulator system for regulating inflation and deflation of the bladder in response to a controlled variable;

the pneumatic controller further comprising a sensor that measures the controlled variable in a controlled space and provides an output to the regulator system proportional to the controlled variable,

wherein the regulator system includes digital controller operatively connected to the sensor and to an electronic microvalve which controls gas low to the bladder.

5,310,112

VALVED GASKET FOR DISPENSER

Philip Meshberg, 2500 S. Ocean Blvd. Building 3, Apt. 1-A, Palm Beach, Fla. 33480

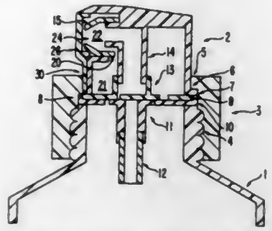
Filed Mar. 5, 1992, Ser. No. 846,631
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—482 **24 Claims**

1. A valving arrangement for a dispenser comprising:

an upper member with a hole and a flap valve;

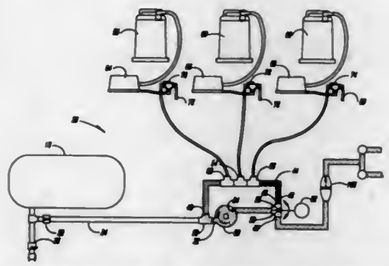
VOL 1162 ISS 2 MY 10 1994 UMI

a lower member with a hole and a flap valve;
said upper member overlaying said lower member;
said hole on said upper member being aligned with said flap valve on said lower member and said hole on said lower member being aligned with said flap valve on said upper member;
wherein said hole on said upper member cooperates with said flap valve on said lower member and said hole on said



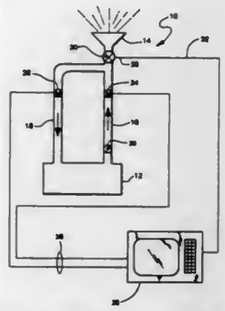
lower member cooperates with said flap valve on said upper member so as to respectively form two one-way valves, one being shaped so as to allow air flow in one direction and one being shaped so as to allow limited air flow in an opposite direction; and
an additional liquid flow passage through said upper and lower members for allowing liquid flow from said container in said one direction.

5,310,113
SPRAYER CONTROL SYSTEM AND METHOD FOR USING SAME
Bruce E. Cowgur, 14 Katie La., Rochester, Ill. 62563
Filed Dec. 1, 1992, Ser. No. 983,816
Int. Cl.[5] B05B *12/00, 9/06*
U.S. Cl. 239—10 **11 Claims**



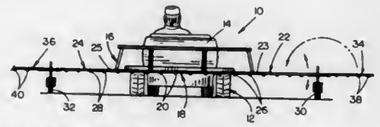
1. A chemical mixing and delivery system for delivering a mixture of carrier fluid and fluid chemical additive to at least one sprayer head, said system comprising:
a regulated flow conduit connected to said sprayer head;
a fluid pump having a fluid intake opening and a discharge opening and being adapted to pump fluid from said intake opening outwardly through said discharge opening;
a flow control valve having an intake port, a bypass port, and a regulated port;
first conduit means connecting said intake opening of said pump to said source of said carrier fluid;
second conduit means connecting said discharge port of said pump to said intake port of said flow control valve;
said regulated port of said flow control valve being adapted for connection to said regulated flow conduit;
a bypass conduit having a first end connected to said bypass port of said flow control valve and a second end connected to said first conduit means;
chemical additive means for adding a predetermined quantity of said chemical additive to said bypass conduit whereby a mixture of said chemical additive and said carrier fluid will be introduced to said fluid intake opening of said pump;
said flow control valve having a valve member movable between a bypass position connecting said bypass port to said intake port and a regulated position connecting said intake port to said regulated port, said valve member connecting said intake port to both of said bypass port and said regulated port while moving between said bypass position and said regulated position;
a flow sensor connected to said regulated flow conduit between said flow control valve and said sprayer head for sensing the rate of flow of said mixture of said chemical additive and said carrier fluid through said regulated flow conduit;
control means connected to said flow sensor and said flow control valve for causing adjustment of the position of said flow control valve in response to the rate of flow sensed by said flow sensor;
said control means comprising a microprocessor programmed to compare said flow rate sensed by said flow sensor to a predetermined programmed flow rate and to cause adjustment of said flow control valve until said flow rate sensed by said flow sensor matches said predetermined programmed flow rate.

5,310,114
APPARATUS AND METHOD FOR MEASURING PAINT USAGE IN A PAINTING SYSTEM
Roger S. Cann, 28670 Old River Rd., Mt. Clemens, Mich. 48045
Filed Sep. 16, 1992, Ser. No. 945,525
Int. Cl.[5] B05B *9/00*
U.S. Cl. 239—74 **13 Claims**



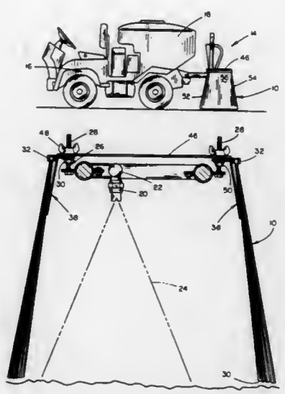
1. An apparatus for measuring and controlling paint usage in a painting system (**10**), said apparatus comprising:
a reservoir (**12**) for holding a supply of paint;
an atomizer (**14**) for discharging paint toward an object to be painted;
an atomizer feed line (**16**) extending between said reservoir (**12**) and said atomizer (**14**) for supplying paint from said reservoir (**12**) to said atomizer (**14**);
an atomizer return line (**18**) extending between said atomizer (**14**) and said reservoir (**12**) for returning a portion of the paint supplied to said atomizer (**14**) back to said reservoir (**12**);
a feed flowmeter (**24**) positioned in said atomizer feed line (**16**) for measuring the volume of paint flow through said atomizer feed line (**16**), a return flowmeter (**26**) positioned in said atomizer return line (**18**) for measuring the volume of paint flow through said atomizer return line (**18**), and a processor (**28**) for providing the difference between the volume of paint flow through said atomizer feed line (**16**) as determined by said feed flowmeter (**24**) and the volume of paint flow through said atomizer return line (**18**) as determined by said return flowmeter (**26**) to determine the volume of paint flow discharged through said atomizer (**14**);
valve means (**22**) disposed in said atomizer (**14**) for terminating paint flow through said atomizer (**14**), said valve means (**22**) comprising a variable orifice (**30**) for varying the volume of paint flow through said atomizer (**14**); and
characterized by a feedback loop (**32**) extending from said variable orifice (**30**) to said processor (**28**) for controlling said variable orifice (**30**) to maintain a predetermined volume of paint flow through said atomizer (**14**).

5,310,115
SPRAYER HAVING A FOLDING BOOM
Craig G. Broyhill, Dakota City, Nebr., assignor to The Broyhill Company, Dakota City, Nebr.
Filed Dec. 6, 1991, Ser. No. 803,048
Int. Cl.[5] B05B *1/16, 1/20*
U.S. Cl. 239—168 **6 Claims**



1. A sprayer comprising,
a wheeled frame means,
a liquid spray tank on said wheeled frame means,
a pump means operatively connected to said spray tank for pumping liquid therefrom,
a horizontally disposed, main spray bar on said wheeled frame means and having opposite ends,
a first intermediate boom section pivotally secured, about a horizontal axis, to one end of said main spray bar,
a second intermediate boom section pivotally mounted, about a horizontal axis, to the other end of said main spray bar,
a first outer boom section pivotally connected, about a horizontal axis, to the outer end of said first intermediate boom section,
a second outer boom section, pivotally connected, about a horizontal axis, to the outer end of said second intermediate boom section, said first and second outer boom sections being selectively pivoted between operative positions and folded positions,
said first and second outer boom sections being positioned on said first and second intermediate boom sections, respectively, when in their said folded positions,
said main spray bar having a plurality of spray nozzles mounted thereon,
said first intermediate boom section, said second intermediate boom section, said first outer boom section and said second outer boom section having a plurality of spray nozzles mounted thereon,
said nozzles being operatively connected to said pump means,
and means for interrupting the flow of liquid only to the nozzles on said first and second outer boom sections when said first and second outer boom sections are in their said folded positions.

5,310,116
DRIFT CONTROL ENCLOSURE FOR AN AGRICULTURAL SPRAYER
Craig G. Broyhill, Dakota City, Nebr., assignor to The Broyhill Company, Dakota City, Nebr.
Filed Dec. 1, 1992, Ser. No. 983,879
Int. Cl.[5] A01G *25/09;* **B05B** *1/28*
U.S. Cl. 239—172 **1 Claim**



1. A drift control enclosure for an elongated spray boom having a plurality of spray nozzles mounted thereon which are spaced above the ground and which are adapted to spray liquid chemicals or the like downwardly therefrom towards the ground, the spray boom having rearward and forward ends, comprising,
a plurality of elongated filaments extending downwardly from said spray bar towards the ground in an enclosure fashion so as to enclose the spray nozzles and the spray pattern thereof to prevent spray drift,
said flexible filaments being arranged in an elongated strip which includes a front portion positioned forwardly of said spray boom, a rear portion which is spaced rearwardly of said front portion and which is positioned rearwardly of said spray bar and end portions which extend around the ends of said spray bar,
said back portion of said elongated strip extending downwardly and rearwardly relative to said spray boom,
the angle at which said back portion extends rearwardly being adjustable.

5,310,117
JET ENGINE PROVIDED WITH A THRUST REVERSER
Etienne Fage, Ramatuelle, and Jean-Pierre Lair, Plaisance, both of France, assignors to The Dee Howard Company, San Antonio, Tex.
Division of Ser. No. 573,481, Aug. 24, 1990, Pat. No. 5,192,023, which is a division of Ser. No. 263,224, Oct. 27, 1988, Pat. No. 4,966,327. This application Feb. 5, 1993, Ser. No. 13,964
The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.
Int. Cl.[5] F02K *1/10, 1/12*
U.S. Cl. 239—265.29 **2 Claims**

1. An aircraft jet engine comprising:
a thrust reverser having at least one door pivotal between stowed and deployed positioned and defining in its stowed position at least a portion of the throat of the ejection nozzle of the engine;
a flange having a plurality of slots formed on the downstream portion of said flange;
said flange is integrally connected to said nozzle;

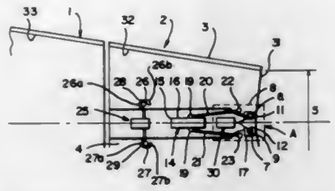
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said slots each providing guidance to the movement of said corresponding thrust reverser doors while in their respective stowed positions, said doors each coupled therethrough to an actuating arm;

a thrust reverser actuator means for operating said door between its respective stowed and deployed positions;

means for retaining said door in its stowed position;

means independent of said thrust reverser means for selectively moving said thrust reverser door while in its stowed position between at least first and second limiting positions to vary the cross-sectional area of the throat of said ejection nozzle between respective minimum and maximum values;



means enabling sufficient movement of said thrust reverser door relative to its associated door retaining means to permit movement of said thrust reverser door between its said first and second limiting position;

whereby said at least one thrust reverser door not only functions when deployed to reverse the thrust of the aircraft engine during the landing roll phase of aircraft operation but is also effective while remaining stowed to vary the cross-sectional area of the throat of the gas ejection nozzle of the aircraft engine to thereby permit optimization of engine thrust to suit different engine operating regimes.

5,310,118

MECHANICAL ACTUATING DEVICE FOR OPENING OR CLOSING A VALVE CONTROLLING A NOZZLE MOVABLE ALONG A PRESENT TRAJECTORY

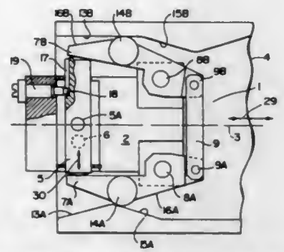
Jean-Pierre Reymonet, Le Chesnay, France, assignor to Colas S.A., Boulogne Billancourt Cedex, France

Filed Aug. 7, 1992, Ser. No. 925,849

Claims priority, application France, Aug. 9, 1991, 91 10193

Int. Cl.[5] B05B *1/14*

U.S. Cl. 239—551 **22 Claims**



1. A mechanical actuating device for opening and closing at least one nozzle movable along a preset trajectory with respect to a support, comprising:

at least one nozzle movable along a preset trajectory;

a valve associated with each said at least one nozzle; said valve comprising a distributing element movable between an open position wherein a fluid can flow through said valve, and a closed position wherein said valve is sealed; and

means for mechanically moving said distributing element between the open position and the closed position comprising at least one guide rail comprising a flexure for enabling said distributing element to move between the open position and the closed position.

5,310,119

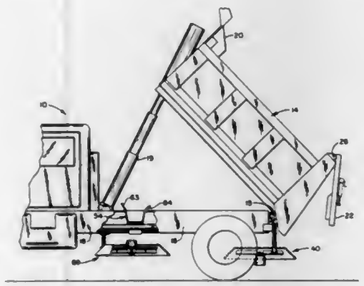
DUMP TRUCK WITH CONVEYOR DISPENSING SYSTEM

Charles S. Musso, Jr., Hammondsport, and Tom W. Musso, Bath, both of N.Y., assignors to Air-Flo Mfg. Co. Inc., Prattsburg, N.Y.

Filed Jun. 2, 1992, Ser. No. 892,250

Int. Cl.[5] B60P *1/04, 1/36*

U.S. Cl. 239—672 **12 Claims**



1. In a dump truck having a truck frame with longitudinally extending rails, a dump body having a forward end and a rearward end and being pivotally mounted at the rearward end thereof on the truck frame, a lift cylinder connected between the truck frame and the forward end of the dump body for raising and lowering the dump body between a lower normal position thereof resting on the truck frame and an upper raised position thereof, the dump body forming a receptacle having a bottom, front and laterally spaced sidewalls and a rear tailgate opening and having a tailgate pivotal between an open position thereof and a closed position thereof closing the tailgate opening, the dump body having a bottom structure, providing the bottom of the dump body receptacle, with an integrated, longitudinally extending, endless conveyor having a front end and a rear end and forming part of the bottom of the dump body receptacle, the conveyor being operable for longitudinally conveying the material contained in the receptacle for dispensing the material from the receptacle, and a spreader system mounted on the truck for spreading the material dispensed by the conveyor; the improvement wherein the dump body has a hood, mounted over the front end of the conveyor, having a rearwardly facing conveyor opening that is located at the forward end of the dump body and rearwardly of the front sidewall of the dump body and of the front end of the conveyor, wherein the front end of the conveyor is located rearwardly of the front sidewall of the dump body, wherein the conveyor has a drive system selectively operable for running the conveyor in a forward conveyance mode of operation for conveying the material forwardly through the conveyor opening and dispensing the material off the front end of the conveyor, wherein the dump truck comprises a gravity chute mounted on the truck frame between the longitudinally extending rails and below the front end of the conveyor, and wherein the spreader system comprises a front spreader mounted on the truck frame below the chute for spreading the material on a roadway.

5,310,120

SPRAYING DEVICE WITH AN INSULATED STORAGE TANK FOR ELECTRICALLY CONDUCTIVE COATING PRODUCT

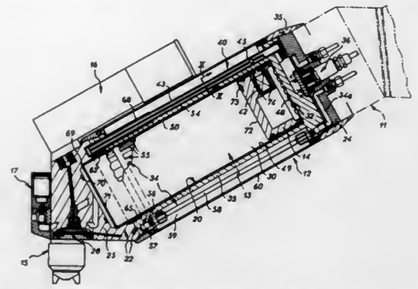
Pierre Ehinger, Faverges, and Djamel Merabet, Grenoble, both of France, assignors to Sames S.A., Meylan, France

Filed Aug. 3, 1993, Ser. No. 101,019

Claims priority, application France, Sep. 9, 1992, 92 10746

Int. Cl.[5] B05B *5/16*

U.S. Cl. 239—708 **12 Claims**



1. Electrostatic device for spraying electrically conductive liquid coating p comprising a storage tank flow the product in which the product is at a high voltage defined in a substantially cylindrical cavity formed in an insulative material body and inside which is a piston forming in said cavity a mobile wall separating a coating product chamber from an actuation chamber filled with an electrically insulative actuation fluid, said body being fixed to a conductive material socket which is grounded and to which is connected an actuation fluid supply circuit extending between said socket and said actuation chamber and discharging into said actuation chamber near a back wall of said cavity which is not in contact with the coating product, a section of said supply circuit running substantially parallel to said cavity in the direction away from said socket starting from said back wall.

5,310,121

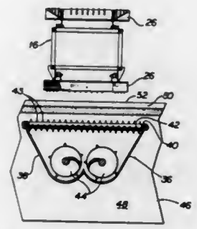
COLD WEATHER BULK STACKER/RECLAIMER APPARATUS AND METHOD

Bengt A . Nilson, Atlanta, and Peter J. Zreloff, Alpharetta, both of Ga., assignors to Consilium Bulk Babcock Atlanta, Inc., Atlanta, Ga.

Filed Jul. 24, 1992, Ser. No. 919,786

Int. Cl.[5] B02C *23/00*

U.S. Cl. 241—27 **5 Claims**



1. In a bulk material stacker/reclaimer of the type having a central tower and a stacker conveyor for stacking bulk material into a pile and a reclaimer conveyor for removing bulk material from the pile concentrically mounted on the tower for rotation, the reclaimer conveyor having a discharge end, and a removing means for transporting reclaimed material away from the stacker/reclaimer to a remote location, the improvement comprising a breaking means having an open top interposed between the reclaimer conveyor and the removing means to break apart frozen clumps of bulk material, wherein the inflow to the breaking means is in communication with the discharge end of the reclaimer conveyor and the outflow of the breaking means is in communication with the removing means and further comprising a means for directing the discharge from the reclaimer conveyor into the open top of the breaking means, wherein the directing means comprises a wall radially extending from the tower about the interior of the pile of bulk material, the wall having a top end to allow bulk material to fall over the top end of the wall into the breaking means.

5,310,122

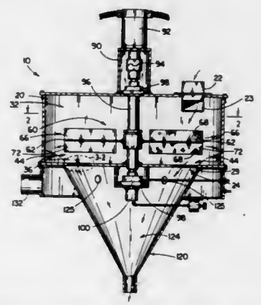
METHOD AND APPARATUS FOR PULVERIZING GLASS

John M. McFarlane, 18 Rye Rd., Rochester, N.Y. 14626

Filed Sep. 24, 1991, Ser. No. 764,550

Int. Cl.[5] B02C *19/00*

U.S. Cl. 241—60 **4 Claims**



1. An apparatus for grinding glass particles and fragments to a predetermined size, comprising:

(a) a housing including a substantially cylindrical grinding chamber having a peripheral wall, an inlet and a circular base plate which contains a plurality of apertures which extend through the thickness of said base plate, with a portion of the outer periphery of said base plate defining an area of damming glass during grinding;

(b) said apertures having centers which are positioned on a line which is substantially concentric with the outer periphery of said base plate;

(c) a blade assembly rotatably mounted in the grinding chamber between the inlet and the base plate, the blade assembly including a carrier plate substantially separating the grinding chamber into an upper portion and a lower portion, with the blade assembly spaced from the peripheral wall by a distance sufficient to permit the passage of glass particles therethrough, said blade assembly having a plurality of blades extending from said carrier plate into the upper portion of said grinding chamber, and a plurality of lower blades extending from said carrier plate into the lower portion of said grinding chamber, said lower blades being spaced radially from said peripheral wall a sufficient distance to allow for the formation of a dam of glass particles on the outer periphery of the base plate during grinding, such that glass particles contacted by said lower blades impact said glass dam to further reduce the size of the glass particles; and

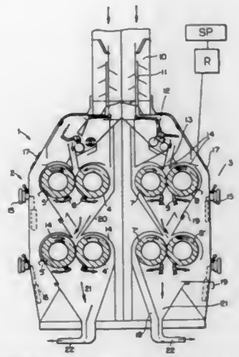
(d) an exit assembly which defines an enclosed chamber fixed in sealed engagement to a bottom outside surface of said base plate, said assembly including vacuum means for creating a sufficient negative pressure to withdraw glass particles having a predetermined size through said apertures and into said exit assembly.

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5,310,123
METHOD FOR THE PRODUCTION OF MILLED GRAIN PRODUCTS AND GRAIN MILLING SYSTEM

Werner Baltensperger, Oberuzwil, and Christian Lippuner, Niederuzwil, both of Switzerland, assignors to Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 728,621, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 350,557, Mar. 22, 1989, Pat. No. 5,100,062. This application Nov. 2, 1992, Ser. No. 970,061
Claims priority, application Switzerland, Oct. 6, 1987, 03 893/87
Int. Cl.[5] B02C *9/04*
U.S. Cl. 241—79 **9 Claims**



1. In a grain mill for producing milled grain products such as flour, semolina and middlings, with a system of advanced milling having a plurality of grinding passes and a plurality of sifting passes with plansifters and sifter divisions, respectively, the improvement comprising:

two grinding roll paris arranged sequentially without sifting therebetween, thereby defining a double-grinding pass, means for sifting directly followed the second of said grinding roll pairs so that a grain product will be subject to a double-grinding pass followed by sifting, said grain mill being constructed using only a plurality of such double grinding passes followed by sifting in each case and wherein said grain mill employs eight roll mills exclusively.

5,310,124
WIRE TENSIONER WITH PROGRAM CONTROLLED BIDIRECTIONAL PULLEY WHEEL

Massimo Linari, and Massimo Lombardi, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.

Filed Apr. 29, 1992, Ser. No. 875,389
Int. Cl.[5] B65H *59/38*
U.S. Cl. 242—7.05 B **55 Claims**

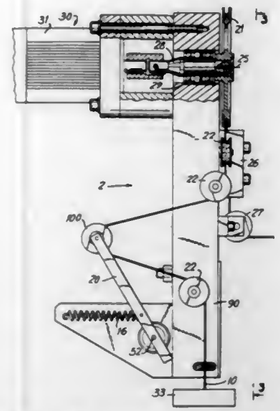
1. A wire tensioner for maintaining wire at a substantially constant tension in a machine that winds wire around a workpiece, comprising:

a frame;

means mounted on the frame for receiving the wire from a wire supply;

a pulley wheel that engages the wire and accepts the wire from the means for receiving; and

a drive unit mounted on the frame and connected to the pulley wheel for rotating the pulley wheel in a first direction such that wire is fed toward the workpiece, the wire between the pulley wheel and the workpiece accordingly having a lower tension than the wire between the pulley wheel and the workpiece would otherwise have, and a second direction such that wire is drawn back from the workpiece, the wire between the pulley wheel and the workpiece accordingly having a higher tension than the wire between the pulley wheel and the workpiece would

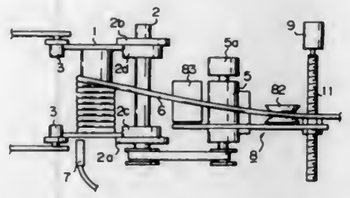


otherwise have, the drive unit receiving and being responsive to drive signals that control torques applied by the drive unit.

5,310,125
TRANSFORMER COIL WINDING APPARATUS FOR WINDING WIRE ON A COIL BOBBIN

Fumio Kitamura, Chino, Japan, assignor to Kitamura Kiden Co., Ltd., Nagano, Japan

Filed Mar. 27, 1992, Ser. No. 859,333
Claims priority, application Japan, Oct. 23, 1991, 3-275420
Int. Cl.[5] H01F *41/06;* **B65H** *54/28*
U.S. Cl. 242—7.15 **27 Claims**



1. A transformer coil winding apparatus for winding a winding wire on a coil bobbin comprising:

a rotating drive mechanism for rotatably driving said coil bobbin by a friction force between said coil bobbin and said rotating drive mechanism;

a detection means provided on said coil bobbin;

a rotation number counting means for counting the number of rotations of said coil bobbin on the basis of the output of said detection means;

a winding traversing means for maintaining a winding angle of said winding wire at a predetermined value in response to the number of rotations on said rotation number counting means; and said winding traversing means comprising a winding angle sensor for detecting said winding angle of said winding wire, and a winding traverse shifting means for maintaining said detected winding angle to a predetermined value;

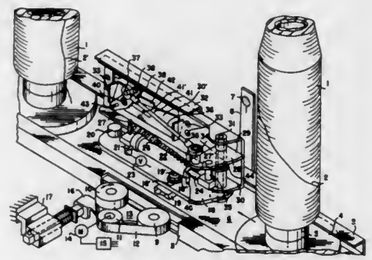
a winding angle abrupt variation judgment means for judgment of abrupt variation of the detected winding angle; and

a reversing means for reversing said winding angle by said winding traverse shifting means when said detected winding angle is abruptly varied.

5,310,126
APPARATUS FOR LOOSENING A RESERVE YARN WINDING FROM THE PERIPHERY OF A COP

Helmuth Hensen; Hans Grecksch, both of Mönchengladbach; Hermann-Josef Meul, Hückelhoven, and Karl-Heinz Floh, Mönchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 948,024
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131454; Feb. 11, 1992, 4203934
Int. Cl.[5] B65H *67/08*
U.S. Cl. 242—35.6 OE **13 Claims**



1. In a winding machine having winding stations and a transport path for leading cops to the winding stations, an apparatus for loosening a reserve yarn winding from peripheries of the cops disposed at the transport path, comprising:

scissors having two legs being open at an onset of a yarn search, one of said legs being a yarn loosener to be placed against a cop positioned on the transport path;

means for rotating the cop to bring said yarn loosener under the reserve yarn winding; and

actuation means for closing said scissors after a predetermined search period.

5,310,127
THREAD STORAGE AND DELIVERY DEVICE WITH ADJUSTABLE BRISTLE ALIGNMENT

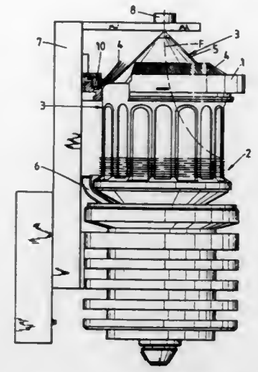
Adriano Deiuri, Taverne, Switzerland, assignor to Sobrevin Société de brevets industriels-Etablissement, Vaduz, Liechtenstein

Filed Sep. 21, 1992, Ser. No. 948,390
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 9111875[U]
Int. Cl.[5] B65H *51/20*
U.S. Cl. 242—47.01 **11 Claims**

1. A thread storage and delivery device for overhead withdrawal of thread turns deposited on a storage drum, comprising

a storage drum having a frustoconical outer surface,

a ring comprising adjustable bristles, said bristles being applied in a non-radial direction of alignment onto said frustoconical outer surface of the storage drum, and

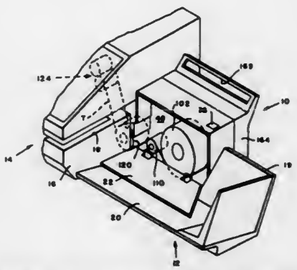


said ring constitutes means for changing said direction of alignment of the bristles on said outer surface.

5,310,128
TAPE STORAGE APPARATUS FOR MAILING MACHINE

Terrence M. Doeberl, West Redding, and Joseph Gelb, Jr., Milford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Coan.

Filed Feb. 8, 1993, Ser. No. 14,917
Int. Cl.[5] B65H *35/04*
U.S. Cl. 242—55 **12 Claims**



1. A tape storage apparatus for use with a mailing machine having means for printing postage indicia on a discrete portion of a strip of tape of indefinite length which is fed along a tape path extending through the mailing machine by tape feeding means mounted within the mailing machine, said tape storage apparatus comprising:

A) a base adapted to be connected to the mailing machine adjacent to an entrance to the tape path extending through the mailing machine,

B) a substantially vertically oriented guide means extending upwardly from said base,

C) tape holding means for holding a roll of tape and having means defining a tape path extending from the roll of tape to a tape exit location from said tape holding means,

D) means mounting said tape holding means for movement along said guide means between a lowermost position in which said tape holding means is inaccessible in the mailing machine, and an uppermost position in which said tape holding means becomes accessible for replacement of a roll of tape and for threading the tape along said tape path

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and into the entrance to the tape path in the mailing machine,

E) releasable latching means for normally latching said tape holding means in said lowermost position, and

F) means for moving said tape holding means upwardly toward said uppermost position when said latching means is released, whereby said tape holding means is normally maintained in a position in which the tape roll is situated for feeding of tape along said tape path in said tape holding means and into the tape path extending through the mailing machine and can be moved to a position in which the tape roll becomes accessible for replacement of the tape roll and for threading of tape along said tape path in said tape holding means into the tape path extending through the mailing machine.

5,310,129

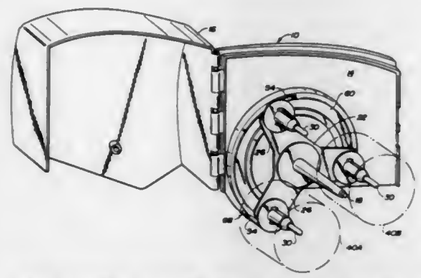
SYSTEM FOR SEQUENTIALLY DISPENSING WEB MATERIAL FROM A PLURALITY OF ROLLS

Jimmie L. Whittington, Diamond Bar, and Patrick C. Perrin, Rancho Palos Verdes, both of Calif., assignors to James River Paper Company, Inc., Richmond, Va.

Filed May 17, 1993, Ser. No. 61,588

Int. Cl.[5] B65H *19/10*

U.S. Cl. 242—55.3 **4 Claims**



1. Apparatus for sequentially dispensing web material from a plurality of rolls of said web material, said apparatus comprising, in combination:

a support including a housing having an opening;

roll holder means movably mounted on said support for rotation about an axis of rotation, said roll holder means including at least three spaced roll support shafts, each support shaft for insertion into a roll for supporting a roll, rotation of said roll holder means sequentially presenting said support shafts at said opening and rotation of said roll holder means being interrupted when a support shaft holding a roll is presented at said opening until the roll held thereby is depleted, said roll holder means rotating in response to depletion of a roll on a shaft at said opening to present another support shaft holding a roll at said opening, said support shafts being so positioned relative to each other and relative to said axis of rotation as to create an unbalanced condition of the roll holder means and rolls on said support shafts and exert a biasing force on the roll holder means causing rotation of said roll holder means under the influence of gravity until all rolls on said support shafts are depleted; and

lock means operatively associated with said support and said roll holder means for locking said roll holder means against further rotation about said axis of rotation after interruption of roll holder means rotation, said lock means being responsive to depletion of a roll at the opening to unlock said roll holder means and allow said roll holder means to rotate under the influence of gravity, said locking means including a lock element operatively associated with each of said shafts and movable relative thereto between a first position wherein said lock element engages said support and locks said roll holder means against rotation about the axis of rotation and a second position wherein the lock element is disengaged from said support and permits rotation of said roll holder means, each said support shaft including a support shaft member engageable with a respective lock element, said support shaft member movable between a first location wherein said support shaft member maintains said lock element in said first position and a second location wherein said lock element is movable to said second position, biasing means biasing said support shaft member toward said second location, said support shaft member engageable with a roll when in said first location, said roll blocking movement of said support shaft member to said second location by said biasing means until the engaged roll is depleted.

5,310,130

CUTTING DEVICE FOR A WINDING MACHINE FOR WINDING A WEB OF MATERIAL, PARTICULARLY A PAPER WEB

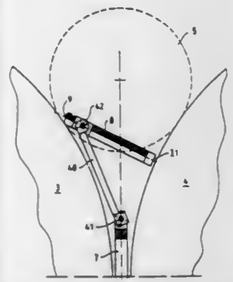
Martin Wieland, Niederstotzingen, and Hans-Albrecht Ruff, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 962,471

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134361

Int. Cl.[5] B65H *19/26*

U.S. Cl. 242—56 R **8 Claims**



1. A winding machine for winding a web of material, particularly a paper web, comprising:

first and second support rollers, said first and second support rollers being parallel and separated to form a space therebetween, and together forming a winding bed for receiving a roll of the web material, said first support roller being partially wrapped by said web of material; and

web cutting means inserted upward from underneath said first and second rollers into said space for cutting the web of material, said cutting means including:

a support structure,

a blade carrier having opposed ends, one end of said blade carrier supporting a blade and an intermediate portion of said blade carrier being pivotally connected to said support structure, and

a connecting link extending between and pivotally interconnecting said support structure and said blade carrier,

wherein said blade carrier is capable of being tilted in said space into a position in which the end supporting the blade faces the web of material partially wrapped on said first roller and the other end rests at an outer surface of the second support roller.

5,310,131

THIN MATERIAL HANDLING SYSTEM FOR USE IN DOWNCOILERS AND METHOD

Gaetano Monaco, Hamilton; Lorn D. Newton, Lynden, and Francis I. Bailey, Hamilton, all of Canada, assignors to Stelco Inc., Ontario, Canada

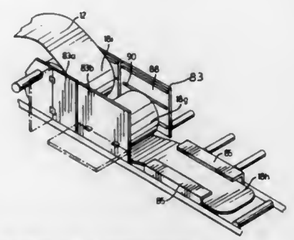
PCT No. PCT/CA90/00452, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO91/09694, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 20, 1990, Ser. No. 854,625

Claims priority, application United Kingdom, Dec. 29, 1989, 8929342.7; May 2, 1990, 9009863.3

Int. Cl.[5] B21C *47/24, 47/16*

U.S. Cl. 242—79 **13 Claims**



10. An apparatus for manipulating a coil of hot metallic material having an open coil eye, comprising:

a first coil support defining a first coil position

a second coil support defining a second coil position

means for transferring a coil from said first position to said second position while the coil axis remains transverse to the direction of coil movement,

heat shield means located closely adjacent the coil throughout its movement from the first position to the second position, for restricting heat loss from side edges of the coil and the coil eye while the coil moves, and

a coil opener pin adjacent to said second position and parallel to the coil axis, the pin being capable of axial movement whereby it can be inserted into the coil eye, without contacting the coil, when the coil is near the end of the uncoiling operation at said second position, such that the last few coil wraps contact the pin as the coil is pulled out of the second position, and the pin prevents collapsing or crushing of the final portion of the coil.

5,310,132

BELT RETRACTOR WITH TENSION RELIEF FOR SAFETY BELT RESTRAINING SYSTEMS IN MOTOR VEHICLES

Robert Kopetzky, Mutlangen, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Nov. 19, 1992, Ser. No. 978,790

Claims priority, application European Pat. Off., Nov. 21, 1991, 91119837

Int. Cl.[5] B60R *22/34*

U.S. Cl. 242—107 **7 Claims**

1. A safety belt retractor for vehicles comprising:

a housing;

a belt spool rotatably mounted in said housing for coiling and uncoiling of belt webbing;

a hub member connected to said belt spool for joint rotation, said member having a hub;

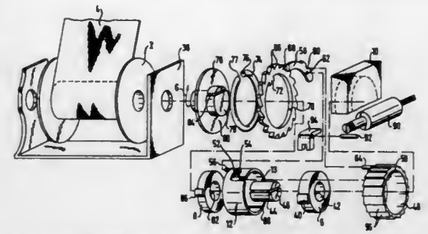
an intermediate member rotatably mounted in said housing in coaxial relationship with said belt spool;

a retracting spring having a first end connected to said housing and a second end connected to said intermediate member;

an auxiliary spring having a first end connected to said hub and a second end connected to said intermediate member, said auxiliary spring being weaker than said retracting spring;

a ratchet member mounted for limited rotation with respect to said intermediate member and selectively lockable in rotation with respect to said housing;

a biasing spring engaged between said intermediate member and said ratchet member to oppose relative rotation between said intermediate member and said ratchet member;



a braking means frictionally engaged with said hub member and mounted for rotation with respect to said hub member against frictional forces;

a coupling member for selectively coupling said intermediate member with said braking means for joint rotation therewith; and

said coupling member being controlled by relative rotation of said ratchet member with respect to said intermediate member.

5,310,133

MAGNETIC TAPE TRANSPORT DEVICE WITH TAPE TENSION ROLLER ON A LEVER SUBJECTED TO MOTOR TORQUE

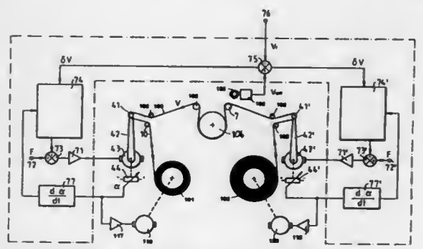
Gerhard Falk, Rossdorf, and Wolfgang Fell, Seeheim, both of Fed. Rep. of Germany, assignors to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 718,026, Jun. 20, 1991, abandoned. This application Sep. 17, 1993, Ser. No. 123,707

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1990, 4020543

Int. Cl.[5] G11B *15/43*

U.S. Cl. 242—190 **8 Claims**



1. A magnetic tape transport device having

two reel devices for winding up and unwinding a magnetic tape,

tape guide elements,

a scanner for scanning the tape,

a first tape tension roller mounted on a first swingable tape tension lever, said lever being mounted so as to be swingable about a first axis,

a first motor for controlling tape tension having a shaft which is affixed directly to said first lever for swinging said lever about said first axis,

a second tape tension roller mounted on a second swingable

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tape tension lever, said lever being mounted so as to be swingable about a second axis,

a second motor for controlling tape tension having a shaft which is affixed directly to said second lever for swinging said lever about said second axis, wherein:

said first tape tension roller, and said first motor are coupled to said first lever, being component parts of a first tape tension device, and said second tape tension roller and said second motor are coupled to said second lever, being component parts of a second tape tension device;

said first tape tension device is located for engagement of said first tape tension roller with said tape on the path of said tape between said scanner and a first one of said two reel devices operating as a supply reel and said second tape tension device is located for engagement of said second tape tension roller with said tape on the path of said tape between said scanner and a second one of said two reel devices operating as a take-up reel;

said first tape tension lever is connected with an angular position indicator for producing an electrical angular position signal;

a regulating circuit is provided for detecting deviation (δv) of the tape speed (v_{act}) from a value corresponding to the sum of a reference tape speed value (v_r) and a tape tension reference value (F) derived from said tape speed and providing, in response to said deviation (δv), a controlling direct current for said first motor for controlling tape tension;

each of said reel devices is equipped with a reel drive motor connected to a reel device regulator for controllably driving a reel of said reel device, and

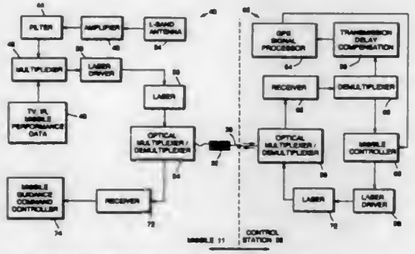
said output signal of said angular position indicator is a control magnitude for the corresponding reel drive regulator.

5,310,134

TETHERED VEHICLE POSITIONING SYSTEM

Hui-Pin Hsu, Northridge; Ronald B. Chesler, Woodland Hills, and Harry T. Wang, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 16, 1992, Ser. No. 851,720
Int. Cl.[5] F41G *7/32*
U.S. Cl. 244—3.12 **13 Claims**



1. A tethered vehicle system, comprising:

a tethered vehicle body having a control system and propulsion system therein;

a control station for the tethered vehicle located outside of the tethered vehicle body;

an optical fiber data link from the tethered vehicle control system to the control station;

a positioning system for the tethered vehicle, the positioning system comprising

a positioning signal receiving antenna mounted in the tethered vehicle,

a positioning signal amplifier mounted in the tethered vehicle, the amplifier receiving a positioning signal from the antenna and producing an amplified positioning signal,

means for transmitting the amplified positioning signal into the optical fiber data link at its end within the tethered vehicle,

means for receiving the amplified positioning signal from the optical fiber data link at its end at the control station, and

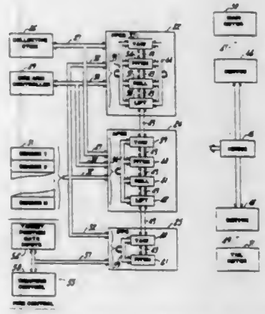
signal processing means for analyzing the amplified positioning signal received from the means for transmitting, the signal processing means being located at the control station.

5,310,135

HELICOPTER INTEGRATED FIRE AND FLIGHT CONTROL HAVING COORDINATED AREA BOMBING CONTROL

Donald W. Fowler, Oxford, and Nicholas D. Lappos, Milford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 28, 1992, Ser. No. 967,308
Int. Cl.[5] B64C *11/34*
U.S. Cl. 244—17.13 **15 Claims**



1. An aircraft flight control system for providing control surface command signals to the aircraft control surfaces thereby controlling the yaw, pitch, roll and lift attitude axes of the aircraft in flight, comprising:

fire control means for providing at least one pair of azimuth and elevation coordinate error signals, said pairs of azimuth and elevation coordinate error signals each being indicative of the change in aircraft yaw attitude and pitch attitude for an aircraft to be aligned with an aiming attitude;

means for providing a coordinated area bombing signal in response to activation of a flight control system coordinated area bombing mode; and

one of said pairs of azimuth and elevation coordinate error signals providing the aircraft yaw attitude reference and pitch attitude reference in response to said coordinated area bombing signal.

5,310,136

HELICOPTER INTEGRATED FIRE AND FLIGHT CONTROL HAVING CONSTRAINT LIMITING CONTROL

Donald W. Fowler, Oxford, and Nicholas D. Lappos, Milford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 19, 1992, Ser. No. 885,799
Int. Cl.[5] B64C *11/34*
U.S. Cl. 244—17.13 **15 Claims**

8. A helicopter integrated fire and flight control system for providing control surface command signals to the helicopter control surfaces thereby controlling the yaw, pitch, roll and lift attitude axes of the helicopter in flight, comprising:

control means operable by a pilot to provide axis command signals for controlling a given attitude axis of the helicopter;

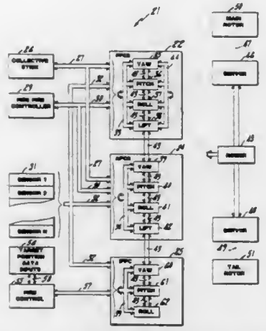
means responsive to said axis command signals for providing a desired attitude signal indicative of a desired helicopter attitude in said given attitude axis;

means for sensing the attitude of the helicopter in said given attitude axis and for providing an actual attitude signal indicative thereof;

means responsive to said desired attitude signal and to said actual attitude signal for providing an attitude feedback error signal as a function of the difference between said desired attitude signal and said actual attitude signal; and

attitude feedback means for providing control surface command signals to drive the magnitude of said attitude feedback error signal to zero for said given attitude axis;

characterized by:



means for providing a constraint limit in a given attitude axis with respect to an aircraft reference axis, said constraint limit being indicative of a limit relative to said reference axis for a given aircraft subsystem;

means for providing a signal for constraint limiting for said given attitude axis, said signal for constraint limiting being indicative of a current operating position of said given aircraft subsystem in said given attitude axis relative to said reference axis;

means responsive to said signal for constraint limiting and said constraint limit for providing constraint limiting axis command signals indicative of an amount the magnitude of said signal for constraint limiting exceeds said constraint limit for said given attitude axis;

constraint limiting mode indicating means for providing a constraint limiting signal in response to activation of said flight control system constraint limiting mode; and

said attitude feedback means being responsive to the presence of said constraint limiting signal for replacing said attitude feedback error signal with said constraint limiting axis command signals for said given attitude axis.

5,310,137

HELICOPTER ACTIVE NOISE CONTROL SYSTEM

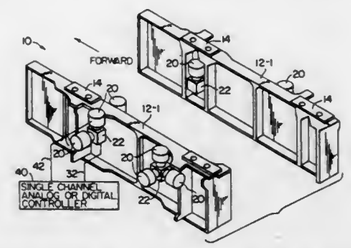
Charles A. Yoerkie, Jr., Newington; William A. Welsh, North Haven, and Thomas W. Sheehy, Hamden, all of Conn., assignors to United Technologies Corporation, Stratford, Conn.

Filed Apr. 16, 1992, Ser. No. 870,434
Int. Cl.[5] B64C *27/00*
U.S. Cl. 244—17.27 **15 Claims**

1. An active noise control system for a helicopter for effectively nullifying high frequency vibrations emanating from the main transmission gearbox thereof to significantly reduce interior noise levels of the helicopter, comprising:

modified transmission beam means including mounting hardpoints for interfacing the main transmission gearbox in combination with the airframe of the helicopter, said modified transmission beam means being mechanically stiffened with respect to at least one of the high frequency vibrations emanating from the main transmission gearbox wherein said modified transmission beam means function as a rigid body with respect to said at least one high frequency vibration;

actuator means mounted in combination with said modified transmission beam means adjacent said transmission gearbox and airframe interface for generating a plurality of



single dimensional counterforces having a frequency, magnitude, and phase to effectively nullify said at least one high frequency vibration at said transmission gearbox and airframe interface; and

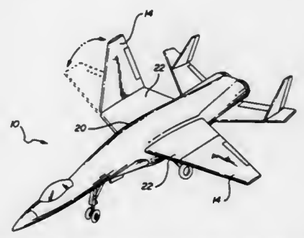
means operative with respect to said at least one high frequency vibration to detect magnitudes and frequencies of single dimensional components thereof at said transmission gearbox and airframe interface and to provide command signals to control operation of said actuator means to generate said single dimensional counterforces having said frequency, magnitude, and phase to effectively nullify said at least one high frequency vibration at said transmission gearbox and airframe interface wherein the interior noise levels of the helicopter are significantly reduced.

5,310,138

WING FOLD ACTUATOR SYSTEM FOR AIRCRAFT

Thomas F. Fitzgibbon, Long Beach, Calif., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 30, 1991, Ser. No. 816,315
Int. Cl.[5] B64C *3/56*
U.S. Cl. 244—49 **14 Claims**



1. A wing fold actuator system for use in an aircraft having an outboard wing section connected to an inboard wing section for movement between a deployed position and a folded position said actuator system comprising:

an electrohydraulic actuator connected between the inboard and outboard wing sections, said electrohydraulic actua-

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tor including a driven member for displacing the outboard wing section between the deployed and folded positions;

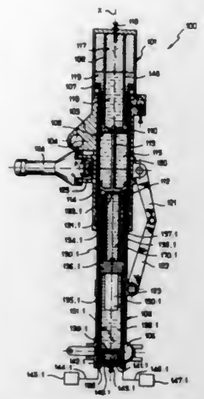
said electrohydraulic actuator includes a power cylinder having a base end connected to one of the inboard and outboard wing sections, and a ram adapted for extension and retraction movement with respect to said power cylinder and having a free end connected to the other at the inboard and outboard wing sections;

said electrohydraulic actuator further including hydraulic drive means and electric motor drive means alternatively operable for reversible power drive displacement of said driven member, said electric motor drive means including a rotatable output shaft connected to said driven member, said output shaft being rotatably back-driven by said driven member upon operation of said hydraulic drive means to displace said driven member; and said hydraulic drive means includes a power piston connected to said ram and mounted within power cylinder, said power piston cooperating with said power cylinder to define a pair of fluid chambers at opposite sides of said power piston, and means for controllably supplying hydraulic fluid under pressure to one of said chambers while exhausting the other of said chambers to displace said power piston within said power cylinder;

said actuator further includes a central drive shaft, and reversible transmission means for rotating said drive shaft in response to displacement of said power piston within said power cylinder, said output shaft of said electric motor drive means being connected to said drive shaft for rotation therewith; and

a brake unit for preventing displacement of said driven member upon interruption of power drive displacement thereof, said brake unit including a brake member carried on said output shaft for rotation therewith, a friction member, means for engaging said brake and friction members to prevent rotation of said output shaft in the absence of operation of one of said drive means, and means for disengaging said brake and friction members to permit rotation of said output shaft during operation of one of said drive means for power drive displacement of said drive member.

bottom abutment secured to said sliding rod, independent control means also being provided to control said linear actuator, which when engaged serves to extend the landing gear while the aircraft is stationary on the ground.

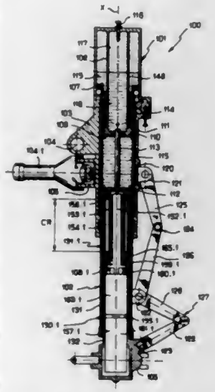


5,310,140

SHOCK ABSORBER FOR AN AIRCRAFT LANDING GEAR LEG

Jacques Veaux, Chatillon, and Michel Derrien, Versailles, both of France, assignors to Messier-Bugatti, Velizy Villacoublay, France

Filed Feb. 1, 1993, Ser. No. 11,750
Claims priority, application France, Feb. 4, 1992, 92 01242
Int. Cl.[5] B64C *25/10*
U.S. Cl. 244—104 FP **12 Claims**



5,310,139

SHOCK ABSORBER FOR AIRCRAFT LANDING GEAR

Michel Derrien, Versailles, and Bernard Guyot, Seine Port, both of France, assignors to Messier-Bugatti, Velizy-Villacoublay, France

Filed Jan. 5, 1993, Ser. No. 720
Claims priority, application France, Jan. 7, 1992, 92 00073
Int. Cl.[5] B64C *25/10*
U.S. Cl. 244—104 FP **10 Claims**

1. A shock absorber for aircraft landing gear, the shock absorber comprising a cylinder and a rod sliding inside said cylinder, together with a moving disk delimiting a bottom hydraulic fluid chamber which communicates via a diaphragm with a top hydraulic fluid chamber adjacent to a pressurized gas chamber formed in the top of the cylinder, wherein a self-contained linear actuator is disposed coaxially inside the sliding rod, being interposed between the moving disk and a bottom abutment secured to said sliding rod, independent control means also being provided to control said linear actuator, which when engaged serves to extend the landing gear while the aircraft is stationary on the ground.

1. A shock absorber for an aircraft landing gear leg, the shock absorber comprising a cylinder and a rod sliding in said cylinder, together with a disk defining a lower hydraulic fluid chamber which communicates via a diaphragm with an upper hydraulic fluid chamber adjacent to a pressurized gas chamber provided in the upper portion of the cylinder, wherein the sliding rod is implemented in telescopic form, having an outer rod sliding in the cylinder, an intermediate partition which constitutes the above-mentioned disk, and an inner rod sliding

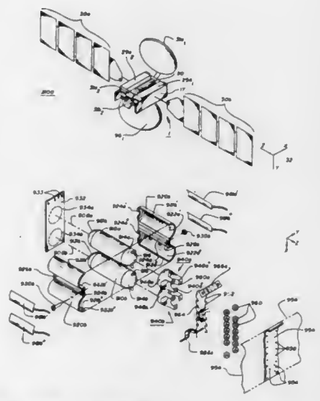
in the outer rod on the other side of said partition from the lower hydraulic fluid chamber, bearing directly against said partition when the shock absorber is relaxed or under static load, and wherein the shock absorber further includes a linear actuator received inside the inner rod and suitable, when switched on, for extending the landing gear while the airplane is stationary or moving slowly on the ground, and at least one external scissors linkage for conveying the structural twisting forces to which the telescopic sliding rod is subjected.

5,310,141

BATTERY THERMAL CONTROL ARRANGEMENT

Peter K. Homer, Newtown; Paul V. Barcomb, Yardley, both of Pa., and Lisa M. Grob, Vincentown, N.J., assignors to General Electric Co., East Windsor, N.J.

Filed Sep. 21, 1992, Ser. No. 948,229
Int. Cl.[5] B64G *1/00*
U.S. Cl. 244—158 R **12 Claims**



1. A spacecraft, comprising:

an electrical battery, said battery comprising a plurality of cells, each of said cells being within a vessel taking the physical form of a circular cylinder with first and second convex curved ends, each of said vessels including a pair of terminals associated with said first convex curved end; and

vessel mounting and heat radiating means, said vessel mounting and heat radiating means comprising:

(a) a radiator plate including first and second surfaces, said first surface being mounted on said spacecraft at a location facing open space, and being associated with an optical solar reflection means for tending to reflect insolation and for efficiently radiating heat;

(b) sleeve means for holding a plurality of said vessels in parallel, side-by-side relationship, said sleeve means including a pair of monolithic integral half-sleeve arrays, each of said half-sleeve arrays comprising a plurality of portions, each said portions not exceeding a 180° segment of a cylindrical sleeve having a diameter substantially equal to the diameter of one of said cells, each of the axes of said portions of cylindrical sleeves being parallel to a common axis and defining first and second ends, said pair of half-sleeve arrays together forming a plurality of cylindrical sleeves dimensioned for accommodating a like plurality of said vessels, for holding said plurality of vessels in a mutually parallel relationship and for transferring heat from said vessels;

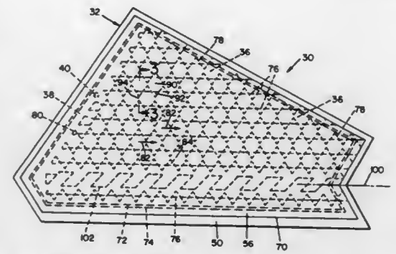
(c) mounting means associated with said sleeve means and with said radiator plate for mounting said sleeve means to said plate with said first ends of said portions of said cylindrical sleeves juxtaposed to said second surface of said radiator panel in heat-transferring relationship therewith, with said axes of said vessels perpendicular to said plate.

5,310,142

DIMPLE PATTERN PNEUMATIC DEICER ASSEMBLY

Norbert A. Weisend, Jr., Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 30, 1992, Ser. No. 968,774
Int. Cl.[5] B64D *15/16*
U.S. Cl. 244—134 A **31 Claims**



1. An apparatus for removing ice from an airfoil utilizing pressurized fluid, said apparatus comprising,

a bottom layer of a first fabric;

a top layer of a stretchable second fabric;

said top and bottom layers being stitched together in a predetermined pattern comprising a plurality of substantially parallel stitch lines and a zig-zag stitch line provided along each of at least two adjacent ones of said plurality of substantially parallel stitch lines, said plurality of substantially parallel stitch lines forming a plurality of tube-like passages which are inflated by the fluid, each said zig-zag stitch line forming a zig-zag pattern,

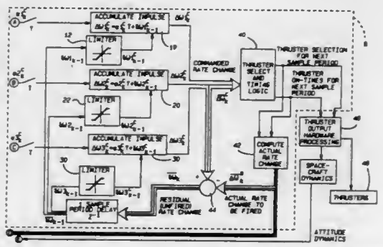
wherein the pressurized fluid is communicated across said stitch lines, said stitch lines thereby providing a plurality of dimples in said tube-like passages when said tube-like passages are inflated.

5,310,143

THREE AXIS THRUSTER MODULATION

John F. Yocum; Dan Y. Liu, both of Rancho Palos Verdes; Richard A. Fowell, Culver City, and Douglas J. Bender, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 800,658, Nov. 27, 1991, abandoned.
This application Jun. 10, 1993, Ser. No. 75,843
Int. Cl.[5] B64G *1/24*
U.S. Cl. 244—164 **19 Claims**



9. A spacecraft having three mutually orthogonal control axes comprising:

a plurality of thrusters capable of providing torque impulses in both directions about each of said axes;

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means for generating acceleration commands for each axis for performing spacecraft attitude control and station-keeping functions;

modulation means for generating thruster selections and thruster on-times for execution during an upcoming sample period based on said acceleration commands, said modulation means including means for generating a rate change command for each axis for execution during an upcoming sample period by multiplying said acceleration commands by a time length of said sample period and adding thereto any residual unfired rate change from a preceding sample period;

said modulation means including thruster-select and timing logic means for determining simultaneously from said rate change command the thruster selection and the thruster on-times for the upcoming sample period, said logic means also forwarding the thruster selection and thruster on-times to thruster output processing means for firing of the thrusters during the upcoming sample period; and

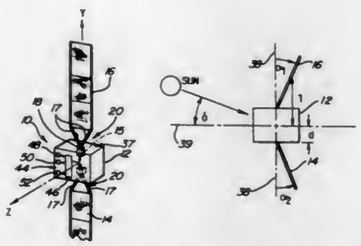
said modulation means further including means for computing an actual rate change estimate for the upcoming sample period based on the thruster selection and thruster on-times and means for generating a residual unfired rate change for each axis for use in generating a rate change command for a subsequent sample period by comparing the rate change command for the upcoming sample period with the computed actual rate change estimate for the upcoming sample period.

5,310,144

METHOD AND APPARATUS FOR SATELLITE TORQUE BALANCING

Jeremiah O. Salvatore, Redondo Beach, and Alois Wittmann, Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 6, 1992, Ser. No. 909,260
Int. Cl.[5] B64G *1/24*
U.S. Cl. 244—168 **16 Claims**



1. A satellite for orbiting the earth in an orbit plane about the earth with a sun based inertial reference system centered at said satellite having mutually perpendicular overturning, windmill and pitch axes, with the windmill axis being along the projection of the sun line in the orbit plane, said overturning axis being in the orbit plane and normal to the windmill axis, and said pitch axis extending perpendicular to said orbit plane, said satellite comprising:

a main body;

at least one solar panel extending from said main body out of the orbit plane in a deployed position with said panel facing the sun; said panel having proximal and distal ends relative to said main body and said panel in said deployed position being oriented at an angle relative to a line normal to said orbit plane; and

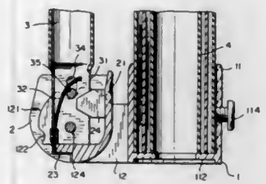
tilting means for rotating said panel about a tilt axis parallel to the overturning axis and adjacent said proximal end for variably orienting said panel relative to aid normal line in said deployed position whereby said panel is tilted to move said distal end toward or away from the sun and solar pressure and gravity gradient forces on said panel can be varied in order to minimize overturning torque acting on said satellite about said overturning axis.

5,310,145

FLOOR LAMP TRIPOD STAND

Jason Chen, 5F, No. 130, Sec. 4, Cheng Teh Rd., Taipei, Taiwan

Filed Oct. 19, 1992, Ser. No. 963,184
Int. Cl.[5] F16M *11/38*
U.S. Cl. 248—170 **1 Claim**



1. A tripod stand for a floor lamp including a socket fastened to a support arm for said floor lamp, three legs respectively and pivotably connected to said socket, a pivot pin interconnecting said legs and said socket and a clamp for supporting said support arm in said socket, and three locking plates for respectively locking said legs in predetermined angular positions relative to said socket and support arm, wherein:

said socket comprising three mounting frames equiangularly spaced around an outside surface of said socket, said socket further having an upwardly opening center hole for receiving said support arm, and a stop plate mounted on said socket closing the bottom of the center hole for supporting said support arm in said socket, and a set screw and hole provided through a peripheral wall of said socket to fasten said support arm in said socket; each mounting frame having two symmetrical wings perpendicularly extended outwards from said socket, each wing having a series of locating notches around a respective peripheral edge and a pin hole therethrough;

each of said locking plates having a top finger press portion on a top wall thereof, an extension strip extended from the top finger press portion and a locating rod and two symmetrical presser strips at the distal portion thereof, and a pair of opposed holes on two opposite side walls thereof bilaterally aligned with the pin holes on the two symmetrical wings of the respective mounting frame on the outside thereof and interconnected by said pivot pin;

each leg having a side opening on one side adjacent said socket, a curved spring plates fastened inside said side opening, an oval slot across said side opening, a rod inserted in said oval slot and releasably locked in either locating notch on each wing of the respective mounting frame by said curved spring plate, a pin hole extending across the side opening below said oval slot in said leg connected between the holes on the two symmetrical wings of the respective mounting frame by said pivot pin;

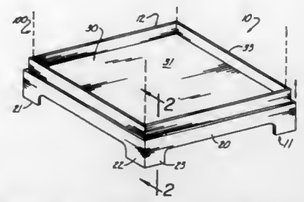
whereby pressing the finger press portion on either locking plate causes the respective symmetrical presser strips to move the rod of the respective locking plate in the respective oval slot against the respective curved spring plate for permitting the respective rod to be moved from one locating notch on each wing of the respective mounting frame to another, allowing the respective leg to be adjusted to any of a series of angular positions on said socket relative to said support arm of said floor lamp.

5,310,146

DUAL AXIS LEVELING SYSTEM

Edward J. Maguire, 220 Union Church Rd., Salisbury, Md. 21801

Filed Oct. 1, 1993, Ser. No. 130,252
Int. Cl.[5] F16M *11/24*
U.S. Cl. 248—188.2 **5 Claims**



1. A dual axis leveling system for a vertical support column, wherein, the leveling system comprises:

a base unit, including a base plate member having an enlarged central opening and a plurality of support legs disposed at spaced locations on the periphery of the base plate member, wherein, the bottom of each support leg has an inwardly directed foot portion;

a bearing unit, including a bearing plate member dimensioned to be received in the enlarged central opening in the base plate member, wherein, the bearing plate member includes: a top plate, dimensioned to receive said vertical support column; a plurality of sidewalls depending downwardly the outer edges of the top plate, and

a bottom plate connected to said sidewalls and provided with a plurality of threaded apertures that may be placed in alignment with the portions of said like plurality of support legs; and

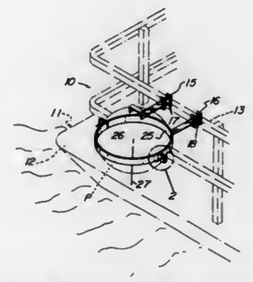
adjustment means operatively disposed intermediate the foot portions of the plurality of support legs and the said plurality of threaded apertures in the bottom plate of the bearing plate member for varying the height of the bearing unit relative to the base unit at the spaced locations of said plurality of support leg.

5,310,147

BOAT KETTLE GRILL SUPPORT BRACKET

Therman R. Billman, 1309 Sandy Spring Dr., Nekoosa, Wis. 54457

Filed Jun. 14, 1993, Ser. No. 75,807
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—214 **1 Claim**



1. A boat kettle grill support bracket arranged for securement to a handrail of a boat member, wherein the support bracket comprises,

a first U-shaped bracket spaced from, parallel to, and coextensive relative to a second U-shaped bracket, the first U-shaped bracket includes a first bracket first leg plate parallel and coextensive to a first bracket second leg plate, the second bracket including a second bracket first leg plate parallel to and coextensive to a second bracket second leg plate, and

the first U-shaped bracket and the second U-shaped bracket arranged to receive the handrail therewithin, wherein the first U-shaped bracket includes a first spacer plate, and the second U-shaped bracket includes a second spacer plate, with the first spacer plate orthogonally and fixedly mounted to the first bracket second leg plate, and the second spacer plate fixedly and orthogonally mounted to the second bracket second leg plate, and

ring means mounted to the first spacer plate and the second spacer plate for receiving a cooking pot therewithin, and

a first lock pin in threadedly and orthogonally received through the first bracket first leg plate and a second lock pin is threadly and orthogonally received through the second bracket first leg plate, wherein the first lock pin includes a first abutment plate oriented between the first bracket first leg plate and the first bracket second leg plate to engage a handrail, and a second lock pin includes a second abutment plate positioned between the second bracket first leg plate and the second bracket second leg plate for engaging the handrail, and the first spacer plate and the second spacer plate arranged in a parallel, coplanar, and coextensive relationship, and

the ring means includes a first semi-cylindrical ring having a first ring exterior wall, and a second semi-cylindrical ring secured to the first semi-cylindrical ring, wherein the first ring and the second ring are concentric about a predetermined axis, and the axis is arranged parallel to the first bracket second leg plate and the second bracket leg plate and oriented medially of the first bracket second leg plate and the second bracket second leg plate, and

the first ring includes a first ring first flange as a first end of the first ring, and a first ring second flange at a second end of the first ring, wherein the first ring first flange and the first ring second flange are arranged in a parallel, coplanar relationship, and the second ring having a second ring first flange mounted fixedly to a first end of the second ring, and a second ring second flange fixedly mounted to a second end of the second ring, wherein the second ring first flange and the second ring second flange are arranged in a coplanar relationship, and a first fastener slidably received in an orthogonal relationship relative to the first ring first flange, and threadedly received within the first ring second flange, and a second fastener slidably received through the second ring first flange and threadedly received within the second ring second flange, wherein the first fastener and the second fastener are arranged parallel relative to one another permitting selective securement of the first ring to the second ring for securement of a cooling pot between the first ring and the second ring.

5,310,148

CLOSET POLE AND SHELF SUPPORT BRACKET

Richard Dorr, 434 Oak Lake Ave., Santa Rosa, Calif. 95409

Filed Nov. 23, 1992, Ser. No. 980,278
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—223.4 **1 Claim**

1. A closet pole and shelf support bracket comprising:

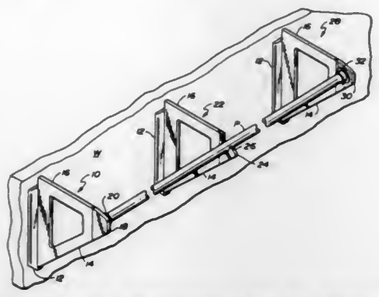
a bracket back plate portion for securing to a closet wall;

a bracket body portion having a first edge bearing means for releasable securing to said bracket back plate portion, a second edge defining a shelf support surface, and a third edge; said means for releasably securing said bracket body portion first edge to said bracket back plate portion comprises complementary track and channel elements; and

a closet pole support element including a closet pole support hook member, said closet pole support element bearing means for releasable securing to said bracket body portion

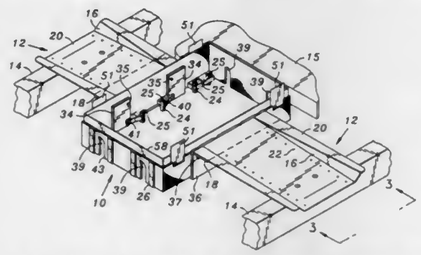
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third edge; said means for releasably securing said closet pole support element to said bracket body portion third



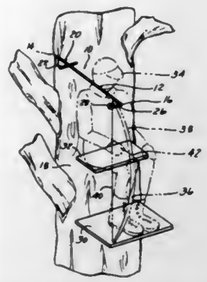
edge comprises complementary track and channel elements.

5,310,149
DEPTH ADJUSTABLE BRACKET FOR WALL MOUNT SPEAKERS
Scott Struthers; William J. Kindel, both of San Clemente; Geoffrey L. Spencer, Laguna Niguel; F. Hendrik Huebscher, Mission Viejo, and Ronald Maurer, El Cajon, all of Calif., assignors to Dana Innovations, San Clemente, Calif.
Filed May 25, 1993, Ser. No. 67,343
Int. Cl.[5] A47F *5/08*
U.S. Cl. 248—231.9 **24 Claims**



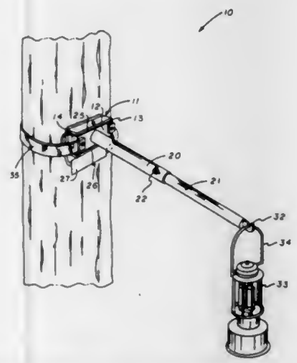
1. A bracket for the in-wall mounting of speakers, said bracket comprising:
(a) a bracket frame member configured to receive at least one speaker; and
(b) a plurality of wing members attached to said bracket frame member; and
(c) at least one position adjuster for adjusting the position of said wing members relative to said bracket frame member when said bracket is installed in a wall;
(d) wherein said position adjuster comprises:
i) first detents formed upon said bracket frame member, said detents including detent posts attached to said bracket frame member, said detent posts including an elongate member having a plurality of detents formed thereon to facilitate adjustable attachment of said wing members to said bracket frame member; and
ii) complementary second detents formed upon said wing members for releasably attaching said wing members to said bracket frame member to provide a desired adjustment thereof.

5,310,150
TREE MOUNTED ARCHERY BOW HOLDER
Robert J. Fecko, 28766 Apollo, Chesterfield, Mich. 48047
Filed Oct. 20, 1992, Ser. No. 963,595
Int. Cl.[5] F16B *45/00*
U.S. Cl. 248—218.2 **7 Claims**



1. A tree mounted archery bow holder comprising:
an elongated tubular member having first and second opposed ends and a longitudinal axis:
means, formed on the first end of the tubular member, for removably mounting the tubular member on a tree trunk such that the tubular member extends outward from the tree trunk; and
hook means, connected to and extending from the second end of the tubular member, for releasably supporting an archery bow thereon, the hook means including:
a leg extending co-planarly from the second end of the tubular member substantially perpendicular to the longitudinal axis of the tubular member; the tubular member and the leg lying in a first plane; and
an arm extending substantially perpendicular from the leg and the first plane.

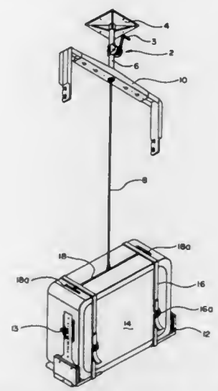
5,310,151
LANTERN HANGER DEVICE
Stephen J. Engel, 502 Kingston Dr., Romeoville, Ill. 60441
Filed Apr. 12, 1993, Ser. No. 44,764
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231 **3 Claims**



1. A lantern hanger device, comprising,
a support housing, the support housing including a front wall spaced from a rear wall, a first side wall spaced from a second side wall, and at least a top wall, with the rear wall

including continuous periphery of engaging teeth extending beyond the rear wall in a peripheral orientation relative to the rear wall, with the rear wall including a cushion layer extending within the engaging teeth for engagement of a tree surface, and
a first strap mounted to the first side wall, a second strap mounted to the second side wall, the first strap including a first fastener, the second strap including a second fastener, with the first fastener and second fastener arranged for securement relative to one another, and
the front wall including a base tube orthogonally mounted to the front wall, with the base tube including an extension tube telescopingly received within the base tube, and the base tube having a base tube lock fastener directed through the base tube for engagement with the extension tube, and the extension tube including an extension tube hook member, and
a lantern having a lantern bail, with the lantern bail arranged for positioning upon the hook member.

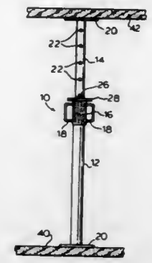
5,310,152
TELEVISION MOUNTING SUPPORT WITH REMOVABLE LIFTING ASSEMBLY
Edward L. O'Neill, San Leandro, Calif., assignor to Lucasey Manufacturing Company, Oakland, Calif.
Continuation-in-part of Ser. No. 817,909, Jan. 8, 1992, Pat. No. 5,255,884. This application Aug. 20, 1993, Ser. No. 109,822
Int. Cl.[5] A47H *1/10*
U.S. Cl. 248—329 **9 Claims**



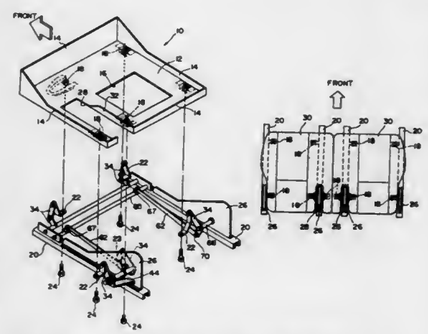
1. An apparatus for securing equipment, comprising:
means for supporting said equipment;
means attached to said support means, for mounting the equipment to said support means;
upper equipment retention means, attached to said support means, for securing the equipment;
lower equipment retention means, attached to said upper retention means, for securing said equipment; and
whereby said mounting means is adaptable to engage a removably attachable means for lifting the equipment.

5,310,153
QUICK RELEASE WASHER FOR A SHORING POST
George W. Jackson, 2570 Drew Road, Mississauga, Ontario, Canada L4T 3M5
Filed Apr. 26, 1993, Ser. No. 28,876
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—354.5 **7 Claims**

1. A shoring post comprising a support post slidingly engaging a telescoping sleeve member, a screw means for incrementally adjusting the length of said shoring post, said telescoping member having a plurality of pairs of diametrically opposed holes spaced therealong, a pin member for inserting through a pair of said diametrically opposed holes of said telescoping member to releasably extend said shoring post, wherein the improvement comprises a quick release washer for quickly reducing an overall length of said shoring post, said washer comprising a ring portion having a pair of diametrically opposed cam lobes, said lobes having an inclined surface and a cradling surface, said washer mounted between said pin and said support post, said washer is rotatable between a load transfer position wherein said pin is cradled on the cradling surface and a quick release position wherein as said washer is rotated relative to the pin, the pin travels along the inclined surface reducing the overall length of the shoring post.



5,310,154
SEAT FRAME-MOUNTING STRUCTURE
Katsuya Ueda; Kikuo Sugimura, and Isao Morishita, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Sep. 22, 1992, Ser. No. 948,495
Claims priority, application Japan, Oct. 18, 1991, 3-271334
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—394 **34 Claims**



1. A seat frame-mounting structure comprising:
adjusting rails mounted to an underbody of a vehicle and provided respectively for a left seat and a right seat of a split bench seat to enable said left seat and said right seat to slide independently in longitudinal directions of the vehicle;
reclining lower arms mounted respectively to said adjusting rails and provided so as to be erect at respective rear seat sides of said adjusting rails; and
seat frames provided so as to correspond to said left seat and said right seat, and supported on said adjusting rails;

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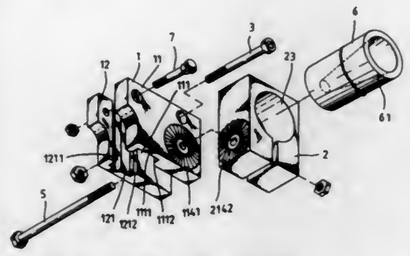
wherein each of said seat frames has a cove-shaped cut-out which is open toward a rear of the vehicle to avoid interfering with said reclining lower arms, and edge portions of said cut-outs positioned at both sides of said reclining lower arms are supported by said adjusting rails.

5,310,155

GOLF CART UMBRELLA HOLDER

Ching-Tsang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsieu, Taiwan

Filed Jul. 21, 1992, Ser. No. 915,661
Int. Cl.[5] F16M *13/02*
U.S. Cl. 248—514 **1 Claim**



1. A golf cart umbrella holder comprising:

a mounting device secured to a frame of a golf cart, said mounting device including two plates secured around said frame by screw means, said two plates having symmetrical shapes and an inner wall with a channel receiving said frame, said channel having a channel structure for tightly securing said mounting device to said frame where said frame has any one of a plurality of different cross sections including a circle, an oval, a square and a hexagon, said channel structure including two chamfered peripheral top edges, a flat bottom with square corners and a single V-shaped groove centrally arranged in said bottom and extending a length of said channel, one of said plates having an outer wall with a plurality of first teeth arranged in a circle;

a socket having a tapered bore for holding an umbrella; and

a clamping device fastened to said mounting device by screw means for holding said socket, said clamping device having an opening which receives said socket and a surface with a plurality of second teeth mating with said first teeth.

5,310,156

EARTHQUAKE-PROOF LEG SUPPORT STRUCTURE OF ELECTRONIC APPARATUS

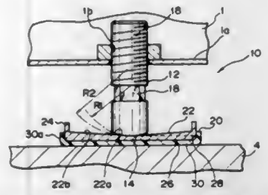
Tadanobu Matsumura; Yasuhide Iwamoto; Yoshio Makino; Osamu Nishina; Katuel Satou; Takasi Watanabe; Yujiro Hata; Toshiro Kubo; Wataru Ishizu, and Takashi Simura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 24, 1992, Ser. No. 933,703
Claims priority, application Japan, Oct. 3, 1991, 3-256775; Feb. 19, 1992, 4-031237
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—615 **16 Claims**

1. A leg support structure of an electronic apparatus having an outer case, the leg support structure comprising:

a leg extending vertically downward from the outer case and having a lower end surface of a convex spherical shape and

a dish-shaped leg support seat having an upper surface for slidably receiving the lower end surface of the leg, a periphery, a peripheral flange upwardly rising on the periphery of the upper surface, and a lower flat smooth surface adapted to be put on a supporting surface, the upper surface of the leg support seat including a central surface portion of a concave spherical shape and an outer peripheral surface portion contiguous to the central surface portion whereby the lower end surface of the leg can



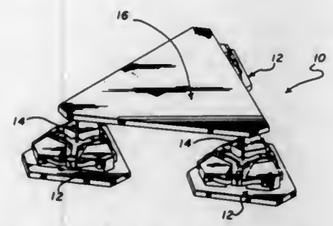
slide on the central surface portion and the outer peripheral surface portion upon an earthquake, and the leg may abut against the peripheral flange and move with the leg support if the shock of the earthquake is large.

5,310,157

VIBRATION ISOLATION SYSTEM

David L. Platus, Los Angeles, Calif., assignor to Minus K Technology, Inc., Inglewood, Calif.

Continuation-in-part of Ser. No. 941,758, Sep. 4, 1992, abandoned, which is a continuation of Ser. No. 395,093, Aug. 16, 1989, abandoned. This application Feb. 12, 1993, Ser. No. 17,139
Int. Cl.[5] F18M *13/00*
U.S. Cl. 248—619 **38 Claims**



1. An omnidirectional vibration-isolating suspension system for supporting an object having mass in an acceleration field and maintaining the object in an equilibrium position relative to a base while suppressing transmission of vibratory motion between the object and base, comprising:

a first isolator including a first elastic structure having first and second ends spaced apart to define an axial direction, said first elastic structure having transverse stiffness in response to displacement of said first end relative to said second end in any direction substantially transverse to the axial direction without rotation of said second end and stiffness in the axial direction to support the object, said first elastic structure having a point of elastic instability in response to loading in the axial direction where at the point of elastic instability said first elastic structure has substantially zero transverse stiffness, said first elastic structure being loaded in the axial direction to approach its point of elastic instability to cause a substantial reduction of the transverse stiffness while maintaining sufficient axial stiffness to support the object; and

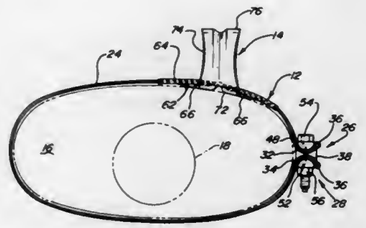
a second isolator operatively connected axially in series with said first isolator, said second isolator including a second elastic structure adapted to receive a compressive loading force, said second elastic structure having an end for supporting the object and axial stiffness, said second elastic structure having a point of elastic instability in response to application of a compressive loading force to said second elastic structure where at the point of elastic instability said second elastic structure has substantially zero axial stiffness, said second elastic structure being loaded to approach its point of elastic instability to cause a substantial reduction of its axial stiffness, wherein said first and second isolators have load-supporting capability to support the object in the axial direction and are connected between the object and base.

5,310,158

HANGER CLAMP ASSEMBLY

Scott T. Cassel, Birmingham, Mich., assignor to BKS Company, Birmingham, Mich.

Filed Jul. 22, 1990, Ser. No. 556,314
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—74.3 **12 Claims**



6. A hanger clamp assembly for supporting a vehicle muffler form an undercarriage member of a vehicle, the hanger clamp assembly comprising:

a band clamp having a sleeve portion and first and second end portions, said sleeve portion being generally conformable to the circumference of the muffler and said end portions being configured to be movable towards each other by a fastener to thereby tighten said band clamp about the muffler;

a hanger bracket attachable to the undercarriage member and having a mounting arm configured to be able to extend transversely of said sleeve portion between the outer surface of the muffler and the inner surface of said sleeve portion when said band clamp and hanger bracket are assembled to support the muffler;

a support plate having a length that is substantially greater than the width of said mounting arm, said support plate being configured such that, when said band clamp, hanger bracket, and support plate are assembled to support the muffler and said end portions are tightened together by the fastener, said support plate can be disposed between a section of said sleeve portion and said mounting arm in contact with said mounting arm and the muffler to thereby press said mounting arm against the surface of the muffler.

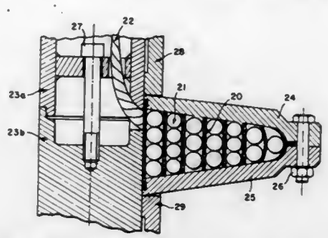
5,310,159

DESTRUCTIBLE CORE FOR UNDERCUT CASTING

André Hiss, Le Haillan, and Jean-Michel Tauzia, Blanquefort, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jul. 26, 1991, Ser. No. 736,082
Claims priority, application France, Aug. 2, 1990, 90 09883
Int. Cl.[5] C06B *21/00*
U.S. Cl. 249—61 **8 Claims**

1. A destructible core used for casting of a propellant block, said propellant block having at least one internal cavity and having an outer surface and being open to the outside only by way of one or more restricted orifices, said core having an outer surface and comprising at least one elongated element which is shaped in order to be contained in said outer surface of the core, a portion of said elongated element being a band of knitted wires having free spaces, said knitted wires forming layers, intermediate elements separate said layers, wherein said free spaces of said knitted wires are filled with a joining material, said joining material providing cohesion between said layers of knitted wires, said core being removed after the



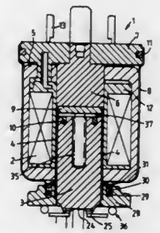
propellant block is cast by traction applied to said portion of said elongated element which is accessible from the outside, said intermediate elements being cylindrical or spherical.

5,310,160

ELECTROMAGNETIC VALVE TOP PART

Kurt Harck, Sonderborg; John G. Abrahamsen; Holger Nicolaisen, both of Nordborg; Michael Boisen, Kolding, and Erik Kyster, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jan. 14, 1993, Ser. No. 4,512
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1992, 4201449
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.15 **2 Claims**



1. An electromagnetic valve assembly, comprising,

a valve seat,

a coil arrangement including a coil unit defining a central bore and a yoke unit attached to and surrounding said coil unit,

a base unit attachable to said coil arrangement,

said base unit having a bore of the same diameter as said coil unit central bore and in axial alignment therewith,

an armature tube fixedly disposed in said coil unit and base unit bores,

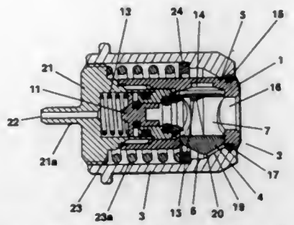
a core head fixedly disposed in said coil unit bore in axially adjacent and abutting relation to said armature tube, and

an armature slidably disposed in said armature tube having one end thereof cooperable with said core head to form an air gap and having closure means at the other end thereof cooperable with said valve seat,

said electromagnetic valve assembly being assembled from two modules wherein (1) a first module comprises said base unit, said armature and said armature tube and (2) a second module comprises said coil arrangement, said yoke and said core head.

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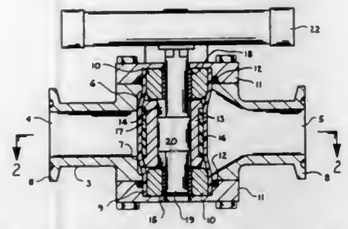
5,310,161
HIGH PRESSURE GAS LINE BREAKAWAY CONNECTOR
Gordon Bryce, White Rock, Canada, assignor to Fuelmaker Corporation, Rexdale, Canada
Filed Jun. 13, 1991, Ser. No. 713,363
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 **3 Claims**



1. A tension-activated auto-disengaging fluid line connector that comprises:
(1) a connector with complementary, interfitting but disengageable male and female portions, one of such portions being provided with line coupling means for connection to a hose containing a source of high pressure fluid and thereby constituting the pressurized portion of the connector, the other portion of the connector constituting the non-pressurized portion of the connector;
(2) a spring-activated check valve contained within the pressurized portion of the connector, biased by a check valve spring mounted within the said pressurized portion to displace the check valve towards closure;
(3) a probe, formed upon the non-pressurized portion of the connector for opening the check valve upon assembly of the connector;
(4) latch means for releasably holding the male and female connector portions together, once assembled,
(5) an actuator, connected to said latch means so as to effect release of the latch means by the application of pressure to the actuator, such actuator being accessible from outside of the connector;
(6) a housing, provided with a means for such housing to be anchored externally to a stationary body, such housing extending over the actuator and positioned to contact and apply pressure to activate such actuator upon displacement of the housing with respect to the connector;
(7) a principal spring means biasing the housing to separate from the actuator;
wherein the housing and actuator are positioned so that upon application of tension to one portion of the connector, the housing will advance towards the actuator, and at a predetermined level of tension, will activate such actuator by applying pressure thereto and thereby effect release of the latch means and disengagement of the male and female portions of the connector.

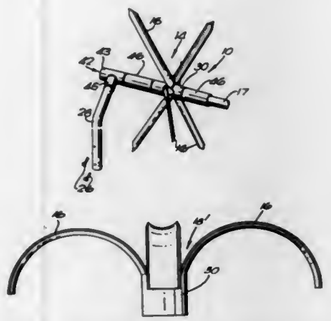
5,310,162
ECCENTRICALLY ROTATABLE SLEEVE VALVE
Hans D. Baumann, 32 Pine St., Rye, N.H. 03870
Filed Apr. 12, 1993, Ser. No. 44,691
Int. Cl.[5] F16K *31/52*
U.S. Cl. 251—258 **5 Claims**

1. Eccentrically Rotatable Sleeve Valve, comprising a housing having at least one horizontal inlet port and outlet port and one central opening extending essentially perpendicular to said inlet port, the interface between said horizontal inlet port and the perpendicular central opening constituting a valve seat, said valve seat having a radial surface and where the center of the radius is eccentrically displaced for the center of said central housing, a flexible sleeve inserted within said central opening, a barrel-shaped core having tapered ends snugly fitting within said flexible sleeve and where the length of the cylindrical portion of said core extends beyond the cross-sectional dimension of said inlet port and where the substantial length of is sleeve exposed within said housing is supported to withstand external fluid forces by said barrel-shaped core and its tapered ends, a shaft extending through the length of said central opening and having an eccentric element, said core having a bore cooperatively engaging with the shaft and having suitably configured portions to engage said eccentric ele-



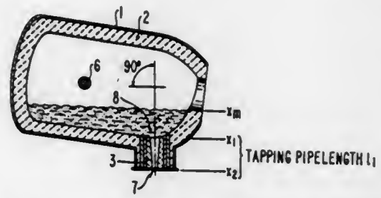
ment of the shaft nd capable of causing a nutating motion of said core toward said inlet port thereby forcing the central portion of said flexible sleeve to make a complimentary motion and thereby causing the sleeve to contact the valve seat in a camming motion and to close off and prevent fluid from flowing from the inlet to the outlet port upon sufficient rotational displacement of said shaft, tapered inserts snugly engaging the inside of said flexible sleeve above and below said core, and suitable closure means attached to either terminating end of said central opening to retain and seal said flexible sleeve and a portion of said tapered inserts.

5,310,163
BARRIERS
David P. Waite, P.O. Box 51, Hampkins Hill Road, Chiddingstone, Edenbridge, Kent TN8 7QH, England
Continuation of Ser. No. 728,281, Jul. 11, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 46,909
Claims priority, application United Kingdom, Jun. 13, 1989, 8913605.5; Mar. 15, 1990, 9005824.9; Fed. Rep. of Germany, Nov. 17, 1990, 9015767
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—11 **13 Claims**



1. A barrier comprising an elongate support shaft, and a plurality of units arranged along and supported by said support shaft, each said unit being rotatably supported on said support shaft, wherein each said unit comprises a pair of elements, each said element having a tubular portion through which said support shaft extends, and each said element having a plurality of blades extending outwardly of said tubular portion, wherein the blades of the elements of each pair are interengaged to form said unit, such that a blade of one of said pair of elements extends and intersects between two adjacent blades of another of said pair of elements, and
wherein said support shaft is formed of a number of aligned lengths of shaft each having two spaced ends, and wherein adjacent ends of adjacent lengths of shaft are fastened together.

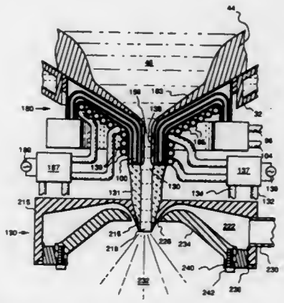
5,310,164
TAPPING PIPE AND SYSTEM FOR A CONVERTER OR ELECTRIC ARC FURNACE
Hans Rothfuss, Taunusstein; Günther Haubold, Saarlouis; Dieter Bach, Moers; Werner Glasmacher, and Dieter Stüsser, both of Duisburg, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany
Filed Mar. 17, 1993, Ser. No. 32,262
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1992, 4208520
Int. Cl.[5] B22D *41/50*
U.S. Cl. 266—45 **19 Claims**



18. A method of tapping melt from a melt vessel, comprising the steps of:
a) repeatedly tapping melt from a melt vessel that has a maximum melt bath level X_m and a minimum melt bath level X_u through a tapping pipe in the melt vessel until the tapping pipe becomes worn, the tapping pipe being composed of a first brick defining a discharge zone, a second brick defining a feed zone and a third brick defining a transition zone between the feed zone and the discharge zone, and the first brick having the discharge zone thereof having flow cross-sections approximately the same as the cross-sections of the flow-profile of a free flowing stream of the melt from a melt bath level X_o between 30% and 70% of the maximum melt bath level X_m; and
b) replacing the tapping pipe in the melt vessel by replacing the first brick with a new first brick substantially identical to the first brick, replacing the second brick with a new second brick substantially identical to the second brick and replacing the third brick with a new third brick having a shorter length than the third brick being replaced so as to compensate for wear of the lining of the melt vessel.

5,310,165
ATOMIZATION OF ELECTROSLAG REFINED METAL
Mark G. Benz, Burnt Hills; Thomas F. Sawyer, Stillwater, and Steven A. Miller, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 2, 1992, Ser. No. 969,906
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B22F *9/08*
U.S. Cl. 266—201 **1 Claim**

1. Apparatus for atomization of refined metal which comprises,
electroslag refining apparatus operationally linked to close coupled atomization apparatus,
said electroslag refining apparatus comprising,
a refining vessel adapted to receive and to hold a refining molten slag,
a body of molten slag in said vessel,
an electrode of unrefined metal,
means for positioning and for maintaining said electrode in said vessel in touching contact with said molten slag,
electric supply means adapted to supply refining current to said electrode and through said electrode and molten slag to a body of refined metal beneath said slag to keep said refining slag molten and to melt said electrode where it contacts said slag,
means for advancing said electrode toward and into contact with said molten slag at a rate corresponding to the rate at which the contacted surface of said electrode is melted as the refining thereof proceeds,
a cold hearth vessel beneath said electroslag refining apparatus, said cold hearth being adapted to receive and to hold electroslag refined molten metal in contact with a solid



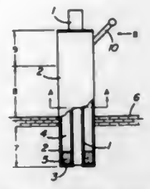
skull of said refined metal formed on the walls of said cold hearth vessel,
a body of refined molten metal in said cold hearth vessel beneath said body of molten slag,
a cold finger apparatus below said cold hearth
said cold finger apparatus being adapted to receive and to dispense as a stream refined molten metal processed through said electroslag refining process and descending through said cold hearth,
said cold finger apparatus having a bottom pour orifice,
a skull of solidified refined metal in contact with said cold hearth and said cold finger apparatus including said bottom pour orifice,
said operationally linked close coupled atomization apparatus comprising,
a ceramic melt guide tube disposed immediately below the bottom pour orifice of said cold finger apparatus and adapted to receive melt from said bottom pour orifice, and
a gas orifice closely coupled to the lower end of said melt guide tube.

5,310,166
SELF-COOLING LANCE OR TUYERE
Ernest D. Mast, Montreal; Frank Mucciardi, St. Laurent, and Murray J. Brown, Pointe-Claire, all of Canada, assignors to Noranda, Inc., Toronto, Canada
Filed Aug. 17, 1992, Ser. No. 929,748
Claims priority, application Canada, Aug. 23, 1991, 2049774
Int. Cl.[5] F27D *3/16*
U.S. Cl. 266—225 **5 Claims**

1. A self-cooling lance or tuyere for the conveying of gases, liquids or solids into or onto a metallurgical bath comprising a heat pipe or thermosiphon made of two tubular members, the heat pipe having one end inside a furnace environment and the other end outside the furnace environment, said tubular mem-

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bers defining a closed annular chamber therebetween, the chamber containing a working substance adapted to evaporate in a region of the heat pipe which is inside the furnace environment and flow toward the end of the heat pipe which is outside the furnace environment where the working substance con-



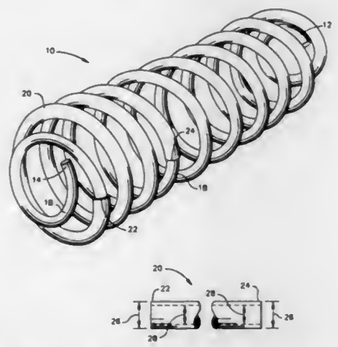
denses and flows back to the evaporator region, the self cooling lance or tuyere further comprising a tube connected to the outer tubular member for charging the working substance into the closed annular chamber, and means for measuring the vapor pressure of the said working substance to determine the temperature of the lance or tuyere.

5,310,167

METHOD AND APPARATUS FOR PROVIDING A FLEXIBLE COVERING FOR A PORTION OF A TAPERED COIL SPRING

Robert A. Noll, Jr., Florence, Ky., assignor to Hoesch Suspensions, Inc., Hamilton, Ohio

Filed Sep. 14, 1992, Ser. No. 944,517
Int. Cl.[5] B60G *11/52*
U.S. Cl. 267—33 **3 Claims**



1. For use in a coil spring assembly kit comprising a non-tapered hose and a wire coil spring;

(a) the wire coil spring having first and second ends, and a middle portion between said first and seconds ends said wire coil spring being tapered from a smaller diameter at said first end to a larger diameter at said middle portion; and

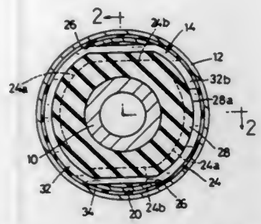
(b) said non-tapered hose adapted to cover at least a portion of said wire coil spring between said first end and said middle portion of the coil spring, said non-tapered hose having first and second ends, and having a non-stressed inner diameter which is smaller than the diameter of the coil spring wire at said coil spring wire's first end, said non-tapered hose being sufficiently resilient to regain its form once it has been installed upon the wire of said coil spring such that the inner diameter of said non-tapered hose fits tightly around the diameter of said wire at both ends of said non-tapered hose.

5,310,168

FLUID-FILLED CYLINDRICAL ELASTIC MOUNT HAVING ANNULAR FLUID CHAMBER WITH CONSTANT CROSS SECTIONAL AREA OVER THE ENTIRE CIRCUMFERENCE

Hiroaki Tanahashi, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Continuation of Ser. No. 789,548, Nov. 8, 1991, abandoned, which is a continuation of Ser. No. 555,643, Jul. 23, 1990, abandoned. This application Apr. 23, 1993, Ser. No. 51,290
Claims priority, application Japan, Jul. 27, 1989, 1-88167
Int. Cl.[5] F16F *7/00, 9/00*
U.S. Cl. 267—140.12 **9 Claims**



1. A fluid-filled cylindrical elastic mount for flexibly connecting two members, comprising

an inner sleeve attached to one of the two members to be flexibly connected;

an outer sleeve having a circumference and attached to the other of said two members, and disposed radially outwardly of said inner sleeve with a predetermined radial spacing therebetween;

an elastic body interposed between said inner and outer sleeves for elastically connecting the inner and outer sleeves; and

means for defining a generally annular fluid chamber formed between said inner and outer sleeves so as to extend over the entire circumference of the mount, said generally annular fluid chamber defining a fluid passage having an effective length not greater than said circumference of said outer sleeve, said fluid chamber having a substantially constant cross sectional area over the entire circumference thereof, so that the mount exhibits a substantially constant damping effect for vibrations received in all radial directions of the mount, said fluid chamber being filled with a non-compressible fluid having a kinematic viscosity of not higher than 100 centistokes, said annular fluid chamber undergoing substantially no deformation due to a rise in pressure of said fluid upon vibration application,

said means for defining a generally annular fluid chamber comprising said elastic body and an inner surface of said outer sleeve.

5,310,169

VIBRATION ISOLATING APPARATUS

Hiroshi Kojima, Yokohama, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 95,539
Claims priority, application Japan, Jul. 30, 1992, 4-203893
Int. Cl.[5] F16F *13/00*
U.S. Cl. 267—140.14 **20 Claims**

1. A vibration isolating apparatus comprising:

a first mounting member connected to one of a vibration generating portion and a vibration receiving portion;

a second mounting member connected to another of the vibration generating portion and the vibration receiving portion;

an elastic body provided between said first mounting member and said second mounting member, and deforming when vibration is generated;

a main liquid chamber, at least a portion of a partitioning wall of which being defined with said elastic body, said main liquid chamber is able to expand and contract;

a first sub-liquid chamber separated from said main liquid chamber, and able to expand and contract;

a second sub-liquid chamber separated from said main liquid chamber and said first sub-liquid chamber, and able to expand and contract;

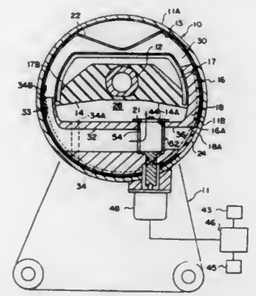
a plurality of diaphragms forming respective portions of partitioning walls of said first sub-liquid chamber and said second sub-liquid chamber, and provided so as to permit expansion of said first sub-liquid chamber and said second sub-liquid chamber;

a first restricting passage which always communicates said main liquid chamber and said first sub-liquid chamber;

a second restricting passage which is provided so as to permit communication of said main liquid chamber and one of said first sub-liquid chamber and said second sub-liquid chamber and whose liquid transit resistance is smaller than a liquid transit resistance of said first restricting passage;

a third restricting passage which is provided so as to permit communication of said main liquid chamber and said second sub-liquid chamber and whose liquid transit resistance is smaller than the liquid transit resistance of said second restricting passage; and

restricting passage opening and closing means for opening and closing said second restricting passage and said third restricting passage in accordance with a frequency of a vibration generated from the vibration generating portion, said restricting passage opening and closing means being provided such that a first state, in which said second restricting passage is closed and said third restricting passage is open, and a second state, in which said third restricting passage is closed and said second restricting passage is open, are possible.



5,310,170

RECYCLING AUTOMATIC DOCUMENT FEEDER FOR A COPIER

Hisahide Yushita, and Mitsuhiro Nonaka, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,175
Claims priority, application Japan, Sep. 2, 1992, 4-233989
Int. Cl.[5] B65H *3/12*
U.S. Cl. 271—3.1 **2 Claims**

1. A recirculating automatic document feeder (RADF) comprising:

a document table;

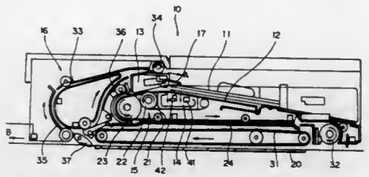
a nozzle for blowing air against an edge of a stack of documents set on said document table;

a suction tank for sucking a lowermost document of said stack;

feeding means for feeding said lowermost document being sucked by said suction tank;

transporting means for transporting the document fed by said feeding means to a predetermined document set position and then returning said document to said document table;

a parting plate resting on part of the documents stacked on said document table and having not fed by said feeding means, thereby separating said part of said documents



from the other part of said documents having been returned by said transporting means;

sensing means for sensing a height of a portion of said stack which adjoins said parting plate; and

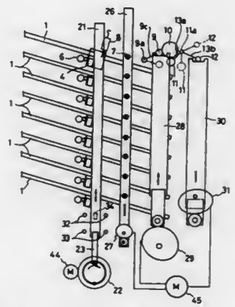
control means for inhibiting, when said sensing means determines that said portion of said stack adjoining said parting plate is higher than a predetermined height, said feeding device and said transporting device at least from returning said documents to said document table.

5,310,171

COLLATING DEVICE

Tomio Honma, and Hideo Tanaka, both of Komae, Japan, assignors to Duplo Corporation, Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,292
Claims priority, application Japan, Feb. 18, 1992, 4-031102
Int. Cl.[5] B65H *3/44, 5/26*
U.S. Cl. 271—9 **18 Claims**



1. A collating device for feeding a sheet of paper on the topmost of a paper stack one after another, comprising:

a paper table loaded with said paper stack;

support means for supporting the paper table so as to be able to move up and down;

biasing means for biasing the paper table upward;

a stopper movable between a first position at which the topmost sheet of said paper stack contacts said stopper and a second position at which said stopper is spaced from said paper stack;

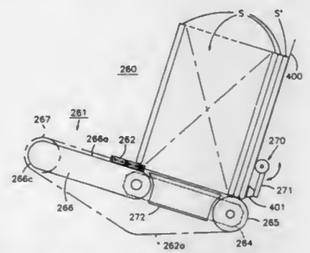
fixing means for fixing the position of said paper table in an on-state and for releasing the paper table in an off-state in which said fixing means does not fix the position of the paper table;

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a suction head which can suck up each sheet by a sucking force;
suction head moving means for moving said suction head between a lower position where the topmost sheet of said paper stack is sucked up and an upper position where the suction head is separated from said paper stack; and
control means for controlling operations of said stopper, fixing means, suction head and suction head moving means.

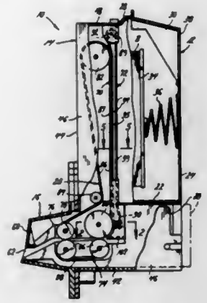
7. A collating device for feeding a sheet of paper on the topmost of a paper stack one after another, comprising:
multiple paper tables loaded with said paper stack;
support means for supporting the paper tables so as to be able to move up and down;
biasing means for biasing said paper tables upward;
a stopper which is provided for each paper table and which is movable between a fist position at which the topmost sheet of said paper stack contacts said stopper and a second position at which said stopper is spaced from said paper stack;
fixing means, provided for each paper table, for fixing the position of said paper table in an on-state and for releasing the paper table in an off-state in which said fixing means does not fix the position the paper table;
a suction head provided for each paper table which can suck up each sheet by a sucking force;
suction head moving means for moving said suction heads between a lower position where the topmost sheet of said paper stack is sucked up and an upper position where the suction head si separated from said paper stack;
a paper table lever which engages each of said paper tables and which can pulldown said paper tables at one time;
a paper table lever driving means for driving said paper table lever between an upper feeding position and a lower standby position; and
control means for controlling operations of said stoppers, fixing means, suction heads, suction head moving means and paper table lever driving means.

5,310,172
HOPPER LOADER
John E. Prim, West Chazy; David Hall, Plattsburgh; Robert Kinson, Plattsburgh, and Cyrus Myers, Plattsburgh, all of N.Y., assignors to Prim Hall Enterprises Inc., Plattsburgh, N.Y.
Division of Ser. No. 693,638, Apr. 30, 1991, Pat. No. 5,197,590.
This application Nov. 19, 1992, Ser. No. 978,994
Int. Cl.[5] B65H *1/02*
U.S. Cl. 271—150 **17 Claims**



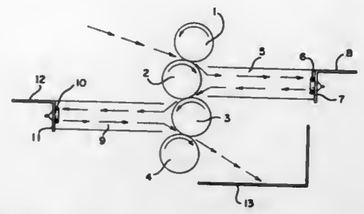
1. A signature feedrack assembly comprising:
chain drive means for supporting a plurality of signatures along one edge thereof;
an end wall arranged substantially at a right angle to an upper run of said chain drive means and cooperating with said chain means for supporting a stack of signatures on end;
means for removing a signature adjacent said end wall;
means responsive to removal of a signature for moving said chain drive means through a linear distance for advancing the signatures on said upper run through a distance substantially equal to a width of a signature;
said chain drive means including a drive sprocket;
a first linkage arm;
said sprocket being pivotally mounted at a first end of said first linkage arm;
a second linkage arm;
a first end of said second linkage arm being pivotally coupled to a second end of said first linkage arm;
clamp means for releasably clamping the first and second linkage arms to maintain a predetermined angular orientation therebetween;
said second linkage arm having a first chain guide edge aligned with said drive sprocket;
said chain drive means being entrained about said drive sprocket and riding on said first chain guide edge;
said second linkage arm being movable relative to said first linkage arm between a first position wherein the first and second linkage arms are arranged to lie along a substantially straight line and a second position wherein said second linkage arm forms an angle of less than 180 degrees with said first linkage arm, said angle being defined by longitudinal axes of said first and second linkage arms.

5,310,173
BILL VALIDATOR WITH BILL TRANSPORT SYSTEM
Alejandro R. Martinez, St. Louis, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.
Filed Apr. 21, 1993, Ser. No. 50,817
Int. Cl.[5] B65H *29/16*
U.S. Cl. 271—198 **10 Claims**



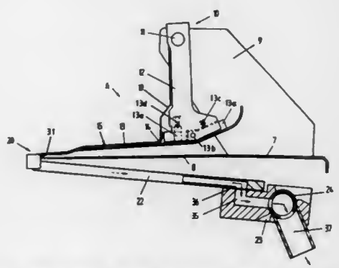
1. A bill validator having a bill transport system for conveying bills to a location adjacent a bill collection compartment, the bill transport system comprising:
(a) a first pair of spaced belt means each including a lower pulley, an upper pulley and an endless belt movable between said lower and upper pulley,
(b) a second pair of spaced belt means, each including a lower pulley, an upper pulley and an endless belt movable between said lower and upper pulley, said belt being disposed adjacent an associated belt of said first belt means to receive and direct bills in a generally vertical path, and
(c) means moving said associated belts of said belt means into engagement, said moving means including floating journal means for one pair of pulleys of one pair of belt means, the associated endless belts having a length selected to induce internal tension into said belts and apply a force to said pulleys having said floating journal means to provide sufficient pressure between said belts to grip and convey said bills.

5,310,174
PAPER CUSHION AND NOISE SUPPRESSOR
David Thomas, Wabash, Ind., assignor to Martin Yale Industries, Inc., Wabash, Ind.
Filed Sep. 11, 1992, Ser. No. 943,810
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—225 **14 Claims**



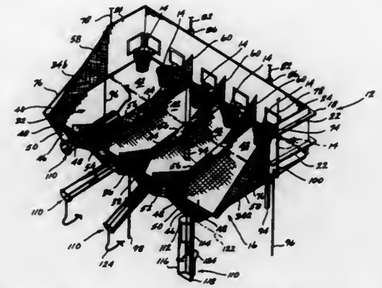
1. A paper cushion noise suppression device for a buckle-type folding machine comprising:
an elongated sheet stop rigidly fixed to said folding machine;
at least one bumper non-movably fixed to said sheet stop for preventing contact of a paper sheet with the stop during operation of the folding machine.

5,310,175
SEWING SYSTEM HAVING A DEVICE FOR THE PRECISE EDGE ALIGNMENT OF SEWING MATERIAL ALONG A STOP STRAIGHTEDGE
Gerhard Riss; Rainer P. Horst, both of Bielefeld, and Heinz Lengel, Mammelsdorf, all of Fed. Rep. of Germany, assignors to Durkopp Adler Aktiengesellschaft, Fed. Rep. of Germany
Filed May 18, 1992, Ser. No. 885,309
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116211
Int. Cl.[5] B65H *9/16*
U.S. Cl. 271—250 **12 Claims**



1. A sewing system having a device for the precise edge alignment of sewing material along a stop edge, for locating the material to be taken over by material clamps after being placed on a support surface and aligned, the aligning device comprising:
a stop edge having suction means for drawing the sewing material toward the stop edge, the stop edge being mounted on a frame of the sewing system so as to be swingable into a stopping position adjacent a support surface for supporting the sewing material to be aligned; and
clamping mans on said support surface for clamping the sewing material to said support surface after alignment.

5,310,176
BASKETBALL SHOOTING AND RETURN CENTER
David J. Berg, 344 N. 190th St., Seattle, Wash. 98133
Filed Sep. 27, 1991, Ser. No. 765,331
Int. Cl.[5] A63B *69/00, 63/08*
U.S. Cl. 273—1.5 A **16 Claims**



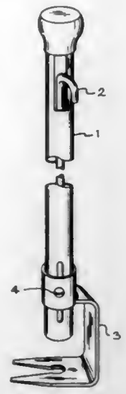
1. A basketball shooting and return center supported by an overhead support structure, comprising:
a backboard structure;
a plurality of goals mounted on the backboard structure;
a ball return table connected to the backboard structure, configured to form a plurality of troughs, each trough disposed under at least one associated goal and sloping downwardly towards a discharge point defined by the trough, wherein the ball return table includes:
(a) a peripheral frame secured to the backboard structure under the goals; and
(b) a web spanning and attached to the frame;
suspension means for suspending the backboard structure and the ball return table from the overhead support structure; and
at least one elongate ball rack, secured to the ball return table adjacent the discharge point of an associated trough, for receiving returned balls from the trough and directing the returned balls to the user from the distal end of the ball rack, wherein the ball rack is pivotally secured to the ball return table on a first pivot axis, and which further comprises means to selectively position the ball rack at selected angular positions about the first pivot axis, the means to selectively position the ball rack including an elongate telescoping support arm pivotally secured to the ball rack at a point spaced from the first pivot axis, the support arm being adjustable in length to selectively elevate the ball rack.

5,310,177
NO-BEND GOLF DEVICE
Barry G. Conrad, and Debra S. Conrad, both of P.O. Box 30, Swanton, Ohio 43558
Filed May 13, 1993, Ser. No. 59,970
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32.5 **1 Claim**

1. A golf ball and tee placement and retrieval apparatus comprising;
a hollow elongated shaft having first and second ends,
an elongated rod slidably received within said shaft,
and a foot element including a forked foot oriented at a right angle to said shaft and rod, said forked foot adapted to receive a tee and golf ball,
said shaft having a longitudinally oriented slot at said first end and a pair of opposing longitudinally oriented slots at said second end,
said rod having a handle at one end which passes through said first end slot, and a transverse bolt at an opposite end which passes through said second end slots,

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said foot element attached to said bolt on the outside of the shaft so that said foot may slide vertically on the outside of the shaft,



wherein by sliding the rod relative to the shaft, the foot may be moved vertically to place or retrieve a ball and tee.

5,310,178

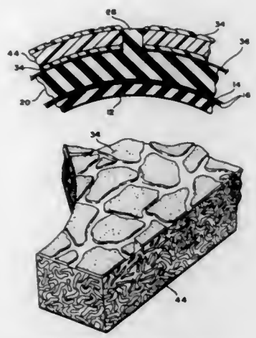
BASKETBALL WITH POLYURETHANE COVER

Alan D. Walker, Somers, Conn., and Joseph F. Baltronis, Agawam, Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Jan. 29, 1993, Ser. No. 10,956

Int. Cl.[5] A63B *41/02, 41/08*

U.S. Cl. 273—65 B **7 Claims**



1. An improved basketball comprising:

an interior spherical bladder formed principally of synthetic butyl rubber with a thickness of about 0.82 millimeters;

an intermediate layer of monofilament strands formed of nylon and wound around the bladder to a thickness of between about 0.3 and 0.7 millimeters;

an exterior carcass of molded natural rubber formed of two hemispheres with exteriorly projecting ribs or channels, and

a plurality of polyurethane inserts formed with matted fibers of a polymeric material with a diameter of about 1 micron adhered to the exterior surface of the carcass between the ribs or channels, the inserts having a thickness of about 1.8 millimeters.

5,310,179

TENNIS RACKET

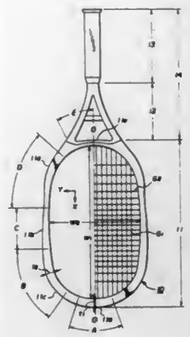
Masanori Takatsuka, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jul. 29, 1992, Ser. No. 921,567

Claims priority, application Japan, Jul. 29, 1991, 3-210360; May 20, 1992, 4-152702

Int. Cl.[5] A63B *49/02*

U.S. Cl. 273—73 C **16 Claims**



1. A tennis racket comprising

a substantially oval ring shaped head frame and

a racket face constructed by a string network which is made up of interlaced main and cross strings mounted under tension to said head frame,

said racket face having a first length (W_1) in the direction of said main strings adjusted in a range from 320 to 390 mm and a second length (W_2) in the direction of said cross strings adjusted in a range from 200 to 240 mm and

said head frame having a compressive rigidity in said direction of said main strings adjusted in a range from 30 to 200 Kgf/mm.

5,310,180

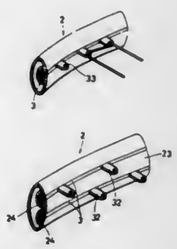
RACKET FRAME

Chao-I Wu, Taichung Hsien, Taiwan, assignor to Jan Sports Products Corp., Taichung Hsien, Taiwan

Filed Mar. 2, 1993, Ser. No. 24,777

Int. Cl.[5] A63B *51/00*

U.S. Cl. 273—73 D **6 Claims**



1. A racket frame having a head portion defined by an oval frame wherein said oval frame is coupled to a handle by a throat portion thereof, and oval frame comprising:

a closed contour frame member having at least one continuous recess formed in an inner surface thereof, said recess having a pair of retaining flanges formed on opposing side walls of said recess; and,

means for mounting catgut fixedly coupled to said frame member, said mounting means including (1) a base member secured within said recess by said retaining flanges and extending around said closed contour, and (2) a plurality of spaced tab members extending radially from said base member, said plurality of tab members being formed integrally in one-piece formation with said base member, each of said tab members having a through opening formed therein extending transverse said radial direction of said tab member, whereby catgut is strung between adjacent pairs of said tab portions on opposing sides of said frame member to divide tensile forces therebetween.

5,310,181

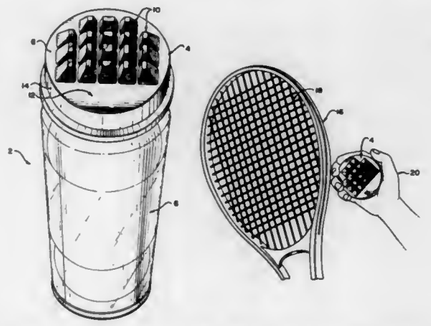
RACQUET STRING ALIGNER

Stephen Chan, 2800 Ingleton Avenue, Burnaby, British Columbia, Canada V5C 6G7

Filed Oct. 20, 1992, Ser. No. 963,919

Int. Cl.[5] A63B *51/14*

U.S. Cl. 273—73 R **11 Claims**



1. A racquet string aligner for aligning the strings of a racquet comprising:

(a) a base member;

(b) a tapered central projection on the base member having a topography that tapers away from the base member;

(c) at least one tapered first projection adjacent the central projection the base of which is located at a first radius from the centre-point of the central projection, and at least a portion of a string impinging surface of which has a first slope in the direction of the central projection; and

(d) at least one tapered second projection the base of which is located at a second radius from the centre-point of the central projection greater than that of the first radius, at least a portion of an outer surface of which slopes in the same direction as the slope of the first projection in the direction of the central projection to a degree smaller than the first slope.

5,310,182

STRING ADJUSTMENT DEVICE FOR BALL RACKETS, FOR EXAMPLE TENNIS RACKETS

Johann Macknigg, Anichgasse 32, Graz, Austria A-8051

PCT No. PCT/AT91/00109, § 371 Date Jul. 30, 1993, § 102(e) Date Jul. 30, 1993, PCT Pub. No. WO92/10243, PCT Pub. Date Jun. 25, 1992

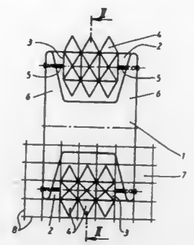
PCT Filed Oct. 10, 1991, Ser. No. 70,363

Claims priority, application Austria, Dec. 7, 1990, A2478/90

Int. Cl.[5] A63B *69/38*

U.S. Cl. 273—73 R **11 Claims**

1. String adjuster for ball rackets, for example tennis rackets, comprising at least one carrier body (3,11) provided with protruding engagement bodies (4) which can be inserted into matching meshes (7) of strings so that when the engagement bodies are inserted into the meshes (7), a set of strings (8) is displaced into the correct position, characterized in that a circulating carrier body (3,11) is provided that is bearingly supported in a support member (1).



5,310,183

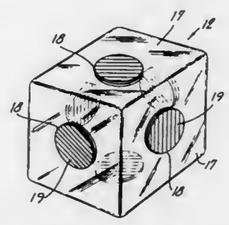
TRANSPARENT CUBE PUZZLE

Kevin L. Glikmann, 16607 Calneva Dr., Encino, Calif. 91436-4129

Filed Oct. 1, 1992, Ser. No. 955,364

Int. Cl.[5] A63F *9/08*

U.S. Cl. 273—153 S **5 Claims**



1. A puzzle cube comprising:

a. a cube-shaped container having six faces each of which having a first number of holes equally-spaced apart in a square matrix thereon wherein said first number is defined by n^2 with n being greater than 2;

b. a second number of cubes disposed in said cube-shaped container, each of said cubes having six faces, wherein said second number is less than (n^3) and wherein each of said cubes is formed out of a transparent material;

c. a plurality of first designators each of which is placed on one of said six faces of said cubes; and

d. a plurality of second designators each of which is placed beneath one of said first designators whereby each of said second designators corresponds to one of said first designators disposed on an opposing face of said cube on which it is placed.

5,310,184

TRANSPARENT PRIZE PRESENTING GAME

Elizabeth A. Grist, 9660 Dundawan Rd., Baltimore, Md. 21236

Filed Nov. 13, 1992, Ser. No. 976,261

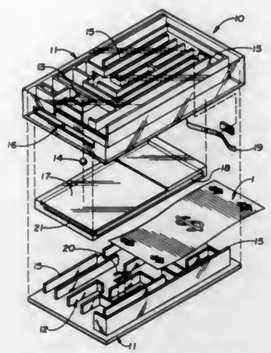
Int. Cl.[5] A63F *9/06*

U.S. Cl. 273—153 R **20 Claims**

1. A transparent prize presenting game having a puzzle or challenge to be solved or completed, the game being capable of presentation of a paper prize, thereby motivating a player to solve and complete the puzzle or challenge, the game comprising a hand held manipulable, transparent container wherein the paper prize is viewable, the paper prize being removably disposed in the container, so that access thereto without success-

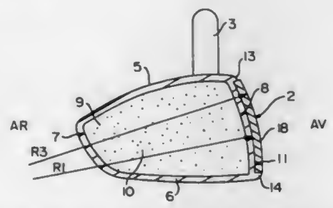
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fully completing the puzzle or challenge is prevented, the puzzle or a challenge to be solved and completed being disposed in the container, and means for providing access to the paper prize only upon the successful completion of the puzzle



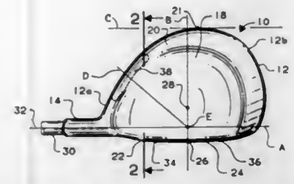
or challenge wherein the player gains access to the container to retrieve the paper prize, whereby the user thereof is provided with the motivation of the paper prize to successfully complete the puzzle or the challenge provided by the game.

5,310,185
GOLF CLUB HEAD AND PROCESSES FOR ITS MANUFACTURE
Francois Viollaz, Evian, and Benoit Vincent, Annecy le Vieux, both of France, assignors to Taylor Made Golf Company, Carisbad, Calif.
Filed Mar. 1, 1993, Ser. No. 24,400
Claims priority, application France, Feb. 27, 1992, 92 02554
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **17 Claims**



1. A golf club head comprising a shell (1) extended laterally by a neck (3), said shell comprising a series of metal plates (4) forming an interior cavity (9) and including a front plate (8) comprising a support surface (11) to which a hitting plate (18) made of a plastic or composite material is fastened, wherein said support surface (11) belonging to said front plate (8) is a convex surface extending in a direction of intended flight of a struck ball and said hitting plate (18) associated with said support surface has a rear face (19) supported on said support surface (11) and a shape matching a shape of said support surface, and has a hitting surface (2) which is convex int he direction of intended flight of a struck ball.

5,310,186
GOLF CLUB HEAD WITH WEIGHT PAD
Solheim Karsten, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Mar. 17, 1993, Ser. No. 32,304
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—171 **6 Claims**



1. A golf club head having a center of gravity, said golf club head comprising:
a hollow body having a heel portion, a toe portion, a top wall, a bottom wall, a side wall between said top and bottom walls, a front wall with a face for impacting a golf ball;
a hosel for receiving one end of an elongated shaft;
said face having a sweet spot thereon aligned with the center of gravity so that when a golf ball is impacted at said sweet spot no rotation of the club head will occur, said face being disposed forwardly of an inclined with respect to a first vertical plane containing a longitudinal axis of the elongated shaft, said face intersecting and being substantially perpendicular to a second vertical plane containing the center of gravity, said second vertical plane dividing said body into said heel and toe portions;
a weight pad disposed along said side wall in the heel portion of the body rearwardly of said first vertical plane and intermediate said hosel and said second vertical plane, said weight pad providing the golf club head with increased resistance to horizontal rotation about a vertical axis that extends through the center of gravity when the club head impacts a golf ball on the face at off-center points spaced laterally of the sweet spot;
said side wall having a length dimension measured between said first vertical plane and a third vertical plane which is disposed generally parallel to said first vertical plane while being located rearwardly of both said front wall and said hosel, said third vertical plane containing a rearwardmost point on said side wall, said weight pad being elongated in a direction extending along the length dimension of said side wall; and
said weight pad being divided into two substantially equal parts by a fourth vertical plane which intersects the first and second vertical planes at approximately 45 degrees.

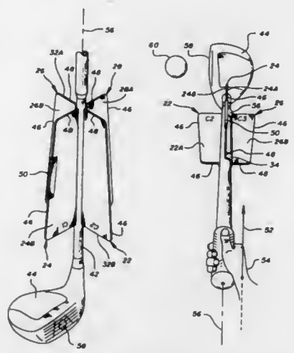
5,310,187
GOLF PUTTING AND CHIPPING PRACTICE DEVICE
Kenneth Yamaguchi; Michael Yamaguchi, and Monica Ambrose, all of 101 S. Martel Ave., Los Angeles, Calif. 90036
Filed Oct. 20, 1993, Ser. No. 139,537
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—177 R **10 Claims**

1. A self supporting golf target device for practicing putting and chipping or the like comprising;
a first elongated side wall having a bottom wall, a top wall, a first outer end and a second inner end and an arcuate cut-out section at said second inner end;
a second elongated side wall having a bottom wall, a top wall, a first outer end and a second inner end and an arcuate cut-out section at said last mentioned second inner end;
a third elongated side wall having a bottom wall, a top wall, a first outer end and a second inner end and an arcuate cut-out section at said last mentioned second inner end; and
a block member interconnecting the inner ends of said first, second and third side walls and spacing the plane of one of said side walls about 120° from the plane of an adjacent



other of said side walls with the arcuate cut-out section of one of said side walls cooperating with the arcuate cut-out section of an adjacent other of said side walls to form a substantially semicircular opening leading into the center of said device with no obstruction between adjacent second inner ends of said side walls.

5,310,188
GOLF CLUB SWING ALIGNMENT DEVICE
Joseph G. Hernberg, 514 Queen Anne Rd., Cherry Hill, N.J. 08003
Filed Apr. 21, 1993, Ser. No. 50,955
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **10 Claims**



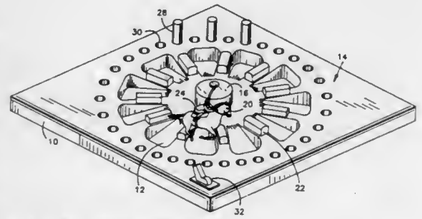
1. A device for enabling a person to align the face of a golf club head to a desired orientation, said device comprising first, second, and third fins, a hub, and releasable securement means, said releasable securement means for releasably securing said device to the shaft of a conventional golf club, each of said fins being a thin, generally planar member extending radially outward from said hub, whereupon when said device is secured to said club shaft said first fin projects upward, said second fin projects laterally outward of said first fin to one side of said first fin and perpendicular to said first fin, and said third fin projects laterally outward of said first fin to the opposite side of said first fin, perpendicular to said first fin, and coplanar with said second fin, said first fin having a pair of sides each of which bears first indicia thereon, said second fin having a top surface bearing second indicia thereon, said second indicia being different than said first indicia, said third fin having a top surface bearing third indicia thereon, said third indicia being different than said first indicia.

5,310,189
SOFT GOLF CLUB, TEE AND BALL
Jorge Soto, Redwood City, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Feb. 5, 1993, Ser. No. 14,289
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—193 R **3 Claims**



1. A toy golf playset comprising:
a golf club having an elongated shaft, a handle, and a clubhead, said clubhead being formed of a soft resilient foam material and defining a pair of mirror image angled ball striking surfaces to facilitate use of said golf club by both right-handed and left-handed players and a cradle extending beneath said angled ball striking surfaces;
a soft resilient foam ball; and
a golf tee formed of a soft resilient material having four equal-length elements extending radially outwardly from a common center such that each forms equal angles with each remaining elements, each of said four elements of said golf tee each defining outwardly facing concave ball recesses.

5,310,190
WESTERN GAME BOARD APPARATUS
Richard D. Morris, R.R. 1, Box 146B, Jasonville, Ind. 47438
Filed Jul. 23, 1993, Ser. No. 96,553
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **11 Claims**

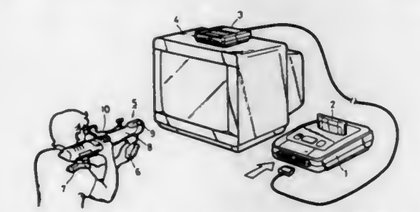


6. A board game comprising
a board defining a plurality of pockets symmetrically situated around a periphery of the board and a plurality of depressions for accepting movable game pieces,
a rotating shaft of an electric motor positioned in the center of the board, the electric motor being powered by a battery and controlled by a switch,

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an outwardly extending arm attached to the shaft for rotational movement therewith,
a horse figure attached to the rotating arm, the horse figure being configured to pass over the plurality of pockets,
a cowboy figure separate from and removably connected to the horse figure, and
a plurality of bumps and ridges positioned between the plurality of pockets and a center of the board for jostling the outwardly extending arm and the combined horse figure and cowboy figure, causing random or semirandom detachment of the cowboy figure from the horse figure, with the cowboy figure falling into one of the plurality of pockets to determine movement of game pieces.

5,310,191
BINGO CARD SHEET COVER ASSEMBLY
Joanne-Marie W. Booth, 370 Steeles Ave. E, Apt. 916, Brampton, Ontario, Canada L6W 1A1
Filed Mar. 24, 1993, Ser. No. 36,360
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—269 **1 Claim**



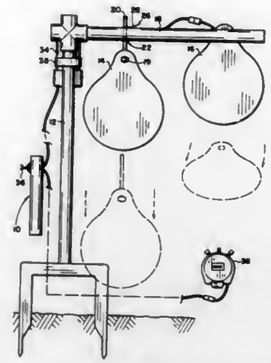
1. A bingo card sheet cover assembly, comprising,
a tubular container, the tubular container having a container opening, and
a cap member securably mounted in a selective relationship relative to the container about the opening, and
an elongate flexible transparent web arranged in a first position in a furled configuration complementarily received within the tubular container and arranged for furling in a second orientation exteriorly of the container, wherein the web includes a plurality of patterns of openings directed through the web, the web has directed therethrough a first pattern of openings having an "O" shaped configuration, and a second pattern of openings having an "M" shaped configuration, and a third and fourth pattern of openings directed through the web having respective third and fourth arrays of openings.

5,310,192
SHOOTING GAME AND EXTERNAL STORAGE USED THEREFOR
Masahito Miyake, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Jul. 27, 1992, Ser. No. 918,708
Claims priority, application Japan, Dec. 28, 1991, 3-358480
Int. Cl.[5] A63F *9/22*; F41G *3/26*
U.S. Cl. 273—310 **24 Claims**

1. A shooting game system for shooting a target displayed on a raster scan type display in a position spaced apart from the display to play a shooting game, comprising:
game processing apparatus being connected to said display for performing processing for the shooting game;
a shooting scope, having a light receiving axis, used in a position spaced apart from said display for shooting the target displayed on said display; and
a sight attached on said shooting scope and defining a sighting axis having a predetermined angle with respect to the light receiving axis of said shooting scope, whereby said sighting axis intersects the light receiving axis of said shooting scope on said display when the distance between said shooting scope and said display is a predetermined distance;
said shooting scope comprising;
a trigger signal generator for generating a trigger signal in response to an operation performed by a player,
a photoelectric converter for converting light from a position which is shot on said display into an electric signal which is synchronized with raster scanning of said display, and
a control signal transmitter for transmitting by optical space communication a control signal based on the electric signal outputted from said photoelectric converting means to said game processing apparatus in response to said trigger signal from said trigger signal generator,
said game processing apparatus comprising
a control signal receiver for receiving the control signal transmitted from said control signal transmitter,
shot coordinate position determining means for detecting a coordinate position which is shot by said shooting scope on said display on the basis of a raster coordinate position on said display at the time of receiving of said control signal by said control signal receiver,
reference mark display controlling means for displaying a reference mark in a predetermined fixed position on said display before starting the game,
an error detector for operating, when said reference mark is shot by said shooting scope, to detect an error between the coordinate position detected by said shot coordinate position detecting means and a coordinate position of said reference mark,
an error storing device for storing the error detected by said error detector,
a target display controller for displaying the target on said display while the game is played,
correcting means for correcting, when the target on said display is shot by said shooting scope, the relative positional relationship between a coordinate position of the target and the coordinate position detected by said shot coordinate position detecting means on the basis of the error stored in said error storing device, and
hit judging means for making a hit determination in a case where said target is shot by said shooting scope on the basis of said relative positional relationship after being corrected by said correcting means.

5,310,193
FEATURE FOR STARTING AND STOPPING OF GAME
Arlen J. Lowrance, Tulsa, Okla., assignor to Carl J. Lowrance, Tulsa, Okla.
Filed Jul. 15, 1992, Ser. No. 913,399
Int. Cl.[5] A63F *9/00*; F41J *1/10*
U.S. Cl. 273—393 **2 Claims**

1. A feature for stopping, starting and recording the elapsed playing time for a timed game, comprising:
a start target removably attached to the game, a stop watch, means for simultaneously causing the start target to fall and electrically starting the stop watch,
a motor, a momentary switch electrically connected to the stop watch and electrically connected to the motor so as to simultaneously start the stop watch and activate the motor, means whereby activating the motor causes the start target to fall, and



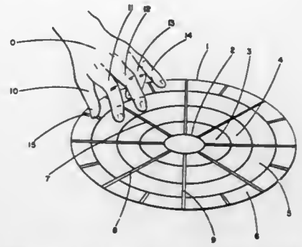
means for electrically stopping the stop watch when play ends.

5,310,194
CENTRIFUGALLY LAUNCHED PROJECTILE RECREATIONAL DEVICE
Kenneth R. Scheel, Rte. 4, Box 340, Elkton, Va. 22827
Filed Dec. 28, 1992, Ser. No. 997,504
Int. Cl.[5] A63B *65/00*
U.S. Cl. 273—415 **11 Claims**



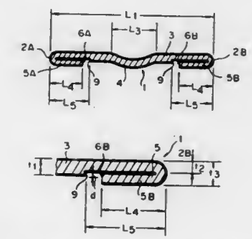
1. A centrifugally launched projectile device comprising:
a) a nose section comprising a flexible material encasing a substantially heavy weight;
b) a substantially flexible elongate body section adjacent to and extending from said nose section; and
c) a gripping section adjacent to said body section at the end distal to said nose section comprising a flexible material and a lower density, lightweight mass of sufficient size to prevent said mass from sliding between the fingers of an open human hand whereby said projectile device, by means of the unique configuration of all elements, maximizes the ease of both throwing and catching said device.

5,310,195
BOARDGAME AND METHOD OF MEASURING BRAIN ACTIVITY UTILIZING A BOARD-GAME
Iman'al-Amin Abdallah, 33 Stanley Rd., South Orange, N.J. 07079-2721
Filed Aug. 29, 1991, Ser. No. 752,067
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—444 **6 Claims**



1. A boardgame apparatus for stimulating brain activity during EEG measurements, said boardgame apparatus comprising
a playing board comprising a circular disc having a playing surface disposed on one side of the circular disc, said playing surface consisting of a plurality of playing spaces formed by four circular bands concentrically disposed about a center space, each of said four circular bands being divided into eight parts by radials extending from the center space, each one-eighth part of the outermost circular band being further divided into two parts.

5,310,196
METALLIC GASKET AND METHOD OF MANUFACTURING THE SAME
Shigeru Kawaguchi; Kenji Kubouchi; Hiroshi Uemura, and Kunitoshi Inoue, all of Osaka, Japan, assignors to Nippon Gasket Co., Ltd., Osaka, Japan
Filed Aug. 20, 1992, Ser. No. 932,188
Claims priority, application Japan, Aug. 21, 1991, 3-232450
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—180 **3 Claims**



1. In a metallic gasket having an elastic metallic plate formed out of an elastic metallic material, said elastic metallic plate having a first lower surface and a second upper surface and being provided with holes for a combustion chamber, and beads constituting seals formed along said boles so as to have convexities to a given height along said first surface and concavities in said second surface thereof, an improvement wherein said elastic metallic plate has folded portions formed by bending parts of said metallic plate which surround said holes onto said first surface thereof which carries said convexities of said beads so as to define said holes, said folded portions being formed to a thickness smaller than said height of

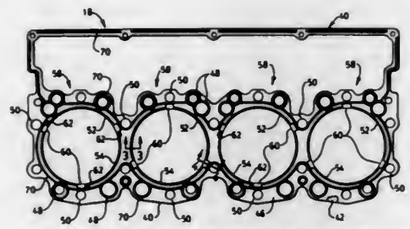
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said beads, said folded portions and parts of said metallic plate on which said folded portions are laminated being formed to a prior-to-folding thickness in the range of less than the thickness of said metallic plate to not less than that of a half of the thickness of said metallic plate.

5,310,197
GASKET CONSTRUCTION

Cynthia F. Bruch, Magnolia; Mark W. Craig, Chillicothe; Dale E. Geyer, Peoria; Lynette M. Lipski, Peoria; Roger A. McHugh, Peoria, and Tana L. Utley, Metamora, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/02830, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO92/19892, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 26, 1991, Ser. No. 844,563
Int. Cl.[5] F17J *15/12*
U.S. Cl. 277—235 B **16 Claims**

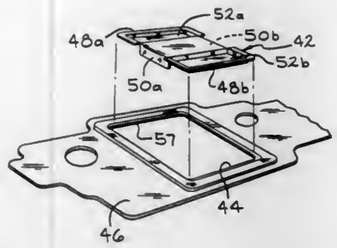


1. A head gasket assembly (**18**) adapted for use in an engine (**10**) having a cylinder block (**12**) and a cylinder head (**14**), said cylinder block (**12**) having a combustion chamber (**20**), a plurality of threaded holes (**26**) and a plurality of bores (**24**) defined therein, said cylinder head (**14**) having a plurality of bores (**30,32**) defined therein corresponding to the threaded holes (**26**) and at least a portion of the plurality of bores (**24**) in the cylinder block (**12**), said head gasket assembly (**18**) comprising:
- a main gasket body (**40**) having a center core (**42**), a sealing material (**46**) attached to each side of the core (**42**) and a plurality of apertures (**48,50,52**) defined within the main gasket body (**40**) and extending through the sealing material (**46**) and the core (**42**), said plurality of apertures (**48,50,52**) including a combustion opening (**52**) and at least a portion of the plurality of apertures (**48,50,52**) correspond to the combustion chamber (**20**), the plurality of threaded holes (**26**) and the plurality of bores (**42**) in the cylinder block (**12**) when in use;
- a fire ring (**54**) positioned in each combustion opening (**52**), said fire ring having a weld joint; and
- means for attaching (**59**) the fire ring (**54**) to the sealing material (**46**) prior to being installed in the engine (**10**), said means for attaching (**58**) including a plurality of tape strips (**60**), each tape strip (**60**) having an end portion (**62**) attached to a side of the sealing material (**46**), partially surrounding the fire ring (**54**) and having another end portion (**64**) attached to another side of the sealing material (**46**), said weld joint being spaced from and intermediate a pair of said tape strips (**60**).

5,310,198
ONE PIECE METERING BAFFLE INSERT FOR A GASKET

Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 590,509, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 291,545, Dec. 29, 1988, abandoned. This application Jun. 8, 1992, Ser. No. 895,574
Int. Cl.[5] F16J *15/06*
U.S. Cl. 277—235 B **4 Claims**

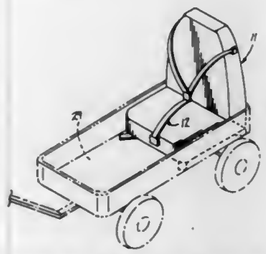


1. A gasket assembly comprising:
- a sheet of preformed gasket material having an aperture formed therein, said gasket aperture defining an inner edge surface; and
- a one-piece metallic insert having a main body with an outer periphery generally corresponding to the shape of said gasket aperture, said outer periphery including an outwardly facing side wall extending continuously around said outer periphery and engaging said inner edge surface of said gasket aperture in co-extensive and opposing relationship;
- said insert including a plurality of first flanges connected to and extending outwardly from only a portion of said side wall and engaging only ne surface of said sheet;
- said insert including a plurality of second flanges connected to and extending outwardly from only another portion of said side wall and engaging only an opposite surface of said sheet in alternating fashion with said first flanges;
- said first and second flanges collectively cooperating to continuously surround said outer periphery of said main body.

5,310,199
CONVERSION SEAT KIT

Jason M. Korkin, 8 Old Bedford Rd., Bedford, N.H. 03110

Filed Jun. 7, 1993, Ser. No. 72,079
Int. Cl.[5] A47D *1/10*
U.S. Cl. 280—87.01 **1 Claim**

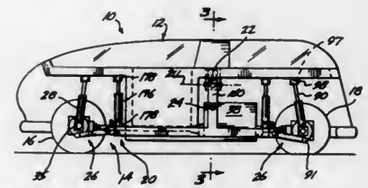


1. A conversion seat kit for selective use as a mounting support within a transport vehicle, wherein the kit includes a seat member, the seat member including a vertical seat back mounted to a horizontal seat bottom, the seat back includes a seat back top wall defined by a first width and the seat bottom is defined by a second width, wherein the second width is greater than the first width, wherein the seat back includes seat back side walls converging from the seat bottom to the seat back top wall, and
- the seat bottom including seat bottom side walls in fixed cooperation with the seat bottom extending forwardly of the seat back side walls and the seat bottom including a seat bottom front wall, and first support loops fixedly mounted to the seat back adjacent a first intersection defined between convergence of the seat back side walls, and the seat back top wall, and
- second support loops secured to the seat bottom adjacent second intersection defined by convergence of the seat bottom side walls with the seat bottom front wall, and
- a transport vehicle, wherein the transport vehicle includes a transport vehicle floor plate, the seat member including a mounting member, wherein the mounting member is mounted to a top surface of the transport vehicle floor plate, and
- fastener means directed through the mounting member and through the transport vehicle floor plate for securement within the seat bottom for selective securement of the seat member to the transport vehicle, and
- the mounting member includes a first rigid mounting bar medially intersecting a rigid second mounting bar, and each respective first and second mounting bar includes respective first and second distal ends, and the fastener means includes a plurality of fasteners with each of said fasteners directed through the mounting bar between the first and second distal ends for fixed securement of the mounting bar to the transport vehicle floor plate, and further fasteners directed through the first and second mounting bar into the seat bottom for securement of the seat bottom to the mounting bar.

5,310,200
VEHICLE SUSPENSION SYSTEM

William L. MacIsaac, 7911-40th Ave. West, Everett, Wash. 98203

Continuation-in-part of Ser. No. 247,162, Sep. 21, 1988, Pat. No. 5,004,257. This application Apr. 1, 1991, Ser. No. 678,679
Int. Cl.[5] B62D *9/02*
U.S. Cl. 280—112.2 **40 Claims**

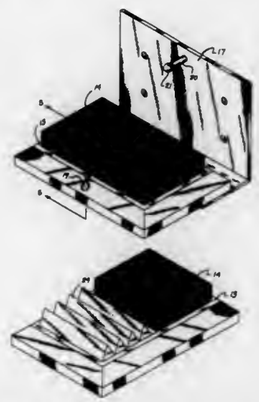


1. A suspension system for a vehicle having a body and a drive train through which torque is transmitted for propelling the vehicle, comprising:
- (a) vehicle support means on opposite sides of the front and rear of the body;
- (b) a tie structure interposed between the vehicle support means and the body;
- (c) first means for interconnecting the tie structure to the vehicle support means, the first interconnecting means permitting the vehicle support means and the adjacent portion of the tie structure to elevate relative to each other in response to lateral and longitudinal forces imposed on the vehicle during cornering, braking and accelerating, the first interconnecting means being substantially devoid of torque transmitted through the vehicle drive train for propelling of the vehicle;
- (d) second means for pivotally interconnecting the tie structure and the body to enable the body to pivot relative to the tie structure about a body transverse pitch axis and simultaneously about a body longitudinal roll axis, both axes being located at effective elevations above the reaction center of the body, whereby upon forces being imposed on the body during turning, braking and accelerating, the body tilts downwardly about the body axis relative to the tie structure in the direction opposite to the direction of the resultant forces acting on the body during cornering, braking and acceleration; and,
- (e) load control means interposed between and interconnecting the body and the vehicle support means and also interposed between and interconnecting the tie structure with at least one of the body and the vehicle support means.

5,310,201
VEHICULAR FOOT BRUSH

Finis A. Routh, 5605 County Rd. 68C, Livermore, Colo. 80536

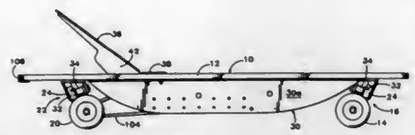
Filed Jul. 1, 1993, Ser. No. 84,917
Int. Cl.[5] B60R *3/04*
U.S. Cl. 280—164.2 **1 Claim**



1. A vehicular foot brush arranged in combination with a vehicular step plate, a base plate mounted to the step plate, the base plate including a top wall spaced from a bottom wall, with the top wall including a bristle brush web matrix extending orthogonally relative to the top wall, and
- a plurality of threaded bores directed into the bottom wall, and
- a plurality of fasteners directed through the vehicular step plate and received within the threaded bores to affix the base plate to the step plate, and
- a hinge mounted to the base plate, the hinge having a lid mounted to the hinge, the lid having a latch rod, with the latch rod including a resilient head mounted to the latch rod, the latch rod orthogonally and fixedly mounted to the lid spaced from the hinge, and the top wall including a top wall socket, the socket having a socket floor, with a plurality of spring plates mounted within the socket in spaced adjacency to the floor to effect ease of projection of the resilient head beyond the spring plates and in communication with the socket floor, and
- the top wall further includes a plurality of parallel scraping ribs of rigid construction, fixedly mounted to the top wall and the scraping ribs extending along the top wall from the bristle brush web matrix.

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5,310,202
SKATEBOARD
Byron L. Goodspeed, 203 White Rd., Castle Rock, Wash. 98611
Filed May 15, 1992, Ser. No. 883,557
Int. Cl.[5] A63C *17/12*; B62M *1/04*
U.S. Cl. 280—221 14 Claims



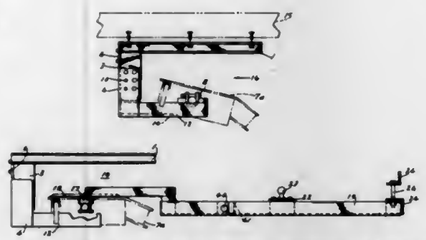
1. A skateboard comprising:
an elongated deck;
a pedal mounted to said deck and pivotable between a first ready position and a second depressed position;
a plurality of wheels rotatably mounted to the underside of said deck for supporting said deck on a surface, including at least one drive wheel;
transmission means interposed between said pedal and said drive wheel so that movement of said pedal from said pedal'first ready position to said depressed position drives said transmission means from a ready position to a driven position causing said drive wheel to rotate and move said skateboard along aid surface; and
spring means for normally biasing said transmission means to its ready position when said pedal is not depressed;
wherein said transmission means includes a camming member engaged in response to movement of said pedal so that, during the latter portion of a pedal stroke, increased velocity is imparted to said board; and
wherein said camming member depends from a pivot and is engaged by a roller mounted to said pedal wherein said roller is urged closer to said pivot as said pedal is depressed, and including an operable connection between said camming member and said drive wheel, said camming member having a lobe engageable by said roller as said pedal is depressed and said roller draws closer to said pivot to increase the velocity of said drive wheel.

5,310,203
BICYCLE SHOCK-ABSORBING APPARATUS
Tsai L. Chen, No. 2, Lane 371, Hua Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan
Filed Dec. 3, 1992, Ser. No. 984,849
Int. Cl.[5] B62K *25/08*
U.S. Cl. 280—276 8 Claims



1. A bicycle shock-absorbing apparatus (10) clamped in a steerer crown (2) which is engaged to a steer tube (1) of a bicycle by a sleeve (3) and a C-clip (4) comprising a lower tube (20) having an upper cavity and a mount member (201) thereunder and an upper tube (16) partially and slidably received within said cavity of said lower tube (20), a rod means (5) having a cap portion (50) and a rod member (51) downwardly extending from said cap portion (50), said cap portion (50) being engaged to an upper end of said upper tube (16), a bellows (12) being engaged on a top end of said lower tube (20) and also slidably receiving a portion of said upper tube (16), a bellows (12) being engaged on a top end of said lower tube (20) and also slidably receiving a portion of said upper tube (16), said upper tube (16) and said bellows (12) being clamped by said steerer crown (2), a plurality of compressive units (7) being arranged longitudinally inside said upper tube (16), said rod member (51) of said rod means (5) penetrating through said compressive units (7), said cap portion (50) downwardly facing a top one of said compressive units (7), a socket bolt (17) having an upper socket (171) with a flange portion (174) and a lower bolt member (172), a channel (173) being defined from said upper socket (171) down to said bolt member (172), said lower bolt member (172) being engaged to said mount member (201) causing said compressive units (7) to be limited between said cap portion (50) of said rod means (5) and said upper socket (171) of said socket bolt means (17), said upper tube (16) slidable holding said compressive units (7) and said upper socket (171) of said socket bolt means (17), a lower socket member (19) being engaged to a lower end of said upper tube (16) while allowing said lower bolt member (172) to slide therethrough, a first cushion (18) being positioned between said lower socket (19) and said flange portion (174) of said upper socket (171) of said socket bolt means (17), such that when said bicycle receives a shock from an uneven terrain causing said steerer crown (2) to move downward, which in turn causes said upper tube (16) to slide downward in said lower tube (20), compressing said compressive units (7), and causes said rod member (51) of said rod means (5) to move downward in said channel (173) of said socket bolt (17).

5,310,204
MODIFIED FIFTH WHEEL TRAILER HITCH AND TRAILER TONGUE CONSTRUCTION
Arnold A. Bagley, Jr., 1425 N. 35th St., Milwaukee, Wis. 53208
Filed Mar. 23, 1992, Ser. No. 854,713
Int. Cl.[5] B62D *53/06*
U.S. Cl. 280—415.1 4 Claims



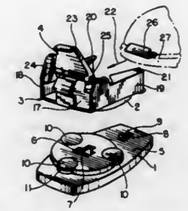
1. A fifth wheel trailer hitch assembly mounted to a frame of a towing vehicle and a trailer tongue of a trailer and having a trailer ball hitch assembly with said fifth wheel trailer hitch assembly comprising:
a cradle assembly defining an opening for mounting a fifth wheel trailer hitch, said cradle assembly comprising: a first top channel member and a second top channel member each having a plurality of mounting holes for mounting said channels to the frame of the towing vehicle; a top width adjusting plate attached to and perpendicular to each top channel member for maintaining a spaced relationship between the frame of the towing vehicle with said top channel members, said top width adjusting plate having a plurality of adjustment holes; an upper height adjusting plate attached to and perpendicular to each top channel member, said upper height adjusting plate having a plurality of adjustment holes; a first bottom channel member and a second bottom channel member each having a plurality of adjustment holes; a lower height adjusting plate attached to and perpendicular to each bottom channel member, said lower height adjusting plate having a plurality of holes spaced to align with the holes in the upper height adjusting plate, said upper and lower height adjusting plates are connected by a plurality of bolts through the holes in the said upper and lower adjusting plates; a bottom width adjusting plate attached to and perpendicular to each bottom channel member for maintaining a spaced relationship between each bottom channel member; a pivot saddle mounted on each bottom channel and adapted to receive the fifth wheel trailer hitch; a lock pin attached to each pivot saddle; and
a king pin adaptor assembly comprising: a king pin with an extension plate; a first hitch rail and a second hitch rail, each of said hitch rails having a first and second end; an extension channel attached to the extension plate and the first end of each hitch rail by a brace member attached to each of said hitch rails and said extension channel; a ball plate adjustably attached to and traverse to the first hitch rail and the second hitch rail at a point to engage a trailer ball hitch mechanism of the trailer; a means for attaching the second end of each of said hitch rails to the trailer tongue of the trailer, whereby the king pin of the king pin adaptor assembly attached to the trailer engages the fifth wheel trailer hitch mounted in the opening of the cradle assembly attached to the towing vehicle.

5,310,205
SKI SOLE
Yves Piegay, Meyrieu les Etangs, and Adrien Duvillard, Megeve, both of France, assignors to Skis Rossignol SA, France
Filed Dec. 14, 1992, Ser. No. 990,066
Claims priority, application France, Dec. 20, 1991, 91 16207
Int. Cl.[5] A63C *5/044*
U.S. Cl. 280—610 15 Claims



1. A ski sole for covering the bottom of a ski to provide a snow contact surface, said sole being divided into a midregion runner section and front and rear end sections, said midregion runner section being situated between the front and rear end sections and having at least one predetermined area thereof fabricated of a material having a greater hardness than the front and rear end sections and said midregion runner section having a lower coefficient of friction than the front and rear end sections.

5,310,206
SAFETY BINDING
Norbert Eugler, Karlsfeld, and Werner Schindler, Munich, both of Fed. Rep. of Germany, assignors to Silvretta-Sherpas Sportartikel GmbH, Karlsfeld, Fed. Rep. of Germany
Filed Dec. 17, 1992, Ser. No. 991,963
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142434
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—615 6 Claims



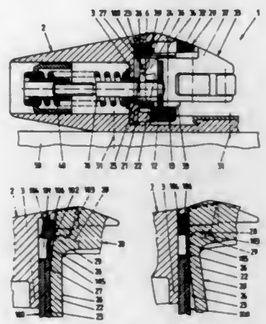
1. In a safety binding for a boot holding deice in which the heel can be lifted, in which the boot is held in the binding at its front sole part by means of a clamping device which can be actuated at will, the binding being constructed in two parts and having a base part which is fixed with respect to the ski and a release part which is detachable from the base part during overloading by means of rotation relative to the base part and is held at the base part in the operating position by means of a release mechanism, the improvement comprising that the base part has at least three guide rolls which are supported so as to be freely rotatable and provided with circumferential grooves for guiding the release part, that the base part further has an adjustable release mechanism with springloaded releasing member, that the release part has a rotating plate with a number of downwardly and inwardly bent guide flanges corresponding to the number of guide rolls for engaging in the circumferential grooves of the guide rolls as well as a number of recesses between the guide flanges likewise corresponding to the number of guide rolls, and that the release part further has a release cam with control cams for the releasing process which cooperate with the releasing member of the base part.

5,310,207
FRONT JAW
Karl Stritzl; Helmut Wladar, both of Vienna; Andreas Janisch, Oeyenhausen, and Hubert Wuerthner, Hainburg/Donau, all of Austria, assignors to HTM Sport- und Freizeitgeraete Aktiengesellschaft, Schwechat, Austria
PCT No. PCT/EP92/00654, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO93/04744, PCT Pub. Date Mar. 18, 1993
PCT Filed Mar. 25, 1992, Ser. No. 955,745
Claims priority, application Austria, Aug. 28, 1991, 1686/91
Int. Cl.[5] A63C *9/085*
U.S. Cl. 280—629 4 Claims

1. In a front jaw for a ski binding including a housing adapted to be fastened to a ski and having a rear cross wall extending transverse to a longitudinal axis of the ski, the rear cross wall having a bore therethrough, an elongated pull rod disposed within the housing along the longitudinal axis and having one end of the pull rod extending through the bore, a release spring surrounding the pull rod within the housing to urge the pull rod along the longitudinal axis a release plate coupled to the end of the pull rod, two toggle levers each having a short lever arm and a long lever arm, the release plate operatively coupling the pull rod to the short lever arms and the long lever arms engaging a front end of a sole of a ski shoe, a support part having a through opening for the pull rod and a front surface support resting at least partially against a rear

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surface of the rear cross wall, the toggle levers being arranged pivotally on the support part, the improvement comprising an insert plate arranged between the rear cross wall and the support part, said insert plate including two spacedapart upper side parts and an approximately rearwardly extending central part interposed between said upper side parts in a direction transverse to the longitudinal axis, the upper side parts each



including a first section having a first thickness in a direction along the longitudinal axis, and a second section extending upwardly from an upper extent of said first section and having a second thickness in said direction, said second thickness being greater than said first thickness to allow said section to pivot about said first section under the influence of the support part.

5,310,208

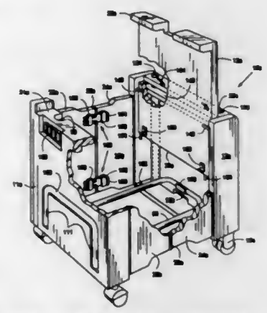
COLLAPSIBLE WHEELED SEAT

Joseph M. Jarke, Austin, Tex.; Ole I. Thorsen, La Conner, Wash.; Paul J. Horak, Lenox, Mass.; Phillip C. Kiesler, Greenville, Ind.; Michael K. Harvey, Louisville, Ky., and Charles Miller, Floyds Knobs, Ind., assignors to Jarke-Thorsen Products, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 621,422, Nov. 30, 1990, Pat. No. 5,273,307, which is a continuation of Ser. No. 409,469, Sep. 19, 1989, Pat. No. 4,974,870. This application Jan. 17, 1991, Ser. No. 641,426

Int. Cl.[5] B62B *7/06*

U.S. Cl. 280—643 **20 Claims**



1. An erectable, collapsible seat, comprising:

a front end;

a back end connected to said front end by a first foldable side and a second foldable side, each of said sides comprising a first side member pivotally connected to said front end and a second side member pivotally connected to said back end, said first and second side members on said first side being pivotally connected to define a first axis and said first and second side members on said second side being pivotally connected to define a second axis, whereby said first axis and said second axis translate toward each other when said seat is being collapsed;

a top supported by said front and back ends when said seat is in an erected condition;

a back support connected to said back end when said seat is in said erected condition;

a plurality of wheels connected to said front and back ends;

means for locking at least one of said wheels so as to prohibit undesired rolling thereof; and

bracket means pivotally connected to said front end and being connected to said back end for bracing said front and back ends and foldable sides when said seat is in said erected condition.

5,310,209

VEHICLES FOR TRANSPORTATION AND DISPLAY OF ARTICLES OF MERCHANDISE

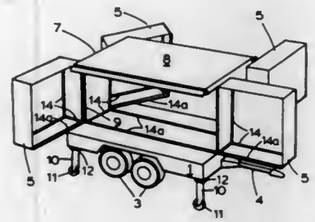
Peter Holman, 24 York Ridge Road, Willowdale, Ontario, Canada M2P 1R7

Filed Feb. 11, 1993, Ser. No. 16,467

Claims priority, application Canada, Aug. 17, 1992, 2076253

Int. Cl.[5] B62D *33/04*

U.S. Cl. 280—656 **6 Claims**



1. A vehicle for the transportation and display of articles of merchandise comprises:

A trailer provided with an undercarriage for facilitating mobility and a rectangular platform secured to the undercarriage,

a vertically adjustable castor secured to the underside of each corner of the platform, the castors, when adjusted downward, with respect to the platform, being capable of lifting the undercarriage free of a vehicle supporting surface,

a rectangular box-type housing mounted on the platform, the housing being provided with, at least, one swing-out cover on, at least, one longitudinal side of the housing,

the cover being connected, by a hinge, to a vertical corner of one end of the housing whereby the cover can be opened outwardly 180 degrees to extend the length of the vehicle and a display area for articles of merchandise,

the cover being in the form of an open sided box, which open side faces inward when the cover is in a closed position,

the top of the housing being provided with a longitudinal closure flap having, at a longitudinal outside edge thereof, a turned down flange which extends downward over an outside top edge of the closed cover,

the flap being provided with a longitudinal hinge connection, at an inner, longitudinal, edge of the flap, to the top of the housing whereby the outer edge of the flap can be raised, with respect to the top of the housing, to lift the flange clear of the cover and allow opening of the cover.

5,310,210

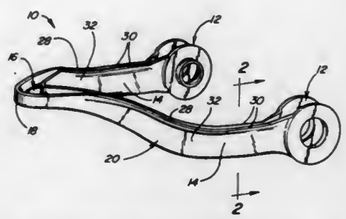
UPPER CONTROL ARM FOR VEHICLE SUSPENSION SYSTEM

Robert G. Delbeke, Livonia, and Leland M. Richart, Redford, both of Mich., assignors to Mascotecb, Inc., Novi, Mich.

Continuation of Ser. No. 805,295, Dec. 10, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,460

Int. Cl.[5] B60G *7/00*

U.S. Cl. 280—673 **5 Claims**



1. A control arm for a vehicle suspension system adapted to be connected to a ball joint assembly and a pivot bar assembly, said control arm comprising:

an integral body having a substantially U-shaped configuration, said body including a bottom wall and a pair of integral side walls extending upwardly from said bottom wall, means for receiving the ball joint assembly disposed within said bottom wall of said body between said side walls at an apex of said body, and means for receiving the pivot bar assembly at remote ends of each arm of said body;

said integral body having a modulus section along a substantial part of the length of each arm of said body, said modulus section having a hollow substantially triangular cross-sectional configuration with an upper seam along an apex of said triangular modulus section formed by joining said side walls along said triangular modulus sections, said upper seam including a reinforcement rim flange formed as an extension of said joined walls outwardly of said upper seam for improved rigidity along said modulus sections, said extensions of said side walls forming said reinforcement rim flange disposed substantially perpendicular to said corresponding side wall.

5,310,211

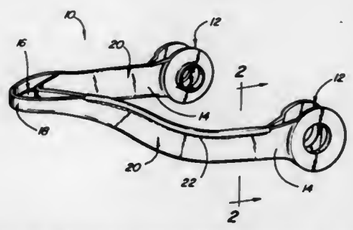
HOLLOW UPPER CONTROL ARM FOR VEHICLE SUSPENSION SYSTEMS

Robert G. DelBeke, Livonia, Mich., assignor to MascoTech, Inc., Novi, Mich.

Continuation of Ser. No. 805,609, Dec. 10, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,480

Int. Cl.[5] B60G *7/00*

U.S. Cl. 280—673 **7 Claims**



1. A control arm for a vehicle suspension system adapted to be connected to a ball joint assembly and a pivot bar assembly, said control arm comprising:

an integral body having a substantially U-shaped configuration with a bottom wall and a pair of integral side walls extending upwardly from said bottom wall, means for receiving the ball joint assembly mounted within said bottom wall at a bight of said body and means for receiving the pivot bar assembly at remote ends of said body;

said integral body having modulus sections along a substantial part of the length of each arm extending from said bight of said body, said bight having a U-shaped cross-sectional configuration with said side walls extending upwardly from said bottom wall and said modulus sections having a hollow, substantially triangular cross-sectional configuration formed of an integral one-piece stamping and including a compound curve along said modulus sections, said triangular modulus sections having a seam proximate an apex of said triangular modulus sections formed along one wall thereof by overlapping one of said side walls over the other of said side walls of said stamping, said overlap seam proximate said modulus section apex forming a predetermined pattern along the compound curve of said modulus section facilitating welding of said seam with a single pass weld pattern for different control arm configurations, said seam on different control arm configurations having substantially identical patterns allowing welding of identical cross-sectional locations along said modulus sections for the different control arm configuration.

5,310,212

AXLE BEAM TYPE SUSPENSION ARRANGEMENT FOR VEHICLE

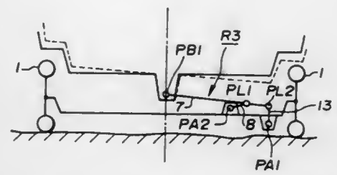
Takaaki Uno, and Ken Sugino, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Nissan Shatai Company, Limited, Hiratsuka, both of Japan

Filed Mar. 27, 1992, Ser. No. 858,714

Claims priority, application Japan, Mar. 29, 1991, 3-066189

Int. Cl.[5] B60G *7/02*

U.S. Cl. 280—689 **8 Claims**



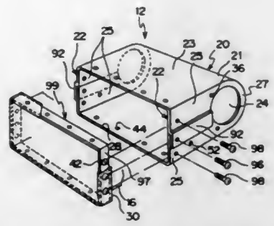
7. An axle beam type suspension arrangement for an automotive vehicle comprising:

an axle beam supporting vehicle road wheels at left and right sides thereof respectively;

a lateral link assembly for compensating lateral forces applied to vehicle wheels during vehicle running, said lateral link assembly comprising a lateral link pivotally connected to said vehicle body at one end thereof and pivotally connected to an end of a first assist link at another end thereof, another end of said first assist link being pivotally connected to said axle beam, a second assist link is provided which is pivotally connected at one end thereof to said vehicle axle beam and at another end thereof pivotally connected to said lateral link such that said pivotal connection of said first assist link to said axle beam is made at an elevation lower than said pivotal connection of said second assist link to said axle beam.

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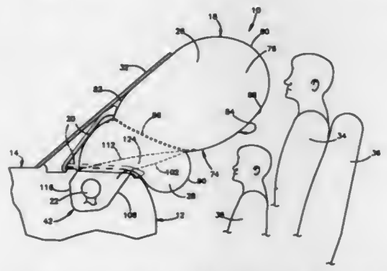
5,310,213
AIR BAG CASE
Shinji Mori, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Japan
Filed Nov. 12, 1992, Ser. No. 974,872
Claims priority, application Japan, Nov. 25, 1991, 3-309298
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **20 Claims**



1. An air bag case which can accommodate an inflator and a bag body, said inflator capable of generating gas to expand said bag body when a vehicle rapidly decelerates, said air bag case comprising:
a main plate portion including an intermediate portion which is curved so as to form a space for accommodating said inflator and said bag body inside said main plate; and
a pair of side plate portions formed by bending both sides of said main plate portion in an inner direction of said main plate portion, said pair of side plate portions respectively serving to join side edges of said side plate portions opposed to each other, and forming an inflator accommodating opening which is provided in said side plate portions in a vicinity of said intermediate portion of said main plate portion

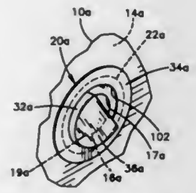
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5,310,214
AIR BAG SYSTEM FOR RESTRAINING MOVEMENT OF AN ADULT AND/OR A CHILD
Jess Cuevas, Scottsdale, Ariz., assignor to Talley Automotive Products, Inc., Phoenix, Ariz.
Filed Apr. 2, 1992, Ser. No. 862,443
Int. Cl.[5] B60R *21/24, 21/22*
U.S. Cl. 280—729 **23 Claims**



1. A vehicle safety apparatus for restraining movement of an adult and/or a child, said apparatus comprising:
an inflatable air bag having wall means for at least partially defining an upper chamber for holding gas to restrain the adult and a lower chamber for holding gas to restrain the child;
a first gas source for inflating said upper chamber to a first pressure to restrain the adult;
a second gas source for inflating said lower chamber to a second pressure which is less than said first pressure to restrain the child;
means for simultaneously actuating said first and second gas sources to inflate said upper and lower chambers; and
barrier means for separating said upper chamber from said lower chamber, said barrier means at least partially defining said upper and lower chambers.

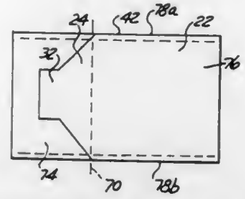
5,310,215
APPARATUS FOR VENTING OF AN INFLATABLE AIR BAG
John P. Wallner, Rochester Hills, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Jan. 13, 1993, Ser. No. 3,558
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—739 **3 Claims**



1. An inflatable air bar for, when inflated, restraining a vehicle occupant, said air bag comprising:
air bag material having an outer surface area and an inner surface area which defines a chamber into which inflation fluid is directed to inflate said air bag;
said air bag material including a surface area extending between said outer and inner surface areas and defining an opening for venting inflation fluid from said chamber;
a panel disposed on said outer surface area of said air bag material and including (i) a first portion fixedly secured to said outer surface area of said air bag material and surrounding said opening entirely, and (ii) a second portion attached to said first portion and overlaying only part of said opening, said second portion being movable from a blocking position in which said second portion blocks only part of said opening to a non-blocking position in which said second portion unblocks said opening and directs inflation fluid vented through said opening away from the occupant; and
means for fixedly securing said first portion of said panel to said outer surface area of said air bag material.

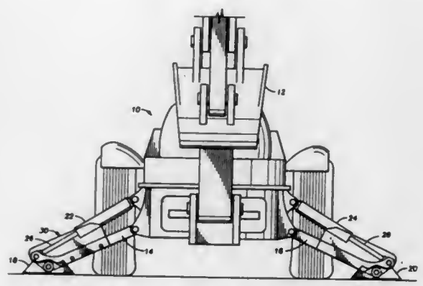
5,310,216
FLAT SEW PATTERN PASSENGER AIR BAG
Mark F. Wehner, Raunheim am Main, Fed. Rep. of Germany, and Michael J. Lachat, Macomb Township, Macomb County, Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Oct. 30, 1992, Ser. No. 968,809
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—743 R **5 Claims**

1. An air bag (20) formed from a panel of woven material, the panel comprising:
a main panel portion (22) having straight parallel sides (42),
a first neck portion (24) extending from a first end (26) of the main panel portion and
a second neck portion (28) extending from an opposite or second end (30) of the main panel portion,
the first neck portion (24) and the second neck portion (28) positioned in an overlapping, registered relationship and sewn together at first and second sew lines along mating first and second sides (48) of the first neck portion and second neck portion to define a joined neck portion,
respective first ends (54) of the joined neck portion proximate respective ends of the main panel portion, positioned along a predetermined line (70) in the main panel portion defined by the first and second ends of the main panel portion positioned in an overlapping, registered relationship, the remaining parts of the main panel portion forming a single loop adjacent the predetermined line, the joined neck portion being laid flat. On the single loop with



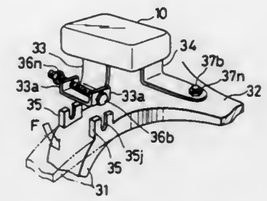
the predetermined line intermediate ends of the single loop and the aligned edges of the main panel portion are sewn together along third and fourth sew lines such that upon inflation of the air bag the joined neck portion extends away from the main panel portion and intersects a plane cutting through the single loop generally along the third and fourth sew lines.

5,310,217
RAM GUARD
Robert L. Paskey; Janice M. Paskey, both of 2561 Loganberry Cir., Seabrook, Tex. 77586; Curtis W. Paskey, 2011 Vince, Pasadena, Tex. 77502, and William D. Paskey, 1417 Harris, Pasadena, Tex. 77506
Filed Nov. 30, 1992, Ser. No. 983,049
Int. Cl.[5] B60R *19/00*
U.S. Cl. 280—763.1 **2 Claims**



1. A guard for an exposed piston rod which is attached to a stabilizer arm of an earth mover which comprises:
a plate which is attached to said stabilizer arm and extending along and above the outside surface of said stabilizer arm adjacent to the exposed piston rod, said plate being a flat plate having a linear length greater than the length of the piston rod and less than the length of the piston plus the fully exposed piston rod;
a second plate extending from said first plate which extends over the piston rod to cover the exposed piston rod; and
a third plate which attaches to flat surfaces of the end pieces of the stabilizer arm to which the piston rod is attached.

5,310,218
STEERING WHEEL STRUCTURE FOR VEHICLE
Keisuke Miyoshi, Hiroshima; Akira Marumoto, Kure, and Michitaka Ohta, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 22, 1991, Ser. No. 796,335
Claims priority, application Japan, Nov. 27, 1990, 2-326704; Nov. 27, 1990, 2-327775; Nov. 30, 1990, 2-337576; Mar. 6, 1991, 3-040074; Sep. 10, 1991, 3-230091
Int. Cl.[5] B60R *21/00*
U.S. Cl. 280—777 **20 Claims**



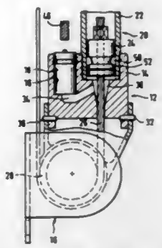
1. A steering wheel structure comprising:
a steering wheel ring,
a first spoke extending downward from a steering shaft at a neutral position of the steering wheel ring and carrying the steering wheel ring on the steering shaft,
second and third spokes extending substantially in left and right directions when said steering wheel ring is in said neutral position,
an air bag case disposed on a tip end portion of the steering shaft,
joint portions interconnecting said air bag case with said first, second and third spokes,
an air bag received in the air bag case in a folded state,
an inflator for inflating the air bag with gas,
an igniter for igniting a material in the inflator to produce the gas, and
displacing means for allowing the first spoke and a lower portion of the steering wheel ring to be displaced when subjected to a forward force beyond a predetermined value, the displacing means being formed on said first spoke at a position radially outside of the joint portion interconnecting said air bag case with said first spoke.

5,310,219
SAFETY BELT PRETENSIONER HAVING A PYROTECHNICAL PISTON/CYLINDER DRIVE
Arthur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany
Filed Jan. 11, 1993, Ser. No. 2,928
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1992, 4201359
Int. Cl.[5] B60R *22/46*
U.S. Cl. 280—806 **12 Claims**

1. A safety belt pretensioner having a frame and a pyrotechnical piston/cylinder drive which comprises a cylinder, a piston accommodated in said cylinder, a gas generator and a base pivotally mounted on said frame, said cylinder, piston and base forming a vehicle-sensitive inertial mass and a cable being connected to said piston and extending out of said base, wherein said piston is received in said cylinder with radial clearance and wherein said piston has an annular groove around its periphery and said groove has a bottom shaped to act as a ramp extending between a first bottom end of smaller diameter and a second bottom end of larger diameter, a deformable annular seal being located in said groove adjacent said first bottom end without contacting said cylinder, and said

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annular seal being adapted to move along said groove bottom towards said second bottom end and radially outwardly into



contact with said cylinder under the action of pressurized gas supplied by said gas generator.

5,310,220

DRIVE UNIT IN A RESTRAINING SYSTEM FOR VEHICLE OCCUPANTS

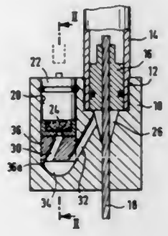
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jan. 11, 1993, Ser. No. 2,931

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1992, 4201374

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—806 **13 Claims**



1. A drive unit for a pretensioner in a vehicle safety belt system, comprising a piston/cylinder unit, a housing with a bore and a pyrotechnical gas generator inserted into said bore, said bore having a longitudinal axis and a concave bottom formed by a rounded recess, and said gas generator having a gas outlet which faces said bottom of said bore, said cylinder having an end mounted in said housing and a longitudinal axis parallel to the axis of said bore, a connecting passage being arranged in said housing between said bore and a space formed in said housing adjacent said cylinder end, wherein said connecting passage comprises a first passage portion originating from the gas outlet of said gas generator, extending in a direction inclined to the axis of said bore and away from the axis of said cylinder and opening at least approximately tangentially into said rounded recess and a second passage portion of said connecting passage leading at least approximately tangentially from said concave recess to said housing space in a direction inclined to and approaching the axis of said cylinder.

5,310,221

PROTECTIVE CAP FOR SKI TIPS

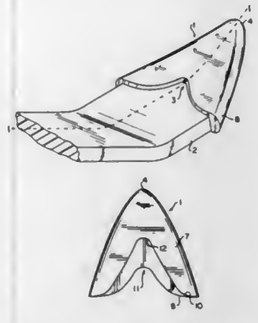
Richard Schmidt, 18 Hacket Pl., Rutherford, N.J. 07070

Filed Oct. 30, 1991, Ser. No. 784,705

Int. Cl.[5] A62C *11/00*

U.S. Cl. 280—809 **15 Claims**

1. A protective cap for a snow ski having a bottom surface capable of being in contact with snow when in use, a top surface having means for attachment to a user and an upturned forward tip formed by converging edges and surfaces of said ski, said protective cap having a substantially triangular shape corresponding to said tip and comprising top, bottom and side walls formed from resiliently flexible, weatherproof material having a durometer hardness of at most 70A according to the Shore scale, said top and bottom walls each substantially triangular in shape corresponding to said ski tip and joined together by said side wall extending therebetween and around two adjoining sides thereof, said adjoining sides meeting at a common apex which is generally rounded in shape, a third side of said cap being opposite said apex and open, thereby forming a pocket within said cap between said top and bottom walls



and extending to said common apex and adapted to receive said upturned tip completely therein and having centrally located, forwardly tapering cutouts in said top and bottom walls, said cutout in said bottom wall having a substantially triangular shape extending from said third side toward said apex a distance of from $\frac{1}{4}$ to $\frac{3}{4}$ the length of said cap and being outwardly flared at the base thereof to a width substantially equal to said third edge adjacent to said open side and tapering to a narrow width at the forward end of said cutout substantially equivalent to the width of said rounded apex, whereby said bottom surface of said ski tip is exposed for contact with snow, and wherein said pocket has dimensions slightly smaller than said ski tip whereby said cap is stretchable for application to said ski tip and has a tight stretch fit on said ski tip.

5,310,222

OPTICAL DEVICE

Charles E. Chatwin, Horsham; Ralph Kay, Maidenhead; Martin C. Gomme, Hemel Hempstead, and David Ezra, Wallingford, all of Great Britain, assignors to De La Rue Holographics Limited, London, England

PCT No. PCT/GB90/01613, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO91/06925, PCT Pub. Date May 16, 1991

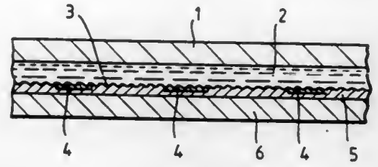
PCT Filed Oct. 19, 1990, Ser. No. 856,141

Claims priority, application United Kingdom, Oct. 26, 1989, 8924111

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—86 **21 Claims**

1. An optical security device for use on a security article, the device comprising a number of layers including an optically diffracting layer including an embossed layer and an at least partially reflective layer which together generate a first image; and a non-optically diffracting second image defined within the device in association with said first image, wherein said



second image is provided at the interface between the embossed layer and said at least partially reflective layer.

5,310,223

PIPE COUPLING

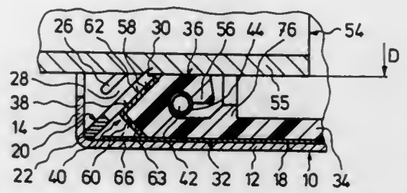
Immanuel Straub, Wangs, Switzerland, assignor to Straub Federnfabrik AG, Wants, Switzerland

Filed Jan. 4, 1993, Ser. No. 400

Claims priority, application Switzerland, Jan. 16, 1992, 00115/92

Int. Cl.[5] F16L *17/04*

U.S. Cl. 285—112 **9 Claims**



1. In a pipe coupling of the type comprising: an elastomer sealing sleeve of C-shaped cross section, said sealing sleeve defining a sleeve bar and a plurality of sealing lips supported on the sleeve bar to extend toward one another; a housing enclosing the sealing sleeve and defining a radially extending longitudinal gap such that the housing is discontinuously formed in a peripheral direction and the housing is contractible in the peripheral direction; said housing comprising a closing mechanism and an insert plate inserted between the sealing sleeve and the housing to bridge the longitudinal gap; said sealing lips, prior to compression of the housing, defining an inside dimension greater than an outside dimension of pipes to be coupled, and upon compression of the housing being able to be upset in the peripheral direction and thereby pressed snugly against respective pipes; the improvement comprising:

said housing having radial end walls;

a plurality of frustoconical clamping rings configured to converge toward a central region of the housing and restrained axially by the respective end walls;

said sleeve defining two faces, one face at each axial end thereof, each face comprising a conical, radially inner surface which converges toward the central region of the housing and is supported by the respective clamping ring, and an oppositely directed, conical, radially outer surface in its operable state;

at least one supporting ring positioned to support one of the faces of the sleeve, said supporting ring being of V-shaped cross section and contractible in the peripheral direction, said supporting ring comprising a radially inner flank disposed between the radially inner surface of the sleeve and the respective clamping ring, and a radially outer flank which supports the radially outer surface of the sleeve, said supporting ring discontinuous in the peripheral direction and comprising two end sections, said two end sections overlapping one another in the peripheral direction in the operable state.

5,310,224

PROCESS FOR MANUFACTURING A HOSE COUPLING COMPONENT INTENDED PARTICULARLY FOR A HOSE CONNECTION BETWEEN A TURBO UNIT AND AN AIR COOLER, AND A HOSE COUPLING COMPONENT OF THIS TYPE

Lars Tenglund, Henån, Sweden, assignor to AB Volvo, Göteberg, Sweden

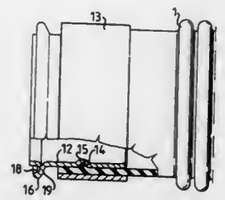
PCT No. PCT/SE91/00026, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO91/10859, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 16, 1991, Ser. No. 867,188

Claims priority, application Sweden, Jan. 16, 1990, 9000150-4

Int. Cl.[5] F16L *33/20*

U.S. Cl. 285—256 **6 Claims**



3. A hose coupling component, comprising:

a pipe sleeve having a first end and a second end;

a circumferential flange arranged on said pipe sleeve at the first end thereof;

said flange having a side facing toward said second end, wherein said side is inclined toward said first end;

a first circumferential groove arranged in said flange, said groove being open towards said first end of the pipe sleeve;

a second circumferential groove arranged around said pipe sleeve at a location between said flange and said second end.

5,310,225

CLAMPING CONNECTION MADE OF PLASTIC

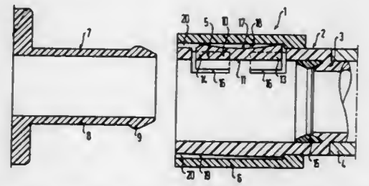
Hans-Werner Ruckwardt, Eisenberg, Fed. Rep. of Germany, assignor to TRW United Carr GmbH & Co., K G, Alsenborn, Fed. Rep. of Germany

Filed Apr. 27, 1993, Ser. No. 53,719

Claims priority, application Fed. Rep. of Germany, May 19, 1992, 4216518

Int. Cl.[5] F16L *37/10*

U.S. Cl. 285—308 **19 Claims**



1. In a releasable tube connection made of plastic including a sleeve-shaped central body having a first end connectable with a tube-shaped part and a second end axially receiving a junction piece having a circumferentially extending clamping rib and a rotatable clamping sleeve encircling the second end

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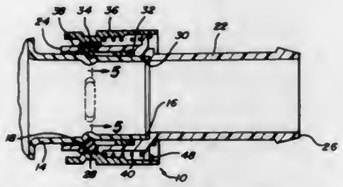
of the central body, the improvement wherein the central body includes at least two radially deflectable resilient locking tabs with cam surface means on the interior of the clamping sleeve for selectively deflecting the locking tabs radially inward to engage the junction piece, a first of the tabs located to engage closely adjacent the clamping rib to prevent axial withdrawal of the junction piece and a second of the tabs located at a position axially spaced from the first said tab to radially position and stabilize the junction piece in the central body.

5,310,226

QUICK CONNECT COUPLING FOR A FUEL TANK

Phillip J. Norkey, Jackson, Mich., assignor to Pilot Industries, Inc., Dexter, Mich.

Filed Mar. 18, 1993, Ser. No. 33,354
Int. Cl.[5] F16L *37/084*
U.S. Cl. 285—316 **5 Claims**



1. A quick connect fluid coupling for use with a fuel tank having an outwardly extending tubular and cylindrical nipple open to an interior of the tank, said nipple having a radially inwardly extending recess at a position spaced from an outer end of said nipple, said fluid coupling comprising:

a one-piece tubular and cylindrical body open at each end, said body being dimensioned to slidably extend over said nipple to a connected position, said body having a plurality of elongated and circumferentially spaced slots formed radially through said body, said slots registering with said nipple recess when said body is in said connected position,

a plurality of elongated arcuate retainers, each retainer having two spaced ends, one retainer being positioned in each slot in said body, said retainers being radially movable between an inner locked position in which a portion of said retainers are positioned in said nipple recess thereby locking said body to said nipple, and an outer unlocked position in which said retainers are positioned outside of said nipple recess thereby allowing said body to move axially relative to the nipple,

a tubular and cylindrical locking ring positioned coaxially around said body and axially movable between an extended and a retracted position, said locking ring having an inner cam surface which radially moves said retainers from said unlocked position to said locked position as said locking ring moves from said retracted to said extended position, said ring being freely slidable between said extended and said retracted position to enable selective engagement and disengagement of the coupling with the fuel tank,

means for resiliently urging said locking ring towards said extended position, and

means for fluidly sealing said body to said nipple when said body is in said connected position, wherein said body, said retainers and said locking ring are constructed of plastic, and

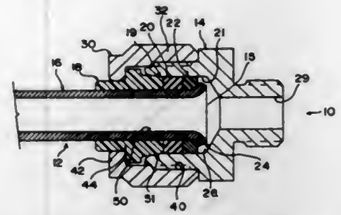
wherein each end of each retainer is curvalinearly formed so that, when viewed axially with respect to an axis of the body, each end of each retainer is generally S-shaped with a radially outer portion of each retainer having a greater circumferential length than a radially inner portion of each retainer.

5,310,227

HIGH PRESSURE FLEX FITTING

James J. Grinsteiner, Union, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Apr. 20, 1992, Ser. No. 870,990
Int. Cl.[5] F16L *19/00*
U.S. Cl. 285—354 **19 Claims**



1. A high pressure flex fitting assembly comprising:

a fitting body including a fluid passage therethrough, said fitting body having a wall defining an internal cylindrical cavity having an inside diameter communicating with said passage and having a threaded exterior surface; and

a tube assembly having an enlarged end disposed within said cavity and including a tube upon which a retainer ring, an elastomeric sealing member, a compression sleeve, and an internally threaded nut are disposed sequentially from said enlarged end of said tube assembly, said compression sleeve having a deformable cylindrical end portion disposed adjacent said elastomeric sealing ring, said cylindrical portion of said sleeve having an outer diameter larger than the inside diameter of said cavity wall, said threaded nut upon being engaged with said threaded fitting surface having an end flange operatively engaging said sleeve to push said sleeve into said cavity against the elastomeric sealing member to a point at which said compression sleeve is deformed and an interference fit between said sleeve and said cavity wall is obtained, and said elastomeric sealing ring having its inner and outer diameters of such dimension relative to said tube that upon insertion within said cavity, said elastomeric sealing ring becomes compressed to effect a seal between said elastomeric sealing ring and said cavity wall and between said elastomeric sealing ring and said tube.

5,310,228

SECURITY DOOR BOLTING MECHANISM

John F. Ellenberg, 1240 Sunset Ct., Herndon, Va. 22070

Filed May 13, 1993, Ser. No. 60,934
Int. Cl.[5] E05C *1/14*
U.S. Cl. 292—167 **12 Claims**

1. A latch bolt actuating mechanism for a door having a latch bolt mounted on its inner surface adjacent a top edge thereof in position to engage and cooperate with a fixed keeper above the door, the actuating mechanism comprising,

elongated strap means having a top end connected to the latch bolt for vertical movement therewith, said strap means extending downwardly from said latch bolt in juxtaposition to said inner surface of the door and terminating in a bottom end,

a rigid metal housing adapted to be releasably mounted on said inner surface of the door,

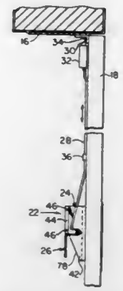
removable cover means mounted on said housing,

a bolt actuator connected to said bottom end in said housing,

shaft means extending through said housing and supporting said bolt actuator for pivotal movement about a horizontal axis parallel to said inner surface,

biasing means in said housing continuously urging said actuator means and said strap means in a direction to engage said latch bolt with said keeper,

said actuator including lever means extending from said housing in generally coplanar relationship with said removable cover means and in outwardly spaced relation to said inner surface in position to be pivoted about said shaft means toward and away from said inner surface, said lever means being operable upon movement toward said inner surface to move said strap means and said latch bolt connected thereto downwardly against the force of said biasing means to release the latch bolt from the keeper, and stop means for engaging said lever to limit the pivotal movement of said actuator to thereby limit the extent of downward movement of said strap means and said latch bolt, said stop means including lever engaging surfaces on said rigid metal housing.

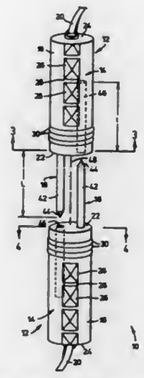


5,310,229

ICE EMERGENCY AID AND RECOVERY METHOD INCORPORATING SAME

David C. Hanson, 31 Doninion Road, Apartment #2, Etobicoke, Ontario M8W 1J5, Canada

Filed Feb. 19, 1993, Ser. No. 19,487
Int. Cl.[5] B63C *9/32*
U.S. Cl. 294—26 **10 Claims**



1. An ice emergency aid for use by a person who has fallen through the surface of a frozen body of water, comprising:

(a) a pair of support elements each having a first end and a second end;

(b) a hand grip located on each of said support elements;

(c) engaging means located on said first end of each of said support elements for engaging the surface of the frozen body of water, said engaging means comprising at least one tooth;

(d) connecting means located on said first ends of said support elements for releasably connecting said support elements together along a common axis with said first ends of said support elements facing one another so that said support elements when connected together form a single axially extending unit; and

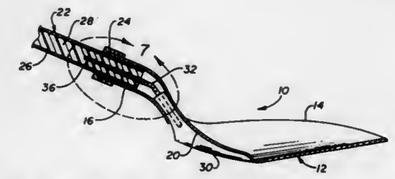
(e) a strap fastened to at least one of said support elements and forming a closed loop for carrying said aid by said person, said strap including a releasable joint for permitting severance of said strap, to enable said person to grip said hand grips as a unit in one hand and sever said strap, so that said person can then separate said support elements and then engage the surface of the frozen body of water with said engaging means.

5,310,230

CLOSED BACK SHOVEL AND METHOD OF ASSEMBLY

Joseph A. Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210, assignor to Joseph Allen Carmien, Beverly Hills, Calif.

Continuation of Ser. No. 757,670, Nov. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 712,690, Jun. 10, 1991, Pat. No. 5,123,304. This application Jan. 19, 1993, Ser. No. 6,127
Int. Cl.[5] A01B *1/22*
U.S. Cl. 294—49 **19 Claims**



1. A closed back shovel, comprising:

an open back shovel head including a blade portion, a back-side cavity in the blade portion, and a handle receiving socket extending rearwardly from the blade portion;

a composite tool handle having a forward end adapted for insertion into the handle receiving socket of the shovel head, the forward end including a thermoplastic section;

a frog situated within and configured to fill the back-side cavity of the blade portion; and

a tang having a first end secured to the frog, and a second end secured to the forward end of the tool handle, wherein the tang interconnects the frog and the forward end of the tool handle within the handle receiving socket to attach the tool handle to the shovel head and to prevent the tool handle and the frog from becoming disassociated from the shovel head.

5,310,231

SHOVEL DEPTH DETERMINER

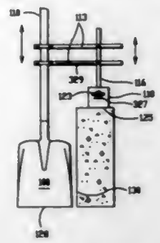
Glenn E. Burkhart, 4643 Oakbough Way, Carmichael, Calif. 95608

Filed Jul. 14, 1992, Ser. No. 912,990
Int. Cl.[5] A01B *1/02*
U.S. Cl. 294—59 **17 Claims**

1. An improvement to a shovel having a shovel blade and a handle extending from the shovel blade wherein the handle is connected to the shovel blade, the shovel blade and handle both having an upper and lower end and the shovel blade further having a front and back side and a right and left side, the improvement comprising a guide means for fixing the depth the shovel blade can clear away soil as a function of the distance between a stop surface of a previously constructed structure and the lower end of the shovel, said guide means locatable on the top surface of the previously constructed

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structure located parallel to the side of the shovel, means for adjustably connecting the guide means to the handle of the shovel, said connecting means both rotatably and slidably secured to the handle so that when the connecting means is loosened and not secured to the handle, the connection means

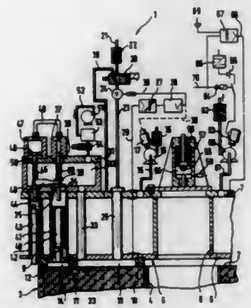


can be located along the shovel handle to determine the distance of the guide means above the shovel blade's lower end as a function of the top surface of the previously constructed surface and when desired rotated about the handle so that the guide means may be located on either the right or left side of the shovel blade.

5,310,232
VACUUM LIFTER

Adolf Schmidt, Duren, Fed. Rep. of Germany, assignor to Bartholomy & Co., Duren, Fed. Rep. of Germany

Continuation of Ser. No. 764,681, Sep. 25, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,596
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1990, 9013528
Int. Cl.[5] B66C *1/02*
U.S. Cl. 294—64.1 **18 Claims**

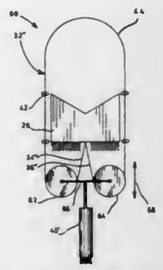


1. A vacuum lifter, comprising:
a) a suction plate assembly;
b) at least first and second seals projecting from sid assembly and defining therebetween a vacuum chamber;
c) a main vacuum source operatively associated with said assembly for applying a vacuum to said vacuum chamber;
d) an emergency vacuum source operatively associated with said assembly for selectively applying a vacuum to said vacuum chamber, said emergency vacuum source being electrically operable during application of the vacuum thereof;
e) means operatively associated with said vacuum chamber for monitoring the vacuum therein; and
f) means operatively associated with said monitoring means and with said emergency vacuum source for causing automatic electrical operation of said emergency vacuum source when said monitoring means detects in said vacuum chamber a vacuum pressure less than a preselected limit.

5,310,233
ROBOTIC END GRIPPER WITH A BAND MEMBER TO ENGAGE OBJECT

Roy E. Pollard, Maryville; Samuel C. Robinson, Knoxville; William F. Thompson, Oak Ridge; Scott A. Couture, Knoxville, and Bill J. Sutton, Powell, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Apr. 22, 1992, Ser. No. 872,152
Int. Cl.[5] B25J *15/00*
U.S. Cl. 294—86.4 **19 Claims**



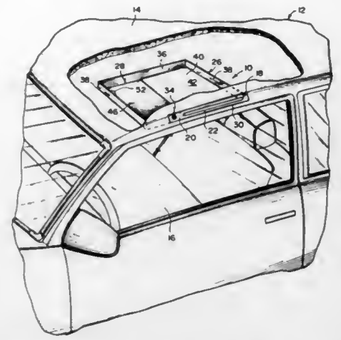
1. A gripper for use in grasping an object, said gripper comprising:
an anvil member, said anvil member being provided with a concave surface to contact a surface of said object;
a band member for movement relative to said anvil member, said band member having opposite end portions and a bight portion for encircling and engaging said object, said band member further having a thickness sufficiently thin so as to be substantially flexible and a sufficient width transverse to said thickness to substantially prevent droop of said bight portion when extended from said anvil member, said opposite end portions of said band member passing over at least one pulley member; and
actuator means engaged with said pulley member for moving said opposite end portions of said band member relative to said anvil member and therefore moving said bight portion of said band member relative to said concave surface to selectively engage and disengage said object between said bight portion of said band member and said concave surface of said anvil member.

5,310,234
VEHICLE MESSAGE BOX

David Klein, 190 Ross St., Apt. 1A, Brooklyn, N.Y. 11211

Filed Sep. 9, 1993, Ser. No. 118,518
Int. Cl.[5] B60R *5/00*
U.S. Cl. 296—37.7 **10 Claims**

1. A message box for a motor vehicle having a roof and a drivers seat, which comprises:
a) the roof having a small rectangular side aperture located near the drivers seat;
b) a side door in said side aperture of the roof, said side door having a narrow slot to allow messages and mail to be deposited therethrough;
c) a receptacle mounted to the underside of the roof within the motor vehicle above the drivers seat and adjacent said side door, so as to receive the messages and mail deposited through said narrow slot in said side door; and

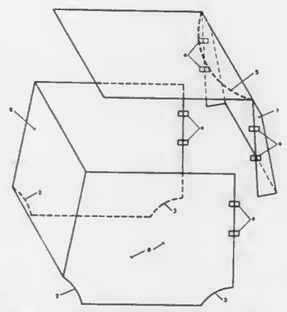


d) means in said receptacle for retrieving the messages and mail deposited therein.

5,310,235
GOLF CART WEATHERSHIELD

Timothy B. Seymour, P.O. Box 12354, Beaumont, Tex. 77726, and Jack H. Riley, P.O. Box 947, Beaumont, Tex. 77704

Filed Aug. 7, 1992, Ser. No. 925,779
Int. Cl.[5] B60J *9/00*
U.S. Cl. 296—77.1 **9 Claims**

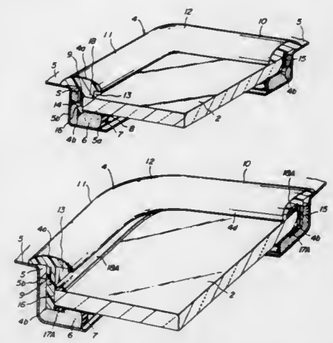


1. A weather-shield enclosure for a standard size gasoline or electric golf cart for protecting passenger and golf bag areas thereof from inclement weather, the weather-shield enclosure comprising:
(a) a surround sheet having a front portion and side portions for protecting a front and sides of the golf cart, respectively;
(b) a top-and-rear sheet having a top portion and a rear portion for protecting a top and a rear of the golf cart, respectively;
(c) means for permanently interconnecting the sheets to each other;
(d) means for releasably connecting the sheets together when the sheets are placed over the golf cart, wherein the releasably connecting means comprises hook-and-loop fastners at two predetermined locations on a rear of one of said side portions and at two predetermined locations on a portion of said rear portion adjacent said rear of said one of said side portions releasably connected together, respectively, and hook-and-loop fastners at two predetermined locations on a rear of another of said side portions and at two predetermined locations on a portion of said rear portion adjacent said rear of said other of said side portions releasably connected together, respectively; and
(e) an elastic sewn into and loosely stretched across the top-and-rear sheet to enable the enclosure to properly fit the golf cart when the sheets are placed over the cart;
wherein the sheets are translucent, and the weather-shield enclosure is flexible and has 360 degree visability.

5,310,236
MOLDING MEMBER FOR AUTOMOBILE WINDOW PLATE

Tatsuya Tamura, and Tetsuo Hotta, both of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Japan

Continuation of Ser. No. 603,551, Oct. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 423,055, Oct. 18, 1989, abandoned. This application Jun. 8, 1992, Ser. No. 895,231
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] B60J *10/02*
U.S. Cl. 296—93 **11 Claims**



1. A window molding member for automobiles having a body panel with an outer surface, a flange which is recessed from said outer surface, and a shoulder portion connecting said flange with said outer surface, a window plate mounted on said flange of the body panel, said window plate having an inner surface, an outer surface, a central region and a peripheral edge opposing said shoulder portion of the body panel so as to form a gap therebetween, said window molding member comprising:
an upper segment to extend along an upper edge of the window plate, a side segment to extend along a side edge of the window plate, and a corner segment to extend along a corner edge of the window plate and integrally and continuously connecting said upper and side segments with each other in a longitudinal direction of said window molding member, each segment comprising:
a main body covering the peripheral edge of the window plate from outside, said main body comprising first and second sections on each side of said main body, said first section being on the side of said outer surface of said body panel and said second section projecting over the peripheral edge of the window plate and toward its central region; and
a leg section which is integral with said main body, and projects from an inner side of said main body to extend into said gap, said leg section having means for defining a groove-like retainer on one side of said leg section, said retainer being engageable with said peripheral edge of the window plate, said retainer extending in the longitudinal direction of the window molding member, said retainer having an inner projecting means which is spaced by a first predetermined vertical distance from a peripheral

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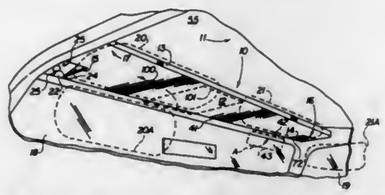
edge of the second section closest to said central region of said window plate along the upper segment of the window molding member and which is spaced by a second predetermined vertical distance from said peripheral edge of the second section along the side segment of the window molding member, said second predetermined vertical distance being greater than said first predetermined vertical distance, the arrangement being such that the peripheral edge of said second section of the main body for the upper segment substantially contacts the outer surface of the window plate, and the peripheral edge of said second section of the main body for the side segment defines a channel-like weir between the second section and the outer surface of the window plate, the flange of the body panel being at a third predetermined distance from the outer surface of the body panel at a first region which corresponds to the upper segment of the window molding member; the flange being at a fourth predetermined distance from the outer surface of the body panel at a second region which corresponds to the side segment of the window molding member; said fourth predetermined distance being greater than the third predetermined distance, and the second predetermined vertical distance along the side segment being greater than the first predetermined vertical distance by an amount which is substantially the same as the difference between the third and fourth predetermined distances.

5,310,237

STORAGE CONTAINER FOR INTERIOR OF MOTOR VEHICLE

James L. McCloy, II, Scottsdale, and Gregory J. Carr, Glendale, both of Ariz., assignors to Vehicular Accessories, Cleveland, Ohio

Filed May 4, 1992, Ser. No. 877,787
Int. Cl.[5] B60R 7/04; B60J 3/00
U.S. Cl. 296—97.5 **2 Claims**



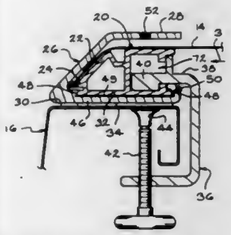
1. A storage container for the interior of a motor vehicle, said vehicle including
at least one sun visor including
a base,
a plurality of fastener holes formed through the base,
a visor,
a support arm pivotally mounted in the base and including a first portion extending through the base and a second portion extending outwardly from the base and the first portion to the visor, and
a plurality of fasteners each sized to pass through at least one of the fastener holes,
a ceiling including
a ceiling aperture shaped to receive said first portion of said support arm, and
a plurality of secondary apertures each spaced apart from the ceiling aperture and shaped to receive one of the fasteners so that the base of the sun visor can be removably attached to the ceiling by passing the end of each of the fasteners through one of the fastener holes in the sun visor base and into one of the secondary apertures, the support arm of the sun visor being mounted in the base such that when the base is attached to the ceiling and the support arm is pivoted in the base the visor follows a path of travel lying in a plane which is parallel to and spaced apart from the ceiling,
the storage container including
(a) an elongate shelf having an upper surface and a lower surface and first and second ends;
(b) an aperture formed through said first end and sized to permit the base of the sun visor to pass therethrough;
(c) a support surface attached to said upper surface of said elongate shelf above said aperture in said first end, said support surface being sloped with respect to said upper surface and including
(i) a primary aperture shaped to receive the first portion of the support arm of the sun visor, and
(ii) a plurality of auxiliary apertures each spaced apart from said primary aperture and from one another such that after the fasteners are removed from the base of the sun visor and the sun visor is removed from the ceiling, the base of the sun visor can be attached to said support surface by aligning the fastener holes in the base with said auxiliary apertures and passing fastening means through each fastener hole—auxiliary aperture pair,
said support surface being oriented such that when the base of the sun visor is attached to said support surface and the sun visor support arm is pivoted in the base, the visor follows a path of travel parallel to the ceiling of the motor vehicle; and,
(d) means for attaching said storage container to the ceiling of the motor vehicle.

5,310,238

MOUNTING APPARATUS FOR A TRUCK BED

Donald G. Wheatley, 4451 Ford Rd., Ann Arbor, Mich. 48105

Filed Jan. 29, 1993, Ser. No. 10,853
Int. Cl.[5] B60P 7/04
U.S. Cl. 296—100 **11 Claims**



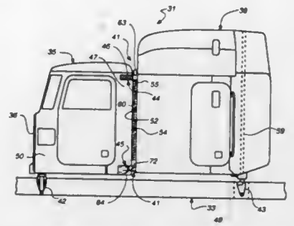
1. A mounting apparatus for attaching accessories to a vehicle cargo box, said cargo box having an upright wall with a generally horizontal top surface, said apparatus comprising:
a rail mounted to the cargo box above the top surface of the cargo box wall, said rail having an outer edge facing outwardly from the cargo box and means for attaching a tonneau cover also having an outer edge to said rail to extend across said cargo box substantially covering said rail;
a mounting bracket coupled to said rail and extending outwardly beyond the outer edge of the tonneau cover and upwardly above the tonneau cover, said bracket including means for attaching an accessory thereto above said rail and said tonneau cover; and
means for attaching said rail and said bracket to said cargo box wall.

5,310,239

MODULAR CAB AND SLEEPER STRUCTURAL ASSEMBLY FOR A TRUCK-TRACTOR VEHICLE

Charles E. Koske, Fremont; Huston R. Marlowe, Orinda; Jeffrey E. Paul, Union City; Richard D. Chapman, and James P. Bingaman, both of Fremont, all of Calif., assignors to PACCAR Inc, Bellevue, Wash.

Filed Feb. 22, 1993, Ser. No. 20,353
Int. Cl.[5] B60P 3/32
U.S. Cl. 296—190 **21 Claims**



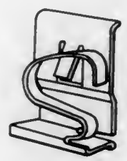
1. A modular cab/sleeper structural assembly for a truck-tractor vehicle comprising:
chassis frame means extending substantially longitudinal of the vehicle,
a cab portion having a cab structural assembly and being mounted to said chassis frame means by first mounting means positioned proximate a front end portion of said cab structural assembly;
a sleeper portion having a sleeper structural assembly positioned behind said cab portion and mounted to said chassis frame means by second mounting means coupled proximate a rear end portion of said sleeper structural assembly; and
coupling means coupled between said cab structural assembly and said sleeper structural assembly independently of said chassis frame means, said coupling means fixedly joining said sleeper structural assembly and said cab sleeper structural assembly together at discrete locations forming a substantially unified composite structure and causing said composite structure to function as an integral unit.

5,310,240

HOLDING DEVICE FOR VERTICALLY POSITIONING A WINDOW PANE

Guy Andre, Saint Savine; Daniel Boville, Paris, and Jean-Jacques Legat, St.-Jean de Moirans, all of France, assignors to A. Raymond & Cie, Grenoble, France

Filed Apr. 24, 1992, Ser. No. 873,022
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113844
Int. Cl.[5] B60J 1/04
U.S. Cl. 296—201 **6 Claims**



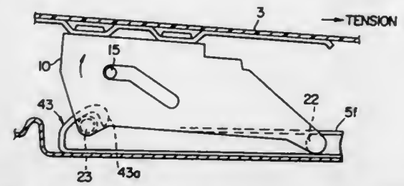
1. A holding device for vertically positioning a window pane in the window frame of a motor vehicle, comprising a retaining part adapted to be secured in a transverse part of the frame, a supporting part moveable with respect to said retaining part and adapted to engage with an edge of the window pane, and a spring acting between the supporting part and the retaining part for urging the supporting part in the direction of the plane of the window pane toward said edge, said retaining part including a pawl pivotally connected to it for movement between a holding position where it engages the supporting part and holds it and the spring in an initial tensioned position and a release position where it is located in a recess in the retaining part and allows the spring to urge the supporting part against the edge of said window pane, said pawl being resiliently biased toward the holding position and located so that it will be pushed into said release position by the window pane as the pane is being inserted into said window frame.

5,310,241

FLEXIBLE TOP VEHICLE

Seiichi Omoto, and Kenji Matsumoto, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 601,133, Oct. 23, 1990, abandoned.
This application Jan. 21, 1992, Ser. No. 824,736
Claims priority, application Japan, Oct. 23, 1989, 1-276239
Int. Cl.[5] B60J 7/12, 7/185
U.S. Cl. 296—219 **15 Claims**



14. A flexible top vehicle having a roof with a roof opening formed therein and surrounded by a front header, rear header and roof sides; and a flexible top made of a flexible material and disposed at the roof opening; wherein the flexible top is disposed so that it can assume a full close state in which the roof opening is fully covered with the flexible top by extending the flexible top to its full extended length in a longitudinal direction of a vehicle body and an open state in which the roof opening is partially opened by folding the flexible top in the longitudinal direction thereof so that the flexible top is disposed away from said front header and said rear header; comprising:
a first guide rail extending in the direction longitudinal to the roof sides;
a forward sliding member disposed at a forward end portion of said flexible top so as to be slidably transferable in the longitudinal direction thereof by guidance of said first guide rail;
a rearward sliding member disposed at a rearward end portion of said flexible top so as to be slidably transferable in the longitudinal direction thereof by guidance of said first guide rail;
a forward stopper means disposed at a front end of said first guide rail for receiving said forward sliding member and allowing the forward end portion of said flexible top to assume a forward closed state in which a forward portion of said roof opening is covered with the forward end portion of said flexible top;
a forward locking mechanism disposed at said forward stopper means and being capable of locking said forward sliding member by means of tension acting on the top in the direction to the rear of the vehicle when the forward sliding member is abutted with the forward stopper means;
a rearward stopper means disposed at a rear end of said first guide rail for receiving said rearward sliding member and allowing the rearward end portion of said flexible top to assume a rearward closed state in which a rearward por-

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tion of said roof opening is covered with the rearward end portion of said flexible top;

a rearward locking mechanism disposed at said rearward stopper means and being capable of locking said rearward sliding member by means of tension acting on the top in the direction to the front of the vehicle when the rearward sliding member is abutted with the rearward stopper means;

a driving means for driving said forward sliding and said rearward sliding member in said first guide rail;

a forward lifting mechanism disposed between a forward end portion of said first guide rail and the forward end portion of said flexible top, said forward lifting mechanism having a forward portion capable of assuming a tilted-up state in which the forward portion of said forward lifting mechanism and the forward end portion of said flexible top are tilted rearwardly and upwardly in said rearward closed state; and

wherein a distance (L1) between the forward stopper means and said rearward stopper means is longer than a maximum distance (L2) between said forward sliding member and said rearward sliding member when said flexible top is extended to its longest possible extent enough to cover said roof opening.

15. A flexible top vehicle having a roof with a roof opening formed therein and surrounded by a front header, rear header and roof sides; and a flexible top made of a flexible material and disposed at the roof opening; wherein the flexible top is disposed so that it can assume a full close state in which the roof opening is fully covered with the flexible top by extending the flexible top to its full extended length in a longitudinal direction of a vehicle body and an open state in which the roof opening is partially opened by folding the flexible top in the longitudinal direction thereof so that the flexible top is disposed away from said front header and said rear header; comprising:

a first guide rail extending in the direction longitudinal to the roof sides;

a forward sliding member disposed at a forward end portion of said flexible top so as to be slidably transferable in the longitudinal direction thereof by guidance of said first guide rail;

a rearward sliding member disposed at a rearward end portion of said flexible top so as to be slidably transferable in the longitudinal direction thereof by guidance of said first guide rail;

a forward stopper means disposed at a front end of said first guide rail for receiving said forward sliding member and allowing the forward end portion of said flexible top to assume a forward closed state in which a forward portion of said roof opening is covered with the forward end portion of said flexible top;

a forward locking mechanism disposed at said forward stopper means and being capable of locking said forward sliding member by means of tension acting on the top in the direction to the rear of the vehicle when the forward sliding member is abutted with the forward stopper means;

a rearward stopper means disposed at a rear end of said first guide rail for receiving said rearward sliding member and allowing the rearward end portion of said flexible top to assume a rearward closed state in which a rearward portion of said roof opening is covered with the rearward end portion of said flexible top;

a rearward locking mechanism disposed at said rearward stopper means and being capable of locking said rearward sliding member by means of tension acting on the top in the direction to the front of the vehicle when the rearward sliding member is abutted with the rearward stopper means;

a driving means for driving said forward sliding and said rearward sliding member in said first guide rail;

a rearward lifting mechanism disposed between a rearward end portion of said first guide rail and the rearward end portion of said flexible top, said rearward lifting mechanism having a rearward portion capable of assuming a tilted-up state in which the rearward portion of said rearward lifting mechanism and the rearward end portion of said flexible top are tilted rearwardly and upwardly in said rearward closed state; and

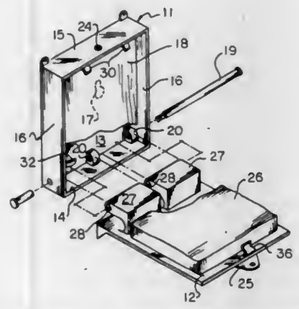
wherein a distance (L1) between the forward stopper means and said rearward stopper means is longer than a maximum distance (L2) between said forward sliding member and said rearward sliding member when said flexible top is extended to its longest possible extent enough to cover said roof opening.

5,310,242

PORTABLE INFANT SEAT

Kimberly A. Golder, 301 Edgewater Pines Dr., Warren, Ohio 44481

Filed Sep. 28, 1992, Ser. No. 952,322
Int. Cl.[5] A47D *1/10*
U.S. Cl. 297—14 **5 Claims**



1. A portable infant seat arranged for securement to a door, having a housing, the housing including a housing rear wall, a housing top wall spaced from a housing bottom wall, and spaced housing side walls, with the housing rear wall having a rear wall cushion positioned within the housing, and a rear wall aperture directed through the rear wall between the side walls, and the housing further having a housing lid, and

the housing including a hinge pin directed orthogonally through the side walls, and the housing lid having a plurality of hinge blocks to receive the hinge pin therethrough to hingedly mount to lid to the housing, and

the housing lid having a housing fastener web, and the housing top wall including a fastener member, wherein the fastener web is selectively secured to the housing member to secure the fastener lid in adjacency to the housing in a first position and permit release of the housing lid to orthogonally orient the housing lid relative to the housing rear wall in a second position, and

the housing lid includes a lid flange foot fixedly mounted to the housing lid in adjacency to the housing bottom wall, wherein the lid flange foot extends laterally beyond the lid for abutment with the door in the second position.

5,310,243

HEADREST SUPPORT ASSEMBLY FOR RECLINER CHAIR

James J. Pine, Tupelo, Miss., assignor to DBJU, Inc., Verona, Miss.

Filed Mar. 26, 1993, Ser. No. 37,409
Int. Cl.[5] A47C *1/037*
U.S. Cl. 297—61 **13 Claims**

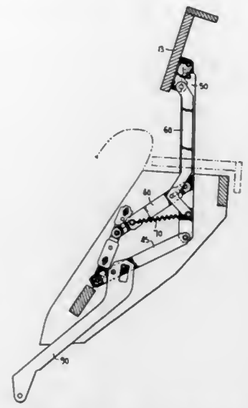
1. A support subassembly for a headrest support assembly for use in a recliner chair that includes a backrest, a backrest frame behind the backrest, a headrest and a carriage mecha-

nism capable of being shifted between a retracted condition and an extended condition, said support subassembly including

a mounting bracket to which said headrest can be attached,

a first support link pivotally connected at an upper end thereof to said mounting bracket,

upper and lower swing links connectable at first corresponding ends to said backrest frame and at corresponding second ends to said first support link, said upper swing link including an opening therein along a length thereof,



a second support link pivotally connected at an upper end thereof to said mounting bracket and including a pin which extends through said opening, and

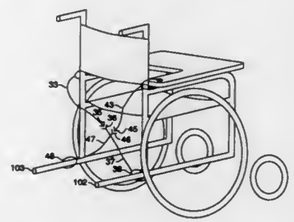
an actuator link connected at its upper end to one of said upper and lower swing links and connectable at its lower end to said carriage mechanism so as to cause said support subassembly to deploy when said carriage mechanism is shifted from a retracted condition to an extended condition and to retract when said carriage mechanism is shifted from an extended condition to a retracted condition.

5,310,244

LAPBOARD/PATIENT RESTRAINT DEVICE

Alvin G. Borgardt, 3124 N. Van Ness, Fresno, Calif. 93704

Filed Feb. 5, 1992, Ser. No. 831,179
Int. Cl.[5] A47C *7/68*
U.S. Cl. 297—153 **2 Claims**



1. In the combination of a lapboard and a chair, a combination comprising a lapboard fitted to a chair, said chair having two arms and a first and a second fixed portion, and said lapboard having a top and a bottom, the improvement comprising:

a first cleat secured to said lapboard and positioned below said lapboard to be generally parallel to and close to a first arm of said chair; and

a second cleat secured to said lapboard and positioned below said lapboard to be generally parallel to and close to a second arm of said chair; and

securing means connected to said lapboard and configurable to wrap around some portion of said chair, thereby securing said lapboard to said chair with each of said first and second cleats positioned generally close to said first and second chair arms, respectively,

said securing means including:

a left extension to said lapboard connected to and extending generally rearwardly from said lapboard, said extension having a left hole generally near the back of said left extension;

a right extension to said lapboard connected to and extending generally rearwardly from said lapboard, said extension having a right hole generally near the back of said right extension;

a left strap having two ends with a first end connected to said left hole;

a right strap having two ends with a first end connected to said right hole;

means for securing said left strap and said right strap to secure said lapboard to said chair such that an occupant of said chair cannot access or

operate said means for securing; said means for securing said left strap and said right strap including;

a loop on the second end of said left strap adapted to fit around a first fixed portion of said chair; and

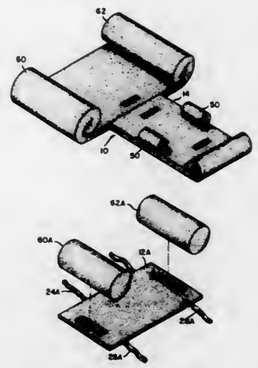
a loop on the second end of said right strap adapted to fit around a second fixed portion of said chair.

5,310,245

CUSHION SUPPORT APPARATUS FOR INFANTS

Christine Lyszczasz, 1113 Maltby Ave., South Plainfield, N.J. 07080

Continuation of Ser. No. 848,642, Mar. 9, 1992, abandoned. This application Oct. 13, 1992, Ser. No. 959,799
Int. Cl.[5] A47C *7/38, 7/52, 31/11*
U.S. Cl. 297—219.12 **9 Claims**



1. A cushion support apparatus for infants for use in cooperation with infant transport apparatus such as car seats and baby seats to maintain the infant's body and the infant's head in position, and to prevent them from tilting, said cushion support apparatus comprising:

a T-shaped planar cushion member having a facing side and an underside, said T-shaped planar member having an outer fabric shell and a cushioning layer disposed between said outer fabric shell, said T-shaped member defined by a cross member having a first end and a second end and a leg member having a first end and a second end, said leg member secured to said cross member along said first end of said leg member, perpendicularly to said cross member

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an equidistance from said first end and said second end of said cross member;

a plurality of first fastening means secured on said facing side of said cross member;

a plurality of second fastening means secured on said underside of said cross member, said first fastening means and said second fastening means cooperatively engageable to secure said first end and said second end of said cross member in holding relationship about the sides of said infant's head;

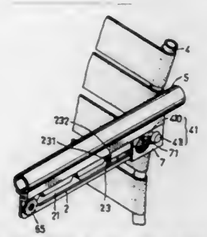
third fastening means secured on said facing side of said leg member, proximate to its lateral edges, said third fastening means for emovably securing lateral cushions on said facing side for lateral support of said infant's body sides.

5,310,246

LAWN CHAIR

Chun-Chu Tseng, No. 3, Ting-Hsi-Hsin, Lu-Man Tsun, Chu-Chi Hsiang, Chiayi Hsien, Taiwan

Filed Sep. 17, 1993, Ser. No. 123,910
Int. Cl.[5] A47C *1/024*
U.S. Cl. 297—359 **2 Claims**



1. A lawn chair including a seat frame with a rear end portion, a backrest frame with a lower end portion which is connected pivotally to said rear end portion of said seat frame, and two spaced arm support frames provided on two opposite sides of said backrest frame, each of said arm support frames having an armrest portion;

two elongated positioning members connected respectively and securely to said armrest portions of said arm support frames, each of said positioning members having a first longitudinal slot which has a front end, a rear end and a pair of upper and lower peripheries extending between said front and rear ends, a row of upwardly and rearwardly extending positioning notches which are formed along said upper periphery of said first longitudinal slot, and an access hole which is formed adjacent to said front end and which is communicated with said first longitudinal slot;

two opposed positioning studs respectively secured to two opposite sides of said backrest frame and extending through said first longitudinal slot of said positioning member so as to engage one of said positioning notches, each of said positioning studs having a neck and an enlarged head, said neck being sized so as to be slidable from said first longitudinal slot to said access hole, said enlarged head being sized so as to prevent removal of said stud from said first longitudinal slot and so as to be detachable from said access hole, thereby permitting said positioning stud to separate from said positioning member, wherein the improvements comprising:

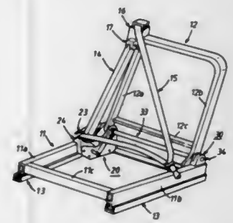
each of said positioning members further having a slide plate sleeved slidably thereon, said slide plate having a second longitudinal slot aligned with said first longitudinal slot and a through-hole which is formed adjacent to a front end thereof and which is formed adjacent to a front end thereof and which is formed integrally with and which is communicated with said second longitudinal slot, said through hole being sized so as to permit passage of said enlarged head of said positioning stud, said second longitudinal slot being sized to permit sliding movement of said neck of said positioning stud, said slide plate being capable of covering each of said positioning notches when sliding along said positioning member, thereby preventing said neck of said positioning stud from engaging thereinto, said through-hole being capable of exposing each of said positioning notches, thereby permitting said positioning stud to be engaged therein with said positioning stud being disposed within said through-hole of said slide plate while engaging a selected one of said positioning notches of said positioning member when said slide plate slides along said positioning member.

5,310,247

VEHICLE SEATS

Takashi Fujimori, Toyota; Kazuhisa Tatematsu, Nagoya; Kunio Nishiyama, Susono, and Takakazu Mori, Toyota, all of Japan, assignors to Araco K.K. and Toyota Jidosha K.K., both of Aichi, Japan

Filed Mar. 23, 1993, Ser. No. 35,578
Claims priority, application Japan, Mar. 23, 1992, 4-015185[U]; Jun. 5, 1992, 4-145492; Jun. 5, 1992, 4-145499
Int. Cl.[5] B60N *2/22*
U.S. Cl. 297—378.12 **3 Claims**



1. A vehicle seat having a backrest hinged to a seat squab frame to be tilted forwardly or backwardly with respect to the seat squab frame, comprising:

a single strut member rotatably connected at its upper end to an upper end of the backrest frame at one side thereof to be moved forwardly or backwardly;

resilient means mounted on the upper end of the backrest frame for biasing the strut member forwardly; and

a support member secured to or arranged to be locked to one side of the seat squab frame at the same side as the one side of the backrest frame for supporting the lower end of the strut member, the support member being formed with a semi-circular elongated hole of which the radius center is located at a rotation fulcrum of the strut member;

wherein the lower end of the strut member is slidably engaged with the semi-circular elongated hole and is normally positioned at a forward end of the elongated hole under load of said resilient means.

5,310,248

AUTOMATIC VEIN IDENTIFYING METHOD AND FOLLOWER APPARATUS FOR USE IN A ROBOT MINING SYSTEM

Robert H. King, Conifer, and Dale L. Lauer, Golden, both of Colo., assignors to Colorado School of Mines, Golden, Colo.

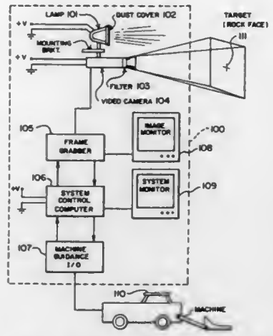
Filed Jul. 19, 1991, Ser. No. 712,707
Int. Cl.[5] E21C *35/24*; G01N *21/25*
U.S. Cl. 299—1.1 **24 Claims**

13. A method of automatically and dynamically identifying a vein of mineralization in a mine face comprising the steps of:

generating a broad spectrum beam of light, which beam of light is aimed at said mining face to illuminate said mining face;

producing, in response to said beam of light as returned from said illuminated mining face, with a camera an n * m pixel image, with each pixel being representative of a returned light level from a corresponding location on said illuminated mining face, where n and m are positive integers greater than 1;

interposing a selected one of a plurality of narrow bandwidth filters, each transmissive of only a predefined range of frequencies of light between said illuminated mining face and said camera to block the transmission of all of said returned light beam, except said narrow band of frequencies passed by said selected narrow bandwidth filter, from said illuminated mining face to said camera;



storing at least one mineral signature representative of the relative returned light level for a plurality of frequencies for a designated mineral;

comparing said returned light level for at least one of said n * m pixels for a plurality of images, produced by sequentially interposing each of a plurality of said narrow bandwidth filters between said illuminated mining face and said camera, with at least one of said stored mineral signatures; and

identifying, in response to said pixel for a predetermined number of said images being of illumination magnitude within a predetermined distance from said corresponding mineral signature value, the presence of said mineral in said mineral face at a location thereon corresponding to said pixel.

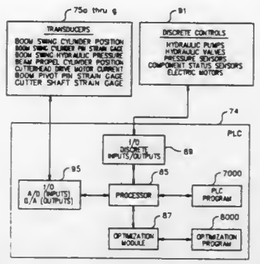
5,310,249

METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING A MINING MACHINE

David B. Sugden, Tasmania, Australia; John Turner, Renton, Wash.; Robert J. Boyd, Queensland, Australia; Thomas M. Hartman, Des Moines, Wash.; Gerald L. Dollinger, Bellevue, Wash., and John G. Moore, Puyallup, Wash., assignors to Z C Mines PTY LTD, Australia

Division of Ser. No. 701,503, May 16, 1991, Pat. No. 5,205,612.
This application Mar. 8, 1993, Ser. No. 27,828
Claims priority, application Australia, May 17, 1990, PK0197
Int. Cl.[5] E21C *35/24*; E21D *9/10*
U.S. Cl. 299—1.3 **21 Claims**

1. A method of controlling a mobile mining machine of the type having a cutting wheel rotatable about a horizontal axis by wheel drive means and traversable across a mining face in order to maximize its mined output including selectively controlling the kerf depth and kerf spacing such that the kerf ratio of kerf depth to kerf spacing approaches the optimum value for the rock being cut by continuously monitoring a sensing mining machine parameter and altering one or more of cutter penetration depth, cutter penetration rate, cutting wheel speed, and cutter slew rate based on one or more of a predetermined optimum cutter penetration depth value, a predetermined optimum cutter penetration rate value, a predetermined optimum cutting wheel speed value and a predetermined optimum



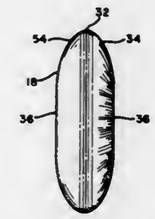
cutter slew rate value derived from said sensed mining machine parameter.

5,310,250

IN-LINE SKATE WHEELS

Stanley W. Gonsior, 14424 Lennell Dr., Minnetonka, Minn. 55345

Filed May 14, 1993, Ser. No. 62,312
Int. Cl.[5] B60B *5/02*
U.S. Cl. 301—5.3 **12 Claims**



1. An in-line skate wheel, comprising:

a radially symmetrical body, said body defined in cross section by:

an axial bore surface,

a first convex arcuate perimeter surface having a constant radius subsuming less than a 180 degree angle and having a first edge and a second edge wherein said first arcuate surface is radially disposed concentric to said axial bore,

at least one first convex transitional arcuate surface having a constant radius greater than said radius of said first arcuate perimeter surface and tangentially connecting to said perimeter surface at said first edge and radially disposed to said axial bore,

at least one second convex transitional arcuate surface having a constant radius greater than said radius of said first arcuate perimeter surface radius, said second convex transitional arcuate surface tangentially connecting to said perimeter surface at said second edge and radially symmetrically disposed relative to said axial bore,

a pair of spaced apart parallel sidewalls normal to said axial bore and each connecting to one of said first or second transitional arcuate surfaces to said axial bore surface and radially symmetrically disposed relative to said axial bore.

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5,310,251

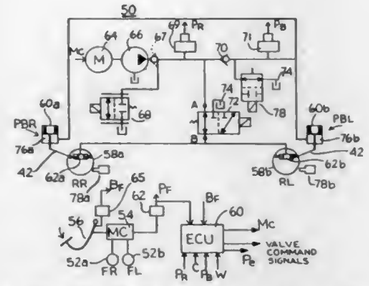
ELECTRO-HYDRAULIC SERVICE & PARKING BRAKE SYSTEM

Kenneth S. Towers, Royal Oak, and Daniel J. Patient, Sterling Heights, both of Mich., assignors to AlliedSignal Inc., Southfield, Mich.

Continuation of Ser. No. 962,164, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 691,935, Apr. 26, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 87,941

Int. Cl.[5] B60T *13/22*

U.S. Cl. 303—11 **17 Claims**



1. A system (**50**; **200**) for controlling service brake function of at least one wheel of a vehicle comprising:

electro-hydraulic means for providing a primary means of control of pressure build in a service brake, the electro-hydraulic means comprising:

an electric motor (**64**) drivingly connected to a hydraulic pump (**66**) for pressurizing hydraulic fluid; wherein the pump is communicated to at least one service brake (**58***a*,*b*), comprising a hydraulic cylinder (**62***a*,*b*), first means for controlling the speed of the motor (**64**) in proportion to operator braking activity (**56**, **65**, **62**), the motor and pump providing a primary source of pressurized fluid for service brake activation; and

flow means (**68**) for providing a variable area flow path through which a portion of hydraulic fluid exiting the pump (**66**) is communicated to a drain (**74**) so that when activated the motor and pump will continuously operate during times of pressure build in a manner to supply fluid through the variable area flow path as well as to activate the hydraulic cylinder and the flow means also providing a flow path to drain the hydraulic cylinder.

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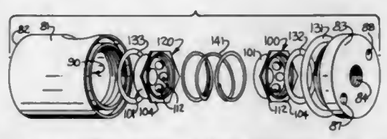
BRAKE VALVE ASSEMBLY FOR PURGING AIR FROM BRAKE LINES

Howard C. Stewart, Jr., High Point, N.C., assignor to Stewart Components, High Point, N.C.

Continuation of Ser. No. 14,700, Feb. 8, 1993. This application Jun. 28, 1993, Ser. No. 83,611

Int. Cl.[5] F16K *7/17*

U.S. Cl. 303—84.2 **21 Claims**



15. A brake valve assembly adapted to connect to a vehicle braking system for removing air from the brake lines therein, the brake valve assembly comprising a housing having a substantially cylindrical overall shape, having a first opening in an end of said housing adapted for connecting an inlet brake line thereto, a second opening in an opposite end of said housing adapted for connecting an outlet brake line thereto, said first and second openings being in substantial alignment, a third opening extending laterally of said first and second openings and positioned in a medial portion of said housing adapted for connecting a master cylinder of the braking system thereto, an expansion chamber positioned within said housing and accessible by all of said openings for receiving fluid therein, and first and second check valves positioned within said housing in communication with said expansion chamber and being in fluid communication with each other, said first check valve constructed for allowing fluid to flow therethrough in only one direction and through said first opening, and said second check valve constructed for allowing fluid to flow therethrough and through said second opening and in a common direction as the fluid flow through said first valve means, said first and second check valves facing in a common direction toward said second opening and each comprising a dome shaped outer housing having a plurality of holes therein and an inner housing having a lesser plurality of holes therein than said outer housing, said inner housing being positioned within said outer housing, resilient means positioned between said outer and inner housings and covering said plurality of holes in said outer housing so that fluid flow is prevented when flowing through said holes of said inner housing toward said outer housing and is allowed when flowing through said holes of said outer housing toward said inner housing, a coiled spring positioned between said first and second check valves and within said expansion chamber to maintain said check valves in a predetermined aligned position within said housing of the brake valve assembly.

5,310,253

BRAKING PRESSURE CONTROL DEVICE

Erhard Beck, Wellburg, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

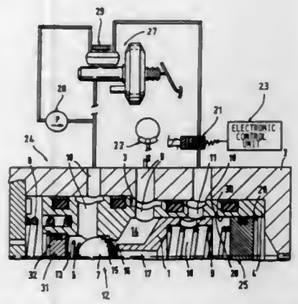
PCT No. PCT/EP91/01621, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO92/08632, PCT Pub. Date May 29, 1992

PCT Filed Aug. 26, 1991, Ser. No. 910,322

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1990, 4036583

Int. Cl.[5] B60K *28/16;* **B60T** *8/32, 8/40*

U.S. Cl. 303—113.1 **9 Claims**



1. A braking pressure control device for an automotive vehicle wheel brake system having an automatic control operating with hydraulic fluid, said wheel brake system including a master cylinder, at least one wheel brake cylinder, at least one normally open inlet valve controlling communication of said master cylinder and pump with said wheel cylinder and at least one normally closed outlet valve for said wheel cylinder allowing outflow of hydraulic fluid from said wheel cylinder to a low pressure region in the system, at least one motor-driven pump for generating pressurized hydraulic fluid, an electronic control unit, said pressure control device including means responsive to opening of said outlet valve and a resulting pressure drop in the outlet line of said wheel cylinder to close said inlet valve, said braking pressure control device comprising a valve housing, an inner piston, an outer stepped diameter piston having a larger diameter portion and a smaller diameter portion, said inner piston slidable within said outer piston, said outer piston slidable in said valve housing, said outer piston stepped diameter forming a piston step; a master cylinder pressure chamber defined in said outer piston with channels in said housing and said outer piston enabling pressurization of said master cylinder pressure chamber with hydraulic fluid from said pump or master cylinder, said inlet valve including an inlet valve seat formed in said outer piston adjacent said master cylinder pressure chamber and an inlet valve closure element carried within said outer piston in said master cylinder pressure chamber to be movable onto and off said valve seat, a spring urging said closure element onto said valve sat, a wheel cylinder pressure chamber defined in said outer piston and channel in said housing and outer piston allowing a fluid connection to said wheel cylinder, pressure in said wheel cylinder chamber exerted on said outer piston step, said master cylinder pressure chamber communicating with said wheel cylinder pressure chamber through said valve seat with said inlet valve closure element moved off said valve seat, an outlet chamber in said inner piston and channels in said valve housing, outer piston and inner piston allowing connection to a low pressure region of said system via said outlet valve, said channels in said housing and outer piston forming a control edge upon movement of said outer piston from an abutting position against said housing; a portion of said inner piston engagable with said inlet valve closure element upon movement towards said closure element to move said valve closure element off said valve seat, said inner piston portion configured to allow flow out of said wheel cylinder pressure chamber through said valve seat and into said wheel cylinder pressure chamber, an inner channel in said inner piston communicating said wheel cylinder pressure chamber with said outlet chamber with said inner piston portion moved out of engagement with said closure element, a spring in said outer piston urging said inner piston portion into engagement with said closure element, a control spring in said housing acting on said outer piston urging said outer piston towards said abutting position against said wheel cylinder chamber, pressure on said step in said outer piston directed so as to urge said outer piston away from said position abutting said housing.

5,310,254

LOCKER PROVIDING AN EFFICIENT VENTILATION OF ITS CONTENT

Michel Dallaire, Montréal, Canada, assignor to Decolam, Inc., Quebec, Canada

Filed Nov. 27, 1991, Ser. No. 799,382

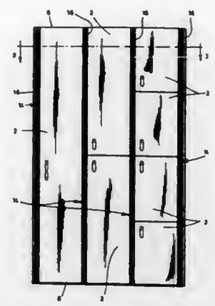
Int. Cl.[5] A47B *97/00*

U.S. Cl. 312—213 **5 Claims**

1. A locker comprising a back wall, a top wall, a front wall and two side walls to form a chamber, said front wall being provided with a door by which a user can have access to said chamber, said front wall forming with said side walls two lateral vertical edges having a length, said side walls respectively provided with two ventilating means along at least a portion of said length, said two ventilating means providing for air circulation inside said chamber;

in combination with at least another locker comprising a back wall, a top wall, a bottom wall, a front wall and two side walls to form another chamber, the front wall of said other locker being provided with a door by which the user can have access to said other chamber, the front wall and the side walls of said other locker forming two lateral edges having a length, said side walls respectively provided with two ventilating means along at least a portion of said length, said lockers having one of said side walls and one of said ventilating means that are common;

wherein each of said ventilating means are constituted of a wire mesh and wherein each of said lateral vertical edges is provided along all of said length with one of said wire meshes; and



wherein each said common wire mesh is an elongated member of U-shaped cross section having side sections facing respectively each of the two adjacent chambers, and having linking section interposed between the two adjacent front walls.

5,310,255

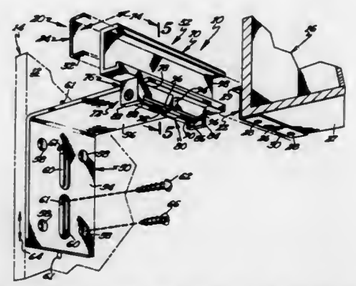
ADJUSTABLE DRAWER GUIDE MOUNTING APPARATUS

Paul A. Ranallo, 19915 County Rd. 81, Osseo, Minn. 55369

Filed May 18, 1992, Ser. No. 885,148

Int. Cl.[5] A47B *96/00*

U.S. Cl. 312—334.5 **16 Claims**



1. A mounting apparatus useable with a cabinet and drawer for mounting the drawer for sliding movement relative to the cabinet, the cabinet having a plurality of interior wall surfaces, said apparatus comprising:

a pair of drawer track assemblies, each said assembly including at least first and second members, said first member attachable to the drawer and said second member supportable within the cabinet and slidingly engaged with said first member for supporting the drawer and for sliding movement relative to said first member, said assemblies useable to support the drawer on opposite sides thereof; and

means for supporting each said second member within the cabinet, each said means for supporting including:

a mounting bracket, said bracket having a pair of arms angularly disposed relative to each other, a first one of said arms including means for mounting said bracket to the interior wall surface of the cabinet such that said second arm of said bracket extends inwardly from the cabinet interior wall surface;

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a carriage for supporting said second member in spaced relation to the cabinet interior wall surface, said carriage being slidably engaged with said second arm; and

means for selectively securing said carriage to said second arm at a predetermined position.

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APPARATUS FOR MIXING AND PROCESSING PLASTIC MATERIAL INCLUDING A DELIVERY PUMP

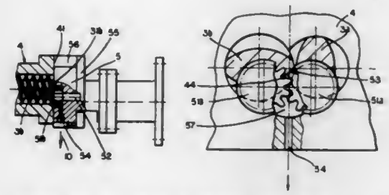
Hellmut Boden, Illingen, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 21, 1992, Ser. No. 871,402

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126390

Int. Cl.[5] B01F *7/08, 15/02*

U.S. Cl. 366—77 **5 Claims**



1. Mixing and processing apparatus comprising:

a mixing means for mixing a plastic material including a housing having an outlet end with an opening for delivery of mixed plastic material therefrom, a mixing element in said housing and drive means for driving said mixing element; and

a gear pump connected to said mixing means for receiving plastic material from said mixing means and for pumping the plastic material for discharge from the gear pump, said gear pump including a separate drive means independent of the drive means of the mixing element of said mixing means, said gear pump including a pump housing directly connected to the housing of said mixing means, said pump housing having a suction space which is in communication with said opening at the outlet end of the housing of the mixing means to receive plastic material from said outlet end directly, said mixing means comprising a horizontal extruder in which said mixing element comprises two rotatable screws in the housing of the mixing means, said housing of the mixing means including a flange against which the housing of the gear pump is directly engaged in face to face sealed relation; said gear pump including gears having faces confronting end faces of said two screws in close proximity, said gears of the gear pump having axes of rotation disposed at a lower level than axes of rotation of said screws such that a lower wedge region in a nip between said screws is horizontally aligned with a suction space formed at an upper nip between the gears of the gear pump so that plastic material is fed directly from said lower wedge region of the screws to the suction space of the gear pump.

5,310,257

MIXING APPARATUS

Anthony Altieri, Jr., Wheeling, and Melvin F. Sass, Park Ridge, both of Ill., assignors to Fluid Management Limited Partnership, Wheeling, Ill.

Filed Oct. 29, 1992, Ser. No. 968,389

Int. Cl.[5] B01F *9/00*

U.S. Cl. 366—208 **25 Claims**

1. Clamping fixture for slidable mounting between a pair of generally parallel spaced apart guide rails, comprising:

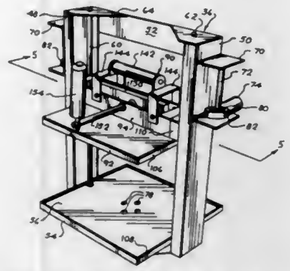
a pressure plate insertable between said guide rails;

at least two lock plates adjacent aperture for receiving a respective guide rail so as to slide along the guide rail, said aperture having a locking edge;

a bar extending between said lock plates, said bar having end portions for engaging said lock plates, with a central, cam-engaging portion therebetween;

an operating shaft movable between locked and unlocked positions, and having a cam mounting portion adjacent said central portion;

cam means mounted on the cam mounting portion and engaging the cam-engaging portion;



the cam-engaging portion of said bar including edge means defining an aperture for receiving the cam mounting portion of said operating shaft with said cam means engaging said edge means to displace said bar; and

displacement of said operating shaft moving said cam to displace the bar and move the lock plates so as to bring the locking edges into binding engagement with the guide rails to prevent movement of the pressure plate with respect to the guide rails.

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MACHINE FOR STIRRING PAINTS

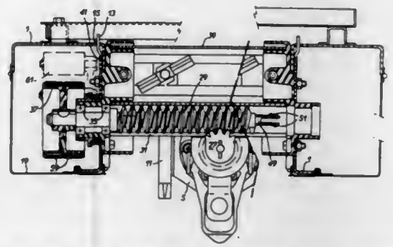
Jean Godat, Olivet, and Alain Krzywdzjak, Orleans, both of France, assignors to F.A.S. Fabrication d'Appareils Mecaniques Speciaux, St-Jean-le-Blanc, France

Filed Jan. 7, 1993, Ser. No. 1,332

Claims priority, application France, Jan. 7, 1992, 92 00068

Int. Cl.[5] B01F *7/06*

U.S. Cl. 366—251 **12 Claims**



1. Stirring machine for paints, comprising support racks (3) for cans of tints each provided with an upper stirrer lid (5), a mechanism for driving the stirrer lids on each of the racks, a stirrer shaft in each said can, the stirrer lids (5) each being provided with a motion take-up pinion (27) for operatively engaging the stirrer shaft of respectively each of the cans, said mechanism for driving the stirrer lids actuating a set of endless screws (29) mounted one on respectively each of the racks, said endless screws each meshing with the pinions (27) for driving the stirrer lids of a specific rack and being driven at a variable speed of rotation in dependence upon the range of the cans of tints of the racks.

5,310,259

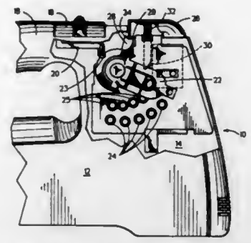
MIXER WITH LOCKOUT DEVICE FOR POWER BOOST SWITCH

David J. Wanat, Meriden, Conn., assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 2, 1993, Ser. No. 12,207

Int. Cl.[5] B01F *7/00*

U.S. Cl. 366—349 **4 Claims**



1. A mixer having a primary operating switch for connecting the mixer to a source of electrical energy and a secondary operating switch for selectively increasing the power of the mixer, said primary operating switch being movable between a first position whereat the mixer is disconnected from the source of electrical energy and a second position whereat the mixer is connected to the source of electrical energy, the primary operating switch including stop means, said secondary switch being movable between a first position whereat the mixer is operating at normal power and a second position whereat the mixer is operating at increased power, said stop means of said primary switch being disposed in the path of travel of said secondary switch when the primary switch is in said first position to prevent said secondary switch from being placed into said second position thereof, said stop means being displaced from said path of travel of said secondary switch when the primary switch is placed into its second position.

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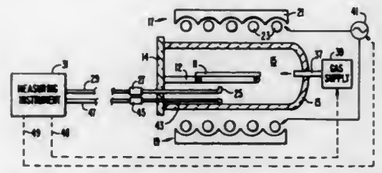
NON-CONTACT OPTICAL TECHNIQUES FOR MEASURING SURFACE CONDITIONS

Charles W. Schietinger, and Bruce E. Adams, both of Portland, Oreg., assignors to Luxtron Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 943,927, Sep. 11, 1992, which is a continuation-in-part of Ser. No. 507,605, Apr. 10, 1990, Pat. No. 5,154,512, which is a continuation-in-part of Ser. No. 692,578, Apr. 19, 1991, Pat. No. 5,166,080. This application Dec. 28, 1992, Ser. No. 999,278

Int. Cl.[5] G01J *5/08, 5/16*

U.S. Cl. 374—142 **33 Claims**



1. A system adapted to measure a characteristic of a surface of an article, comprising:

a source of electromagnetic radiation that contains a time varying ripple component,

means for directing said source electromagnetic radiation against said article surface,

first and second photodetectors each characterized by generating an electrical signal proportional to a level of electromagnetic radiation incident upon it,

means positioned with respect to the article for carrying to the first photodetector both a portion of source electromagnetic radiation reflected from said article surface and electromagnetic radiation emitted by said article surface within a bandwidth of the source electromagnetic radiation,

means positioned with respect to the source for carrying to the second photodetector a portion of source electromagnetic radiation substantially without any radiation reflected or emitted from said article surface, said source radiation carrying means including an elongated light pipe having a solid end thereof with either a convex shape or roughened surface that is oriented to gather source radiation therethrough, and

means receiving and combining the electrical signals from the first and second photodetectors for determining characteristic of the surface.

5,310,261

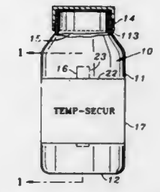
FLUID SPECIMEN CONTAINER

Sharon L. Blue, San Clemente, Calif., and Jacob W. Walker, Durham, N.C., assignors to Southern California Edison Company, Rosemead, Calif.

Filed Oct. 29, 1992, Ser. No. 968,385

Int. Cl.[5] A61J *9/02;* **G01K** *1/14*

U.S. Cl. 374—150 **27 Claims**



1. A container for a body fluid specimen comprising a base, a wall, and a neck, removable closure means for permitting opening and closing the container, temperature sensing means for sensing the temperature of fluid in the container and a temperature reading means for permitting determination of the temperature of fluid, and first and second removable means covering the temperature reading means whereby removal of the first means effects at least partial removal or destruction of the second means and wherein the temperature is readable by removal of at least part of the first means and at least part of the second means.

5,310,262

FLEXIBLE PACKAGE WITH AN EASY OPEN ARRANGEMENT

Lyle D. Robison, Sheboygan, Wis., and Robert C. James, Boaita Springs, Fla., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Jun. 2, 1992, Ser. No. 892,219

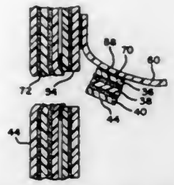
Int. Cl.[5] B65D *33/16*

U.S. Cl. 383—205 **13 Claims**

1. A flexible package arrangement forming a composite bag including an outer wall formed by a first flexible film laminate said first film laminate including a plurality of layers with at least an outer layer of biaxially oriented polyamide adhered to an inner layer of heat sealable material, said outer wall adapted to provide the main physical strength for the bag; an inner wall formed by a second flexible film disposed interior to and positioned adjacent said outer wall, said second film including at least an outer layer of polymeric material, heat seal compatible with said inner layer of said outer wall, an inner layer of polymeric material, heat seal compatible with itself and a middle

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layer of ethylene vinyl alcohol, said inner wall being resistant to oils and moisture and providing high gas, vapor and aroma barrier properties to thereby protect the integrity of product disposed within said package, said outer wall and said inner wall folded over at one side and aligned such that said inner layer of said inner wall is folded over on itself; and a seal



formed along at least one edge of said bag sealing said inner layer of said inner wall to itself and sealing said outer layer of said inner wall to said inner layer of said outer wall thereby forming an interior chamber for product to be contained therein and forming a composite bag with inner and outer walls adhered to each other along said seal but freely slidable with respect to each other at other locations.

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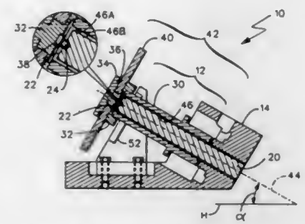
SELF-ACTING AIR BEARING FOR HIGH SPEED LASER SCANNER

J. Kelly Lee, Rochester; Haribhajan S. Kocher, Penfield, and R. David Burns, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1991, Ser. No. 815,719

Int. Cl.[5] F16C *32/06*

U.S. Cl. 384—100 **14 Claims**



1. An improved self-acting cylindrical air bearing system for rotation of a beam deflection means, comprising:

a bearing spindle;

a bearing sleeve received by the spindle, the spindle and sleeve having respective bearing surfaces displaced by a bearing gap, and at least one bearing surface being subject to rotation with respect to the other bearing surface; and

a residual layer of boundary lubricant formed on at least one of the first and second bearing surfaces.

5,310,264

METHOD FOR IMPROVING THE TRANSIENT THERMAL PROPERTIES OF AIR-LUBRICATED HYDROSTATIC BEARINGS FOR THE MAIN SPINDLES OF PRECISION MACHINE TOOLS

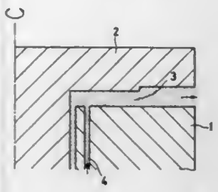
Nozomu Mishima, Tsukuba; Kiyoshi Mizuhara, Tokyo; Yuichi Okazaki, Tsukuba, and Norimitsu Ozawa, Tsuchiura, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,421

Claims priority, application Japan, Mar. 5, 1992, 4-83418

Int. Cl.[5] F16C *29/04*

U.S. Cl. 384—100 **2 Claims**



1. A method for improving the transient thermal properties of air-lubricated hydrostatic bearings for the main spindles of precision machine tools, comprising the steps of:

installing an entire precision machine tool that has a main spindle with an air-lubricated hydrostatic bearing in a temperature-controlled constant-temperature environment, and

supplying the air-lubricated hydrostatic bearing of said main spindle with lubricating air of a temperature higher than the temperature of said constant-temperature environment from the start of operation of said main spindle until the thermal displacement of said main spindle reaches a previously-determined target value, and

once the thermal displacement of said main spindle reaches the target value, supplying the air-lubricated hydrostatic bearing of said main spindle with lubricating air of a temperature lower than the temperature of said constant-temperature environment.

5,310,265

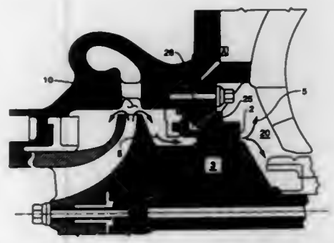
AXIALLY FED HYDROSTATIC BEARING/SEAL

Maynard L. Stangeland, Thousand Oaks, and Robert F. Beatty, West Hills, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 15, 1993, Ser. No. 76,885

Int. Cl.[5] F16C *32/06;* **F01D** *11/08*

U.S. Cl. 384—100 **13 Claims**



1. An axially fed hydrostatic bearing and annular seal comprising,

a journal annularly circumscribed by a hydrostatic bearing,

the hydrostatic bearing having a high pressure end and a low pressure end,

a source of high pressure fluid at the high pressure end of the bearing, where the fluid is forced to flow axially along the journal between the journal and the bearing and exiting to the low pressure end of the hydrostatic bearing,

the fluid flow thereby providing a restoring force to the journal when it deviates from the center of the hydrostatic bearing.

5,310,266

ROLLING-CONTACT BEARING ASSEMBLY WITH DATA SENSOR

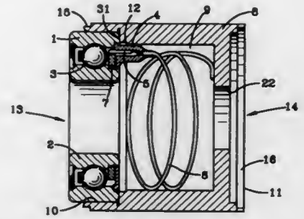
Isabelle Coux, Seynod; Claude Sonnerat, Annecy Le Vieux; Roger Dumas, La Balme de Sillingy, and Roger Chalansonnet, Annecy, all of France, assignors to The Torrington Company, Torrington, Conn.

Filed May 21, 1993, Ser. No. 65,717

Claims priority, application France, Feb. 5, 1993, 93 01283

Int. Cl.[5] F16C *33/78;* **G01P** *3/44*

U.S. Cl. 384—448 **11 Claims**



1. A rolling-contact bearing assembly including a data sensor, the rolling-contact bearing assembly comprising:

a fixed ring;

a rotating ring;

rolling elements in contact with said rings;

a packing mounted on the fixed ring;

sensor means supported by said packing;

encoding means mounted on the rotating ring; and

a protective casing for the sensor means and its connection with a feed cable, the casing having a chamber for holding the cable extending axially between a recess for receiving the fixed ring and a bottom wall of the casing.

5,310,267

ANTIFRICTION BEARING FOR USE IN APPARATUS FOR DAMPING FLUCTUATIONS OF TORQUE IN POWER TRAINS OF MOTOR VEHICLES

Johann Jäckel, Baden-Baden, and Albert Albers, Bühl, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 891,599

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1991, 4118079; Aug. 2, 1991, 4125656

Int. Cl.[5] F16C *33/66, 33/76*

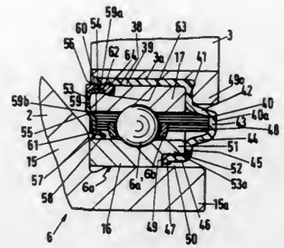
U.S. Cl. 384—462 **32 Claims**

1. A bearing for use between first and second rotary components, comprising:

an outer race;

an inner race which is coaxial with, at least partly surrounded by and disposed radially inwardly of said outer race, and

an enclosure including a first wall between said outer race and one of said components, a second wall extending from said first wall inwardly along an axial end of said outer race to an axial end of said inner race and a third wall which is surrounded by said inner race, said second wall



having a lubricant-confining pocket extending substantially axially of said races and away from said axial ends.

5,310,268

MULTI-ROW ANTIFRICTION BEARING

Werner Schlereth, Schweinfurt, Fed. Rep. of Germany, assignor to FAG KugelFischer Georg Schafer KGaA, Fed. Rep. of Germany

Filed Mar. 15, 1993, Ser. No. 31,579

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 9204957

Int. Cl.[5] F16C *43/00*

U.S. Cl. 384—537 **19 Claims**

1. An antifriction bearing having an outer ring, an inner ring inside the outer ring, two axially spaced rows of rolling bearing elements between the outer and inner rings;

the outer ring have a radially outer periphery; a main groove defined in the periphery of the outer ring axially between the rows of rolling elements, the main groove having and being defined by edges of the main groove at the periphery of the outer ring;

a secondary groove axially adjoining the main groove and defined in the periphery of the outer ring; the secondary groove having the shape of a circular segment opening wider toward the periphery of the outer ring; the secondary groove having a cross section of about one-third the size of the cross section of the main groove.

5,310,269

ROLLER BEARINGS

Frank P. Wardle, Bodegraven, Netherlands, and Mark A. Harris, Newark, United Kingdom, assignors to RHP Bearings Limited, Newark, United Kingdom, a part interest

Filed Jun. 5, 1992, Ser. No. 853,712

Claims priority, application United Kingdom, Oct. 6, 1989, 8922563.5

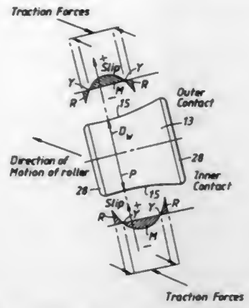
Int. Cl.[5] F16C *33/36*

U.S. Cl. 384—568 **13 Claims**

1. A roller bearing comprising inner and outer rings (**11, 12**) and a complement of rollers (**13**) therebetween each roller

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having an eternal surface (15) with an axial profile which is substantially concave and the inner and outer rings having raceways (21) with surfaces (16, 17) with axial profiles which are substantially convex and match the shape of the rollers; characterized in that each roller (13) has an external surface

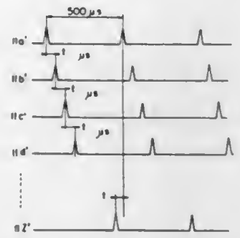


(15) which is asymmetrical relative to the center of the roller and the concave and convex surfaces contact one another over contact zones (20) such that during use resultant frictional moments generated in the contact zones between the inner and outer rings and the rollers provide positive skew to the rollers to control the tracking motion of the rollers.

5,310,270
PRINTING METHOD FOR DOT IMPACT TYPE SERIAL PRINTER

Hiroyuki Matsukura, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Continuation of Ser. No. 763,704, Sep. 23, 1991, abandoned. This application May 5, 1993, Ser. No. 56,949
Claims priority, application Japan, Sep. 21, 1990, 2-253724
Int. Cl.[5] B41J *2/22, 29/10*
U.S. Cl. 400—121 **2 Claims**

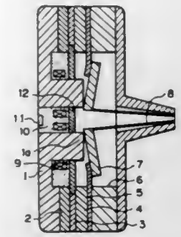


1. A method for driving a plurality of print wires arranged on a print head of a dot impact type serial printer which includes a platen, said method comprising the steps of:
determining a time required for a surface wave, caused by impact of tips of said print wires on said platen, to pass across said platen in a lengthwise direction of said platen;
determining an interval for driving successive ones of said print wires based upon said time required for said surface wave to pass across said platen in said lengthwise direction, wherein said interval is less than one-half of said time in which said surface wave passes said platen in said lengthwise direction; and
driving successive ones of said print wires at said interval.

5,310,271
SOLENOID ACTUATOR

Hirokazu Andou; Hideaki Ishimizu; Mitsuru Kishimoto, and Masayuki Ishikawa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,857
Claims priority, application Japan, Apr. 30, 1991, 3-128543
Int. Cl.[5] B41J *2/235*
U.S. Cl. 400—124 **7 Claims**

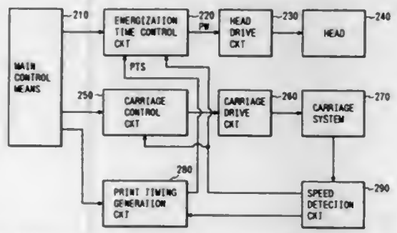


1. A solenoid actuator having a longitudinal axis comprising:
a core member having an annular portion defining an internal axial cavity surrounding said longitudinal axis, said core member being composed of a ferromagnetic substance;
an exciting coil wound around said core member;
an armature disposed adjacent said core member and coaxial with said longitudinal axis;
lubricating oil located between said core and said armature; and
an internal filler positioned within the cavity in said core member for fixing the exciting coil to the core member, said internal filler being composed of silicone resin oversaturated with an oil having the same composition as said lubricating oil and providing additional lubrication to the armature.

5,310,272
PRINTER TIMING CONTROLLER AND METHOD

Katsuhiko Nishizawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,705
Claims priority, application Japan, Jul. 22, 1991, 3-180989; Aug. 8, 1991, 3-199255; Oct. 28, 1991, 3-281193; Jun. 16, 1992, 4-156806
Int. Cl.[5] B41J *2/23*
U.S. Cl. 400—279 **6 Claims**

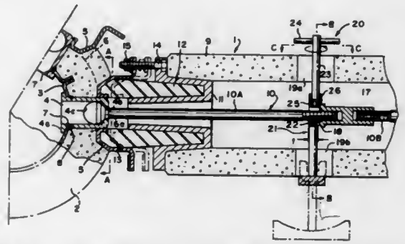


1. A method for generating a print timing signal for a printer having a detector which outputs a detect signal, each time a printhead carriage including a printhead and head pins moves a predetermined distance towards printing paper, said method comprising the steps of:
generating successive basic timing signals in accordance with detect signals output by the detector, said basic timing signals each having a signal cycle corresponding to a current print mode of the printer, said basic timing signals being generated at intervals corresponding to a greatest common measure of a plurality of print dot pitches which correspond to a plurality of print modes;
determining a correction value corresponding to the carriage moving speed based on the signal cycle of the detect signal and from a preceding signal cycle equal to a predetermined time of the head pin arriving at the printing paper; and
correcting the signal cycle of said basic timing signal in accordance with said correction value and outputting a print timing signal corresponding to the corrected signal cycle.

5,310,273
JOINT FOR TRUSS STRUCTURE

Yukio Hara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka; Mitsui & Co., Ltd., Tokyo and Nakamura Kensetsu Kabushiki Kaisha, Sizuoka, all of Japan

Filed Jul. 9, 1992, Ser. No. 910,241
Claims priority, application Japan, Jul. 9, 1991, 3-193684; Jul. 9, 1991, 3-193686; Jul. 9, 1991, 3-193687
Int. Cl.[5] E02D *29/00*
U.S. Cl. 403—171 **40 Claims**



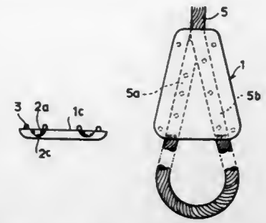
15. A joint structure for removably attaching a ball member having an outer surface to an end of a bar member to form a truss structure comprising:
a) an engagement member attached to the ball member, the engagement member having an outer portion engageable from exteriorly of the ball member;
b) attachment means operatively associated with the bar member and removably engaged with the outer portion of the engagement member from the exterior of the ball member so as to removably attach the ball member to the end of the bar member;
c) a tension rod extending through the bar member; and,
d) tension adjusting means operatively associated with the tension rod.

5,310,274
LOCK STRUCTURE FOR FLEXIBLE LINE

Makoto Arakawa, Tokyo, Japan, assignor to Kabushikigaisha Heisei, Tokyo and Hayashi Kabushikigaisha, Osaka, both of Japan

Filed Oct. 23, 1992, Ser. No. 966,010
Claims priority, application Japan, Dec. 13, 1991, 3-110029
Int. Cl.[5] F16B *11/00;* **A44B** *17/00*
U.S. Cl. 403—209 **7 Claims**

1. A lock structure for a flexible line, comprising:
a first trapezoidal lock half having a flat surface with a first V-shaped groove, as viewed in top plan, formed therein;
a second trapezoidal lock half having a flat surface with a second V-shaped groove, as viewed in top plan, formed therein, said second V-shaped groove being identical to said first V-shaped groove for fitting-opposite said first V-shaped groove and for positioning of said line therebetween;
a plurality of sharp-pointed projections formed in each of said first and second V-shaped grooves for penetrating and securing said flexible line within said grooves;
a plurality of engaging projections formed on said flat surface of said first lock half;

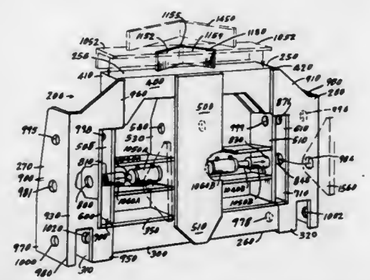


a plurality of receiving holes formed in said second lock half arranged so as to receive said engaging projections therein and to align said first and second lock halves with said flat surfaces in contact with one another and with said first and second grooves aligned opposite one another.

5,310,275
UNIVERSAL COUPLER

Estel L. Lovitt, 2266 Brendon Way, Sylvania, Ohio 43560

Filed Nov. 30, 1989, Ser. No. 443,746
Int. Cl.[5] E02F *9/00*
U.S. Cl. 403—322 **5 Claims**



1. A universal coupling device attached to the front end of a motor vehicle for attachment of various work implements to said work vehicle, said coupling device comprising:
(a) a longitudinally extending base support member having a longitudinal central axis;
(b) first vertical main support member and second vertical main support member, each said vertical main support member having an upper portion and a lower portion, both said vertical main support members being vertically disposed parallel to one another in tandem fashion, both said main vertical support members being integrally affixed on their respective lower portions to said base member, said first vertical main support member and said second vertical main support member each having a transverse opening in the upper portion wherein said transverse opening in the upper portions of said first and second vertical main support members are coaxially aligned along a common axis, and wherein said first vertical main support member and said second vertical main support member each having a second transverse opening disposed in a portion of the vertical main support members at a portion of said vertical main support members above

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said base support member, said second transverse openings in such respective vertical main support members being coaxially aligned along a common axis;

(c) a first secondary vertical support member and a second secondary vertical support member with the first such secondary vertical support member being integrally affixed to and in a position immediately outboard of said first vertical main support member, and said second secondary vertical support member being integrally affixed to and in a position immediately outboard of said second vertical support member, said first and second secondary vertical support members each having three sets of openings therein, each set aligned along a common axis, with one such set being adapted to hold a removable shaft;

(d) a longitudinally extending circular shaft member affixed to the first main vertical support member and disposed between said first main vertical support member and said first secondary vertical support member, said circular shaft member being adapted to be inserted reciprocally in the first transverse openings of said first secondary vertical support member, said circular shaft member being adapted to connect to an ear on the rear portion of the attached work implement.

5,310,276

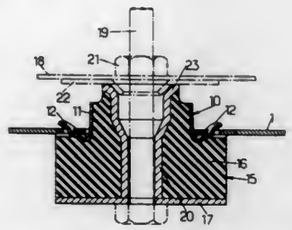
CONNECTION DEVICE BETWEEN TWO MECHANICAL COMPONENTS

Jeffrey L. Bergers, Grand Rapids, and Terry L. Houston, Walker, both of Mich., assignors to Hutchinson, Paris, France

Filed Dec. 21, 1992, Ser. No. 993,836

Int. Cl.[5] F16B 7/00; F16C 27/00

U.S. Cl. 403—349 **9 Claims**



1. An elastic suspension mount for providing an elastic connection to a vehicle body comprising:

a subframe component to be attached to the vehicle body;

a sheet metal component;

an armature plate;

a rigid through-tube extending from said armature plate and through said sheet metal component;

a mass of elastic material bonded around said through-tube and between said sheet metal component and said armature plate;

a connection means between said subframe component and said sheet metal component for locking said components against one another along a common joining plane and against rotation with respect to an axis perpendicular to the joining plane, said connection means being effected by a relative rotation of said components in a predetermined direction of rotation about the axis and including

(a) in one of said components, at least one key-hole in a shape of an arc of a circle centered on the axis and having

a first arched zone radially having a first width,

a second arched zone radially having a second width smaller than the first width, said second zone following said first zone in the direction of rotation, and

a third zone arranged between said first zone and said second zone, said third zone having a width which decreases progressively in the direction of rotation from a maximum equal to the width of said first zone to a minimum which is at most equal to the width of said second zone, and

(b) the other of said components having at least one elastic locking tab suitable for engagement in said first zone as said components are brought against one another, said locking tab having a width in a radial direction which is slightly less than the width of said first zone but greater than the width of said second zone so that relative rotation of said components about the axis in the direction of rotation effects the locking of said components to one another; and

a bolt and nut, said bolt passing through said through-tube and the vehicle body so that said bolt and nut attach said sheet metal component to the vehicle body.

5,310,277

MEANS AND NET FOR SLOWING DOWN AND/OR STOPPING THE MOTION OF A LAND VEHICLE

Jarmo Uotila, Lepsämä , Finland, assignor to Arrestarum Ltd., Klaukkala, Finland

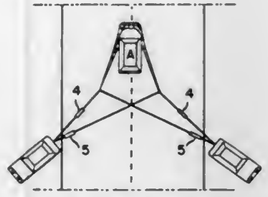
PCT No. PCT/FI89/00213, § 371 Date Jul. 2, 1991, § 102(e) Date Jul. 2, 1991, PCT Pub. No. WO90/05809, PCT Pub. Date May 31, 1990

PCT Filed Nov. 21, 1989, Ser. No. 689,844

Claims priority, application Finland, Nov. 22, 1988, 885396; May 2, 1989, 892100

Int. Cl.[5] E01F 13/00, 15/00

U.S. Cl. 404—6 **18 Claims**



1. A device for impeding the motion of a land vehicle, comprising:

a net having a first end and a second end, said ends being separated to provide an elongated net arranged for grabbing a moving vehicle;

first brake means including a first end brake member attached to said net first end and attached to a substantially fixed anchoring point on a first end side of said elongated net and a second end brake member attached to said net first end and attached to a substantially fixed anchoring point on a second end side of said elongated net for braking said net; and

second brake means including a first end brake member attached to said net first end and attached to said substantially fixed anchoring point on said second end side of said elongated net and a second end brake member attached to said net second end and attached to said substantially fixed anchoring point on said first end side of said elongated net for braking said net, said first brake means includes means for slowing down motion of said vehicle, and said second brake means includes means for further slowing down and stopping motion of said vehicle, said first brake means first end brake member and second end brake member are of a length which is shorter than said second brake means first brake member and second brake member allowing said first and second brake means to function stepwise with said first brake means braking said net first and said second brake means braking said net second.

5,310,278

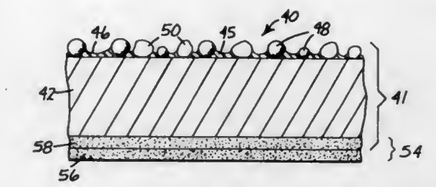
PAVEMENT MARKERS WITH SILICONE ADHESIVE

James M. Kaczmarczik, Saint Paul; James E. Lasch, Oakdale; Gregory F. Jacobs, Woodbury, all of Minn.; David C. May, Roberts, Wis., and Daniel J. Willie, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 662,773, Feb. 28, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,451

Int. Cl.[5] E01D 19/00, 19/06

U.S. Cl. 404—14 **3 Claims**



1. A pavement marker having an upper surface useful as a pavement marking indicium and comprising a layer of polyorganosiloxane pressure-sensitive adhesive wherein said adhesive is characterized by a 90° peel strength of from 1.8 to 10.5 Newtons per centimeter width from stainless steel at a peel rate of 54 centimeters per minute at 21° C. and more than 0.4 Newton per centimeter width at 2° C. when coated as a 76 micrometer layer on a 51 micrometer polyester backing.

5,310,279

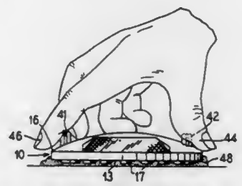
PAVEMENT MARKERS WITH FRANGIBLE INSTALLATION TABS

Henry Lindner, Elgin, Ill., assignor to Elgin Molded Plastics, Inc., Elgin, Ill.

Filed Nov. 19, 1992, Ser. No. 978,866

Int. Cl.[5] E01F 9/04

U.S. Cl. 404—14 **18 Claims**



1. A pavement marker comprising

a solid flattened body comprised of plastic and having

a perimeter,

a generally convex top, and

a generally planar bottom; and

tab means

said tab means being integral with and outstanding from said top, and in inwardly spaced relationship to said perimeter,

said tab means being cooperatively engagable at outer regions thereof by clamping between a thumb tip and at least one finger tip of a hand so that said body is supportable by compression force exerted between said thumb and said finger(s), said tab means being relatively rigid in the direction of said compression force, and

said tab means also being brittle and breakable adjacent said top responsive to a relatively small bending force applied against said outer regions in a different direction from that in which said compression force is exerted.

5,310,280

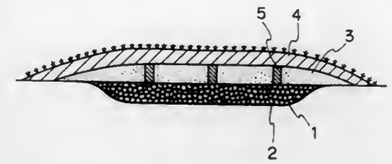
SUBSOIL STRUCTURE FOR SODDED GROUND

Hiroshi Hara, Amagasaki, Japan, assignor to Parumo Kabushiki Kaisha, Amagasaki, Japan

Filed Oct. 8, 1992, Ser. No. 957,910

Int. Cl.[5] E02B 11/00

U.S. Cl. 405—38 **5 Claims**



1. A subsoil structure for storing water beneath sodded ground to reduce the frequency of needed watering, said subsoil structure comprising a pan-like cavity, a water-retaining layer filling the pan-like cavity for storing water therein with no drain pipes within the water-retaining layer in the cavity, a sand layer covering the water-retaining layer, and a soil-improving layer covering the sand layer and incorporating a soil-improving material which is of a porous structure.

5,310,281

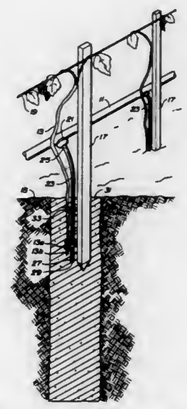
SUBSURFACE IRRIGATION SYSTEM

Alfonso P. Elena, 1701 Mt. Veeder Rd., Napa, Calif. 94539

Filed Dec. 11, 1992, Ser. No. 989,084

Int. Cl.[5] E02B 13/00

U.S. Cl. 405—39 **19 Claims**



1. A system for irrigating the roots of plants below the surface of the ground, comprising

a water distribution source;

feeder tubing connected to said water distribution source and disposed above the surface of the ground proximate plants to be watered, said feeder tubing having a plurality of valve means disposed along its length for the controlled release of water; and

a plurality of flexible irrigation tubes having an outer diameter narrower than the outer diameter of the feeder tubing and generally uniform over its length, each of said irrigation tubes having an upper end connected to said valve means and a lower end forming a vertically downward opening for the discharge of water proximate the roots of a plant, each of said irritation tubes extending for at least

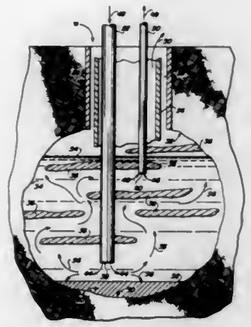
VOL 1162 ISS 2 MY 10 1994 UMI

a portion of its length below the surface of the ground in a generally vertical alignment with the stalk of a plant to a depth below the lower end of the plant stalk proximate the roots of the plant whereby water may be discharged from the opening in the lower end in a downwardly direction.

5,310,282
HYDROCARBON RECOVERY FROM DRILLING MUD STORED IN SALT CAVITY

Thomas A. Voskamp, 3807 St. Andrews Ct., Midland, Tex. 79707

Filed Feb. 16, 1993, Ser. No. 18,126
Int. Cl.[5] B65G *5/00*
U.S. Cl. 405—58 **19 Claims**



1. Method of disposing of material heavier than brine that has been contaminated with material lighter than brine, comprising the steps of:

A. forming a cavity having a lower, central, and upper part in a downhole salt formation by communicating the salt formation with the surface of the earth, and circulating water downhole into said salt formation and uphole to the surface of the earth to solubilize the salt, form the cavity, and fill the cavity with brine;

B. forming a flow path for contaminated material to flow into the bottom of said cavity by extending an inlet feed pipe from the surface of the earth down into said cavity;

C. displacing brine from said cavity by injecting quantities of the contaminated material into said cavity whereupon the relatively dense component of said contaminated material gravitates to the bottom of said cavity while the relatively light component of the contaminated material separate from the material and rises toward the surface of the ground, leaving the dense component of the material on the bottom of the cavity;

D. flowing water from the surface of the earth, into the middle part of said cavity while displacing brine from said cavity by communicating a production pipe with the middle part of the cavity and the surface of the earth, and flowing the displaced brine uphole to the surface of the earth;

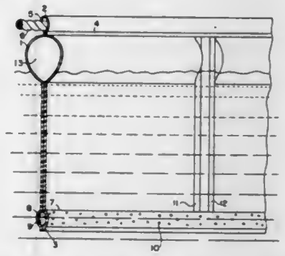
E. forming a tortious flow path within said cavity along which the separated material lighter than brine flows as the lighter material rises toward the surface of the ground by selecting said salt formation in a geological strata having a plurality of spaced anhydride formations located within the cavity area, and using said anhydride ledges to form a plurality of baffle members that force the ascending lighter material separated from the contaminated material to assume said tortuous flow path and thereby coalesce the separated lighter material and enhance the accumulation thereof at the top of the cavity;

F. whereby material heavier than brine that has been contaminated with lighter material can be deposited within the lower part of the cavity, while lighter material separates from the heavier material and flows uphole toward the top of the cavity, and brine can be produced from the cavity by flowing the brine to the surface of the ground.

5,310,283
FLOATING BARRAGE

Leif Berg, Arhus C, Denmark, assignor to Berg Marine A/S, Arhus C, Denmark

PCT No. PCT/DK90/00296, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO91/07546, PCT Pub. Date May 30, 1991
PCT Filed Nov. 16, 1990, Ser. No. 856,201
Claims priority, application Denmark, Nov. 17, 1989, 5774/89
Int. Cl.[5] E02B *3/00*
U.S. Cl. 405—67 **10 Claims**



1. A floating barrage comprising an air-containing buoyancy portion and a curtain suspended from said portion, said curtain being maintained in an approximately vertical position in the water by a ballast member connected to the curtain, the buoyancy portion having the form of an air-tight envelope formed by a flexible film (1) having a lower edge connected to the ballast member, wherein the air-tight envelope, which is formed by the flexible film (1), constitutes both the buoyancy portion and the curtain, wherein the amount of air within the envelope is fixed and wherein no means are provided for introducing or evacuating air to or from the envelope.

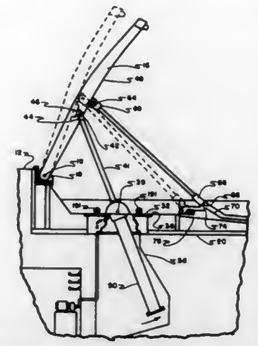
5,310,284
WEAK LINK PROP FOR WICKET DAM

Ralph B. Snowberger, Louisville, Ky., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 2, 1992, Ser. No. 908,276
Int. Cl.[5] E02B *7/40*
U.S. Cl. 405—102 **7 Claims**

1. A support for a wicket pivotable about an axis between extreme positions, said support for engaging a hurter having a hurter bearing, said hurter located at the downstream side of the wicket comprising:

a prop secured to the downstream side of the wicket and having a free end for slidably engaging the hurter between the extreme positions of the wicket, said prop for engaging the support bearing as the wicket is raised to near the extreme upright position and means for causing a portion

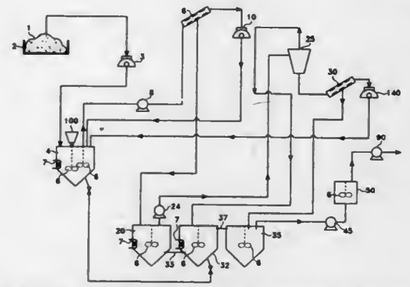


of the free end of the prop to break away in a controlled manner upon application of a selected force on the wicket.

5,310,285
DEVICE FOR RECLAIMING AND DISPOSAL OF DRILLING WASTES AND METHOD OF USE THEREFORE

T. J. Northcott, 225 E. Fireweed La., Suite 203, Anchorage, Ak. 99503

Filed May 14, 1993, Ser. No. 62,823
Int. Cl.[5] B09B *3/00, 5/00*; E21B *21/06*
U.S. Cl. 588—250 **18 Claims**



1. A method of processing reserve pit material for injection into a disposal well comprising the steps of:

a) passing chunks of reserve pit material through a primary crusher;

b) mixing the output material of the crusher with fluid to form a viscous slurry material in a slurry mixing tank;

c) transferring said slurry to a first classification shaker;

d) passing the output of the first classification shaker to a first holding tank;

e) passing the material in the first holding tank to a hydrocyclone;

f) removing the liquids produced from the hydrocyclone and passing them to a second holding tank;

g) removing the solids from the hydrocyclone and passing them through a secondary classification shaker;

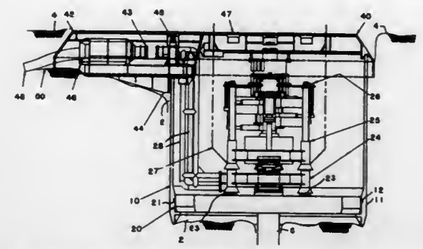
h) passing the undersized material from the secondary shaker to the third holding tank;

I) passing the slurry material from the second holding tank into a well injection system for injection into a disposal well.

5,310,286
CASED GLORY HOLE SYSTEM

Denis Gilbert, Airdrie, and Ian MacGregor, Calgary, both of Canada, assignors to Tornado Drill Ltd., Alberta and Volker Stevin Offshore Canada Inc., Calgary, both of Canada

Filed Apr. 21, 1992, Ser. No. 871,455
Int. Cl.[5] F16L *1/16*; E02B *17/02*
U.S. Cl. 405—169 **6 Claims**



1. A glory hole silo for installation in a glory hole in a subsea surface, comprising:

a) a cylindrical casing open at the upper end thereof;

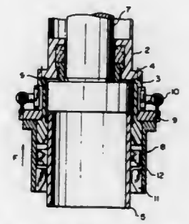
b) a porch having an upper surface for supporting a hydrocarbon-carrying flowline, said porch secured at one end thereof to said upper end of said casing and extending horizontally from and cantilevered with respect to said upper end of said casing, the upper surface of said porch forming a generally horizontal planar area opening to the interior of said casing and provided with means communicating with the interior of said casing for attaching said flowline; and

c) a removable roof extending over the open upper end of said casing and over said porch.

5,310,287
METHOD AND DEVICE FOR DRIVING A PILE OR THE LIKE INTO AND OUT OF THE GROUND

Dik Arentsen, Leiderdorp, Netherlands, assignor to THC Holland N.V., Ep Sliedrecht, Netherlands

Filed Jun. 4, 1992, Ser. No. 892,947
Claims priority, application Netherlands, Jul. 5, 1991, 9101179
Int. Cl.[5] E02D *7/30*
U.S. Cl. 405—246 **12 Claims**



7. Device for driving a pile into and out of the ground, comprising:

(A) a hammer;

(B) a plurality of hammer locking dogs connected therewith, connectable to pile locking dogs mounted on a pile;

(C) a bush, the hammer locking dogs fixed thereto, protruding away from the hammer in an axial direction and supported in the axial direction by the hammer and rotatable in relation to the hammer, whereby the bush can be at least partially shoved over the pile to be extracted from

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the ground, and further rotatable, whereby the hammer locking dogs lie beneath the pile locking dogs;

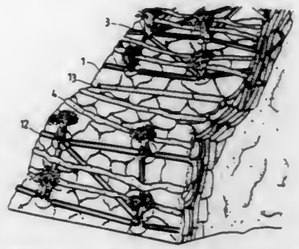
(D) wherein the hammer and pile locking dogs include at least one screw-thread segment.

5,310,288

WORK METHOD FOR STABILIZING AND GREENING A SLOPESIDE OF MUDSTONE OR LACCOLITH

Tsun T. Huang, No. 3, Lane 78, Sec. 1, An Ho Road, Taipei, Taiwan

Filed Jan. 27, 1993, Ser. No. 9,707
Int. Cl.[5] E02D *3/00, 17/20*
U.S. Cl. 405—258 **30 Claims**



1. A work method for stabilizing and greening a slopeside of mudstone or laccolith which comprises the following steps:

grading the slopeside of mudstone or laccolith into an artificial slopeside;

arranging several oblique and parallel drainage channels on the surface of said artificial slopeside;

selecting several root planting segments between the drainage channels;

selectively connecting said root planting segments with several root planting tubes provided for communication, the tubes being charged with organic fertilizers and having a lower part suitable for burial in the artificial slopeside;

planting at least one bush pack having lateral roots in each of the root planting segments;

inserting the lateral roots into the root planting tubes in order to have the roots of different packs grow quickly in the tubes and entangle intimately with each other to form a stable base for greening the artificial slopeside;

affixing to the artificial slopeside several vegetative quick greening bags containing organic material based on the different growing time of herbaceous plants, to distribute the organic materials to provide an optimum place for the herbaceous plants to bud and fully grow, a portion of the quick greening bags being affixed onto the root planting tubes to form a protective layer for the tubes;

spraying the whole artificial slopeside with liquid fertilizers for the purpose of improving the artificial slopeside quality and facilitating the quick growth of herbaceous and woody plants.

5,310,289

APPARATUS FOR SHEETING DEEP TRENCHES

Wilhelm Hess, Siegstrasse 1, D-50859 Köln, Fed. Rep. of Germany

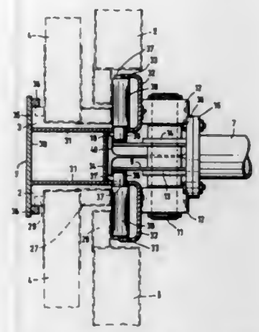
Filed Jul. 8, 1993, Ser. No. 88,703
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1992, 4230860
Int. Cl.[5] E21D *5/12*
U.S. Cl. 405—282 **11 Claims**

1. An apparatus for sheeting a deep trench, comprising:

pairs of vertical support rails arranged along the trench so that the support rails of each pair of support rails are opposite each other at an equal distance, the support rails having guide channels, a rigid strut frame holding the support rails of a pair of rails at a distance from each other and being formlockingly displaceable on the support rails; and

large-surfaced outer sheeting plates and inner sheeting plates having vertical edges that are vertically displaceable in the guide channels of the support rails,

the support rails having two side walls spaced from each other which, together with an outer wall and an inner wall, form an at least partially closed box beam, and the guide channels being formed, at least partially, on outer sides of the side walls by guide flanges, which lay in the



plane of the outer wall, and support flanges which are spaced from the guide flanges;

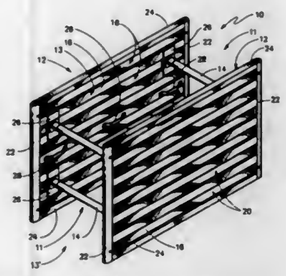
the side walls of the support rails being extended inward past the inner wall, the support flanges being provided on projecting end portions of the side walls, a vertical guide channel being provided between the support flanges and projecting portions of the side walls, which vertical guide channel formlockingly encompasses a rail located at a respected end of the strut frame, the strut frame being provided on opposite sides of the rail with rollers rotatably supported on a horizontal axle and adapted to roll on outer sides of the support flanges.

5,310,290

PROTECTIVE STRUCTURE FOR EXCAVATIONS

Dennis I. Spencer, 12140 E. 116th Cir., Henderson, Colo. 80640

Filed Mar. 12, 1993, Ser. Nn. 30,788
Int. Cl.[5] E02D *3/02, 5/00*
U.S. Cl. 405—283 **30 Claims**



1. A protective panel adapted to be supported by a brace in order to buttress an upright wall of an excavation, comprising:

(a) a corrugated sheet having lateral side edges and a pair of end edges, said sheet formed as a plurality of channels extending longitudinally between the end edges thereof

with alternative ones of said channels opening oppositely one another, each channel having a bottom wall and a pair of sidewalls with adjacent one of said channels having a common sidewall therebetween;

(b) a transverse rigidifying member secured along each and edge of said sheet and operative to resist bending of said sheet; and

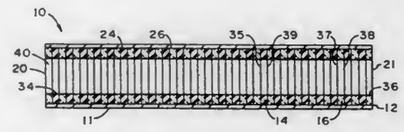
(c) at least one mounting station disposed on a first side of said sheet and operative to mount the brace whereby said protective panel may be supported with a second side against the upright wall of the excavation, said mounting station including a support plate extending transversely across a selected channel and a gusset web interposed between said support plate and the bottom wall of the selected channel and operative to support said support plate against said bottom wall.

5,310,291

TRANSPORT DUCT FOR ABRASIVE MATERIALS

Gene S. Miller; Dennis R. Raines, both of Maryville, and Joseph C. Preston, Louisville, all of Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 14, 1993, Ser. No. 48,433
Int. Cl.[5] B65G *53/52*
U.S. Cl. 406—193 **17 Claims**



1. A transport duct comprising:

(a) an outer casing defining an elongated, axially extending opening; and

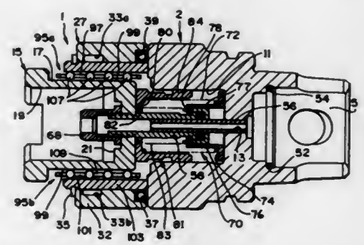
(b) an axially extending array of alternating ceramic and polymer segments in said opening, each said segments including an exterior wall adjacent said casing, an interior wall defining a passageway smaller than said opening and side walls spaced apart by less than about 1 cm in an axial direction, each said ceramic segments having at least one side wall adjacent a polymer segment and each said polymer segments having at least one side wall adjacent a ceramic segment.

5,310,292

LINEAR ROLLER TAP DRIVER ASSEMBLY

Victor D. Mogilnicki, and Donald E. Meachum, both of Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.

Filed Dec. 21, 1992, Ser. No. 994,374
Int. Cl.[5] B23G *1/46*
U.S. Cl. 408—141 **26 Claims**



1. A rotary tool connecting assembly for transmitting torque to a rotary tool from a rotating, torque-generating spindle while allowing axial linear movement to occur between said tool and said spindle, comprising:

a receiver for receiving and securing an end of said rotary tool;

a chuck body having an axis of rotation, and one end connectable to a torque-generating spindle, and an opposing end having an axially aligned recess for slidably receiving said receiver, and

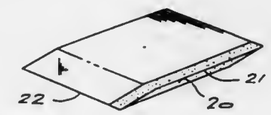
means for transmitting torque from said chuck body to said receiver while allowing said receiver to axially slide within said recess, including at least one linear roller bearing rollingly engaged between only a single flat wall of said receiver and a flat wall defining a portion of said recess in said chuck body.

5,310,293

DRILL BIT WITH CUTTING INSERT

Theo A. Notter, 29 Langley Drive, Camberley, Surrey, GU15 3TB, England, and David W. James, 68 Derby Square, Douglas, Isle of Man, Isle of Man

Division of Ser. No. 758,162, Sep. 11, 1991, Pat. No. 5,195,404, which is a continuation of Ser. No. 209,223, Jun. 20, 1988, abandoned. This application Feb. 4, 1993, Ser. No. 13,719
Claims priority, application United Kingdom, Jun. 18, 1987, 8714340
Int. Cl.[5] B23B *51/02*
U.S. Cl. 408—145 **13 Claims**



1. A cutting insert for use with a twist drill of the type having a drill body including a face, a flank, and a seat formed in the flank, the seat defining a support surface to support the cutting insert, and the support surface being inclined at a predetermined angle to the face of the drill,

the cutting insert having a prismatic shape and comprising a layer of an abrasive compact bonded to a cemented carbide backing,

the cutting insert further having first and second adjacent facets thereon, the second facet being at an inclined angle relative to the first facet,

the first facet including a cutting edge formed by the abrasive compact layer,

the second facet including a seating surface formed predominantly by the cemented carbide backing,

the insert being adapted to be bonded into the seat of the twist drill with the seating surface of the second facet bonded to the support surface of the seat, with the cutting edge of the insert defining a major cutting edge of the drill, and with the first facet of the insert coinciding with the face of the drill.

5,310,294

WIRE-PULLER APPARATUS

Robert E. Perkins, 2 Kelly La., Pisgah Forest, N.C. 28768

Filed May 25, 1993, Ser. No. 67,534
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—226 **15 Claims**

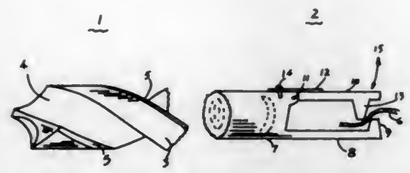
1. A wire puller apparatus comprising:

a cutting element;

a wire attachment means capable of coupling with said cutting element;

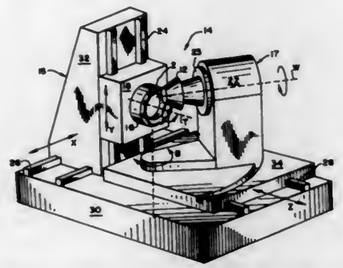
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wherein said wire attachment means comprises a shaft with at least two opposing arms attached thereto;



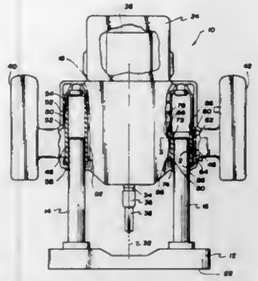
a means for reversibly engaging said opposing arms with an elongated object.

5,310,295
TOOL FEEDING METHOD IN GEAR MANUFACTURING PROCESSES
Donald W. Palmateer, Jr, Rochester; Mark J. Bogh, East Rochester, and Theodore J. Krenzer, West Rush, all of N.Y., assignors to The Gleason Works, Rochester, N.Y.
Filed Mar. 22, 1993, Ser. No. 34,053
Int. Cl.[5] B23F *9/14*
U.S. Cl. 409—13 **15 Claims**



1. A method of feeding a tool to a predetermined depth in a workpiece in a machining process for producing at least one tooth surface on said workpiece, said tool being rotatable about a tool axis and having at least one stock removing surface, said workpiece being rotatable about a work axis and being in mesh with a theoretical generating gear, said theoretical generating gear being rotatable about a generating gear axis, said method comprising:
rotating said tool about said tool axis,
contacting said rotating tool and said workpiece,
feeding said tool relative to said workpiece along a feedpath to said predetermined depth,
wherein at least a portion of said feedpath is defined by a feed vector comprising at least first and second feed vector components, said first and second feed vector components being positioned in an axial plane defined by said generating gear axis and said work axis, said first feed vector component being substantially in the direction of said generating gear axis and said second feed vector component being substantially perpendicular to said generating gear axis.

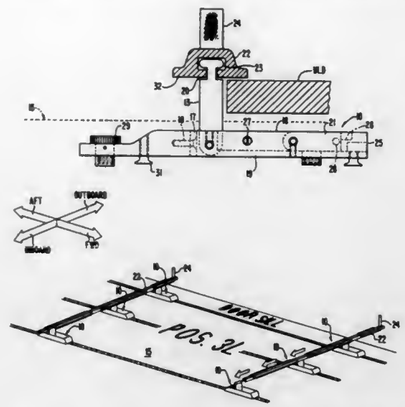
5,310,296
PLUNGE ROUTER WITH AN ELASTICALLY MOUNTED BUSHING
Ronald C. McCurry, West Union, S.C., assignor to Ryobi Motor Products, Easley, S.C.
Filed May 18, 1993, Ser. No. 63,494
Int. Cl.[5] B23C *1/20*; B27C *5/00*
U.S. Cl. 409—182 **12 Claims**



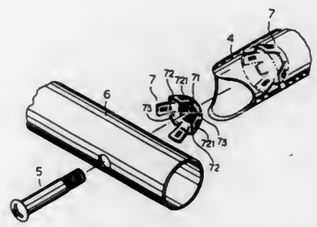
1. A plunge router comprising:
a base having a planar work engaging surface;
a pair of laterally spaced apart columns affixed to the base and extending perpendicular to the work engaging surface;
a motor housing assembly translatably cooperating with the columns for movement therealong, the motor housing assembly including:
a housing;
a drive motor for rotating a cutting tool, the drive motor affixing to the housing and having an armature shaft rotatable about a central axis which extends perpendicular to the work engaging surface; and
a pair of bushings supported by the housing and sized to slidingly engage the columns;
wherein one of the bushings is relatively securely affixed to the housing to ensure the central axis remains perpendicular to the work engaging surface and the other of the pair of bushings is elastically mounted relative to the housing to enable limited movement of the bushing relative to the housing thereby preventing binding between the bushings and the columns and accommodating the production variations and tolerances and thermal expansions and contractions of the housing.

5,310,297
CARGO RESTRAINT APPARATUS AND SYSTEM
Arthur J. Benjamin, Germantown, Tenn., assignor to Federal Express Corporation, Memphis, Tenn.
Filed Aug. 27, 1992, Ser. No. 935,254
Int. Cl.[5] B60P *1/00*
U.S. Cl. 410—77 **15 Claims**

1. A cargo restraint system for securedly holding a cargo pallet or container on a cargo floor comprising:
a plurality of cargo restraint units including means for attaching each cargo restraint unit to the cargo floor, each cargo restraint unit having a pawl member, which has a substantially flat first position and a substantially upright second position at which the pawl member provides horizontal restrain and permits relative vertical movement of the cargo pallet or container placed adjacent the pawl member; and
at least one elongated locking bar including means for slidably engaging a predetermined number of extended pawl members to restrict relative vertical motion between the pawl members and the locking bar, the locking bar containing a surface for restraining the vertical movement of the cargo pallet or container when the cargo pallet or container is positioned adjacent the pawl members.

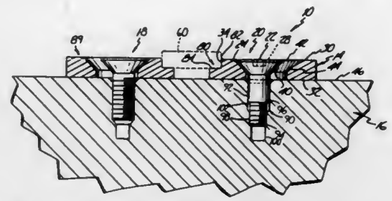


5,310,298
EXPANSION NUT FOR T-JOINT OF PIPES
Shoei-Muh Hwang, No. 3, Lane 71, Chang Shoei Road, Changhua City, Taiwan
Filed Jul. 8, 1993, Ser. No. 87,296
Int. Cl.[5] F16B *19/00*, *37/04*
U.S. Cl. 411—182 **5 Claims**



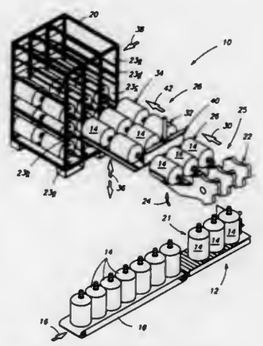
1. A one-piece expansion nut for a T-joint of pipes, comprising:
an expansion nut body defining an internal thread hole at a center thereof, the body including a plurality of long expanding pieces and short expanding pieces alternatively disposed around an outer periphery of the body wherein outer diameters formed by said long and short expanding pieces are the same, and the outer diameter is slightly larger than an inner diameter of a first pipe to be jointed, such that when said expansion nut is placed into the first pipe and a bolt is passed through a second pipe to screw into the internal thread hole for the T-joint, the long and short expanding pieces are respectively expanded to exert force against an inner wall of the first pipe in two stages, so as to firmly hold the expansion nut in place, wherein each long expanding piece includes a catch tab punched from an inner side of an upper part thereof, wherein an outer diameter formed by said catch tabs is slightly smaller than the outer diameters of said long or short expanding pieces; whereby when said long and short expanding pieces are respectively expanded to exert force against the inner wall of said first pipe, said catch tabs on said long expanding pieces are expanded to exert another force against the inner wall of said first pipe.

5,310,299
SLIDING CLAMP
Leon M. Bernstein, Minnetonka, Minn., assignor to Kurt Manufacturing Company, Inc., Fridley, Minn.
Filed Sep. 1, 1992, Ser. No. 939,070
Int. Cl.[5] F16B *19/00*; B25B *1/08*
U.S. Cl. 411—354 **20 Claims**



1. A clamping device for holding a workpiece comprising:
a platen having a working surface including a stop;
a clamping member having a sliding face adapted for sliding movement along the platen working surface and at least one clamping face adapted to engage a workpiece; and
actuating means for simultaneously anchoring the clamping member to the platen on the platen working surface while moving the clamping member toward the stop, wherein the actuating means is secured into the platen along a fixed reference axis intersecting with the platen working surface and includes a tapered bearing surface engaging the clamping member wherein the simultaneous anchoring and moving is caused only by movement of the tapered bearing surface toward the platen working surface parallel to the reference axis.

5,310,300
APPARATUS AND METHOD FOR PACKING CONTAINERS ONTO A RACK
John A. Crabb, Yakima, and Gary M. Garofano, Spokane, both of Wash., assignors to R. A. Pearson Co., Spokane, Wash.
Filed Feb. 3, 1992, Ser. No. 830,667
Int. Cl.[5] B65G *1/10*
U.S. Cl. 414—280 **30 Claims**



1. A rack packer for containers, comprising:
a loading station which receives and supports successive incoming rows of vertically oriented identical containers,

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each container having side surfaces extending between upper and lower ends arranged along a container axis;

transfer means for moving the containers of each row from vertical positions at the loading station upwardly to horizontal positions above the loading station, the transfer means being rotatable about a transfer axis parallel to the successive rows of containers at the loading station;

drive means for rotating the transfer means to engage the side surfaces of the containers in each row at the transfer station and move the containers from their vertical positions to their horizontal positions; and

a concave guiding surface centered on the transfer axis to support and direct the containers along an arcuate path about the transfer axis as the transfer means moves the containers from their vertical positions to their horizontal positions, the lower ends of the containers slidably contacting the surface.

5,310,301

CHIP FEEDER FOR CHIP MOUNTER

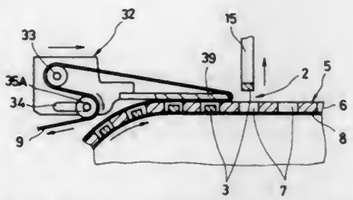
Takami Aono, Shizuoka, Japan, assignor to Tenryu Technics Co., Ltd., Shizuoka, Japan

Filed Jun. 22, 1992, Ser. No. 901,727

Claims priority, application Japan, Jan. 27, 1991, 3-156749

Int. Cl.[5] H05K *13/04*

U.S. Cl. 414—416 **6 Claims**



1. A chip feeder for a chip mounter, wherein a plurality of chips held in a tape are fed from a tape feeding portion to a chip takeout portion of the chip mounter, comprising:

a tape feeding means for feeding intermittently the tape sealed with a protective tape to the chip takeout portion at predetermined pitch intervals;

a protective tape peeling means for peeling the protective tape from the tape fed intermittently by the tape feeding means, said protective tape peeling means comprising a protective tape take-up means for taking up and peeling said protective tape from said tape by every predetermined length, a protective tape guiding member which turns back the protective tape in a direction reverse to a feeding direction and guides the protective tape peeled off to the take-up means with end tip of the protective tape guiding member contacting with the protective tape, said protective tape guiding member moving in the feeding direction together with said tape when the tape is fed and moving in the direction reverse to the feeding direction immediately before said chip is taken out by the chip takeout means; and

a chip takeout means for taking out the chip from the tape from which the protective tape has been peeled, said peeling means peeling off the protective tape sealing the chip during a descent of said chip takeout means to a chip takeout position immediately before the chip takeout means takes out the chip when the tape is in a stationary state.

5,310,302

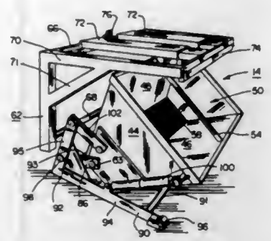
DUMPING HOPPER AND TRAILER WASHING STAND

John H. Ferguson, Sr., P.O. Box 116, Lindwood, N.C. 27299

Filed Apr. 6, 1992, Ser. No. 862,986

Int. Cl.[5] B65G *65/23*

U.S. Cl. 414—424 **13 Claims**



1. A dumping hopper comprising:

(a) a carrier frame;

(b) a container pivotally attached to the carrier frame so as to be movable between an upright loading position and a downward tilted dumping position;

(c) a lift coupling on the carrier frame for coupling the carrier frame to a lift vehicle; and

(d) an uprighting frame connected to the container for moving the container from the dumping position to the loading position in response to the carrier frame being lowered, wherein the uprighting frame is pivotally connected to the carrier frame and is moveable between a raised position when the waste container assumes a loading position and a lowered position when the waste container assumes a dumping position, the uprighting frame including:

(1) a lever member for engaging the ground when the waste container is lowered such that the engagement of the lever member with the ground causes the lever member to rotate from the ground engaging position to the raised position, and

(2) a link member pivotally attached at one end to the lever member and at an opposite end to the container.

5,310,303

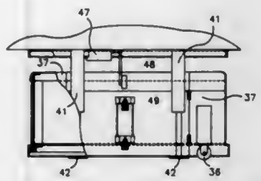
UNDERSLUNG TRAILER CARGO CONTAINER SYSTEM

Gaylord N. Betts, 740 Old Salem Ave., Albany, Oreg. 97321

Filed Jun. 26, 1992, Ser. No. 905,034

Int. Cl.[5] B60R *9/00*

U.S. Cl. 414—462 **1 Claim**



1. An underslung trailer container system adapted to fit on a trailer underside including

a cargo container having a top and a bottom;

means on the trailer underside for receiving and guiding the top of said container to position the container on the underside of the trailer;

means for lifting the container into engagement with said receiving and guide means, said lifting means including spaced hydraulic cylinders mounted to and extending downwardly from the underside of the trailer, said cylinders including a rod and an arm extending outwardly from said rod, said arms adapted to engage the bottom of the container to lift the container into place under the trailer and to lower the container for removal;

means for releasably securing the container to the underside of the trailer, and

an additional pair of hydraulic cylinders mounted underneath the trailer, the rods of said cylinders including means for moving the container laterally after it has been released and lowered.

5,310,304

LOAD-LIFTING DEVICE

Guido Baumgartner, Root, Switzerland, assignor to Heppenstall Holding AG, Cham, Switzerland

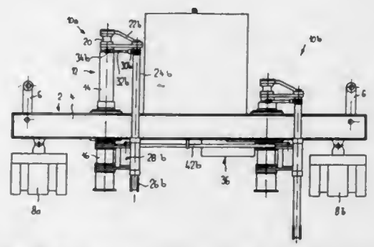
PCT No. PCT/CH91/00269, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/13792, PCT Pub. Date Aug. 20, 1992

PCT Filed Dec. 16, 1991, Ser. No. 930,705

Claims priority, application Switzerland, Feb. 8, 1991, 396/91

Int. Cl.[5] B66C *1/04, 1/28*

U.S. Cl. 414—606 **9 Claims**



1. A load-lifting device comprising a load-carrying beam and at least one load-lifting magnet having two sides, the at least one load-lifting magnet being connected to the load carrying beam, at least one load-securing device comprising a vertical support column on each side of the load-lifting magnet, a drive for swinging the vertical support columns, a securing arm attached to each vertical support column, the securing arms being movable by swinging the vertical support columns between a free position in which the securing arms extend parallel to a load suspended from the load-lifting magnet and a secured position in which the securing arms are aligned with each other and completely engage under the load, guide arms for guiding the swingable support columns, the guide arms being mounted so as to be swingable, support arms fastened to upper ends of the support columns, further comprising a lifting device mounted on the load carrying beam for raising and lowering the securing arms and placing the aligned securing arms in the secured position against an underside of the load.

5,310,305

APPARATUS FOR LOADING AND UNLOADING OBJECTS

David W. Lutz, Carlisle, Pa., assignor to Master Manufacturers, Inc., Carlisle, Pa.

Filed Sep. 11, 1991, Ser. No. 757,590

The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.

Int. Cl.[5] B60K *1/04*

U.S. Cl. 414—609 **13 Claims**

10. Apparatus for loading and unloading objects, said apparatus comprising:

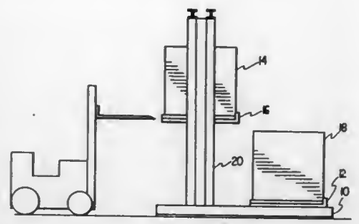
(a) a base;

(b) a gantry mounted on said base and projecting upwardly therefrom;

(c) a first carriage mounted on said base;

(d) first means for moving said first carriage back and forth in a straight line on said base to and between a first and a second position with movement to its second position occurring after a second means has moved a second carriage away from its first position;

(e) a second carriage mounted on said gantry;



(f) second means for moving said second carriage back and forth to and between a first position that is substantially identical to the second position of said first carriage and a second position that is vertically spaced from the first position of said first carriage, with movement to its first position occurring after the first means has moved the first carriage away from its second position.

5,310,306

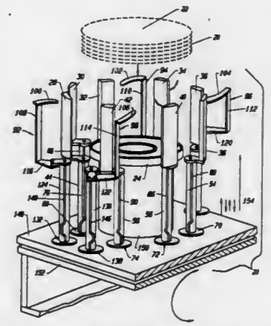
STACK LOADING APPARATUS AND METHOD

Donald G. Lunghi, 921 Park Ave., Burlingame, Calif. 94010

Filed Nov. 15, 1991, Ser. No. 792,707

Int. Cl.[5] B65H *9/10*

U.S. Cl. 414—788 **19 Claims**



4. A stack loading apparatus for receiving and aligning stacks of similarly shaped sheet-like objects, said stack loading apparatus comprising:

a base plate adapted to rotatably fix aligner actuator ends;

a plurality of elongate aligner actuators each having a first end, a second end, and an outer surface, said aligner actuator first end being rotatably fixed to said base plate to permit rotation of said aligner actuator about its longitudinal axis which is positioned perpendicular to said base plate, said plurality of aligner actuators arranged on said base plate about a polygon perimeter corresponding to said sheet-like object perimeter, and said aligner actuators each having an aligner actuator track disposed on its outer surface;

a movable guide plate, positioned substantially parallel to said base plate, having a plurality of aligner actuator-receiving apertures which apertures are defined by an inner perimeter sized for receiving said aligner actuators,

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said aligner actuator-receiving apertures having a ball bearing rotatably mounted on said inner perimeter for engaging said aligner actuator tracks;

a plurality of elongate aligners, each aligner fastened at one end to said aligner actuator second end, each elongate aligner corresponding to an aligner actuator;

means, disposed on said guide plate substantially at the center of said aligner actuator polygon, for supporting an unaligned stack of similarly shaped sheet-like objects in an orientation substantially parallel to said guide plate; and

means for moving said guide plate relative to said base plate along said aligner actuator longitudinal axis while maintaining said plates in substantially parallel relationship;

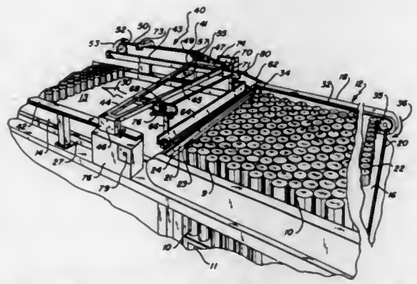
wherein, said moving means causes said guide plate to move relative to said base plate which causes said aligner actuators to rotate about their longitudinal axes which causes said aligners to contact and to act upon said unaligned stack to obtain an aligned stack of similarly shaped sheet-like objects.

5,310,307

DEPALLETIZING DEVICE AND METHOD

Richard H. VanderMeer, and Donald J. Simkowski, both of Loveland, Colo., assignors to Goldco Industries, Inc., Loveland, Colo.

Filed Feb. 12, 1993, Ser. No. 16,969
Int. Cl.[5] B65G *39/00*
U.S. Cl. 414—796.2 **26 Claims**



1. A depalletizing device for moving articles by groups from a pallet with each said group of articles having a leading portion and a trailing portion, said device comprising:

sweep means having movable article urging means engagable with the trailing portion of a group of articles then at a pallet sweep area, said article urging means being at a home position that is adjacent to but spaced from said trailing portion of said group of articles then at said pallet sweep area prior to engagement with said trailing portion;

retainer means having movable article retaining means engagable with the leading portion of said group of articles then at said pallet sweep area; and

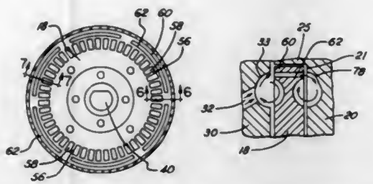
actuating means connected with said sweep means and said retainer means for causing movement of said article urging means from the home position whereby said article urging means thereafter engages said trailing portion of said group of articles and thereafter urges said group of articles from said pallet in a predetermined direction, said actuating means also causing movement of said article retaining means whereby said article retaining means engages said leading portion of said group of articles and thereafter leads said group of articles from said pallet as said group of articles is moved from said pallet in said predetermined direction by said article urging means.

5,310,308

AUTOMOTIVE FUEL PUMP HOUSING WITH ROTARY PUMPING ELEMENT

Dequan Yu, and Henry W. Brockner, both of Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1993, Ser. No. 131,223
Int. Cl.[5] F04D *5/00*
U.S. Cl. 415—55.6 **20 Claims**



1. A fuel pump for supplying fuel from a fuel tank to an automotive engine, comprising:

a pump casing;

a motor mounted within said casing and having a shaft extending therefrom;

a rotary pumping element fitted to said shaft having a ring portion along an outer circumference thereof, a plurality of vanes around an inner circumference radially inward of said ring portion, and a plurality of axially extending fuel flow passages located radially between said plurality of vanes and said ring portion; and

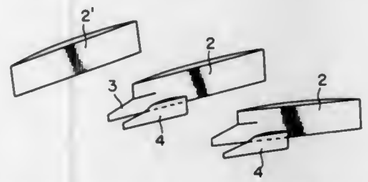
a pump housing mounted within said pump casing and having a fuel inlet and a fuel outlet therethrough, said pump housing encasing said rotary pumping element therein such that two axially spaced pumping chambers connected in series by said flow passages are formed along the periphery of said rotary pumping element.

5,310,309

CENTRIFUGAL COMPRESSOR

Masatoshi Terasaki, Tsuchiura, and Koji Nakagawa, Matsudo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,389
Claims priority, application Japan, Oct. 21, 1991, 3-272333
Int. Cl.[5] F04D *29/30*
U.S. Cl. 415—208.3 **14 Claims**



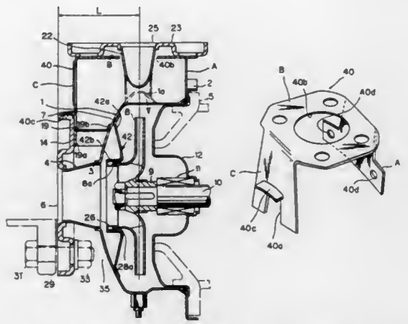
1. A centrifugal compressor comprising a diffuser provided with stator blades operative to convert the kinetic energy of a fluid discharged from an impeller into a pressure energy, wherein said stator blades have leading edges inclined in the downstream direction while extending away from a side plate toward a core plate; and auxiliary blades each having a chord length shorter than that of each of said stator blades have leading edges inclined in the downstream direction while extending away from said side plate toward said core plate, said auxiliary blades being arranged at positions radially inward of said stator blades in such a manner that one of the surfaces of each said auxiliary blade faces a stator blade.

5,310,310

PUMP CASING MADE OF SHEET METAL

Yukimasa Nakatsukasa, Tokyo, Japan; Renzo Ghiotto, Vicenza, Italy; Shinichiro Arakawa, and Shu Nagata, both of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 819,881
Claims priority, application Japan, Jan. 11, 1991, 3-12700; Mar. 12, 1991, 3-13894
Int. Cl.[5] F04D *29/42, 29/62*
U.S. Cl. 415—214.1 **13 Claims**



3. A pump casing made of sheet metal, comprising:

a casing jacket having a cylindrical cup shape and including, at one end thereof, a casing flange, and, at the other end thereof, an end plate;

a suction flange connected to said end plate;

an outlet flange connected to said casing jacket; and

a casing supporting member having four supporting surfaces, said casing flange, said suction flange and said outlet flange being mounted on three supporting surfaces of said four supporting surfaces, respectively, and the remaining one supporting surface serving as a leg member for supporting said pump casing.

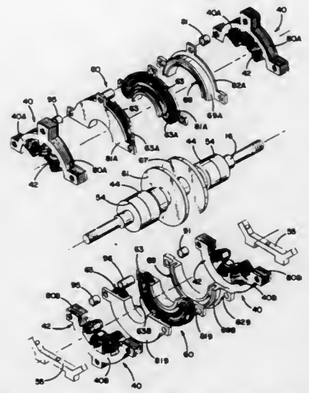
5,310,311

AIR CYCLE MACHINE WITH MAGNETIC BEARINGS

Michael Andres, Rockford, Ill., and Terry L. Coons, Dayton, Ohio, assignors to Barber-Colman Company, Rockford, Ill.

Filed Oct. 14, 1992, Ser. No. 961,002
Int. Cl.[5] F01D *25/16*
U.S. Cl. 415—229 **6 Claims**

1. An air cycle machine for an aircraft and comprising a housing, a shaft disposed in said housing and having a central axis, a compressor mounted on said shaft and having inlet means for receiving a pressurized gas to be compressed, a turbine mounted on said shaft in axially spaced relation with said compressor and having inlet means for receiving gas pressurized by said compressor, said turbine being driven by the gas pressurized by said compressor and acting through said shaft to drive said compressor, the pressurized gas received by said turbine expanding therein, being cooled as a result of expanding and being exhausted as chilled gas by said turbine, axially spaced bearings for radially supporting said shaft for rotation in said housing, each of said bearings comprising a plurality of electromagnets mounted within said housing and spaced angularly around said shaft, said electromagnets comprising selectively energizable electrical coil means for producing magnetic forces suspending said shaft radially within said housing, means for sensing the radial position of the axis of said shaft, means responsive to said sensing means for varying the energization of said coils to keep the axis of said shaft in coincidence with a predetermined axis, an additional bearing for maintaining said shaft in a predetermined axial position in said housing, said additional bearing comprising axially spaced and axially opposing electromagnets mounted within said housing and positioned substantially coaxial with said shaft, a disc rigid with and projecting radially from said shaft and located between said axially opposing electromagnets, said axially opposing electromagnets comprising selectively energizable electrical coil means for producing magnetic forces acting in axially opposing relation on said disc, means for detecting the axial position of said shaft, means responsive to said detecting means for varying the energization of the coils of said axially opposing electromagnets to keep said shaft in a predetermined axial position, a second disc rigid with an projecting radially from said shaft, and annular permanent magnet means disposed in said housing in axially opposing relation with said second disc for producing a magnetic force biasing said second disc and said shaft axially in opposition to the pressurized gas entering said inlet means of said compressor.

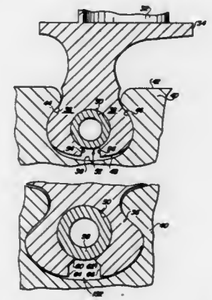


5,310,312

GAS TURBINE TEST AIRFOIL

Ronald B. Balfour, Phoenix, Ariz., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 18, 1992, Ser. No. 993,148
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—2 **7 Claims**



1. A gas turbine engine airfoil designed for failure, comprising:

an aerodynamic blade adapted to be placed in momentum exchange relationship with a fluid stream;

a platform from which said blade extends radially outwardly;

a dovetail shaped root extending radially inwardly from said

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platform and adapted to be received in a generally complementally shaped groove at the outer periphery of a rotary wheel, said dovetail root having radially outwardly facing, axially extending, load carrying faces and an internal bore extending through its axial length; and

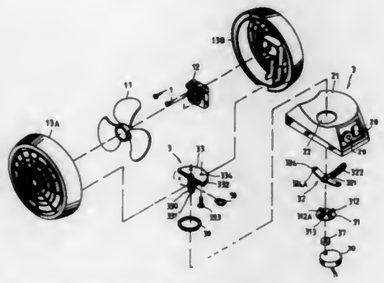
a tubular insert within said internal bore, said insert being of a material having strength characteristics such that said insert fails under preselected conditions to cause release of the airfoil from the rotary wheel.

5,310,313

SWINGING TYPE OF ELECTRIC FAN

C. H. Chen, 12, Lane 296, Sec. 3, Chung-Ching North Road, Taipei, Taiwan

Filed Nov. 23, 1992, Ser. No. 980,567
Int. Cl.[5] F04D *29/36*
U.S. Cl. 416—100 **5 Claims**



1. A swiveling electric fan comprising:

a housing comprised of a front section and a rear section associated therewith, a vane member driven by a first motor disposed in said housing, said housing having the shape of a truncated sphere;

a base having a concave top surface with a diameter equal to that of a bottom section of said housing, a circular hole being in said top surface of said housing, a downward extending restricting pin being disposed on an inner side of said top surface of said base between said circular hole and a rear wall of said base;

a swiveling mechanism including a second motor fixed in said base having an upward extending rotary shaft, and further including

a guiding disk member having a downward extending sleeve section and a disk section formed with a plurality of guiding means, said sleeve section of said guiding disk member being fixedly fitted with said rotary shaft of said second motor, so that said guiding disk member is rotated by said second motor,

an arch guiding board member formed with a central insert hole, and having a laterally extending arch guiding slot, said restricting pin of said base being extended through said guiding slot, causing said guiding slot to slide along the circumference of the circular hole in the top surface of said base in an elliptical pattern,

a supporting disk member having a disk section and a sleeve section extending downward therefrom, said disk section being secured under said bottom section of said housing while said sleeve section of said supporting disk member extends through said central insert hole of the arch guiding member, a lower end of said sleeve abutting against and engaging with the guiding disk so as to bear the weight of the fan and rotate when the guiding disk is rotated, thus causing the fan to swivel, the construction of said swiveling mechanism causing the fan to rotate in more than one plane of motion.

5,310,314

DIRECTIONAL CONTROL SYSTEM FOR ROTARY WING AIRCRAFT

Walter Bastedo, Hendersonville, N.C.; Alex Pappas, Greenlawn, N.Y., and Martin L. Stevens, Brielle, N.J., assignors to Gyrodyne Company of America, Inc., St. James, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,354
Int. Cl.[5] B64C *27/46*
U.S. Cl. 416—88 **13 Claims**



1. A tip brake unit for installation in a tip portion of a rotor blade of rotary a rotor of a wing aircraft, said unit comprising:

a frame of a size and shape for installation in a tip portion of a rotor blade;

an elongate tip brake member of channel cross sectional shape having an inner end and an outer end with an end closure closing said outer end of said tip brake member;

supporting and guiding means in said frame for supporting said tip brake member in a position extending longitudinally of a rotor blade in which said unit is installed and for guiding said tip brake member for movement in a longitudinal direction between an inner position in which said outer end of said tip brake member is flush with a tip of a rotor blade in which said unit is installed and an outer position in which said tip brake member extends outwardly beyond said tip of said blade; and

operating means for moving said tip brake member between said inner position and said outer position, said operating means comprising gear teeth constituting a first rack on said tip brake member, a first pinion rotatably supported by said frame and meshing with said first rack, a second pinion coaxially rotatable with said first pinion, an elongate operating member having a second rack meshing with said second pinion and guided by said frame for movement in a longitudinal direction and connecting means for connecting said operating member with a tip brake control system of said aircraft for movement of said operating member longitudinally by said system and thereby moving said tip brake member between said inner position and said outer position.

5,310,315

LOW-VULNERABILITY DEVICE FOR THE CONTROL OF HELICOPTER ROTOR BY CYCLIC PLATES

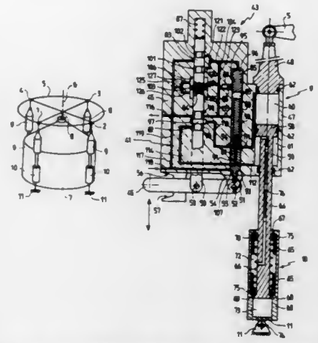
Alain G. Lafortune, Vitrolles, and Francois Potdevin, Ventabren, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Dec. 3, 1992, Ser. No. 985,081
Claims priority, application France, Dec. 11, 1991, 91 15388
Int. Cl.[5] B64C *27/64*
U.S. Cl. 416—114 **39 Claims**

1. Low-vulnerability device for the operation of plural lifting and propulsing rotor blades of a helicopter controlled by control linkages from a cockpit, the linkages being connected to a cyclic plate mechanism mounted coaxially on a rotor drive shaft, the cyclic plate mechanism including a rotating plate coupled by a peripheral part individually to a plurality of rods, each rod controlling the pitch of one rotor blade, and a non-rotating plate coupled at four points regularly distributed around a periphery of the non-rotating plate to four hydraulic actuating servocontrols, each servocontrol comprising a power jack, an anchoring system and a servocontrol-distributor, three of the servocontrols being used in normal working and the fourth being used as back-up in the event of a failure occurring on one of the other three normally working servocontrols wherein:

each power jack is supplied by a hydraulic circuit, independent of the hydraulic circuits of the other jacks, each hydraulic circuit including a hydraulic supply, a fluid reservoir and a hydraulic return to said fluid reservoir, and each power jack is attached tct eh servocontrol-distributor which is operated by a mechanical input which is linked to the cockpit by the corresponding control linkage;

each power jack being operatively connected to one of the anchoring systems, each anchoring system being disengagable;



each of the servocontrol-distributors of the normally working servocontrols is structurally arranged so as to be active in normal working and to block the anchoring system of each corresponding power jack, and the one servocontrol-distributor of the back-up servocontrol is structurally arranged so as to be passive in normal working and to keep the anchoring system of the corresponding power jack disengaged;

each mechanical input of the four servocontrol-distributors comprises a system which in the event of a certain force threshold being exceeded on one of the three normally active servocontrol-distributors, neutralizes this one servocontrol-distributor and initiates starting up of the normally passive servocontrol-distributor which then becomes operational in a safeguard working mode.

5,310,316

IMPELLER FOR A PROPELLER PUMP

Ulf Arbeus, Lidingo, Sweden, assignor to ITT Flygt AB, Solna, Sweden

Filed Aug. 6, 1992, Ser. No. 926,474
Claims priority, application Sweden, Aug. 28, 1991, 9102460
Int. Cl.[5] F04D *29/18*
U.S. Cl. 416—188 **3 Claims**

1. An impeller for a propeller pump for pumping waste water containing pollutants, comprising in combination:

a hub having a cone angle of twenty degrees of arc, and a straight impeller shaft joined to said hub;

a plurality of vanes attachable at arbitrary pitch angle to said hub;

said vanes of said plurality thereof have backwards-swept leading edges;

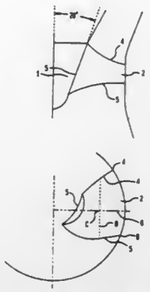
said hub has a cross-section which conically increases in the flow direction of said impeller;

said vanes have tips which define a rotary circumference of said impeller;

said vanes have chords of a given length which does not decrease towards said circumference;

each said vane having a center of gravity and a turning axis perpendicular to said shaft said turning axis substantially bisects the center of its chord at said center of gravity;

the distance between each leading edge of said vanes and the turning axis, at said circumference, encompasses a given distance;



the distance between each trailing edge of said vanes and the turning axis, at said circumference, encompasses another given distance which is not more than eleven percent greater than said given distance; and

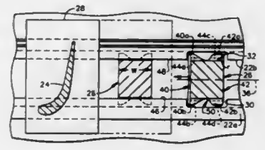
at said center of gravity, the lengths between said turning axis of each said vane and its leading and trailing edge are equal.

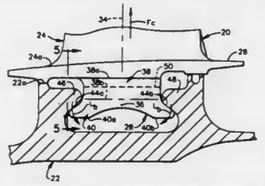
5,310,317

QUADRA-TANG DOVETAIL BLADE

Mark J. Bailey, Cincinnati, and Robert K. Mitchell, Jr., Hamilton, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 11, 1992, Ser. No. 928,001
Int. Cl.[5] B64C *27/48*
U.S. Cl. 416—215 **8 Claims**





1. A rotor blade adapted to be positioned radially in a gas turbine engine comprising:

an airfoil having a root and a tip; and a dovetail extending from said airfoil and including:

a shank having a top fixedly joined to said airfoil root, and a bottom spaced from said shank top;

first and second pairs of dovetail tangs extending radially inwardly from said shank bottom, said first pair including first and second integral dovetail tangs, and said second pair including third and fourth integral dovetail tangs, said dovetail tang pairs being symmetrical about a dovetail axis and being defined by a bifurcating slot disposed therebe-

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tween for spacing apart said dovetail pairs, said first and third dovetail tangs being coextensive on one side of said dovetail axis, and said second and fourth dovetail tangs being coextensive on an opposite side of said dovetail axis; and

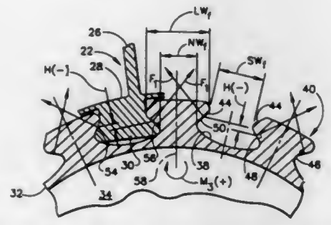
said dovetail being configured for retention in a complementary dovetail groove in a rotor disk with said bifurcating slot remaining empty for reducing weight of said blade while carrying centrifugal load from said blade to said rotor disk.

5,310,318

ASYMMETRIC AXIAL DOVETAIL AND ROTOR DISK

Andrew J. Lammas, Maineville; Nicholas J. Kray, and Doug A. Finkhousen, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 21, 1993, Ser. No. 95,231
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—219 R **12 Claims**



12. A rotor blade for a gas turbine engine rotor disk including:

an annular rim having an axial centerline axis and axially spaced apart forward and aft ends, said aft end having a larger diameter than said forward end;

said rim having a plurality of circumferentially spaced apart, axially extending straight dovetail slots for receiving therein complementary dovetails of rotor blades, said slots defining a plurality of circumferentially spaced apart dovetail posts; and

each of said posts comprising:

a pair of circumferentially oppositely extending lobes defining a maximum circumferential width of said post;

a neck disposed radially below said lobes and defining a minimum circumferential width of said post;

a first pressure face facing radially inwardly from a respective one of said lobes to said neck on a first side of said post for reacting force from said dovetail;

a second pressure face facing radially inwardly from the other one of said lobes to said neck on a second, opposite circumferential side of said post for reacting force from said dovetail; and

said first and second pressure faces varying in radial height therebetween from a first magnitude at said rim aft end to a second magnitude at said rim forward end, said second magnitude being less than said first magnitude; said rotor blade comprising:

an airfoil having a leading edge and a trailing edge;

a dovetail extending from said airfoil and configured for axial entry into a respective one of said dovetail slots;

said dovetail having a pair of circumferentially extending lobes with upwardly facing pressure faces for transmitting loads to said rotor disk; and

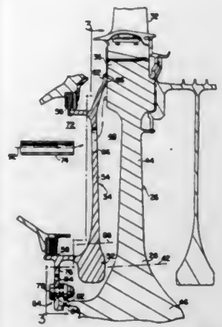
said dovetail being straight from adjacent said airfoil leading edge to adjacent said airfoil trailing edge and having a substantially constant configuration therebetween, with said pair of pressure faces being longitudinally spaced apart from each other.

5,310,319

FREE STANDING TURBINE DISK SIDEPLATE ASSEMBLY

Parker A. Grant, Rocky Hill, and Stephen D. Hoyt, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 12, 1993, Ser. No. 3,337
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—220 R **20 Claims**



1. A gas turbine engine having a longitudinal axis and an axially disposed flow path defining a passage for working fluid, the gas turbine engine including a rotor assembly having a rotor disk and sideplate assembly, the rotor disk having a rotor self-sustaining radius and including a rotor disk bore disposed radially within the rotor self-sustaining radius and a rotor web disposed radially outward of the rotor self-sustaining radius, the sideplate assembly being positioned axially adjacent to the rotor disk and defining a disk cavity therebetween, the sideplate assembly including a sideplate disk having a sideplate self-sustaining radius, a sideplate bore disposed radially within the sideplate self-sustaining radius, and a sideplate web disposed radially outward of the sideplate self-sustaining radius, locating means disposed on the sideplate bore and engaged with the rotor disk bore, the sideplate blocking the passage of working fluid into the disk cavity such that engagement between working fluid and the rotor web is blocked, and wherein the sideplate assembly is not axially or radially supported by the disk web.

5,310,320

ROTOR FOR A ROTARY SCREW MACHINE HAVING INTERNAL MEMBER AND EXTERNAL SHELL MADE OF PRESSED METAL POWDER

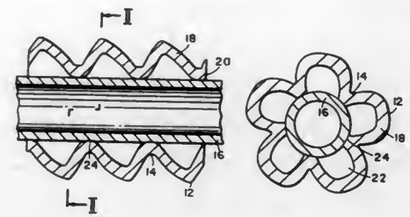
Karlis Timuska, Spanga, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

Filed Oct. 13, 1992, Ser. No. 960,546
Claims priority, application Sweden, Apr. 27, 1990, 9001530-6
Int. Cl.[5] F04C *15/00*
U.S. Cl. 416—241 R **16 Claims**

1. A rotor for a rotary screw machine, the rotor having an external peripheral surface having helical lobes 912) and intermediate grooves (14) thereon, the rotor further comprising:

an internal member; and

an external shell (18) connected to and surrounding said internal member, said external shell being made of pressed



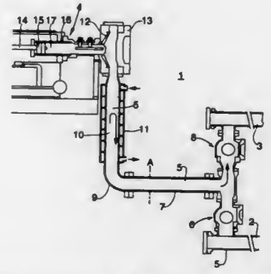
metal powder of substantially uniform thickness and forming said external peripheral surface of said rotor.

5,310,321

PUMP SYSTEM

Cornelius J. de Koning, Ed Velden, Netherlands, assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 816,146, Dec. 31, 1991, abandoned, which is a continuation of Ser. No. 675,456, Mar. 26, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,617
Claims priority, application Netherlands, Jul. 24, 1990, 9001676
Int. Cl.[5] F04F *11/00*
U.S. Cl. 417—54 **4 Claims**



1. A method for moving a fluidic medium, comprising the steps of:

providing a diaphragm pump connected via a substantially vertical pipe to a substantially horizontal commuting pipe having a smooth inner surface with a substantially uniform internal diameter along essentially the entire length of said commuting pipe between the vertical pipe and a valve unit;

operating the diaphragm pump to move a membrane of the pump in a suction direction;

in response to said step of operating and an associated suction stroke of said membrane, sucking a quantity of the fluidic medium through a one-way inlet valve of said valve unit into said commuting pipe to a boundary layer at a predetermined reversal point spaced from said vertical pipe;

actuating the diaphragm pump to move a membrane of the pump in a delivery direction opposite to said suction direction; and

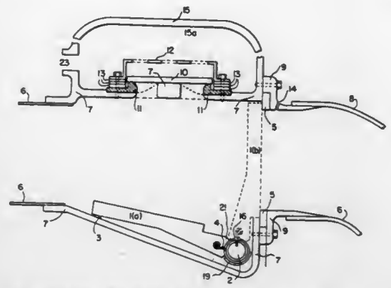
in response to said step of actuating and an associated delivery stroke of said membrane, forcing said predetermined quantity of the fluidic medium through a one-way outlet valve of said valve unit from said commuting pipe into a discharge pipe.

5,310,322

HYDRAULIC RAM PUMPS

Ian J. Richards, Victoria, Australia, assignor to Peppermint Springs Pty Ltd., Victoria, Australia

Continuation of Ser. No. 582,876, Dec. 11, 1990. This application Apr. 26, 1993, Ser. No. 805,390
Claims priority, application Australia, Apr. 14, 1988, PI7751
Int. Cl.[5] F04F *7/02*
U.S. Cl. 417—226 **11 Claims**



1. A hydraulic ram pump apparatus comprising:

a body member having a water flow passage therethrough; a waste gate pivotally mounted in said flow passage and being movable between an open position wherein said waste gate resides in a recess disposed in said body member and water may flow past said waste gate and a closed position wherein said waste gate substantially closes said flow passage, said waste gate being biased away from said closed position such that said bias is greatest when said waste gate is closed and said bias is substantially non-existent when said waste gate is open;

a waste water outlet downstream of said waste gate; and

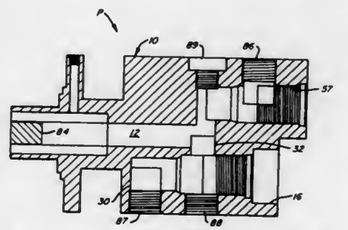
a delivery outlet having an adjustable non-return valve therein and located upstream of said waste gate, said non-return valve is adjustable to optimize the pumping efficiency through the valve.

5,310,323

PLUNGER PUMP

Peter N. Hansen, Dallas, Tex., assignor to Baker Hughes Incoporated, Houston, Tex.

Continuation of Ser. No. 977,896, Nov. 18, 1992, abandoned, which is a continuation of Ser. No. 684,586, Apr. 12, 1991, Pat. No. 5,195,876. This application Oct. 8, 1993, Ser. No. 134,464
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—307 **2 Claims**



1. A plunger pump for a piping system, comprising:

a. a housing;

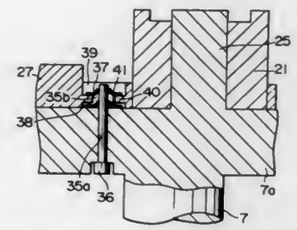
b. an inlet and outlet on said housing for connection to a piping system;

c. a passage connecting said inlet and outlet defining a bore;

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d. a plunger mounted in said housing for inward and outward movement to vary the volume of said bore;
e. a suction check valve in said housing selectively sealing off said inlet from said bore and removably mounted to said housing at a point removed from said inlet;
f. a discharge check valve assembly in said housing selectively sealing off said outlet from said bore and removably mounted to said housing at a point removed from said outlet; and
g. vent means separate from said suction and discharge check valves, for allowing selective continuous purging of trapped fluid from said bore, said vent means allowing said purging to be controlled from outside said housing.

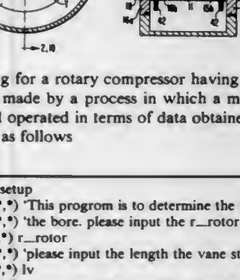
5,310,324
SCROLL-TYPE FLUID MACHINE WITH ATTACHING MEANS FOR THE BALANCE WEIGHT
Ryuhei Tanigaki, and Takayuki Ito, both of Aichi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1993, Ser. No. 20,587
Claims priority, application Japan, Feb. 27, 1992, 4-075689
Int. Cl.[5] F01C *1/04, 21/00*; F16B *2/14, 21/20*
U.S. Cl. 418—55.1 **4 Claims**



1. A scroll-type fluid machine, comprising:
a drive bushing rotatably fitted to a rotary scroll for engaging a fixed scroll;
a rotating shaft having a portion at one end for supporting the drive bushing, and a drive pin extending from said support portion that slidably engages a slide hole in said drive bushing, said support portion having first and second faces;
a balance weight supported by and attached to said support portion, said balance weight being attached to the second face of said support portion by a pin having a flanged end that abuts the first face of said support portion and a tip end extending through a first hole in said support portion and a second hole in said balance weight;
a first attachment means, disposed on said pin and against said second surface between said supporting portion and said balance weight, for securing the pin within said first hole such that a portion of the pin extends beyond the second surface; and
a second attachment means disposed at the tip end of said pin and abutting said balance weight for securing said balance weight against said support portion thereby preventing tilting of the balance weight.

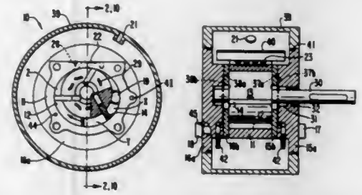
5,310,325
ROTARY ENGINE WITH ECCENTRIC GEARING
Steve I. Gulyash, 3071 Burnhamthorpe Road, Oakville, Ontario, Canada L6J 4Z3
Filed Mar. 30, 1993, Ser. No. 39,673
Int. Cl.[5] F01C *1/063*
U.S. Cl. 418—61.2 **20 Claims**

1. A rotary engine comprising:
a housing having two opposing internal faces and a side wall joining said faces;
a driven shaft having an axis of rotation orthogonally extending substantially through the center of at least one of said opposing internal faces, the driven shaft having a lobe portion eccentric to said axis and located in the housing;
a rotor rotatably mounted on said lobe portion and having an internal ring gear substantially co-axial with said lobe portion;



a pinion gear meshing with the ring gear and eccentrically fixed on a pinion shaft, the pinion gear having the same eccentricity as said lobe portion, the pinion shaft extending orthogonally through one of said opposing internal faces of the housing and being rotatable therein; and
drive means for transmitting torque between said pinion shaft and the driven shaft so that as the rotor is turned, the rotor substantially follows said side wall of the housing.

5,310,326
ROTARY COMPRESSOR WITH IMPROVED BORE CONFIGURATION AND LUBRICATION SYSTEM
Fulin Gui, and Robert P. Scaringe, both of Rockledge, Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.
Filed Sep. 14, 1992, Ser. No. 944,321
Int. Cl.[5] F04C *18/344, 29/02*
U.S. Cl. 418—76 **26 Claims**



1. A housing for a rotary compressor having a bore with a configuration made by a process in which a machine is controlled by and operated in terms of data obtained with a Fortran program as follows

```
c   initial data setup
c       write(*,*) 'This progrom is to determine the profile of
c       write(*,*) 'the bore. please input the r_rotor now'
c       read(*,*) r_rotor
c       write(*,*) 'please input the length the vane sticks out'
c       read (*,*) lv
        write(*,*) 'please input the endmill radius (inch) now'
        read(*,*) rm
c       rm =0.0
        rbmin=r_rotor + .0005
        rmin =rbmin-rm
        rbmax=r_rotor+lv
        rmax=rbmax-rm
        omg=2.*Pi*6500/60.
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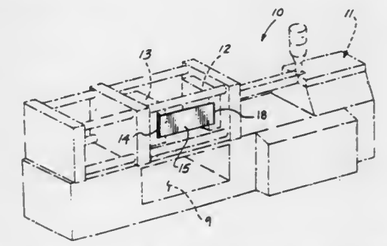
```
        a1=rmin
        b1=rmax
        theta1m=100.0
        a2=rmax
        b2=rmin
        theta2m=120.0
        n=2000
        write(*,*) 'please input the number of points'
        read(*,*) n
c   set theta dimension
        do 100 i=0,n+1
        dtheta=360./n
        theta(i)=dtheta*(i-1)
c       determine the radius as a function of theta
c   Region I, the seal region
        if (theta(i).ge.b) goto 20
        r(i)=rmin
C   Region II the expansion region 1
        if (theta(i).le.a) goto 100
        theta1=(theta(i)-10.)/theta1m *pi/2.
        r(i)=radius(a1,b1,theta1)
        goto 100
c   Region III, the transient region 2
20  r(i)=rmax
        if (theta(i).le.c ) goto 100
c   Region IV, the compression region
        theta2=(theta(i)-c)/theta2m *Pi/2.
        r(i)=radius(a2,b2,theta2)
        goto 100
100     continue
        do 200 i =1,n+1
        vt=omg*r(i)*0.0254
        v=omg*(r(i)-r(i-1))*0.0254
        acel=omg*omg*(r(i)-0.3)*0.0254/9.81
        acelratio=(r(i+1)+r(i-1)-2.*r(i))*pi**2/(r(i)-0.3)
c       write(*,*)i, theta(i),r(i)
        x= r(i)*sin(theta(i)*PI/180.)
        y= r(i)*cos(theta(i)*Pi/180.)
        write(20,1000)theta(i),r(i), x,y
        write(30,2000) x,y
c       if (amod(i-1,5).ne.0) goto 200
c       write (20,1002)theta(i),r(i),vt,acel,v,acelratio
200     continue
c       do 300 i=1,100
c       theta(i)=360./99*(i-1)
c       x=0.7123*sin(theta(i)*pi/180.)
c       y=0.7123*cos(theta(i)*pi/180.)
c300    write(20,2000) x,y
c       to calculate the circumference of the profile
        cL3=0.0
        cL2=0.0
        r(n+1)=r(1)
        theta(n+1)=theta(1)+360.
        do 400 i=2,n+1
        cL2=cL2+r(i)*( (theta(i)-theta(i-1)) *pi/180.)
        cL3=cL3+r(i-1)*( (theta(i)-theta(I-1)) *pi/180.
400     continue
        write(*, *) 'circomference=',cL2,cL3,'de=',cL2/Pi
1000    format(1x,'|',f6.1,'|',f8.4,2('|',f8.4),'|')
1002    format(1x,f6.4,4('.',f13.4),',',f9.5)
2000    format(1x,'X',f7.4,'Y',f7.4)
        Stop
        end
        function radius(a,b,theta)
        radius=a/sqrt( 1.-(1.-a*a/(b*b))*sin(theta)*sin(theta))
        end,
        wherein
        r_rotor — rotor radius
        rmin, rmax - min. and max. radius
        a — the angle at which the first ellipse starts
        b — the angle at which the first ellipse ends the
        large circle are begins
        c — the angle at which the large circle ends and the
        second ellipse begins
        theta — angle variable (degree)
        r — radius variable (inch)
        x,y — point coordinates
        omg — rotating velocity
        Vt — tangential velocity
        V — Radial velocity
        acel — the tangential acceleration of the vane
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        acelratio — the ratio of the radial accel. to the
        tangential accl
```

such that the bore has a configuration divided into an expansion region of elliptical shape, a circular transition region, a polynomial-shaped compression region, and a circular sealing region.

5,310,327
WORKPIECE DEFLECTOR SHIELD FOR AN INJECTION MOLDING APPARATUS
Reginald Phillips, 3633 W. Grenshaw St., Chicago, Ill. 60624
Filed Mar. 29, 1993, Ser. No. 38,819
Int. Cl.[5] B29C *45/84*
U.S. Cl. 425—151 **4 Claims**



1. A workpiece deflection shield apparatus, comprising,
an injection mold having a first mold member, and a second mold member, the first mold member and the second mold member arranged for reciprocation relative to one another, and a workpiece receiving area positioned below the first mold member and the second mold member,
a shield housing, the shield housing having a support bracket mounting the shield housing to said first mold member, and the shield housing including a web support tube rotatably mounted within the shield housing,
a flexible web shield, with a first end of the flexible web shield mounted to the support tube, and a second end of the web shield mounted to the second mold member,
the shield housing includes an elongate feed slot receiving the web shield therethrough in guiding the web shield from the shield housing to the second mold member, and
the web support tube includes a support tube first end and a support tube second end, the support tube first end includes a first axle, and the support bracket includes a first leg spaced from and parallel a second leg, and the first axle is rotatably received through the first leg, the first leg having a first leg recess, and the first axle having a first axle abutment ring, with the first axle abutment ring mounted within the first leg recess, and the first axle fixedly mounted to the support tube, and a second axle rotatably mounted relative to the support tube second end, with the second axle rotatably received through the second leg, and the second leg having a second leg recess, and the second axle having a second axle abutment ring received within the recess to position the second axle within the second leg.

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GREEN TIRE FORMING APPARATUS

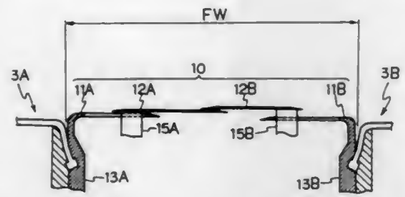
Hisashi Imai, Izumizaki; Shinji Hayase, Shirakawa; Shousaku Anzai, Shirakawa; Kenichi Masuda, Shirakawa, and Masaaki Iimura, Tamagawa, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

PCT No. PCT/JP90/01433, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO92/07707, PCT Pub. Date May 14, 1992

PCT Filed Nov. 2, 1990, Ser. No. 861,878

Int. Cl.[5] B29D *30/24, 30/36*

U.S. Cl. 425—31 14 Claims



1. A green tire forming apparatus comprising a driving section and a forming section supported by a shaft extended from the driving section wherein a center former section of the forming section comprises a pair of first former elements and a pair of second former elements, the pair of first former elements being simultaneously movable in opposed directions and the pair of second former elements being simultaneously movable in opposed directions, each one of the pair of first elements being adjacent one of the pair of second elements, adjacent first and second formed elements moving in a first direction while the other adjacent first and second former elements move in a second direction, the first and second directions being opposite directions, and the first and second former elements overlap for substantially a whole width of the elements when movement to a first position is complete, the pair of first and second former units thereby forming a four layered unit.

5,310,329

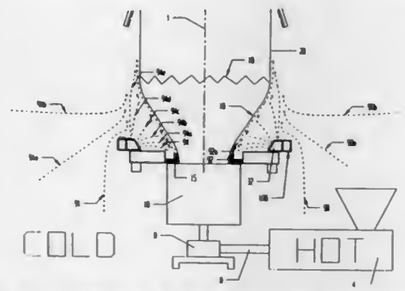
AIR SHROUD DEVICE FOR A BLOWN FILM EXTRUSION LINE

Robert E. Cree, 127 Bartle Ave., Newark, N.Y. 14513

Filed Feb. 5, 1992, Ser. No. 831,673

Int. Cl.[5] B29C *55/28*

U.S. Cl. 425—72.1 19 Claims



1. In combination an air shroud device and an air cooling means comprising at least one air cooling ring, said air shroud device and air cooling means constructed for use in a blown film extrusion line comprising a heated extruder for melting and pressurizing a flow of molten plastic resin and an annular die through which the molten resin extrudes and from which it is pulled away along an axis in the form of an expanding bubble, said air cooling means having annular cooling ring air outlet lips of predetermined given diameter for disposition closely adjacent to the path of the film, said annular cooling ring air outlet lips being constructed to direct at least one relatively high velocity stream of cooling air into cooling contact with the film in the base region of the bubble, to flow along the bubble in the direction of film travel, to cause the resin to cool as the film expands until a substantially fixed maximum bubble diameter is achieved at a frost line spaced from the annular die,

said air shroud device being constructed for use in cooperation with said annular cooling ring air outlet lips of predetermined diameter and comprising an annular air shroud outlet means in combination with a source of circumferentially uniform air,

said air shroud outlet means constructed and arranged to be disposed at a level below said frost line and coaxial with said film line axis, said annular air shroud outlet means being of substantially larger diameter than the diameter of said cooling ring air outlet lips so that said air shroud outlet means, when positioned in operative position, is spaced substantially radially outward from said annular cooling ring air outlet lips and the path of the film passing thereby,

and said annular air shroud outlet means being so related to its said air source that, in operation, it provides a diffused, relatively low velocity mass of air surrounding the relatively high velocity flow of cooling air from said annular cooling ring outlet lips,

whereby said movement induced from surrounding air by the directed flow of relatively high velocity cooling air from said cooling ring air outlet lips comprises uniform pseudo-ambient air drawn from the outlet region of said outwardly spaced annular air shroud outlet means.

5,310,330

SYSTEM FOR MOLDING LAMINATED ARTICLES OF A THERMOPLASTIC RESIN

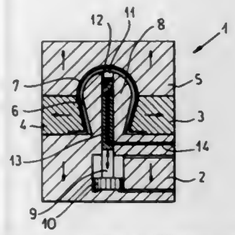
Konrad Zweig, Augsburg; Erwin Bürkle, Bichl, and Markus Spötzl, Munich, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,993

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1991, 4113148

Int. Cl.[5] B29C *45/02, 45/14, 45/18*

U.S. Cl. 425—116 5 Claims



1. An apparatus for molding a laminated resin article, the apparatus comprising:

an outer mold part having a concave inner surface;

an inner convex mold part having an inner convex surface and fittable with the outer part such that the inner-part and outer-part surfaces together form a substantially closed mold cavity;

a piston set in the inner mold part and having an end surface, the piston being movable between a retracted position with its end surface withdrawn from the inner-part surface and forming a pocket open inward into the cavity and an extended position with the end surface flush with and forming a smooth continuation of the inner-part surface, the inner part and the piston being formed with respective feed passages that communicate with each other only in the retracted position and that do not communicate with each other in the extended position, the feed passage of the piston opening at the end surface thereof; and

operating means for

holding a liner in the cavity generally against the concave outer-part surface, and

fitting the outer mold part holding the liner to the inner mold part to form the substantially closed mold cavity;

positioning the piston to form with its end surface the pocket open inward into the cavity;

filling the pocket with a mass of fluent synthetic resin; and

inwardly pressing the piston of the inner mold part from the retracted position into the extended position while the inner and outer mold parts are fitted together and without otherwise relatively moving the mold parts to force the resin mass from the pocket into the cavity until the end surface of the piston lies substantially flush with the inner-part surface to press the liner tightly against the outer-part surface and to misalign the feed passages to prevent the resin from flowing out of the cavity therethrough.

5,310,331

INJECTION MOLDING MACHINE WITH A MOLD CORE DRIVE APPARATUS

Shuichi Wakebe, Oshino; Hisaaki Matsui, Tama, and Motohiro Nagaya, Oshino, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

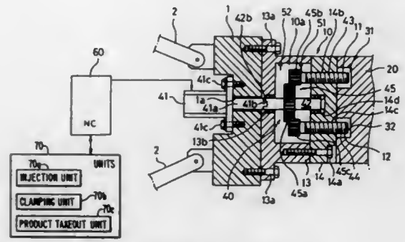
PCT No. PCT/JP91/00694, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO91/19599, PCT Pub. Date Dec. 26, 1991

PCT Filed May 23, 1991, Ser. No. 829,051

Claims priority, application Japan, Jun. 16, 1990, 2-156653

Int. Cl.[5] B29C *45/80*

U.S. Cl. 425—139 12 Claims



1. An injection molding machine comprising:

a mold having at least one mold part and at least one movable core;

a group of units including a mold clamping unit having a movable platen, and a core drive apparatus for driving the at least one movable core, the core drive apparatus including a servomotor having an output shaft coupled to the movable platen;

connecting means for operatively connecting the at least one movable core to the output shaft; and

a control device electrically coupled to the servomotor and the mold clamping unit, for controlling the drive of the group of units so that control of the mold clamping unit is independent from control of the core drive apparatus.

5,310,332

INJECTION MOLDING MACHINE WITH A MOVABLE DISPLAY DEVICE

Susumu Ito; Kikuo Watanabe, and Koichi Nishimura, all of Oshino, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

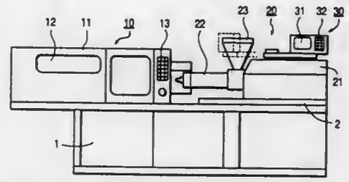
PCT No. PCT/JP91/01216, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO92/05025, PCT Pub. Date Apr. 2, 1992

PCT Filed Oct. 31, 1990, Ser. No. 856,912

Claims priority, application Japan, Sep. 20, 1990, 2-248812

Int. Cl.[5] B29C *45/76*

U.S. Cl. 425—169 2 Claims



1. An injection molding machine comprising:

a pole located behind an injection unit;

a swing arm supportably attached to said pole and being rotatable in a horizontal direction in close proximity above a top surface of said injection unit;

a ball caster rollable on said top surface of said injection unit and attached to a lower surface of a middle portion of said swing arm; and

a display device mounted on an end portion of said swing arm opposite to said pole and moveable between a retreating position directly above said injection unit and a working position above said injection unit at a position in front of a front surface of said injection unit.

5,310,333

ROLL STAMPER FOR MOLDING SUBSTRATE USED FOR OPTICAL RECORDING MEDIUM

Tetsuya Sato; Osamu Kanome, both of Kawasaki; Masataka Yashima, Yokohama, and Hiroyuki Sugata, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

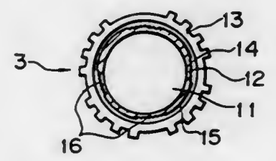
Division of Ser. No. 514,721, Apr. 26, 1990, Pat. No. 5,048,745.

This application Jun. 25, 1991, Ser. No. 720,615

Claims priority, application Japan, Apr. 26, 1989, 1-104688; Apr. 26, 1989, 1-104689; Apr. 26, 1989, 1-104690

Int. Cl.[5] B29C *59/04*

U.S. Cl. 425—363 10 Claims



1. A roll stamper, comprising:

a roll substrate, and

a stamper fixed to said roll substrate and having a front surface and a back surface, with a convexity and concavity preformat pattern on said front surface, wherein said stamper has an auxiliary layer adjacent to said back surface and comprised of a material different from that of said stamper, and

said roll substrate has a low-melting metal layer adjacent to a front surface thereof,

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said auxiliary layer being fixed to said roll substrate by contact with said low-melting metal layer so that said stamper is fixed to said roll substrate, wherein

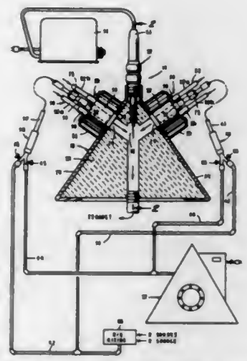
said auxiliary layer has a mirror-surface opposite said back surface of said stamper at an area corresponding to a part of said stamper where said preformat pattern is formed on said front surface, and has a roughened-surface opposite said back surface at an area corresponding to a part of said stamper where no preformat pattern is provided on said front surface.

5,310,334

METHOD AND APPARATUS FOR THERMAL DESTRUCTION OF WASTE

Spiro Spiros, Mascot, Australia, assignor to Air Duke Australia, Ltd., Sydney, Australia

Filed Jun. 3, 1992, Ser. No. 892,754
Int. Cl.[5] F23D *14/00*
U.S. Cl. 431—5 **16 Claims**



1. An apparatus for thermal destruction of pollutants contained within gaseous emissions from waste material comprising:

(a) a housing having an internal combustion chamber, said chamber having an inlet and an outlet;

(b) a source of mixed hydrogen and oxygen gas;

(c) gas mixing means connected to said source of mixed hydrogen and oxygen and in communication with the gaseous emissions to be burned for mixing said gaseous emissions with said mixed hydrogen and oxygen to produce a gaseous mixture, said mixing means having an outlet;

(d) a gas injector assembly mounted on said housing, said gas injector assembly having an inlet in communication with said outlet of said gas mixing means and an outlet in communication with said inlet of said internal combustion chamber;

(e) ignition means connected to said housing for controllably generating an electrical spark within said internal combustion chamber; and

(f) cooling means for controllably cooling said gas injector assembly.

14. A method for treating waste materials in an apparatus of the character having a combustion chamber, gas mixing means for mixing the waste material with hydrogen and oxygen gas, an injector means for injecting the mixture into the chamber and an electric arc ignition means for igniting a gaseous mixture within the chamber, the method comprising the steps of:

(a) burning the waste materials to produce gaseous emissions;

(b) mixing said gaseous emissions with a mixture of hydrogen and oxygen to produce a gaseous mixture; and

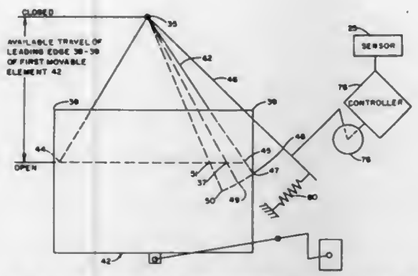
(c) introducing said gaseous mixture into the combustion chamber via the injection means and igniting said gaseous mixture with the electrical arc of the ignition means to cause said gaseous mixture to burn at an elevated temperature in excess of 3,000 degrees Fahrenheit.

5,310,335

TRIM SYSTEM FOR FUEL COMBUSTION SYSTEMS

Robert A. van Berkum, Chagrin Falls, Ohio, assignor to Robert A. van Berkum, Chagrin Falls, Ohio

Filed May 5, 1992, Ser. No. 878,634
Int. Cl.[5] F23N *5/00*
U.S. Cl. 431—12 **17 Claims**



1. In a control system for maintaining the desired air-to-fuel ratio during a combustion process occurring in a combustion apparatus and in which the control system includes a fuel flow control device having a fuel control means to control fuel flow, an air flow control device having an air control means to control air flow, means to interconnection the fuel control device and the air control device, said means comprising a fixed mechanical linkage, said linkage providing a fuel-to-air ratio throughout the range of energy release of the combustion apparatus, means to initially calibrate the relationship between the fuel flow control device and the air control device throughout the range of energy release of the combustion apparatus, there being a predetermined, fixed relationship between fuel flow and air flow throughout the entire range of operation of the combustion apparatus according to the initial calibration; the improvement comprising:

(a) a flow compensation means in at least one of said fuel flow control device and said air flow control device, said flow compensation means providing a means to change the rate of flow of at least one of said fuel flow control device and said air flow control device over the entire range of operation of the combustion apparatus, and thereby change the initial calibration between said fuel flow control device and said air flow control device in order to account for variations in air or fuel qualities caused by changes in pressure, changes in BTU content per unit volume of fuel, changes in oxygen content per unit volume of combustion air, or any combination thereof, said change to the initial calibration between said fuel flow control device and said air flow control device providing compensation to the current rate of energy release of the combustion apparatus, and simultaneously providing compensation to any and all rates of energy release within the operating range of the combustion apparatus.

7. An air flow control device for use with combustion chambers utilizing jack shaft combustion control, said air flow control device being mechanically linked to said jack shaft for control of combustion within said combustion chamber, said air flow control device comprising:

a port, said port having a port area, said air passing through said port;

a first moveable element for controlling a air flow rate through said port, movement of said first moveable element modifying said port area;

a second moveable element for adjusting said air flow rate through said port, movement of said second

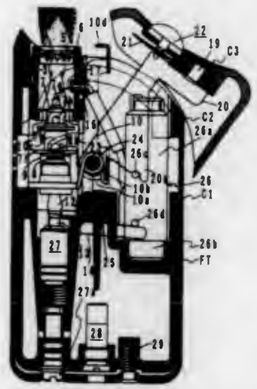
a movement generation means for moving said second moveable element between a first and second position in response to a signal from an associated exhaust gas analyzer.

5,310,336

LIGHTER

Takaaki Segawa, 3-57-14, Wakamiya, Ichikawa-shi, Chiba-ken, Japan

Filed May 17, 1993, Ser. No. 61,551
Claims priority, application Japan, Jul. 17, 1992, 4-190417; Jul. 17, 1992, 4-190418; Dec. 4, 1992, 4-325834; Jan. 5, 1993, 5-000205
Int. Cl.[5] F23Q *2/08*
U.S. Cl. 431—131 **8 Claims**



1. A lighter including a fuel tank (FT) including a gas discharge valve, a cylinder member (**3**), a nozzle member (**7***d*) which projects into an internal space of the cylinder member from below, a gas guide sleeve (**8**) for guiding a fuel gas which finds its way out of the fuel tank (FT) through the gas discharge valve thereof to the nozzle member (**7***d*), an air suction port (**8***b*) formed in the lateral surface of the gas guide sleeve (**8**), and ignition means for igniting a fuel gas which is led through the nozzle member (**7***d*) into the cylinder member (**3**); characterized by

an opening (**30***a*) formed in the lower end of the cylinder member (**3**) for admitting an air into the cylinder member (**3**);

a first shutter member (**7***h*) slidably mounted on the gas guide sleeve (**8**) and movable between a first position where it closes the air suction port (**8***b*) and a second position where it opens the air suction port (**8***b*);

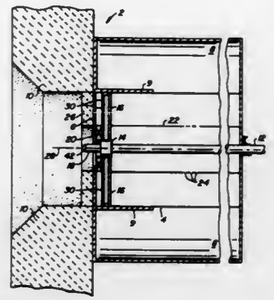
and a second shutter member (**7***g*) connected to the first shutter member (**7***h*) and disposed for movement to a first position where it opens the opening (**30***a*) when the first shutter member (**7***h*) moves to its first position and to a second position where it closes the opening (**30***a*) when the first shutter member (**7***h*) moves to its second position.

5,310,337

VIBRATION-RESISTANT LOW NO_x BURNER

Vladimir Lifshits, Burlingame, and Steve B. Londerville, Half Moon Bay, both of Calif., assignors to Coen Company, Inc., Burlingame, Calif.

Filed May 27, 1993, Ser. No. 68,372
Int. Cl.[5] F23C *5/00*
U.S. Cl. 431—174 **27 Claims**



1. A burner comprising:

a burner plate having a plurality of nonparallel, radically extending slots formed therethrough and arranged in a circular pattern adjacent a central region of said plate for introducing air and fuel gas into combustion chamber, the ratio of the distance between outer end portions of adjacent slots and inner end portions of adjacent slots is at least about 2:1 substantially varying between the central region and perimeter; and

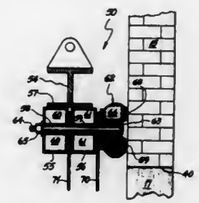
a plurality of burner tubes adapted to be coupled to a fuel source, each tube including a plurality of discharge openings and being oriented such that its discharge openings are aligned with one of said slots for directing fuel gas therethrough.

5,310,338

HEAT RETAINING CURTAINS FOR REHEAT FURNACE DISCHARGE OPENINGS AND CHARGING OPENINGS

Hugh J. Harding, McMurray, Pa., assignor to SSE International Corporation, Bridgeville, Pa.

Filed Mar. 24, 1993, Ser. No. 36,279
Int. Cl.[5] F24F *9/00*
U.S. Cl. 432—64 **14 Claims**



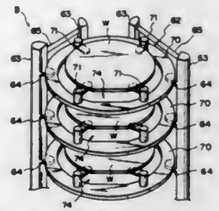
1. A closure for a charging opening of a reheat furnace having heating means which develop high temperatures, above 2000° F., in the region of said charging opening, said closure comprising:

a water-cooled curtain holder secured outside said furnace at the upper edge of said charging opening; a water passageway extending lengthwise through said curtain holder; plural, parallel ribbons of woven, high-temperature, sag-resistant alloy metal wire, each said ribbon being secured at its top end in heat-conductive relation with said curtain

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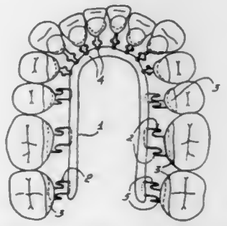
holder and depending vertically toward the bottom of said discharge opening; said parallel ribbons substantially entirely covering said charging opening when depending freely from said curtain holder and being adapted to for lateral displacement to accommodate entry of a workpiece through said charging opening.

5,310,339
HEAT TREATMENT APPARATUS HAVING A WAFER BOAT
Harunori Ushikawa, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 765,888, Sep. 26, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,443
Claims priority, application Japan, Sep. 26, 1990, 2-256155
Int. Cl.[5] F27D *5/00*
U.S. Cl. 432—253 **17 Claims**



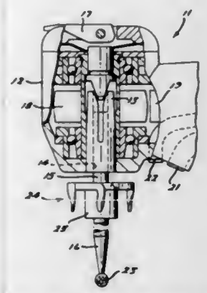
1. A heat treatment apparatus for transferring a semiconductor wafer between a cassette and a heat-resistant boat and for heat-treating a number of wafers loaded on the boat, comprising:
the boat having a wafer holding assembly for holding the wafer, a plurality of main posts, and a plurality of tongues equidistantly mounted to said main posts and projecting inward of the main posts;
said wafer holding assembly having a ring member fixed to said tongues and a plurality of supporting pieces mounted on an upper surface of said ring member such that wafers are brought into direct contact with said supporting pieces, an outer diameter of said ring member being larger than the wafer diameter;
wherein said ring member has a straight portion formed on an inner periphery thereof, and the straight portion corresponds to an orientation flat of the wafer, a major portion of a process gas flowing onto a wafer surface through the straight portion.

5,310,340
FIXED LINGUAL ORTHODONTIC APPLIANCE
Paolo F. Zedda, Sinnai (Cagliari), Italy
Filed Mar. 26, 1993, Ser. No. 37,892
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—8 **9 Claims**



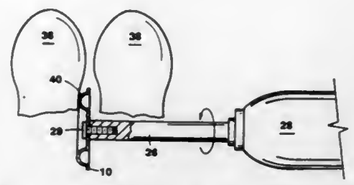
1. A fixed lingual orthodontic appliance, characterized by the fact that it comprises:
a base and support element (1) destined to be rested on the oral mucous membrane, substantially horseshoe-conformed, having a thickness which is inferior to its transversal breadth, and which follows conformingly and at the distance of a few millimeters, the progression of the dental arch, upper and lower, in its morphological development;
a plurality of elastic connection elements (2), realized through modeling of a wire with predetermined elastic characteristics, at one end rigidly fixed to the said support element (1) and at another end fixed on a respective bracket (3), arranged in such a way as to be near or more or less adjacent to a gingival mucous membrane (6) along all of its morphological development;
a plurality of brackets (3) realized in synthetic resin and in number equal to that of the teeth to be treated, conformed exhibiting a concave face (7), destined to be cemented on the same lingual surface of the tooth, a convex face (8) exposed to the oral cavity, being superficially perfectly smooth and with a convexity which conforms to the development of the corresponding surface of the tooth;
said elastic connecting elements (2) being envisaged in a number at least equal to the number of the brackets (3) and the relative teeth to be treated and a plurality of channels or holes (4) being envisaged on the said base and support element (1) in a number corresponding to the number of elastic connecting elements (2) to be fixed and corresponding in position to the relative brackets (3).

5,310,341
DENTAL APPARATUS
Joseph I. Byer, 36601 Howard Rd., Farmington Hills, Mich. 48331
Filed Jan. 12, 1993, Ser. No. 3,315
Int. Cl.[5] A61C *1/16, 3/02*
U.S. Cl. 433—116 **12 Claims**



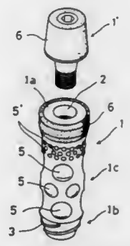
2. A dental bur used in conjunction with a dental handpiece, said dental handpiece incorporating a chucking mechanism and a driving mechanism to rotate said chucking mechanism at high speeds, said dental bur comprising a tool head at one end and a shank segment having an end portion at the other end, said end portion being received in said chucking mechanism, and a deflecting means mounted on said shank segment intermediate the end portion of said shank segment and said tool head of said dental bur, said deflecting means upon being rotated by said chucking mechanism shaped to create at least one continuous air stream to deflect air-borne particles away from said dental handpiece to prevent the deposition of said air-borne particles on and in said handpiece.

5,310,342
ROTARY TOOL FOR SHAPING REPLACEMENT TEETH
Stuart H. Bernstein, 24 Cummings Rd., Newton, Mass. 02159
Filed Feb. 19, 1993, Ser. No. 19,620
Int. Cl.[5] A61C *3/06*
U.S. Cl. 433—166 **8 Claims**



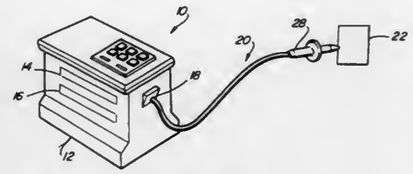
1. A rotary member for shaping replacement teeth comprising
a metal support having a generally circular outer shape with a radius less than 20 mm,
said metal support having a generally flat inner portion extending at least 30% of said radius, said metal support also having contoured contact surfaces located radially outward of said flat inner portion, and
abrasive particles bonded to said contoured contact surfaces,
wherein said contoured contact surfaces are arcuate,
wherein said contoured contact surfaces are semicircular in shape in cross-section and extend away from and back to a plane passing through said generally flat inner portion.

5,310,343
ENDO-OSSEOUS IMPLANT
Jiro Hasegawa, 4-560 Komaki, Komaki-shi, Aichi-pref., and Bunkichi Azuma, 680-10 Aza Shimokawada, Ohaza Sanbongi, Nisshin-cho, Aichi-gun, Aichi-pref., both of Japan
Filed Oct. 14, 1992, Ser. No. 960,911
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **20 Claims**



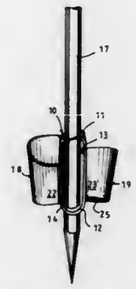
1. An endo-osseous implant, for embedding in dental alveoli, said implant comprising a plurality of concave surfaces on a tubular wall of a cylindrical main body, wherein each said concave surface has a shape of a double hemisphere consisting of an upper hemisphere of greater diameter and a lower hemisphere of smaller diameter.

5,310,344
DENTAL LASER SYSTEM
Arthur Vassiliadis, 707 Continental Cir. #412, Mountain View, Calif. 94040; Joseph W. Shaffer, 235 Vincent Dr., Mountain View, Calif. 94041; David J. Fullmer, 156 Rock Harbor La., Foster City, Calif. 94404; Michael H. Brewer, 8001 Pine Dr., Felton, Calif. 95018; David R. Hennings, 190 Welcome Rd., Newcastle, Calif. 95658; Terry D. Myers, 25334 Lyncastle, Farmington Hills, Mich. 48018, and William D. Myers, 5855 Wingcroft Ct., Birmingham, Mich. 48010
Filed Nov. 1, 1990, Ser. No. 607,817
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 **10 Claims**



1. A dental laser system comprising:
an erbium doped YAG laser for dental treatment applications,
means for exciting said laser so that said laser produces a plurality of laser light pulses,
means for delivering said light pulses to a site in a mouth of a patient remote from said laser, said delivery means comprising a sapphire fiber strand, said sapphire fiber strand consisting of a single crystal having a solid cross-sectional shape.

5,310,345
WRITING AID
Joshua Gershon, 149 Yale St., Roslyn Heights, N.Y. 11577
Filed May 3, 1993, Ser. No. 55,325
Int. Cl.[5] G09B *11/00*
U.S. Cl. 434—166 **4 Claims**

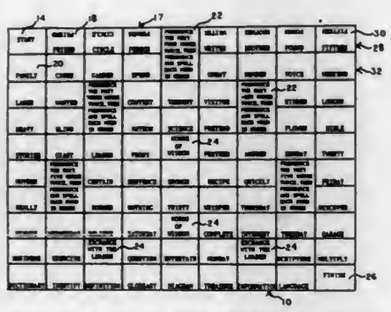


1. A writing aid for both left- and right-handed persons, comprising:
a central section having first side and second oppositely facing sides separated to form a space therebetween with the tops and bottoms of said sides being joined by top and bottom walls, respectively, each of said top and bottom walls being provided with an opening aligned with each other for receiving and holding in frictional engagement an elongated writing instrument visible through said space between said first and second sides to assist the user to naturally assume the correct position for grasping said writing instrument;

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a first sleeve attached to said first side of said central section defining a finger receiving first pocket and a second sleeve attached to said second side of said central section defining a finger-receiving second pocket, said sleeves and associated pockets being configured and dimensioned and angularly offset with respect to one another in such a manner that the user's thumb may be inserted into one of said finger-receiving pockets and the user's index finger may be inserted into the other of said finger-receiving pockets so that they are oriented for holding said writing instrument received and held in said central section in proper writing position.

5,310,346
EDUCATIONAL WORD GAME
Richard H. Dillhoff, 209 E. Anthony, Celina, Ohio 45822
Filed Oct. 3, 1990, Ser. No. 592,183
The portion of the term of this patent subsequent to Oct. 10, 2009, has been disclaimed.
Int. Cl.[5] G09B *1/00*
U.S. Cl. 434—167 **5 Claims**

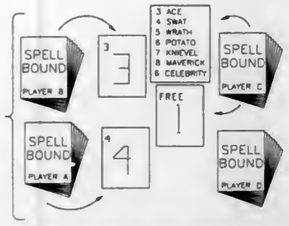


1. A method for playing a game, said method comprising the steps of: placing a game piece on a start space of a substrate, said substrate having a plurality of rows thereon, wherein each row comprises a plurality of spaces, and a plurality of individual words are written in a plurality of said spaces; moving said game piece along said spaces according to the number appearing on a die which is to be rolled as each player takes a turn; and

requiring a player to successfully perform at least one action from a group of actions consisting of reading, pronouncing, spelling, and defining said individual words in said spaces as said player's game piece is placed on particular ones of said spaces, for said player to be entitled to further advance said player's game piece on said substrate.

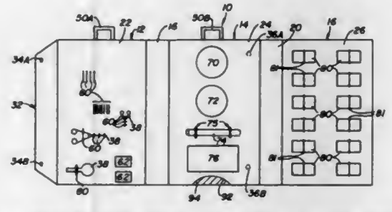
5,310,347
CARD GAME FOR SPELLING IMPROVEMENT AND EDUCATION
Chester Brand, 29055 Schwartz Rd., Westlake, Ohio 44145
Filed Nov. 23, 1992, Ser. No. 979,884
Int. Cl.[5] G09B *1/00, 19/00*; A63F *1/00, 9/20*
U.S. Cl. 434—167 **15 Claims**

1. Playing apparatus comprising a first set of playing pieces, said first set of playing pieces being generally flat, said first set of playing pieces each having a top side and a bottom side, said bottom side of each piece bearing thereupon indicia, said indicia bearing upon said bottom side of each piece of said first set of playing pieces is a numerical indicia having positive integers, a second set of playing pieces, each said piece of said second set of playing pieces being generally flat, said second set of playing pieces each having a top side and a bottom side, said bottom side of each piece bearing thereupon word indicia, said word indicia bearing upon said bottom side of each piece of said second set of playing pieces includes a plurality of words having different lengths, and wherein said words are in



the form of a list, said words having lengths from and including three letters up to and including n letters.

5,310,348
SUTURE DEMONSTRATION PORTFOLIO
Eric Miller, Colombus, Ohio, assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 9, 1992, Ser. No. 958,627
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—262 **26 Claims**



I. A surgical suture demonstration portfolio comprising at least two relatively flat, planar panel members hinged together such that said panel members can be positioned in a closed position in which said panel members are disposed parallel to and in stacked relation to one another, and an open position in which said panel members are disposed adjacent to and coplanar with one another, wherein at least one of said panel members comprises means for demonstrating the use of surgical sutures and at least one of said panel members comprises a tool-carrying surface having means to carry a plurality of tools thereon and to present said tools for grasping when said panel members are positioned in said open position.

5,310,349
INSTRUCTIONAL MANAGEMENT SYSTEM
Dan B. Daniels, San Diego; Darrell M. Olps, Poway; Carl G. Reese, San Diego; Tom R. Rahlfs, Encinitas, and Ronald R. Carlton, San Marcos, all of Calif., assignors to Jostens Learning Corporation, San Diego, Calif.
Filed Apr. 30, 1992, Ser. No. 876,584
Int. Cl.[5] G09B *3/00*
U.S. Cl. 434—350 **19 Claims**

1. A user interface apparatus of an instructional management system for presenting text and graphics information to a user, the interface being targeted to scholastic environments and comprising:

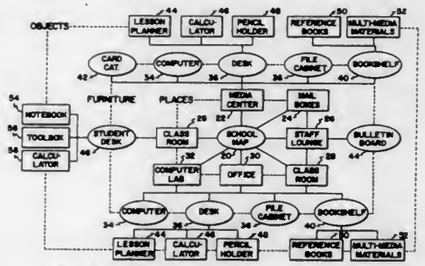
(a) at least one computer connected to a computer network, the computer having user input means, a video screen, and data storage means coupled thereto;

(b) instructional and administrative information stored in an electronic format in the data storage means of the computer; and

(c) virtual school means, operated by the computer and coupled to the data storage means, for providing a networked virtual reality environment so that one or more users of the compute network can access the instructional and administrative information by grouped functions, wherein the user selects among the grouped functions by first accessing one of a plurality of representations of rooms within a school representation as displayed on the video screen and then accessing at least one representation of office equipment within the accessed room as displayed on the video screen, the networked virtual reality environment thereby presenting the user as a real-time entity within the virtual school means so that the user interfaces with others users and elements therein; wherein the virtual school means comprises:

(1) front door means, indicated by a front door graphic on the video screen, for providing entry into the virtual school means, the front door means further comprising school security means, indicated by a doorknob graphic displayed on the video screen within the front door graphic, for controlling access to the virtual school means by requesting a name and a password from a user when the doorknob graphic is accessed;

(2) school map means, indicated by a map graphic of a school representation displayed on the video screen, for providing access among the plurality of rooms in the virtual school means;



(3) hallway means, indicated by a hallway graphic displayed on the video screen, for traversing among the room in the virtual school means;

(4) office means, indicated by an office graphic displayed on the video screen, for providing administrative functions including the generation of administrative reports for the virtual school means;

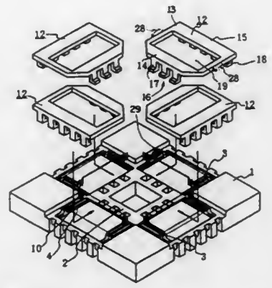
(5) classroom means, indicated by a classroom graphic displayed on the video screen, for providing shared access to lessons, tools, and references within the virtual school means;

(6) computer laboratory means, indicated by a computer laboratory graphic displayed on the video screen, for providing system management functions including the generation of reports, setting up the virtual school means, and assigning a learning path to a student;

(7) media center means, indicated by a media center graphic displayed on the video screen, for providing audio-visual management functions within the virtual school means; and

(8) lounge means, indicated by a lounge graphic displayed on the video screen, for providing communications functions within the virtual school means, including the accessing of a public bulletin board for teachers, electronic mail, and external online information services.

5,310,350
CONNECTOR
Noriyuki Matsuoka, Yokohama, and Masanori Egawa, Sendai, both of Japan, assignors to Yamaichi Electric Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 857,870, Mar. 26, 1992, abandoned.
This application Aug. 6, 1993, Ser. No. 102,959
Claims priority, application Japan, Mar. 27, 1991, 3-87483
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—72 **2 Claims**



1. A connector comprising:

a base member having an upper surface with a front end and a rear end;

a plurality of contacts arrayed in parallel relation with one another atop said upper surface of said base member, each of said contacts including a seat portion received on said upper surface of said base member and a contact portion extending upwardly from said seat portion;

wherein said contact portions of said contacts include basal portions at which said contact portions connect with said seat portions, respectively;

wherein said seat portions of said contacts comprise front seat portions extending forwardly of said basal portions, respectively, and rear seat portions extending rearwardly of said basal portions, respectively;

wherein a front fixture device is provided and includes a front retaining claw engaged with said base member to secure said front fixture device to said base member, and a front presser portion laid on and across said front seat portions of said contacts such that said front seat portions are firmly sandwiched between said front presser portion of said front fixture device and said upper surface of said base member;

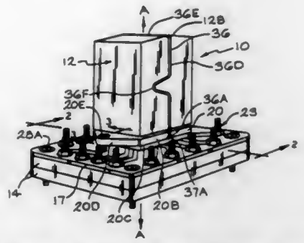
wherein a rear fixture device is provided and includes rear retaining claw engaged with said base member to secure said rear fixture device to said base member, and a rear presser portion laid on and across said rear seat portions of said contacts such that said rear seat portions are firmly sandwiched between said rear presser portion of said rear fixture device and said upper surface of said base member;

wherein said front presser portion has a front rib formed thereon, said front rib protruding downwardly from a lower surface of said front presser portion and extending across said front seat portions of said contacts, such that upper surfaces of said front seat portions bite into said front rib to enhance pressing engagement between said front seat portions and said front presser portion; and

wherein said rear presser portion has a rear rib formed thereon, said rear rib protruding downwardly from a lower surface of said rear presser portion and extending across said rear seat portions of said contacts, such that upper surfaces of said rear seat portions bite into said rear rib to enhance pressing engagement between said rear seat portions and said rear presser portion.

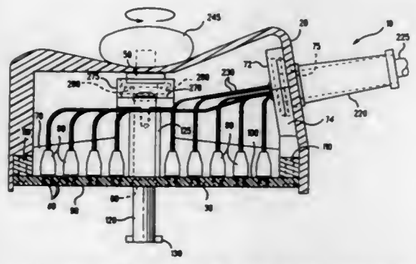
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5,310,351
RELAY SUPPORT CIRCUIT BOARD UNIT
Theodore McAdow, 806 Hyannis Port S., Crosby, Tex. 77532, and Ralph G. Dennett, 20 Bartlett Rd., Brentwood, N.H. 03833
Filed Oct. 29, 1992, Ser. No. 968,394
Int. Cl.[5] H01R *13/00, 9/09*
U.S. Cl. 439—74 9 Claims



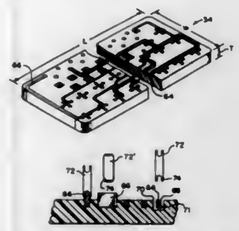
1. A mounting assembly for a relay which comprises:
(a) a flat printed circuit board with multiple terminals mounted around a periphery of the board extending upward from a top surface of the board, each terminal having a lead converging around a central portion of the board and ending at an opening in the board with a conductive material around each opening, wherein the terminals are a set of bolts mounted through the support means and board with nuts mounted on the bolts adjacent the top surface of the board;
(b) an electrical connector with pins extending from a first side of the connector and sockets for mounting the relay on an opposite second side of the connector, the pins being secured in the openings in the board by the conductive material, wherein there is a space between the top surface of the board and the first side of the connector allowing passage of air to cool the pins;
(c) non-conductive support means mounting the board on a bottom surface of the board opposite the connector; and
(d) securing means for holding the support means and board together.

5,310,352
SUBSTRATE INTERFACING ELECTRICAL CONNECTOR SYSTEM
Robert S. Mroczkowski, Lititz, and Richard E. Rothenberger, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Dec. 24, 1992, Ser. No. 996,750
Int. Cl.[5] H01R *13/62, 23/72*
U.S. Cl. 439—76 30 Claims



1. A connector for electrically interfacing contacts to a device containing a circuit-bearing substrate and a cooperating surface comprising:
a printed wiring board adapted to receive a multi-circuit connector element for communicating data from an outside source to the device, the printed wiring board including a mating surface having an array of conductive pads exposed thereacross associate with a corresponding array of conductive sites of the circuit-bearing substrate on an exposed mating interface thereof;
housing means for mounting the printed wiring board in a manner exposing the mating surface thereof; and
securing means assembled to the housing means and extending from an exposed actuation section through and beyond the mating surface of the printed wiring board to a distal end having an interlocking means adapted to interlock with and be unlockable from said cooperating surface in the device; and
the housing means including structure for supporting the securing means upon actuation thereof to receive substantial force therefrom in the mating direction and for supporting the printed wiring board at least at substantially all peripheral regions thereof to equally distribute and transmit force thereagainst,
whereby upon actuation the securing means is cinched to the cooperating surface and is urged toward the device and exerts sufficient force against the support means and therefore against the printed wiring board make effective electrical contact with the corresponding conductive sites of the substrate.

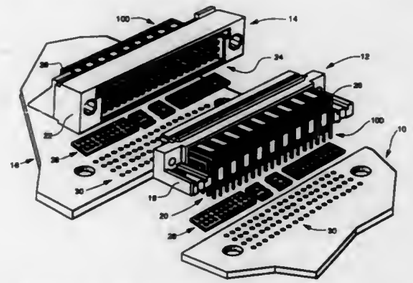
5,310,353
ELECTRICAL POWER DISTRIBUTION CENTER HAVING CONDUCTIVE RIDGES
Steven R. Parrish, Utica, and David E. Champlin, Port Huron, both of Mich., assignors to Augat Inc., Mansfield, Mass.
Continuation of Ser. No. 900,243, Jun. 17, 1992, abandoned.
This application May 25, 1993, Ser. No. 67,482
Int. Cl.[5] H01R *9/00*
U.S. Cl. 439—76 14 Claims



1. A power distribution center of the type generally used in an automotive electrical system for housing fuses and relays, comprising:
at least one insulative housing;
at least one insulative board disposed within said insulative housing, said at least one insulative board having at least one substantially planar surface and a plurality of recesses disposed therein;
at least one conductive bus comprising strip stock, said strip stock being of a type to be flexibly configurable into an angled pattern as it is placed into at least one of said plurality of recesses and having a substantially rectangular cross-section including a height and a width that is greater than said height, said strip stock being disposed and oriented within at least one of said plurality of recesses via a friction fit and having said width orthogonally disposed with respect to said at least one substantially planar surface to form a conductive ridge, said conductive ridge being accessible for electrical interconnection therealong; and

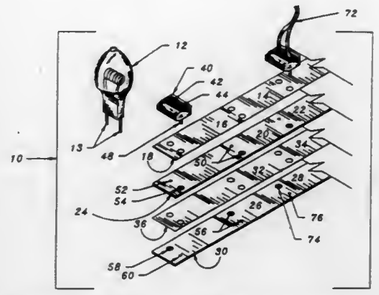
at least one interface terminal engaging said conductive ridge at portions of said conductive ridge which are exposed to receive said at least one interface terminal, said at least one interface terminal including at least one female portion for mechanically and electrically engaging said conductive ridge for providing electrical continuity therewith.

5,310,354
INTEGRAL GROUND TERMINAL AND TAIL SHIELD
Joseph A. Oswald, Jr., Mechanicsburg, Pa., assignor to E. I. Du Poot de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 854,159, Mar. 19, 1992, abandoned.
This application Feb. 17, 1993, Ser. No. 28,772
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—108 9 Claims



1. A connector for interconnecting a mating connector and a circuit assembly, comprising:
an insulative housing;
a plurality of terminals arranged in rows and columns in the housing;
at least one integral ground terminal and tail shield in one of the columns and comprising:
a first contact end portion for contacting a mating terminal contact portion in the mating connector;
a first, substantially flat, longitudinal, tail portion connected to the first contact end portion;
a second, substantially flat, longitudinal, tail portion connected to the first tail portion at a bend;
a second contact end portion terminating the second tail portion, the second contact end portion for being connected to the circuit assembly;
a first, substantially flat, shield member integrally connected to one of the first tail portion and the second tail portion, the first shield member non-integrally electrically contacting the other one of the first tail portion and the second tail portion, the first shield member being substantially perpendicular to the first tail portion and the second tail portion; and
a second, substantially flat, shield member integrally connected to one of the first tail portion and the second tail portion, the second shield member non-integrally electrically contacting the other one of the first tail portion and the second tail portion, the second shield member being substantially perpendicular to the first tail portion and the second tail portion; and
the first and second shield members and the first and second tail portions of the integral ground terminal and tail shield defining a pocket for enclosing tails of a plurality of the terminals in the same column as the integral ground terminal and tail shield.

5,310,355
STRIP LIGHTING ASSEMBLY
Irmgard Dannatt, 5018 Tutle Cove Rd., Manhattan, Kans. 66512
Filed Mar. 9, 1993, Ser. No. 28,291
Int. Cl.[5] H01R *25/16*
U.S. Cl. 439—110 15 Claims



1. A light assembly for holding and illuminating a plurality of light bulbs, comprising:
a. an elongated insulated band formed of insulating material having an upper side and a lower side,
b. a first conductive strip having an upper side and a lower side, said first conductive strip being aligned parallel to said insulated band,
c. a second conductive strip having an upper side and a lower side, said second conductive strip being aligned parallel to said insulated band,
d. an intermediate insulating strip having an upper side and a lower side, said intermediate insulating strip being attached to said first conductive strip and to said second conductive strip to prevent electrical contact between said first conductive strip and said second conductive strip,
e. connecting means for connecting said first conductive strip, said second conductive strip, said intermediate insulating strip, and said insulated band,
f. a plurality of sockets connected to said upper side of said insulated band, each of said sockets having a first and second conductive receptacle formed therein, said first and second receptacles being separated from each other, each of said first receptacles having a first terminal protruding therefrom to make electrical contact with said first conductive strip and each of said second receptacles having a second terminal protruding therefrom to make electrical contact with said second conductive strip, and
g. adjusting means for restricting or expanding at least one of said receptacles formed in at least one of said sockets.

5,310,356
TRANSMISSION DEVICE USED BETWEEN TWO RELATIVELY ROTATABLE COMPONENTS
Ken Obata; Seiichi Ueno, and Masahiro Hasegawa, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Feb. 17, 1993, Ser. No. 18,877
Claims priority, application Japan, Feb. 20, 1992, 4-69385
Int. Cl.[5] H01R *39/02*
U.S. Cl. 439—164 19 Claims

1. A transmission device comprising:
an inner case and an outer case which are rotatable relative to each other, and which are coupled together to define a space therebetween for receiving a transmission medium which is spirally wound and housed in said space defined by said inner case and said outer case;

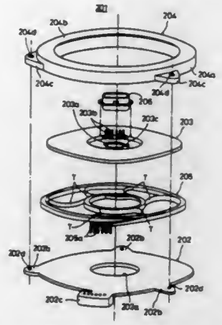
VOL 1162 ISS 2 MAY 10 1994 UMI

a plurality of flexible cables provided in said space defined by said inner case and said outer case;

said plurality of flexible cables including at least one spirally wound transmission cable serving as said spirally wound transmission medium;

each of said plurality of flexible cables having inner and outer ends fixed to said inner case and to said outer case, respectively;

each of said plurality of flexible cables having inner and outer end sections, said inner and outer end sections normally extending in opposite directions from each other circumferentially around said inner and outer case, so that



a direction reversal section at which cable movement reverses is formed in said space defined by said inner and outer cases;

said direction reversal sections of said plurality of flexible cables being spaced at mutually equal angular intervals circumferentially around the whole circumferential extent of said inner and outer cases; and

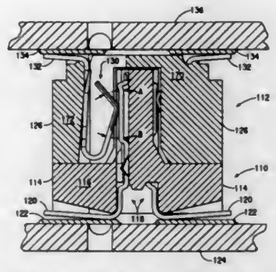
each of said direction reversal sections generating an elastic reaction force for pressing the inner end section of at least one counterpart of said plurality of flexible cables, and also generating an elastic reaction force for pressing the outer end section of at least one counterpart of said plurality of flexible cables.

5,310,357

BLADE-LIKE TERMINAL HAVING A PASSIVE LATCH

Stanley W. Olson, East Berlin, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Filed Feb. 22, 1993, Ser. No. 20,489
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—346 **5 Claims**



1. A connector assembly having a first connector, a second connector with a plurality of cantilever beam terminals and a circuit assembly, the first connector interconnecting the second connector and the circuit assembly, the first connector comprising:

an insulative connector housing having a base and a first wall generally perpendicular to the base, the first wall with a plurality of parallel slots;

a plurality of blade terminals, each one of the blade terminals comprising:

an insertion end portion having wings for placement in one of the parallel slots;

a strip-like contact portion having a substantially flat surface for wiping and contacting one of the cantilever beam terminals;

a first transition portion connecting the insertion end portion and the strip-like contact portion, the first transition portion comprising a retentive bump;

a solderable tail portion for mechanical and electrical connection to the circuit assembly; and

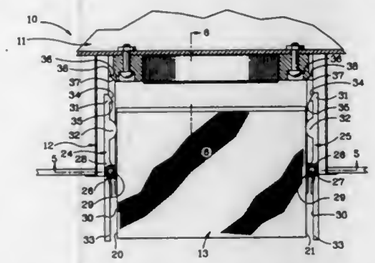
a second transition portion connecting the strip-like contact portion and the solderable tail portion, the second transition portion comprising retentive means for securing the blade terminal in the connector base.

5,310,358

COMPUTER DOCKING SYSTEM

David C. Johnson, Winston Salem; Robert M. Renn, Pfafftown; Keith L. Volz, Jamestown, and Frederick R. Deak, Kernersville, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1992, Ser. No. 995,615
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—358 **12 Claims**



1. A computer docking system, comprising a first device and a second device to be electrically interconnected thereto, a guide housing between the respective devices for slidably moving one of the said devices into a telescopic relationship therebetween, said guide housing being substantially rectangular in cross-section and is provided with top and bottom walls joined by respective side walls, wherein the top wall has a first pair of spaced-apart inwardly-projecting longitudinally-extending guide ribs formed thereon substantially parallel to the respective side walls of the guide housing, wherein the bottom wall has a second pair of spaced-apart inwardly-projecting longitudinally-extending guide ribs formed thereon substantially parallel to the respective side walls of the guide housing and aligned with the first pair of guide ribs on the top wall, wherein one of the devices has respective sides engaging the first and second pairs of guide ribs as the said one device is slidably inserted into the guide housing, and such that the respective side walls of the guide housing and the respective sides of the said one device define respective first and second chambers therebetween, wherein one of said devices is provided with at least one flexible electrical connector in the form of a flexible film having electrical circuitry thereon, and the other said device has at least one circuit element engaging said flexible electrical connector, means for assuring that the flexible electrical connector engages the circuit element with an insertion force which is substantially zero, and one of the

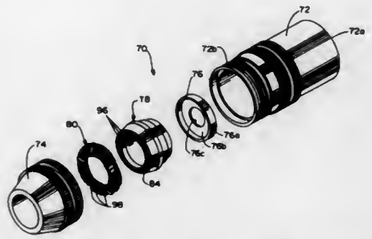
devices having a pair of manually-releasable spring-loaded latches pivotably mounted thereon, such that the latches automatically engage the other of the devices upon completion of the slidable movement therebetween to retain the devices in their telescopic relationship, and such that the latches may be manually pivoted and released to enable the devices to be separated.

5,310,359

CABLE CONNECTOR WITH STRAIN RELIEF

Richard Chadbourne, Anaheim; Scott D. Magovern, Huntington Beach, and Robert A. Miller, Anaheim Hills, all of Calif., assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 10, 1993, Ser. No. 75,152
Int. Cl.[5] H01R *13/59*
U.S. Cl. 439—462 **8 Claims**



1. In a connector backshell assembly for strain relief mounting to an electrical cable, including a backshell having forward and rearward ends and an axially extending cable-receiving aperture therethrough, a toroidally configured radially compressible strain relief coil spring for surrounding the cable and disposed near the rearward end of the backshell, and compression means engageable with the backshell for selective rotational and axial movement relative thereto, the compression means including a forwardly facing concave cam surface for engaging and radially compressing the coil spring into strain relief engagement with the cable, wherein the improvement comprises interference means operatively associated with the backshell and non-rotatably engageable with the strain relief coil spring to prevent rotation of the coil spring with the rotatable compression means relative to the backshell,

said interference means including axially facing seriations for non-rotatably engaging the coil spring.

5,310,360

CIRCUIT BOARD MOUNTED MODULAR PHONE JACK

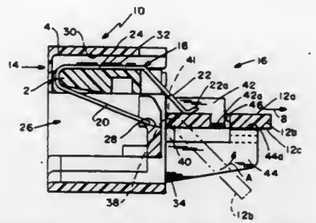
Bruce A. Peterson, Schaumburg, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed May 18, 1993, Ser. No. 63,994
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—571 **9 Claims**

1. An electrical connector assembly for interconnecting a modular phone plug with a printed circuit board, comprising:

housing means having a forward mating end and a rearward end, a plug-receiving socket formed in the forward mating end and adapted to receive a modular phone plug, and the rearward end being configured so that an edge of a printed circuit board can be fully inserted with the printed circuit board at a first angular orientation relative to the housing means and then rotated to a second angular orientation; and

a plurality of terminals mounted in the housing means, each terminal including a contact portion at one end, a tail portion at an opposite end and an intermediate portion therebetween, the intermediate portion being anchored in the housing means, the contact portion projecting into the socket for engaging a contact of the modular phone plug when inserted into the socket, and the tail portion being configured for engaging a contact pad on the printed circuit board with minimal contact force in said first angular orientation of the board and with considerable contact force in said second angular orientation of the board.

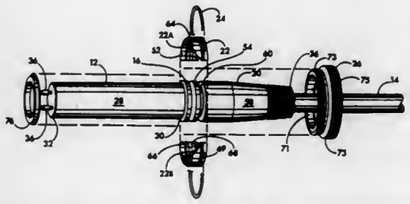


5,310,361

HIGH-VOLTAGE X-RAY CABLE CONNECTION

Thomas J. Muchowicz, Elk Grove Village, and Arkady Kantor, Buffalo Grove, both of Ill., assignors to Eureka X-Ray Tube Corp., Arlington Hts., Ill.

Filed Nov. 30, 1992, Ser. No. 984,291
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—610 **17 Claims**



1. A high-voltage cable connection for connecting a high-voltage power supply and an x-ray tube, the cable connection comprising:

(a) a terminal having a rigid male sleeve formed of insulating material and a plurality of conductors, the sleeve having a proximal end and a distal end, wherein the conductors are routed through the sleeve and extend to the distal end and terminate in a pattern of pins, and wherein the sleeve is shaped to fit within a mating female receptacle and the pattern of pins are arranged to fit within a pattern of sockets which are connectors in the power supply or the x-ray tube;

(b) a cable having a first end, a second end, the conductors extends between the first and second ends, a length defined between the first end and the second end, and a circumference, the first end of the cable being inserted into the proximal end of the sleeve such that the conductors continue uninterrupted through the sleeve and the length of the cable;

(c) a flexible boot which is juxtaposed with the proximal end of the rigid male sleeve and envelops the circumference of the cable at a point where the cable enters the sleeve;

(d) a collar which conforms about a boundary formed between the proximal end of the sleeve and the flexible boot to maintain the boot in position opposed to proximal end of the male sleeve, the collar having multiple segments each of which fit about a portion of the boundary;

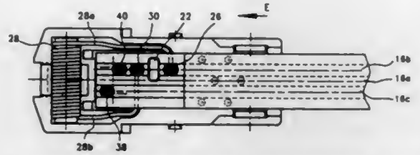
(e) a ring which fits about the collar to hold the segments together; and

(f) a nut having an external thread portion, the nut fitting over the collar and the ring, and the external threads

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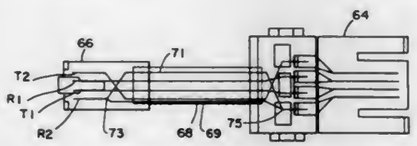
mating with internal threads which form part of the receptacle in the power supply or the x-ray tube.

5,310,362
PIN-AND-SOCKET CONNECTOR
Gerhard Bäuerle, Obersulm-Willsbach, and Claus Dullin, Ilsfeld-Wüstenhausen, both of Fed. Rep. of Germany, assignors to Amphenol-Tuchel Electronics GmbH, Heilbronn, Fed. Rep. of Germany
Filed May 21, 1993, Ser. No. 65,532
Claims priority, application Fed. Rep. of Germany, May 23, 1992, 4217205
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **13 Claims**



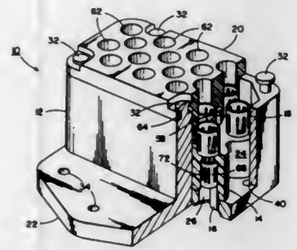
1. Pin-and-socket connector for accommodating and electrically contacting the strip conductors (16*b*, *c*) of a flat conductor flat cable (16), wherein an electrical component (28) is connected to at least one strip conductor (16*b*), with a number of plug contacts (34) corresponding to the number of strip conductors (16*b*, *c*), which are positioned in the pin-and-socket connector, possessing the following characteristics:
1.1. a slot-like opening (14) for accommodating and fixing the flat conductor flat cable (16), wherein
1.2. at least one strip conductor (16*b*) is interrupted along its path in the pin-and-socket connector,
1.3.1. the strip conductor has a contact point (26), to which one arm (28*a*) of the component (28) is electrically connected, in front of the interruption (22), viewed in the plugging-in direction (E),
1.3.2. the other arm (28*b*) of the component (28) is in contact with another contact point (30) of the strip conductor (16*b*) behind the interruption (22),
1.4. additional openings (32) for accommodating and fixing the plug contacts (34), which contact the corresponding strip conductors (16*b*, *c*) behind the interruption (22) with their end facing the flat conductor flat cable (16), are provided in the pin-and-socket connector.

5,310,363
IMPEDANCE MATCHED REDUCED CROSS TALK ELECTRICAL CONNECTOR SYSTEM
Kenneth W. Brownell, Marion, and Sterling A. Vaden, Black Mountain, both of N.C., assignors to Superior Modular Products Incorporated, Swannanoa, N.C.
Continuation-in-part of Ser. No. 855,893, Mar. 23, 1992. This application May 25, 1993, Ser. No. 66,974
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—676 **22 Claims**



1. A low cross talk electrical signal transmission system comprising:
an electrical connection apparatus having at least first, second, third and fourth conductors; said first and second conductors forming a first signal pair; said third and fourth conductors forming a second signal pair; said first and second conductors being adjacent to and parallel to one another through at least a major portion of said electrical connection apparatus; said third conductor being adjacent to and parallel to said first conductor and said fourth conductor being adjacent to and parallel to said second conductor through at least a portion of said connector apparatus thereby forming a first group of signal paths thus inducing cross talk from one signal pair to another signal pair when signals are applied to either of said signal pairs; said third conductor being adjacent to and parallel to said second conductor and said fourth conductor being adjacent to and parallel to said first conductor for another portion of said connector apparatus forming a second group of signal paths, thereby cancelling a substantial amount of said cross talk; a fifth conductor connected to said third conductor and being adjacent to said fourth conductor in said second group of signal paths thereby improving return, loss.

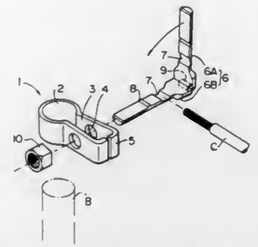
5,310,364
GROUNDING BLOCK
Frederick D. Hooper, and James D. Anderson, both of Norwalk, Conn., assignors to Burndy Corporation, Norwalk, Conn.
Filed Nov. 3, 1992, Ser. No. 971,053
Int. Cl.[5] H01R *11/09*
U.S. Cl. 439—724 **15 Claims**



1. A grounding block comprising:
a housing having a receiving cavity, top rivet posts extending from a top surface of the housing, and bottom rivet posts extending from a bottom surface of the housing;
an electrical contact terminal having a busing strip and contacts extending from the busing strip, the contacts being located in the receiving cavity, the busing strip being located adjacent a bottom of the housing and being connected to the housing by the bottom rivet posts;
a housing insert located in the receiving cavity, the insert having a plurality of holes with the contacts located therein; and
a top cap connected to the housing over the receiving cavity, the top cap being connected to the housing by the top rivet posts.

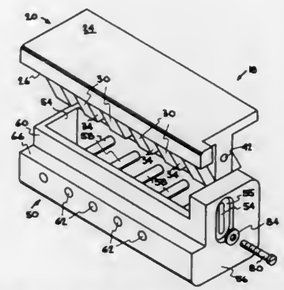
5,310,365
TERMINAL CONNECTING DEVICE
Hiroo Hashimoto, Tokyo, Japan, assignor to Yukio Hashimoto, Tokyo, Japan
Filed Jan. 5, 1993, Ser. No. 706
Claims priority, application Japan, Jan. 17, 1992, 4-010246[U]
Int. Cl.[5] H01R *11/01*
U.S. Cl. 439—756 **4 Claims**

1. A terminal connecting device for connecting an electrical cable to a battery terminal, comprising:
(1) a connecting member having a connecting and surrounding portion for at least partially surrounding the battery terminal and connecting the cable thereto, said connecting member having first and second spaced-apart holding portions extending from the connecting and surrounding portion and each holding portion having a bolt receiving hole therethrough;
(2) a connecting bolt receivable through said bolt receiving holes and having:
(a) a pair of opposed half-split members which are split in an axial direction of the bolt so as to form inner and outer surface of each half-split member along an entire axial length of the bolt;



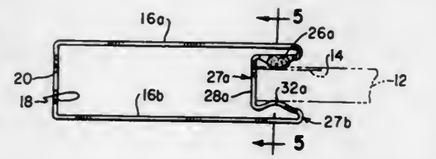
(b) a recessed inserting groove disposed on the inner surface of each half-split member such that the grooves in combination form a cable receiving hole through the half-slit members, said cable receiving hole extending in a direction transverse to the axial direction of the bolt; and
(c) thread means on the outer surfaces of the half-split members for threadedly engaging a nut such that upon insertion of the bolt with a cable received in the cable receiving hole through the bolt receiving holes and tightening the nut, the cable is clamped between the half-split members and the connecting and surrounding portion is clamped against the battery terminal.

5,310,366
EASILY DISASSEMBLED ELECTRICAL CONNECTOR FOR HIGH VOLTAGE, HIGH FREQUENCY CONNECTIONS
Joseph R. Milner, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jun. 14, 1993, Ser. No. 76,059
Int. Cl.[5] H01R *4/38*
U.S. Cl. 439—807 **13 Claims**



1. A two piece electrical connector for evenly contacting a metal conductor sheet along an entire edge of the surface thereof which comprises:
a) a first connector segment having a first conductor contacting surface thereon to contact one surface of said metal conductor sheet;
b) a series of parallel teeth depending from said first connector segment which are slanted with respect to said first conductor contacting surface, each of said teeth having a camming surface thereon;
c) a threaded bore in one end of said first connector segment;
d) a second connector segment having an elongated slot at one end thereof;
e) a single actuating screw passing through said elongated slot in said second connector segment and received in said threaded bore in said first connector segment to secure said first and second connector segments together;
f) a second conductor contacting surface disposed parallel to and facing said first conductor contacting surface when said two connector segments are secured together by said adjusting screw;
g) a rectangular recess in said second connector segment facing said first connector segment and dimensioned to accept therein said slanted teeth depending from said first connector segment; and
h) a series of spaced apart rods mounted in said second connector segment bridging said recess and positioned to permit said teeth to pass between said rods, with said camming surfaces on said teeth in contact with said rods;
whereby as said actuation screw is tightened, said camming surfaces on said slanted teeth will engage said rods to urge said first connector segment toward said second connector segment in a direction perpendicular to said actuation screw axis, so that said first and second contacting surfaces will exert even pressure, along the entire length of said conductor contacting surfaces, against the opposite surfaces of a conductor sheet placed between said contacting surfaces of said connector.

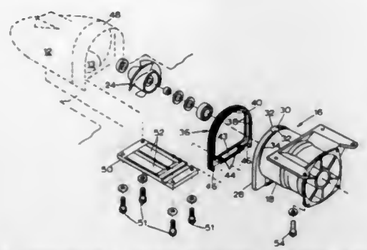
5,310,367
SOLDERABLE LEADS
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.
Filed May 7, 1993, Ser. No. 58,938
Int. Cl.[5] H01R *4/02, 9/09*
U.S. Cl. 439—876 **26 Claims**



1. A solderable lead structure adapted to be attached to a substrate having an array of conductive areas on a surface thereof, said substrate having two opposed surfaces, comprising:
a main body of conductive material having first and second edges;
a first set and a second set of leads, said first set extending from said first body edge and said second set extending from said second body edge, each of said leads within said sets having a proximal end attached to said body and a free end extending away from said body, each lead of one set being adjacent a respective lead of the other set; and
clip means formed on each of said leads for resiliently retaining said leads in engagement with said substrate, said clip means for each lead being integral with the free end of said lead, said clip means having two arms, one of said arms being adapted to abut one of said substrate surfaces while the other of said arms is adapted to abut the other surface of said substrate.

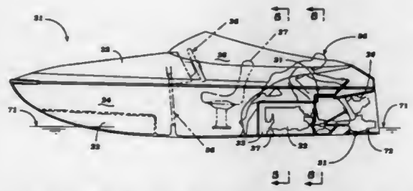
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,368
SEAL CONSTRUCTION FOR A PUMP OF A SMALL WATERCRAFT
Mikio Kamitake, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Jan. 28, 1993, Ser. No. 10,545
Claims priority, application Japan, Mar. 19, 1992, 4-063472
Int. Cl.[5] B63H *11/08*
U.S. Cl. 440—38 **4 Claims**



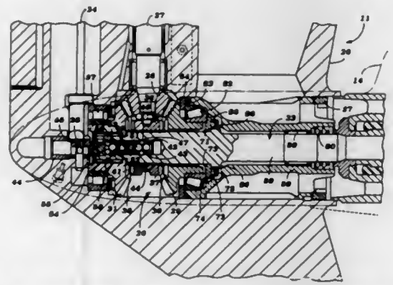
1. A construction for mounting a pump on a small water jet propulsion watercraft, the watercraft including a hull and a pump casing, and in which a pumping passage for water jet propulsion is formed by the pump casing and a portion of the hull, the construction comprising:
a flange formed on the pump casing and extending radially outwardly of said pump casing, the flange having walls,
an elastic seal member liquid-tightly surrounding the periphery of the flange, the seal member having an outer periphery in liquid-tight contact with the inner surface of the hull portion where the pump is mounted, and
the flange and the seal member having interengaging means for engaging with each other and preventing movement of said seal member around said pump casing.

5,310,369
WATER JET PROPULSION UNIT
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Division of Ser. No. 735,154, Jul. 22, 1991, Pat. No. 5,254,023, which is a continuation of Ser. No. 489,361, Mar. 6, 1990, abandoned. This application May 14, 1993, Ser. No. 61,859
Claims priority, application Japan, Mar. 8, 1989, 1-57589; Mar. 8, 1989, 1-57590; Mar. 10, 1989, 1-58985; Mar. 16, 1989, 1-65274; Apr. 21, 1989, 1-103253
Int. Cl.[5] B63H *11/00*
U.S. Cl. 440—38 **9 Claims**



1. A jet propelled watercraft comprising a hull, a jet propulsion unit having a water inlet portion defining a water inlet opening through which water may be drawn from a body of water in which said hull is operating, an impeller portion containing an impeller for pumping water and a discharge portion through which water pumped by said impeller is discharged, means for supporting said jet propulsion unit from said hull for movement of at least said water inlet portion from a downwardly facing position to an elevated position, said hull having a portion bounding at least the sides of said water inlet portion when in its downwardly facing position, and anti-leakage means for providing an area extending between the periphery of said water inlet opening of said jet propulsion unit and said hull portion at least when said water inlet portion is in its downwardly facing position for preventing the ingestion of air into said water inlet opening around said water inlet opening.

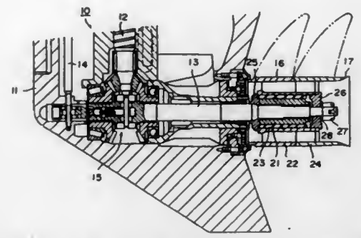
5,310,370
THRUST SUPPORTING STRUCTURE FOR A MARINE PROPULSION UNIT
Akihiro Onoue, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Continuation of Ser. No. 702,636, May 17, 1991, abandoned. This application May 7, 1993, Ser. No. 58,782
Claims priority, application Japan, May 17, 1990, 2-125401
Int. Cl.[5] B63H *21/28*
U.S. Cl. 440—75 **30 Claims**



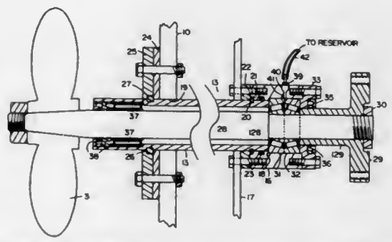
1. A thrust taking arrangement for a propeller shaft of a marine propulsion unit, a propulsion device coupled to said propeller shaft adapted to drive an associated watercraft in forward and reverse directions by exerting opposite axial thrusts to said propeller shaft, means forming an abutment on said propeller shaft facing in only the forward thrust direction, a thrust transfer member separate from said propeller shaft and positioned on said propeller shaft in engagement with said abutment, and means affixed directly to said propeller shaft for axially affixing said thrust transfer member to said propeller shaft in engagement with said abutment, the portion of the propeller shaft defining said abutment having a greater diameter than the remainder of said propeller shaft, said thrust transfer member having an annular configuration with an inner diameter sufficiently large to pass over the propeller shaft from at least one end thereof and to be engaged with said abutment and an outer diameter greater than the outer diameter of said abutment.

5,310,371
TANDEM PROPELLER ASSEMBLY FOR A MARINE PROPULSION UNIT
Yasushi Iriono; Yoshitsugu Sumino; Mitsunori Suzuki, and Hiroshi Harada, all of Hamamatsu, Japan, assignors to Sanshin Industries Co., Ltd., Shizuoka, Japan
Filed Aug. 26, 1992, Ser. No. 935,416
Claims priority, application Japan, Aug. 27, 1991, 3-239001
Int. Cl.[5] B63H *1/14*
U.S. Cl. 440—80 **30 Claims**

1. A tandem propeller assembly for use in a marine propulsion unit including a drive shaft, comprising:
a first propeller unit;
a second propeller unit located in tandem relative to the first propeller unit;
corotation connector means for positively drivingly connecting the first and second propeller units together for corotation in the same direction;
a single shock absorber; and
drive connecting means for drivingly interconnecting at least one of the propeller units to a drive shaft through said single shock absorber such that said single shock absorber protects the marine propulsion unit from damage in the event that either of the propeller units is obstructed by debris during operation.

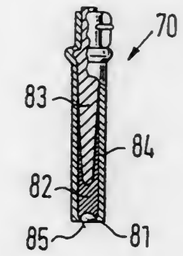


5,310,372
THROUGH HULL ASSEMBLIES FOR MARINE DRIVES
Samuel H. Tibbetts, North Haven, Me., assignor to The Evolution Company Inc., Camden, Me.
Filed Mar. 19, 1992, Ser. No. 853,923
Int. Cl.[5] B63H *23/36*
U.S. Cl. 440—112 **6 Claims**



1. A through hull assembly to be incorporated in a marine drive, the assembly including an elongated open ended housing having inboard and outboard end portions, the housing extending outwardly through a passageway in the hull with the outboard end portion submerged below the water line of the hull, means connecting the housing to the hull in a manner sealing the passageway, inboard means connecting the housing to the hull to prevent the turning of the housing, a propeller shaft freely fit within the housing and of a length to extend through the housing with the shaft ends extending beyond the ends of the housing, a propeller fixed on the end of the shaft protruding from the outboard end portion, shaft bearings within the inboard and outboard end portions of the housing and spaced from the open ends thereof to provide end recesses, shaft sealing means in each end recess, the housing provided with a port for the entrance of bearing lubricant, the volumetric capacity of the housing being such that the bearings are immersed in the lubricant with the sealing means preventing the escape of the lubricant from either end of the housing, the bearings and sealing means in each end portion removable through the open end thereof.

5,310,373
METHOD FOR PRODUCING ELECTRODES FOR SPARK PLUGS AND SPARK PLUG ELECTRODES
Jürgen Treiber, Bamberg; Rainer Noack, Bietigheim-Bissingen; Klaus-Dieter Pohl, Schwieberdingen; Willi Frank, Bamberg; Volker Brendick, Gerlingen, and Hans Hurbert, Priesendorf-Neuhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE90/00864, § 371 Date May 8, 1992, § 102(e) Date May 8, 1992, PCT Pub. No. WO91/09438, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 13, 1990, Ser. No. 856,061
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1989, 3941649
Int. Cl.[5] H01T *21/02*
U.S. Cl. 445—7 **14 Claims**



1. A method of producing a long-life spark plug electrode (16,18) by applying a movable punch (49) against a composite blank (77) in a hollow extrusion die (41),
said composite blank containing
a first, shell component (31,71) of corrosion-resistant material,
a second component (32,72) of erosion-resistant material, and
a third component (75) of highly erosion-resistant material, and
a fourth, core component (33,73) of thermally conductive material,
thereby impact-extruding said composite blank (77) to form an elongated electrode blank (79), comprising the steps of
a) forming a blind bore or recess (34,62,74) in said shell component (31,71) and aligning said bore with an open end thereof facing upward;
b) dimensioning said second and third components to occupy a volume equal to that of said bore in said shell component, heating said third component (75) until it melts and covers a lowest point (76) in said bore, and heating said second component (32,72) until it melts and fills a remaining portion of the volume of said bore (74);
c) welding or soldering said fourth, core component (33,73) onto said first, second, and third components at a position covering said blind bore and components therein;
d) inserting the thus-formed composite blank (77) into an accomodating cavity (43) of said extrusion die (41) with said fourth, core component (33,73) closest to said punch (49);
e) applying said punch (49) axially against said composite blank (77), thereby producing said electrode blank (79) by impact-extrusion; and
f) cutting, to a desired length, the impact-extruded elongated electrode blank (79) in such a way that highly erosion-resistant material of said third component (75) is exposed, thereby defining a highly erosion-resistant surface region (82) at an end face (17) of said spark plug electrode.

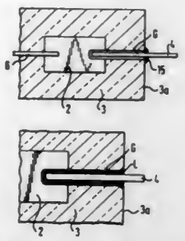
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5,310,374

ELECTRIC LAMP WITH FOIL SEAL CONSTRUCTION AND METHOD OF PRODUCING THE SAME

Akio Tomoyuki, Himeji, Japan, assignor to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 806,337, Dec. 13, 1991, abandoned. This application Aug. 25, 1993, Ser. No. 111,761
Claims priority, application Japan, Dec. 25, 1990, 2-412943
Int. Cl.[5] H01J *9/32*
U.S. Cl. 445—27 **5 Claims**



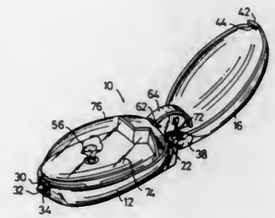
1. A manufacturing method for an electric lamp having an envelope with a foil seal arrangement incorporating a molybdenum foil and to which is connected an outer lead and which is characterized by a microscopically small cavity surrounding the outer lead and the area of connection between the outer lead and foil, including the steps of injecting a sealing solution containing a sealing compound from which lead oxide can be obtained by thermal decomposition into the microscopically small cavity, and thermally decomposing the sealing compound to coat lead oxide on the outer end of the molybdenum foil.

5,310,375

SMALL DECORATION EQUIPPED WITH SPRING-OPERATED MOVABLE DECORATIVE ELEMENT

Shigeru Kananchi, Yachiyo, Japan, assignor to Takara, Co. Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,991
Claims priority, application Japan, Nov. 30, 1992, 4-088100[U]
Int. Cl.[5] A63H *33/00, 13/16, 13/00;* **G09F** *19/08*
U.S. Cl. 446—71 **10 Claims**



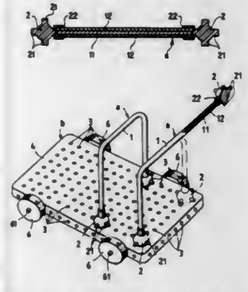
1. A small decoration equipped with a spring-operated movable decorative element comprising:
a container provided with a mounting section through which the small decoration is to be attached to an article;
lid member movably connected to said container;
a spring drive unit arranged in said container and including a drive mechanism which includes a spring and a plurality of gears driven by said spring;
said drive mechanism including two gear shafts arranged so as to project from said spring drive unit;
a decorative element mounted on one of said gear shafts; and
a spring winding-up means mounted on the other of said gear shafts;
said spring winding-up means being operatively connected to said lid member so as to wind up said spring in association with closing of said lid member and be returned to the original state while permitting unwinding of said spring to actuate said decorative element when said lid member is open.

5,310,376

TOY THAT CAN BE ASSEMBLED INDEPENDENTLY BY A CHILD

Masaki Mayuzumi; Jun Kawahara, and Tatsuo Nakamata, all of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan

Continuation of Ser. No. 812,988, Dec. 24, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,363
Claims priority, application Japan, Feb. 7, 1991, 3-4580[U]; May 15, 1991, 3-43358[U]
Int. Cl.[5] A63H *33/08*
U.S. Cl. 446—107 **6 Claims**



1. A toy that can be assembled by a child independently, comprising:
at least one elongated flexible element having a substantially smooth outer surface;
a spherical fitting terminal having a plurality of projections integrally formed thereon, said fitting terminal also having a cylindrical protrusion integrally formed thereon;
an end portion of said flexible element being inserted and fixed into said cylindrical protrusion;
a block element having a plurality of fitting holes which are adapted to receive said projections.

5,310,377

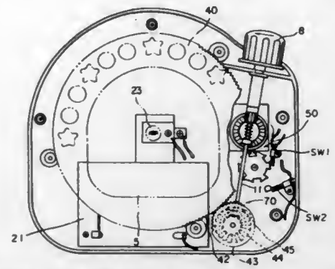
ILLUMINATED SOUND PRODUCING TOY

Tetsuya Joja, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,384
Claims priority, application Japan, Jul. 31, 1991, 3-68367[U]
Int. Cl.[5] A63H *33/22, 33/26;* **F21V** *33/00;* **G09F** *13/12*
U.S. Cl. 446—219 **15 Claims**

1. A illuminated sound producing toy comprising:
a base frame;
a drive mechanism provided in said base frame;
a sound producing mechanism provided in said base frame and engaged to said drive mechanism;
mirror means fitted in base means:
an electric lamp;
switch means comprising;
an automatic switch mechanism for turning said electric lamp ON and OFF by force provided by said drive mechanism; and
a manual switch mechanism for turning said electric ON and OFF by force not provided by said drive mechanism; and

a first light transmitting board positioned generally between said mirror means and said electric lamp, said first light transmitting board being driven through a predetermined



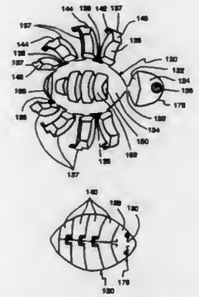
motion by said drive mechanism and comprising an illustration display area so that illustrations can be seen through said mirror means only when said electric lamp is ON.

5,310,378

TRANSFORMABLE TOY

Suel G. Shannon, 16 South St., Rockport, Mass. 01966

Filed Jun. 1, 1992, Ser. No. 891,720
Int. Cl.[5] A63H *3/02, 3/04, 3/46*
U.S. Cl. 446—268 **9 Claims**



1. A three-dimensional toy transformable from an open configuration that visually simulates an animate object image such as an animal, creature or the like to a closed configuration such as a spheroid, egg or the like that simulates an inanimate object image;
said toy including parts defining body, appendages and foldable flat plastic hinges operable to allow such parts to be folded inwardly to define the closed configuration and folded outwardly to define the open configuration;
each of said parts being comprised of semi-riged material to define fixed geometry, three-dimensional shapes with a curvilinear surface defining the exterior surface and the inanimate image;
each of said parts also having an interior surface defining the details of the animate object image with each of said surfaces shaped to allow said parts to fit together upon being folded into the closed configuration to essentially fill the interior of said toy producing a generally semi-solid structure to allow handling for play;
a hook or loop fastener means operable to releasibly hold said toy in the closed configuration and to permit release of such parts to the open configuration;
both said exterior and interior surfaces having details defined by coated portions of the animate image.

5,310,379

MULTIPLE CONFIGURATION TOY VEHICLE

Keith A. Hippely, Manhattan Beach, and Philip O. Riehlman, Montrose, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Feb. 3, 1993, Ser. No. 12,718
Int. Cl.[5] A63H *13/00, 3/14, 3/46, 17/00*
U.S. Cl. 446—279 **8 Claims**



1. A toy vehicle comprising:
a chassis;
a pivotal support member pivotally coupled to said chassis;
a simulated creature having a center body portion and a rear body portion pivotally coupled thereto;
means for attaching said rear body portion to said pivotal support member such that said rear body portion and said center body portion are restable upon said chassis in a relaxed position and pivotable upwardly therefrom in a raised position, said body portions pivoting with respect to each other when in said raised position;
a pair of simulated wings; and
actuating support means coupled said rear body portion supporting said pair of simulated wings in a closed position when said rear body portion and said center body portion are in said relaxed position and engaging said center body portion moving said pair of simulated wings to an open diverging position when said rear body and said center body portion are pivoted with respect to each other as they are moved to said raised position.

5,310,380

ADJUSTABLE HEIGHT PLAY TOY WITH MOVABLE BODY PORTION

Richard C. Levy, P.O. Box 34828, Bethesda, Md. 20827, and Gary Piaget, No. 48, 1435 W. Slivermeadows Dr., Park City, Utah 84060

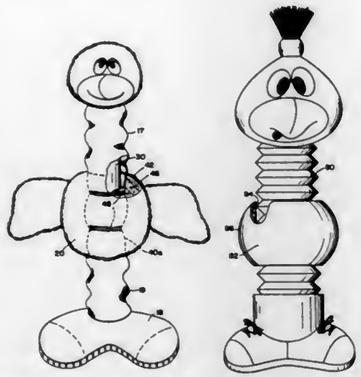
Filed Apr. 13, 1992, Ser. No. 867,477
Int. Cl.[5] A63H *3/36*
U.S. Cl. 446—489 **4 Claims**

1. A play toy comprising:
a toy body having a plurality of generally upright sections telescopically receivable one with the other, one of said sections having a base portion at its lower end and another of said sections having an upper portion whereby, upon telescopic movement of said sections, said upper portion and said base portion are movable toward and way from one another to render the play toy shorter or taller, respectively;
means engageable between said sections for releasably retaining said sections in selected telescopically adjusted positions relative to one another whereby said upper portion and said base portion are disposable in selected adjusted distances relative to one another;
a body portion moveable along said sections independently of the telescopic movement of said sections and toward and away rom each of said upper portion and said base portion;
means cooperable between said body portion and said sec-

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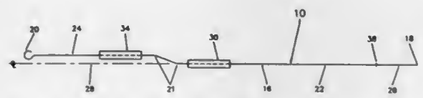
tions for releasably retaining said body portion in selected adjusted positions along said sections;

said cooperable means including a sleeve extending about at least one of said sections together with means for biasing at least a portion of said sleeve in an inward direction toward said one section for frictionally engaging said one section; and



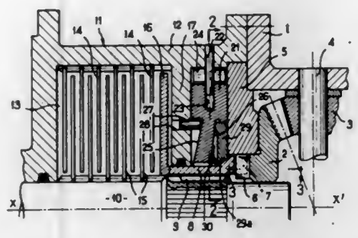
said biasing means comprising a resilient material carried by said body portion externally of said sleeve providing a radially inwardly directed force on said sleeve portion to frictionally engages said sleeve portion against said one section and thereby retain said body portion at selected elevations along said play toy between said upper portion and said base portion.

5,310,381
CAMPFIRE SKEWER
Ronald Green, 93 Malvern Dr., Sherwood Park, Alberta, Canada T8A 3S6
Division of Ser. No. 875,985, Apr. 29, 1992, Pat. No. 5,238,445.
This application Aug. 4, 1993, Ser. No. 101,853
Claims priority, application Canada, Jun. 20, 1991, 2045033
Int. Cl.[5] A47J *43/28*
U.S. Cl. 452—198 **4 Claims**



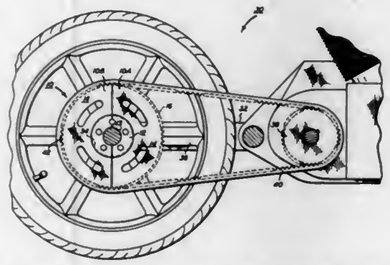
1. A campfire skewer, comprising:
a. an elongate member having a first end, a second end, a first portion adjacent the first end, and a second portion adjacent the second end, and the first end having means for impaling food;
b. a first hand grip rotatably mounted on the first portion of the elongate member such that by holding the first hand grip and manipulating the second portion of the elongate member, the elongate member can be made to rotate in a rotisserie-like fashion;
c. a second hand grip rotatably mounted on the second portion of the elongate emmber; and
d. the first portion having a first axis and the second portion being offset from the first axis, and the offset of the second portion forming an acute angle with the first axis.

5,310,382
TRANSMISSION DEVICE WITH A CONTROLLED VISCOUS COUPLER, IN PARTICULAR FOR A MOTOR VEHICLE
Pierre Guimbretiere, Neauphle le Chateau, France, assignor to Glaenzer Spicer, Poissy, France
Filed Apr. 23, 1992, Ser. No. 872,448
Claims priority, application France, Apr. 26, 1991, 91 05202
Int. Cl.[5] F16D *3/10, 25/00*
U.S. Cl. 464—1 **27 Claims**



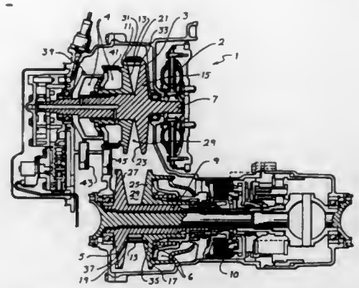
1. A transmission device between two coaxial rotating members, comprising a viscous-fluid coupling with a driving element and a driven element, and control means for modifying the operating characteristic of said coupling, said control means incorporated into the device and acting as a function of the rotational speed of one of said members and as a function of a torque transmitted by the device and said control means including a member mounted so as to slide axially and connected to one of the two rotating members by at least one set of inclined planes, said sliding member being capable of moving axially as a function of the torque which is exerted in the region of the inclined planes and thereby modifying the operating characteristic of the coupling device.

5,310,383
SPLIT MOTORCYCLE DRIVE PULLEY
Eugene A. Lisi, House 101, Rt. 96, Geneva, N.Y. 14456
Filed Jan. 12, 1993, Ser. No. 3,131
Int. Cl.[5] F16H *55/46*
U.S. Cl. 474—95 **25 Claims**



1. A pulley for driving a wheel to which the pulley is mounted comprising diametrically split halves, each pulley half including
a rim section having means for engaging a drive belt;
a web section contiguous with the rim section; and
a hub section contiguous with the web section having a plurality of mounting holes for attaching the pulley halves to the wheel and a semi-circular axle bore for mounting each pulley half about an axle;
whereby the pulley is replaceable without the need to slide the pulley off of the axle.

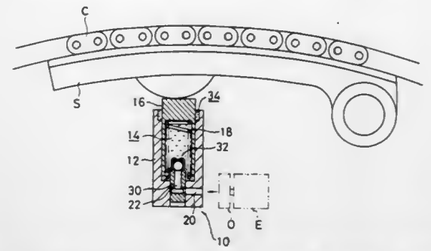
5,310,384
CONTINUOUSLY VARIABLE TRANSMISSION BELT RATIO MEASUREMENT SYSTEM
Edward C. Siemon, Ithaca, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Mar. 29, 1993, Ser. No. 38,476
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—70 **13 Claims**



1. A mechanism for determining the theoretical belt ratio for a continuously variable transmission having a first variable-diameter pulley mounted on a first shaft and a second variable diameter pulley mounted on a second shaft, the pulleys being interconnected by a belt and having a fixed sheave and a moveable sheave, with a means for controlling the axial movement of the first moveable sheave and the second moveable sheave to alter the effective diameters of the first pulley and the second pulley to provide a continuously variable drive ratio, the mechanism comprising:
a first tone wheel mounted in a fixed position relative to the first fixed sheave;
a first pickup mounted such that the rotation of the first tone wheel induces a voltage in the first pickup;
a second tone wheel including teeth along its perimeter formed at an angle to the axis of the second tone wheel; and,
a second pickup whereby the second tone wheel and the second pickup are mounted such that axial displacement of the first moveable sheave results in an equal axial displacement between the second tone wheel and the second pickup, the second tone wheel and the second pickup further being mounted such that the rotation of the second tone wheel induces a voltage in the second pickup, wherein the voltage induced in the second pickup varies with the axial displacement between the second pickup and the second tone wheel such that as the moveable sheave moves axially, the relative phase angle of the electrical signal from the first pickup and the second pickup changes.

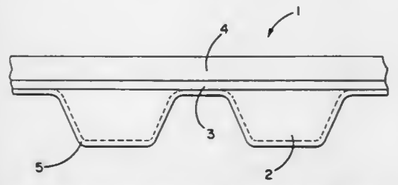
5,310,385
OIL-OPERATED TENSIONER WITH OIL-SEALED AIR ENTRANCE
Tadasu Suzuki, Higashimurayama, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan
Filed Dec. 11, 1992, Ser. No. 989,337
Claims priority, application Japan, Dec. 12, 1991, 3-109511
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—110 **1 Claim**

1. An oil-operated tensioner having a cylindrical housing, said housing having a cylindrical interior surface having an axis; a plunger having a cylindrical outer surface conforming to said cylindrical interior surface and slidable axially thereon through a range of axial movement, said plunger forming, with the housing, a high-pressure fluid chamber inside the housing; spring means for moving said plunger outward in relation to said housing; means providing a passage for supplying said high-pressure fluid chamber with oil; and check valve means in said passage for allowing oil to flow freely into said high pressure fluid chamber but preventing flow of oil outward from said fluid chamber through said passage; wherein the improvement comprises means providing an annular recess in said



cylindrical interior surface of the housing, said recess being located at an axial position such that it is always in register with a portion of said cylindrical outer surface of the plunger throughout the range of axial movement of the plunger, said recess containing oil and forming a seal between the plunger and said cylindrical interior surface, whereby oil in said annular oil chamber prevents the entry of air into said high-pressure chamber as the plunger moves in the outward direction.

5,310,386
TOOTHED BELT HAVING COATED CORES EXHIBITING IMPROVED RESISTANCE
Takahide Mizuno; Nobutaka Osako; Takeshi Murakami, and Yasunori Nakai, all of Kobe, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan
Filed Oct. 9, 1992, Ser. No. 959,057
Int. Cl.[5] F16G *1/28*
U.S. Cl. 474—205 **14 Claims**



1. A toothed belt comprising a backing member rubber and a plurality of rubber teeth extending from a surface of the backing member and at least one core imbedded in the backing member, the at least one core being treated with a resorcin-formalin-latex liquid wherein at least 60 weight percent of the latex component of the RFL liquid is selected from the group of hydrogenated acrylonitrile-butadiene (HNBR) latex in which more than about 80% of the double bonds are hydrogenated and chlorosulfonated polyethylene (CSM) latex

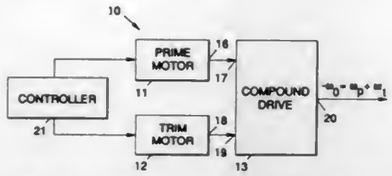
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5,310,387
DIFFERENTIAL MOTOR DRIVE
Peter J. Savagian, Clarkston, Mich., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 30, 1992, Ser. No. 954,187
Int. Cl.[5] F16H *1/38*
U.S. Cl. 475—5 **8 Claims**

1. A differential epicyclic power train comprising:
a first motor having a first output shaft;
a second motor having a second output shaft;

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a differential epicyclic motor drive having a power train output shaft, and first and second input shafts that are respectively coupled to the first and second output shafts of the first and second motors, and wherein the output of the motor drive is a linear function of input speeds of the first and second motors, and



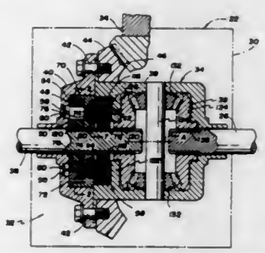
controller means coupled to the first and second motors for controlling the respective input speeds of the first and second motors to produce a desired range of output speeds at the power train output shaft, and wherein a selected motor is controlled to operate within a predetermined relatively narrow speed and torque range to maximize the efficiency of the power train.

5,310,388

VEHICLE DRIVETRAIN HYDRAULIC COUPLING

Murat N. Okcuoglu, and Theodore E. Shaffer, both of Santa Barbara, Calif., assignors to ASHA Corporation, Santa Barbara, Calif.

Filed Feb. 10, 1993, Ser. No. 16,168
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—88 **22 Claims**



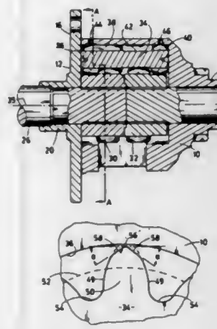
1. A hydraulic coupling for use with a vehicle drivetrain within a housing thereof containing hydraulic fluid to rotatively couple a pair of rotary members about a rotational axis, the hydraulic coupling comprising: a casing of a hollow construction that is rotatable within the housing about the rotational axis and connected to one of the rotary members; a hydraulic pump located within the casing along the rotational axis and including an impeller rotatively connected to the other rotary member and having between five and seven external teeth; the hydraulic pump also including an internal ring gear mounted by the casing for rotation eccentrically with respect to the toothed impeller and including internal teeth of a number one more than the impeller teeth and in a meshing relationship therewith to provide a pumping action upon relative rotation between the casing and the toothed impeller; an inlet port through which hydraulic fluid is pumped into the casing by the hydraulic pump; an outlet port through which the pumped fluid flows; and a control valve including an elongated metallic strip valve element having one end that is mounted in a spaced relationship to the outlet port and having another distal end that is movable between an open position spaced from the outlet port and a closed position that closes the outlet port when the pumped fluid reaches a predetermined pressure to rotatively couple the impeller with the internal ring gear and thereby also couple the pair of rotary members to each other.

5,310,389

PARALLEL-AXIS DIFFERENTIAL GEAR TOOTH MODIFICATION

Hideyuki Sato, Tsurugashima, Japan, assignor to Zexel-Gleason USA, Inc., Rochester, N.Y.

Filed Nov. 17, 1992, Ser. No. 977,651
Int. Cl.[5] F16H *1/32, 55/08*
U.S. Cl. 475—252 **1 Claim**



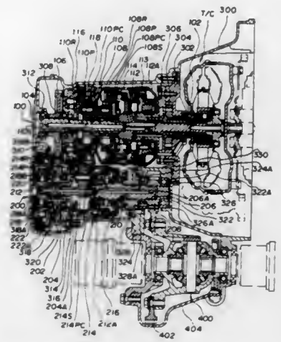
1. In a differential assembly having:
a differential housing;
a pair of side gears positioned in said housing for receiving a pair of respective axle ends for rotation therewith about a common axis;
at least one pair of planetary element gears positioned in said housing operatively connecting said pair of side gears in a mutual driving relationship, each respective element gear in each pair being in meshing engagement with both a respective one of said side gears and with its paired element gear;
at least one pair of pockets formed in said housing supporting said element gears for rotation about respective axes that extend parallel to said common axis of said side gears; and
said gear sections of said element gears having helical teeth with a predetermined profile between the roots and toplands of said teeth;
the improvement wherein:
said predetermined profile of the helical teeth of said element gears is modified with a chamfer-like form at the intersection of said profile and said toplands, said chamfer-like shape making an angle ranging between 10°–30°with said toplands;
said housing further comprises at least one passageway between the exterior of said housing and each said pair of pockets for providing a path for lubricating fluid; and each said passageway is positioned in proximity to one of the meshing areas shared by each said pair of element gears.

5,310,390

AUTOMATIC TRANSMISSION

Hirobumi Shirataki, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Division of Ser. No. 766,267, Sep. 27, 1991, Pat. No. 5,224,907.
This application Apr. 12, 1993, Ser. No. 44,772
Claims priority, application Japan, Sep. 28, 1990, 2-257261; Sep. 28, 1990, 2-257262; Sep. 28, 1990, 2-257263
Int. Cl.[5] F16H *37/08*
U.S. Cl. 475—312 **1 Claim**



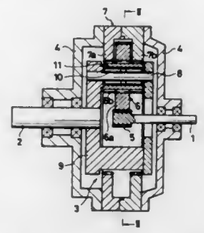
1. In a transmission
a first support member having a circular opening formed therein;
a rotatable member disposed so as to extend into the circular opening;
a multi-plate brake disposed between the rotatable member and the circular opening, the multi-plate brake including a piston and a return spring;
a second support member which is secured to a peripheral portion of said first support member and which includes a tubular structure for operatively supporting the piston and return spring; and
a one-way clutch which is disposed between and operatively connected with the tubular structure and the rotatable member.

5,310,391

COMPOUND PLANETARY GEAR TRANSMISSION HAVING LOAD EQUALIZATION MEANS

Takashi Takahashi, 26-18, Kamisoshigaya 1, Setagaya-ku, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,515
Claims priority, application Japan, May 23, 1991, 3-118649
Int. Cl.[5] F16H *1/28*
U.S. Cl. 475—338 **3 Claims**



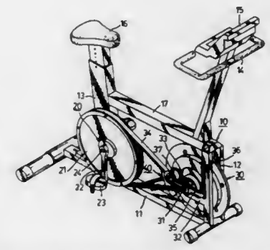
1. A planetary gear transmission comprising a planetary gear mechanism wherein a plurality of planetary gear members are provided around a sun gear and meshed with said sun gear and an internal gear is provided outside said planetary gear members and meshed with said planetary gear members, wherein:
said internal gear is divided by a plane perpendicular to its axial direction and comprises two separate internal ring gears;
each of said planetary gear members is a compound planetary gear which comprises a large planetary gear having a large diameter and small planetary gears having small diameters, said large diameter being bigger than said small diameter, said small planetary gears being spline-coupled coaxially with said large planetary gear in such a manner that the teeth thereof are positioned on both sides of said large planetary gear;
said divided internal ring gears are meshed with the teeth of each of said small planetary gears;
said large planetary gear is meshed with said sun gear; and
said transmission further includes, on each of said plurality of said planetary gear members, an equalizing means for equally distributing a load to the plurality of gears of said gear member.

5,310,392

MAGNET-TYPE RESISTANCE GENERATOR FOR AN EXERCISE APPARATUS

Peter K. Lo, Taichung, Taiwan, assignor to Johnson Metal Industries Co., Ltd., Taichung Hsien, Taiwan

Filed Jul. 27, 1993, Ser. No. 98,427
Int. Cl.[5] A63B *69/16, 21/24*
U.S. Cl. 482—63 **2 Claims**



1. A magnet-type resistance generator for an exercise apparatus, said exercise apparatus including a frame assembly, a flywheel mounted rotatably on said frame assembly, and a manually operated driving unit for driving rotatably said flywheel, said magnet-type resistance generator comprising:
a magnet unit including a curved housing which has a U-shaped horizontal cross-section, said curved housing confining a groove and having opposite inner wall surfaces that are respectively provided with a plurality of permanent magnets which extend into said groove, said groove having a shape which conforms with a periphery of said flywheel;
a tubular sleeve extending from a rear side of said curved housing and having a distal end which is formed with an internally threaded portion;
a tubular slide seat mounted on said frame assembly adjacent to said flywheel, said slide seat confining a through hole to receive slidably said tubular sleeve therein;
a guide bolt extending axially into said slide seat and having a threaded portion that engages said internally threaded portion of said tubular sleeve, said guide bolt further having a distal end which extends out of said slide seat and which is provided with a first transmission gear;
a motor having an axle which is provided with a second transmission gear that meshes with said first transmission gear;
a slide potentiometer mounted on said frame assembly, said slide potentiometer having a slider connected to said curved housing of said magnet unit; and

VOL 1162 ISS 2 MAY 10 1994 UMI

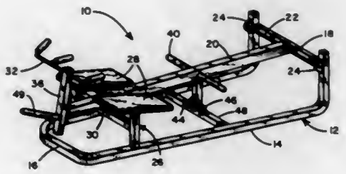
an instrument control unit mounted on said frame assembly and connected electrically to said slide potentiometer, said instrument control unit activating said motor to rotate said guide bolt axially and cause said tubular sleeve to move slidably along said through hole of said slide seat, thereby moving said magnet unit toward or away from said periphery of said flywheel so that said periphery of said flywheel can extend into said groove of said curved housing by a desired depth in order to attain a desired resistance to rotation of said flywheel, said slider moving with said magnet unit to permit said slide potentiometer to control said instrument control panel to deactivate said motor when the desired depth has been reached.

5,310,393

T-BAR ROW EXERCISE DEVICE

Gregory R. Highsmith, West Hampton Beach, N.Y., and Carl K. Towley, III, Owatonna, Minn., assignors to Lumex, Inc., Bay Shore, N.Y.

Continuation-in-part of Ser. No. 906,514, Jun. 30, 1992, abandoned. This application May 3, 1993, Ser. No. 56,473
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—93 **20 Claims**



1. An exercise device of the T-bar row type, which comprises:
a frame having front and rear ends;
an elongate pivot bar having opposite ends;
means for pivotally securing one end of said pivot bar to the rear end of said frame for pivotal movement in a vertical plane between lowered and raised positions;
a handle secured to the other end of said pivot bar;
a transverse weight tube secured to said pivot bar between said handle and the rear end of said frame, said weight tube being adapted for receiving at least one free weight thereon;
a pair of laterally spaced apart footrests associated with said frame and disposed on opposite sides of said pivot bar between said handle and said transverse weight tube; and
means for normally supporting said pivot bar in the lowered position.

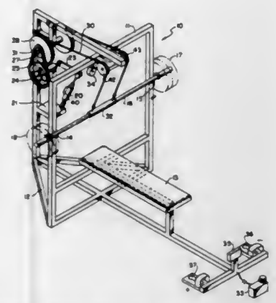
5,310,394

SPOTTER SYSTEM FOR WEIGHTLIFTERS

Demetrios Kallios, 6421 Monero Dr., Rancho Palos Verdes, Calif. 90274

Filed Dec. 28, 1992, Ser. No. 997,552
Int. Cl.[5] A63B *21/078*
U.S. Cl. 482—104 **1 Claim**

1. An exercising apparatus providing for maximum lifting effort in safety comprising the combination of:
a frame;
weight means carried on said frame;
torque reduction means operably carried on said frame and engaged with said weight means to ease resistance encountered by the user during an exercise procedure;
said torque reduction means to ease resistance includes a controllable swing arm assembly means and linkage means engageable with said weight means;
said controllable swing arm assembly means having a piston and cylinder means connected with said linkage with a reservoir cylinder for selectively changing pressure to control the pull on said linkage means without fluctuation to assist in the lift of said weight means during said exercising procedure;
said linkage means includes an electric motor means and a cable and pulley combination and a lever pivotally carried on said controllable swing arm assembly whereby pivoting of said lever follows movement of said weight means by the user whereby said piston and cylinder follow the command of the user;



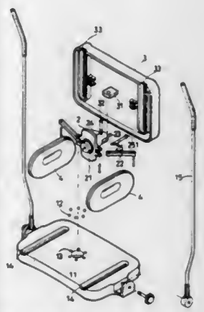
control means interconnecting with said controllable swing arm assembly means for selecting the pressure in said controllable swing arm assembly means;
switch means in said control means operable by the limbs of the user to adjust the pressure in said piston and cylinder means; and
said lever having two ends, one end connected to a pulley in said linkage means and its other end pivotally connected to said controllable swing arm assembly means.

5,310,395

EXERCISING APPARATUS

Ching-Ho Ko, Chang Hua Hsien, Taiwan, assignor to Yow Li Feng Industrial Co., Ltd., Chang-Hua Hsien, Taiwan

Filed Oct. 28, 1993, Ser. No. 142,000
Int. Cl.[5] A63B *23/10, 21/04*
U.S. Cl. 482—146 **5 Claims**



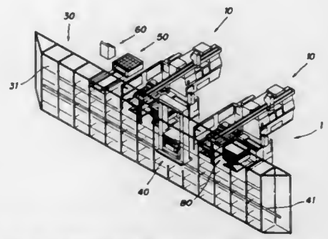
1. An exercising apparatus comprising:
a base having a seat in the center;
a rotary table mounted on said seat of said base and moved to turn on said seat of said base, said rotary table having an upright support;
a foot board having a bottom lug pivoted to said upright support of said rotary table at the top; and
two tensile elements bilaterally connected between said rotary table and said foot board for permitting said foot board to be alternatively oscillate back and forth on said rotary table.

5,310,396

FLEXIBLE MANUFACTURING SYSTEM

Sboji Momoi; Kiyohisa Mizoguchi, and Yasushi Nakamura, all of Aichi, Japan, assignors to Yamazaki Mazak Corporation, Japan

Filed Sep. 3, 1991, Ser. No. 753,942
Claims priority, application Japan, Apr. 9, 1990, 2-233892
Int. Cl.[5] B23Q *3/155, 3/157*
U.S. Cl. 483—15 **18 Claims**



1. A flexible manufacturing system comprising:
machining tools and chuck jaws, said machining tools and chuck jaws each having a read/write memory device;
pallets, said pallets each having a read/write memory device for memorizing data concerning the pallet with which the read/write memory device is associated and for memorizing data concerning one or more members stored by said pallet which members include work pieces, said machining tools and said chuck jaws;
a numerical control machine tool which includes means for reading the memory of each pallet, and said numerical control machine tool further comprising means for receiving the work pieces, machining tools and chuck jaws supported by said pallets, means for transferring the work pieces, machining tools and chuck jaws from said pallets to said means for receiving, and means for working the work pieces received by said receiving means;
a loading station with a reading/writing device for reading/-writing the memory of said pallets, and a display for facilitating a setting up of said pallets with said members in accordance with data provided in the memory of said pallets;
a stacker crane for transferring pallets among the numerical control machine and loading station; and
a controller which includes means for storing the data for each tool or chuck jaw and means for revising said storing means with present status data of each tool or chuck jaw in the flexible manufacturing system.

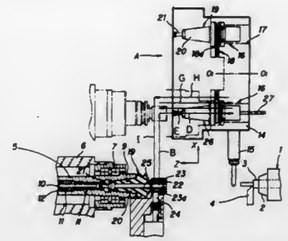
5,310,397

COMPUTERIZED NUMERICAL CONTROL AUTOMATIC COMPLEX LATHE

Minoru Kubota, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed May 8, 1992, Ser. No. 880,722
Claims priority, application Japan, May 20, 1991, 3-114913
Int. Cl.[5] B23Q *3/157*
U.S. Cl. 483—18 **8 Claims**

1. A computerized numerical control automatic complex lathe comprising:
a main spindle for gripping and rotating a work to be machined;
a back spindle positioned on the opposite side of the work and facing the main spindle;
a first machining tool for performing a main machining of the work;
a second machining tool selected from a plurality of machining tools and chucked by the back spindle for performing a secondary machining of the work; and



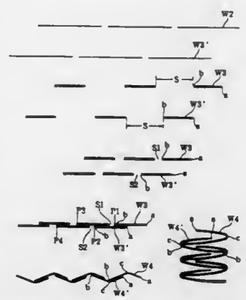
a turret tool rest having at least one tool holder for holding one of the plurality of machining tools which are utilized for the secondary machining of the work, the turret tool rest further having a set of machining tools radially extending from the outer periphery thereof.

5,310,398

METHOD AND APPARATUS FOR FOLDING AND INTERFOLDING SINGLE-PLY WEBS

Katsu Yoneyama, 413 Mitojima, Fujl-shi, Shizuoka-ken, Japan

Filed Oct. 30, 1992, Ser. No. 969,366
Claims priority, application Japan, Nov. 1, 1991, 3-315461
Int. Cl.[5] B65H *35/08, 37/06, 45/20*
U.S. Cl. 493—430 **3 Claims**



1. A method of folding and interfolding single ply webs, said method comprising the steps of:
transporting a first set of single-ply web segments along one line as spaced from one another by first distances, and transporting a second set of single-ply web segments along another line as spaced apart from one another by first distances;
while the web segments are being transported along the lines, respectively, as spaced by said first distances, folding the web segments to thereby produce No. 1 folded single-ply web segments on said one line and No. 2 folded single-ply web segments on said another line which are spaced apart from one another on each of the lines, respectively, by second distances greater than said first distances, respectively,
each of the folded single-ply web segments including a head portion about which the web segment is folded and a tail portion at which respective terminal edges of the web segment lie in an overlapped state;
subsequent to said step of folding, reducing the second dis-

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tances between the folded single-ply web segments while the folded single-ply web segments are transported along the lines, respectively;

overlapping the tail portions of the No. 1 folded single-ply web segments with the head portions of the No. 2 folded single-ply web segments, respectively;

overlapping the tail portions of the No. 2 folded single-ply web segments with the head portions of the No. 1 folded single-ply web segments, respectively;

said steps of overlapping being carried out in a manner in which the head portions of the No. 1 folded single-ply web segments are located to the same side of the No. 2 folded single-ply web segments as the tail portions of the No. 1 folded single-ply web segments;

with the tail portion of each preceding No. 1 folded single-ply web segment overlapped with the head portion of a No. 2 folded single-ply web segment and the tail portion of the same No. 2 folded single-ply web segments overlapped with the head portion of a succeeding No. 1 folded single-ply web segment, folding the No. 2 folded single-ply web segment at a location between the tail portion of said preceding No. 1 folded single-ply web segment and the head portion of said succeeding No. 1 folded single-ply web segment in a direction which brings the overlapping tail portion of said preceding No. 1 folded single-ply web segment and head portion of the No. 2 folded single-ply web segment back toward the overlapping tail portion of said same No. 2 folded single-ply web segment and head portion of said succeeding No. 1 folded single-ply web segment such that the tail portion of each said preceding No. 1 folded single-ply web segment and the head portion of the succeeding No. 1 folded single-ply web segment are interfolded within a No. 2 folded single-ply web segment; and

with the tail portion of each preceding No. 2 folded single-ply web segment overlapped with the head portion of a No. 1 folded single-ply web segment and the tail portion of the same No.1 folded single-ply web segment overlapped with the head portion of a succeeding No. 2 folded single-ply web segment, folding said same No. 1 folded single-ply web segment at a location between the tail portion of said preceding No. 2 folded single-ply web segment and the head portion of said succeeding No. 2 folded single-ply web segment in a direction which brings the overlapping tail portion of said preceding No. 2 folded single-ply web segment and head portion of said same No. 1 folded single-ply web segment back toward the overlapping tail portion of said same No. 1 folded single-ply web segment and head portion of said succeeding No. 2 folded single-ply web segment such that the tail portion of each said preceding No. 2 folded single-ply web segment and the head portion of the succeeding No. 2 folded single-ply web segment are interfolded within a No. 1 folded single-ply web segment.

5,310,399

SEDIMENTATION CENTRIFUGE CONTAINING SCREW CONVEYOR WITH FINS

Souroku Suzuki, Mobara, Japan, assignor to Kotobuki Techrex Ltd., Kawasaki, Japan

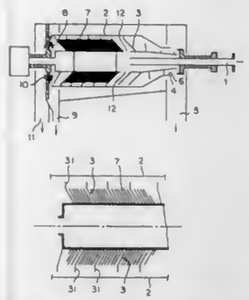
Continuation-in-part of Ser. No. 13,249, Feb. 3, 1993, which is a continuation of Ser. No. 748,207, Aug. 20, 1991, abandoned. This application May 21, 1993, Ser. No. 65,281

Claims priority, application Japan, May 25, 1992, 4-034679

Int. Cl.[5] **B04B** *1/20*

U.S. Cl. 494—54 **4 Claims**

1. A sedimentation centrifuge, comprising: an elongated, hollow, rotatable, solid-wall bowl adapted to receive a mixture of light liquid, heavy liquid and solids, said bowl being rotatable about a longitudinally extending axis, said bowl having a cylindrical section having first and second axial ends, said bowl having first and second, coaxial, truncated conical, canted sections connected in series with each other, said first canted section extending away from said first end of said cylindrical section, said second canted section being adjacent to and extending away from said first canted section, said first and second canted sections each having a tapered wall, said tapered walls each extending at an acute angle to the axis of rotation of said bowl, said tapered wall of said first canted section being tapered at a larger angle than said tapered wall of said second canted section, said bowl having a first outlet for solids at an axially outer end of said second canted section, said bowl having second and third outlets for light liquid and heavy liquid, respectively, at said second end of said cylindrical section; a rotatable, helical screw conveyor rotatably mounted inside said bowl and extending substantially the full length thereof, said screw conveyor having a screw flight with an inner portion which is inclined with respect to the axis of



rotation of said bowl and conforms to said cylindrical section and said canted sections and an outer portion which is normal to an inner wall surface of said bowl; a plurality of helical fins mounted on said screw conveyor and extending parallel to and being positioned between the turns of said screw flight, said fins being straight in a direction from a radially innermost edge to a radially outermost edge thereof; a coaxial supply pipe inside said conveyor and hole means extending from said pipe for feeding the mixture into said cylindrical section of said bowl at a location close to said first end of said cylindrical section, a first zone extending from said location to the axially outer end of said second canted section being free of fins, a second zone extending from said location to said second axial end of said cylindrical section containing said fins.

5,310,400

THERAPEUTIC BANDAGE

Tim S. Rogers, P.O. Box 7863, Santa Rose, Calif. 95407, and Frank C. Hammond, 4501 Snell Ave. #2010, San Jose, Calif. 95136

Filed Nov. 23, 1992, Ser. No. 979,899

Int. Cl.[5] **A61F** *5/00, 13/00, 5/37*

U.S. Cl. 602—5 **5 Claims**

1. A therapeutic bandage for treatment of minor injury or discomfort to a user's joint, said therapeutic bandage comprising:

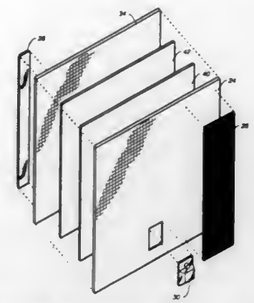
a bandage body having an outside layer and an inside layer;

fastening means for releasably securing said outside layer to said inside layer when said bandage body is wrapped around a joint;

a selectively pressurized internal air bladder between said outside layer and said inside layer;

an air pump carried on said bandage body, said air pump operated by a manually-depressed button and in fluid communication with said internal air bladder; and

a selectively cooled internal coolant bladder between said outside layer and said inside layer, said internal coolant



bladder is positioned between said internal air bladder and said inside layer.

5,310,401

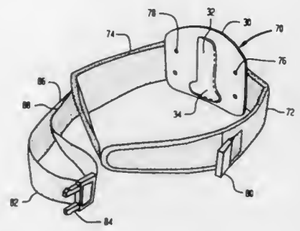
LUMBAR SPINE SUPPORT

James S. Striano, 475 Tuckahoe Rd., Suite 201, Yonkers, N.Y. 10701

Continuation-in-part of Ser. No. 879,590, May 7, 1992, Pat. No. 5,207,636. This application May 12, 1993, Ser. No. 60,745

Int. Cl.[5] **A01F** *5/02*

U.S. Cl. 602—19 **4 Claims**



1. A lumbar spine support comprising:

a substantially rigid, body contoured, continuous, posterior shell having lateral edges which terminate in the right and left posteriorlateral regions of a torso of a patient;

strap means extending forwardly around the torso between said lateral edges of said posterior shell for adjustably tightening said posterior shell against the torso;

said posterior shell including an elongated central upright indentation extending inwardly from the continuous surface of said shell having a laterally extending portion at the lower end thereof and positioned and structured to center and secure said posterior shell over the lumbosacral area of the spine wherein said indentation provides even dispersion of a resilient force.

5,310,402

TEMPORARY BANDAGE TAPE

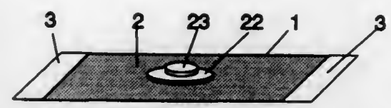
Ernest J. Rollband, 3415 Slaterville Rd., Brooktondale, N.Y. 14817

Continuation-in-part of Ser. No. 621,261, Dec. 3, 1990, Pat. No. 5,213,565. This application Jun. 18, 1991, Ser. No. 716,903

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] **A61L** *15/00*

U.S. Cl. 602—42 **3 Claims**



1. A roll of tapes with non-adhesive ends which may be used by a gloved person, comprising:

a) a center spool,

b) a length of tape wound around said spool, said tape comprising repeating segments, each of said segments comprising:

1) a first non-adhesive section, having non-adhesive surfaces on both sides thereof,

2) a second non-adhesive section, having non-adhesive surfaces on both sides thereof, and

3) an adhesive section, having an adhesive surface on one side thereof and a non-adhesive surface on the other side thereof, disposed between said first non-adhesive section and said second non-adhesive section such that said adhesive surface covers the entire area on the one side of said adhesive section between said first non-adhesive section and said second non-adhesive section, and is permanently attached to said first and second non-adhesive sections,

whereby each of said repeating segments is attached to at least one other of said repeating segments, in an end-to-end manner, with a perforated attachment between segments; wherein the non-adhesive sections of each of said segments are of sufficient size to enable said gloved person to grasp one of said non-adhesive sections using a hand covered by a glove, without having said glove come into contact with the adhesive surface of the adhesive section of said segment, and wherein said sections are transparent.

5,310,403

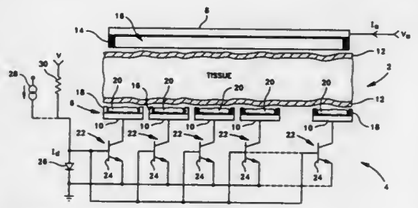
IONTOPHORETIC DRUG DELIVERY DEVICE AND CIRCUIT THEREFOR

John L. Haynes, Chapel Hill, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 18, 1992, Ser. No. 884,684

Int. Cl.[5] **A61N** *1/30*

U.S. Cl. 604—20 **7 Claims**



1. An iontophoresis system, which comprises:

an iontophoretic drug delivery device for placement against the skin of a patient, the drug delivery device including:

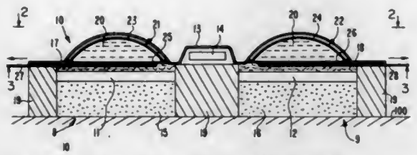
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a first electrode;
means for holding an electrolyte situated in relation to the first electrode such that an electrolyte held by the electrolyte holding means is in electrical communication with the first electrode;
a second electrode; and
means for holding an ionic medication situated in relation to the second electrode such that an ionic medication held by the medication holding means is in electrical communication with the second electrode;
at least one of the first and second electrodes being formed of a plurality of electrode segments; and
means for controlling current passing through each of the electrode segments, the current controlling means including a plurality of constant current sources, each of the constant current sources of the plurality of sources being electrically coupled to a corresponding one of the electrode segments, the constant current sources being selected such that predetermined amounts of current flow through the electrode segments, wherein each constant current source is formed as a current mirror circuit, each current mirror circuit including a transistor electrically coupled to a corresponding electrode segment, and at least one reference diode, the transistor of each current mirror circuit being electrically coupled to the at least one reference diode, wherein current through the reference diode effectively controls the current flowing through each transistor.

5,310,404
IONTOPHORETIC DELIVERY DEVICE AND METHOD OF HYDRATING SAME

J. Richard Gyory, San Jose, and John R. Perry, Stanford, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Jun. 1, 1992, Ser. No. 892,554
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **27 Claims**

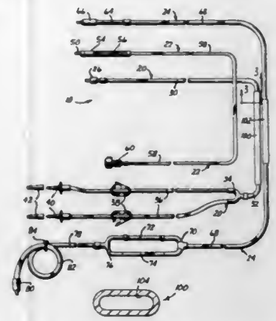


1. A device including an electrode assembly for an electrically powered iontophoretic agent delivery, the electrode assembly comprising:
a) a reservoir including a substantially non-hydrated hydratable matrix adapted to contain an agent to be delivered through a body surface, said reservoir being electrically connected to a power source;
b) a sealed container in fluid communication with the reservoir, the container containing a liquid for hydrating the substantially non-hydrated matrix, at least a portion of the container comprising a liquid impermeable material which is capable of being ripped or torn, the material having an inner surface which is exposed to the sealed hydrating liquid and an outer surface; and
c) a tab having one portion attached to the outer surface of the liquid impermeable material without passing through said material, whereby pulling the tab relative to the liquid impermeable material causes the material to rip or tear and release the liquid from the container and into the reservoir matrix.

5,310,405
ENDOSCOPIC IRRIGATION TUBING SET HAVING COMPLIANT SECTIONS

Ulf B. Dunberger, Portsmouth, N.H., and Thomas D. Egan, Marblehead, Mass.; Harpreet Kaur, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 4, 1991, Ser. No. 771,616
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—31 **32 Claims**



1. For use in an irrigation system of the type that regulates the supply of fluid to an endoscopic surgical site, a tubing set comprising:
an inflow line adapted for supplying fluid to the surgical site, the inflow line being adapted for mounting an inflow cannula in fluid communication with the inflow line to supply fluid to the surgical site, and adapted for connection to a source of fluid in fluid communication with the inflow line so that fluid from the source of fluid can be directed through the inflow cannula;
an outflow line adapted for draining fluid from the surgical site, the outflow line being adapted for mounting an outflow cannula in fluid communication with the outflow line to drain fluid from the surgical site, the inflow and outflow lines defining a fluid pathway through the surgical site; and
two resilient-compliant tubing segments defining a substantial portion of each of the inflow and outflow lines, the resilient-compliant tubing segments having a generally flattened cross section when not expanded that is expandable to increase the fluid volume within the tubing segment in response to increasing fluid pressure within the tubing segment, thereby accommodating changes in the rate of fluid flow through the surgical site to reduce variations in fluid pressure in the surgical site.

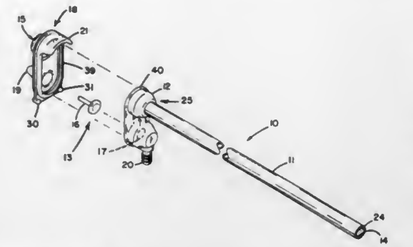
5,310,406
ENDOSCOPIC ASPIRATOR SURGICAL INSTRUMENT

Leslie A. Sharpe, Edina, Minn., and Francis C. Peterson, Prescott, Wis., assignors to Sharpe Endosurgical Corporation, Minneapolis, Minn.

Filed May 8, 1992, Ser. No. 880,954
Int. Cl.[5] A61M *3/00*
U.S. Cl. 604—35 **5 Claims**

5. An endoscopic aspirator instrument for use with a grasping instrument and a surgical sponge, said grasping instrument having a first diameter, said surgical sponge having a sponge volume, said aspirator instrument comprising:
an aspiration tube having a central axis, a distal tip, said distal tip having a central distal tip opening, a proximal end, and a lumen, said lumen having a continuous circular cross-section and having a second diameter, said central distal tip having a diameter equal to said second diameter;
a handle coupled to said proximal end of said aspiration tube;

aspiration valve assembly means proximate said handle for connecting said lumen to a source of vacuum, and for regulating the application of vacuum to said lumen;
cover means coupled to said handle;
tool access port means having a size substantially equal to said first diameter, located proximate said cover means substantially concentric with said central axis for admitting said grasping instrument to said lumen;
whereby said grasping instrument may move axially along said axis to retract said surgical sponge into said lumen defining a first position for said sponge and,



whereby said grasping instrument may move axially along said axis to advance said surgical sponge out of said distal tip opening defining a second position for said sponge;
said grasping instrument and said lumen together defining an aspiration area having a cross sectional area value substantially equal to the difference between said first diameter and said second diameter;
whereby said sponge may be cleansed in said second position by aspiration through said aspiration area.

5,310,407
LAPAROSCOPIC HEMOSTAT DELIVERY SYSTEM AND METHOD FOR USING SAID SYSTEM

John Casale, Oakland, N.J., assignor to Datascope Investment Corp., Montvale, N.J.

Continuation of Ser. No. 716,837, Jun. 17, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 968,262
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **15 Claims**

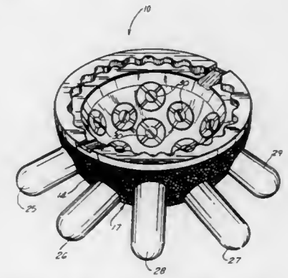


1. A method for directly applying a plug of hemostatic material against an internal vascular tissue site of a patient during a laparoscopic procedure, comprising the steps of,
charging a hollow sheath having a distal end and a proximal end with a plug of hemostatic material,
passing the distal end of said sheath through a channel of a laparoscopic cannula, and guiding the distal end of said sheath to a position facing the vascular tissue site,
passing a plunger through a lumen of said hollow sheath, thereby advancing the plug of hemostatic material in said lumen, such that a portion of the plug of hemostatic material exits the distal end of the hollow sheath, and
mechanically applying with pressure the distally extending portion of the plug of hemostatic material against the vascular tissue site to effect rapid hemostasis.

5,310,408
ACETABULAR CUP BODY PROSTHESIS

Jeff Schryver, Cordova; Jeff Schryver; Dawn M. Ryan, both of Memphis, all of Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 830,243, Feb. 10, 1992, which is a continuation-in-part of Ser. No. 656,247, Feb. 14, 1991, Pat. No. 5,226,917. This application Aug. 31, 1992, Ser. No. 938,421
Int. Cl.[5] A61F *2/34*
U.S. Cl. 623—22 **21 Claims**



1. An acetabular cup prosthesis, comprising:
a) an acetabular cup body having an inner concave surface, an outer convex surface for engaging a patient's acetabulum, and an annular base that defines a base plane;
b) a polymeric cup liner that lines the cup body at the cup body concave surface during use, the liner having convex and concave surfaces, the concave surface defining an articulating surface that is positioned to receive and articulate with a ball of a prosthesis hip stem, and the convex surface defining a non-articulating surface that is positioned on the opposite side of the liner from the concave surface;
c) wherein the cup body concave surface has polished inner surface means that faces the convex side of liner for retarding inner debris generation, and including a polished surface having a roughness of less than eight (8) microinches.

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5,310,409

METHOD FOR ALTERING FABRICS OR GARMENTS TO DISCHARGE DYED COLORS OR INDIGO DENIM TO CREATE FINISHES

James I. Friday, 9 Dorchester Dr., Chesnee, S.C. 29323

Filed Mar. 18, 1991, Ser. No. 676,386
Int. Cl.[5] D06M *3/06, 3/08*
U.S. Cl. 8—102 15 Claims

1. A method for producing a desired design on the surface of colored fabric comprising the steps of;

a.) applying to a discrete, selective area of said fabric, a viscous mixture of fine inert, mineral material, water and one or more compounds selected from the group consisting of sodium hypochlorite and sodium bromite, said viscous mixture comprising about 50 to 75 percent by weight fine sand and 50 to 25 percent by weight of an aqueous solution containing about 2 to 20 weight percent of at least one of said sodium hypochlorite and sodium bromite,

b.) allowing said viscous mixture to permeate and remain in contact with said fabric for a sufficient period of time to destroy at least a portion of the coloration present in said fabric, and

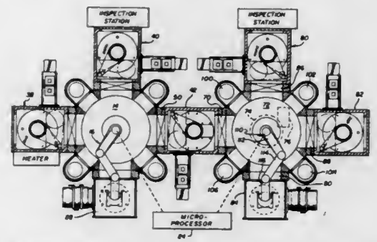
c.) removing said viscous mixture at the end of said period of time from the fabric to leave a discrete well defined color discharged pattern on the fabric.

5,310,410

METHOD FOR PROCESSING SEMI-CONDUCTOR WAFERS IN A MULTIPLE VACUUM AND NON-VACUUM CHAMBER APPARATUS

Robert G. Begin, Montecito, and Peter J. Clarke, Santa Barbara, both of Calif., assignors to Sputtered Films, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 505,596, Apr. 6, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,162
Int. Cl.[5] C23C *14/00, 16/00, 13/08*
U.S. Cl. 29—25.01 11 Claims



1. A method of processing a wafer to produce dies on the wafer, including the following steps;

disposing a second chamber adjacent a first chamber for providing for a transfer of the wafer between the first chamber and the second chamber,

disposing a plurality of third chambers in a satellite relationship with the second chamber such that the third chambers define an at least partially closed loop around the second chamber for providing for a transfer of the wafer between the second chamber and each of the third chambers,

providing for the production of a vacuum pressure in each of the third chambers,

interspersing a plurality of fourth chambers with the third chambers in the satellite relationship with the second chamber where the fourth chambers define at least partially closed loops with the third chambers around the second chamber, and

loading the wafer in the first chamber and transferring the wafer to the second chamber,

transferring the wafer at atmospheric pressure from the second chamber to individual ones of the third chambers,

performing individual ones of processes at a vacuum pressure on the wafer in the individual ones of the third chambers upon the transfer of the wafer to such individual ones of the third chambers, the vacuum processes constituting steps in the method of producing dies on the wafer,

transferring the wafer from the individual ones of the third chambers to the central station after the performance of the individual ones of the processes at the vacuum pressure in such individual ones of the third stations,

transferring the wafer at atmospheric pressure, in second steps alternate with the first steps, from the second chamber to individual ones of the fourth chambers,

performing individual ones of processes at atmospheric pressure on the wafer in the individual ones of the fourth chambers upon the transfer of the wafer to such individual ones of the fourth chambers,

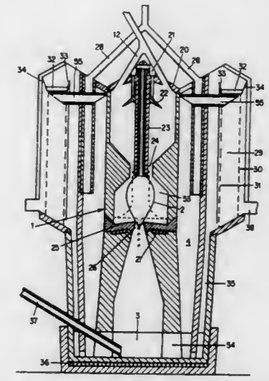
transferring the wafer from the individual ones of the fourth chambers to the second chamber after the performance of the individual ones of the processes at atmospheric pressure on the wafer in such individual ones of the fourth chambers.

5,310,411

PROCESS AND MACHINE FOR THE TRANSFORMATION OF COMBUSTIBLE POLLUTANTS OF WASTE MATERIALS INTO CLEAN ENERGY AND USABLE PRODUCTS

Valerio Tognazzo, Via 7 F.lli Cervi, 18, I-35031 Abano Terme, Italy

PCT No. PCT/EP88/00478, § 371 Date Jan. 18, 1990, § 102(e) Date Jan. 18, 1990, PCT Pub. No. WO88/09363, PCT Pub. Date Dec. 1, 1988
PCT Filed May 27, 1988, Ser. No. 455,350
Claims priority, application Israel, May 28, 1987, 41606 A/87
Int. Cl.[5] B01J *3/00*
U.S. Cl. 48—62 R 29 Claims



1. A process for transforming combustible pollutants and waste materials into clean energy and useful products, comprising the steps of:

introducing pollutant and waste material to a thermic lance at a temperature higher than 1600° C. in an airless atmosphere for a time sufficient to totally decompose the material and extract combustible gaseous products based on H_2 and CO, non-combustible gaseous products and inert products, which are forwarded to the subsequent steps,

cooling all together the thermally decomposed products and separating the inert products with water, thus generating

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steam and reducing the gases temperature at not less than 1200° C.,

introducing said steam and said cooled gaseous products onto a depurative carbonaceous mass heated at a temperature higher than 1200° C., to remove the residual pollutants from the gaseous products and to transform the gaseous products, at least in part, into hydrogen, carbon monoxide and other wholly useful gaseous products, and

cooling the gaseous products coming out from the depurative carbonaceous mass.

5,310,412

MELTING METAL PARTICLES AND DISPERSING GAS AND ADDITIVES WITH VANED IMPELLER

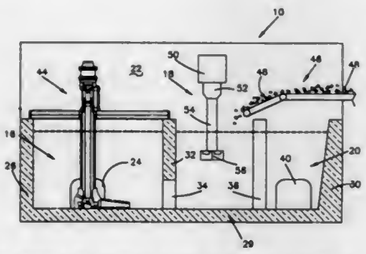
Ronald E. Gilbert, Chardon, and George S. Mordue, Ravenna, both of Ohio, assignors to Metaullics Systems Co., L.P., Solon, Ohio

Continuation-in-part of Ser. No. 857,448, Mar. 25, 1992, which is a continuation of Ser. No. 614,914, Nov. 19, 1990, Pat. No. 5,143,357. This application Jan. 11, 1993, Ser. No. 2,604

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] C21C *7/00*

U.S. Cl. 75—571 **29 Claims**



1. A method for melting metal particles in a bath of molten metal, comprising the steps of:

providing an impeller, the impeller including a rectangular prism having upper and lower faces, four sidewalls, a width (A), a depth (B), and a height (C), with (A) being approximately equal to (B), the impeller defining a hub on the upper face, the impeller further including a plurality of vanes projecting radially outwardly of the hub, the vanes being disposed on the upper face:

providing an elongate, rotatable shaft rigidly connected to the upper face of the impeller:

providing a vessel within which the molten metal is contained;

immersing the impeller into the molten metal contained within the vessel;

rotating the shaft about its longitudinal axis such that a vortex is created in the molten metal; and

depositing metal particles onto the surface of the molten metal in the vortex.

5,310,413

PROCESS AND APPARATUS FOR EXTRACTION OF METAL VALUES FROM METAL BEARING ORES

Mark S. Hallinan, Johannesburg, South Africa, assignor to African Oxygen Limited, Johannesburg, South Africa

Filed Jun. 8, 1992, Ser. No. 895,299

Claims priority, application South Africa, Jun. 6, 1991, 91/4336

Int. Cl.[5] C22B *3/12*

U.S. Cl. 75—744 **16 Claims**

1. A process for extracting metal values from an ore bearing a desired metal, which comprises the following steps:

(a) milling an ore containing the desired metal in the presence of water from at least one first pipeline to produce an ore containing slurry;

(b) adding a lixiviant to the slurry;

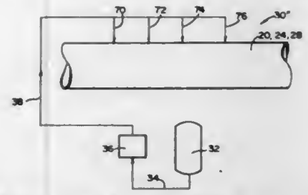
(c) dissolving the desired metal in the lixiviant to thereby leach the desired metal from the slurry;

(d) absorbing the dissolved metal from the lixiviant with activated carbon particles in a carbon-in-pulp absorption section;

(e) separating the carbon particles from the slurry;

(f) recovering the desired metal from the carbon particles;

(g) wherein the slurry is conveyed along second pipelines, some of which can be fitted with pumps to each succeeding step of the process; and



wherein the improvement comprises introducing, prior to step (f), and after the formation of the ore-containing slurry in step (a), a gaseous agent, capable of promoting recovery of the metal values from the ore, into at least one of the second pipelines or the first pipeline said agent being introduced at a plurality of spaced apart points or zones of at least one of said first and second pipelines, provided that when at least one of the spaced apart points or zones is in a second pipeline between step (e) and step (c), or in a first pipeline from step (c) to step (a), then at least one further gaseous agent introduction point or zone is provided in one of said first or second pipelines slurry or process water which is positioned downstream after step (c).

5,310,414

METHOD OF FORMING SEPARATION MEMBRANES

Mitri S. Najjar, Wappingers Fall, N.Y.; Robert S. Averback, Urbana, Ill.; Uygur Kokturk, Poughkeepsie, and Martin D. Hilmar, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 29, 1993, Ser. No. 10,714

Int. Cl.[5] B01D *53/22, 69/04, 71/02*

U.S. Cl. 95—45 **5 Claims**

1. The method of separating a charge gas mixture containing a more permeable gas and a less permeable gas which comprises

maintaining a separation membrane including a support of metal oxide particles bearing, as separating layer thereon a separating layer of deposited nanocrystalline ceramic powder of average particle diameter of 200Å–2,500Å, of pores of average diameter of 1000Å–2000Å, and of thickness of 5–250 microns;

passing a charge gas mixture containing a more permeable gas and a less permeable gas into contact with said separation membrane;

maintaining a pressure on the charge side of said membrane greater than the pressure on the permeate side of said membrane thereby yielding a permeate containing increased quantity of said more permeable gas and decreased quantity of said less permeable gas and retentate containing decreased quantity of said more permeable gas and an increased quantity of said less permeable gas;

recovering said permeate containing increased quantity of said more permeable gas and decreased quantity of said less permeable gas; and

recovering said retentate containing decreased quantity of said more permeable gas and an increased quantity of said less permeable gas.

5,310,415

POLYIMIDE AND POLYAMIDE-IMIDE GAS SEPARATION MEMBRANES

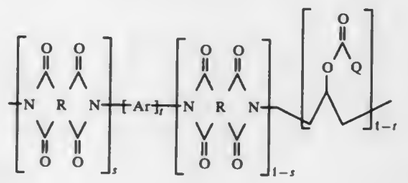
John W. Simmons, and Okan M. Ekiner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. and L'Air Liquides, SA, Paris, France

Division of Ser. No. 970,778, Nov. 3, 1992, Pat. No. 5,232,472. This application May 5, 1993, Ser. No. 57,032

Int. Cl.[5] B01D *53/22, 71/64*

U.S. Cl. 95—45 **2 Claims**

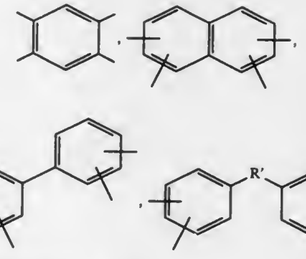
1. A process for separating one or more gases from a gaseous mixture comprising bringing said gaseous mixture into contact with the first side of a gas separation membrane formed from a polyimide comprising repeating units of the formula:



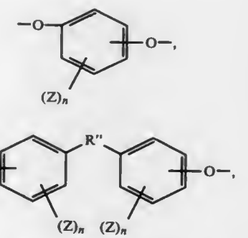
where

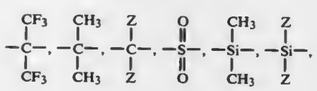


is independently

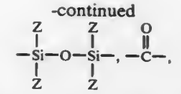


or mixtures thereof: —R'— is

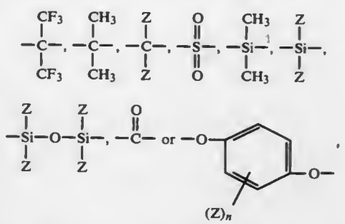




-continued



or mixtures thereof, where Z is independently —H, alkyl groups having 1 to 6 carbon atoms, aromatic groups having 6 to 12 carbon atoms, or halogen groups such as —F, Cl, —Br, or —I, where n is an integer from 0 to 4. R'' is



or mixtures thereof; Ar is any aromatic diamine residue; Q is an alkyl group having 1–10 carbon atoms or an aromatic group having 6–12 carbon atoms; t is a fraction from 0.01 to about 0.75 and s is a fraction from 0 to 1.0, in a manner to cause a portion of the mixture to pass through the membrane to a permeate side, the resulting gas mixture on the permeate side being enriched in one or more component over that of the mixture on the first side.

5,310,416

PROCESS AND APPARATUS FOR THE ABSORPTION OF EXPLOSIVE GASES IN A MASS TRANSFER COLUMN

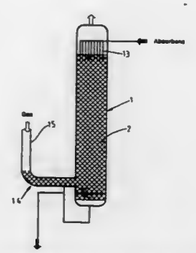
Götz-Gerald Börger, Odenthal-Osenau; Uwe Listner, Hürth-Stotzheim, and Günther Lüttgens, Odenthal-Osenau, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 18, 1992, Ser. No. 932,831

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 4128119

Int. Cl.[5] B01D *35/14*

U.S. Cl. 95—64 **7 Claims**



1. A process for the absorption of explosive gases or vapours which are passed through a mass transfer column charged with an absorbent and filled with an electrically conductive packing, wherein

a) the packing of the mass transfer column is earthed,

b) the absorbent used is a nonconductive, electrostatically chargeable liquid and

c) the packing has such a dense lattice structure that no electric charge sufficient for igniting a mixture of Ex-Class IIC gases can accumulate at any point in the packing.

7. A column for the absorption of explosive gases or vapours

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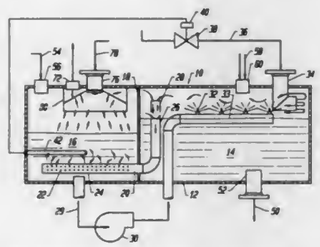
wherein the column contains a regularly arranged electrically conductive packing, the lattice distance of the packing is less than 25 mm so that no electric charge sufficient for igniting a mixture of Ex-Class IIc gases can accumulate at any point in the packing, the electrically conductive packing is earthed, pipes extending to the upper end of the packing or into the packing are provided at the upper end of the column for providing and supplying an absorbent nonconductive and electrically chargeable liquid, and a siphon gas supply pipe also filled with a packing is connected to the lower end of the column.

5,310,417

ATMOSPHERIC DEAERATOR

Martin Bekedam, 19059 N. 88th Ave., Westbrook Village, Peoria, Ariz. 85382

Filed Mar. 15, 1993, Ser. No. 31,718
Int. Cl.[5] B01D *19/00*
U.S. Cl. 96—157 **10 Claims**



1. An atmospheric deaerator unit comprising:

a first vessel means for containing a quantity of water and a volume of gas at atmospheric pressure, the first vessel means having a vent means for venting the first vessel means to atmosphere;

a second vessel means for containing a quantity of water at a predetermined level and a volume of gas under pressure slightly higher than atmospheric pressure, the second vessel means having a steam admission and direct-contact heating means for deaerating and direct-contact heating water in the second vessel means, the steam admission and direct-contact heating means including a water spray means for spraying a fine spray of water into the volume of gas in the second vessel means above the predetermined level;

communicating passage means between the first vessel means and the second vessel means, the communicating passage means comprising an L-shaped water column conduit communicating between the first and second vessel means with a stand pipe segment having an end for admission of water that is positioned at the predetermined level of water in the second vessel means and a horizontal segment extending into the first vessel means, the horizontal segment in the first vessel means having holes and an end submerged under the water in the first vessel means, wherein the communicating passage means provides a gas relief means for passing gases from the second vessel means to the first vessel means and a safety means for releasing excess pressure of gases in the second vessel means to the first vessel means; and

first water circuit means for continuously circulating water from the first vessel means to the water spray means in the second vessel means, and, second water circuit means for circulating water from the second vessel means to a boiler, wherein the steam admission and direct-contact heating means includes a steam conduit having an end directly open to the volume of gas in the second vessel means with a steam valve proximate the end of the conduit, and valve having control means for regulating the steam admitted to the second vessel means from the steam conduit, and sensor means connected to the valve control means for regulating steam flow to the steam admission and direct-contact heating means in accordance with conditions in the deaerator unit.

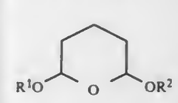
5,310,418

METHOD OF IMPARTING DURABLE PRESS PROPERTIES TO COTTON TEXTILES WITHOUT USING FORMALDEHYDE

Anna M. Czech, Peekskill, N.Y., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 767,676, Sep. 30, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,943
Int. Cl.[5] D06M *13/12*
U.S. Cl. 8—116.4 **16 Claims**

1. A method for imparting durable press properties to a cotton-containing textile, which method avoids using formaldehyde and the problems associated therewith, which method comprises treating the textile with an aqueous finishing solution comprising at least one curing catalyst and an acetal of glutaraldehyde having the formula



(I)

R^1 is selected from the group consisting of:

(i) an alkyl group having 1 to 12 carbon atoms, preferably 1 to 4 carbon atoms;

(ii) a hydroxyalkyl group having 1 to 12 carbon atoms, preferably 1 to 6 carbon atoms;

(iii) a polyoxyalkylene group containing polyoxyethylene units, polyoxypropylene units, or a mixture thereof and wherein the polyoxyalkylene group has a molecular weight of less than 2000, preferably less than 1000;

(iv) a polyoxyalkenyl-substituted aryl group wherein the polyoxyalkenyl-substituted substituent contains polyethylene units, polypropylene units or a mixture thereof and wherein the substituent has a molecular weight of less than 2000, preferably less than 1000; and

R^2 is selected from the group consisting of

(i) a hydroxyalkyl group having 1 to 12 carbon atoms, preferably 1 to 6 carbon atoms;

(ii) a polyoxyalkylene group containing polyoxyethylene units, polyoxypropylene units, or a mixture thereof and wherein the polyoxyalkylene group has a molecular weight of less than 2000, preferably less than 1000;

(iii) a polyoxyalkenyl-substituted aryl group wherein the polyoxyalkenyl-substituted substituent contains polyethylene units, polypropylene units or a mixture thereof and wherein the substituent has a molecular weight of less than 2000, preferably less than 1000.

5,310,419

METHOD OF PREPARING INORGANIC POLYMERIC WATER COMPLEXES AND PRODUCTS SO PRODUCED

Charles R. McCoy, 3208 Windsor, Pearland, Tex. 77581, and Frank G. Defalco, 2401 Fountain View, Suite 626, Houston, Tex. 77057

Continuation of Ser. No. 384,815, Jul. 24, 1989, Pat. No. 5,084,263. This application Jan. 10, 1992, Ser. No. 819,137
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] C09D *1/00;* **C01G** *5/00, 7/00;* **C01D** *13/00*
U.S. Cl. 106—1.05 **28 Claims**

1. A method of producing inorganic polymeric water complexes stable throughout the pH range from 0 to 14 which comprises reacting in an aqueous medium:

a. at least one acid selected from mineral and carboxylic acids;

b. an alkali metal hydroxide; and

c. a source of reactive NH_2 groups:

said stable water complex prepared as follows:

(i) mixing in a reaction vessel, a source of reactive NH_2 groups in aqueous medium; with

a) said alkali metal hydroxide to raise the pH of the solution to above about 12 to form an aqueous ammonium hydroxide/alkali metal hydroxide mixture; or

b) said acid, to lower the pH to about 0 to form an acidic ammonium mixture; and

(ii) combining with the mixture of step (i) said acid if a hydroxide mixture; or said hydroxide if an acid mixture at a rate sufficient to create a highly exothermic reaction; whereby the reactive NH_2 groups are contained in solution during formation of the inorganic polymeric water complexes.

25. A solution for use in electroplating metals prepared by the steps comprising:

(i) mixing and reacting in an aqueous medium a source of reactive NH_2 groups with:

a) an alkali metal hydroxide; or

b) at least one mineral acid or carboxylic acid to form a highly acidic, in the case a) is used or highly alkaline if b) is used, mixture; and

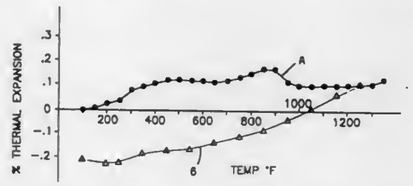
(ii) rapidly combine the mixture with the remaining hydroxide or acid not used in step (i) above at a rate sufficient to create a highly exothermic reaction and maintain the reacted NH_2 groups at a pH of 7.

5,310,420

REFRACTORY CONTAINING INVESTMENT MATERIAL AND METHOD OF MAKING

Claude Watts, Mayfield Heights, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Filed Sep. 21, 1992, Ser. No. 948,013
Int. Cl.[5] B28B *7/34*
U.S. Cl. 106—38.9 **16 Claims**



1. In an aqueous slurry of investment powder for use in making investment molds, the powder including refractory and binder, the improvement comprising a sulfate salt in an amount of from about 0.01% to about 0.04% by weight based on the weight of investment powder, a chloride salt in an amount of at least about 0.5% by weight based on the weight of investment powder, and from about 3% to about 6% by weight colloidal silica based on the weight of water.

5,310,421

PLAY MATERIAL

Wallace H. Shapero, West Hills, and Susan A. Reyes, Agoura Hills, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

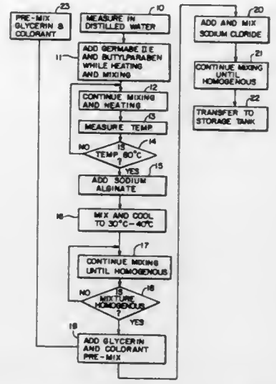
Filed Feb. 7, 1992, Ser. No. 832,272
Int. Cl.[5] C08L *5/04*
U.S. Cl. 106—208 **5 Claims**

1. A play material comprising:

2.5 to 4.0 percent by weight of a self cross-linking sodium alginate;

1.0 to 3.5 percent by weight of a glycerin and water solution in excess of 90 percent glycerin;

a preservative;



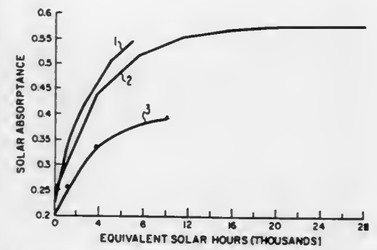
about 4.0 percent by weight sodium chloride; and water.

5,310,422

HIGH TEMPERATURE INORGANIC PAINT

A. Ismail Abdel-Latif, Chadds Ford, Pa., assignor to General Electric Co., East Windsor, N.J.

Filed Dec. 1, 1992, Ser. No. 983,780
Int. Cl.[5] C09D *1/02, 5/24, 5/33*
U.S. Cl. 106—635 **12 Claims**



1. A durable temperature resistant paint, comprising a mixture of:

greater than 50% dry weight barium titanate pigment;

greater than 5% dry weight of an alkali metal silicate binder; and

sufficient water to allow said pigment and binder to be applied.

5,310,423

DEVELOPING UNIT HAVING CAPABILITY OF EFFICIENTLY EXCHANGING DEVELOPING POWDER

Toyoka Aimoto, Nara, and Masato Asanuma, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

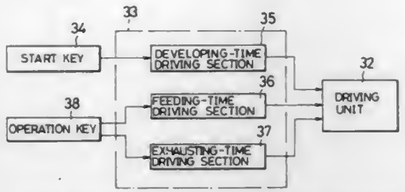
Filed Jul. 22, 1992, Ser. No. 918,813
Claims priority, application Japan, Oct. 31, 1991, 3-284558; Nov. 8, 1991, 3-292631; Nov. 22, 1991, 3-307442; Dec. 2, 1991, 3-317978
Int. Cl.[5] G03G *15/06*
U.S. Cl. 118—689 **13 Claims**

1. A developing unit comprising:

a developing bath for containing a developing powder;

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a stirring roller disposed in said developing bath for development;
a screw disposed in said bath for carrying a developing powder to feed it inside of said bath;
control means for controlling said roller and said screw such that rotary speeds of said roller and said screw in a case of



feeding a new developing powder are not equivalent to those in a case of development, respectively;
a sensor for outputting a signal representing a toner density in said developing bath; and
means for disabling said roller and said screw when the signal supplied from said sensor reaches a predetermined value.

5,310,424

PROCESS FOR REDUCING THE FIBRILLATION TENDENCY OF SOLVENT-SPUN CELLULOSE FIBRE

James M. Taylor, Derby, United Kingdom, assignor to Courtaulds PLC, London, United Kingdom

Filed Apr. 6, 1992, Ser. No. 863,008
Claims priority, application United Kingdom, Oct. 21, 1991, 9122318
Int. Cl.[5] D06M *13/322*
U.S. Cl. 8—190 **33 Claims**

1. A process for fibre treatment comprising contacting solvent-spun cellulose fibre with an aqueous system comprising a substantially colourless chemical reagent having two to six functional groups reactive with cellulose and drying said fibre to reduce the fibrillation tendency of said fibre.

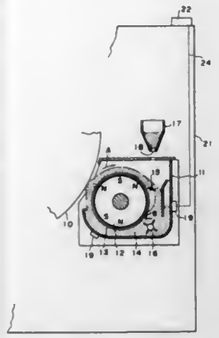
5,310,425

TONER CONCENTRATION DETECTOR FOR A TWO-COMPONENT DEVELOPER

Shiro Nakagawa, Chiba; Taisuke Domon, Ichikawa; Takehiro Imai, Ichikawa, and Eiji Takahishi, Ichikawa, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 601,526, Oct. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 465,632, Jan. 9, 1990, abandoned, which is a continuation of Ser. No. 187,431, Apr. 23, 1988, abandoned. This application Feb. 9, 1993, Ser. No. 15,165
Claims priority, application Japan, May 19, 1987, 62-074868
Int. Cl.[5] B05C *11/00*; **G03G** *21/00*
U.S. Cl. 118—689 **5 Claims**

1. In a toner concentration detector including a differential transformer means having primary and secondary coils having a coupling coefficient therebetween for producing a differential output from the secondary coil and capacitive circuit means for adjusting the coupling coefficient between said primary and secondary coils, the improvement residing in said capacitive circuit means including means for reducing high frequency noise resulting from current conducted through extension wiring means and a variable capacitive diode capacitively coupled between said primary and secondary coils, and separate adjustable means for applying a voltage for varying the capacitance of said variable capacitive diode to control the coupling coefficient between said primary and secondary coil, the extension wiring means interconnecting the primary and secondary coils with the separate adjustable means to be located at an accessible location remote from the transformer means.

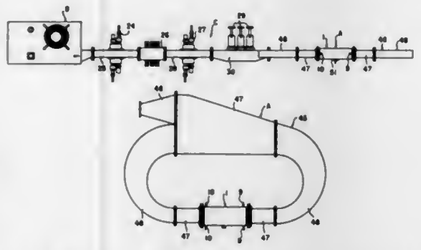


5,310,426

HIGH-SPEED FILM FORMING METHOD BY MICROWAVE PLASMA CHEMICAL VAPOR DEPOSITION (CVD) UNDER HIGH PRESSURE AND AN APPARATUS THEREFOR

Yuzo Mori, Osaka, Japan, assignor to UHA Mikakuto Precision Engineering Research Institute Co., Ltd., Osaka, Japan

Division of Ser. No. 561,639, Aug. 2, 1990, Pat. No. 5,037,666. This application Apr. 8, 1991, Ser. No. 681,268
Claims priority, application Japan, Aug. 3, 1989, 1-202370
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 AN **7 Claims**



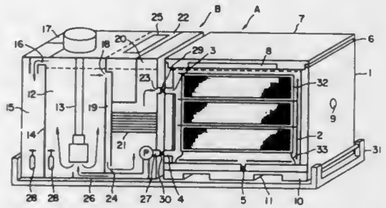
1. A high speed film forming apparatus by microwave plasma chemical vapor deposition (CVD) under high pressure relative to pressures at which microwave plasma CVD apparatus normally operate, comprising;
a reaction unit having a storage circuit for allowing progressive waves of microwave to circulate or reflect so as to accumulate said microwave, provided at part of said storage circuit with an incident-emission window through which said microwave is passable, provided with an airtight reaction chamber capable of holding therein a substrate to form thereon a desired thin film, and forming at said reaction chamber a supply pipe and an exhaust pipe for carrier gas and reaction gas communicating therewith respectively;
a microwave generator for supplying to said reaction unit progressive waves of microwave of a predetermined wavelength;
a waveguide unit for guiding to said reaction unit said microwave generated by said microwave generator and having at least a waveguide pipe;
a gas supply unit for adjusting flow rates of said carrier gas and reactant gas and supplying said gases to said supply pipe of said reaction unit;
an exhaust unit for adjusting flow rates of said carrier gas and reactant gas and exhausting said gases from said exhaust pipe at said reaction unit through a buffer tank by a vacuum pump, and
a gas processing unit for supplying purging gas to said buffer tank and said supply pipe for said reaction gas and provided with a bubbling tank which is connected to said buffer tank so as to process a mixed gas comprising said reaction gas, carrier gas and purging gas.

5,310,427

METHOD FOR TRANSPORTING LIVE FISH

Hiromichi Manome, Chiba, Japan, assignor to Japan Airlines Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01035, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/02130, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 2, 1991, Ser. No. 856,168
Claims priority, application Japan, Aug. 3, 1990, 2-205122
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—201 **15 Claims**



1. A method for transporting live fish, comprising the steps of:
cooling live fish placed in water to bring the fish into a dormant state,
removing the water within which the fish are placed, and, after removing the water, transporting the live fish in the dormant state with the live fish placed under an ambient temperature maintained at −1° to 10° C.

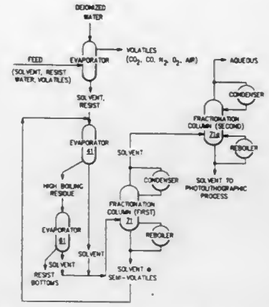
5,310,428

SOLVENT STABILIZATION PROCESS AND METHOD OF RECOVERING SOLVENT

Anilkumar C. Bhatt, Johnson City; Kostas I. Papathomas, Endicott; Terry D. Sinclair, Endicott, and Jerome J. Wagner, Endicott, all of N.Y., assignors to Inernational Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1992, Ser. No. 994,868
Int. Cl.[5] B08B *3/08*
U.S. Cl. 134—2 **5 Claims**

1. A photolithographic method comprising removing an acrylic acid-acrylate ester photolithographic polymer film from a substrate, and circuitizing said substrate, said polymeric film containing monomeric trimethylol-propane triacrylate capable of thermally initiated exothermic polymerization, said method comprising:
a. contacting the photolithographic polymeric film with (i) water, and (ii) cyclic alkylene carbonate organic solvent;
b. recovering an effluent stream comprising water, the cyclic alkylene carbonate organic solvent, the acrylic acid-acrylate polymeric material, and monomeric triethylol-propane triacrylate;
c. adding a quinone thermal polymerization inhibitor to the cyclic alkylene carbonate solvent to stabilize the monomeric triethylol-propane triacrylate against exothermic polymerization;
d. thereafter
(i) thermally separating the water from the cyclic alkylene carbonate solvent, and
(ii) thermally separating the cyclic alkylene carbonate solvent from the effluent stream, while avoiding exothermic polymerization of acrylic acid-acrylate monomer and of the monomeric triethylol-propane triacrylate and polymerization exotherm induced hydrolysis of the cyclic alkylene carbonate solvent to the corresponding alkylene glycol;
e. separating cyclic alkylene carbonate solvent from high boiling materials and polymeric solids; and
f. receiving the cyclic alkylene carbonate solvent.



5,310,429

CONTACT LENS CLEANING METHOD

Maylee H. Chou, Lexington, and Edward J. Ellis, Lynnfield, both of Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Division of Ser. No. 772,110, Oct. 7, 1991, Pat. No. 5,190,594, which is a continuation of Ser. No. 434,412, Nov. 9, 1989, Pat. No. 5,089,053. This application Dec. 2, 1992, Ser. No. 984,878
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—6 **6 Claims**

1. A method of cleaning a hard contact lens formed of a polymer having silicon and fluorine incorporated therein, after said lens has been used in the eye and has accumulated deposits from the eye,
said method comprising,
(a) exposing said contact lens to a solution containing in admixture, an alkylphenyl polyether alcohol surfactant, a second surfactant which is anionic, a third surfactant having a preservative action, a suspending agent; and
(b) rubbing said solution against said contact lens to remove surface deposits.

5,310,430

PROCESS OF DISPENSING A SOLID CAST BLOCK OF WATER SOLUBLE DETERGENT

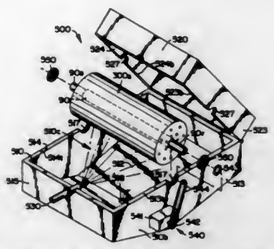
John E. McCall, Jr., West Saint Paul, Minn., assignor to Ecolab Inc., St. Paul, Minn.

Filed May 31, 1991, Ser. No. 708,510
Int. Cl.[5] B08B *7/00, 3/04*; **C11D** *17/00*
U.S. Cl. 134—33 **7 Claims**

1. A method of dispensing a solid cast block of water-soluble detergent composition, comprising the steps of:
obtaining an article of commerce comprising at least twenty liters of a solid detergent composition cast onto a longitudinally extending structural core wherein the solid cast detergent composition defines an exposed surface area;

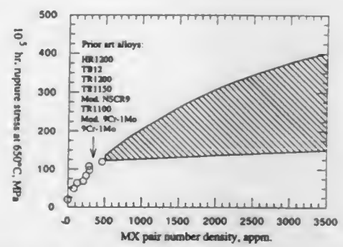
VOL 1162 ISS 2 MY 10 1994 UMI

obtaining a spray-type dispenser having a spray chamber and a spray nozzle directed into the spray chamber;
placing the article of commerce within the spray chamber of the dispenser such that the solid detergent composition is suspended within the spray chamber upon the structural core which is in contact with the dispenser;
rotating the article of commerce within the spray chamber about the structural core;



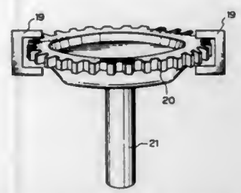
spraying a dissolving solvent through the spray nozzle and into contact with the exposed surface area of the rotating detergent composition so as to dissolve a portion of the detergent composition and form a use solution of the detergent composition; and
directing the use solution out of the dispenser and to an end use point substantially immediately after formation of the use solution.

5,310,431
CREEP RESISTANT, PRECIPITATION-DISPERSION-STRENGTHENED, MARTENSITIC STAINLESS STEEL AND METHOD THEREOF
Robert F. Buck, N. Huntingdon, Pa., assignor to Robert F. Buck, North Huntingdon, Pa.
Filed Oct. 7, 1992, Ser. No. 957,724
Int. Cl.[5] C22C *38/30*
U.S. Cl. 148—325 **21 Claims**



1. An iron based alloy having good corrosion resistance and high strength at elevated temperatures consisting essentially of 0.05–0.15% carbon, 2–15% chromium, 0.1–10.0% cobalt, 0.1–4.0% nickel, 0.1–2.0% molybdenum, 0.1–0.75% titanium, less than 0.1% boron, less than 0.02% nitrogen, and the remainder essentially iron plus impurities in which alloy is heat treated to be a face centered cubic structure at temperatures above about 900° C. and body centered cubic structure on cooling.

5,310,432
TOOTHED WHEEL FOR USE IN AUTOMOBILES AND ITS MANUFACTURING METHOD
Kiyoshi Fukui, Nishinomiya, and Shigeaki Yamanaka, Hiroshima, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Kubota Iron Works Co., Ltd., Hiroshima, both of Japan
Filed Jun. 29, 1993, Ser. No. 83,266
Claims priority, application Japan, Jun. 30, 1992, 4-171408
Int. Cl.[5] C22C *38/16*
U.S. Cl. 148—330 **2 Claims**



1. A toothed wheel for use in automobiles and in a form of a dish-shaped disk having a thickened peripheral edge portion in an outer and/or inner side of which gear teeth are present, at least the surface area of the gear teeth being of a martensitic structure, the disk being made of a steel comprising a ferrite-cementite-graphite structure in which 50% or more of cementite originally present in a starting material for said steel has been changed to graphite, the steel composition of the disk consisting essentially of, by weight %:
C: 0.20–0.70%, Si: 0.05–1.00%, Mn: 0.05–0.50%, sol.Al: 0.01–1.00%, N: 0.002–0.010%, B: 0.0003–0.0050%, Ca: 0–0.01%, Cu: 0–1.00%, Ni: 0–2.00%, and
a balance of Fe and incidental impurities in which the content of P is restricted to not larger than 0.020% and the content of S is restricted to not larger than 0.010%.

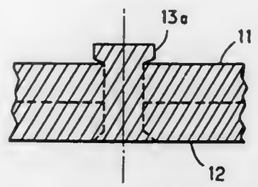
5,310,433
PROCESS FOR PREPARING HIGH ENERGY ROCKET PROPELLANT PLASTICIZER FROM GLYCEROL
Lawrence E. Carosino, Wilmington, Del., and Kenneth O. Hartman, LaVale, Md., assignors to Hercules Incorporated, Wilmington, Del.
Filed Dec. 24, 1987, Ser. No. 137,842
Int. Cl.[5] C06B *25/14, 45/10*
U.S. Cl. 149—104 **8 Claims**

1. A process for producing high energy plasticizer composition for rocket propellant comprising
(a) contacting glycerol and ethylene oxide in the presence of a catalytic amount of dry alkali metal bisulfate;
(b) separating out the alkali metal bisulfate; and
(c) conitrating the resulting intermediate reaction products, to obtain the desired high energy plasticizer composition.

5,310,434
PROCESS FOR JOINING ELEMENTS IN THE MANUFACTURE OF THERMOSTRUCTURAL COMPOSITE MATERIAL PARTS
Michel Vives, Eysines, and Yvon Sourdoulaud, Artigues, both of France, assignors to Societe Europeenne De Propulsion, Suresnes, France
Continuation of Ser. No. 494,180, Mar. 14, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 973,212
Claims priority, application France, Mar. 30, 1989, 89 04181
Int. Cl.[5] B32B *31/24, 7/08*
U.S. Cl. 156—92 **10 Claims**

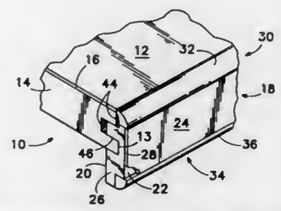
1. A process for the manufacture of thermostructural composite material parts having a fibrous reinforcement substrate densified by a matrix, said process comprising:

forming at least two structural elements from an arrangement of reinforcing fibers;
forming at least a lodging in at least one of the structural elements;
forming a connecting element for joining the two structural elements from an undensified arrangement of reinforcing fibers;
compacting the connecting element to a size and shape suitable to be introduced into the lodging in the structural element to form an undensified compacted connecting element;
engaging the undensified compacted connecting element in the lodging in the structural element to form an uninterrupted connecting element/lodging interface suitable for co-infiltration of a matrix material;



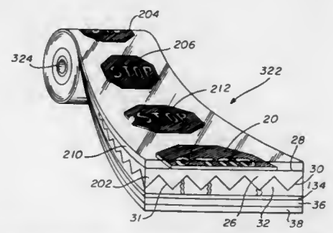
eliminating the compaction of the connecting element to allow the arrangement of reinforcing fibers forming the connecting element to expand and provide mutual contact between fibers of the connecting element and fibers in the lodging along substantially the entire connecting element-/lodging interface to lock the connecting element in the lodging forming an assemblage prior to co-densification, said assemblage including the structural elements and the connecting element; and
co-densifying said assemblage including the structural elements and the connecting element with said matrix material to effect co-infiltration of said matrix material along substantially said entire connecting element/lodging interface.

5,310,435
METHOD FOR MAKING CORNERS FOR LAMINATE AND VENEER COUNTERTOPS
Basil T. Kelly, 6625 SW. Robbins Rd., Tualatin, Oreg. 97062
Continuation of Ser. No. 811,293, Dec. 20, 1991, which is a division of Ser. No. 435,544, Nov. 13, 1989, abandoned. This application May 24, 1993, Ser. No. 67,338
Int. Cl.[5] A47B *13/08;* B32B *31/04, 31/18*
U.S. Cl. 156—182 **2 Claims**



1. A method for forming a countertop comprising:
(a) placing a laminate sheet on the upper surface of a horizontal deck having an elongate exposed vertical edge;
(b) placing a laminate strip on the face side of a vertical edge piece having a length substantially equal to the length of said exposed vertical edge;
(c) cutting a first rectangular notch along the horizontal upper corner of the face side of said edge piece, said notch extending along the entire length of said edge piece;
(d) adhesively joining in said first notch a first rectangularly cross-sectioned elongate corner element having transverse dimensions that are larger than the dimensions of said first notch and a length substantially equal to the length of said edge piece;
(e) forming an arcuate surface on said first corner element that smoothly fairs into said laminate strip after said corner element has been attached to said edge piece;
(f) forming tongue and groove joint elements in the edge of said deck and the back side of said edge piece that interfit so that said edge piece covers the exposed vertical edge of said deck and said arcuate surface smoothly fairs onto said laminate sheet; and
(g) adhesively attaching said edge piece to said deck with said tongue and groove elements interfitting, after said corner element has been attached thereto and said arcuate surface has been formed.

5,310,436
PREPRINTED RETROREFLECTIVE HIGHWAY SIGN AND METHOD FOR MAKING THE SIGN
Robert M. Pricone, Libertyville; Richard Zanotti, Hoffman Estates, and Alex A. Szopinski, Des Plaines, all of Ill., assignors to Stimsonite Corporation, Niles, Ill.
Division of Ser. No. 687,989, Apr. 19, 1991, Pat. No. 5,213,872. This application Aug. 7, 1992, Ser. No. 926,984
Int. Cl.[5] B29C *59/02;* B29D *11/00*
U.S. Cl. 156—209 **13 Claims**



11. A method of making a unitary preprinted retroreflective sheeting material, for use in sign-making comprising the steps of:
printing a desired legend on one surface of a resinous sheeting material;
placing an ultraviolet absorbent overlay over the surface of the resinous material having the printed legend thereon to protect the legend from ultraviolet radiation;
imposing a removable layer of film over the ultraviolet absorbent overlay;
embossing the unprinted reverse surface of the resinous sheeting material with a precise optical pattern of cube-corner type retroreflective elements to form a unitary sheet of retroreflective material, while essentially concurrently bonding the overlay to the printed surface side of the sheeting material;
providing a backing layer over at least a portion of the embossed retroreflective material;
placing an adhesive on the exposed side of the backing layer; and
adding a removable release sheet to the adhesive.

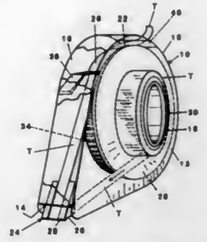
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,437

SINGLE SPOOL CORRECTION TAPE DISPENSER

William E. Tucker, Attleboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 15, 1992, Ser. No. 961,499
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—238 15 Claims



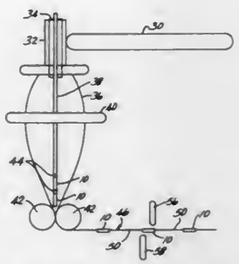
1. A hand operated device for transferring a film from a carrier tape to a substrate comprising:
wall structure forming a housing having an applicator means and a single spool mounted for rotation within said housing;
said spool having a portion carrying a roll of carrier tape and being supported for feeding the carrier tape over said applicator means;
a portion of said spool adjacent said roll carrying portion having an outer perimeter disposed for receiving said carrier tape after its passage over said applicator means; and
spring means forcing said carrier tape against said spool outer perimeter for driving said carrier tape after its passage over said applicator means and allowing slippage therebetween to prevent breakage of said carrier tape.

5,310,438

PROCESS FOR MAKING LOW COST DRIP IRRIGATION LINES USING PLASTIC EXTRUSION AND FILM BLOWING TECHNIQUES

Rodney R. Ruskin, San Francisco, Calif., assignor to Agrifim Irrigation International N.V., Netherlands Antilles

Filed Dec. 16, 1992, Ser. No. 991,826
Int. Cl.[5] B29C *47/02*
U.S. Cl. 156—243 9 Claims



1. A process for making drip irrigation lines comprising:
providing a drip emitter having an emitter body and a drip irrigation passage in the emitter for producing a pressure-reduction in water traveling in the passage,
forming a plastic film bubble having a thin outer film of plastic enclosing a hollow interior of the bubble,
inserting the emitter body into the hollow interior of the bubble so the drip irrigation passage faces toward a wall portion of said plastic film bubble,
applying pressure to opposite wall portions of the plastic film bubble for laminating the emitter body to the plastic film bubble so that said opposite wall portions of the plastic film forming the bubble are bonded to opposite sides of the emitter body and to thereby form an intermediate carrier sheet comprising an elongated, thin, flexible plastic film sheet in generally planar form with spaced-apart outer marginal edges and having the laminated emitter body embedded in said plastic film sheet inboard from said outer marginal edges,
forming an inlet to and an outlet from spaced-apart regions of the emitter passage, and
forming the intermediate carrier sheet into an elongated, flexible tubular drip irrigation conduit, with the emitter embedded in a wall of the conduit so the inlet receives water under pressure traveling in the conduit, passes it through the drip irrigation passage in the emitter, and discharges the water through the outlet to the exterior of the conduit at a drip rate.

5,310,439

PROCESS FOR BONDING A MOLDED ARTICLE OF A THERMOPLASTIC SATURATED NORBORNENE RESIN

Toshiyasu Matsui; Hidenori Yukishige, both of Yokohama, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,196
Claims priority, application Japan, Dec. 18, 1991, 3-353040; Aug. 31, 1992, 4-255570
Int. Cl.[5] C09J *5/02*
U.S. Cl. 156—307.3 12 Claims

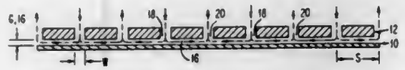
1. A process for bonding a molded article of a thermoplastic saturated norbornene resin which comprises sticking together the adhesion surface of the molded article of a thermoplastic saturated norbornene resin and the adhesion surface of an adherend with an elastic epoxy-silicon based adhesive, and then curing the elastic epoxy-silicon based adhesive.

5,310,440

CONVECTION TRANSFER SYSTEM

Arthur R. Zingher, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 515,802, Apr. 27, 1990. This application Apr. 2, 1992, Ser. No. 862,160
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 6 Claims



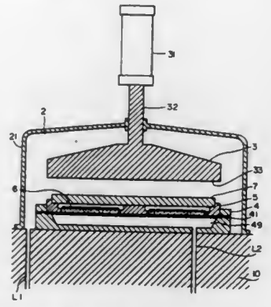
1. A system for transferring material with a workpiece by convection comprising:
a fluid which chemically reacts with the workpiece;
supply means including a plurality of supply nozzles;
return means including a plurality of return nozzles;
a facesheet coupled to said supply means and said return means and disposed opposite the workpiece for forming a gap therebetween through which said fluid flows;
the system characterized such that material is added to the workpiece from the fluid flowing through the supply means, the gap and the return means.

5,310,441

WAFER BINDING METHOD AND APPARATUS

Yukio Tsutsumi; Tatsumi Matsumoto; Keisuke Takahashi, and Mitsuzi Koyama, all of Tokyo, Japan, assignors to Mitsubishi Materials Corporation and Mitsubishi Materials Silicon Corporation, both of Tokyo, Japan

Division of Ser. No. 800,833, Nov. 29, 1991, Pat. No. 5,254,205. This application Jun. 14, 1993, Ser. No. 76,204
Claims priority, application Japan, Nov. 30, 1990, 2-334104
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—382 8 Claims



1. A wafer binding apparatus comprising:
a tightly sealed first decompression chamber,
a tightly sealed second decompression chamber provided at the lower portion of said first decompression chamber,
a diaphragm which divides said decompression chambers,
a wafer carrier, provided in said first decompression chamber and a carrier plate and wafers to be bonded to said carrier plate in the upper plate of said diaphragm, and
a pressure control means for controlling the pressure inside of both said decompression chambers,
in said wafer carrier there are provided:
a wafer supporting part for supporting each of said wafers in a position facing the upper surface of said diaphragm, and
a carrier plate supporting part for supporting said carrier plate in a fixed spacing in the interval between the upper surface of said wafer and said wafer supporting part,
wherein said pressure control means lowers the pressure in both of said decompressing chambers at the same time and then increases the pressure of said second decompression chamber relative to said first decompression chamber so that the position of said diaphragm is changed such that said diaphragm is drawn near to said carrier plate through said fixed spacing extending in between.

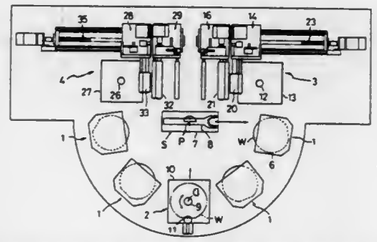
5,310,442

APPARATUS FOR APPLYING AND REMOVING PROTECTIVE ADHESIVE TAPE TO/FROM SEMICONDUCTOR WAFER SURFACES

Minoru Ametani, Osaka, Japan, assignor to Nitto Denko Corporation, Osaka, Japan

Filed May 7, 1992, Ser. No. 879,394
Claims priority, application Japan, May 13, 1991, 3-138342
Int. Cl.[5] B26D *5/00*; B32B *31/18*
U.S. Cl. 156—353 8 Claims

1. An apparatus for applying protective adhesive tape to surfaces of semiconductor wafers preparatory to a back grinding treatment, and for removing the protective adhesive tape from the wafer surfaces after the back grinding treatment, said apparatus comprising:
a single wafer transport mechanism disposed centrally of the apparatus;
at least one cassette loading mechanism, disposed in a front position of the apparatus relative to said single wafer transport mechanism, for storing a cassette containing a plurality of wafers in a plurality of stages;
a single wafer position mechanism for positioning the wafers taken out of said cassette;
a tape applying mechanism, disposed in a rearward position of the apparatus relative to said single wafer transport mechanism, for applying said protective adhesive tape to a surface of each wafer prior to said back grinding treatment; and
a tape removing mechanism, disposed in a rearward position of the apparatus relative to said single wafer transport mechanism and juxtaposed with said tape applying mechanism, for removing said protective adhesive tape from said surface of each wafer by using a remover adhesive tape



having a strong adhesion after said back grinding treatment
wherein said single wafer transport mechanism is operable for transporting the wafers from said cassette to said wafer positioning mechanism, transporting each wafer positioned before said back grinding treatment from said wafer positioning mechanism to said tape applying mechanism, transporting each wafer positioned after said back grinding treatment from said wafer positioning mechanism to said tape removing mechanism, transporting each wafer having said protective adhesive tape applied thereto from said tape applying mechanism to a predetermined cassette, and transporting each wafer stripped of said protective adhesive tape from said tape removing mechanism to a predetermined cassette.

5,310,443

APPARATUS FOR THE PRODUCTION OF TUBULAR BODIES

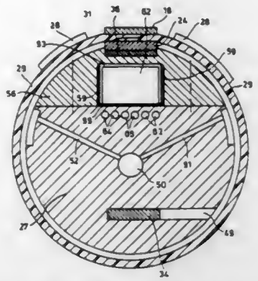
Hans Burger, Pfäffikon, Switzerland, assignor to KMK Karl Magerle Lizenz AG, Zug, Switzerland

Filed Jan. 28, 1992, Ser. No. 826,787
Claims priority, application Switzerland, Feb. 5, 1991, 00339/91
Int. Cl.[5] B29D *23/00*
U.S. Cl. 156—466 6 Claims

1. Apparatus for the production of a tubular body from a foil strip which includes a weldable plastic material and the longitudinal edges of which are thermally joined together, comprising a mandrel, a shaping belt adapted to shape the foil strip around the mandrel to provide a tubular body, a lower transportation belt, having an upper and lower belt run, which runs against the mandrel, an upper transportation belt having an upper and lower belt run, between the upper belt run of the lower transportation belt and the lower belt run of the upper transportation belt said longitudinal edges of the foil strip are received in mutually overlapping relationship, means for driving the transportation belts, a heating means adapted to act on the lower belt run of the upper transportation belt to cause said overlapping longitudinal edges to fuse, a pressing means for pressing said fused longitudinal edges, with prehardening of the plastic material, a cooling means arranged downstream of the pressing means for completing hardening of the plastic material, and means for adjusting the temperature of the upper

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belt run of the lower transportation belt associated with the lower belt run of the upper transportation belt in individual regions at each of the heating means, pressing means and cooling means, wherein said temperature adjusting means include at least first, second, and third cavities in the longitudinal extent of the mandrel, said cavities having walls, over which cavities the upper belt run of the lower transportation belt is



adapted to successively pass, with the cavities provided in inserts, wherein the length and width of the cavities at least substantially corresponds to the length and width of the heating means, pressing means and cooling means respectively, and further including means for adjusting the temperatures of the cavities, and wherein walls of the cavities, excluding those walls facing the upper belt run of the lower transportation belt, are provided with insulating means.

5,310,444

VENEER JOINING MACHINE

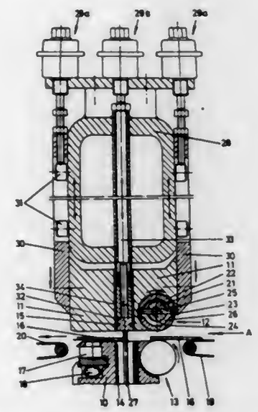
Theo Groenebaum, Rietberg, Fed. Rep. of Germany, assignor to Heinrich Kuper GmbH & Co. KG, Reitberg, Fed. Rep. of Germany

Continuation of Ser. No. 517,379, May 1, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,434

Claims priority, application Fed. Rep. of Germany, May 2, 1989, 8905533[U]

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—544 **12 Claims**



1. A veneer joining machine comprising transporting means, such as rolls, which are supported in a machine frame and draw together veneers with their impact edges, as well as a contact pressure pad which is arranged in the area of the end faces of adjacent veneers to be butt-joined and includes heating means, characterized in that said contact pressure pad (**11**) has arranged therein a counterpressure roll (**12**) having an outer tube (**22**) which is held relative to an inner drive shaft (**21**) at a variable distance as a jacket whose surface is even with the surface of said contact pressure pad (**11**) or is slightly projecting with respect thereto, wherein two longitudinal grooves (**23**) which extend parallel to the longitudinal tube side and are opposite each other in mirror-symmetrical fashion are provided on the inner side of side tube (**22**), and that the drive shaft (**21**) disposed in said tube (**22**) comprises a plurality of through holes (**24**) which extend in spaced relationship with each other relative to the longitudinal shaft axis at a right angle and through which a carrier pin (**25**) is respectively inserted whose length is slightly smaller than the distance from one longitudinal groove bottom to the other longitudinal groove bottom.

5,310,445

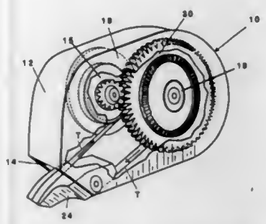
TAPE DISPENSER

William E. Tucker, Attleboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 15, 1992, Ser. No. 961,428

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—574 **14 Claims**



1. A hand operated device for transferring a film from a carrier tape to a substrate comprising

wall structure forming a housing having an applicator means and containing a carrier tape disposed on a feed spool axially mounted for rotation and having a face surface;

a take-up spool rotatably mounted for receiving tape from said feed spool after having passed over said applicator means,

a clutch plate having a face surface controlling said feed spool face surface and disposed for rotation about a common axis with said feed spool, said clutch plate face surface contacting said take-up spool face surface for rotating said take-up spool upon rotation of said clutch plate; and

biasing means for forcing said face surface of said clutch plate into contact with said face surface of said feed spool;

whereby tape moved over said applicator means is effective to cause rotation of said feed spool and said clutch plate through frictional contact therebetween to thereby rotate said take-up spool, and a predetermined tensile force in said tape is effective to cause slippage between said feed spool and said clutch plate.

5,310,446

METHOD FOR PRODUCING SEMICONDUCTOR FILM

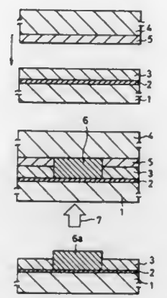
Junichi Konishi; Kouichi Maari, both of Ikeda; Toshihiko Taneda, Minoo, and Akiko Kishimoto, Kawanishi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 628,583, Dec. 17, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 912,894

Claims priority, application Japan, Jan. 10, 1990, 2-3959; Jan. 10, 1990, 2-3960; Jan. 19, 1990, 2-10916; Sep. 12, 1990, 2-243328

Int. Cl.[5] C30B *25/00*

U.S. Cl. 117—58 **19 Claims**



1. A method for producing a semiconductor single crystal film comprising the steps of:

(a) preparing a first substrate and a second substrate, wherein said first substrate having a surface at least partially comprising a semiconductor layer;

(b) superposing said first substrate on said second substrate to form an assembly of substrates combined in such a manner that said semiconductor layer contacts a surface of said second substrate;

(c) applying energy to said assembly of substrates to form a molten portion of said semiconductor layer therein;

(d) cooling said molten portion to crystallize said molten portion of said semiconductor layer to form a single crystal semiconductor structure therein; and

(e) separating said first substrate from said second substrate.

5,310,447

SINGLE-CRYSTAL DIAMOND OF VERY HIGH THERMAL CONDUCTIVITY

Thomas R. Anthony, Schenectady; William F. Banholzer, Glenville, and James F. Fleischer, Scotia, all of N.Y., assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 448,469, Dec. 11, 1989, abandoned. This application Aug. 12, 1991, Ser. No. 744,815

Int. Cl.[5] C30B *29/04*

U.S. Cl. 423—446 **23 Claims**

1. A method for preparing isotopically pure single-crystal diamond having a thermal conductivity of at least 31.5 watts/cm.°K. at 300° K. which comprises the steps of:

(A) depositing a layer of diamond on a substrate by a chemical vapor deposition method comprising low pressure activation of a mixture of hydrogen and a hydrocarbon consisting of isotopically pure carbon-12 or carbon-13;

(B) removing and comminuting said diamond layer; and

(C) converting the comminuted diamond to single-crystal diamond by diffusion under high pressure through a metallic catalyst-solvent material to a region containing a diamond seed crystal.

5,310,448

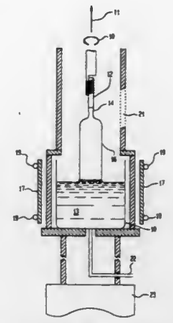
COMPOSITION FOR GROWTH OF HOMOGENEOUS LITHIUM NIOBATE CRYSTALS

Peter F. Bordui, Menlo Park; Richard G. Norwood, San Jose, and John L. Nightingale, Woodside, all of Calif., assignors to Crystal Technology, Inc., Palo Alto, Calif.

Filed Aug. 26, 1988, Ser. No. 236,960

Int. Cl.[5] C30B *29/30*

U.S. Cl. 423—593 **16 Claims**



1. Lithium niobate acoustic surface wave material produced by: a) preparing a charge of lithium niobate having a mol percentage composition of Li_2O of about 48.38 and the remainder Nb_2O_5, b) heating the charge to a temperature to provide a molten charge, and c) drawing a solidifed homogeneous crystal from the molten charge having a composition essentially the same as that of the molten charge.

5,310,449

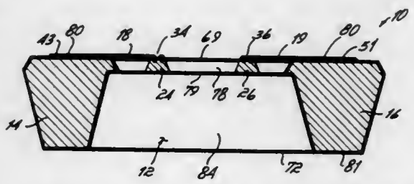
PROCESS OF MAKING A SOLID STATE MICROANEMOMETER

H. Thurman Henderson, Cincinnati, Ohio, assignor to University of Cincinnati, Cincinnati, Ohio

Division of Ser. No. 626,304, Dec. 12, 1990, Pat. No. 5,231,877. This application Jul. 22, 1993, Ser. No. 95,948

Int. Cl.[5] H01L *21/306*; B44C *1/24*; C03C *15/00, 25/06*

U.S. Cl. 156—628 **12 Claims**



1. A method of forming a microanemometer comprising the step of:

selectively processing selected parts of a single semiconductor crystal to form a fluid flow sensing bridge with at least one semiconductor resistor, each semiconductor resistor in the sensing bridge being thermally and electrically isolated from every other semiconductor resistor in the sensing bridge.

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5,310,450

METHOD OF MAKING AN ACCELERATION SENSOR

Michael Offenberg, Tuebingen, and Martin Willmann, Reutlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 17, 1992, Ser. No. 900,187

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122435

Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00*

U.S. Cl. 156—630 8 Claims



1. Method of making an acceleration sensor, comprising

connecting together at least an upper plate (3) and a lower plate (2), and

forming a cavity (4) between said plates,

in such a way that

at least one of said plates (2, 3) defines a membrane (5) which deforms in response to an internal pressure in said cavity, thereby facilitating immediate detection of any faulty connection between said plates.

5,310,451

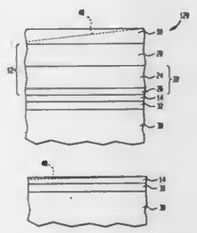
METHOD OF FORMING AN ULTRA-UNIFORM SILICON-ON-INSULATOR LAYER

Manu J. Tejwani, and Subramanian S. Iyer, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1993, Ser. No. 108,272

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—630 17 Claims



1. A method of forming a semiconductor layer having ultra-high thickness uniformity and upon which semiconductor structures can subsequently be formed, comprising the steps of:

a) providing a primary substrate having a prescribed total thickness variation;

b) forming a stack upon said primary substrate for compressing thickness variation to be transferred into the semiconductor layer, said thickness variation compression stack comprising a first strain-free etch stop layer and at least one intermediate layer pair formed upon said first strain-free etch stop layer, said at least one intermediate layer pair each comprising a spacer layer and a subsequent strain-free etch stop layer formed upon said spacer layer;

c) forming an epitaxial silicon layer of a desired thickness upon said stack;

d) bonding said epitaxial silicon layer to a mechanical substrate to form a bonded substrate pair, said mechanical substrate having a prescribed total thickness variation and said bonded substrate pair having a combined total thickness variation equal to the sum of the respective total thickness variations of said primary and said mechanical substrates;

e) removing said primary substrate, wherein the combined thickness variation of said bonded substrate pair is transferred and compressed into said stack a first compression amount; and

f) removing said stack, wherein the combined thickness variation of said bonded substrate pair is further transferred and compressed a second compression amount into said epitaxial silicon layer,

whereby said epitaxial silicon layer remains on said mechanical substrate to form the semiconductor layer of ultra-high thickness uniformity, the thickness uniformity being a controlled function of said first and second compression amounts.

5,310,452

PLASMA PROCESS APPARATUS AND PLASMA PROCESSING METHOD

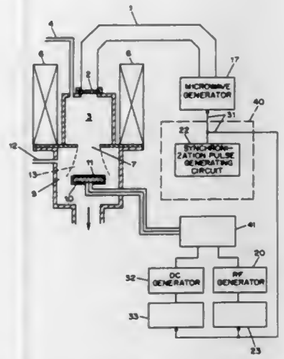
Masahiko, Doki, Sagamihara, and Kiyoshi Ooiwa, Yokosuka, both of Japan, assignors to Fujitsu Limited, Kanagawa and Fuji Electric Co., Ltd., Kawasaki, both of Japan

Division of Ser. No. 516,077, Apr. 27, 1990. This application Jul. 20, 1992, Ser. No. 916,495

Claims priority, application Japan, Apr. 27, 1989, 1-108553; Jul. 3, 1989, 1-171662; Mar. 1, 1990, 2-49810

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 5 Claims



1. A method of processing a semiconductor device using microwave-generated plasma, comprising the steps of

(a) supplying a gas to an evacuated plasma-generating chamber;

(b) supplying pulsed microwave to said evacuated plasma-generating chamber;

(c) providing a magnetic field in said plasma-generating chamber so as to generate a plasma due to resonance effects between said gas and said microwaves, wherein said magnetic field guides said plasma from said plasma-generating chamber into an evacuated processing chamber;

(d) providing a supported substrate in said processing chamber with one of its surfaces arranged for thin-film formation or etching using said plasma;

(e) supplying an RF bias voltage such that its magnitude varies with time during each microwave pulse; and

(f) synchronizing said RF bias voltage with said microwave pulses.

5,310,453

PLASMA PROCESS METHOD USING AN ELECTROSTATIC CHUCK

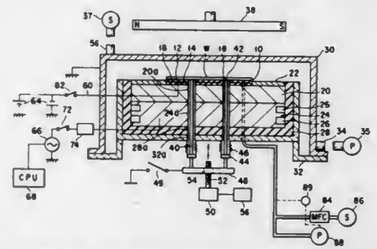
Kazuo Fukasawa, Kofu; Ryo Nonaka, Yamanashi, and Kousuke Imafuku, Kufu, all of Japan, assignors to Tokyo Electron Yamanashi Limited, Nirasaki, Japan

Filed Feb. 12, 1993, Ser. No. 17,379

Claims priority, application Japan, Feb. 13, 1992, 4-059366; Feb. 13, 1992, 4-059367; Mar. 25, 1992, 4-098924

Int. Cl.[5] H01L *21/00, 21/02, 21/306*; B44C *1/22*

U.S. Cl. 156—643 14 Claims



1. A plasma process method using a plasma process apparatus including:

a process chamber capable of attaining vacuum;

a support table for supporting a substrate to be processed in said process chamber;

an electrostatic chuck arranged on said support table, said electrostatic chuck including a conductive layer and an insulating layer formed on the conductive layer and constituting a substrate support surface;

conductive support means, arranged in said chamber, for transferring the substrate onto said electrostatic chuck;

plasma generating means for generating a plasma in said process chamber; and

means for supplying a heat medium gas between the substrate and said electrostatic chuck, the method comprising the steps of:

placing the substrate on said support means in said process chamber;

applying a potential for electrostatic attraction to said electrostatic chuck;

transferring the substrate onto the insulating layer of said electrostatic chuck by using said support means while said support means is grounded;

releasing contact between the substrate and said support means;

supplying the heat medium gas between the substrate and said electrostatic chuck;

generating a plasma in said process chamber; and

processing the substrate by using the plasma.

5,310,454

DRY ETCHING METHOD

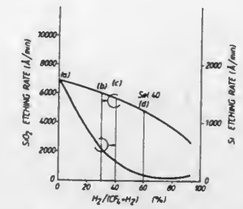
Tokuhisa Ohiwa, Kanagawa; Hisataka Hayashi, Chiba; Keiji Horioka, Kanagawa; Haruo Okano; Takaya Matsushita, both of Tokyo; Isahiro Hasegawa, and Akira Takeuchi, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 4, 1993, Ser. No. 26,042

Claims priority, application Japan, Mar. 4, 1992, 4-047153; Mar. 27, 1992, 4-071380

Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 9 Claims



1. A dry etching method by a plasma etching comprising the steps of:

providing a silicon substrate having a silicon oxide layer thereon;

forming a mask pattern on the silicon oxide layer with a maximum width opening of 1 μm;

placing the silicon substrate into a reactive chamber having an etching gas introducing means;

introducing an etching gas mixture of fluorocarbon gas and hydrogen gas such that a ratio of the hydrogen gas to the gas mixture is 50% to 80%; and

generating a plasma within the reactive chamber to plasma etch the silicon oxide layer according to the mask pattern to form an opening having an aspect ratio of at least 1.

5,310,455

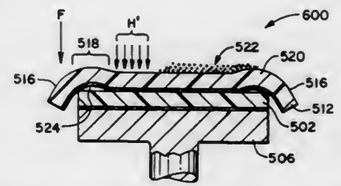
TECHNIQUES FOR ASSEMBLING POLISHING PADS FOR CHEMI-MECHANICAL POLISHING OF SILICON WAFERS

Nicholas F. Pasch, Pacifica; Thomas G. Mallon, Santa Clara, and Mark A. Franklin, Scott's Valley, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 10, 1992, Ser. No. 911,814

Int. Cl.[5] B24D *13/14*

U.S. Cl. 156—636 9 Claims



1. Method of assembling polishing pads to the platen of apparatus for chemi-mechanical polishing of semiconductor wafers, comprising:

assembling a first planar polishing pad to a platen of a chemi-mechanical polisher, the platen having an outer edge and a diameter "d";

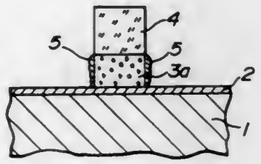
trimming the first polishing pad so that an outer edge of the first polishing pad is coincident with the outer edge of the platen;

assembling a second polishing pad, having a front face for polishing a wafer, to the first polishing pad, the second

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polishing pad having a diameter "D" greater than the diameter "d" of the platen, so that an edge portion region of the second polishing pad extends beyond the periphery of the first polishing pad about the entire circumference of the first polishing pad, the front face of the second polishing pad being exposed after assembling to the first polishing pad for polishing the wafer.

5,310,456
DRY ETCHING METHOD
Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 29, 1991, Ser. No. 736,947
Claims priority, application Japan, Jul. 30, 1990, 2-199249
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—657 **9 Claims**



2. A dry etching method for etching a polycide film composed of a polysilicon layer and a refractory metal silicide layer formed step by step on a sample wafer, said method comprising

etching said refractory metal silicide layer using an etching gas free of any carbon based gases and mainly composed of a compound containing S and F as the constituent elements, and controlling the temperature of the sample wafer to be not higher than room temperature to deposit sulfur for side wall protection, and

etching said polysilicon layer using an etching gas free of any carbon based bases and composed of at least one of a compound containing S and Cl as constituent elements and a compound containing S and Br as constituent elements, and controlling the temperature of said sample wafer to be not higher than room ambient temperature to deposit sulfur for side wall protection.

5,310,457
METHOD OF INTEGRATED CIRCUIT FABRICATION INCLUDING SELECTIVE ETCHING OF SILICON AND SILICON COMPOUNDS
David H. Ziger, San Antonio, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 30, 1992, Ser. No. 954,982
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—657 **7 Claims**

1. A method of semiconductor integrated circuit fabrication comprising the steps of:

forming a silicon oxide surface;

forming structures on said, surface said structures comprise layers of both silicon and silicon nitride; and

selectively removing said structures relative to said underlying silicon oxide surface by etching in an etch bath comprising phosphoric acid, hydrofluoric acid, and nitric acid.

5,310,458
PROCESS FOR BLEACHING LIGNOCELLULOSE-CONTAINING PULPS
Per G. Lundgren, Väröbacka; Lillemor K. Holtinger, Nödinge; Jiri J. Basta, Partille, and Marie R. Samuelsson, Stenungsund, all of Sweden, assignors to EKA Nobel AB, Sweden
Continuation of Ser. No. 535,409, Jun. 5, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 813,058
Claims priority, application Sweden, Jun. 6, 1989, 8902058-0; Apr. 23, 1990, 9001448-1
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] B21C *3/00*
U.S. Cl. 162—78 **9 Claims**

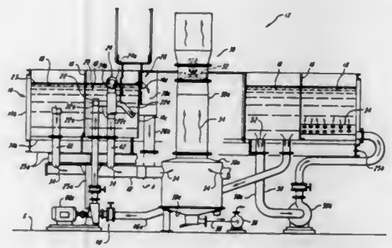
1. A process for bleaching chemically delignified lignocellulose-containing pulp, comprising, before a peroxide-containing step, the steps of:

(a) treating the pulp for at least one minute in a non-delignifying step with a nitrogenous polycarboxylic acid, thereby altering the trace metal profile of the pulp, said treating step being carried out in the absence of sulfite, at a pH in the range from 3.1 up to 9.0, and at a temperature in the range from 40° C. up to 100° C.;

(b) removing the metals complex bound to the nitrogenous carboxylic acid from the pulp by washing; and subsequently

(c) bleaching the pulp from step (b) with a peroxide-containing substance at a pH in the range from 7 up to 13.

5,310,459
APPARATUS AND METHOD FOR DEINKING WASTE PAPER PULP
Milos Krofta, Lenox, Mass., assignor to Lenox Institute for Research, Inc., Lenox, Mass.
Division of Ser. No. 755,028, Sep. 4, 1991, Pat. No. 5,242,585. This application Jun. 2, 1993, Ser. No. 71,392
Int. Cl.[5] B03D *1/02*
U.S. Cl. 162—4 **5 Claims**



1. A method for removing ink from a slurry of pulped, previously printed waste paper using a foam flotation process where the ink is separated from the paper fibers in a tank and floated upwardly on microscopic air bubbles, comprising,

creating a flow path within the tank of said slurry from an inlet end to an outlet end where the flow path has a generally uniform cross sectional flow area,

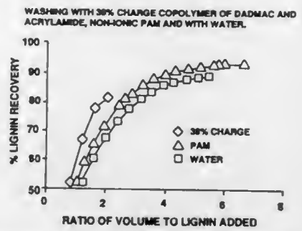
introducing a flow of ink containing paper slurry at the inlet end of said flow path;

recycling slurry flow from a plurality of first locations spaced in series along said flow path to a corresponding second plurality of locations spaced in series along said flow path, wherein each first location corresponds with only one second location and each of said second locations is located upstream from said corresponding first location;

aerating at least one of said recycled slurry flows to form an ink containing foam which floats on the slurry flow in said flow path, and

removing said ink containing foam from said slurry flow in said flow path.

5,310,460
CLOTTING WASHING
Robert H. Pelton, 167 Old Ancaster Road, Dundas Ontario, Canada L9H 3R3, and Pei Li, 1281 Fennel Avenue E., Hamilton, Ontario, Canada L8T 1T3
PCT No. PCT/CA91/00350, § 371 Date Jun. 25, 1993, § 102(e) Date Jun. 25, 1993, PCT Pub. No. WO92/06241, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 30,278
Claims priority, application United Kiogdom, Sep. 28, 1991, 9021126
Int. Cl.[5] D21C *9/02*
U.S. Cl. 162—60 **9 Claims**



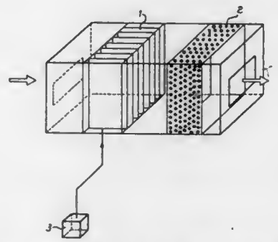
1. An improved process for the displacement washing of fibrous material, which comprises:

applying a wash water to a mat of said fibrous material to effect displacement washing of said mat,

sensing zones of higher flow rate of wash water through said mat, and

precipitating solid clots formed by ionic interaction between oppositely-charged species in said mat and in said wash water in said zones so as to inhibit wash water flow in said zones and to achieve a greater uniformity of displacement washing.

5,310,461
COLD OXIDATION IN GASEOUS PHASE
Ernesto Bardelli, Galliate Lombardo, and Eraldo Cassinerio, Ferno, both of Italy, assignors to H.R.S. Engineering S.r.l., Ferno, Italy
PCT No. PCT/IT90/00095, § 371 Date Sep. 6, 1991, § 102(e) Date Sep. 6, 1991, PCT Pub. No. WO91/07220, PCT Pub. Date May 30, 1991
PCT Filed Nov. 20, 1990, Ser. No. 730,839
Claims priority, application Italy, Nov. 21, 1989, 22454 A/89
Int. Cl.[5] H05F *3/00*
U.S. Cl. 204—164 **4 Claims**



1. A catalytic oxidation treatment of gaseous effluents carrying gaseous organic compounds, wherein the effluent is first made to flow at temperatures ranging from 10° C. to 40° C. between metal plates parallel to the flow direction, subjected to electrical alternate voltages ranging from 15000 to 30000V, at a frequency ranging from 500 to 1500 Hz, and the resulting ionized gas is then made to flow over supported catalysts.

5,310,462
QUANTITATION OF SAMPLES UTILIZING CAPILLARY ELECTROPHORESIS
Fu-Tai A. Chen, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed May 31, 1991, Ser. No. 708,144
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 **24 Claims**

1. A method of quantifying a peptide-containing constituent species in a sample by capillary zone electrophoresis comprising the following steps:

a) adding at least one ionic species to the sample to form a mixture, the ionic species having a charge density greater than substantially all of the peptide-containing constituent species in the sample,

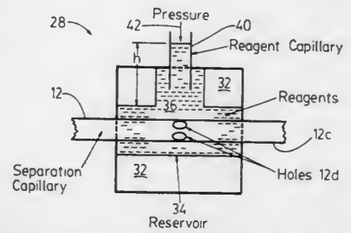
b) subjecting the mixture to capillary zone electrophoresis,

c) detecting the ionic species and the peptide-containing constituent species in said mixture, and

d) normalizing at least one peptide-containing constituent species relative to the detected ionic species,

where the normalized value of step (d) is the quantified amount of said peptide-containing constituent species in the sample.

5,310,463
ON-COLUMN JUNCTION FOR CAPILLARY COLUMNS
Rajeev Dadoo, Stanford; Luis A. Colòn, Menlo Park; Harvey A. Fishman, Stanford; Jason B. Shear, Menlo Park, and Richard N. Zare, Stanford, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Nov. 13, 1992, Ser. No. 975,850
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 **29 Claims**



1. An method for separating a sample into its components, employing a capillary tube defining a separation channel therein through which the sample travels and separates into its components, said tube having a side wall defining at least one hole therein, said hole extending through the side wall thereby permitting a fluid or particles to pass there through, said method comprising:

surrounding said hole with a fluid medium containing a substance so that the medium is dispersed in a region larger than size of the hole;

introducing a sample into the tube;

causing at least a portion of said sample to travel through the tube towards the location of the hole;

introducing said substance into the channel through the hole; and

detecting the separated sample components at a location upstream or downstream from the hole.

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5,310,464
ELECTROCRYSTALLIZATION OF STRONGLY ADHERENT BRUSHITE COATINGS ON PROSTHETIC ALLOYS
Jody G. Redepenning, 920 Manchester Dr., Lincoln, Nebr. 68528
Filed Jan. 4, 1991, Ser. No. 638,104
Int. Cl.[5] C25D *11/36*
U.S. Cl. 204—180.2 **2 Claims**

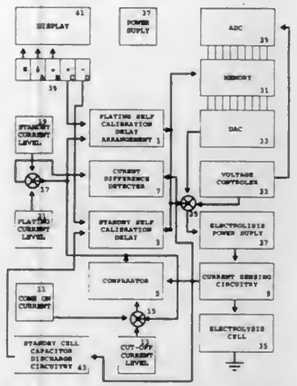


1. The method of covering a metal surface portion of a prosthetic appliance with a coating of uniform thickness of pure brushite of predetermined crystal size and morphology which comprises the steps of:
a) contacting the metal surface portion as a cathode with aqueous electrolyte containing calcium and dihydrogen phosphate ions,
b) passing an electric current through the electrolyte, and
c) controlling the number of crystal nucleation sites and the rate of crystal growth by adjusting the electrical current in the electrolyte.

5,310,465
ELECTRODIALYTIC OXYDATION-REDUCTION OF METALS
Daniel J. Vaughan, 36 Paxon Dr., Wilmington, Del. 19803
Continuation of Ser. No. 537,460, Jun. 14, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 23,045
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—182.4 **7 Claims**

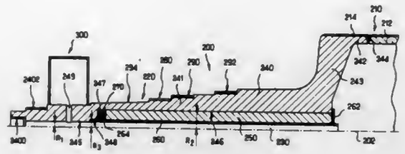
1. The process which uses an electrodialytic cell having anolyte and catholyte compartments separated by a cation permeable membrane comprising the steps of:
a) supplying an acidic anolyte to the anolyte compartment;
b) supplying an alkaline catholyte to the catholyte compartment;
c) connecting the anode and cathode of the anolyte and catholyte compartments to a current source to produce hydrogen ions at the anode and hydroxide ions at the cathode;
d) adding a soluble anion of an acid to be removed to the catholyte compartment;
e. supplying electrical current in such an amount to electrolyze the water in the solution at the anode to form hydrogen ions which are electrotransported through said cation permeable membrane and into the catholyte compartment resulting in formation of an acidic zone in the catholyte compartment immediately adjacent the membrane and an alkaline zone adjacent the cathode;
f) feeding a chemical reactant to the catholyte compartment which will chemically react with said soluble anion of the acid in one of the zones in the catholyte compartment to form gaseous or solid reaction products; and
g) removing said reaction products.

5,310,466
ELECTROLYTIC METAL RECOVERY SYSTEM
John La Riviere, Beaconsfield; Bernard Gravel, Pointe-Claire, and Gordon Bathurst, Beaconsfield, all of Canada, assignors to Metafix Inc., Quebec, Canada
Continuation-in-part of Ser. No. 838,353, Feb. 19, 1992, abandoned. This application Feb. 4, 1993, Ser. No. 13,712
Int. Cl.[5] C25C *1/20, 7/06*
U.S. Cl. 204—228 **24 Claims**



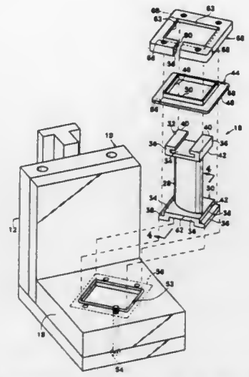
1. An electrolytic metal recovery system for recovering metal from an electrolytic solution;
said metal recovery system being operable in either a standby mode having associated with it a predetermined standby current level, or a plating mode having associated with it a predetermined plating current level;
said metal recovery system also having associated with it a cut-off current level at which said metal recovery system is transferred from said plating mode to said standby mode, and a come-on current level at which said metal recovery systems is transferred from said standby mode to said plating mode;
said metal recovery system comprising;
a variable voltage generator for impressing a voltage across said solution;
standby voltage generator regulator means for adjusting the voltage level of said variable voltage generator, during a standby mode regulatory period, to a standby voltage level; and
means for fixing said variable voltage generator to said standby voltage level at the end of said standby mode regulatory period;
wherein said standby voltage level is that level of voltage which will cause said predetermined standby current to flow in said system;
said system further including:
system current level sensor means for sensing the current flowing in said solution;
standby current level generator means for generating a standby current level;
current difference detector means, said system current level sensor and said standby current level generator means connected to respective inputs of said current difference detector means;
whereby, to detect the difference between said sensed system current level and said standby current level;
the output of said current difference detector means being operable to continuously adjust the voltage level of said variable voltage generator to reduce the difference detected by said current difference detector to zero.

5,310,467
CURRENT-CONDUCTING ROLLERS
Claude Jacques, Pontault Combault, France, assignor to Polimiroir, Saint-Soupplets, France
Filed Oct. 13, 1992, Ser. No. 960,580
Claims priority, application France, Oct. 15, 1991, 91 12678
Int. Cl.[5] C25D *17/00*
U.S. Cl. 204—279 **27 Claims**



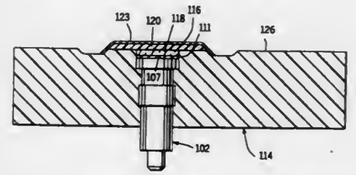
1. A current-conducting roller comprising:
a central sleeve constituting the main axial portion of the roller,
two steel bodies extending on respective ends of the central sleeve, and each provided with a through axial bore,
a blind second bore opening out to the axially inner end of the steel body and having a radius greater than the radius of said through axial bore,
a blind third bore opening out to the axially inner end of the steel body and having a radius intermediate between the radius of the through bore and the radius of the blind second bore,
an internal copper heat-shrink fitting received in said blind second bore of each steel body, the outside radius of the internal copper fitting matching the radius of said blind second bore,
an internal protective bushing provided inside each fitting, said bushing being longer than the copper fitting and projecting axially from each of the ends thereof, said internal bushing being received in said blind third bore of each steel body, the outside radius of said bushing being substantially complementary to the radius of said blind third bore and having an inside radius equal to the radius of the through axial bore, so that said bushing does not project into said through bore,
a first metal washer placed on the axially inner end of each copper fitting, said first washer having a radially outer periphery and a radially inner periphery, the radially outer periphery of said first washer being fixed to a respective steel body and the radially inner periphery being fixed to the bushing,
a second metal washer placed on the axially outer end of each copper fitting, said second washer having a radially outer periphery and a radially inner periphery, the radially inner periphery of said second washer being welded on a respective bushing, while the radius of the outside periphery of said second washer being less than the radius of said blind second bore,
a compressible gasket interposed between the end of each blind second bore and the corresponding second metal washer, said compressible gasket being suitable for expanding radially when subject to axial compression so as to guarantee good sealing against the axially outer end of the internal fitting,
at least one through duct located axially outside the internal copper fitting of one of said two steel bodies and extending in a direction that is generally radial relative to a central axis o said roller, and
a manifold provided outside said one steel body, in which opens said through duct, so as to collect cooling water flowing along said through axial bore of the roller.

5,310,468
ECM SLAVE ASSEMBLY
Norbert A. Bruns, and Edward C. Bruns, both of Cincinnati, Ohio, assignors to Lehr Precision Inc., Cincinnati, Ohio
Filed Nov. 2, 1992, Ser. No. 970,489
Int. Cl.[5] B23H *9/10*
U.S. Cl. 204—279 **13 Claims**



1. A slave assembly for protecting an anodic workpiece joined to a shuttle from stray electrochemical machining as an electrolyte is channeled over said workpiece comprising:
a slave including a support flange joined integrally with a sacrificial flange for being positioned adjacent to said workpiece for being electrochemically machined along with said workpiece to prevent stray electrochemical machining between said sacrificial flange and said workpiece; and
a retainer configured for being positioned on said slave support flange to clamp said sleeve to said shuttle.

5,310,469
BIOSENSOR WITH A MEMBRANE CONTAINING BIOLOGICALLY ACTIVE MATERIAL
David D. Cunningham, Lakemoor; Susan B. Brontman, Buffalo Grove; Jill M. Geist, Ingleside; R. Hayes Helgren, Mundelein; Timothy P. Henning, Vernon Hills; Kenneth S. Johnson, Buffalo Grove; Laura S. Morici, Cary, all of Ill.; Thomas G. Schapira, Bristol, and Neal T. Sleszynski, Kenosha, both of Wis., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Dec. 31, 1991, Ser. No. 815,423
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 **23 Claims**

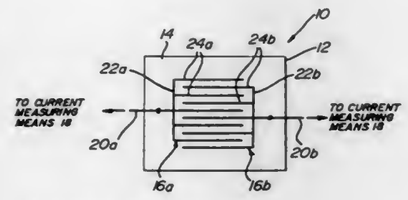


1. A device for measuring the concentration of an analyte in a solution, which comprises:
(a) an electrically insulating housing which describes a first aperture, a second aperture, and a passage that extends from the first aperture through the housing to the second aperture and which is impervious to a solution that contains an analyte selectively catalyzed by an enzyme;

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(b) means for conducting electrical current which extend through the first aperture into the passage and are sealed against the first aperture in a manner that prevents fluid flow; and
(c) a membrane located across the passage and welded in place such that the solution must pass from the second aperture through the membrane in order to contact the means for conducting electrical current, said membrane having
a substrate including an internal surface which defines a plurality of micropores distributed throughout the substrate;
a plurality of functional groups attached to the internal surface of said substrate; and
molecules of a biologically active material attached to at least a portion of the functional groups.

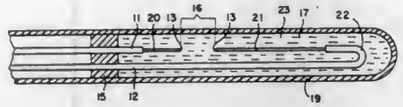
5,310,470
CORROSIVITY SENSOR
Vinod S. Agarwala, Warminster, and Fred Pearlstein, Philadelphia, both of Pa., assignors to The United States of america as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 10, 1992, Ser. No. 942,914
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—404 **12 Claims**



1. A corrosivity sensor, comprising:
a non-conductive base 10 mils or less thick and having a surface;
a first conductive element composed of a first material fixed to the surface, said first conductive element further comprising a bus bar and a plurality of strips extending therefrom; and
a second conductive element composed of a second material different from the first material fixed to the surface and electrically isolated from said first conductive element, said second conductive element further comprising a bus bar and a plurality of strips extending therefrom, and being interdigitated with the strips of said first conductive element, the strips of said first and second conductive elements being less than 30 mils wide and less than 15 mils apart, whereby galvanic current may be generated between adjacent strips in the presence of an electrolyte.

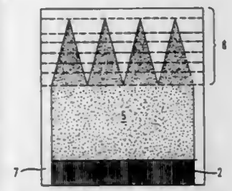
5,310,471
METHOD FOR MANUFACTURING AN ELECTRO CHEMICAL SENSOR
David R. Markle, Paoli, Pa., and Stuart P. Hendry, Aylesbury, England, assignors to Biomedical Sensors Ltd., High Wycombe, England
Division of Ser. No. 887,615, May 22, 1992, Pat. No. 5,262,037. This application May 26, 1993, Ser. No. 67,649
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—415 **1 Claim**

1. A method for manfacturing an electrochemical sensor comprising an anode and a cathode immersed in an electrolyte, which method comprises the following steps:
folding a first elongate, insulated conductor having an exposed uninsulated distal portion terminating in an exposed uninsulated distal end surface and a proximal end into a "U" shape so that the uninsulated distal portion forms one arm of the "U" and the exposed uninsulated end surface faces the same direction as the proximal end;
positioning a second elongate, insulated conductor with an exposed, uninsulated distal portion terminating in an exposed, uninsulated end surface adjacent the first elongate, insulated conductor, so that the exposed uninsulated distal end surface each of the first conductor and second conductor faces each other to form an anode and a facing cathode, respectively with a gap therebetween;



placing the positioned anode and the facing cathode within a hollow tube having a longitudinal axis and defined by a gas permeable membrane with the anode and cathode parallel to the axis of the tube;
sealing the insulated portions of the first and second conductors within the proximal end of the tube;
filling the tube with electrolyte so that the gap between the anode and the cathode is filled with electrolyte; and
sealing the distal end of tube to form a closed chamber containing the anode, cathode and electrolyte.

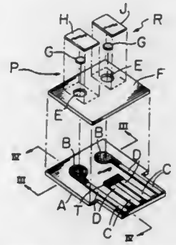
5,310,472
SENSOR ELEMENT FOR LIMITING CURRENT SENSORS TO DETERMINE THE LAMBDA VALUE OF GAS MIXTURES
Hermann Dietz; Werner Grünwald, both of Gerlingen, and Claudio de la Prieta, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE89/00731, § 371 Date May 16, 1991, § 102(e) Date May 16, 1991, PCT Pub. No. WO90/06506, PCT Pub. Date Jun. 14, 1990
PCT Filed Nov. 17, 1989, Ser. No. 700,141
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841611
Int. Cl.[5] G01N *27/419*
U.S. Cl. 204—425 **18 Claims**



1. Sensor element for limiting-current sensors to determine the lambda value of gas mixtures, in particular of exhaust gases of internal combustion engines, having
a solid electrolyte ceramic substrate (1),
first and second pump electrodes (2, 3) disposed on opposite sides of said solid electrolyte ceramic substrate (1),
said first pump electrode (2) being accessible for a measurement gas, said gas being supplied to said first pump electrode through a diffusion layer (5) acting as a diffusion barrier and located on said solid electrolyte ceramic substrate adjacent to said first pump electrode;
said first pump electrode and said diffusion layer having a gas-tight cover layer (7) covering said first pump electrode (2) and the diffusion layer (5) for exclusion of the measurement gas, except for a measurement gas inlet opening (4) located at an edge of said diffusion layer

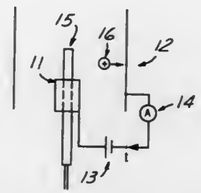
remote from and opposite an edge thereof that adjoins said first pump electrode;
a first conductor track (2') on said substrate (1) for the first pump electrode (2), said first conductor track being covered by said gas-tight cover layer (7), and
a second conductor track (3') on said substrate (1) for said second pump electrode (3),
characterized in that
the diffusion layer (5) has, at its edge which is nearest to the measurement gas inlet opening (4), a series of outwardly tapered projections, each oriented towards said measurement gas inlet opening, said gas-tight layer filling all gaps between said projections, whereby the finished sensor element is calibratable by at least one mechanical or laser cutting operation which cuts off extremity portions of a plurality of said projections and thereby reduces the diffusion resistance of the diffusion layer.

5,310,473
REMOVABLE SAMPLE TESTING MEMBER FOR USE IN MEASURING ION CONCENTRATION
Katsuhiko Tomita, Ohtsu; Akemi Mototsune, Matsue, and Junji Kojima, Nara, all of Japan, assignors to Horiba Ltd., Kyoto, Japan
Continuation of Ser. No. 456,845, Dec. 27, 1989, Pat. No. 5,248,403, which is a continuation of Ser. No. 99,294, Sep. 17, 1987, abandoned. This application Aug. 4, 1993, Ser. No. 102,092
Claims priority, application Japan, Mar. 19, 1986, 61-63564; Mar. 19, 1986, 61-63565; Dec. 11, 1986, 61-191495
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—414 **8 Claims**



1. A removable sample testing member for use with a compact ion-concentration measuring apparatus which provides an indication of an ion-concentration of a sample, comprising:
a nonconductive nonapertured planar substrate having an outer edge and an upper surface;
first and second lead portions carried by the upper surface of said substrate from the outer edge of said substrate to first and second internal positions, respectively;
first and second internal electrode portions formed at the first and second internal positions of said first and second lead portions, respectively;
a nonconductive support layer having a lower surface and an upper surface, the lower surface of said support layer adhered to the upper surface of said substrate and thereby sandwiching said first and second lead portions between said substrate and said support layer, said support layer having an exterior edge which terminates before the outer edge of said substrate to expose a part of said substrate and a part of the lead portions of said first and second lead portions for physical and electrical connection to the ion-concentration measuring apparatus;
first and second holes provided in said support layer spatially corresponding to said first and second internal electrode portions whereby said internal electrode portions are respectively accessible through said holes;
a glass electrode portion comprised of a first gelatinized member located in said first hole and contacting said first internal electrode portion, the gelatinized member being of a thickness to project an upper surface thereof slightly above the upper surface of said support layer, and a PH-responsive glass membrane overlaying said first hole, said PH-responsive glass membrane contacting the upper surface of said first gelatinized member and hermetically sealing said first gelatinized member in said first hole; and
a reference electrode portion comprised of a second gelatinized member located in said second hole and contacting said second internal electrode portion.

5,310,474
WORKFUNCTION BASED A/F SENSOR
Robert E. Hetrick, Dearborn Heights, and Allen L. Schamp, Deaborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 13, 1992, Ser. No. 912,389
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—425 **7 Claims**



1. An electrical sensing structure, having a surface material, for sensing a stoichiometric ratio of an oxidizing and a reducing species in an ambient gas phase, the surface material having a work function which undergoes a reversible change in magnitude as the ratio of the concentrations of the oxidizing and reducing species passes through its stoichiometric value as a result of the interaction of these species with the surface material, and a means for measuring a reversible change by electrically monitoring the change in the workfunction so that the value of the ratio, to the extent that it is either above or below the stoichiometric value, can be known.

5,310,475
PLATINUM ELECTROFORMING AND PLATINUM ELECTROPLATING
Katsutsugu Kitada, and Soumei Yarita, both of Kanagawa, Japan, assignors to Electroplating Engineers of Japan, Limited, Japan
Filed Jun. 21, 1991, Ser. No. 718,767
Claims priority, application Japan, Jun. 29, 1990, 3-170064; Jul. 16, 1990, 2-185241; Apr. 30, 1991, 2-124577; Apr. 30, 1991, 3-124578; Apr. 30, 1991, 3-124579
Int. Cl.[5] C25D *1/00, 1/10*
U.S. Cl. 205—67 **9 Claims**

1. A method for preparing a platinum product having a hardness in excess of 100 Hv consisting essentially of electrodepositing a layer of platinum material onto a die having a pre-determined shape, in a platinum electrolytic bath, with said die having been coated with a release material, wherein the platinum electrolytic bath comprises:
at least one compound selected from the group consisting of chloroplatinic acid, chloroplatinates of alkali metals, hydrogen hexahydroxoplatinate, and hexahydroxoplatinates of alkali metals, 2–100 g/l as platinum; a hydroxylated alkali metal, 20–100 g/l; and a soluble carboxylate;
and releasing said layer of platinum material from the die.

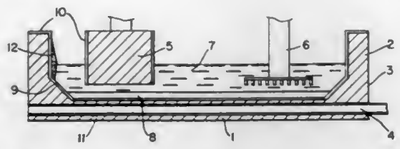
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,476

APPLICATION OF REFRACTORY PROTECTIVE COATINGS, PARTICULARLY ON THE SURFACE OF ELECTROLYTIC CELL COMPONENTS

Jainagesh Sekhar, Cincinnati, Ohio, and Vittorio de Nora, Nassau, The Bahamas, assignors to Moltech Invent S.A., Luxembourg

Filed Apr. 1, 1992, Ser. No. 861,513
Int. Cl.[5] C25D *9/04, 11/00, 15/00*
U.S. Cl. 205—230 **40 Claims**



33. A method of producing a component of an aluminum production cell which in operation of the cell is exposed to molten aluminum, said component comprising a substrate of carbonaceous or refractory material or a metallic alloy that is not wettable by molten aluminum and a coating of aluminum-wettable refractory material, said method comprising:

a) providing a micropyretic slurry containing particulate reactants which, when dried, can react micropyretically with formation of condensed matter along a combustion front to produce the refractory material;

b) applying the micropyretic slurry to a substrate in one or more layers and drying to provide at least one dried layer of the particulate reactants on the substrate; and

c) initiating a micropyretic reaction in the dried layer(s) to produce the refractory material on the substrate.

34. The method of claim 33, including the additional step of providing particulate or fibrous non reactants in the dried layers by including particulate or fibrous non-reactants in the micropyretic slurry or by applying one or more layers from a slurry of particulate or fibrous non reactants.

36. The method of claim 34, wherein said component is part of a cell which is coated in the cell prior to operation.

5,310,477

FCC PROCESS WITH SECONDARY DEALKYLATION ZONE

David A. Lomas, Barrington, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 632,794, Dec. 24, 1990, Pat. No. 5,176,815. This application Apr. 22, 1992, Ser. No. 872,214
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] C10G *51/06*
U.S. Cl. 208—78 **16 Claims**

1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock selected from the group consisting of gas oils and residual hydrocarbons and the production of low boiling end point gasoline, said process comprising:

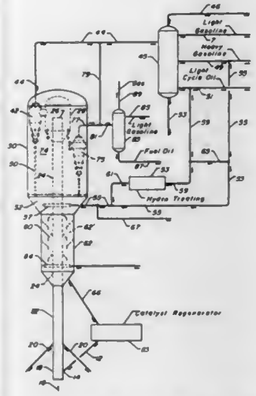
(a) passing said FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to a riser gaseous product stream and producing partially spent catalyst particles by the deposition of coke on said regenerated catalyst particles;

(b) discharging a mixture of partially spent catalyst particles and gaseous products from a discharge end of said riser directly into a separation zone and recovering at least 90 wt % of the riser gaseous products from said riser in said separation zone;

(c) withdrawing said recovered riser gaseous products from said separation zone through a first gas outlet;

(d) separating said riser gaseous products from said first outlet into a first product stream comprising light gasoline having an end boiling point at a first temperature in a range of 300° F. to about 400° F., a heavy gasoline feed comprising C_9 aromatics and having an initial boiling point at about said first temperature and an end boiling point at a second temperature of above 400° F., and a first cycle oil stream having an initial boiling point at about said second temperature;

(e) passing said partially spent catalyst and not more than 10 wt % of the reactor riser gaseous products from said separation zone into a reaction vessel, maintaining a dense bed of catalyst in said reaction vessel and contacting said heavy gasoline feed with said partially spent catalyst in



said dense bed of said reaction vessel to dealkylate said C_9 aromatics and produce a reactor vessel product stream comprising C_7 and C_8 aromatics;

(f) withdrawing at least 90 wt % of said reactor vessel product stream from said reactor vessel through a second outlet;

(g) passing spent catalyst from said reactor vessel into a regeneration zone and contacting said spent catalyst with a regeneration gas in said regeneration zone to combust coke from said catalyst particles and produce regenerated catalyst particles for transfer to said reactor riser; and,

(h) separating said reactor vessel product stream to recover additional light gasoline product having an end boiling point below said second temperature.

5,310,478

METHOD FOR PRODUCTION OF HYDROCARBON DILUENT FROM HEAVY CRUDE OIL

Malcolm T. McCants, 2400 Augusta, Ste. 260, Houston, Tex. 77057

Division of Ser. No. 569,020, Aug. 17, 1990, Pat. No. 5,109,928. This application Apr. 21, 1992, Ser. No. 871,772
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] C10G *9/00*
U.S. Cl. 208—100 **13 Claims**

1. A method of producing a hydrocarbon diluent from heavy crude oil comprising the steps of:

a) pre-heating the crude oil to produce a heated crude oil;

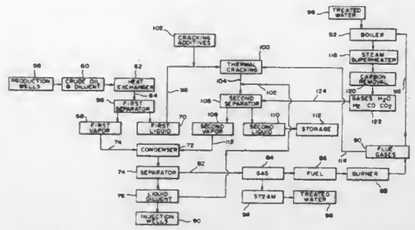
b) separating in a separator vessel by flashing the heated crude oil to produce a first vapor fraction and a first liquid fraction;

c) thermally cracking in a cracking unit at least a portion of the first liquid fraction to produce a first liquid effluent;

d) quenching the first liquid effluent with the preheated crude oil to produce a quenched, first liquid effluent;

e) introducing at least a portion of the quenched first liquid effluent into a separator;

f) condensing the first vapor fraction; and,



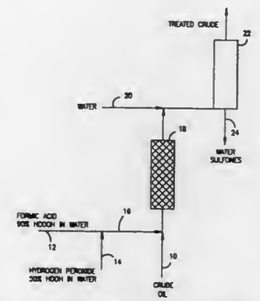
g) separating in a separator vessel the condensed vapor fraction to produce a liquid hydrocarbon diluent middle fraction characterized by having a boiling range consisting essentially of about 400°–700° F. and a gas whereby said middle fraction is free from steam, naphtha or other condensed and non-condensed hydrocarbon gases.

5,310,479

PROCESS FOR REDUCING THE SULFUR CONTENT OF A CRUDE

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 802,174, Dec. 4, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,186
Int. Cl.[5] C10G *19/02*
U.S. Cl. 208—219 **14 Claims**



1. A process for reducing the sulfur content of a crude oil rich in aliphatic sulfur compounds comprising:

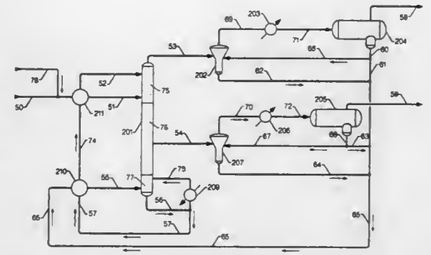
mixing the crude oil rich in aliphatic sulfur compounds with an oxidant which comprises formic acid and peroxide in proportion of about 2 moles of oxidant for each mole of aliphatic sulfur in the crude at a temperature of reaction ranging from about 30° F. to below about 100° F. to convert the aliphatic sulfur compounds to a water soluble internal phase; and separating from the internal phase, a crude oil having a reduced aliphatic sulfur content.

5,310,480

PROCESSES FOR THE SEPARATION OF AROMATIC HYDROCARBONS FROM A HYDROCARBON MIXTURE

Jose A. Vidueira, White Plains, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Oct. 31, 1991, Ser. No. 785,717
Int. Cl.[5] C10G *21/12*
U.S. Cl. 208—313 **14 Claims**



1. A process for separating aromatic hydrocarbon from a feedstream containing aromatic and non-aromatic hydrocarbons, comprising:

a) passing the feedstream to an upper fractionation zone of a reboiled extractive distillation column maintained at extractive distillation conditions including a temperature of from about 200° to 400° F. and a pressure of from about 15 to 100 psia effective to separate aromatic from non-aromatic hydrocarbons and contacting the feedstream within said distillation column with a cooled lean solvent stream comprising an aromatic-selective solvent and a stripping medium stream comprising water, said cooled lean solvent stream being introduced at the top of the upper fractionation zone and said stripping medium stream being introduced in a bottom fractionation zone;

b) withdrawing a raffinate stream comprising non-aromatic hydrocarbons and water from the upper fractionation zone of said distillation column;

c) withdrawing a side stream as a vapor side draw comprising aromatic hydrocarbons, water, and trace amounts of the aromatic-selective solvent from an intermediate fractionation zone of said distillation column;

d) withdrawing a hot lean solvent stream comprising the aromatic-selective solvent from the bottom fractionation zone of said distillation column;

e) passing the side stream to a first cyclone separator to provide an aromatic-rich overhead stream and a first aqueous stream;

f) passing the aromatic-rich overhead stream to a first condenser and a first phase separator to provide an aromatic product and a second aqueous phase;

g) passing the raffinate stream to a second cyclone separator to provide an overhead raffinate stream and a third aqueous phase and returning at least a portion of the second aqueous phase to the second cyclone separator;

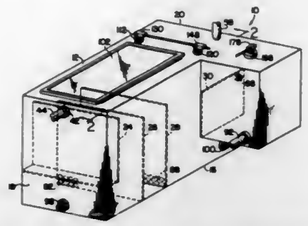
h) cooling and condensing the overhead raffinate stream to provide a raffinate byproduct and a fourth aqueous phase;

i) combining at least a portion of the first, second, third and fourth aqueous phases to provide a stripping medium stream; and

j) cooling said hot lean solvent stream to provide the cooled lean solvent stream.

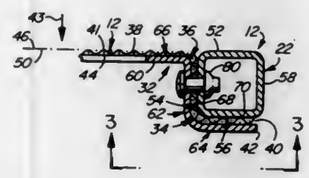
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5,310,481
APPARATUS FOR CONTINUOUSLY SEPARATING A MIXTURE OF FLUIDS HAVING DIFFERENT DENSITIES
Alfred Rondano, 70 Barton St., Torrington, Conn. 06790
Filed Oct. 4, 1991, Ser. No. 771,340
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—86 **26 Claims**



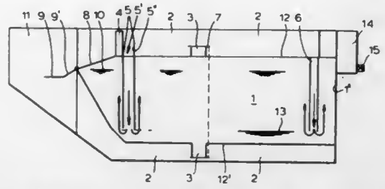
1. A separator adapted for continuously separating a mixture of fluids having different densities into a high density fraction and a low density fraction, said separator comprising:
a tank having a top, a bottom, an inlet end and a discharge end;
a plurality of partitions dividing the interior of the tank into a plurality of chambers including a first separation chamber at the inlet end of the tank, a second separation chamber adjacent the first separation chamber, a last separation chamber at the discharge end of the tank and a collection chamber at the discharge end of the tank, wherein each of said separation chambers has an upper portion for containing said low density fraction and a lower portion for containing said high density fraction and wherein said second separation chamber is substantially larger than said first separation chamber, and said last separation chamber is substantially larger than said second separation chamber;
first fluid communication means for serially connecting the upper portions of said first, second and last separation chambers and said collection chamber to define a first fluid flow path for said low density fraction, said first flow path extending from the inlet end of the tank to the collection chamber;
inlet means for introducing the mixture of fluids of different densities into the tank and the lower portion of the first separation chamber to at least partially fill the first chamber, wherein said mixture begins to separate into a low density fraction contained in the upper portion of the first chamber and a high density fraction contained in the lower portion of the first chamber;
fluid transfer means for transferring at least a portion of the mixture and the high density fraction contained in the lower portion of the first separation chamber to the bottom portion of the second separation chamber to at least partially fill the second chamber;
second fluid communication means for serially connecting the lower portions of the separation chambers excluding the lower portions of said first and second separation chambers, said second fluid communication means and said fluid transfer means cooperating to define a second fluid flow path for the high density fraction, said second flow path extending from the inlet end of the tank to the lower portion of the last separation chamber at the discharge end of the tank;
first discharge means for removing the high density fraction from the lower portion of the last separation chamber;
second discharge means for removing the low density fraction from the collection chamber; and
control means for controlling the flow rates and levels of the mixture and the low and high density fractions in the chambers so that the mixture introduced into the first separation chamber is separated into a low density fraction and a high density fraction at the discharge end of the tank, including at least one first float member suspended in the high density fraction and in a portion of the tank exclusive of the inlet means and the first and second separation chambers and defined by a specific gravity less than the specific gravity of the high density fraction, at least one first activation member coupled to said first discharge means for controlling operation of said first discharge means in response to movement of said at least one first float member, at least one second float member suspended in the low density fraction and in a portion of the tank exclusive of the inlet means and the first and second separation chambers and defined by a specific gravity less than the specific gravity of the low density fraction, and at least one second activation member coupled to said inlet means for controlling operation of said inlet means in response to movement of said at least one second float member.

5,310,482
PULP DRYER SCREEN ASSEMBLY AND METHOD FOR TIGHTENING THE SCREEN THEREOF
Stanley H. Sather, 1141 Madore Avenue, Coquitlam, British Columbia, Canada V3K 3C1
Continuation-in-part of Ser. No. 428,942, Oct. 30, 1989, abandoned. This application Jan. 18, 1991, Ser. No. 642,833
Claims priority, application Canada, Sep. 29, 1989, 615315
Int. Cl.[5] B01D *27/08;* **B03B** *5/06*
U.S. Cl. 210—485 **30 Claims**



1. A pulp dryer screen assembly comprising:
(a) a rectangular frame having four interconnected elongated frame members;
(b) four support members, each said support member being adjacent one respective frame member and aligned therewith,
(c) a rectangular screen having a taut inner portion and surrounding edge portions, the support members contacting the screen to define a boundary between said taut inner portion and said edge portions, said edge portions adjoining said inner portion being clamped between and protected from abrasion by the frame members and respective support members, said inner portion of the screen having a pulp fiber collecting surface on an upstream side of the screen with respect to direction of air flow through the screen and extending along a plane, said support members and frame members being located such that said support members and frame members do not project beyond said pulp fiber collecting surface of said inner portion, so that no pronounced portions of the frame members and support members overlie the edge portions of said pulp fiber collecting surface to facilitate cleaning of the upstream side of the screen.

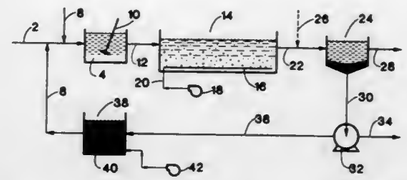
5,310,483
SEPARATOR VESSEL
Nikolaus Hammerschmitt, Kölner Strasse 138, 5350 Euskirchen, Fed. Rep. of Germany
Filed Jun. 22, 1992, Ser. No. 902,648
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1991, 4120712
Int. Cl.[5] E02B *15/04*
U.S. Cl. 210—242.3 **13 Claims**



1. An apparatus for separating a light liquid layer of relatively low density from a surface of a body of water as a second liquid of relatively high density, comprising:
a vessel;
a balance means on said vessel receiving and discharging water for adjusting a draft of the vessel for a successive takeup of a light liquid layer floating on a surface of an outer water at a level of said surface;
skimmer means for guiding said light liquid layer into said vessel from outside upon the movement of the vessel;
a storage tank on the vessel and formed with an interior for separating said light liquid layer from water and provided with:
a top formed above said level and having a front surface extending angularly downwardly and outwardly toward said skimmer means, said front surface terminating substantially at said level of the surface and operatively connected with said skimmer means,
at least one inlet formed on said top and spaced inwardly from said front surface, said inlet opening downwardly into said interior and being in flow communication with said front surface,
at least one dip well in flow communication with said inlet and extending downwardly from said inlet in said interior and terminating at another level lower than said level of the surface, and
means forming a flow opening below said other level for free flow of the outer water in and outer of said interior, said balance means adjusting the draft so that said tank is filled with the outer water substantially at said level of the surface at the beginning of said takeup, said light liquid layer displacing the outer water in said tank downwardly to said outer level which accumulating in said interior substantially up to said level of said surface of the outer water upon floating in from said dip tube; and
collecting means in free flow communication with said tank for collecting said light layer upon separation in said tank.

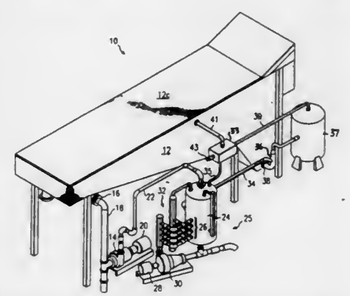
5,310,484
PREAERATION TREATMENT OF VOLATILE WASTEWATER COMPONENTS
John K. Berrigan, Jr., Wausau, Wis., assignor to Zimpro Passavatn Environmental Sys., Rothschild, Wis.
Filed Aug. 24, 1992, Ser. No. 933,832
Int. Cl.[5] C02F *3/12*
U.S. Cl. 210—616 **8 Claims**

1. In a biophysical treatment process for wastewater containing at least one volatile organic pollutant, said process comprising aerating and mixing said wastewater with biological solids and powdered adsorbent in an aeration zone; separating a mixture of wastewater, biological solids and powdered adsorbent to produce a clarified liquid phase which is discharged from said process and a settled biophysical solids phase which is retained within the process, the improvement comprising the steps;
(a) contacting and mixing influent wastewater and retained biophysical solids phase in a preaeration contact zone, said wastewater in said preaeration contact zone maintained with a minimal residual dissolved oxygen concentration



therein, whereby a significant portion of said volatile organic pollutant in said influent wastewater is biologically degraded without being stripped from said wastewater; and
(b) further treating a mixture of biophysical solids and influent wastewater depleted of volatile organic pollutant from said preaeration contact zone in said aeration zone by aeration and mixing for additional pollutant removal by said biophysical treatment process.

5,310,485
PROCESS FOR DISSOLVED GAS FLOTATION IN ANAEROBIC WASTEWATER TREATMENT
Mel Roshanravan, Coppell, Tex., assignor to Darling-Delaware Company, Inc., Dallas, Tex.
Filed Sep. 30, 1992, Ser. No. 953,853
Int. Cl.[5] C02F *3/28, 1/24*
U.S. Cl. 210—603 **8 Claims**



1. A process for treatment of wastewater comprising the steps of:
(a) applying a stream of wastewater from an anaerobic digester to an enclosed flotation container;
(b) withdrawing a stream of wastewater from the enclosed flotation container;
(c) applying the stream of wastewater withdrawn from the enclosed flotation container into a gas entrainment tank;
(d) collecting an essentially oxygen free gas produced by anaerobic digestion from the anaerobic digester and from the enclosed flotation container;
(e) compressing the essentially oxygen free gas collected from the anaerobic digester and from the enclosed flotation container;
(f) introducing the essentially oxygen free compressed gas

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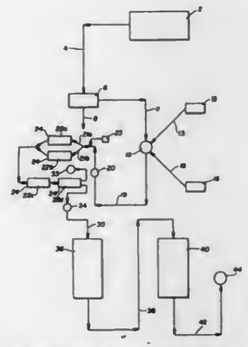
into the gas entrainment tank to pressurize the gas entrainment tank;
(g) introducing a stream of wastewater withdrawn from a lower portion of the gas entrainment tank into a plurality of jets for injection into the gas entrainment tank;
(h) introducing essentially oxygen free gas collected from the top of the gas entrainment tank into each of the plurality of jets for entrainment of the essentially oxygen free gas in the wastewater;
(i) withdrawing a stream of gas entrained wastewater from the gas entrainment tank;
(j) adding the stream of gas entrained wastewater to the stream of wastewater from the anaerobic digester prior to applying the stream to the flotation container, whereby the entrained essentially oxygen free gas bubbles particles from the wastewater upon introduction into the flotation container to form a sludge;
(k) withdrawing a sludge formed in the flotation container; and
(l) introducing the sludge into the anaerobic digester.

5,310,486

MULTI-STAGE WATER TREATMENT SYSTEM AND METHOD FOR OPERATING THE SAME

Dennis H. Green, Arvada, and George S. Cochetas, Golden, both of Colo., assignors to Harrison Western Environmental Services, Inc., Lakewood, Colo.

Filed May 25, 1993, Ser. No. 67,055
Int. Cl.[5] B01D *61/20*
U.S. Cl. 210—638 **14 Claims**



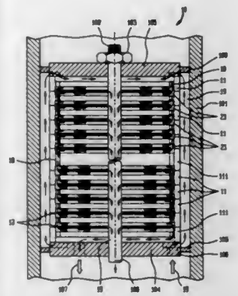
9. A method for treating water contaminated with metal ions in order to remove said metal ions therefrom comprising the steps of:
providing a supply of water contaminated with metal ions;
providing at least one nanofiltration membrane capable of preventing a portion of said metal ions from passing therethrough;
passing said water contaminated with said metal ions through said nanofiltration membrane in order to produce a retentate which does not pass through said nanofiltration membrane and a permeate which passes through said nanofiltration membrane;
providing a supply of porous polymer beads each comprising a metal ion extracting agent therein, said metal ion extracting agent comprising at least one organic biomass composition;
passing said permeate through said polymer beads in order to remove any residual metal ions from said permeate which were not removed by said nanofiltration membrane, said passing of said permeate through said polymer beads causing said residual metal ions in said permeate to be retained within said beads by said metal ion extracting agent in order to yield a supply of purified water;
passing at least one acid solution through said polymer beads after said passing of said permeate therethrough in order to remove said residual metal ions from said polymer beads, said residual metal ions being transferred from said polymer beads to said acid solution during said passing of said acid solution through said polymer beads in order to produce an acidic waste solution; and
passing at least one alkali solution through said polymer beads after said passing therethrough of said acid solution.

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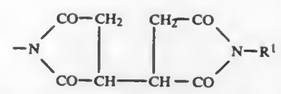
MEMBRANE TECHNOLOGY FOR EDIBLE OIL REFINING

David A. LaMonica, Hermosa Beach, Fla., assignor to Rochem Separation Systems, Inc., Torrance, Calif.

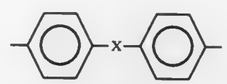
Filed Apr. 27, 1993, Ser. No. 53,599
Int. Cl.[5] B01D *61/14*
U.S. Cl. 210—651 **5 Claims**



1. A method of refining an edible oil comprising:
providing a crude edible oil composition containing impurities and an organic solvent;
tangentially contacting, in parallel, the crude oil composition with each of one side of a plurality of first semipermeable membrane filter elements to produce a plurality of first permeate streams on each of the other sides of the first filter elements and a plurality of first retentate streams on each of the one sides of the plurality of first filter elements,
removing and collecting the plurality of first retentate streams from the one sides of the first filter elements to form a first collected retentate;
removing the plurality of first permeate streams from the other sides of the first filter elements to form a first collected permeate;
tangentially contacting, in parallel, the first collected retentate with each of one side of a plurality of second semipermeable membrane filter elements to produce a plurality of second permeate streams on each of the other sides of the second filter elements and a plurality of second retentate streams on each of the one sides of the plurality of second filter elements;
removing and collecting the plurality of second retentate streams from the one sides of the second filter elements to form a second collected retentate;
removing the plurality of second permeate streams from the other sides of the first filter elements to form a second collected permeate; wherein the semipermeable membrane comprises:
a polyimide consisting of a repeating unit of the general formula



wherein R^1 represent a divalent organic group of the general formula



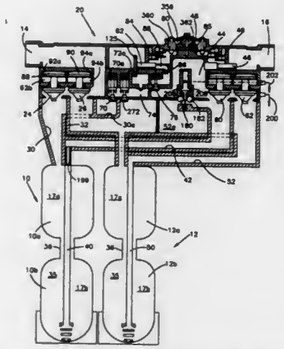
wherein x represent a divalent leeching group selected from the group consisting of $—CH_2—$, $—CH(CH_3)_2—$, —O—, and $—SO_2$
whereby the collected permeates contain the refined edible oil substantially free of impurities and organic solvent.

5,310,488

WATER TREATMENT METHOD

Christopher L. Hansen, Newbury, and Glen E. Latimer, Jr., Leavittsburg, both of Ohio, assignors to Kinetico Incorporated, Newbury, Ohio

Filed Mar. 1, 1991, Ser. No. 663,251
Int. Cl.[5] B01J *49/00*
U.S. Cl. 210—674 **18 Claims**



1. A method of regenerating a weak acid cation exchange resin, comprising the steps of:
a) contacting said resin with a solution of sodium chloride and citric acid for a predetermined time;
b) then contacting said resin with a barrier solution;
c) then contacting said resin with a sodium carbonate solution for a first predetermined length of time; and,
d) then rinsing said resin with water for a second predetermined length of time.

5,310,489

BORATE CROSS-LINKING SOLUTIONS

Sharif Sharif, Midland, Tex., assignor to Zirconium Technology Corporation, Midland, Tex.

Division of Ser. No. 927,974, Aug. 11, 1992, Pat. No. 5,252,234, which is a division of Ser. No. 705,605, May 24, 1991, Pat. No. 5,160,445. This application May 26, 1993, Ser. No. 67,847
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 **4 Claims**

1. A boron cross-linking solution for gelling aqueous treating fluids for and oil and gas reservoir comprising an alkali metal salt, ammonium salt, or water soluble amine salts of an alpha hydroxy carboxylic acid and boric acid at a concentration of from 1% to 25% by weight boric acid in an aqueous media with a pH of at least 6.0.

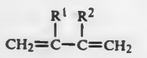
5,310,490

VISCOSITY MODIFER POLYMERS

Mark J. Struglinski, Bridgewater; Gary W. Ver Strate, Atlantic Highlands, and Lewis J. Fetters, Annandale, all of N.J., assignors to Exxon Chemical Products Inc., Linden, N.J.

Filed Mar. 13, 1991, Ser. No. 668,653
Int. Cl.[5] C10M *143/12;* **C08L** *53/02*
U.S. Cl. 252—43 **22 Claims**

1. A composition comprising (a) oil; and (b) having from 0.01 to 50 wt. percent based on the total weight of the composition of block copolymer comprising monomeric units derived from butadiene and at least one conjugated diene comonomer represented by the formula



wherein R^1 is a C_1 to about C_8 alkyl radical and R^2 is hydrogen or C_1 to about C_8 alkyl radical, the copolymer being hydrogenated and comprising at least 10 percent by weight of at least one crystallizable segment comprised of at least eleven methylene units in sequences sufficiently long to impart crystallinity to said segment and having an average 1,4-polybutadiene content of at least about 20 mole percent and more than one low crystallinity segment having a degree of crystallinity of less than about 0.2 percent at 23° C. comprised of methylene units and substituted methylene units and having an average 1,4-polybutadiene content less than about 20 mole percent.

5,310,491

LUBRICANT COMPOSITION CONTAINING ANTIOXIDANT

Bruce W. Downs, South Glastonbury, and Robert G. Rowland, Woodbridge, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Apr. 13, 1993, Ser. No. 46,252
Int. Cl.[5] C10M *133/02*
U.S. Cl. 252—50 **13 Claims**

1. A lubricant composition comprising a lubricant base stock to which has been added an oxidation-inhibiting amount of the reaction product of an alkyl-substituted 1,2-dihydroquinoline with a diarylamine wherein the lubricant base stock is selected from the group consisting of a hydrocarbon-based oil, a mineral oil, a synthetic oil, an oil derived from coal or shale, a silicone-based oil, a crankcase lubrication oil for spark-ignited internal combustion engines, a crankcase lubricating oil for compression-ignited internal combustion engines, a transmission fluid, a transaxle lubricant, a gear lubricant, a metal-working lubricant, a hydraulic fluid, a grease, and miscible mixtures thereof.

5,310,492

REFRIGERATING MACHINE OIL COMPOSITION

Hiromichi Seiki; Masato Kaneko, and Hideo Kanamori, all of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 859,100
Claims priority, application Japan, Mar. 29, 1991, 3-089070
Int. Cl.[5] C09K *5/00;* **C10M** *107/34, 119/00*
U.S. Cl. 252—68 **5 Claims**

1. A refrigerating machine oil composition for use in a refrigerating machine containing a hydrogen-containing fluorocarbon as a refrigerant which comprises a base oil that is at least one member selected from the group consisting of a polyoxyal-

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kylene glycol derivative and a polyester compound and 0.001 to 10% by weight, based on the total of the composition, of an alkali metal salt of a fatty acid having from 12 to 30 carbon atoms or an alkali metal salt of a dicarboxylic acid having from 3 to 30 carbon atoms.

5,310,493

STABILIZED BRAKE FLUIDS CONTAINING METAL BOROHYDRIDE AND BUTYLATED HYDROXYTOLUENES

Charles M. Olson, Midland, and Bart R. Burza, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 699,826, May 14, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,376

Int. Cl.[5] C10M *125/08, 129/04*

U.S. Cl. 252—74 **22 Claims**

1. In a composition having from about 50 to 90 percent by volume of one or more diluents of the formula:

$$R^2[O\text{-}R]_yOR^3$$

and R is a diradical alkylene group of from 2 to 4 carbons, R^2 is hydrogen or an alkyl group of from 1 to 6 carbon atoms, R^3 is hydrogen or an alkyl group of from 1 to 6 carbons, and y is an integer of from 1 to 6, from about 5 to 50 percent by volume of one or more polyoxyalkylene glycol lubricants, from about 0.1 to 5.0 percent by weight of one or more inhibitors,

the improvement comprising:

(A) 0.001 to 1.0 percent by weight of one or more butylated hydroxytoluenes, and

(B) 0.001 to 1.0 percent by weight of one or more metal borohydrides.

5,310,494

METHOD FOR CONTROLLING DUSTING OF COKE AND COAL

Robert P. Bennett, Houston, Tex., assignor to Natec Resources, Inc., Houston, Tex.

Filed Apr. 29, 1992, Ser. No. 875,341

Int. Cl.[5] C09K *3/22*

U.S. Cl. 252—88 **12 Claims**

1. A method for suppressing dusting of coal and coke feeds comprising applying a solution to said feed in an amount sufficient to suppress said dusting, said solution comprising a polyacrylate having a molecular weight less than about 20,000 and an amount of lignosulfonate that exceeds the amount of said polyacrylate.

5,310,495

TRANSPARENT SOAP BAR

Michael I. Hill, Fords, and Jerry J. Krupa, Rockaway Township, Morris County, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 926,602, Nov. 4, 1986, abandoned. This application Jun. 21, 1990, Ser. No. 541,453

Int. Cl.[5] C11D *9/32, 9/30*

U.S. Cl. 252—118 **14 Claims**

1. A transparent bar comprising:

(i) a mixture of alkanolammonium and alkali metal C_{12}–C_{22} atom fatty acid salts, the mole ratio of alkanolammonium to alkali metal fatty acid salt ranging from about 0.1 to less than 1.0;

(ii) a liquid solvent including an amount of water and free alkanolamine in a respective weight ratio ranging from greater than 0.25 to less than 1.0; and

wherein the weight ratio of total fatty acid salt to solvent ranges from greater than 0.02 to less than 1.0.

5,310,496

VEGETABLE OIL BASED PAINT REMOVING COMPOSITIONS

Anthony B. Taylor, Orono, Me., assignor to Chute Chemical Company, Bangor, Me.

Filed Jun. 18, 1991, Ser. No. 717,035

Int. Cl.[5] C09D *9/00; C11D 7/26*

U.S. Cl. 252—171 **3 Claims**

1. A non-toxic, biodegradable ambient temperature non-volatile paint stripping composition of formic acid with a mixture consisting essentially of a mix of 60% N-methyl-2-pyrrolidone and the remainder palm and coconut oils in a 3:1 ratio by weight, wherein the formic acid is 0.95% of the composition.

5,310,497

OXYGEN SCAVENGING COMPOSITIONS FOR LOW TEMPERATURE USE

Drew Ve Speer, Columbia, Md.; William P. Roberts, Simpsonville, S.C., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Oct. 1, 1992, Ser. No. 955,546

Int. Cl.[5] C09K *15/00;* **B65D** *85/84;* **B01J** *20/26*

U.S. Cl. 252—188.28 **3 Claims**

1. An oxygen scavenging composition in the form of a film, said composition consisting essentially of

(a) an ethylenically unsaturated hydrocarbon polymer having a molecular weight of at least about 1,000 and

(b) a transition metal catalyst, and wherein (a) has a a glass transition temperature of $< -15°$ C., and wherein (a) has an oxygen absorption rate of at least 10 cc $O_2/(m^2.day)$ at a temperature of $< 10°$ C.

5,310,498

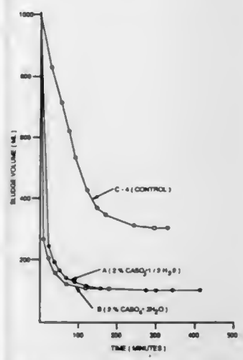
SULFUR DIOXIDE REMOVAL FROM GASES USING A MODIFIED LIME

Yungli J. Lee, Pittsburgh, and Lewis B. Benson, Coraopolis, both of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

Continuation of Ser. No. 745,257, Aug. 14, 1991, abandoned, which is a division of Ser. No. 610,151, Nov. 6, 1990, Pat. No. 5,082,639. This application Sep. 30, 1993, Ser. No. 128,732

Int. Cl.[5] C09K *3/00;* **C01B** *17/00;* **C01F** *11/46*

U.S. Cl. 252—189 **4 Claims**



1. A method of forming a modified slaked lime composition for use in a process for removing sulfur dioxide from gases in a wet scrubbing system using calcium components, such that calcium sulfite solids formed therein have an increased particle size, and wherein a portion of the effluent from the wet scrubbing system contains calcium sulfur-oxide salt solids as an aqueous sludge, comprising:

obtaining a portion of calcium sulfur-oxide salt in water from said portion of effluent from the wet scrubber, and

adding lime to said portion of calcium sulfur-oxide salt in water, said water containing said calcium sulfur-oxide salt, so obtained, in an amount to provide between about 0.3 to 5.0 percent by weight of said calcium sulfur-oxide salt based on said lime.

5,310,499

OXAZOLIDINONE DERIVATIVES, AND THE USE THEREOF AS DOPES IN LIQUID-CRYSTAL MIXTURES

Günter Scherowsky; Michael Sefkow, both of Berlin; Gerd Illian, Frankfurt am Main, and Rainer Wingen, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

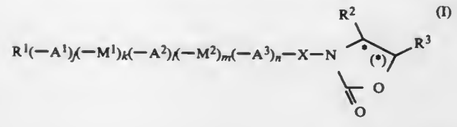
Filed Jul. 19, 1991, Ser. No. 732,626

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1990, 4023216; Jul. 24, 1990, 4023493

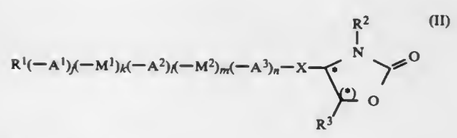
Int. Cl.[5] C09K *19/34;* **C07P** *263/04;* **C07D** *239/02*

U.S. Cl. 252—299.61 **5 Claims**

1. A chiral oxazolidinone of the formula (I) or (II)



(I)



(II)

in which

• is a chiral center,

(•) is an optional chiral center,

R^1 is a straight-chain alkyl radical having 1 to 16 carbon atoms, it being possible for one $-CH_2-$groups to be replaced by —O—,

$-R^2$ and $-R^3$, independently of one another, are —H, alkyl having 1 to 12 carbon atoms, or are -phenyl,

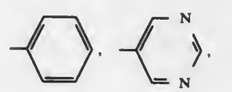
j and l are zero, 1 or 2,

k and m are zero or 1, and

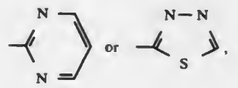
n is zero, 1 or 2,

with the proviso that k is zero if j and/or l are zero; m is zero if n is zero; the sum of j+l+n is at least 1 and at most 3,

$-A^1$ and $-A^2$ are



$-A^3$ is



$-M^1$ and $-M^2$ are —CO—O or —O—CO, and

—X—is $-O-CH_2$ or $-CH_2-$.

5,310,500

LIQUID CRYSTAL COMPOUNDS

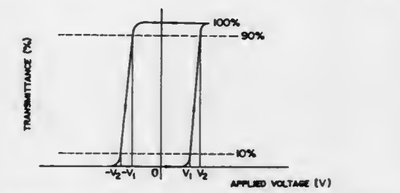
Yoshihiko Aihara; Tadaaki Isozaki; Toru Ooide, and Noriko Yamakawa, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 863,317, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 724,997, Jul. 2, 1991, abandoned. This application Jun. 5, 1992, Ser. No. 894,429

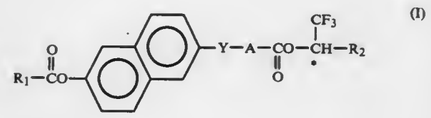
Claims priority, application Japan, Jul. 5, 1990, 2-178336

Int. Cl.[5] C09K *19/32;* **C07C** *69/76*

U.S. Cl. 252—299.62 **3 Claims**



1. A liquid crystal compound represented by the formula (I):



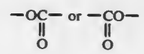
(I)

wherein;

R_1 represents an alkyl group having 5–18 carbon atoms,

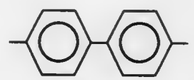
R_2 represents an alkyl group having 6–16 carbon

Y represents a group



and

A represents



and which exhibits optically tristable states in $S^*(3)$ phase.

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5,310,501

ANISOTROPIC COMPOUNDS HAVING NEMATIC PHASE AND LIQUID CRYSTAL MIXTURES

Tuong Huynh-Ba, Baden, and Maged A. Osman, Zürich, both of Switzerland, assignors to Merck Patent GmbH, Darmstadt, Fed. Rep. of Germany

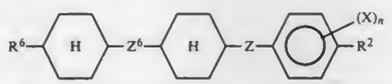
Continuation of Ser. No. 477,719, Feb. 9, 1990, abandoned, which is a continuation of Ser. No. 800,920, Nov. 25, 1985, Pat. No. 5,227,484, which is a continuation of Ser. No. 457,567, Jan. 13, 1983, abandoned. This application Jan. 25, 1993, Ser. No. 8,888

Claims priority, application Switzerland, Jan. 14, 1982, 198/82-0; Jan. 19, 1982, 292/82-3; May 4, 1982, 2725/82-7

Int. Cl.[5] C09K *19/30;* **C07C** *19/08;* **C07D** *211/72, 211/84*

U.S. Cl. 252—299.63 **7 Claims**

1. A liquid crystal mixture comprising at least two compounds and containing at least one anisotropic compound having the formula:



wherein Z is selected from the group consisting of a single bond and, a $—CH_2CH_2—$group,

n is 1 or 2,

X is selected from the group consisting of fluorine, chlorine, bromine and iodine,

R^2 is selected from the group consisting of C_1–C_{12}-alkyl, C_1–C_{12}-alkoxy, C_1–C_{12}-alkanoyloxy and the cyclic group of the formula (16);

wherein R^6 is selected from the group consisting of C_1–C_{12}-alkyl, C_1–C_{12}-alkoxy, and C_1–C_{12}-alkanoyloxy, is selected from the group consisting of a single bond and, a $—CH_2CH_2—$group.

5,310,502

HIGH TILT ANGLE FLC MIXTURE FOR TIR SWITCHING DEVICES

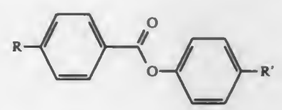
Kenneth L. Marshall, Henrietta, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 27, 1991, Ser. No. 722,022

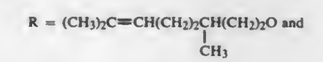
Int. Cl.[5] C09K *19/12;* **C07C** *69/76*

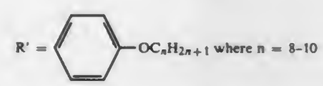
U.S. Cl. 252—299.65 **1 Claim**

1. High tilt angle FLC compounds for TIR switching devices comprising, compounds of the formula:



Where





5,310,503

STILBENE COMPOUND, INTERMEDIATE FOR PRODUCING THE STILBENE COMPOUND, METHOD OF PRODUCING THE STILBENE COMPOUND, AND LIQUID CRYSTAL COMPOSITION CONTAINING THE STILBENE COMPOUND

Masayuki Sboshi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

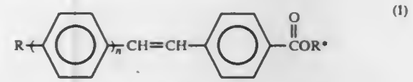
Division of Ser. No. 630,888, Dec. 20, 1990, Pat. No. 5,227,512. This application Feb. 9, 1993, Ser. No. 15,433

Claims priority, application Japan, Dec. 20, 1989, 1-330241

Int. Cl.[5] C09K *19/20, 19/12*

U.S. Cl. 252—299.67 **1 Claim**

1. A liquid crystal composition containing an optically active stilbene compound of formula (I),



(1)

wherein R is an alkoxy group with 20 or less carbon atoms; n is an integer of 1 or 2; and R* is an optically active substituent selected from the group consisting of 1-methylheptyl, 2-methylheptyl and 2-methyloctyl.

5,310,504

PHOSPHOR SLURRY COMPOSITION FOR COLOR BRAUN TUBES

Ikchull Ihm; Minho Kim, both of Kyunggi-do, Rep. of Korea, and Ichull Ihm, assignors to Samsung Electron Devices Co., Ltd., Rep. of Korea

Filed Aug. 6, 1992, Ser. No. 925,852

Claims priority, application Rep. of Korea, Aug. 21, 1991, 91-14416

Int. Cl.[5] C09K *11/02*

U.S. Cl. 252—301.36 **1 Claim**

1. A phosphor slurry composition for color Braun tubes comprising:

a) 100 parts by weight of phosphor powder,

b) 120–130 parts by weight of polyvinyl alcohol,

c) 5–6 parts by weight of sodium dichromate,

d) 0.0009–0.5 parts by weight of ethyl silicate,

e) 0.002–0.04 parts by weight of zinc sulfate and

f) 120–130 parts by weight of deionized water.

5,310,505

PROCESS OF MAKING TANTALATE X-RAY PHOSPHORS

David B. Hedden, Sayre, and William J. Zegarski, Towanda, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1992, Ser. No. 992,812

Int. Cl.[5] C09K *11/67*

U.S. Cl. 252—301.4 R **3 Claims**

1. A process of making a tantalate X-ray phosphor selected from the group consisting of:

(a) $YNb_xTa_{1-x}O_4$, where x=0 to about 01.5;

(b) $LuNb_xTa_{1-x}O_4$, where x=0 to about 0.2;

(c) $Y_{1-y}Tm_yTaO_4$, where x=0 to about 0.2;

(d) a solid solution of (a) and (b);

(e) a solid solution of (a) and (c);

(f) $Y_{1-y}Tb_yTaO_4$, where y= about 0.001 to about 0.15;

(g) $Lu_{1-y}Tb_yTaO_4$, where y= about 0.001 to about 0.15;

(h) $Gd_{1-y}Tb_yTaO_4$, where y= about 0.001 to about 0.15;

(i) a solid solution of at least two of (f), (g), and (h);

(j) any of (a) to (i) where up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by lanthanum;

(k) any of (a) to (i) wherein up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by ytterbium; and

(l) any of (a), (b), (c), (d) or (e) wherein up to 15 mole percent of yttrium or lutetium is replaced by gadolinium; said process comprising the steps of:

1) intimately mixing stoichiometric quantities of precursor oxides for the tantalate X-ray phosphor;

2) mixing said mixture with a flux composition consisting of:

i) 1–99% by weight of at least one alkali metal sulfate,

ii) 1–99% by weight of at least one alkali metal metaborate, and

iii) 0–50% by weight of at least one strontium halide; and

3) firing the flux-containing mixture for a sufficient period of time and at a sufficient temperature to form the tantalate X-ray phosphor from the precursor oxides.

5,310,506

PROCESS OF PRODUCING A SYNTHESIS GAS FOR METHANOL SYNTHESIS

Emil Supp, Dietzenbach, and Rainer Morgenroth, Friedrichsdorf, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 922,304, Jul. 30, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 120,140

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130718

Int. Cl.[5] C01B *3/38, 3/36*

U.S. Cl. 252—373 **2 Claims**

1. In the production of synthesis gas for methanol synthesis and reacting the synthesis gas in the presence of a catalyst to produce a high-methanol product stream, the improvement which comprises feeding into an autothermic reforming reactor (a) a feed gas containing methane, (b) water, (c) oxygen and (d) a high-hydrogen gas which contains free hydrogen, per carbon atom in the feed gas there being supplied 1.2 to 2.0 molecules H_2O, 0.4 to 0.8 molecules O_2 and 0.2 to 0.5 molecules H_2, the hydrogen in said high-hydrogen gas coming at least in part from a plant other than from the instant methanol process, said reactor containing a bed of a granular nickel catalyst and a catalyst-free space above said bed, the volume of said catalyst-free space being 10–30% of the total volume of said catalyst bed, said feed gas (a), said oxygen (c) and said high-hydrogen gas (d) being fed into said catalyst-free space, autothermically reacting said feed gas in said reactor at a pressure of 10 to 100 bars, and withdrawing from said reactor a raw synthesis gas having a temperature in the range of 850° to 1100° C., said raw synthesis gas containing methane not in excess of 3 mole percent, without removal of carbon dioxide producing a synthesis gas which is suitable for the methanol synthesis in which the values of the molar ratios of the components H_2, CO and CO_2 in the formula $(H_2-CO_2):(CO+CO_2)$ is from 1.97 to 2.2.

5,310,507

METHOD OF MAKING A CONDUCTIVE POLYMER SELECTIVE SPECIES SENSOR

Mitchell R. Zakin, Bradford; Lawrence S. Bernstein, Lexington, both of Mass., and Richard A. Moody, Nashua, N.H., assignors to Spectral Sciences, Inc., Burlington, Mass.

Continuation of Ser. No. 596,674, Oct. 12, 1990, abandoned, which is a division of Ser. No. 539,030, Jun. 15, 1990, abandoned. This application Aug. 13, 1992, Ser. No. 928,529

Int. Cl.[5] H01B *1/00*

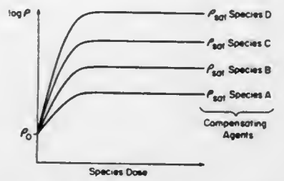
U.S. Cl. 252—500 **6 Claims**

1. A method of fabricating a selective species sensing element for irreversibly detecting the exposure of said sensing element to a first compensating agent in the presence of a second compensating agent, comprising the steps of:

providing a polymer material made conductive with a polymer dopant;

determining the doped material permanent saturation resistivity toward the first and second compensating agents in which the permanent saturation resistivity toward the second compensating agent is lower than that towards the first; and

permanently adjusting, prior to detecting the exposure of said sensing element to said first compensating agent in the presence of said second compensating agent, the doped material resistivity to be at least that of the second compensating agent doped material permanent saturation



resistivity and less than the first compensating agent doped material permanent saturation resistivity so that the adjusted material resistivity permanently changes on exposure to the first compensating agent and not on exposure to the second compensating agent for selective detection of the first compensating agent in the presence of the second compensating agent by monitoring of permanent material resistivity change.

5,310,508

MILD PERSONAL CLEANSING COMPOSITIONS CONTAINING SODIUM ALCOHOL ETHOXY GLYCERYL SULFONATE

Ravi Subramanyam, North Brunswick; Ben Gu, East Brunswick; Amrit Patel, Dayton; Jairajh Mattai, Metuchen; Clarence Robbins, Martinsville; Jane Clarke, Matawan, and Tanya Clifton, Nutley, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 914,369, Jul. 15, 1992, abandoned. This application May 19, 1993, Ser. No. 65,134

Int. Cl.[5] C11D *3/12, 1/18, 9/30*

U.S. Cl. 252—549 **30 Claims**

1. A personal cleansing composition comprising a salt of alcohol ethoxy glyceryl sulfonate and at least 1% of a further detergent surfactant.

5,310,509

DYE-CONTAINING LIGHT-POLARIZING FILM

Toyokazu Okada, Suita; Koji Higashi, Takatsuki; Shinjiro Kawasaki, Nishinomiya, and Yutaka Nishii, Moriguchi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 381,750, Jun. 23, 1989, abandoned. This application Dec. 18, 1992, Ser. No. 993,891

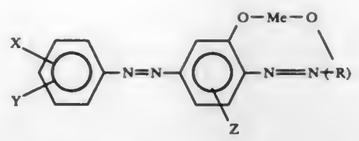
Claims priority, application Japan, Nov. 2, 1987, 62-278078; Nov. 2, 1987, 62-278079; Jun. 30, 1988, 63-165382

Int. Cl.[5] F21V *9/14;* **G02B** *5/30;* **C09B** *45/24*

U.S. Cl. 252—585 **26 Claims**

1. A dye-containing light-polarizing film comprising a dichroic dye absorbed into a high polymer film, in which said dichroic dye is a water-soluble copper-, nickel-, zinc- or iron-containing diazo dye represented by formula (I) as a free acid

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(I)

wherein Me represents a transition metal selected from the group consisting of copper, nickel, zinc and iron; R represents a 1-naphthol or 2-naphthol residue which is bonded to the azo group at the position adjacent to the hydroxyl group forming a complex bond together with the transition metal and which may have a substituent selected from the group consisting of sulfonic acid, sulfonamide, amino, acylamino, arylamino and hydroxyl not adjacent to the azo group; X and Y represent hydrogen, C_1–C_4 alkyl, lower alkoxy, carboxylic acid, sulfonic acid, sulfonamide, amino, acylamino, nitro or halogen; and Z represents hydrogen, C_1–C_4 alkyl or lower alkoxy; said formula (I) having from 1 to 3 sulfonic acid groups.

5,310,510

METHOD FOR MANUFACTURING AN OPTICAL CABLE

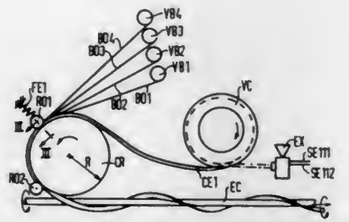
Helmut Pascher, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 851,940

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108567; Mar. 15, 1991, 4108569

Int. Cl.[5] B29D *11/00*

U.S. Cl. 264—1.5 **11 Claims**



1. A method for manufacturing an optical cable composed of a plurality of chamber elements wrapped around a core, said chamber elements each having a chamber opened at one side of the element for receiving light waveguide bands, said method comprising the steps of providing said chamber elements, each element having a chamber opening on one side, guiding each chamber element in a path having a curved portion, inserting the light waveguide bands into the chamber of the element in the region of said curved path so that the light waveguide band lying furthest toward the outside of the curved path has a greater length than the light waveguide band lying toward the inside of the path, and then, subsequently, stranding the chamber element with like elements helically onto a cable core, which is moving along a cable axis.

5,310,511

METHOD AND APPARATUS FOR POLING A PLANAR POLARIZABLE BODY

Michael A. Marcus, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1992, Ser. No. 857,049

Int. Cl.[5] B29C *71/04*

U.S. Cl. 264—22 **4 Claims**

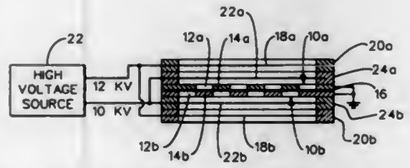
1. A method of poling a ferroelectric planar body in opposite directions through the thickness dimension of the body with regions of alternate polarity at different lateral locations across the surface of the body in a predetermined pattern comprising the steps of:

sandwiching a ferroelectric planar body between and in electrical contact with a pair of ground plane plates, said plates having opposite adjacent conjugate patterns of open aperture and ground plane plate areas therein;

positioning said sandwiched body and plate between spaced apart parallel arrays of electrodes, said electrodes being spaced from said plates and being aligned with said aperture patterns;

and applying a voltage of the same polarity to said electrodes for generating an electric field of the same polarity to both sides of the body through said plate apertures, thereby to cause alternating polarization in opposite directions through the thickness dimension of the body in adjacent areas corresponding to said conjugate patterns of open aperture and ground plane plate areas in the ground plane plates.

3. Apparatus for poling a ferroelectric planar body in opposite directions through the thickness dimension of the body with regions of alternate polarity at different lateral locations across the surface of the body in a predetermined pattern comprising:



a pair of ground plane plates positioned on opposite sides of said body in electrical contact with said body, said plates having opposite adjacent conjugate patterns of open aperture and ground plane plate areas therein;

first and second corona wire arrays spaced from said pair of ground plates on opposite sides thereof, said arrays having at least one mutual pair of opposed wires aligned with a conjugate pattern of open aperture said ground plane plate areas in the ground plane plates;

and means for applying a high voltage of the same polarity to said wires aligned with said conjugate patterns of open aperture areas whereby a pattern of alternating polarization in opposite directions through the thickness dimension of film can be created in adjacent areas of the film corresponding to said conjugate patterns of open aperture and ground plane plate areas in the ground plates.

5,310,512

METHOD FOR PRODUCING SYNTHETIC DIAMOND STRUCTURES

Louis K. Bigelow, Salt Lake City, Utah, assignor to Norton Company, Worcester, Mass.

Filed Nov. 15, 1990, Ser. No. 614,313

Int. Cl.[5] B28B *1/02, 7/30*

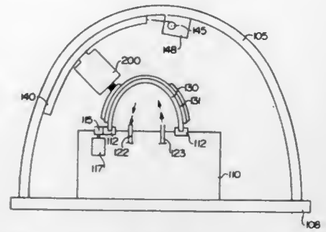
U.S. Cl. 264—25 **26 Claims**

1. A method for producing a synthetic diamond structure, comprising the steps of:

providing a mandrel;

coating the mandrel with a metal;

depositing synthetic diamond on said metal coating to form a synthetic diamond structure; and



removing the synthetic diamond structure from said metal coating by heating said metal to about its melting point.

5,310,513

METHOD FOR MANUFACTURING A CROSS-LINKED THERMOPLASTIC RESIN FOAM

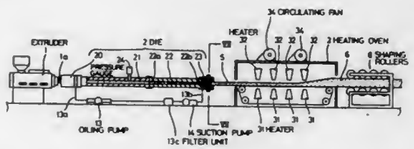
Syunji Yamamoto; Takaaki Kemmotsu, both of Hiratsuka; Mitsunori Okada, Yokohama, and Makoto Hashimoto, Ayase, all of Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 658,349, Feb. 20, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 927,848

Claims priority, application Japan, Sep. 17, 1990, 2-246724

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—54 **5 Claims**



1. A method for continuously manufacturing a cross-linked thermoplastic resin foam, comprising:

extruding a resin composition into a closed die, said resin composition containing at least a thermoplastic resin, a foaming agent, and a cross-linking agent, said die including at least a molding region, a heating region, and a cooling region, continuously arranged in the order named;

molding said resin composition into a desired shape in said molding region of said die;

heating said resin composition in said heating region of said die to decompose said cross-linking agent and also to decompose 20 to 95% of said foaming agent so that cell nuclei are produced, thereby forming a partially foamed product;

cooling said partially foamed product to a temperature lower than the softening point thereof in said cooling region of said die, thereby increasing the rigidity of said partially foamed product, and extruding said partially foamed product, moving in said cooling region, to the outside of said die while applying a damping force to said partially foamed product; and

heating the extruded partially foamed product under atmospheric pressure to complete the decomposition of the foaming agent and the expansion of the extruded partially foamed product, thereby continuously obtaining a final product.

5,310,514

PROCESS AND SPINNING DEVICE FOR MAKING MICROFILAMENTS

Ivo Ruzek, Kaiserslautern, and Walter Bruckner, Wienhausen, both of Fed. Rep. of Germany, assignors to Corovin GmbH, Peine, Fed. Rep. of Germany

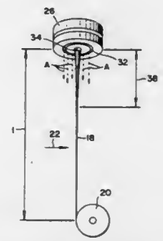
PCT No. PCT/DE90/00941, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO91/09162, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 3, 1990, Ser. No. 862,570

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1989, 3941824

Int. Cl.[5] D01D *5/084;* D02G *1/00*

U.S. Cl. 264—103 **10 Claims**



1. In a process for producing microfilaments that are useful in the production of textile or spun bond fabrics having a silk-like character comprising:

(a) melt extruding a molten melt-spinnable polymeric material downwardly through a plurality extrusion orifices,

(b) passing the resulting molten melt-spinnable polymeric material in the direction of its length through a solidification zone having an entrance end and an exit end wherein cooling air is transversely blown in contact with said molten polymeric material and it is transformed into a solidified microfilamentary material of less than 1 dtex per filament, and

(c) exerting a pulling force on said solidified microfilamentary material after it leaves the exit end of said solidification zone so as to accomplish substantial drawing of said molten melt-spinnable polymeric material intermediate said extrusion orifices and its transformation into a microfilamentary material of less than 1 dtex per filament;

the improvement comprising surrounding said resulting molten melt-spinnable polymeric material as it passes from said extrusion orifices to the entrance end of said solidification zone with a protective stream of heated air that flows parallel to the direction of movement of said molten polymeric material and blowing said cooling air transversely in contact with said molten polymeric material in step (b) at a distance of at least approximately 100 mm, below said extrusion orifices.

5,310,515

PROCESS TO COOL AND PELLETIZE MOLTEN STRANDS ISSUING FROM NOZZLES

Keilert Jürgen, Kleinwallstadt, and Glöckner Frank, Aschaffenburg, both of Fed. Rep. of Germany, assignors to Reiter Automatik Apparate-Maschinebau GmbH, Fed. Rep. of Germany

Filed Oct. 7, 1992, Ser. No. 957,365

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1991, 4133329

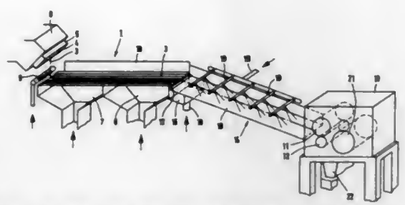
Int. Cl.[5] B29B *9/06;* B29C *47/88*

U.S. Cl. 264—143 **5 Claims**

1. Process to cool and pelletize molten strands (3) which issue from nozzles, (4) wherein the strands are first stretched in the region following the nozzles, then are intensively cooled, fed by feed rollers and pelletized in a pelletizer, wherein the strands (3) are gently cooled up to a kneadable state while

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being stretched by the feed rollers and compacted along said region following the nozzles, wherein said region is a tempering region which is designed as a generally horizontal fluidized



bed (1) driven with gas, and wherein the strands are subsequently conveyed into an intensive cooling region, where the strands (3) are chilled with cooling water and are substantially hardened for the subsequent pelletizing operation.

5,310,516

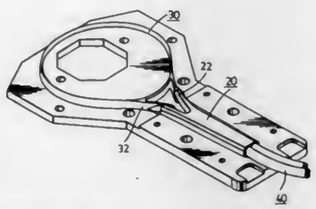
METHOD OF MAKING A COMPOSITE RACKET

Walter Shen, No. 18, 20 Rd., Industry Dist., Taichung City, Taiwan

Division of Ser. No. 879,674, May 6, 1992. This application Jan. 29, 1993, Ser. No. 10,895

Int. Cl.[5] B29C *63/10*

U.S. Cl. 264—250 **4 Claims**



1. The method of making a composite racket frame having a shaft defining a first frame position, a head defining a second frame portion, a throat section disposed between and through which said first and second portions are connected together and wherein one of said frame portions consists of fiber reinforced thermoplastic resin and the other of said frame portion consists of a fiber reinforced thermosetting resin; the method comprising the steps of:

a) preforming said fiber reinforced thermoplastic resin in a first mold to form one of said frame portions;

b) placing the preformed one frame portion in a second mold; and

c) forming the fiber reinforced thermosetting resin into said other frame portion in said second mold and integrally joining it at said throat section to said first frame portion to form said racket frame.

5,310,517

METHOD FOR MANUFACTURE OF A GLOVE, IN PARTICULAR FOR A GLOVE BOX CONTAINING RADIOACTIVE MATERIALS

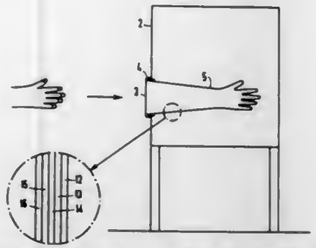
Wolfgang Dams, Zwingenberg, and Werner Wegner, Hofheim-Marxheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 846,732, Mar. 4, 1992, Pat. No. 5,165,114, which is a continuation of Ser. No. 353,827, May 18, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 967,404

Claims priority, application Fed. Rep. of Germany, May 18, 1988, 3816951

Int. Cl.[5] B29C *41/14*

U.S. Cl. 264—255 **9 Claims**



1. Method for manufacturing a glove, which comprises dipping a mold body terminating in a hand into a solution of thermoplastic monocomponent polyester urethane in a solvent formed of a mixture of dimethylformamide and methylethyl ketone for coating the mold body with a polyester urethane coating, removing the coated mold body from the solution, subsequently expelling the solvent from the polyester urethane coating by drying, dipping the mold body into a solution of synthetic rubber and toluene as a solvent after drying the polyester urethane coating for coating the mold body with a synthetic rubber coating, removing the coated mold body from the solution, and subsequently expelling the solvent from the synthetic rubber coating by drying whereby a connecting layer formed of a mixture of the polyester urethane and the synthetic rubber is formed between the polyester urethane coating and the synthetic rubber coating.

5,310,518

METHOD AND DEVICE FOR MANUFACTURING CURING BLADDERS

Marco Franzini, DiLatina; Fabrizio Giovannucci, Rome; Attilio Pomenti, Rome, and Gordon M. Tomlinson, Rome, all of Italy, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

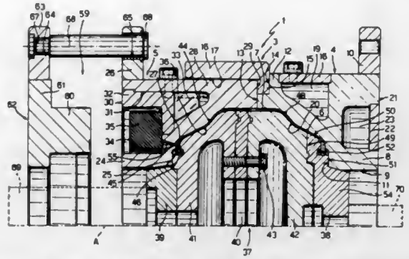
Filed Oct. 9, 1991, Ser. No. 774,759

Claims priority, application Italy, Nov. 9, 1990, 67878-A/90

Int. Cl.[5] B29C *45/00*

U.S. Cl. 264—326 **9 Claims**

1. A method of manufacturing curing bladders using a curing mold comprising a first and second half mold and an inner core which, when said curing mold is closed around said inner core, define a substantially toroidal inner molding chamber of the same shape as the bladder to be produced, said inner core comprising first and second axially separable portions; said method comprising the steps of feeding a mass of uncured rubber into a chamber outside said mold, said outer chamber communicating with said inner chamber via at least one injection duct; subjecting said mass of uncured rubber, via pressure means and with said mold closed, to sufficient pressure to inject said rubber from said outer chamber into said inner chamber via said injection duct; curing said rubber inside said inner chamber so as to produce a finished bladder; extracting said finished bladder from said mold by opening said inner chamber and extracting said inner core only after said finished bladder is cured; and detaching said finished bladder from said first core portion with said second core portion acting as an



extractor for said finished bladder after said finished bladder is extracted from said first core portion.

5,310,519

PROCESS OF MANUFACTURING AS SINTERED MEMBER HAVING AT LEAST ONE MOLYBDENUM-CONTAINING WEAR-RESISTING LAYER

Franz Blaimschein, Sattledt, Austria, assignor to Miba Sintermetall Aktiengesellschaft, Laakirchen, Austria

Filed Jun. 22, 1992, Ser. No. 902,577

Claims priority, application Austria, Jul. 2, 1991, 1314/91

Int. Cl.[5] B22F *3/00*

U.S. Cl. 419—47 **3 Claims**

1. A process of manufacturing a sintered member comprising a body and a wear-resistant layer, which comprises the steps of forming said body of a low-alloy iron powder, forming said wear-resistant layer of an iron powder containing 10% to 30%, by weight, of non-alloyed molybdenum, 1.5% to 3%, by weight, of carbon and 0.3% to 0.6%, by weight, of phosphorus, compacting the body-forming and layer-forming powders to form a shaped member, and subjecting the shaped member to liquid-phase sintering at a temperature of 1070° C. to 1130° C.

5,310,520

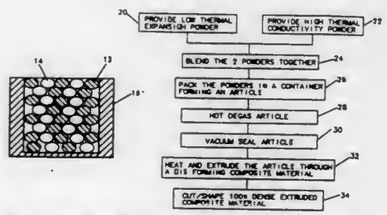
CIRCUIT SYSTEM, A COMPOSITE MATERIAL FOR USE THEREIN, AND A METHOD OF MAKING THE MATERIAL

Sunil C. Jha, Attleboro, Mass.; James A. Forster, Barrington, R.I., and Henry F. Breit, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 29, 1993, Ser. No. 10,931

Int. Cl.[5] B22F *1/00, 3/14*

U.S. Cl. 419—48 **13 Claims**



1. A method for making a thermal composite material for use in electronic circuit systems comprising:

a) providing a first powder metal material of a low coefficient of thermal expansion;

b) providing a second powder metal material of a high thermal conductivity;

c) mixing said first powder material with said second powder material;

d) packing said mixture into an article;

e) heating said article to a temperature below the sintering temperature for either said first powder metal material or said second powder metal material for sufficient time to have uniform temperature throughout the article; and

f) immediately subjecting said heated article to extrusion through a die having an area reduction ratio of at least 8 to 1 so as to impart a true strain to said compacted article of greater than 1.75, thereby yielding a fully dense composite material with excellent combined thermal expansion and conductivity properties.

5,310,521

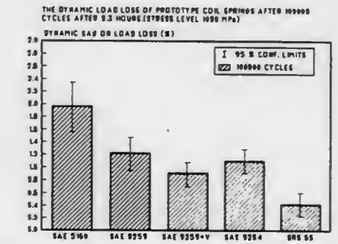
STEEL COMPOSITION FOR SUSPENSION SPRINGS

Anthony M. Asseiro, Burlington; Melvin E. Head, Ancaster, and Gordon D. Millar, Hamilton, all of Canada, assignors to Stelco Inc., Hamilton, Canada

Filed Nov. 24, 1992, Ser. No. 981,081

Int. Cl.[5] C22C *38/46*

U.S. Cl. 420—109 **2 Claims**



1. A steel composition for use in coil and torsion bar suspension springs for passenger cars and light trucks, consisting essentially of:

(a) about 0.08 to about 0.13 wt% vanadium,

(b) nitrogen in amount of about 120 to about 200 ppm and sufficient to provide said vanadium substantially completely in the form of vanadium nitride,

(c) less than about 0.005 wt% of aluminum,

(d) about 0.50 to about 0.64 wt% carbon,

(e) about 0.80 to about 1.35 wt% silicon,

(f) about 0.05 to about 0.60 wt% chromium,

(g) about 0.60 to about 0.90 wt% manganese,

(h) about 0.005 to about 0.020 wt% molybdenum,

(i) about 0.001 to about 0.005 wt% niobium,

(j) about 0.005 to about 0.050 wt% nickel,

(k) less than about 0.10 wt% copper,

(l) less than about 0.020 wt% phosphorus,

(m) less than about 0.025 wt% sulfur,

(n) less than about 0.005 wt% lead,

(o) less than about 0.015 wt% tin, and

(p) the balance by weight of iron.

5,310,522

HEAT AND CORROSION RESISTANT IRON-NICKEL-CHROMIUM ALLOY

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, Pevely, Mo.

Filed Dec. 7, 1992, Ser. No. 987,372

Int. Cl.[5] C22C *30/00, 38/44*

U.S. Cl. 420—585 **6 Claims**

1. An nickel-chromium-iron alloy having good heat resistan properties consisting essentially of:

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NICKEL	30–35% BY WEIGHT
CHROMIUM	22–25%
MOLYBDENUM	4–6.5%
TUNGSTEN	0.2–1.5%
NIOBIUM	0.2–0.6%
TITANIUM	0.1–0.6%
COBALT	0.35–1.7%
CARBON	0.19–0.30%
MANGANESE	0.2–1.5%
SILICON	0.2–1.3%
IRON	ESSENTIALLY BALANCE

5,310,523

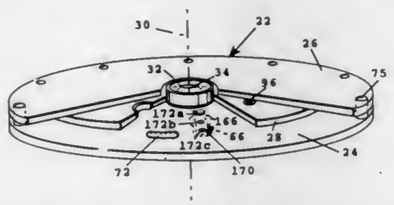
SELF-CONTAINED ASSAY ASSEMBLY AND APPARATUS

Rick T. Smethers, Milpitas; Lev J. Leytes, Palo Alto; Brian D. Warner, Martinez; Robert R. Shadel, San Francisco, and Michael S. Urdea, Alamo, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 539,002, Jun. 15, 1990, abandoned. This application Aug. 27, 1991, Ser. No. 750,325

Int. Cl.[5] G01N *21/01, 31/22*

U.S. Cl. 422—57 **13 Claims**



1. A self-contained assembly for detecting an analyte ligand by detectable, analyte-specific binding to a solid support, comprising

a reaction plate defining a well that contains a solid support, said well being capable of holding liquid reagents in contact with the support,

adjacent the reaction plate, a transfer plate containing first and second reagent reservoirs, each said reservoir being formed by an elastomeric sleeve held in a channel which extends through the transfer plate, said transfer and reaction plates being spaced relative to one another, in the region of the sleeve, to form a capillary lock effective to prevent liquid from leaking from the reservoir by capillarity,

carried in said first and second reservoirs, first and second reaction reagents, respectively, required for binding of ligand in detectable form to the solid support, and

means for mounting the transfer plate on the reaction plate for movement thereon to a sample-addition position at which sample can be added to said well, a first reagent-transfer position at which the first reservoir is aligned with said well, a wash position at which wash solution can be introduced into the well, and a second reagent-transfer position at which the second reservoir is aligned with said well,

wherein said sleeve is effective to prevent release of each said reagent from its respective reservoir until that reservoir is aligned with said well.

5,310,524

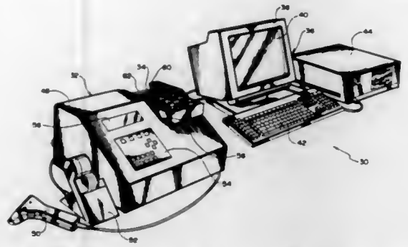
CATHETER REPROCESSING AND STERILIZING SYSTEM

James L. Campbell, and Louis C. Cosentino, both of Plymouth, Minn., assignors to Minntech Corporation, Minneapolis, Minn.

Filed Feb. 11, 1992, Ser. No. 835,729

Int. Cl.[5] A61L *2/00;* **B08B** *9/02*

U.S. Cl. 422—33 **14 Claims**



1. A method for reprocessing and sterilizing a previously used catheter comprising the steps of:

(a) providing a catheter receiving housing and a catheter, having at least one lumen and a balloon member;

(b) enclosing said catheter within said catheter receiving housing;

(c) heating an external source of a sterilant to a temperature of about 53° C.;

(d) introducing said sterilant into said catheter receiving housing;

(e) causing said sterilant to circulate throughout said catheter receiving housing and around and within said catheter, said at least one lumen and said balloon member while constantly maintaining said temperature of about 53° C.;

(f) draining said sterilant from said catheter receiving housing;

(g) pressurizing said catheter receiving housing to a pressure level above said ambient pressure;

(h) maintaining said pressure level within said catheter receiving housing whereby the sterility of said catheter is maintained in a dry, sterile environment for at least one week by retaining said catheter in said pressurized catheter receiving housing.

5,310,525

FLUID DETECTION DEVICE

Stephen J. Churchouse, Banbury; David J. Fitchett, Daventry, both of United Kingdom, and Louis Rey, Lausanne, Switzerland, assignors to Whatman Scientific Limited, Banbury, England

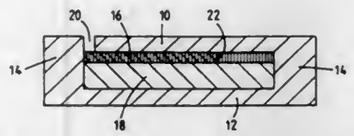
PCT No. PCT/GB91/00179, § 371 Date Sep. 18, 1992, § 102(e) Date Sep. 18, 1992, PCT Pub. No. WO91/12527, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 6, 1991, Ser. No. 917,044

Claims priority, application United Kingdom, Feb. 8, 1990, 9002856

Int. Cl.[5] G01N *33/00*

U.S. Cl. 422—56 **11 Claims**



1. A moving boundary gas detection device for detecting a gaseous analyte, which device comprises an impervious container having at least one fluid entry aperture and containing two contiguous layers said contiguous layers comprising:

a detecting layer which is an anodic aluminum oxide sheet having pores extending transversely from one major face of the sheet to the other and comprising a reagent to generate a signal by a reaction initiated by a gaseous analyte,

and a spreading layer permeable by the gaseous analyte positioned such that gaseous analyte entering the impervious container spreads within the spreading layer, wherein said spreading layer determines the movement of a moving boundary resulting from the reaction in said detection layer.

5,310,526

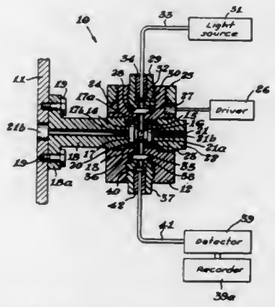
CHEMICAL SENSOR

E. Deniz Yalvac; Stephen W. Barr, and Selim Yalvac, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 605,808, Oct. 30, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 978,566

Int. Cl.[5] G01N *21/00, 21/75, 21/85;* **C12M** *1/34*

U.S. Cl. 422—81 **3 Claims**



1. A chemical sensor suitable for in-line chemical analysis, comprising:

(a) a body, the body defining a cavity therein, the body also defining a first aperture therethrough in communication with the cavity, the body further defining at least a second aperture therethrough in communication with the cavity, the body also further defining a vent passageway therethrough in communication with the cavity, the body also defining a third aperture therethrough in communication with the chamber, the body further defining a fourth aperture therethrough in communication with the cavity;

(b) a first porous member positioned near the first aperture, the first porous member having at least a first side and a second side, the first side of the first porous member being exposed to the cavity;

(c) a first sealing means for sealing the first porous member to the first aperture so that any fluid exposed to the second side of the first porous member at a pressure greater than the pressure in the cavity will move substantially exclusively through the first porous member into the cavity and then out of the cavity through the vent passageway;

(d) a second porous member positioned near the second aperture, the second porous member having at least a first side and a second side, the first side of the first porous member also being exposed to the cavity;

(e) a second sealing means for sealing the second porous member to the second aperture so that any fluid exposed to the second side of the second porous member at a pressure greater than the pressure in the cavity will move substantially exclusively through the second porous member into the cavity and then out of the cavity through the vent passageway;

(f) light generating and directing means for generating light and directing light into the cavity via the third aperture, the light generating and directing means being coupled to the body; and

(g) light detecting means for measuring light coming from the cavity via the fourth aperture, the light detecting means being coupled to the body.

5,310,527

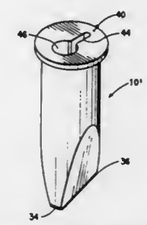
TUBE FOR USE IN A PELLETING CENTRIFUGE ROTOR

William A. Romanauskas, and Hugh H. Tansey, III, both of Southbury, Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1992, Ser. No. 990,103

Int. Cl.[5] B01L *3/14*

U.S. Cl. 422—102 **8 Claims**



1. A tube for use in a pelleting centrifuge rotor to separate solid particles from a liquid supernatant in which they are suspended, the tube having a body with an interior volume, the tube terminating in a mouth, the interior volume comprising an upper portion and a lower pelleting portion, the tube having an axis extending therethrough,

the pelleting portion being defined by at least first and second interior surfaces which converge toward each other to meet along a line of convergence that forms a tube bottom, the pelleting portion of the tube having a first and a second corner respectively defined at a respective end of the line of convergence, the first corner subtending an acute angle defined between the line of convergence and a portion of the tube interior and the second corner subtending an obtuse angle defined between the line of convergence and another portion of the tube interior.

the corner subtending the acute angle lying a greater axial distance from the mouth of the tube than the corner subtending the obtuse angle.

5,310,528

METHOD FOR PURIFICATION OF WASTE GASES

Reijo J. Kuivalainen, San Diego, Calif., assignor to A. Ahlstrom Corporation, Noormarkku, Finland

PCT No. PCT/FI91/00051, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/12876, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 19, 1991, Ser. No. 916,142

Claims priority, application Finland, Feb. 23, 1990, 900915

Int. Cl.[5] B01D *50/00, 11/02*

U.S. Cl. 422—170 **19 Claims**

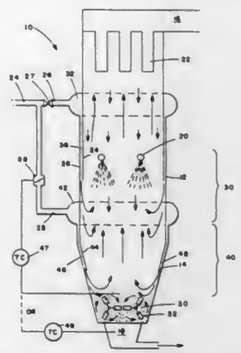
1. A method of purifying of high temperature gases produced during chemical reactions, and containing pollutants therein, utilizing a wetting reactor having at least first and second different levels, and including a first, wetting, zone with spray nozzles at the first level, and a second zone below the first, wetting, zone at the second level, and a third zone above the first, wetting, zone, the third zone including a purified gas outlet; said method comprising the steps of:

(a) outside the wetting reactor, adding to the gases contain-

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ing pollutants, particles of reagent or absorbent or both, capable of reacting with the pollutants in the gases, to produce a suspension of gas and reagent or absorbent or both having a first particle concentration;

(b) activating the reagent or absorbent or both by introducing a first portion of the suspension from step (a) into the first level of the wetting reactor, and introducing a second portion of the suspension from step (a) into the second level of the wetting reactor, and with the nozzles spraying water or steam or both into the wetting reactor to wet particles in the suspension in the first, wetting, zone;



(c) causing the gases of the suspension portions introduced at the first and second levels to flow upwardly into the third zone, while causing wetted particles of the suspension to flow downwardly through the first, wetting, zone countercurrent to the gases;

(d) separating particles in the gases from the gases in the third zone;

(e) effecting an internal recirculation of particles separated in the third zone to at least the first, wetting, zone, so that the particle concentration within the wetting reactor below the third zone is higher than the first particle concentration; and

(f) discharging purified gases from the purified gas outlet.

5,310,529

PROCESS FOR PREPARING PHOSPHORUS TRICHLORIDE

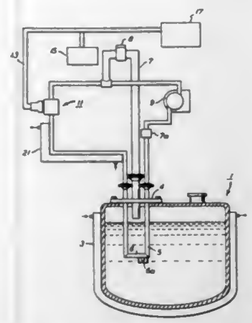
Macaulay S. Feld, Ellisville; David O. Fisher, Chesterfield; John J. Freeman, Webster Groves; Gregory J. Gervasio, Glencoe; Mark A. Hochwalt, Chesterfield; Leonard F. Laskowski, Clayton, and Evan E. Thomsen, Florissant, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 807,353, Dec. 16, 1991, which is a continuation-in-part of Ser. No. 726,490, Jul. 8, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,223

Int. Cl.[5] C01B *25/10*

U.S. Cl. 423—300 **8 Claims**

1. In a continuous commercial scale process for the production of phosphorus trichloride wherein phosphorus is caused to react with chlorine in a reaction zone within a reactor, the improvement which comprises providing a circulatory sampling pipe to withdraw a portion of the reaction mixture from the reaction zone, said pipe containing a window transparent to laser light, analyzing the contents of the reaction zone by means of a laser Raman spectrometer in optical communication with said contents through said window by means of an optrode and continuously controlling the reactor conditions in response to the analysis.



5,310,530

METHOD FOR DECREASING THE SULFUR CONTENT OF PHOSPHOROUS

Arndt Zschalich, Zscherndorf, and Rudolf Schumann, Raguhn, both of Fed. Rep. of Germany, assignors to Chemie AG Bitterfeld-Wolfen, Bitterfeld, Fed. Rep. of Germany

Continuation of Ser. No. 871,453, Apr. 21, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,884

Int. Cl.[5] C01B *25/04*

U.S. Cl. 423—322 **9 Claims**

1. A method for purifying phosphorus, comprising intensively mixing phosphorus and concentrated sulfuric acid to form an emulsion; breaking said emulsion into phosphorus and diluted sulfuric acid by contacting said emulsion with a diluent; and then immediately separating said phosphorus from said diluted sulfuric acid.

5,310,531

POLYCRYSTALLINE SILICON ROD FOR FLOATING ZONE METHOD AND PROCESS FOR MAKING THE SAME

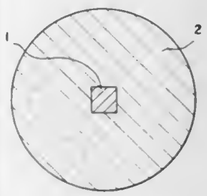
Yasuhiro Ikeda, and Kyoji Oguro, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 662,274, Feb. 28, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,784

Claims priority, application Japan, Feb. 28, 1990, 2-48954

Int. Cl.[5] C01F *3/00*

U.S. Cl. 423—324 **4 Claims**



1. A polycrystalline silicon rod for preparing a monocrystalline silicon rod for a semiconductor by a floating zone method wherein the monocrystalline silicon rod is prepared by a single passage of the floating molten zone through said polycrystalline silicon rod, said polycrystalline silicon rod comprising:

(a) a monocrystalline silicon rod portion having a longitudinal axis in the <100> direction at the center of the radial section of the polycrystalline silicon rod, and a polycrystalline silicon portion formed around said monocrystalline silicon rod portion by a chemical vapor growth method; and

(b) a first region of the sectional area of said polycrystalline silicon portion which is formed of coarsened silicon monocrystal grains surrounding said monocrystalline silicon rod portion and a second region of said sectional area which is formed of fine silicon micro-monocrystal grains surrounding said first region of said polycrystalline silicon portion and said first region and the monocrystalline silicon rod portion combined having a sectional area larger than the minimum sectional area of the floating molten zone.

5,310,532

PURIFICATION OF FULLERENES

James M. Tour; Walter A. Scrivens, and Peter V. Bedworth, all of Columbia, S.C., assignors to University of South Carolina, Columbia, S.C.

Filed Jun. 10, 1992, Ser. No. 896,193

Int. Cl.[5] C01B *31/00*

U.S. Cl. 423—445 B **14 Claims**

1. A method of purifying a mixture of fullerenes to obtain a preparation enriched in a fullerene of a selected molecular weight comprising;

adding a fullerene mixture to the top end of a column comprising activated carbon,

passing a solvent selected from the group consisting of aromatics and halogenated hydrocarbons in which said selected molecular weight fullerene is soluble through said column, and

recovering a fraction enriched in the fullerene of the selected molecular weight from the bottom end of the column.

5,310,533

PRODUCTION OF COPPER COMPOUNDS

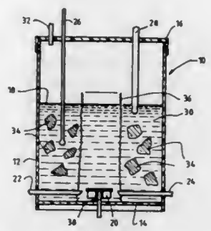
Christopher J. Browne, Burnie, Australia, assignor to Australian Copper Company Pty. Ltd., Youngtown, Australia

Filed Apr. 1, 1992, Ser. No. 862,631

Claims priority, application Australia, Aug. 1, 1989, PJ5552; Jun. 29, 1990, 58043/90

Int. Cl.[5] C01G *3/02*

U.S. Cl. 423—604 **9 Claims**



9. A method of producing copper compounds comprising contacting metallic copper with oxygen or an oxygen-containing gas and an aqueous solution consisting essentially of a soluble ammonium salt and ammonia, said salt being present in said solution in a concentration up to the solubility limit thereof, said ammonia being present in an amount such that initially said solution is alkaline, whereby as a result of said contact said metallic copper dissolves to form a copper amine and the concentration of said copper amine in solution increases until the saturation concentration of said copper amine in solution is reached, whereafter said copper amine continuously breaks down to form a water insoluble tribasic salt, and water soluble decomposition products, said water soluble decomposition products being available for further reaction with said metallic copper and said oxygen or oxygen-containing gas to thereby continuously form further copper amine to maintain the concentration of said copper amine in solution substantially at said saturation concentration, said tribasic salt being separated from said solution, an anion of said soluble ammonium salt being continuously replaced in said solution as it is removed by the formation of said tribasic salt, by the addition of an acid containing said anion at an equivalent rate accompanied by removal of said tribasic salt from said solution at a rate sufficient to maintain an acceptable level of solids in the reaction medium, thereby causing the continuous production of said tribasic salt in solid form.

5,310,534

PROCESS FOR DEALUMINIZATION OF THE SYNTHETIC ZEOLITES OF LARGE PORES, CATALYSTS AND SELECTIVE ORGANOPHILIC ADSORBENTS CONTAINING THE DEALUMINIZED ZEOLITES OBTAINED ACCORDING TO THE PROCESS AND ESSENTIALLY SILICIC BETA ZEOLITE

Francois Fajula; Elodie Bourgeat-Lami, both of Montpellier; Catherine Zivkov, Orthez; Thierry Des Courieres, Lyons, and Didier Anglerot, Lons, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Filed Nov. 26, 1991, Ser. No. 798,543

Claims priority, application France, Nov. 26, 1990, 90 14749

Int. Cl.[5] C01B *33/34;* **B01J** *20/18, 29/04*

U.S. Cl. 423—715 **21 Claims**

20. An essentially silicic beta zeolite, having a silica/alumina ratio of greater than or equal to about 800 and a crystallinity of greater than or equal to about 80%.

5,310,535

CARBOXAMIDE MODIFIED POLYAMINE CHELATORS AND RADIOACTIVE COMPLEXES THEREOF FOR CONJUGATION TO ANTIBODIES

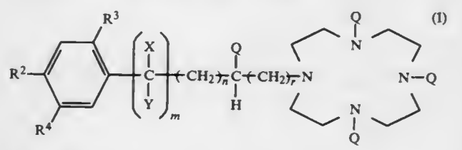
William J. Kruper, Jr., Sanford; William A. Fordyce, Midland, both of Mich., and A. Dean Sherry, Dallas, Tex., assignors to The Dow Chemical Company, Midland, Mich. and The University of Texas, Austin, Tex.

Filed Apr. 24, 1992, Ser. No. 874,244

Int. Cl.[5] A61K *43/00, 49/02*

U.S. Cl. 424—1.53 **6 Claims**

1. A method for the treatment of a disease state in a mammal which comprises administering to said mammal in effective amount of a pharmaceutical formulation comprising a conjugate with a pharmaceutically acceptable carrier wherein the conjugate is a compound of the formula



(I)

wherein:

each Q is independently hydrogen, $(CHR^5)_pCO_2R$; or $(CHR^5)_pC(O)N(R^6)_2$ with the proviso that at least one Q is $(CHR^5)_pC(O)N(R^6)_2$;

R at each occurrence is independently hydrogen, benzyl or C_1–C_4 alkyl;

each R^5 independently is hydrogen, C_1–C_4 alkyl or -(C_1–C_2 alkyl)phenyl;

each R^6 independently is hydrogen, C_1–C_9 alkyl or -(C_1–C_2 alkyl)phenyl;

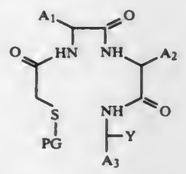
X and Y are each independently hydrogen or may be taken

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with an adjacent X and Y to form an additional carbon-carbon bond to produce an alkene or alkyne;
n is 0 or 1;
m is an integer from 0 to 10 inclusive;
p=1 or 2;
r=0 or 1;
with the proviso that n is only 1 when X and/or Y form an additional carbon-carbon bond;
R^2 and R^4 are independently hydrogen, amino, isothiocyanato, semicarbazido, thiosemicarbazido, maleimido, bromoacetamido or carboxyl;
R^3 is C_1–C_4 alkoxy, —OCH_2CO_2H, hydroxy or hydrogen;
with the proviso that R^2 and R^4 cannot both be hydrogen but one of R^2 and R^4 must be hydrogen; or
a pharmaceutically acceptable salt thereof;
complexed with an ion of a metal selected from ^{153}Sm, ^{166}Ho, ^{90}Y, ^{149}Pm, ^{159}Gd, ^{140}La, ^{177}Lu, ^{175}Yb, ^{47}Sc or ^{142}Pr and
covalently attached to an antibody or antibody fragment.

5,310,536
LIGANDS FOR IMPROVING METAL CHELATE FORMATION KINETICS
Ananthachari Srinivasan, St. Charles, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.
Filed Feb. 6, 1992, Ser. No. 832,149
Int. Cl.[5] A61K *49/02, 43/00*
U.S. Cl. 424—1.65 **8 Claims**

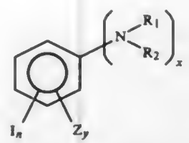
7. A diagnostic composition suitable for administration to a warm-blooded animal comprising:
a diagnostically effective quantity of a N_3S ligand having the general structure:



where at least A_1, A_2, or A_3 is $—(CH_2)_nNR_1R_2$, and at least one of the remaining A_1, A_2, or A_3 is $—(CH_2)_{n'}—X$, and the remaining A_1, A_2, or A_3 is H or an alkyl; Y is H or $—(CH_2)_{n''}—COOH$; X is a functional group for use in coupling the ligand to a biomolecule; R_1 and R_2 may be the same or different and are lower alkyl, R_1 or R_2 may optionally contain a functional group X, such that if R_1 or R_2 contains X, then the remaining A_1, A_2, or A_3 are H or an alkyl; n is from 2–5, n' is from 1–10, and n'' is from 0–4; and PG is a sulfur protecting group, wherein the ligand in coupled to a biomolecule and wherein the ligand is complexed with a radionuclide selected from the group consisting of ^{99m}Tc, ^{111}In, and ^{62}Cu; and
a pharmaceutically acceptable carrier.

5,310,537
COMPOSITIONS OF IODOANILINE DERIVATIVES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT
Carl R. Illig, Phoenixville, and Thomas J. Caulfield, Audubon, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.
Filed Mar. 1, 1993, Ser. No. 24,555
Int. Cl.[5] C07C *211/45;* **G01N** *21/00*
U.S. Cl. 424—5 **28 Claims**

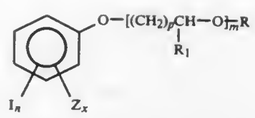
1. An orally or rectally administerable x-ray contrast composition in a dispersion form for visualization of the gastrointestinal tract comprising a contrast agent having the formula, or a pharmaceutically acceptable salt thereof:



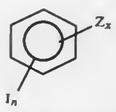
wherein
Z=H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;
R_1 and R_2 are independently H, C_1–C_{25} alkyl, cycloalkyl, acetyl or halo-lower-alkyl, wherein said C_1–C_{25} alkyl, cycloalkyl, and halo-lower-alkyl are optionally substituted with, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy and said acetyl is optionally substituted with fluoro-lower-alkyl, aryl, lower alkoxy, hydroxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy;
n is 1–4;
y is 1–4; and
x is 1 or 2; and a physiologically acceptable carrier comprising a surfactant selected from the group consisting of cationic, anionic, nonionic, and zwitterionic surfactants.

5,310,538
COMPOSITIONS OF IODOPHENOXY ALKYLENE ETHERS IN FILM-FORMING MATERIALS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT
Edward R. Bacon, East Greenbush, N.Y.; Carl R. Illig, Phoenixville, Pa.; Thomas J. Caulfield, Audubon, Pa.; Brent D. Douty, Coatesville, Pa., and Kurt A. Josef, Clifton Park, N.Y., assignors to Sterling Winthrop Inc., Malvern, Pa.
Filed Mar. 11, 1993, Ser. No. 29,484
Int. Cl.[5] A61K *49/04, 31/275, 31/19, 31/075*
U.S. Cl. 424—5 **50 Claims**

1. An x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine of a patient to form a barrier between said nutrient absorbing inner surface and the content of said intestine, said flexible film membrane to remain bound to said muscosal lining until eliminated by normal cell turnover comprising based on w/v:
(a) of from about 0.001 to about 15% of a polymeric material capable of forming a film membrane on the gastrointestinal tract in the pH range of from about 5 to about 8, and polymeric material being selected from the group consisting of
anionic polymers carrying negative charges in the ionized form, cationic polymers carrying positive charges in the ionized form, and neutral polymers, said neutral polymers having atoms containing polarizable electrons thereon selected from the group consisting of oxygen, nitrogen, sulfur, fluoride, chloride, bromide and iodide in combination with
(b) of from about 0.001 to about 15% of a divalent cation to potentiate the binding of said flexible film membrane to said mucusoal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++}; and
c) of from about 0.001 to about 75% of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein
Z=H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, alkoxycarbonyl, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;
R=C_1–C_{25} alkyl, cycloalkyl,



or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, lower-alkoxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy $(CR_1R_2)_p—(CR_3=CR_4)_mQ$, or $(CR_1R_2)_p—C\equiv C—Q$;
R_1, R_2, R_3 and R_4 are independently H or lower-alkyl, optionally substituted with halo;
x is 1–4;
n is 1–4;
m is 1–15;
p is 1–20; and
Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl in an aqueous, pharmaceutically acceptable carrier.

5,310,539
MELANIN-BASED AGENTS FOR IMAGE ENHANCEMENT
Robert F. Williams, San Antonio, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
Filed Apr. 15, 1991, Ser. No. 685,937
Int. Cl.[5] A61K *49/00, 49/02*
U.S. Cl. 424—9 **14 Claims**

1. A method of preparing an image-enhancing agent, the method comprising forming melanin from melanin precursors in the presence of paramagnetic metal at a level sufficient to form a melanin-paramagnetic metal compound where the melanin and paramagnetic metal have an association constant of at least 10^{20}.

5,310,540
METHOD FOR THE PREPARATION OF STABLE SUSPENSIONS OF HOLLOW GAS-FILLED MICROSPHERES SUITABLE FOR ULTRASONIC ECHOGRAPHY
Claude Giddey, Geneva, and Georges Dove, Carouge, both of Switzerland, assignors to Sintetica SA, Mendrisio, Switzerland
PCT No. PCT/EP91/01706, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO92/05806, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 13, 1991, Ser. No. 855,032
Claims priority, application European Pat. Off., Oct. 5, 1990, 90810768.3
Int. Cl.[5] A61K *49/00, 9/50*
U.S. Cl. 424—9 **22 Claims**

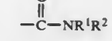
1. A method for preparing stable aqueous suspensions of air or gas filled microbubbles suitable for ultrasonic applications in living organisms, said method comprising the steps of:
a) converting a viscous aqueous solution of a filmogenic protein into a foam of air or gas filled bubbles by whipping with air or a pharmaceutically acceptable gas to produce microbubbles bound by a membrane of said protein, and
(b) subjecting, simultaneously or subsequently, the foaming solution to high shear by forcing it through narrow openings or channels for a time sufficient to reduce the size of the bubbles in the foam to values in a range of about 0.5–10 μm suitable for injection.

5,310,541
ANTIMICROBIAL RAWHIDE ANIMAL CHEW CONTAINING AN OXIDOREDUCTASE AND OXIDOREDUCTASE SUBSTRATE
Robert E. Montgomery, 8916 Hollywood Hills Rd., Los Angeles, Calif. 90046
Filed Aug. 27, 1992, Ser. No. 936,929
Int. Cl.[5] A61K *7/28, 37/50*
U.S. Cl. 424—50 **20 Claims**

1. An antimicrobial animal chew comprising a rawhide chewable carrier material, at least one oxidoreductase and at least one oxidoreductase substrate, said animal chew being made by the process comprising:
a) providing a rawhide animal chew:
b) applying said substrate to said animal chew by absorbing said substrate in liquid form into said animal chew and drying the substrate therein and thereon; and
c) thereafter coating said oxidoreductase on the outside of said animal chew and drying the coating thereon.

5,310,542
ORAL HYGIENE COMPOSITIONS CONTAINING ANTIPLAQUE AGENTS
Van Au, Peekskill, N.Y.; Robert G. Carson, Rahway, N.J.; Bijan Harirchian, South Orange, N.J., and Kurt M. Schilling, Verona, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 816,409, Dec. 31, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,707
Int. Cl.[5] A61K *31/70, 6/00*
U.S. Cl. 424—52 **29 Claims**

1. An oral hygiene composition comprising a suitable carrier and an effective plaque-inhibiting amount of at least one compound selected from the group consisting of an aldobionamide and a corresponding ammonium salt of aldobionic acid, wherein the compound includes (i) at least one β-galactosidic linkage and (ii) an amide group:



wherein R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical, an aromatic radical, a cycloaliphatic radical, an amino acid ester and mixtures thereof.

5,310,543
LIQUID DENTIFRICES
Peter L. Dawson, Upton, United Kingdom, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Nov. 16, 1992, Ser. No. 977,303
Claims priority, application United Kingdom, Nov. 19, 1991, 9124538
Int. Cl.[5] A61K *7/16*
U.S. Cl. 424—49 **6 Claims**

1. A stable liquid dentifrice composition having a viscosity between at least 50 and up to not more than 500 pa.s so as to hold onto toothbrush bristles once dispensed from a container, the composition comprising from 2 to 50% by weight of a particulate siliceous abrasive cleaning agent having a specific surface area of between 50 and 900 m^2/g, stably suspended in

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an aqueous liquid medium which is substantially free from alcohol and polyol-type humectants with the aid of from 0.25 to 2% by weight of a polysaccharide gum as suspending agent.

5,310,544
METHOD FOR TREATING TEETH TO REMOVE FLUOROSIS STAINS
Jose F. Alfaro, Independencia 2000, Privada Alfaro Fracc. San Pedro, Irapauto, Gto., Mexico Z.P. 36520
Continuation-in-part of Ser. No. 690,048, Apr. 23, 1991, abandoned. This application Sep. 1, 1992, Ser. No. 938,751
Int. Cl.[5] A61K 7/16, 9/68; A61C 15/00
U.S. Cl. 424—49 3 Claims

1. A method for removing fluorosis stains from teeth of a patient, the method consisting essentially of: p1 isolating for treatment a fluorosis-stained tooth;
treating a surface of the isolated tooth with an abrasive-free solution of hydrochloric acid having a concentration from about 6 to about 12N, for a period of time sufficient to significantly reduce staining thereon without removing enamel from the treated surface; and
neutralizing any residual acid on the tooth after the treating.

5,310,545
METHOD OF TREATMENT USING MOUTHWASHES CONTAINING STEROIDS AND ANTIFUNGAL AGENTS AND COMPOSITIONS OF MATTER
Drore Eisen, 6720 E. Beechlands Dr., Cincinnati, Ohio 45237
Continuation-in-part of Ser. No. 963,485, Oct. 21, 1992, which is a continuation-in-part of PCT/US92/02806, Apr. 10, 1992, and Ser. No. 802,646, Dec. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 683,380, Apr. 11, 1991, abandoned. This application Jan. 15, 1993, Ser. No. 6,287
Int. Cl.[5] A61K 7/28; A01N 45/00
U.S. Cl. 424—49 20 Claims

1. A composition of matter having a pH of 3.5 to 7 comprising a liquid aqueous carrier containing as active agents an antifungal effective amount of at least one antifungal agent and an anti-inflammatory effective amount of at least one anti-inflammatory steroid having a relative anti-inflammatory potency of at least 2.5 when compared to hydrocortisone.

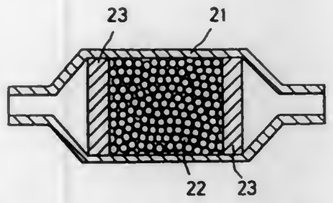
5,310,546
MOUTHRINSE AND METHOD OF PREPARATION
Jerry A. Douglas, Harrisburg, Ill., assignor to 7-L Corporation, Harrisburg, Ill.
Continuation of Ser. No. 755,149, Sep. 5, 1991, Pat. No. 5,174,990, which is a continuation-in-part of Ser. No. 603,570, Oct. 25, 1990, Pat. No. 5,104,644, which is a continuation-in-part of Ser. No. 476,153, Feb. 7, 1990, abandoned. This application Dec. 24, 1992, Ser. No. 327,199
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] A61K 7/16, 7/20, 33/40
U.S. Cl. 424—53 17 Claims

1. A mouthrinse preparation comprising between about 2.25% and about 0.65% hydrogen peroxide, between about 0.005% and about 0.1% zinc chloride, at least about 0.012% sodium citrate, at least about 0.03% sodium lauryl sulfate, at least about 0.006% citric acid and ethanol in an amount less than about 3%, said mouthrinse preparation having a pH such that the mouthrinse preparation remains stable upon continuous exposure to a temperature of 37° C. at atmospheric pressure for at lest 30 days.

5,310,547
COLORED COSMETIC STICKS
Patrick J. Dunphy, Wellingborough, United Kingdom; Alan J. Myers, Trumbull, Conn., and Richard T. Rigg, Springfield Garden, N.Y., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.
Continuation of Ser. No. 867,844, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 723,355, Jun. 28, 1991, Pat. No. 5,108,737. This application Nov. 5, 1992, Ser. No. 972,054
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] A61K 7/027, 7/021
U.S. Cl. 424—64 6 Claims

1. A method for coloring lips comprising contacting the lips with a cosmetic lipstick comprising:
(i) from about 0.5 to about 25% of water;
(ii) from about 1 to about 99% of a solidifying agent which is a wax; and
(iii) from about 0.001 to about 20% of a colorant which is an aluminum salt; and
wherein said stick is formulated with no higher than about 0.5% by weight of a C_{10}–C_{26} fatty acid sufficient to form an aluminum soap with said aluminum salt that would cause said lipstick to lose structure.

5,310,548
DEODORANTS, DEODORANT SHEETS, FILTER SHEETS AND FUNCTIONAL PAPERS AS WELL AS FILTERING MEDIUMS FOR EXHAUST GAS
Sumiaki Tsuru; Akihiko Yokoo, both of Tokyo; Takeshi Sakurai, Saitama, and Tetsuro Ogawa, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 512,323, Apr. 23, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 840,586
Claims priority, application Japan, Apr. 21, 1989, 1-102355; Apr. 28, 1989, 1-110993; Nov. 2, 1989, 1-286120; Jan. 10, 1990, 2-3198
Int. Cl.[5] A61L 9/01
U.S. Cl. 424—76.3 20 Claims



1. A deodorant comprising a ceramic material containing 5 to 100% by weight of a calcium phosphate compound having a molar ratio of calcium to phosphorus of 0.8 to 2.0, said ceramic material being selected from the group consisting of powders, granules, porous granules and porous blocks, and said ceramic material being carried on a supporting material or incorporated into a supporting material, so that said ceramic material is capable of performing as a deodorant.

5,310,549
SOLID CONCENTRATE IODINE COMPOSITION
Sandra L. Bull, Eagan, Minn., assignor to Ecolab Inc., St. Paul, Minn.
Filed Aug. 31, 1989, Ser. No. 401,092
Int. Cl.[5] A01N 59/22
U.S. Cl. 424—78.08 36 Claims

1. A storage stable cast solid iodine concentrate composition consisting essentially of:
(a) an iodine complex consisting essentially of from about 5 wt-% to 25 wt-% of a nonionic surfactant complexing agent and an iodine source present in a ratio of from about 1.5:1 to about 3:1 complexing agent to iodine wherein the concentration of titratable iodine is about 2 wt-% or greater of the composition;
(b) from about 30 wt-% to 70 wt-% of urea; and
(c) an effective pH lowering amount of acidulant.

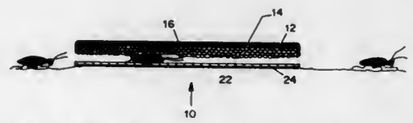
5,310,550
METHOD OF TREATING THROMBOCYTOPENIA USING HUMAN BCDF IN COMBINATION WITH IL-3
Tadamitsu Kishimoto, No. 5-31, Nakano 3-chome, Tondabayashi-shi, Osaka-fu; Toshio Hirano, Ibaraki; Hideo Kimura; Toshiyuki Ishibashi, both of Fukushima; Yukio Akiyama, and Akira Okano, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo and Tadamitsu Kishimoto, Tondabayashi, both of Japan
Division of Ser. No. 462,764, Jan. 10, 1990, Pat. No. 5,126,325. This application Jan. 9, 1992, Ser. No. 818,527
Claims priority, application Japan, Jan. 13, 1989, 1-6954; Jun. 26, 1989, 1-163087; Oct. 30, 1989, 1-282297
Int. Cl.[5] A61K 37/66, 37/02
U.S. Cl. 424—85.2 3 Claims

1. A method for treating thrombocytopenia, comprising: treating a subject suffering from thrombocytopenia with a composition containing a substance having human B cell differentiation activity in combination with interleukin three.

5,310,551
METHOD FOR INHIBITING PULMONARY OXYGEN TOXICITY
Craig D. Wegner, New Milford, and L. Gordon Letts, Newtown, both of Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.
Continuation of Ser. No. 679,870, Apr. 3, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,744
Int. Cl.[5] A61K 39/00, 39/395; C07K 15/28
U.S. Cl. 424—85.8 2 Claims

1. A method for reducing the severity of pulmonary oxygen toxicity in a patient susceptible thereto, which comprises prophylactically administering to the patient an agent selected from the group consisting of:
a) an antibody capable of interfering with ICAM-1-dependent adhesion, by binding to ICAM-1; and
b) a fragment of antibody (a), the fragment being capable of interfering with ICAM-1 dependent adhesion, by binding a ICAM-1.

5,310,552
DEVICE FOR THE BIOLOGICAL CONTROL OF COCKROACHES
Haim B. Gunner, Amherst, Mass.; Fernando Agudelo-Silva, San Francisco, Calif.; Carol A. Johnson, Haydenville, Mass., and Meir Broza, Haifa, Israel, assignors to EcoScience Corporation, Worcester, Mass.
Continuation of Ser. No. 732,057, Jul. 18, 1991, abandoned, which is a division of Ser. No. 324,461, Mar. 15, 1989, Pat. No. 5,057,315. This application Sep. 23, 1992, Ser. No. 949,756
The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.
Int. Cl.[5] A01N 63/00, 25/00; A01M 1/00
U.S. Cl. 424—93 Q 6 Claims



1. An apparatus for control of roaches comprising
a chamber having at least one opening for roaches to enter and exit the chamber, the chamber containing a live culture of a fungus selected from the group consisting of *Metarhizium* and *Beauveria*,
the chamber containing and maintaining an effective density of the fungus to infect the roaches, being attractive to roaches, wherein the openings for the roaches are proportional to the size of the roaches and the chamber geometry is designed so as to force the integument of the roaches into contact with an effective amount of the fungus to lethally infect the roaches with the fungus.

5,310,553
RECHARGEABLE ELECTROCHEMICAL CELL HAVING A LIQUID ELECTROLYTE, AND A LITHIUM/CARBON ANODE
Bernard Simon, Paris, and Jean-Pierre Boeuve, Marcoussis, both of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France
Filed May 28, 1992, Ser. No. 889,253
Claims priority, application France, May 31, 1991, 91 06590
Int. Cl.[5] H01M 4/60
U.S. Cl. 429—212 17 Claims

1. A rechargeable electrochemical cell comprising a cathode, a liquid electrolyte with a solute and at least one solvent, and an anode containing a highly crystallized carbon-containing material with a degree of crystallinity dg greater than 0.8 and capable of intercalating lithium ions, wherein said carbon-containing anode material is made up of single-phase grains, the surface of each grain being provided with a thin layer which is impermeable to said electrolyte solvent, but which allows lithium to be diffused, the impermeability being either intrinsic, or caused by passivation of said layer as a result of the reactivity of said electrolyte, said thin layer of the anode material having a composition different from that of said carbon-containing material, and where the degree of crystallinity dg of the carbon-containing material is defined as

$$dg = (3.44 - d_{002})/0.086$$

where d_{002} is the distance between graphite planes, which distance is measured by X-ray spectroscopy.

5,310,554
HIGH PURITY BETA-CAROTENE
W. Geoffrey Haigh, Seattle, Wash., assignor to Natural Carotene Corporation, Tukwila, Wash.
Filed Oct. 27, 1992, Ser. No. 967,897
Int. Cl.[5] A61K 9/16, 9/48, 9/20, 35/78
U.S. Cl. 424—439 26 Claims

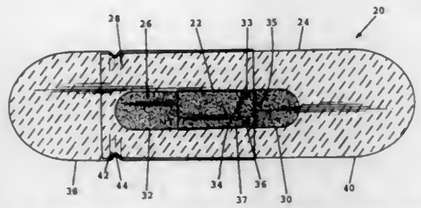


1. A method for purifying beta-carotene from plants, which comprises:
extracting the plant with a solvent to produce a crude mixture of carotenes in the extract;

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removing the solvent from the extract and resuspending the extract in a non-polar solvent;
chromatographing the extract on a column of deactivated alumina; and
collecting fractions from the column which contain the purified beta-carotene.

5,310,555
ORAL NUTRITIONAL AND DIETARY COMPOSITION
William Zimmer, Hollandale, Wis., assignor to Midwestern Bio-Ag Products and Services, Inc., Blue Mounds, Wis.
Filed Jul. 24, 1992, Ser. No. 920,104
Int. Cl.[5] A23K *1/18*
U.S. Cl. 424—438 **11 Claims**



1. A dietary adjunct composition comprising a double capsule, said double capsule including an inner capsule and an outer capsule spaced apart and enclosing said inner capsule;
said inner capsule including a gelatin shell and live intestinal or rumen microorganisms therein, wherein said intestinal or rumen microorganisms are bacteria, wherein said bacteria are one or more of *Lactobacillus acidophilus, Lactobacillus lactis, Lactobacillus casei, Streptococcus faecium,* or *Pediococcus cerevisiae;*
said outer capsule including a gelatin shell and a nutritional supplement therein, wherein said nutritional supplement is selected from the group consisting of vitamins, minerals, and a combination thereof;
said vitamins including one or more of vitamin A, vitamin D, vitamin E, vitamin B_{12}, riboflavin, niacin, pantothenic acid, thiamine, choline, folic acid, biotin, vitamin K, and vitamin C, and
said minerals including one or more of cobalt, copper, iron, manganese, zinc, and selenium.

5,310,556
COSMETIC COMPOSITION
Philip D. Ziegler, Oxford, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jun. 9, 1993, Ser. No. 74,184
Int. Cl.[5] A61K *7/48*
U.S. Cl. 424—401 **7 Claims**

1. A cosmetic composition comprising:
(i) from about 5 to 80% by weight of water;
(ii) from about 0.5 to 30% by weight of petroleum jelly;
(iii) from about 0.01 to 10% by weight of sterol selected from the group consisting of cholesterol, stigmasterol, sitosterol, ergosterol and combinations thereof;
(iv) from about 0.001 to 5% by weight of lecithin; and
(v) from about 0.5 to 20% by weight of a C_{16}–C_{22} alkanoic triglyceride which is a sunflower seed oil.

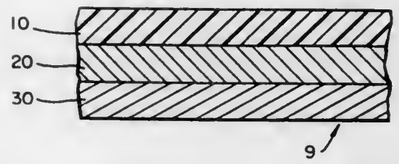
5,310,557
SHAPED ARTICLES BASED ON POLYETHER BLOCK AMIDE ELASTOMERS
Heinz-Dieter Brandt; Rolf Dhein, both of Krefeld; Herbert Hugl, Bergisch Gladbach; Doris Hackemüller, Düsseldorf, and Wilhelm Stendel, Wupperal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 3, 1992, Ser. No. 971,163
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137273
Int. Cl.[5] A01N *25/34*
U.S. Cl. 424—411 **13 Claims**

1. Shaped articles which contain active compounds, characterized in that they consist essentially of, as the carrier, thermoplastic elastomers based on polyether block amides and, as the active compounds, insecticides or acaricides having vapor pressures below about 1.3×10^{-5} mbar at 20° C., an optionally containing additives, said shaped articles having significantly improved flea-killing capacity as compared to shaped articles having the same carrier but active compounds with vapor pressures above about 1.3×10^{-5} mbar at 20° C. instead of said active compounds having vapor pressures below about 1.3×10^{-5} mbar at 20° C.

5,310,558
PROGRAMMED RELEASE ORAL SOLID PHARMACEUTICAL DOSAGE FORM
Franco Pozzi, Como, and Pia Furlani, Milan, both of Italy, assignors to Zambon Group S.P.A., Venice, Italy
Continuation of Ser. No. 724,930, Jul. 2, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,669
Claims priority, application Italy, Jul. 4, 1990, 20849 A/90; Dec. 19, 1990, 22442 A/90
Int. Cl.[5] A61K *9/42, 9/56*
U.S. Cl. 424—476 **21 Claims**

1. A programmed release oral solid pharmaceutical dosage form comprising a core, containing the active ingredient, coated by a layer comprising a mixture of a hydrophobic material selected from the group consisting of esters of higher fatty acids with higher alcohols, higher alcohols, higher fatty acids, salts of higher fatty acids, esters of glycerine with higher fatty acids, esters of higher fatty acids with polyethyleneglycol, wax, paraffin oil and mixtures thereof having a melting point between 50° C. and 90° C. and a non-ionic surfactant having a HLB value between 10 and 16, the amount of the surfactant being from 5 to 20% by weight with respect to the hydrophobic material, and a pharmaceutically acceptable water-soluble film forming material selected from the group consisting of hydroxyalkyl cellulose, polymethacrylic acid esters and polyvinylpyrrolidone in an amount of from 5 to 30% by weight with respect to the hydrophobic material.

5,310,559
DEVICE FOR CONTROLLED RELEASE AND DELIVERY TO MAMMALIAN TISSUE OF PHARMACOLOGICALLY ACTIVE AGENTS INCORPORATING A RATE CONTROLLING MEMBER WHICH COMPRISES AN ALKYLENE-ALKYL ACRYLATE COPOLYMER
Kishore Shah, Bridgewater, and Agis Kydonieus, Kendall Park, both of N.J., assignors to Hercon Laboratories Corporation, New York, N.Y.
Continuation of Ser. No. 434,629, Nov. 13, 1989, abandoned, which is a continuation of Ser. No. 292,040, Dec. 30, 1988, abandoned, which is a continuation of Ser. No. 123,051, Nov. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 847,635, Apr. 3, 1986, Pat. No. 4,758,434, which is a continuation-in-part of Ser. No. 657,911, Sep. 5, 1984, abandoned, which is a continuation-in-part of Ser. No. 413,658, Sep. 1, 1982, abandoned. This application Oct. 21, 1992, Ser. No. 964,478
The portion of the term of this patent subsequent to Jul. 19, 2005, has been disclaimed.
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—448 **31 Claims**

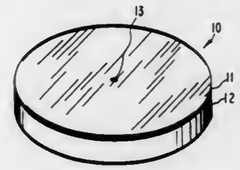


1. A device for the controlled release and delivery to mammalian tissue of a pharmacologically active agent comprising:
(i) at least one polymeric reservoir lamina having a first reservoir lamina surface and, opposite thereto, a second reservoir lamina surface, said reservoir lamina consisting essentially of a first polymeric material and a pharmacologically active agent intimately admixed therewith, (a) said pharmacologically active agent being physically and chemically compatible with said first polymeric material and (b) said first polymeric material being capable of permitting release of said pharmacologically active agent from either said first reservoir lamina surface or said second reservoir lamina surface; and
(ii) coated on at least a portion of said first reservoir lamina surface and/or said second reservoir lamina surface sufficient to provide a desired degree of control, a control membrane lamina having a first control membrane lamina surface and, opposite thereto, a second control membrane lamina surface, said control membrane lamina, prior to utilization of said device consisting essentially of a second polymeric material which consists essentially of at least one C_2–C_4 lower olefin-C_1–C_8 alkyl acrylate and/or methacrylate copolymer having 2–90% by weight of alkyl acrylate and/or methacrylate monomeric units, taken alone, or taken further together with, in intimate admixture, a third polymeric material consisting essentially of a C_2–C_4 polyalkylene corresponding to the C_2–C_4 lower alkylene of said copolymer,
said third polymeric material being compatible with said second polymeric material, said control membrane lamina being juxtaposed with said polymeric reservoir lamina at said first control membrane lamina surface.

5,310,560
MEDICINE FOR THE TREATMENT OF ILLNESSES OF THE RESPIRATORY ORGANS
Josef O. Widaner, Allschwil, Austria, assignor to Medichemie AG, Ettingen, Switzerland
Filed May 5, 1992, Ser. No. 879,339
Claims priority, application Switzerland, May 15, 1991, 1452/91-0
Int. Cl.[5] A61K *9/48, 9/30*
U.S. Cl. 424—451 **9 Claims**

1. A pharmaceutical gelatin capsule or polymer coated tablet for the treatment of acute and chronic inflammatory illness of the respiratory organs, comprising as the active principle chenodeoxycholic acid in admixture with suitable carriers or excipients, and a gelatin encapsulating agent or polymer coating to encapsulate or coat said active principle.

5,310,561
ANTIEMETIC THERAPY
Francisco Jao, San Jose; Hoa T. Huynh, Fremont, and Patrick S. L. Wong, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Division of Ser. No. 580,030, Sep. 10, 1990, Pat. No. 5,166,145. This application Sep. 21, 1992, Ser. No. 947,633
Int. Cl.[5] A61K *9/20*
U.S. Cl. 424—465 **5 Claims**



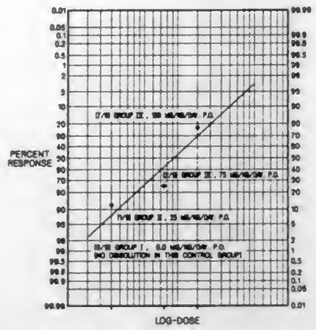
1. A dosage form for administering an antiemetic and antinausea drug orally to a patient, wherein the dosage form comprises:
(a) a wall that surrounds a compartment;
(b) a composition in the compartment comprising a polymer that expands in the presence of fluid that enters the compartment;
(c) at least on exit passageway in the wall that connects the exterior with the interior of the dosage form; and, wherein the dosage form is characterized by:
(d) a therapeutic composition in the compartment comprising 1 mg to 400 mg of the antiemetic and antinausea drug ondansetron, which ondansetron is delivered from the dosage form essentially-free of being retained in the exit passageway.

5,310,562
COMPOSITION AND METHOD FOR REPARATION AND PREVENTION OF FIBROTIC LESIONS
Solomon B. Margolin, 6723 Desco Dr., Dallas, Tex. 75225
Continuation of Ser. No. 737,914, Jul. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 440,978, Nov. 22, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 947,995
Int. Cl.[5] A61K *9/02, 9/14, 9/20, 9/48*
U.S. Cl. 424—489 **18 Claims**

1. A pharmaceutical composition for reparation and prevention of fibrotic lesional tissue in a mammal, comprising 5-meth-

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yl-1-phenyl-2-(1H)-pyridone as an active anti-fibrotic ingredient present in an internally administered dosage form in an



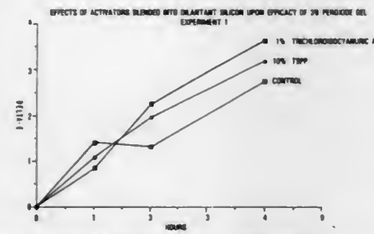
amount of from about 25 mg per kilogram of body weight per day to about 150 mg per kilogram of body weight per day.

5,310,563

DENTAL MATERIAL AND METHOD FOR APPLYING PREVENTATIVE AND THERAPEUTIC AGENTS

John Curtis, Bloomsbury, and Salim Nahoo, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 25, 1991, Ser. No. 782,700
Int. Cl.[5] A61K *6/00, 6/08, 33/40, 31/74*
U.S. Cl. 424—616 **10 Claims**



1. A method of whitening teeth comprising:

shaping a dental composition to conform to a tooth surface, said dental composition comprising a non-absorbing, non-erodible dilatant silicone polymer composition and at least one bioactive whitening agent;

contacting said dental composition against said tooth surface for sufficient time to release said whitening agent and whiten said teeth; and

removing said dental composition from said tooth surface.

5,310,564

MULTIPLE FLAVOR CONTAINER

Hans M. Kimm, P.O. Box 188, Elmendorf AFB, Ak. 99506

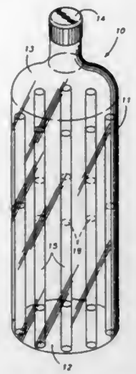
Filed Feb. 16, 1993, Ser. No. 17,605
Int. Cl.[5] B65D *1/04, 77/08, 85/72*
U.S. Cl. 426—115 **2 Claims**

1. A multiple flavor container, comprising,

a flexible container side wall, a container floor, a container neck, and a container cap mounted to the neck, with the container symmetrically oriented about a container axis, and

a plurality of tubular members mounted in contiguous communication to the container side wall within the container between the container neck and the container floor, with the tubular members oriented concentrically about the axis, and each of the tubular members having a frangible portion, and

a liquid flavoring contained within the tubular members,



whereupon rupturing of the frangible portion effects projection of the liquid flavoring within the container, with the container having a container fluid therewithin for mixture with the liquid flavoring.

5,310,565

METHOD OF REMOVING ANTIBIOTICS FROM MILK

James E. Geyer, Baraboo, Wis., assignor to Dairy Technology, Ltd., Baraboo, Wis.

Filed Apr. 10, 1992, Ser. No. 866,905
Int. Cl.[5] A23C *7/04*
U.S. Cl. 426—271 **20 Claims**

1. A method for removing antibiotics from milk, comprising the steps of:

a) heating milk contaminated with an antibiotic to a temperature sufficient to solubilize fats;

b) contacting the milk with a resin for a period of time sufficient to allow the resin to extract antibiotics contained in the milk without substantially changing the composition of the milk; and

c) collecting the milk.

5,310,566

METHOD OF ENSURING CONSTANT PRODUCT QUALITY AND SAFETY WHEN TAILBACK CONDITIONS OCCUR IN PASTEURIZERS

Gerd Baudendistel, Schwieberdingen, Fed. Rep. of Germany, assignor to Otto Tuchenhagen GmbH & Co. KG, Buchen, Fed. Rep. of Germany

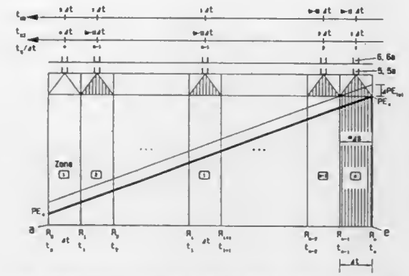
PCT No. PCT/EP91/00502, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/15128, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 15, 1991, Ser. No. 934,451
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1990, 4010921
Int. Cl.[5] A23L *3/00*
U.S. Cl. 426—231 **20 Claims**

1. A method of ensuring constant product quality and safety when tailbacks occur in a pasteuriser, the pasteuriser being operated on a throughfeed basis in such a manner that the product passes from a pasteuriser inlet, through different temperature zones including a superheating zone and a pasteurising zone divided at least in part into controllable sub-zones, to a pasteuriser outlet, a keep-hot process being employed in the pasteurising zone to pasteurise the product, comprising:

moving the product through said pasteuriser, from the pasteuriser inlet to the pasteuriser outlet, at a constant throughfeed speed at which, in the absence of tailbacks, the product is pasteurized,

on the occurrence of a tailback, cooling a section of the pasteurising zone to a temperature which avoids an increase in the number of pasteurisation units applied in that section to the product up to that time to a level above a predetermined acceptable tolerance level, a pasteurising unit being defined as the pasteurising effect obtained by maintaining a product of 60° C. for 1 minute,

beginning the cooling at an exit end of the pasteurising zone and extending the cooling process towards an entry end of



the pasteurising zone at a speed equal in magnitude to the throughfeed speed,

as the cooling process progresses from the entry end of the pasteurising zone to the outlet end, switching off the keep-hot process,

at the end of the tailback time t_S, determining the time of duration t_{KD} of the cooling process at whatever final position the cooling process has then reached by the difference between the pasteurising time t_p and the tailback time t_S, and

subsequently switching on the keep-hot process again at the throughfeed speed in the section which has been cooled.

5,310,567

METHOD FOR DYEING STRAWBERRY

Kazuo Nakaji, Fujiidera; Yoshi Sawada, Fukushima, and Tetsuya Sagoh, Nara, all of Japan, assignors to House Food Industrial Co., Ltd., Higashi-Osaka, Japan

Division of Ser. No. 745,183, Aug. 15, 1991, Pat. No. 5,238,695.
This application Mar. 29, 1993, Ser. No. 38,251
Claims priority, application Japan, Aug. 16, 1990, 3-216768
Int. Cl.[5] A23L *1/275*
U.S. Cl. 426—250 **6 Claims**

1. A method for dyeing strawberries comprising the steps of charging strawberries, the cuticula layer of which has been removed, in a container together with a dyeing solution comprises 0.03 to 0.08% by weight of (a-1) a lac dye or (a-2) a combination of a lac dye and a cochineal dye; 0.064 to 0.18% by weight of (b) alum; 0.08 to 0.3% by weight of (c) L-ascorbic acid and/or a salt thereof; and 0.20 to 0.7% by weight of (d) a phosphoric acid salt; degassing the contents of the container; then sealing the container and heating the sealed container.

5,310,568

ACTIVE CHARCOAL PACKETS FOR PURIFICATION OF IMPURE AQUEOUS MEDIA

Hedi Lini, Saint Brice, France, assignor to Ceca S.A., Puteaux, France

Filed Nov. 2, 1992, Ser. No. 970,022
Claims priority, application France, Oct. 31, 1991, 91 13441
Int. Cl.[5] C12H *1/00*
U.S. Cl. 426—422 **7 Claims**

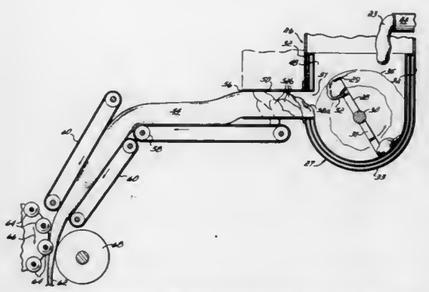
1. A packaged active agent suited for purifying an impure aqueous medium, comprising a unit purifying amount of active charcoal powder sealedly confined within a wrapping film of a water-soluble polymer, said active charcoal powder having a capacity to adsorb that amount of said water-soluble polymer that dissolves in such aqueous medium upon introduction therein said water-soluble polymer being polyvinyl alcohol.

5,310,569

METHOD FOR PRODUCING A STRESS FREE CONTINUOUS DOUGH STREAM

Ben Muller, Loveland, Ohio, assignor to Rykaart, Inc., Hamilton, Ohio

Filed Dec. 3, 1992, Ser. No. 985,551
Int. Cl.[5] A21D *8/00;* **A23P** *1/00*
U.S. Cl. 426—504 **12 Claims**



1. A method for continuously producing a stress free sheet of dough comprising the sequential steps of:

continuously supplying a regulated quantity of blended dry ingredients to a mixing chamber to create a mixed stream of dry ingredients;

continuously injecting a regulated volume of liquid ingredients into said continuously moving stream of dry ingredients;

continuously mixing said dry ingredients and said liquid ingredients to form a dough paste stream;

continuously kneading said dough paste stream to form a continuous dough stream;

after kneading of said dough stream, continuously discharging said dough stream without damaging a gluten network of said dough developed during said kneading step, said dough stream being discharged through a discharge conduit of pre-determined flow resistance, said dough stream being formed from generally oblate spheroids of dough which are repeatedly lapped onto one another in said discharge conduit as a result of centrifugal force generated during said kneading step, said generally oblate spheroids of dough accumulating in said discharge conduit and forming said dough stream upon exiting a discharge orifice of said discharge conduit; and

forming said dough stream after emerging from said discharge orifice of said discharge conduit into a continuously moving sheet of dough while maintaining said gluten network in an undamaged condition.

5,310,570

HUNGER SUPPRESSING FOODSTUFF AND METHOD

Opokua Kwapong, and Valerie Fedun-Jacklin, both of Valhalla, N.Y., assignors to PepsiCo., Inc., Purchase, N.Y.

Filed Jan. 16, 1992, Ser. No. 821,633
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—590 **10 Claims**

1. A method of supressing hunger in a subject in need thereof which comprises administering orally to said subject a foodstuff, said foodstuff comprising; (i) an intensive sweetener, (ii) an amount of acid sufficient to maintain a total titratable acidity

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in excess of 100, and (iii) a buffer to maintain the pH of a solution of said foodstuff above 2.5; said amount of acid effective to suppress hunger on later ingestion of food; wherein the titratable acidity of said foodstuff which is attributable to a given acid present therein is related to the amount of said acid in pounds present therein by the equation;

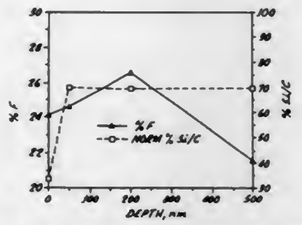
$$\text{titratable acidity} = \frac{\text{pounds of acid}}{\text{gal. of foodstuff}} \times \frac{11.9826}{(\text{mol. wt. of acid/no. of electrons}) \div 1000 \times 0.1}$$

5,310,571

CHEMICAL TREATMENT TO IMPROVE OXYGEN PERMEABILITY THROUGH AND PROTEIN DEPOSITION ON HYDROPHILIC (SOFT) AND RIGID GAS PERMEABLE (RGP) CONTACT LENSES

David Meadows, Mission Viejo, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Sep. 1, 1992, Ser. No. 938,937
Int. Cl.[5] G02C *7/04*
U.S. Cl. 427—2 **20 Claims**



1. A method for treating hydrophilic and rigid gas permeable contact lenses, said method comprising:

purging a hydrated contact lens, formed from a polymer comprising hydrogen atoms, of substantially all water and oxygen; and

exposing the purged contact lens to a fluorine-containing gas at non-plasma conditions for a period of time and at a temperature sufficient to replace hydrogen atoms in the polymer in order to inhibit protein and lipid deposits on said contact lens.

5,310,572

PROCESS FOR FORMING A COATED ACTIVE AGENT-CONTAINING ARTICLE

John T. Woodard; Martin C. Musolf, and Patrick J. Miller, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 787,749, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 10,484, Feb. 3, 1987, abandoned. This application Aug. 31, 1992, Ser. No. 938,376
Int. Cl.[5] A61K *9/22*
U.S. Cl. 427—3 **14 Claims**

1. A process for forming an elastomeric coating on an active-agent-containing core for the controlled release of the active agent through the elastomeric coating which comprises the following steps:

A) preparing a polyorganosiloxane latex, which is free of organometallic catalysts, as follows:

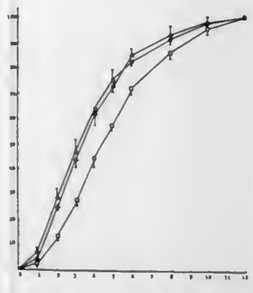
i) forming a first solution by dissolving 0.5 to 15 parts by weight of one or more alkoxy silicon compounds of the formula $R'_aSi(OR'')_{4-a}$ in 100 parts by weight of a liquid hydroxyl endblocked polydiorganosiloxane polymer of the formula $HO(R_2SiO)_xH$;

ii) forming a second, aqueous solution by dissolving from 15 to 75 millimoles of an anionic surfactant in approximately 50 to 200 parts by weight of water;

iii) mixing said first and second solution together to form a homogenous emulsion;

iv) holding said homogenous emulsion at room temperature and at an acid pH for a period in excess of 5 hours whereby a crosslinked polyorganosiloxane latex is formed; and

v) neutralizing said emulsion with a base, thereby terminating the crosslinking reaction; where R is selected from the group consisting of phenyl, vinyl, alkyl, and 3,3,3-trifluoropropyl radicals, R' is a monovalent hydrocarbon radical having up to 12 carbon atoms, R'' is an alkyl radical having 1 to 6, inclusive, carbon atoms, x has an average value in the range of from 3 to 100, inclusive, and a is 0 or 1;



B) blending 100 parts by weight of said crosslinked polyorganosiloxane latex formed in step A hereof with from 5 to 50 parts by weight of colloidal silica particles and 8 to 100 parts by weight of a water-dispersible organic material selected from the group consisting of polyvinylpyrrolidone and polyhydric alcohols and esters thereof, thereby forming an aqueous coating composition;

C) adjusting the viscosity of said coating composition, as necessary, to a range which permits coating of an active core;

D) applying said aqueous coating composition to the exterior surfaces of said active core; and

E) evaporating the water on said exterior surfaces of said active core whereby an elastomeric film is formed.

5,310,573

METHOD OF CONTROLLING THICKNESS OF COATED FILM ON WEB-LIKE MEMBER BY ROLL COATER

Ichiro Tanokuchi, Kurashiki, and Takao Ikenaga, Tsukubo, both of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 20, 1992, Ser. No. 963,894
Claims priority, application Japan, Oct. 23, 1991, 3-303972; Dec. 16, 1991, 3-352796
Int. Cl.[5] B05D *1/28*
U.S. Cl. 427—9 **15 Claims**

1. A method of controlling thickness of a coated film of paint on a continuously moving sheet member, the paint being transferred and coated on the sheet member by a roll coater comprising a pickup roll and an applicator roll, at least a surface of the applicator roll being formed of an elastic material, the method comprising the steps of:

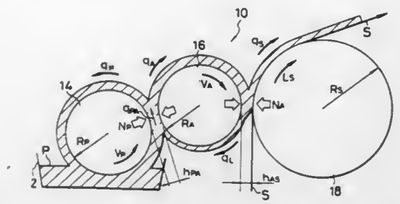
determining a distance between the pickup roll and the applicator roll;

determining a rotating speed of the pickup roll and a rotating speed of the applicator roll;

determining a total flow rate in accordance with the determined distance between the pickup roll and the applicator roll and the determined rotating speed of the pickup roll and the rotating speed of the applicator roll;

determining a supply flow rate of paint delivered to the sheet member by rotation of the applicator roll in accordance with the determination of the total flow rate;

determining a distance between the applicator roll and the sheet member;



determining a leak flow rate in accordance with the determined rotating speed of the applicator roll and the distance between the applicator roll and the sheet member; and

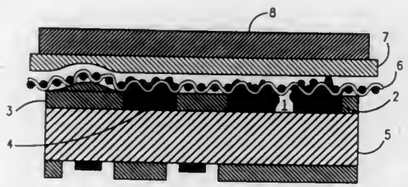
controlling the thickness of the coated film of paint in accordance with the determination of the supply flow rate and the determination of the leak flow rate.

5,310,574

METHOD FOR SURFACE MOUNT SOLDER JOINTS

Damian J. Holtmann, Danbury, Conn., assignor to Mask Technology, Inc., Santa Ana, Calif.

Filed May 12, 1992, Ser. No. 881,872
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—58 **18 Claims**



1. A process for the forming of solder deposits on surface mount device pads comprising the steps of:

a) providing a printed circuit board having solder deposited on the pads;

b) covering said board with a mesh material;

c) placing said board with the mesh thereon between surfaces capable of uniform compression;

d) pressing together said surfaces;

e) placing said thus prepared circuit board at any orientation in a heat transfer fluid medium maintained at an elevated temperature whereby the solder melts;

f) removing said circuit board from the medium;

g) cooling said circuit board to ambient temperature while compressed; and

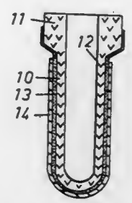
h) removing said circuit board from between the compressive surfaces and the mesh.

5,310,575

METHOD OF MAKING A POROUS CERAMIC PROTECTIVE LAYER ON AN ELECTRODE OF AN ELECTROCHEMICAL SENSOR FOR EXPOSURE TO HOT GAS

Karl-Hermann Friese, Leonberg; Hans-Martin Wiedenmann, Stuttgart, and Eva Söll, Frankfurt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 477,982, May 3, 1990, abandoned. This application Apr. 15, 1992, Ser. No. 869,893
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1987, 3737215
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—126.3 **8 Claims**



1. A method of making a porous ceramic protective layer on at least one electrode of an electrochemical measurement sensor for exposure to hot gas which is to be measured by said sensor for determining the oxygen content in the gas, said sensor having a solid electrolyte of oxygen-ion-conducting oxide composed predominantly of stabilized zirconium dioxide and having at least one said electrode on one side of the solid electrolyte, said method comprising the steps of:

co-precipitating the hydroxides corresponding to an aluminum oxide matrix material and a solid electrolyte oxide, said matrix material being selected from the group consisting of aluminum oxide, magnesium spinel, and mixtures of aluminum oxide and magnesium spinel, and said solid electrolyte oxide consisting essentially of stabilized zirconium dioxide, said hydroxides being co-precipitated in a proportion that will produce a content of from 15 to 50% by volume of said solid electrolyte oxide in a calcined precipitate;

then calcining the precipitated hydroxides to form a mixed oxide powder, and

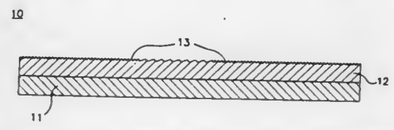
applying said mixed oxide powder on said at least one electrode of said sensor.

5,310,576

ENHANCEMENT OF ELECTROMAGNETIC BARRIER PROPERTIES

Kirit Patel, Spencer, and John R. Pennace, Paxton, both of Mass., assignors to FLEXcon Company, Inc., Spencer, Mass.

Continuation of Ser. No. 471,415, Jan. 29, 1990, Pat. No. 5,211,997. This application Nov. 9, 1992, Ser. No. 973,842
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] B44F *1/10*; B32B *3/00*; C23C *16/00*; B05D *5/00*
U.S. Cl. 427—160 **14 Claims**



1. The method of altering the properties of a structure which comprises the steps of:

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(a) providing a substrate,
(b) applying a surface layer upon said substrate, said surface layer being a metallic coating applied by vacuum metalization, and
(c) modifying said surface layer by microembossing said surface layer with a plurality of sets of patterns, said plurality of sets of microembossed patterns each having a line density between about 100 and 50,000 lines per square centimeter, in order to increase the barrier properties of said structure.

5,310,577
PROCESS FOR PRODUCING PLASTIC LENS
Shoji Mase; Noboru Otani, both of Odawara, and Motoaki Yoshida, Tokyo, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Feb. 21, 1992, Ser. No. 839,263
Claims priority, application Japan, Feb. 21, 1991, 3-049105; Jul. 5, 1991, 3-165397
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—164 **6 Claims**

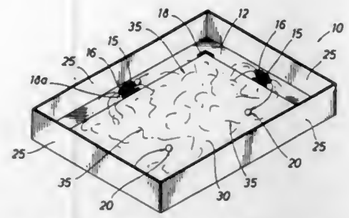
1. A process for producing a plastic lens, which comprises;
(1) applying a primer coating composition composed mainly from a blocked polyisocyanate and a polyol onto a surface of a plastic lens substrate and heating the primer coating composition to form a primer layer of a thermoset polyurethane, the blocked polyisocyanate being a polyisocyanate blocked with a β-diketone,
(2) forming a hard coating layer on the primer layer from a silicon-based resin and
(3) vapor-depositing an inorganic material or inorganic materials on the hard coating layer to form a single-layered or multi-layered anti-reflection coating.

5,310,578
DEPOSITION OF COSMETICALLY FUNCTIONAL MATERIAL ONTO PIGMENTS AND FILLERS
Angelika Thurn-Müller, Frankenthal, Fed. Rep. of Germany; Jane Hollenberg, New York, and Ian Scott, Scarsdale, both of N.Y., assignors to Merck Patent Gesellschaft, Darmstadt, Fed. Rep. of Germany
Filed Sep. 17, 1990, Ser. No. 583,383
Int. Cl.[5] B05D *7/00;* **C08J** *7/00*
U.S. Cl. 427—220 **12 Claims**

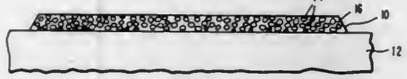
1. A process for coating the surface of a pigment or filler particle with an oleaginous material, comprising mixing an aqueous suspension of the pigment or filler with an emulsion of water-insoluble oleaginous material and adding a component capable of breaking the emulsion to the thus obtained mixture, whereby the emulsion is broken and the emulsified material coalesces onto the surface of the pigment or filler particles.

5,310,579
METHOD AND APPARATUS FOR PAINTING A SURFACE BY MOVING A DEVICE THROUGH A PAINT RESERVOIR AND ACROSS THE SURFACE
Mark A. Fornataro, Houston, Tex., assignor to Creative Time, Inc., Houston, Tex.
Filed Dec. 16, 1992, Ser. No. 991,470
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—290 **16 Claims**

13. A method for applying a medium to the surface of an object, wherein the medium is selected from the group consisting of paint, ink, dyes and colorings, the method comprising:
(a) affixing the object to a holder;
(b) forming a reservoir of the medium on the holder; and
(c) tilting the holder in a manner sufficient to force a medium distribution device to travel through the medium reservoir and across the surface of the object to distribute the medium along t he travel path of the medium distribution device.



5,310,580
ELECTROLESS METAL ADHESION TO ORGANIC DIELECTRIC MATERIAL WITH PHASE SEPARATED MORPHOLOGY
Eugene J. O'Sullivan, Upper Nyack; Terrence R. O'Toole, Webster; Judith M. Roldan, Ossining; Lubomyr T. Romankiw, Briarcliff Manor; Carlos J. Sambucetti, Croton-on-Hudson, and Ravi Saraf, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 27, 1992, Ser. No. 874,665
Int. Cl.[5] B05D *2/06*
U.S. Cl. 427—307 **16 Claims**

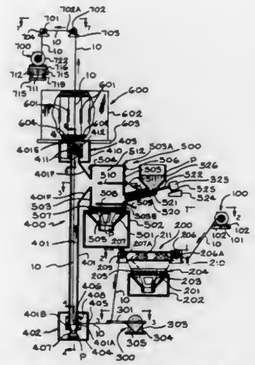


1. A method of improving adhesion of electroless metal deposited on an organic dielectric layer comprising the steps of:
forming an organic dielectric layer by applying a ternary solution including a polar solvent and two polymer precursors which are separable into two polymer phases onto a substrate;
heating the layer to separate the solution into two phases dispersed with different order for producing a rough surface;
exposing the phase separated layer to an alkaline solution to produce a more roughened surface by etching of one of the polymer phases;
seeding the roughened surface by immersion in a seeding bath containing a catalyst seeding agent; and
electrolessly depositing a metal on the seeded surface.

5,310,581
PHOTOCURABLE COMPOSITIONS
Donald L. Schmidt; Geoe D. Rose, and Edward E. Flagg, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 459,085, Dec. 29, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 920,029
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—558 **10 Claims**

1. A method of forming a photocured coating comprising:
(a) applying to a substrate (i) a first compound bearing an average of more than one photolabile onium group bonded to a chromophore group via a linking group, wherein the onium is substantially free of unsaturated substituents which are photoreactive and has a compatible anion, and (ii) a second compound bearing at least one photo-reactive nucleophile, so as to form a coating of an intimate mixture of (i) and (ii) on the substrate, and
(b) exposing the coating of the first compound and second compound to electromagnetic radiation having sufficient energy at wavelengths in the range of from about 200 to about 310 nm to promote reaction of a plurality of onium groups with a plurality of nucleophile groups with extinction of the cationic charge on the onium groups reacted.

5,310,582
APPARATUS AND HIGH SPEED METHOD FOR COATING ELONGATED FIBERS
Murty N. Vyakarnam, East Lansing, and Lawrence T. Drzal, Okemos, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Filed Feb. 19, 1993, Ser. No. 20,112
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—560 **25 Claims**



11. A method for coating a length of fiber with a powder which comprises:
(a) providing an apparatus for coating a length of fiber with a powder which comprises: an elongate chamber defined by inside and outside walls of a container means with openings for inlet and outlet of the fiber adjacent to opposed portions of the chamber means such that the fiber is fed vertically between the openings through the chamber without touching the walls; a powder dispenser means with a connection to the container, wherein the dispenser means is provided with a vibrator means for aerosolizing a powder in a gaseous medium in the dispenser means; and a nozzle means connected to a gas supply means which is directed towards the connection of the dispenser means to the container means, wherein in use the aerosolizing means aerosolizes the powder in the dispenser means and the nozzle means directs the aerosolized powder into the container means so that the powder flows over the fiber as the fiber passes through the container means; and
(b) coating the fiber with the powder in the chamber as the fiber is fed through the apparatus.

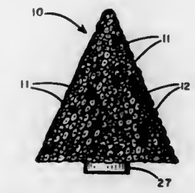
5,310,583
VAPOR PHASE DEPOSITION OF HYDROGEN SILSESQUIOXANE RESIN IN THE PRESENCE OF NITROUS OXIDE
Marie N. Eckstein, and David S. Ballance, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Nov. 2, 1992, Ser. No. 970,444
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—575 **13 Claims**

1. A method of depositing a coating containing silicon and oxygen on a substrate comprising:
introducing a gas comprising hydrogen silsesquioxane into a deposition chamber containing the substrate and a reactive environment comprising nitrous oxide; and
inducing reaction of the gas to form the coating.

5,310,584
THERMOFORMABLE POLYPROPYLENE-BASED SHEET
Philip Jacoby, Naperville, Ill.; Jesse Wu, Doraville, Ga., and Mark Heiden, Sioux Falls, S. Dak., assignors to Amoco Corporation, Chicago, Ill.
Filed Apr. 14, 1992, Ser. No. 868,110
Int. Cl.[5] B65D *71/00;* **B32B** *7/02, 27/32*
U.S. Cl. 428—2 **14 Claims**

1. A thermoformable sheet comprising a crystalline resinous polymer of propylene having beta-spherulites present at K-value of about 0.3 to 0.95.

5,310,585
DECORATIVE ARTICLE MADE OF PRESERVED SPRIGS
Marsha K. Haagenson, 2825 Brookwood Ter., Minneapolis, Minn. 55410
Filed Nov. 29, 1991, Ser. No. 800,416
Int. Cl.[5] A01N *3/00;* **A47G** *7/00*
U.S. Cl. 428—15 **9 Claims**



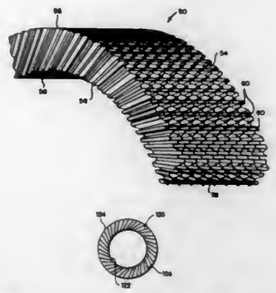
1. An article of manufacture comprising a penetrable core and an outside decorative covering comprising a plurality of preserved sprigs each having leaves at a first end and a second end embedded in the core, leaves at the first ends cooperatively defining an approximate geometric shape, said article having a sufficient number of leaves to substantially conceal the core from view.

5,310,586
ANGLED I-BEAM HONEYCOMB STRUCTURE
Stephen J. Mullen, Beverly, Mass., assignor to Eldim, Inc., Woburn, Mass.
Filed Feb. 5, 1993, Ser. No. 13,787
Int. Cl.[5] B29D *22/00, 23/00;* **B32B** *1/08;* **B01D** *19/00*
U.S. Cl. 428—34.1 **19 Claims**

1. A honeycomb structure comprising
a pair of face sheets, and
at least two corrugated strips arranged between the face sheets and having opposed edges joined to the face sheets, the strips being corrugated to form multiple major flat surfaces extending angularly between the opposed strip edges, the strips being offset relative to each other to

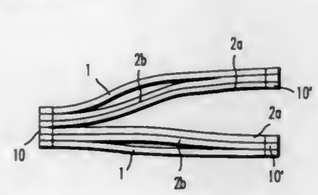
VOL 1162 ISS 2 MY 10 1994 UMI

define a series of cells extending between the face sheets along axes which are oriented at an angle other than normal to the face sheets, each of the major flat surfaces having a central depressed portion forming a matching sub-flat surface which is parallel to and connected to the



major flat surface by sidewalls, abutting undepressed portions of the major flat surfaces of adjacent strips and abutting sub-flat surfaces of adjacent strips being joined together, the strips thereby forming a series of I-beams disposed one to a cell.

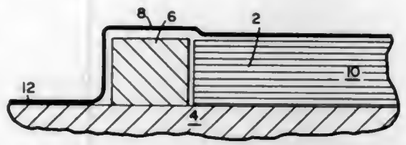
5,310,587
WRAPPING FOR FOODS
Kouji Akahori, Tokyo, and Hiroshi Kanehira, Okayama, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Feb. 14, 1991, Ser. No. 655,843
Claims priority, application Japan, Feb. 21, 1990, 2-17206[U]
Int. Cl.[5] B65D *30/08, 81/26*
U.S. Cl. 428—35.2 **8 Claims**



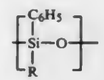
1. A wrapping for foods comprising a laminated composite sheet which comprises a fluid impermeable sheet as an outer layer, an absorbent fiber sheet as an intermediate layer and a hydrophobic fiber nonwoven fabric as an innermost layer that touches the food wrapped therein, said hydrophobic fiber nonwoven fabric having a water resistance of at least 5 cmH_2O and an air permeability of at least 10 $cc/cm^2/sec$.

5,310,588
HIGH TEMPERATURE SEALANT CONTAINING PHENYL SILICONE
Brian W. Carlson, Woodbury, and Brian S. Glasbrenner, Brooklyn Park, both of Minn., assignors to H. B. Fuller Licensing & Financing Inc., Wilmington, Del.
Filed Aug. 13, 1991, Ser. No. 744,538
Int. Cl.[5] B65D *53/00;* **C08G** *77/04*
U.S. Cl. 428—40 **13 Claims**

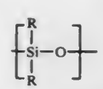
7. A high temperature sealant tape, useful in autoclave curing and processing of thermosetting and thermopalstic composites, comprising:
(a) a release liner;
(b) a semisolid sealant disposed on the release liner which sealant comprises:



(i) about 40 to 90 wt-% of a silicone having a molecular weight of about 10,000 to 10,000,000 and repeating units comprising:
(a) about 1 to 20 mole-% of units having the formula

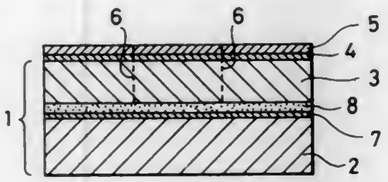


wherein R comprises —H, a C_{1-5} alkyl group, a C_{1-5} fluoroalkyl group, a vinyl group or a phenyl group and
(B) about 99 to 80 mole-% of units having the formula:



wherein each R independently comprises —H, a C_{1-5} alkyl group, a C_{1-5} fluoroalkyl group, or a vinyl group; and
(ii) about 1 to 10 wt-% of a thermal stabilizer;
(iii) about 0.1 to 2 wt-% of a peroxide curing agent that acts upon alkyl substituents on the silicone chain resulting in alkylene groups that combine to crosslink; and
(iv) about 0 to 50 wt-% of an inorganic filler;
wherein the tape remains effective at temperatures above about 700° F.

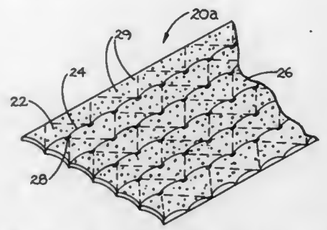
5,310,589
HEAT TRANSFER SHEET AND BASE SHEET THEREFOR
Kousaku Nagashima, Kitamoto, Japan, assignor to Lintec Corporation, Tokyo, Japan
Filed Dec. 23, 1991, Ser. No. 812,160
Claims priority, application Japan, Dec. 26, 1990, 2-406730
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—40 **16 Claims**



1. A base sheet for a heat transfer sheet, comprising:
a support member having heat resistance sufficient for heat which is applied to the base sheet during a heat transfer operation, said support member for supporting a thermally transferable layer comprising

a first support member, and
a second support member being peelably integrated with said first support member.

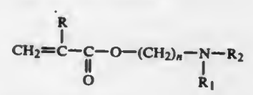
5,310,590
STITCHBONDED ARTICLES
Miroslav Tochacek, Woodbury; Donald M. Couirteau, Maplewood, and Vinu Patel, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 4, 1993, Ser. No. 13,718
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—102 **20 Claims**



1. A dual purpose wiping and scrubbing article, the article comprising an absorbent fibrous layer made from a first material, said absorbent fibrous layer having first and second surfaces, said absorbent fibrous layer being stitched through at a stitch density from its first to its second surfaces with a stitching yarn made of a second material, said first surface having melt-bonded thereto a plurality of nodules comprising a thermoplastic material, said nodules being melt-bonded to said absorbent fibrous layer and to said stitching yarn.

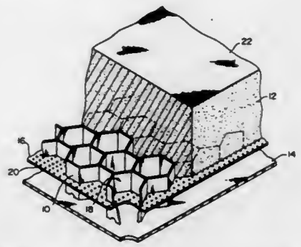
5,310,591
IMAGE-RECEPTIVE SHEETS FOR PLAIN PAPER COPIERS
Bill H. Dodge, North St. Paul, Minn.; William H. Hughes, Austin, Tex.; Steven J. McMan, Stillwater, Minn.; Sharon L. Perry, Round Rock, and Manisha Sarkar, Austin, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 947,252, Sep. 18, 1992. This application Mar. 12, 1993, Ser. No. 30,699
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **16 Claims**

1. A transparent image-recording sheet suitable for use in a plain paper copier, comprising a transparent backing having two major surface, said sheet having a machine direction and a transverse direction, at least one of said major surfaces having coated thereon, a water-based toner-receptive coating comprising:
a) from about 65 to about 99.9 parts of an imaging copolymer formed from
1) from about 80 to about 99 parts of at least one monomer selected from the group consisting of bicyclic alkyl (meth)acrylates, aliphatic alkyl (meth)acrylates having from about 1 to about 12 carbon atoms, and aromatic (meth)acrylates, and
2) from about 1 to about 20 parts of a polar monomer having the formula



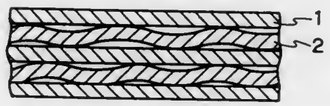
wherein R is hydrogen or methyl, R_1 and R_2 is selected from the group consisting of hydrogen, identical, and differing alkyl groups having up to about 8 carbon atoms, preferably up to 2 carbon atoms, the N-group can also comprise a cationic salt thereof.

5,310,592
FIBROUS CERAMIC AEROBRAKE
Anna L. Baker, and Darryl F. Garrigus, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Sep. 28, 1990, Ser. No. 589,967
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—117 **16 Claims**



1. An ablative fibrous ceramic article comprising:
a honeycomb core having a plurality of cells;
fiberform ceramic insulation at least partially filling each cell of the core and forming a porous sheet having an outer edge covering one face of the core; and
an ablative material infused into a portion of the porous sheet.

5,310,593
ADSORBENT
Soichiro Tsujimoto, Takaishi; Katsuya Kibata, Takarazuka; Yoshinobu Otake, Osaka; Masao Hirayama, Habikino, and Harushi Okabe, Amagasaki, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan
Filed Oct. 29, 1991, Ser. No. 783,970
Claims priority, application Japan, Oct. 31, 1990, 2-295819
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—166 **12 Claims**



1. An adsorbent comprising a plurality of sintered sheets of activated carbon, said sheets having a density of not less than 0.3 g/cm^3 and being arranged in layers so as to form spaces between adjacent sheets.

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5,310,594

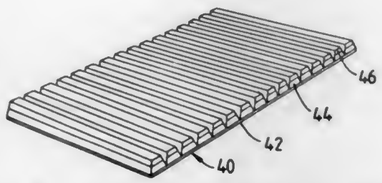
COMPOSITE RIGID INSULATION MATERIALS CONTAINING V-GROOVES

David L. Holland, Friendswood; Charles M. Nelson, Houston, both of Tex.; Thomas M. Miller, Walnut, Calif., and Jay C. First, Houston, Tex., assignors to Rock Wool Manufacturing Co. and Mineral Products and Technology, Inc., Leeds, Ala.

Continuation of Ser. No. 474,938, Feb. 5, 1990, abandoned. This application May 18, 1992, Ser. No. 884,871

Int. Cl.[5] B32B *3/28;* F16L *9/18*

U.S. Cl. 428—167 16 Claims



1. A flat, rectangular composite insulation comprising at least two dissimilar layers of insulating material, at least one of said two dissimilar layers of material being rigid, and a separate flexible backing material disposed at one surface of said flat insulation, and a plurality of V-grooves formed at predetermined spaced intervals in said at least two dissimilar layers of material which extend substantially through said dissimilar layers of material from a second surface of said insulation opposite of said flexible backing material up to, but not into said backing material, each of said plurality of V-grooves being defined by a pair of opposed faces, with selected pairs of opposed faces being selectively urged to an abutting relationship with said second surface defining at least one substantially curved surface responsive to the abutment of said opposed faces.

5,310,595

WATER-BASED TRANSPARENT IMAGE RECORDING SHEET FOR PLAIN PAPER COPIERS

Mahfuza B. Ali, Mendota Heights; Bill H. Dodge, North St. Paul, both of Minn.; William H. Hughes; Mohammed Iqbal, both of Austin, Tex.; Ying-Yuh Lu, Woodbury; Steven J. McMan, Stillwater, both of Minn.; Manisha Sarkar, Austin, Tex., and Chi-Ming Tseng, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 18, 1992, Ser. No. 947,252

Int. Cl.[5] B32B *3/00, 5/16, 7/00*

U.S. Cl. 428—206 10 Claims

1. A transparent recording sheet comprising a transparent film substrate having two major opposing surfaces, at least one of said surfaces having a water-based toner-receptive layer thereon comprising:

a) from 65 to 99.9 parts of an imaging copolymer formed from

1) from 80 to 99 parts of at least one monomer selected from the group consisting of bicyclic alkyl (meth)acrylates, aliphatic alkyl (meth)acrylates having from one to 12 carbon atoms, and aromatic (meth)acrylates, and

2) from 1 to 20 parts of a polar monomer selected from N,N-dialkyl monoalkyl amino alkyl acrylate, and N,N-dialkyl, monoalkyl amino alkyl methacrylate, and quaternary ammonium salts thereof,

b) from 0.1 to 15 parts of at least one polymeric microspheres comprising

1) at least 20 parts polymerized diol di(meth)acrylate having a formula

$$CH_2{=}CR^2COOC_nH_{2n}OOCCR^2{=}CH_2$$

wherein R^2 is hydrogen or a methyl group, and n is an integer from 4 to 18,

2) from 0 to 80 parts of at least one copolymerized vinyl monomer having the formula

$$CH_2{=}CR^2COOC_mH_{2m+1}$$

wherein R^2 is hydrogen or a methyl group and m is an integer of from 12 to 40, and

3) from 0 to 30 parts of at least one copolymerized ethylenically unsaturated monomer selected from the group consisting of vinyl esters, acrylic esters, methacrylic esters, styrene, derivatives thereof, and mixtures thereof, totalling 100 parts, and

c) from 0 to 20 parts of an antistatic agent selected from the group consisting of cationic agents, anionic agents, fluorinated agents, and nonionic agents.

5,310,596

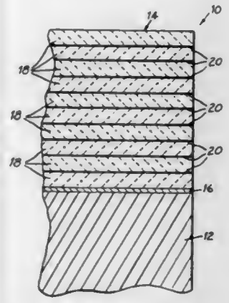
MULTI-LAYER SUPERHARD FILM STRUCTURE

Louis K. Bigelow, Salt Lake City, Utah; Robert M. Frey, Hudson, Mass., and Gordon L. Cann, Laguna Beach, Calif., assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 565,304, Aug. 10, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 810,364

Int. Cl.[5] C30B *21/04;* C23C *28/04*

U.S. Cl. 428—212 9 Claims



1. A diamond material film structure consisting essentially of carbon and comprising at least first and second adjacent layers of diamond material, each layer comprising microcrystals of diamond grown in a generally columnar form with the average cross-sectional dimensions of the columnar microcrystals increasing in the growth direction from a first side of each layer to a second side of that layer, the layers having generally similar average column sizes and similar properties.

5,310,597

FILM-FORMING COPOLYMERS AND THEIR USE IN WATER VAPOR PERMEABLE COATINGS

Stephen E. Cray, South Glamorgan, and Martin Rowlands, West Glamorgan, both of Wales, assignors to Dow Corning Limited, Barry, Wales

Division of Ser. No. 932,821, Aug. 20, 1992, Pat. No. 5,266,403, which is a division of Ser. No. 672,993, Mar. 21, 1991, Pat. No. 5,169,906. This application Mar. 8, 1993, Ser. No. 28,904

Claims priority, application United Kingdom, Apr. 26, 1990, 9009409

Int. Cl.[5] D03D *25/00*

U.S. Cl. 428—266 8 Claims

1. A substrate which is coated with a coating composition comprising a copolymer wherein the improvement comprises using as said copolymer a copolymer formed by the copolymerization of 100 parts by weight of a curable polyurethane resin and 10 to 100 parts by weight o an organosilicon compound, consisting essentially of tetravalent SiO_2 units and monovalent $R_3SiO_{\frac{1}{2}}$ and $R'R_2$; $SiO_{\frac{1}{2}}$ units, wherein the ratio of monovalent units to tetravalent units is from 0.4/1 to 2/1 and from 40 to 90% of all monovalent units present in the organosilicon compound are $R'R_2SiO_{\frac{1}{2}}$ units wherein R denotes a monovalent hydrocarbon group having up to 8 carbon atoms and R' denotes a polyoxyalkylene group which is terminated by a hydroxyl group.

5,310,598

RADIO WAVE ABSORBING MATERIAL

Minoru Yoshinaka; Eizo Asakura; Mitsumasa Oku, all of Osaka; Kouziro Matsuo, Yamatokoriyama, and Hidenosuke Nakamura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

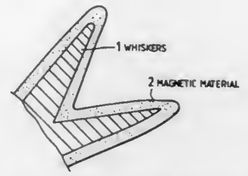
Continuation of Ser. No. 451,856, Dec. 18, 1989, abandoned. This application Dec. 11, 1991, Ser. No. 804,541

Claims priority, application Japan, Dec. 19, 1988, 63-321005; Feb. 17, 1989, 1-38613; Mar. 7, 1989, 1-54012; Apr. 3, 1989, 1-84460

The portion of the term of this patent subsequent to Oct. 2, 2007, has been disclaimed.

Int. Cl.[5] H01Q *17/00;* B32B *5/16, 9/00;* D02G *3/00*

U.S. Cl. 428—328 9 Claims



1. A radio wave absorbing material comprising not less than 1 wt. % of zinc oxide whiskers held with or dispersed in a radio-wave-absorptive or radio-wave-transmissive holding material, wherein each of the zinc oxide whiskers has at least one needle crystal projection which includes a basal part and a tip opposite the basal part, wherein the length of the projection from the basal part to the tip is not less than 3 μm.

5,310,599

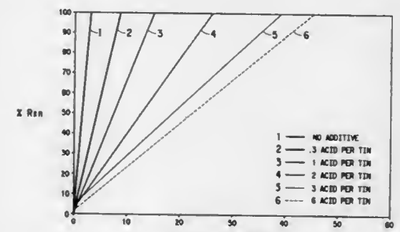
METHOD FOR MAKING POLYMERS OF ALPHA-HYDROXY ACIDS

Thomas M. Ford, Greenville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

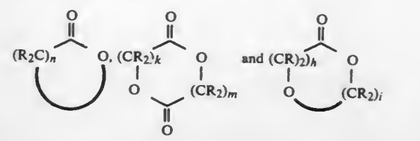
Filed May 6, 1993, Ser. No. 57,817

Int. Cl.[5] C08G *63/84, 63/91*

U.S. Cl. 528—354 8 Claims



1. A method for preparing polymers of alpha-hydroxy acids by catalyzed ring opening of cyclic diesters selected from the group consisting of lactide, glycolide and mixtures thereof and comprising up to 20 weight percent of a monomer selected from the group consisting of



where n is 4 or 5, h, i, k and m are independently 1 or 2, each R is independently selected from hydrogen or hydrocarbyl containing up to 12 carbon atoms comprising the steps of:

a. forming a liquid phase dispersion of the cyclic diesters, monomer and ring-opening catalyst selected from the group consisting of tin compounds, yttrium compounds, compounds of lanthanum series rare earth metals having atomic numbers 57–71, titanates, zirconates, zinc compounds, antimony compounds and mixtures thereof, wherein the mole ratio of monomer to catalyst is 500–20,000:1 and the mole ratio of organic acid to catalyst is less than 6:1; and

b. maintaining (1) the temperature of the dispersion at 50–250 C., (2) the mole ratio of cyclic ester to catalyst at 500–20,000:1 and (3) the mole ratio of organic acid to catalyst in the dispersion below 6:1 to effect polymerization of the monomers to a conversion of at least 95% at a high rate.

5,310,600

FIBER REINFORCED POLYAMIDE RESIN COMPOSITE MATERIAL AND METHOD OF MANUFACTURE THEREOF

Kazuhide Tsuya, Gifu; Akio Onodera, Seki, and Masahiko Yokokita, Gifu, all of Japan, assignors to Ube-Nitto Kasei Co., Ltd., Tokyo, Japan

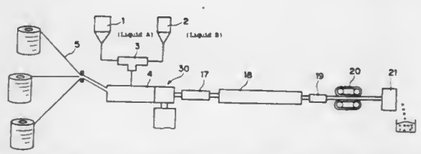
PCT No. PCT/JP90/01733, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO92/00837, PCT Pub. Date Jan. 23, 1992

PCT Filed Dec. 28, 1990, Ser. No. 838,218

Claims priority, application Japan, Jul. 6, 1990, 2-179064

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—378 8 Claims



6. A fiber reinforced polyamide resin composite material manufactured by a method comprising the following steps:

supplying to an impregnation chamber a liquid lactam added with an anionic polymerization catalyst and a liquid lactam added with an activator while mixing them together at a selected ratio;

forming a strand by continuously supplying long reinforcing fibers into said impregnation chamber and therein impregnating the mixed liquid of said lactams into said reinforcing fibers;

introducing said strand through a tubular nipple into a coating head portion of a melt extruder to form all over the peripheral surface of said strand a continuous coating layer of a thermoplastic resin extruded from said coating head portion, the thermoplastic resin having a softening point higher than 120° C.;

introducing the thus coated strand into a polymerization

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chamber and therein conducting anionic polymerization of said lactams in said reinforcing fibers inside of said coating layer; and

cutting the thus polymerized strand into a selected length.

5,310,601

EPOXY-FUNCTIONALIZED SILOXANE RESIN COPOLYMERS AS CONTROLLED RELEASE ADDITIVES

Karen D. Riding, Castleton, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 573,416, Aug. 24, 1990, Pat. No. 5,158,991. This application Apr. 13, 1992, Ser. No. 867,633

Int. Cl.[5] B32B *9/04, 13/12, 15/04, 17/06*

U.S. Cl. 428—429 **26 Claims**

1. An improved ultraviolet radiation-curable epoxyfunctional silicone controlled release composition, comprising:

(A) an epoxyfunctional diorganopolysiloxane having the general formula

$$R_2R^1SiO(RR^1SiO)_x(R_2SiO)_ySiR_2R^1 \quad (I)$$

wherein R is individually a lower alkyl radical having from 1 to about 8 carbon atoms; R^1 individually is a monovalent cycloaliphatic epoxy-functional organic radical having from 2 to about 20 carbon atoms; "x" is a number ranging from about 1 to about 50; and "y" is a number ranging from about 1 to about 1000;

(B) a catalytic amount of a photocatalyst or a combination of photocatalysts; and

(C) from about 1% to about 30% by weight based on (A) of a siloxane resin comprising monovalent $R_3{}^2SiO_{\frac{1}{2}}$ and $R^3R_2{}^2SiO_{\frac{1}{2}}$ units and tetravalent $SiO_{4/2}$ units, the ratio of the monovalent units to tetravalent units being from about 0.6:1 to about 1.1:1; wherein R^2 individually is a monovalent hydrocarbon radical of no more than 2 carbon atoms, R^3 is a monovalent epoxy functional organic radical of from about 2 to about 20 carbon atoms; and the $R^3R_2{}^2SiO_{\frac{1}{2}}$ units comprising from about 1% to about 90% of the total number of monovalent units present.

5,310,602

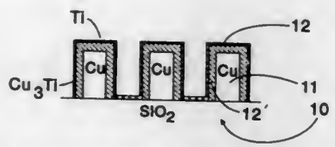
SELF-ALIGNED PROCESS FOR CAPPING COPPER LINES

Jian Li, Ithaca, N.Y.; James W. Mayer, Phoenix, Ariz.; Evan G. Colgan, Suffern, N.Y., and Jeffrey P. Gambino, Gaylordsville, Conn., assignors to Cornell Research Foundation, Ithaca and IBM Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 790,971, Nov. 12, 1991, Pat. No. 5,277,985. This application Oct. 13, 1992, Ser. No. 960,627

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—432 **2 Claims**



1. An Ultra-Large Scaled Integrated (ULSI) circuit, comprising:

a substrate; and

a plurality of capped copper lines disposed upon said substrate, said capped copper lines including copper lines overlaid with a layer of TiN(O), TiN, or refractory metal oxide or nitride, said TiN(O), TiN, or refractory metal oxide or nitride layer forming a diffusion barrier for the copper lines, whereby said capped copper lines can form compounds with refractory metals.

5,310,603

MULTI-LAYER REFLECTION MIRROR FOR SOFT X-RAY TO VACUUM ULTRAVIOLET RAY

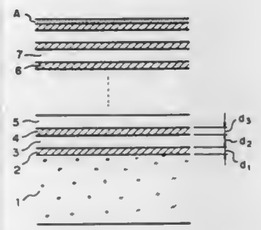
Yasuaki Fukuda, Machida; Yutaka Watanabe, Atsugi; Shigetaro Ogura, Tama, and Takashi Iizuka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 602,922, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 246,012, Sep. 14, 1988, abandoned, which is a continuation of Ser. No. 102,498, Sep. 29, 1987, abandoned. This application Jun. 14, 1993, Ser. No. 75,350

Claims priority, application Japan, Oct. 1, 1986, 61-231246; Oct. 1, 1986, 61-231247; Dec. 25, 1986, 61-307757

Int. Cl.[5] G01K *1/06;* **B32B** *15/04*

U.S. Cl. 428—446 **31 Claims**



1. A reflection mirror, for soft X-ray to vacuum ultraviolet ray, comprising:

a substrate, wherein said substrate has a planar surface polished to have a surface roughness of 10 Å (rms) or less; and

a multi-layer film formed on said substrate, said multi-layer film having a plurality of first layers and a plurality of second layers, each of said second layers being alternately layered to each of said first layers on said substrate, wherein said first layers comprise hafnium boride and said second layers comprise beryllium.

5,310,604

COMPOSITE STRUCTURE FOR THE FLUORIMETRIC MONITORING OF FUNCTIONAL COATINGS

Kurt C. Melancon, and George V. D. Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 711,366, Jun. 5, 1991, Pat. No. 5,270,116, which is a continuation of Ser. No. 220,991, Jul. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 883,926, Jul. 10, 1986, abandoned. This application Aug. 13, 1993, Ser. No. 106,356

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—447 **13 Claims**

1. A composite structure comprising a substrate bearing an adherent layer of a cured coating composition comprising a polymer having chemically bound thereto an effective amount of at least one pendent uvaphore that absorbs radiant energy of wavelength λ_1 and emits radiant energy of λ_2, λ_1 and λ_2 being wavelengths or ranges of wavelengths within the ultraviolet portion of the electromagnetic spectrum, and the mean of the range of λ_2 is above the mean of the range of λ_1 in the electromagnetic spectrum, said uvaphore-bearing polymer having a product of molar extinction coefficient and quantum yield ($\epsilon\phi$) with a value of at least 1,000, wherein said uvaphore is contained in a group having the formula

$$R[+R^2{}_{\overline{b}}Y+_a$$

wherein

R is a group comprising at least one uvaphore and having a valence "a", the uvaphore being a polycyclic aromatic

group and having two to four aromatic rings of which at least two are joined by a single bond or by fusion, the polycyclic aromatic compound absorbing radiant energy of wavelengths between 240 and 400 nm, emitting radiant energy below about 430 nm, no more than 30% of the emitted energy being above 400 nm, and having an ($\epsilon\phi$) product of at least 1000,

R^2 is an alkylene or alkenylene group having 1 to 18 carbon atoms;

Y is a carbon-to-carbon single bond or a divalent connecting group selected from the group consisting of a carbonyloxy group,



a urethane group,



a 3-oxy-2-hydroxypropoxy group, $-OCH_2CH(OH)CH_2O-$; and a silylethyl group;

a is an integer having a value one; and

b is one.

5,310,605

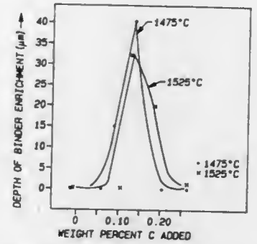
SURFACE-TOUGHENED CEMENTED CARBIDE BODIES AND METHOD OF MANUFACTURE

J. Gary Baldoni, II, Norfolk, Mass., and Stephen L. Bennett, Rochester Hills, Mich., assignors to Valenite Inc.

Filed Aug. 25, 1992, Ser. No. 935,487

Int. Cl.[5] B22F *3/10*

U.S. Cl. 428—569 **24 Claims**



1. A process for producing a ceramic-metal composite body exhibiting binder enrichment and improved fracture toughness at its surface, said process comprising the steps of:

forming a shaped body from a homogeneous mixture consisting essentially of: (a) a metallic binder selected from the group consisting of cobalt, nickel, and alloys thereof, (b) excess carbon in a form selected from the group consisting of elemental carbon and a precursor of carbon, wherein the total carbon present in said mixture is sufficient to result in an ASTM carbon porosity rating at the core of said ceramic-metal composite body of C06 to C08, the weight ratio of said excess carbon to said binder being about 0.05:1 to 0.037:1, (c) optionally, 0 to less than 5.0 volume percent B-1 carbides, and (d) remainder tungsten carbide; wherein said metallic binder is present, in the case of cobalt, in an amount of about 2–15 weight percent, in the case of nickel, in an amount of about 2–12 weight percent, and, in the case of said alloy thereof, in an amount between about 2 and 12–15 weight percent, the maximum increasing with the ratio of cobalt to nickel in said alloy;

sintering said shaped body in a vacuum or inert atmosphere at a temperature of at least about 1300° C., said sintering step being carried out for a time sufficient to produce a fully dense sintered body in which said binder serves as an intergranular bonding agent for said tungsten carbide; and

cooling said sintered body to ambient temperature such that the cooling rate, at least to about 25° below the eutectic temperature of said mixture, is no greater than about 150° C./hr.

7. A process for producing a ceramic-metal composite body exhibiting binder enrichment and improved fracture toughness at its surface, said process comprising the steps of:

forming a shaped body from a homogeneous mixture consisting essentially of: (a) a metallic binder selected from the group consisting of cobalt, nickel, and alloys thereof, (b) excess carbon in a form selected from the group consisting of elemental carbon and a precursor of carbon, wherein the total carbon present in said mixture is sufficient to result in an ASTM carbon porosity rating at the core of said ceramic-metal composite body of C06 to C08, the weight ratio of said excess carbon to said binder being about 0.05:1 to 0.037:1, (c) optionally, 0 to less than 5.0 volume percent B-1 carbides, and (d) remainder tungsten carbide; wherein said metallic binder is present, in the case of cobalt, in an amount of about 2–15 weight percent, in the case of nickel, in an amount of about 2–12 weight percent, and, in the case of said alloy thereof, in an amount between about 2 and 12–15 weight percent, the maximum increasing with the ratio of cobalt to nickel in said alloy;

sintering said shaped body in a vacuum or inert atmosphere at a temperature of at least 1300° C., said sintering step being carried out for a time sufficient to produce a fully dense sintered body in which said binder serves as an intergranular bonding agent for said tungsten carbide; and

cooling said sintered body to a holding temperature at or about the eutectic temperature of said mixture, isothermally holding said sintered body at said holding temperature for at least 0.5 hr, and further cooling said sintered body to ambient temperature.

5,310,606

SLIDE MEMBER

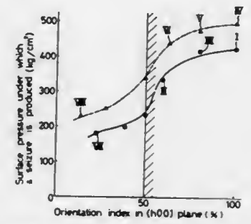
Yosbikazu Fujisawa; Takeshi Narishige, and Yuzuru Miyazaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 642,812, Jan. 18, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,733

Claims priority, application Japan, Jan. 19, 1990, 2-10119; Jan. 19, 1990, 2-10120; Jan. 19, 1990, 2-10121

Int. Cl.[5] F16C *33/12*

U.S. Cl. 428—645 **23 Claims**



1. A slide member comprising a surface layer of a Pb alloy on a slide surface for a mating member, wherein said Pb alloy comprises at least 3% and at most 20% by weight Sn, and said Pb alloy has a crystal form with an orientation index in a (hOO) plane by Miller indices being set in a range of 80 to 100%.

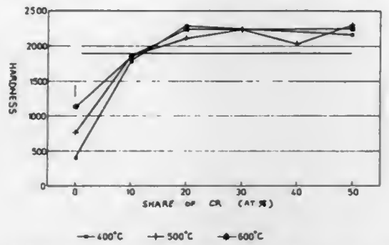
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,607

HARD COATING; A WORKPIECE COATED BY SUCH HARD COATING AND A METHOD OF COATING SUCH WORKPIECE BY SUCH HARD COATING

Hans Schulz, Fürstentum Liechtenstein, Fed. Rep. of Germany, and Erich Bergmann, Mels, Switzerland, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Aug. 13, 1991, Ser. No. 744,532
Claims priority, application Switzerland, May 16, 1991, 1470/91
Int. Cl.[5] C23C *16/40*; B23B *27/14*
U.S. Cl. 428—697 8 Claims



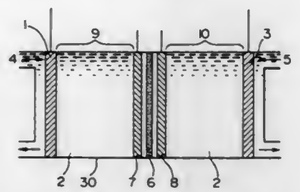
1. A hard coating consisting essentially of $(Al,Cr)_2O_3$ crystals having a share of chrome larger than 5 at %, wherein said $(Al,Cr)_2O_3$ is a single crystal.

5,310,608

TEMPERATURE DIFFERENCE STORAGE BATTERY

Maki Ishizawa, Tokyo; Tsutomu Ogata, Sayama; Kazuhiko Shindo, Tokyo; Syuichi Kitada, Iruma, and Mitsunori Koyama, Nishikatsura, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 20, 1993, Ser. No. 138,440
Claims priority, application Japan, Oct. 21, 1992, 4-283208; Nov. 16, 1992, 4-305484
Int. Cl.[5] H01M *6/36*
U.S. Cl. 429—11 3 Claims



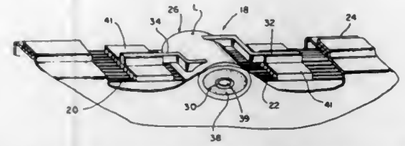
1. An electric storage battery which operates by temperature difference comprising:
(a) a solution containing redox ion couples having a temperature-dependent redox potential;
(b) a low-temperature electrode and a high-temperature electrode for generating a temperature difference disposed in said solution;
(c) a membrane film means which is impervious to said redox ion couples disposed between said low-temperature electrode and said high-temperature electrode; and
(d) a low-temperature power electrode disposed between said low-temperature electrode and said membrane film means and a high-temperature power electrode disposed between said low-temperature electrode and said membrane film means.

5,310,609

BATTERY CELL TERMINAL SEAL/INTERCELL CONNECTOR

Martin W. Earl, Silver Spring; Ronald R. Kessler, Mt. Airy, and Max A. Morris, Frederick, all of Md., assignors to Comsat, Bethesda, Md.

Filed May 25, 1993, Ser. No. 66,207
Int. Cl.[5] H01M *2/24*, *2/08*
U.S. Cl. 429—160 12 Claims



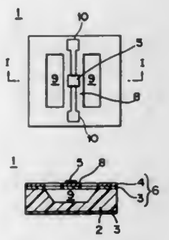
1. An intercell connector for electrically interconnecting a plurality of battery cells, each of said battery cells including a plurality of spaced apart positive and negative electrode plates encased in a plastic casing, said connector comprising:
first and second buss bars disposed in spaced apart relation to each other and each including a base portion and an electrode connecting portion extending from said base portion, said base portions of said first and second buss bars respectively including first and second electrode terminals aligned in a longitudinal direction; and
insulating means for insulating said first and second buss bars from each other,
wherein said connector is disposed in said casing of each of said cells so as to extend transversely to said electrode plates with said casing being bonded to a portion of said insulating means such that only said electrode terminals are exposed outside said casing to allow interconnection of said connector with adjacent connectors and
wherein said electrode connecting portions of said first and second buss bars are respectively electrically connected to said positive and negative electrodes.

5,310,610

SILICON MICRO SENSOR AND MANUFACTURING METHOD THEREFOR

Hisatoshi Furubayashi, and Yasuhiko Inami, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 800,767, Dec. 3, 1991, abandoned, which is a continuation of Ser. No. 346,785, May 3, 1989, abandoned. This application Nov. 20, 1992, Ser. No. 981,898
Claims priority, application Japan, May 7, 1988, 63-111290
Int. Cl.[5] G03C *3/00*
U.S. Cl. 430—11 8 Claims



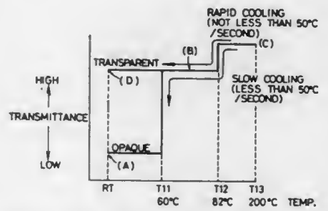
1. A silicon micro sensor comprising:
a silicon substrate;
a support film overlaying said substrate, said support film including a lower layer of silicon oxide film applied by a thermal oxidization method and an upper layer of aluminum oxide film applied by a sputtering method wherein the thickness of the aluminum oxide film is thicker than that of the silicon oxide film,
said layers of said support film being heated at a predetermined temperature for a predetermined time thereby providing a flat stable configuration;
a support element formed from a portion of said support film at an etched portion of said substrate; and
a sensor element and electrode members applied to said support element.

5,310,611

THERMOREVERSIBLE RECORDING MATERIAL, THERMOREVERSIBLE RECORDING MEDIUM AND RECORDING METHOD

Yutaka Okabe; Yoichi Nishioka, and Yukihisa Okada, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,785
Claims priority, application Japan, Oct. 4, 1991, 257626; Jun. 3, 1992, 142350; Aug. 21, 1992, 222324; Sep. 21, 1992, 251174
Int. Cl.[5] B41M *5/26*
U.S. Cl. 430—19 49 Claims



1. A thermoreversible recording material comprising a matrix material and an organic compound of low molecular weight, the transparency of which is changed in accordance with its thermal history, characterized in that the matrix material is polyvinyl acetal and the organic compound of low molecular weight is at least one selected from the group consisting of a saturated carboxylic acid, an amide-, an amine-, an anilide-, an alcohol-, an ester-, a ketone-, a metal salt-, and an imidazole of the saturated carboxylic acid.

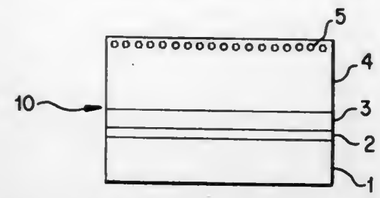
5,310,612

IMAGE-HOLDING MEMBER AND PRODUCTION METHOD THEREOF, METHOD FOR FORMING IMAGE-FORMING MASTER USING THE IMAGE-HOLDING MEMBER AND THE FORMING APPARATUS, AND IMAGE-FORMING METHOD USING THEM

Yuichi Yashiki, Minami-ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,276
Claims priority, application Japan, Mar. 11, 1991, 3-069442; Mar. 11, 1991, 3-069443; Mar. 28, 1991, 3-087387; Jul. 4, 1991, 3-190675
Int. Cl.[5] G03G *5/047*
U.S. Cl. 430—58 6 Claims

1. An image holding member comprising:
a substrate having an electrically conductive surface,
a charge generating layer formed on said electrically conductive substrate, and
a heat softening layer formed on said charge generating layer and containing a charge transporting material, electrically conductive particles, and a heat softening resin,



wherein substantially all of said electrically conductive particles are disposed inside the heat softening layer in the vicinity of the surface thereof.

5,310,613

HIGH SENSITIVITY VISIBLE AND INFRARED PHOTORECEPTOR

Damodar M. Pai, Fairport; Santokh S. Badesha, Pittsford; John F. Yanus, and Michael J. Rice, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1991, Ser. No. 808,391
Int. Cl.[5] G03G *5/047*
U.S. Cl. 430—59 18 Claims

1. An electrophotographic imaging member comprising: a supporting substrate; an optional a charge blocking layer; an optional adhesive layer; a charge generating layer comprising a crystalline titanium phthalocyanine compound dispersed in a binder; and a charge transport layer comprising a film forming charge transporting polymer selected from the group consisting of polysilylene and polyarylamines.

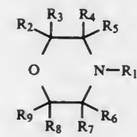
5,310,614

ELECTROPHOTOGRAPHIC PHOTORECEPTOR HAVING AN ORGANIC PHOTOELECTROCONDUCTIVE LIGHT SENSITIVE LAYER

Hideo Yoshizawa; Kiyoshi Tamaki, both of Hachioji; Hajime Tadokoro, Hino, and Yoshihide Fujimaki, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,272
Claims priority, application Japan, Nov. 21, 1991, 3-306355; Dec. 27, 1991, 3-346868
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—59 7 Claims

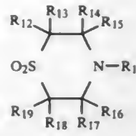
1. An electrophotographic photoreceptor comprising a conductive substrate having thereon a photosensitive layer containing a carrier generation material and a compound represented by the following formula 1, 2 or 3;



(1)

wherein R_1 is a hydrogen atom, an alkyl group, an alkoxy group, a cycloalkyl group, an aryl group, an aryloxy group or a heterocylic group; R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are independently a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a cycloalkyl group, an aryl group or an aryloxy group, said groups represented by R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 each may have a substituent selected from a halogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, a thioether group, an acyl group and sulfonamido group,

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(2)

wherein R_{11} l is a hydrogen atom, an alkyl group, an alkoxy group, a cycloalkyl group, an alkenyl group, an aryl group, an aryloxy group or a heterocylic group; R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18} and R_{19} are independently a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a cycloalkyl group, an aryl group or an aryloxy group, said groups represented by R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18} and R_{19} each may have a substituent selected from a halogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, a thioether group, an acyl group and sulfonamido group,



(3)

wherein R_{21} is a hydrogen atom, an alkyl group, an alkoxy group, a cycloalkyl group, an alkenyl group, an aryl group, an aryloxy group or a heterocylic group; R_{22}, R_{23}, R_{24}, R_{25}, R_{26}, R_{27}, R_{28} and R_{29} are independently a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a cycloalkyl group, an aryl group or an aryloxy group, said groups represented by R_{21}, R_{22}, R_{23}, R_{24}, R_{25}, R_{26}, R_{27}, R_{28} and R_{29} each may have a substituent selected from a halogen atom, an alkenyl group, an alkoxy group, an aryl group, an arylpxy group, a thioether group, an acyl group and sulfonamido group.

5,310,615

IMAGE FORMING METHOD

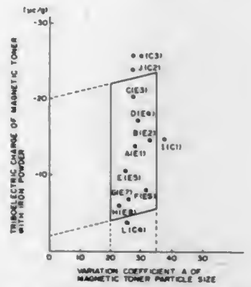
Hirohide Tanikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1990, Ser. No. 626,210

Claims priority, application Japan, Dec. 12, 1989, 1-320484

Int. Cl.[5] G03G *9/14*

U.S. Cl. 430—106.6 **19 Claims**



1. An image forming method, comprising the steps of:

disposing a latent image-bearing member and a toner-carrying member with a prescribed gap therebetween, said toner-carrying member comprising a cylindrical sleeve;

supplying a magnetic toner onto the cylindrical sleeve, wherein the magnetic toner comprises a binder resin and magnetic powder and is in the form of particles providing a volume-average particle size between 4 microns and 7 microns and having a number-basis distribution and a triboelectric chargeability satisfying the relation of:

$$-0.1(\mu c/g)\times A-20(\mu c/g)\leqq Q(\mu c/g)\leqq -0.1(\mu c/g)\times A-2(\mu c/g),$$

wherein A is a real number in the range of 20–35 denoting a coefficient of variation of a number-basis distribution of particle sizes of the magnetic toner defined by $(S/\overline{D}_1)\times 100$ wherein S denotes a standard deviation of the number-basis distribution of particle sizes of the magnetic toner and $\overline{D}_1$ denotes a number-average particle size of the magnetic toner, and Q denotes a triboelectric charge ($\mu c/g$) of the magnetic toner with iron powder;

triboelectrically charging the magnetic toner to provide the magnetic toner with a negative charge;

forming an electrostatic latent image on the latent image-bearing member;

developing the electrostatic latent image with the magnetic toner having a negative triboelectric charge, on the cylindrical sleeve while the cylindrical sleeve is rotated at a peripheral speed of at least 220 mm/sec., thereby forming a toner image; and

transferring the toner image on the latent image-bearing member to a transfer-receiving material.

5,310,616

TONER COMPOSITIONS FOR ELECTROSTATIC DEVELOPERS WITH ORGANO SILOXANE RESIN

Shoji Akamatsu, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 102,024, Aug. 4, 1993, which is a continuation-in-part of Ser. No. 024,698, Mar. 1, 1993, abandoned. This application Sep. 8, 1993, Ser. No. 118,082

Claims priority, application Japan, Mar. 13, 1992, 4-89622; Aug. 6, 1992, 4-228023; Sep. 11, 1992, 4-269472

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **5 Claims**

1. The present invention provides a toner composition for an electrostatic developer, said composition comprising an organic resin, a pigment, and an organosiloxane resin having a combination of difunctional and trifunctional repeating units, where said combination is selected from the group consisting of

$$(R^1SiO_{3/2})_m(R^1{}_2SiO)_n,\quad (R^2SiO_{3/2})_m(R^2{}_2SiO)_n,$$

$$(R^3SiO_{3/2})_m(R^3{}_2SiO)_n,\text{ and }(R^4SiO_{3/2})_a(R^4{}_2SiO)_b(R^4SiO)_c$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad R^5$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad O$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad R^6{}_x(R^7O)_{2-x}P{=}O$$

where each R^1, R^4, R^6 and R^7 are individually selected from monovalent substituted and unsubstituted hydrocarbon radicals, each R^2 is individually selected from the group consisting of monovalent hydrocarbon radicals and aminoalkyl radicals, where at least a portion of the R^2 substituents are aminoalkyl radicals, each R^3 is individually selected from the group consisting of monovalent hydrocarbon radicals and haloalkyl radicals, with the proviso that at least a portion of the R^3 substituents are haloalkyl radicals, a and c are positive numbers, b is 0 or a positive number, and m and n are both positive numbers, with the proviso that the sum and a, b and c and the sum of m and m each represent molecular weights equivalent to a softening point for said organosiloxane resin greater than 25° C. and not greater than 200° C. where R^1 represents a monovalent hydrocarbon radical, each R^2 is individually selected from the group consisting of monovalent hydrocarbon radicals and aminoalkyl radicals, where at least a portion of the R^2 substituents are aminoalkyl radicals, each R^3 is individually

selected from the group consisting of monovalent hydrocarbon radicals and haloalkyl radicals, with the proviso that at least a portion of the R^3 substituents are haloalkyl radicals, m and n are both positive numbers and provide a softening point for said organosiloxane resin greater than 25° C. and not greater than 200° C.

5,310,617

MAGNETIC BRUSH DEVELOPING PROCESS AND DEVELOPER

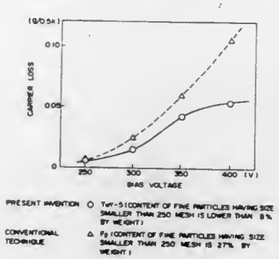
Kyouya Taguchi, Nishinomiya; Takashi Teshima, Ibaragi; Kazuhiko Yamamura, Higashi, and Takatomo Fukumoto, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1990, Ser. No. 593,885

Claims priority, application Japan, Oct. 5, 1989, 1-258847; Oct. 5, 1989, 1-258848; Oct. 9, 1989, 1-262244

Int. Cl.[5] G03G *13/09, 9/107*

U.S. Cl. 430—122 **4 Claims**



1. A developing process which comprises

(i) preparing a two-component developer by mixing toner particles and spherical ferrite carrier particles wherein diameter D_{50} of the weight average particle size corresponding to 50% of the weight of entire carrier particles is in the range of from 80 to 100 microns, the difference between the diameter D_{25} of the weight average particle size corresponding to 25% of the weight of entire carrier particles and the diameter of D_{75} of the weight average particle size corresponding to 75% of the weight of entire carrier particles is in the range of from 5 to 20 microns, and particles having a particle size smaller than 250 mesh occupy less than 8% by weight of the entire particles, and wherein the weight ratio of magnetic carrier to toner is less than 95/5, and the saturation magnetization of the carrier is in the range of 50 to 65 emu/g,

(ii) feeding said two-component developer onto a developing sleeve equipped with magnetic poles and forming a magnetic brush of said two-component developer on the surface of said sleeve,

(iii) applying a bias voltage of 250 to 350 V between a positively chargeable organic photosensitive material drum having a surface voltage of 750 to 850 V and said developing sleeve so that the development voltage difference is no greater than 500 V, wherein the photosensitive material drum and the developing sleeve are maintained at a distance apart of less than 1.2 mm, and

(iv) contacting said magnetic brush of said two-component developer with the surface of the photosensitive material drum to form a toner image on the surface of said drum.

2. A developing process which comprises

(i) preparing a two-component developer by mixing toner particles and spherical ferrite carrier particles wherein diameter D_{50} of the weight average particle size corresponding to 50% of the weight of entire carrier particles is in the range of from 80 to 120 microns, the difference between the diameter D_{25} of the weight average particle size corresponding to 25% of the weight of entire carrier particles and the diameter D_{75} of the weight average particle size corresponding to 75% of the weight of entire carrier particles is in the range of from 10 to 20 microns, and particles having a particle size smaller than 250 mesh occupy less than 8% by weight of the entire particles, and the saturation magnetization of the carrier is in the range of 50 to 65 emu/g,

(ii) feeding said two-component developer onto a developing sleeve equipped with magnetic poles and forming a magnetic brush of said two-component developer on the surface of said sleeve,

(iii) applying a bias voltage of 250 to 350 V between a positively chargeable organic photosensitive material drum having a surface voltage of 750 to 850 V and said developing sleeve so that the development voltage difference is no greater than 500 V, wherein the photosensitive material drum and the developing sleeve are maintained at a distance apart of less than 1.2 mm, and

(iv) contacting said magnetic brush of said two-component developer with the surface of the photosensitive material drum to form a toner image on the surface of said drum.

5,310,618

LIGHT-SENSITIVE COMPOSITIONS AND ARTICLES UTILIZING A COMPOUND OR POLYMER CONTAINING AN AROMATIC DIAZONIUM SALT GROUP AND A LIGHT-ABSORBING RESIDUE OF A SENSITIZING DYE FOR TRICHLOROMETHYL-S-TRIAZINE OR AZINIUM SALT PHOTOPOLYMERIZATION INITIATORS

Kouichi Kawamura, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 24, 1991, Ser. No. 705,360

Claims priority, application Japan, May 31, 1990, 2-142947

Int. Cl.[5] G03F *7/016, 7/021*

U.S. Cl. 430—157 **25 Claims**

1. A light-sensitive composition, said composition comprising a sensitizing amount of a compound or polymer, wherein said compound is being represented by the following general formula (I):

$$(S)_l{-}(L^1)_m{-}(D)_n \qquad (I);$$

and said polymer comprises a moiety represented by the following general formula (II):

$$-(L^2(S))_o{-}(L^3(D))_p{-} \qquad (II);$$

wherein D is an aromatic diazonium salt group, S is a light absorbing group which is a residue of a sensitizing dye for trichloromethyl-s-triazine photopolymerization initiators or azinium salt photopolymerization initiators, and which has an absorption coefficient or more than 1000 at wavelengths longer than 300 nm, L^1, L^2 and L^3 are connecting groups connecting S and D, provided that S and D are not conjugated by L^1, L^2 and L^3, l is an integer of 1 to 5, m is an integer of 1 to 5, n is an integer of 1 to 15, o is an integer of 3 to 200, and p is an integer of 3 to 500.

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5,310,619

RESIST COMPOSITIONS COMPRISING A PHENOLIC RESIN, AN ACID FORMING ONIUM SALT AND A TERT-BUTYL ESTER OR TERT-BUTYL CARBONATE WHICH IS ACID-CLEAVABLE

James V. Crivello, Clifton Park; Michael J. O'Brien, Albany, and Julia L. Lee, Schenectady, all of N.Y., assignors to MicroSi, Inc., Phoenix, Ariz.

Continuation of Ser. No. 629,054, Dec. 14, 1990, abandoned, which is a continuation of Ser. No. 338,346, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 135,963, Dec. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 873,914, Jun. 13, 1986, abandoned. This application May 13, 1992, Ser. No. 889,261

Int. Cl.[5] G03F *7/004, 7/40*

U.S. Cl. 430—270 12 Claims

1. A positive photoresist photopatternable in the substantial absence of moisture, comprising an admixture of,

(A) a water or aqueous based soluble phenolic resin other than a resole resin,

(B) from at least about 10% to up to an equal proportion by weight of (A), of a water or aqueous base insoluble simple compound having a molecular weight of less than 1000 and selected from the group consisting of tertiary butyl esters, aryl tertiary butyl esters and aryl tertiary butyl carbonates, which is a dissolution inhibitor for (A), and

(C) an aryl onium salt which generates a strong acid having a pKa of less than zero upon being irradiated, in an amount effective to deblock compound (B) when heated,

where (B) is substituted with acid labile groups which can be deblocked by being heated in the presence of a strong acid, to thereby render (B) soluble in water or aqueous base and ineffective as a dissolution inhibitor for (A).

5,310,620

ALKALI-SOLUBLE NITRONE COMPOUNDS AND CONTRAST ENHANCED MATERIAL COMPRISING THE SAME

Satoshi Watanabe; Toshinobu Ishihara, and Ken'Ichi Itoh, all of Jonetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

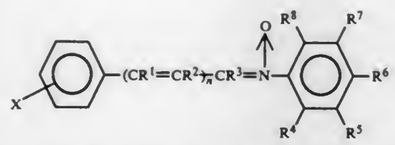
Filed Nov. 5, 1992, Ser. No. 971,650

Claims priority, application Japan, Dec. 6, 1991, 3-348992; Jan. 30, 1992, 4-040424

Int. Cl.[5] C07C *251/24, 251/16;* G03C *1/00*

U.S. Cl. 430—272 19 Claims

1. An alkali-soluble nitrone compound of the following formula



(1)

wherein R^1, R^2 and R^3 may be the same or different and represent an alkyl group, an aryl group or a hydrogen atom, R^4 to R^8 may be the same or different and represent an alkyl group, a hydrogen atom or a carboxyl group provided that at least one of R^4 to R^8 is a carboxyl group, X represents an alkoxy group of the formula, R^9O—, wherein R^9 represents an alkyl group, a dialkylamino group of the formula, $R^{10}R^{11}N$—, wherein R^{10} and R^{11} may be the same or different and represent an alkyl group, or a hydrogen atom, and n is a value of 0, 1 or 2.

5,310,621

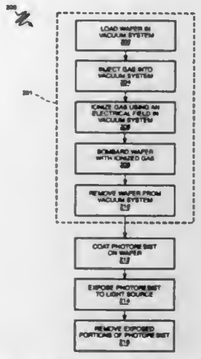
SEMICONDUCTOR PHOTOLITHOGRAPHY WITH SUPERFICIAL PLASMA ETCH

Anthony Sayka, San Antonio, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 626,940, Dec. 13, 1990, abandoned. This application May 6, 1992, Ser. No. 880,470

Int. Cl.[5] G03F *7/00*

U.S. Cl. 430—311 16 Claims



1. A method for photolithographic processing of semiconductors, said method comprising the steps of:

placing a wafer having a surface into a plasma confinement chamber;

introducing a noble gas into said confinement chamber;

ionizing said noble gas using a radio frequency electric field in said confinement chamber to create a noble-gas plasma so that a superficial etch of said wafer is performed;

removing said wafer from said confinement chamber;

applying a photoresist directly to said surface of said wafer;

exposing a selected portion of said photoresist to patterned light so as to create definite soluble and insoluble portions of said photoresist; and

applying solvent to remove said soluble portions of said photoresist.

5,310,622

METHOD OF PATTERNING A REFLECTIVE SURFACE IN AN INTEGRATED CIRCUIT

John C. Sardella, Highland Village, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 29, 1992, Ser. No. 890,696

Int. Cl.[5] G03C *5/16;* G03F *7/26*

U.S. Cl. 430—313 19 Claims

1. A method for fabricating an integrated circuit structure, comprising the steps of:

forming a first photoresist layer over a conductive layer on the integrated circuit;

forming a second photoresist layer over the first photoresist layer, wherein the transmittance of the first photoresist layer is less than the transmittance of the second photoresist layer;

simultaneously exposing the first and second photoresist layers to define a masking pattern;

removing portions of the first and second photoresist layers to leave remaining portions forming a mask corresponding to the masking pattern; and

patterning the conductive layer utilizing the mask formed by the first and second photoresist layers.

5,310,623

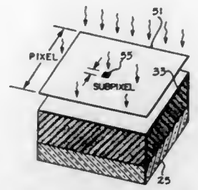
METHOD FOR FABRICATING MICROLENSES

George Gal, Palo Alto, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Nov. 27, 1992, Ser. No. 982,514

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—321 8 Claims



1. A method of fabricating in a photoresist material a replica of a designed microlens of any designed configuration, using a single exposure mask, and reproducing the replica directly in a substrate material, said method comprising,

constructing a single exposure mask with a plurality of precisely located and sized light transmitting openings formed with sufficiently small specific opening sizes and located at a sufficiently large number of specific locations, correlated to related locations on the configuration of the designed microlens, to enable a replica image of the designed microlens to be produced in a photoresist material.

exposing a related photoresist material to light of a selected wavelength and transmitted through said openings in said single mask for a selected duration of time,

processing the exposed photoresist material to produce a replica in the photoresist material of the designed microlens, which replica can be used subsequently for producing the designed microlens in a substrate material,

placing the photoresist material replica on a substrate material, and

processing the replica and the substrate material to reproduce the replica directly in the substrate material.

5,310,624

INTEGRATED CIRCUIT MICRO-FABRICATION USING DRY LITHOGRAPHIC PROCESSES

Daniel J. Ehrlich, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 517,394, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 149,426, Jan. 29, 1988, abandoned. This application Jul. 31, 1992, Ser. No. 924,374

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—322 3 Claims

1. An automated, dry, process for forming a pattern on a surface of a substrate, the process comprising:

dry deposition a continuous layer of a resist material comprising a metal by vapor deposition, on the surface of the substrate to form a metal coated substrate, wherein said metal is chosen from the set of aluminum, chromium, and tungsten,

generating a pattern in the resist material by projecting radiation from an excimer laser through a mask to expose selectively the resist material to pulsed UV laser radiation, in the presence of a photoreactive etchant, and thereby to etch exposed portions of the resist,

maintaining a controlled ambient environment of the resist material, by steps including maintaining the coated substrate in an inert gas environment, to avoid oxidation and exposure to contaminants between said resist depositing and pattern generating steps, and

transferring the pattern from the resist material to the substrate.

5,310,625

PROCESS FOR FORMING NEGATIVE TONE IMAGES OF POLYIMIDES USING BASE TREATMENT OF CROSSLINKED POLYAMIC ESTER

Marie Angelopoulos, Briarcliff Manor; Daniel G. Berger, Wappingers Falls, both of N.Y.; Jeffrey W. Labadie, Sunnyvale, Ca[sic]if.; Eric D. Perfecto, Wappingers Falls, N.Y.; Martha I. Sanchez, Palo Alto, Calif.; Sally A. Swanson, and Willi Volksen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 850,636, Mar. 13, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,261

Int. Cl.[5] G03C *5/56*

U.S. Cl. 430—325 4 Claims

1. A process for generating a negative tone image of polyimide on a substrate comprising the steps of:

(a) coating the substrate with a film comprising polyamic ester and a photoinitiator, the ester substituent of said polyamic ester having a crosslinkable functionality;

(b) imagewise exposing the film to radiation to crosslink said polyamic ester;

(c) developing the image;

(d) contacting said film with a base selected from amine or quaternary ammonium salt;

(e) heating said film to imidize said polyamic ester.

5,310,626

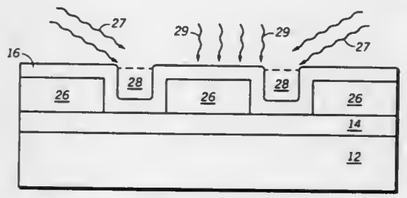
METHOD FOR FORMING A PATTERNED LAYER USING DIELECTRIC MATERIALS AS A LIGHT-SENSITIVE MATERIAL

Mark G. Fernandes, Austin; Stanley M. Filipiak, Pflugerville, and Jeffrey T. Wetzel, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,027

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—327 39 Claims



1. A method for forming a patterned layer of material overlying an integrated circuit substrate, the method comprising the steps of:

forming an inorganic dielectric layer overlying the integrated circuit substrate, the inorganic dielectric layer being physically modified in response to an energy source exposure;

selectively exposing said inorganic dielectric layer to an energy source radiation wherein portions of the inorganic dielectric layer are chemically altered by the energy source radiation to create exposed inorganic dielectric layer portions and unexposed inorganic dielectric layer portions; and

selectively removing regions of the inorganic dielectric layer to form the patterned layer of material having at least one sub-micron feature wherein the regions of the inorganic dielectric layer are selected from a group consisting of: exposed inorganic dielectric layer portions and unexposed inorganic dielectric layer portions.

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5,310,627

CHANGING THE COLOR OF YELLOW RESIST IMAGES BY APPLICATION OF PH-SENSITIVE DYES

Suzan J. Hirz, Maplewood, and Bruce W. Weeks, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 15, 1992, Ser. No. 990,469
Int. Cl.[5] G03C *7/00, 5/00, 5/18;* G03F *9/00*
U.S. Cl. 430—359 **19 Claims**

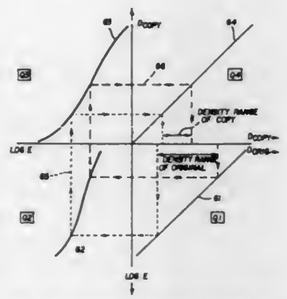
1. A method for locally enhancing the contrast of a yellow image, which method comprises providing a yellow image on a white background, said image comprised of yellow areas and white areas, said yellow areas and white areas exhibiting pH levels which differ by at least 0.5 in an aqueous environment, applying to at least a portion of said yellow image a solution of a pH color changing dye which will change color to a color other than yellow when coated on one of said yellow areas or white areas and not change color when coated on the other of said yellow areas or white areas, thereby forming a colored image duplicating the yellow image in areas where the solution has been applied, said colored image having a visually better contrast than said yellow image.

5,310,628

COLOR IMAGING PROCESS AND APPARATUS

Annabel A. Muenter, Rochester, and James C. Owens, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1991, Ser. No. 805,351
The portion of the term of this patent subsequent to Sep. 24, 2008, has been disclaimed.
Int. Cl.[5] G07C *7/00*
U.S. Cl. 430—363 **14 Claims**



1. A process for recording a positive or negative continuous tone color copy of a continuous tone original image, comprising the steps of:

providing a photographic element comprising a support having thereon a silver halide emulsion unit capable of forming a yellow image, a silver halide emulsion unit capable of forming a cyan image, and a silver halide emulsion unit capable of forming a magenta image, each image-forming unit having a maximum spectral sensitivity at a different wavelength of radiation, and at least one of the image-forming units having a gamma of greater than about 1.0,

receiving image data representing the densities of the yellow, magenta, and cyan records of the original image,

modifying said image data and using it to control three exposure sources, each emitting radiation in the region of maximum spectral sensitivity for a corresponding one of the image-forming units, so that, after exposure, the recorded image density range for at least one of the yellow, magenta, and cyan image-forming units is about 0.1 to 0.9 times the image density range for the corresponding yellow, magenta, or cyan records, respectively, of said original image, and

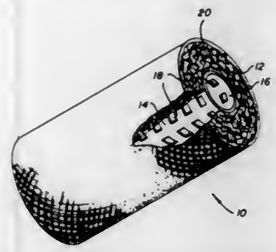
exposing said photographic element to said exposure sources.

5,310,629

SILVER RECOVERY ELEMENT AND METHOD

Hugh G. McGuckin, and John S. Badger, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 724,310, Jun. 28, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 900,810
Int. Cl.[5] G03C *5/31;* C22B *3/44*
U.S. Cl. 430—399 **43 Claims**



37. In a photographic developer recirculating system having a developer tank and a recirculating pump, the improvement wherein the developer system further comprises a silver recovery element comprising a flow-through filter, the filter comprising a cylinder having a hollow core therethrough, the cylinder having an outer surface and an inner surface and having flow channels therethrough, the outer surface having thereon a water-permeable substrate, and the substrate having thereon a hydrophilic colloid layer containing physical development nuclei.

5,310,630

SILVER HALIDE COLOR PHOTOSENSITIVE MATERIALS

Yoshio Inagaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

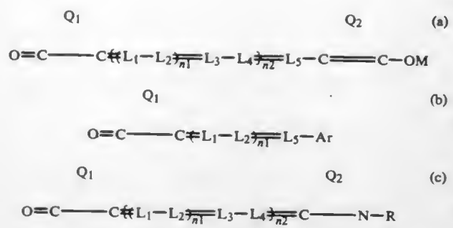
Continuation of Ser. No. 514,555, Apr. 26, 1990, abandoned. This application May 6, 1992, Ser. No. 879,730
Claims priority, application Japan, Apr. 27, 1989, 1-108217
Int. Cl.[5] G03C *7/30, 7/00*
U.S. Cl. 430—434 **18 Claims**

1. A process for preparing color images comprising processing an imagewise exposed photographic material with a color developer which is essentially sulfite ion free, the photographic material comprising at least three silver halide photosensitive layers including a silver halide photosensitive layer comprising a silver halide emulsion containing a yellow coupler, a silver halide photosensitive layer comprising a silver halide emulsion containing a magenta coupler and a silver halide photosensitive layer comprising a silver halide emulsion containing a cyan coupler, and at least one non-photosensitive hydrophilic layer,

wherein the silver halide emulsion in at least one of the photosensitive layers contains silver chloride and/or silver chlorobromide having an average silver chloride content of at least 90 mol % and is essentially silver iodide free,

and further wherein the photosensitive layers are each spectrally sensitized such that they have different peak spectral sensitivities at wavelengths greater than about 670 nm,

the photosensitive material further comprises at least one first dye which comprises at least one compound according to the following formula:



(a)

(b)

(c)

wherein Q_1 and Q_2 each represent a group of atoms which form a pyrazolone, barbituric acid, thiobarbituric acid, isooxazolone, 3-oxythionaphthene, 1,3-indandione, 3,5-pyrazolidindione, pyridone, pyridine or dioxopyrazolo[3,4-b]pyridine ring structure,

wherein the pyrazolone rings completed by Q_1 or Q_2 are pyrazolone rings which have a phenyl, benzyl, or alkyl group which has a sulfonic acid group as a substituent group in the 1- position.

Ar represents a phenyl group or a naphthyl group, which may be substituted,

M represents a hydrogen atom, an alkali metal atom, an ammonium ion which may be substituted, or a phosphonium ion which may be substituted,

R represents alkyl, benzyl or phenyl, and it may be substituted,

L_1–L_5 represent methane groups which may be substituted,

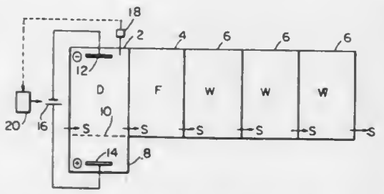
n_1 and n_2 individually represent 0 or 1 and which has an absorption peak wavelength in the region of wavelength longer than 400 nm but at least 20 nm shorter that the shortest of the wavelengths which form the peak values of the spectral sensitivities of the photosensitive layers and which is included in at least one photosensitive layer and/or at least one non-photosensitive hydrophilic colloid layer in an amount of 50 mg/m^2 or more.

5,310,631

METHOD OF PROCESSING A SILVER HALIDE PHOTOSENSITIVE MATERIAL CONTAINING A SILVER HALIDE SENSITIZED WITH A SELENIUM SENSITIZER USING A BLACK-AND-WHITE DEVELOPER CONTAINING A CHELATE COMPLEX SALT OF A TRANSITION METAL

Takashi Nakamura; Yasuhisa Ogawa, and Masato Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1993, Ser. No. 47,289
Claims priority, application Japan, Apr. 20, 1992, 4-125407
Int. Cl.[5] G03C *5/18, 5/26, 1/06, 5/00*
U.S. Cl. 430—447 **16 Claims**



1. A method of producing an image comprising processing an imagewise exposed silver halide photosensitive material comprising a support having thereon a silver halide emulsion layer containing a silver halide sensitized with a selenium sensitizer in a black-and-white developer which contains a chelate complex salt of a transition metal.

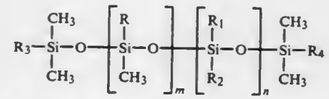
5,310,632

PHOTOGRAPHIC ADDITIVE DISPERSIONS AND A METHOD OF PREPARING THE SAME

Larry E. Oppenheimer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 833,868, Feb. 10, 1992, abandoned. This application Sep. 1, 1992, Ser. No. 939,508
Int. Cl.[5] G03C *1/04, 1/38*
U.S. Cl. 430—449 **10 Claims**

1. In a method of dispersing an oil soluble photographic additive in water or a hydrophilic colloid composition which comprises forming an oil phase by dissolving the photographic additive in at least one organic solvent and dispersing the resulting organic solvent solution in water or in a hydrophilic colloid composition, the improvement which comprises adding to the oil phase prior to the dispersing step, a stabilizing amount to prevent crystallization of a compound having the formula



where R, R_1, R_2, R_3, and R_4 are independently selected from alkyl having from 1 to 25 carbon atoms, or aryl where in addition to the above, R can also be selected from siloxane or polysiloxane and R_3 and R_4 can also be selected from alkoxy and m and n are independently 0 to 5000.

5,310,633

BLEACH-FIXING COMPOSITION FOR COLOR PHOTOGRAPHIC MATERIAL AND METHOD FOR PROCESSING A COLOR PHOTOGRAPHIC MATERIAL WITH THE SAME

Kazuaki Yoshida, and Takatoshi Ishikawa, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 5, 1993, Ser. No. 57,037
Claims priority, application Japan, May 13, 1992, 4-146895; Mar. 18, 1993, 5-059014
Int. Cl.[5] G03C *7/42*
U.S. Cl. 430—458 **10 Claims**

1. A bleach-fixing composition for color photographic materials which has a one-part constitution comprising a mixture of at least the following three kinds of powdery compounds (1) to (3):

(1) a thiosulfate,

(2) an iron (III) complex compound or a salt thereof, and

(3) a salt selected from the group consisting of sulfites, bisulfites and pyrosulfites

in a container, at least 50 molar % (in terms of sulfite ion equivalent) of the salt (3) being potassium salt.

5,310,634

COLOR DEVELOPING AGENT AND IMAGE FORMING PROCESS

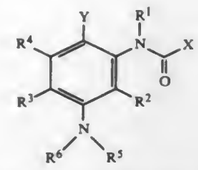
Hisashi Mikoshiba; Mitsugu Tanaka, and Kei Sakanoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 509,530, Apr. 16, 1990, abandoned. This application Oct. 30, 1991, Ser. No. 790,094
Claims priority, application Japan, Apr. 17, 1989, 1-96619
Int. Cl.[5] G03C *5/30, 7/32, 1/42, 1/494*
U.S. Cl. 430—467 **18 Claims**

1. A color developing composition comprising a p-

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phenylenediamine series color developing agent or a precursor thereof represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom or an alkyl group and x represents —O—R^7 or

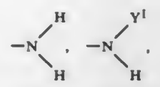


wherein R^7 represents an alkyl group, an aryl group, or a heterocyclic ring and R^8 and R^9, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic ring, R^8 and R^9 may combine with each other to form a heterocyclic ring,

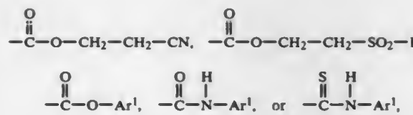
R^2, R^3 and R^4, which may be the same or different, each represents a hydrogen atom, an alkyl group, an amino group, a hydtoxy group, an alkoxy group, an acylamino group, a sulfonamide group, an alkoxycarbonylamino group, an aminocarbonylamino group, a sulfonyl group, a carbamoyl group, a sulfamoyl group, a cyano group, a halogen atom, an alkoxycarbonyl group, an acyl group, an acyloxy group, a sulfo group, or a carboxy group;

R^5 and R^6 each represents an alkyl group, R^5 and R^6, R^3 and R^6, and/or R^2 and R^5 may combine with each other to form a ring structure, and R^2 and X may combine with each other to form a heterocyclic ring;

Y represents



or —N=Y^2, wherein Y^1 represents —SO_3H, —SO_3Na, —SO_2R^{11},



wherein R^{10} and R^{11} each represents an alkyl group or an aryl group which may be substituted, and Ar^1 represents an aryl group which may be substituted and Y^2 represents



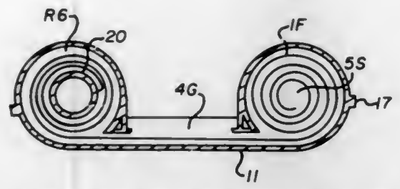
wherein Ar^2 represents an aryl group which may be substituted.

5,310,635

PHOTOGRAPHIC CAMERA FILM CONTAINING A HIGH CHLORIDE TABULAR GRAIN EMULSION WITH TABULAR GRAIN {100} MAJOR FACES

Richard P. Szajewski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1993, Ser. No. 34,061
Int. Cl.[5] G03C *1/00*
U.S. Cl. 430—496 **19 Claims**



1. A photographic camera film comprised of at least one radiation sensitive halide emulsion layer unit and a film base in a roll satisfying the formula

$$\frac{L - SD}{TU \times 2} - FBT = 10 \text{ to } 60\ \mu m$$

in which

FBT is the thickness of the film base in micrometers (μm);

L is the diameter in μm of the film roll;

SD is the spool diameter in μm of the film roll, where, when the film is rolled on a spindle, the spool diameter is the diameter of the spindle and, when the film is rolled on itself, the spool diameter is the inside diameter of the film roll; and

TU is the number of film turns in the film roll; wherein at least one emulsion layer unit is comprised of a radiation sensitive emulsion containing a silver halide grain population comprised of at least 50 mole percent chloride, based on silver, at least 50 percent of the grain population projected area being accounted for by tabular grains (1) bounded by {100} major faces having adjacent edge ratios of less than 10 and (2) each having an aspect ratio of at least 2.

5,310,636

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND THE DEVELOPMENT PROCESSING METHOD

Hideki Ohmatsu, and Rikio Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1991, Ser. No. 783,173
Claims priority, application Japan, Oct. 31, 1990, 2-295051; May 13, 1991, 3-135227
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—502 **14 Claims**

1. A silver halide photographic material comprising a support having, on at least one side thereof, two or more light-sensitive silver halide emulsion layers, each of said light-sensitive silver halide emulsion layers comprising a binder and a silver halide emulsion having a silver iodide content of 1 mol % or less, wherein the silver iodide content of the emulsion layer closest to the support is less than the silver iodide content of any of the emulsion layers further from the support than the emulsion layer closest to the support.

5,310,637

MINIMIZATION OF RIPPLE BY CONTROLLING GELATIN CONCENTRATION

Mark R. Kurz, Rochester; Steven J. Weinstein, Fairport, and Kenneth J. Ruschak, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1992, Ser. No. 868,827
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—502 **14 Claims**

1. A method for reducing the tendency toward formation of ripple imperfections in the coating of a multilayer photographic element comprising the steps of:

preparing coating compositions for upper, middle, and lower gelatin-containing layers of a layered mass suitable for coating on a moving web which follows a path from a coating application point to a set point and where said web path has a vertical component not equal to zero, wherein said layered mass has a ripple value X of greater than 20 as determined by the formula:

$$X = \frac{(\rho)(g)(d_T)(L_{VT})}{2\mu(V_w)}$$

where ρ is the critical density g is a constant representing the acceleration due to gravity, d_T is the total thickness of said layered mass, L_{VT} is the total vertical distance of said web path, μ is the critical viscosity, and V_w is the speed of said moving web, and said middle layer has a gelatin concentration within three weight percent of the gelatin concentration of said upper layer and said lower layer and each of said upper, middle and lower layers has a viscosity which differs from a norm by no more than 15 percent;

forming a laminar flow of the layered mass which includes said compositions as distinct layers, said middle layer being contiguous to said upper and lower gelatin-containing layers; and

receiving said layered mass as a layered coating on a moving support at a coating application point.

5,310,638

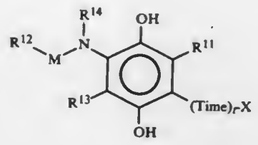
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL COMPRISING AT LEAST ONE DIR-HYDROQUINONE COMPOUND, AND HAVING A TOTAL SILVER CONTENT OF LESS THAN 1.0 G/M^2

Sadanobu Sbuto, and Takashi Ozawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 25, 1991, Ser. No. 783,113
Claims priority, application Japan, Oct. 25, 1990, 2-287601; Oct. 26, 1990, 2-288894
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—505 **4 Claims**

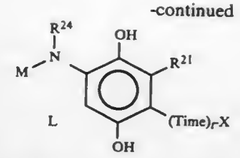
1. A silver halide color photographic material comprising a support, a blue sensitive layer, a green sensitive layer and a red sensitive layer,

wherein the total silver content of the photographic material is not more than 1.0 g/m^2, and the photographic material further contains a compound represented by the formula (1a) or (1b):



(1a)

-continued



(1b)

in which R^{12} is an aliphatic group, an aromatic group or a heterocyclic group; M is —$N(R^{15})CO$—, —OCO— or —$N(R^{15})SO_2$—; each of R^{14}, R^{15} and R^{24} independently is hydrogen, an alkyl group or an aryl group; L is a divalent linking group necessary for forming a 5, 6 or 7-membered ring; each of R^{11}, R^{13} and R^{21} independently is hydrogen or a substituent group of the hydroquinone nucleus; Time is a group which is released from the oxidation product of the hydroquinone nucleus to further release X; X is a development inhibitor; and t is 0 or 1.

5,310,639

PHOTOGRAPHIC ELEMENT CONTAINING STRESS ABSORBING INTERMEDIATE LAYER

Kenneth J. Lushington; Richard P. Szajewski, both of Rochester, and Kevin M. O'Connor, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 720,359, Jun. 25, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 21,382
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—539 **9 Claims**

1. A light sensitive photographic element comprising a support bearing at least one light sensitive silver halide emulsion layer and at least one non-light sensitive stress absorbing layer between the emulsion layer and the support, wherein the stress absorbing layer comprises a polymer latex and hydrophilic colloid in a mass ratio greater than or equal to about 1:2, the polymer latex having a glass transition temperature of less than about 5° C.

5,310,640

THERMALLY PROCESSABLE IMAGING ELEMENT COMPRISING AN ELECTROCONDUCTIVE LAYER AND A BACKING LAYER.

Louis J. Markin, Rochester; Diane E. Kestner, Hilton; Wojciech M. Przezdziecki, Pittsford, and Peter J. Cowdery-Corvan, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1993, Ser. No. 71,806
Int. Cl.[5] G03C *1/85, 1/76, 1/00*
U.S. Cl. 430—527 **15 Claims**

1. A thermally processable imaging element, said element comprising:

(1) a support;

(2) a thermographic or photothermographic imaging layer on one side of said support;

(3) a backing layer which is an outermost layer and is located on the side of said support opposite to said imaging layer, said backing layer comprising a binder and a matting agent dispersed therein; and

(4) an electroconductive layer which is an inner layer and is located on either side of said support, said electroconductive layer having an internal resistivity of less than 5×10^{10} ohms/square.

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5,310,641

NEGATIVE TYPE SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING SILVER HALIDE GRAINS OF CORE-SHELL STRUCTURE

Syoji Matsuzaka, Hachioji; Shu Nishiwaki; Yoshihiko Suda, both of Hino; Takashi Kamio, Hachioji; Toshimi Terai, Kodaira, and Toshimi Iijima, Kokubunji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 566,867, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 364,533, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 140,947, Dec. 28, 1987, abandoned, which is a continuation of Ser. No. 854,582, Apr. 22, 1986, abandoned. This application Oct. 23, 1991, Ser. No. 780,848

Claims priority, application Japan, Apr. 23, 1985, 60-86659

The portion of the term of this patent subsequent to Sep. 8, 2004, has been disclaimed.

Int. Cl.[5] G03C *1/035*

U.S. Cl. 430—567 **22 Claims**

1. A negative type silver halide photographic material comprising silver halide grains of a core-shell structure comprising:

(1) an inner core consisting essentially of silver bromide or silver iodobromide, the silver iodide content of said inner core being within the range of 0 to 40 mole %, and

(2) a plurality of shells consisting essentially of silver bromide or silver iodobromide, the shells of each silver halide grain comprising:

(a) an outermost shell containing 0 to 10 mole % silver iodide,

(b) a highly iodide-containing shell provided inside said outermost shell and having a silver iodide content within the range of 8 to 40 mole % and at least 8 mole % higher than that of said outermost shell, and

(c) an intermediate shell provided between the outermost shell and the highly iodide-containing shell, the silver iodide content of said intermediate shell being at least 3 mole % higher than that of said outermost shell, and at least 3 mole % lower than that of said highly iodide-containing shell,

the whole content of silver iodide in each silver halide grain being within the range of 2 to less than 12 mole %.

5,310,642

DIR COUPLERS WITH HYDROLYZABLE INHIBITORS FOR USE IN HIGH PH PROCESSED FILMS

J. Ramon Vargas, Webster; Paul A. Burns, Rochester, and Phillip D. Knight, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1993, Ser. No. 7,440

Int. Cl.[5] G03C *7/32, 7/34, 7/18*

U.S. Cl. 430—544 **29 Claims**

1. A silver halide photographic light-sensitive material for development in a development solution at a pH of at least 11.4, the material comprising a support having a silver halide emulsion layer comprising a compound capable of releasing a development inhibitor having a decomposition half-life in the range of above 4 to 225 hours at pH 10, said inhibitor after decomposition having substantially no photographic inhibitor properties, the compound having the formula:

$$CAR—(TIME)_n—INH—L—Y \quad (I)$$

wherein:

CAR is a carrier moiety releasing —(TIME)$_n$—INH—L—Y by reaction with oxidized developer;

TIME is a timing group;

INH—L—Y is a development inhibitor moiety selected from the group consisting of oxazole, thiazole, diazole, oxathiazole, triazole, thiatriazole, tetrazole, benzimidazole, indazole, isoindazole, mercaptothiazole, mercaptotriazole, mercaptothiadiazole, mercaptotetrazole, selenotetrazole, mercaptooxadiazole, selenobenzothiazole, mercaptobenzoxazole, selenobenzoxazole, mercaptobenzimidazole, selenobenzimidazole, benzodiazole, or benzisodiazole such that an inhibitor moiety comprising H—INH—L—Y has a calculated log P of greater than 0.4 and

n is 0, 1 and 2;

L is a divalent connecting group containing a chemical bond which is broken in a photographic developing solution and is selected from: —CO_2—, —NR_eCO_2—, —SO_2O—, —$OCH_2CH_2SO_2$—, —OC(=O)O—, or —NR_eC(=O)C(=O)—, where R_e is H, an alkyl group, an alkenyl group, an aryl group, or a heterocyclic group; and

Y represents an alkyl group, an alkenyl group, an aryl group, or a heterocyclic group.

7. The photographic element in accordance with claim 1 wherein CAR is a coupler moiety.

5,310,643

PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A LIGHT-PROTECTIVE AGENT

Günter Helling, Odenthal, and Jörg Hagemann, Cologne, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

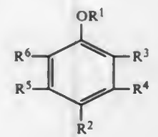
Filed Oct. 28, 1992, Ser. No. 967,819

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4136965

Int. Cl.[5] G03C *7/396, 7/38, 1/34*

U.S. Cl. 430—551 **4 Claims**

1. Color photographic recording material having at least one silver halide emulsion layer and a color coupler associated with this layer, containing, associated with at least one light-sensitive silver halide emulsion layer, a combination of a color coupler and a compound corresponding to the general formula I

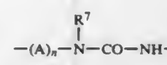


(I)

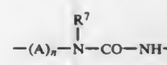
wherein

R^1 denotes H, a group which can be split off under alkaline conditions, alkyl or aryl,

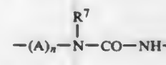
R^2 denotes OH, alkyl, aryl, alkoxy or



R^3, R^4, R^5 and R^6 denote H, OH, COOH, SO_3H, SO_2H, alkyl, aryl, alkoxy, alkylsulphonyl, arylsulphonyl, sulphamoyl, unsubstituted or substituted by at least one of the following: alkyl, aryl, acylamino or



and at least one of the groups R^2, R^3, R^4, R^5 and R^6 is a group corresponding to the formula



in which

A denotes alkylene with 1-6 carbon atoms,

n equals 0 or 1,

R^7 denotes H or an alkyl group which is substituted or unsubstituted and

R^8 denotes the residue of a polymer produced by polycondensation;

or, R^1 and R^3 form a 5-member of 6-member ring, in which case R^2=OH or alkoxy or

R^2 and R^4 form a 5-membered or 6-membered carbocyclic ring.

5,310,644

PROCESS FOR PREPARING A PHOTOGRAPHIC EMULSION USING EXCESS HALIDE DURING NUCLEATION

Mary H. Delton, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1991, Ser. No. 761,319

Int. Cl.[5] G03C *1/005*

U.S. Cl. 430—567 **37 Claims**

1. A process for preparing a photographic emulsion, comprising the steps of:

(A) reacting a first silver salt with a bromide in the presence of a first, excess halide in the presence of a peptizing medium and under conditions of silver and halide concentration and rate of addition, pH, temperature and reaction time effective to nucleate AgBr crystals having twin planes, the first halide remaining in solution; and

then (B) growing the crystals in an aqueous solution to form photosensitive grains by addition of a second silver salt and a second halide while maintaining a silver concentration in the growth solution sufficiently high to produce twinned cubooctahedral or cubooctahedral tabular grains having 1.1.1 and 1.0.0 edge structure.

12. A process for preparing a photographic emulsion, comprising the steps of:

(A) reacting a first silver salt with a bromide in the presence of excess chloride in the presence of a peptizing medium and under conditions of silver and halide concentration and rate of addition, pH, temperature and reaction time effective to nucleate essentially pure AgBr crystals; and

(B) then growing the crystals in the absence of substantial amounts of excess chloride to form photosensitive grains by addition of a second silver salt and a halide.

5,310,645

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Akihiko Ikegawa; Masayuki Kuramitsu, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

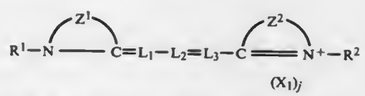
Filed Oct. 6, 1992, Ser. No. 957,042

Claims priority, application Japan, Oct. 7, 1991, 3-285532; Jan. 14, 1992, 4-23343

Int. Cl.[5] G03C *1/18, 1/29*

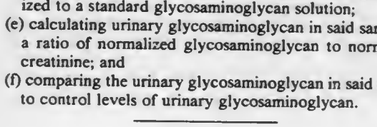
U.S. Cl. 430—574 **9 Claims**

1. A silver halide photographic material comprising a support having thereon (a) a layer containing at least one methine compound represented by the following general formula (I) and (b) a layer containing at least one methine compound represented by the following general formula (V):



(I)

wherein R^1 represents —$(CH_2)_r$—$CONHSO_2$—R^3, —$(CH_2)_s$—SO_2NHCO—R^4, —$(CH_2)_t$—$CONHCO$—R^5 or —$(CH_2)_u$—SO_2NHSO_2—R^6 in which R^3, R^4, R^5 and R^6 each represents an alkyl, alkoxy or amino group, r, s, t and u each represents an integer of 1 to 5, and R^2 has the same meaning as R^1 or represents an alkyl group other than those represented by R^1; Z^1 and Z^2 each represents a nonmetallic atom group required to form a benzothiazole nucleus or a benzoselenazole nucleus; L_1, L_2 and L_3 each represents a methine group; X_1 represents an anion; and j represents an integer required to adjust the charge in the molecule to 0;



(V)

wherein R^{13} and R^{14} each has the same meaning as R^2; Z^9 and Z^{10} each has the same meaning as Z^1; L_{13} and L_{14} each has the same meaning as L_1; Q represents a non-metallic atom group required to form a 5-membered or 6-membered carbon or heterocyclic group; and A represents an oxygen or sulfur atom.

5,310,646

METHOD FOR THE DETECTION OF MUCOPOLYSACCHARIDE STORAGE DISEASES

Chester B. Whitley, Shoreview, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 297,051, Jan. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 194,553, May 13, 1988, abandoned. This application Dec. 9, 1991, Ser. No. 806,833

Int. Cl.[5] C12Q *1/00;* **G01N** *21/75, 21/00*

U.S. Cl. 435—4 **10 Claims**

1. A method for the screening of mucopolysaccharide storage diseases in a human patient consisting essentially of:

(a) extracting a sample of the patient's urine which has been absorbed onto a porous sheet and dried, by agitating said sheet with water for a period of time sufficient to yield an aqueous extract which contains glycosaminoglycan and creatinine;

(b) determining the amount of creatinine in a first portion of said aqueous extract, said amount of creatinine being normalized to standard creatinine reference solutions;

(c) adding a known amount of 1,9-dimethylmethylene blue chloride dye reagent to a second portion of said aqueous extract without prior separation of urine constituents from said extract to produce a test solution, said test solution having sufficient buffer to stabilize glycosaminoglycan-dye complexes in solution without precipitation;

(d) determining the amount of glycosaminoglycan in said test solution by inspection of color change in said test solution, said amount of glycosaminoglycan being normalized to a standard glycosaminoglycan solution;

(e) calculating urinary glycosaminoglycan in said sample as a ratio of normalized glycosaminoglycan to normalized creatinine; and

(f) comparing the urinary glycosaminoglycan in said sample to control levels of urinary glycosaminoglycan.

5,310,647

DETECTION AND MEASUREMENT OF DESTRUCTIVE AND POLYMER FORMING ENZYMES BY COLLOIDAL FLOCCULATION

Daniel A. Kerschensteiner, Chester County, Pa., assignor to Cherrystone Corporation, Wayne, Pa.

Filed Apr. 1, 1992, Ser. No. 861,654

Int. Cl.[5] C12Q *1/00, 1/37*

U.S. Cl. 435—4 **7 Claims**

1. A method for detecting gelatinase in a sample comprising: preparing a sol by adding a colloidal protector selected from the gorup consisting of IgM, IgA, IgG, gelatin, casein, elastin, collagen, fibrin and bovine serum albumin (BSA), to colloidal gold to form a protected sol and by further adding a sensitizing amount of sodium chloride to said protected sol where said sensitizing amount is more than the amount required to flocculate said colloidal gold in the

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absence of the protection provided by said colloidal protector but is less than the amount required to flocculate said colloidal gold in the presence of said colloidal protector; and

exposing said sol to said sample to flocculate said colloidal gold from a dispersed state to a visually observable flocculated state when gelatinase is present in the sample to thereby visually detect said gelatinase in said sample.

5,310,648

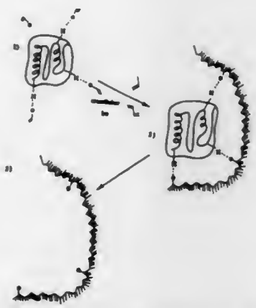
COMPOSITION OF MATTER COMPRISING AN IMPRINTED MATRIX EXHIBITING SELECTIVE BINDING INTERACTIONS THROUGH CHELATED METALS

Frances H. Arnold; Pradeep Dhal, both of Pasadena; Deborah Shnek, Pomona, and Sean Plunkett, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 1, 1991, Ser. No. 649,470

Int. Cl.[5] A01N *1/02*; C12Q *1/70, 1/04*; C12N *5/00*

U.S. Cl. 435—5 **9 Claims**



1. A composition of matter which selectively binds to one or more functional groups present at spaced locations on the surface of a template molecule, said composition comprising:

an imprinted matrix comprising a polymer structure which is spatially matched to the surface of said template molecule;

one or more interactive moieties located on said polymer at spaced locations which are complementary to said functional groups of said template molecule, said interactive moieties comprising chelated metals wherein said chelated metals are located so as to undergo selective binding interactions with said functional groups to thereby provide selective binding of said composition of matter to said template molecule.

5,310,649

METHOD FOR DETECTING SPECIES AND BIOVARS OF BRUCELLA

Thomas A. Ficht; Blair A. Sowa, and L. Garry Adams, all of College Station, Tex., assignors to Texas A & M University System, College Station, Tex.

Filed May 22, 1990, Ser. No. 527,017

Int. Cl.[5] C12Q *1/68*

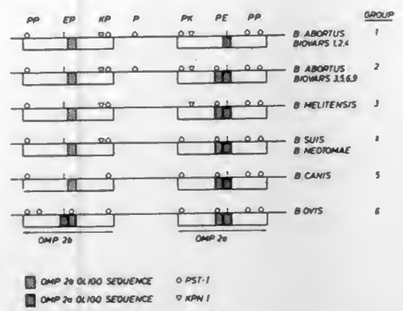
U.S. Cl. 435—6 **19 Claims**

1. A method for diagnosing Brucella infection comprising the steps of:

releasing DNA from a test sample;

releasing DNA from a test sample;

amplifying at high stringency a gene sequence of a Brucella omp2 gene locus includes omp2a gene, omp2b gene, nucleic acid sequences intervening between the omp2a and omp2b genes, and approximately 300 nucleic acids flanking the omp2a and omp2b genes; and



analyzing the amplified gene sequence to detect Brucella omp2 gene sequences diagnostic of Brucella.

5,310,650

METHOD AND DEVICE FOR IMPROVED REACTION KINETICS IN NUCLEIC ACID HYBRIDIZATIONS

Michael E. McMahon, Libertyville, and Julian Gordon, Lake Bluff, both of Ill., assignors to Abbott Laboratoires, Abbott Park, Ill.

Continuation-in-part of Ser. No. 324,926, Mar. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 912,878, Sep. 29, 1986, Pat. No. 4,960,691. This application Aug. 4, 1992, Ser. No. 925,322

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **34 Claims**



1. A device for performing solid phase hydridizations of soluble, single-stranded polynucleotides, comprising a strip of porous chromatographic medium having:

a contact site at or near one end;

a capture site remote from the contact side whereat a single-stranded target polynucleotide complementary to a labelled, soluble polynucleotide is immobilized against transport or becomes immobilized against transport by binding to a capture polynucleotide which itself is immobilized against transport;

said labelled polynucleotide dried on the medium at a location between the contact site and the remote capture site, such that it can be mobilized and transported to the remote capture site by a transport solution; and

capillary means for transporting a solution containing the labelled, soluble polynucleotide under hydridizing conditions to the remote capture site, whereby hybridization

can occur between complementary base pairs of the polynucleotides;

wherein said strip further comprises a first region, said first region being substantially devoid of capture polynucleotide, adjacent said capture site in the direction of said contact site and a second region adjacent said capture site in the opposite direction, and wherein said strip is nonsegmented between said first region and said capture site and between said second region and said capture site.

5,310,651

DNA PROBES OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 2 (HIV-2), AND METHODS EMPLOYING THESE PROBES FOR DECTECTING THE PRESENCE OF HIV-2

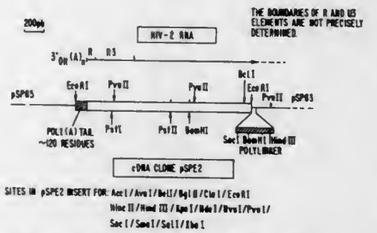
Marc Alizon, Paris; Luc Montagnier, Le Plessy Robinson; Denise Guetard; Francoise Brun-Vezinet, both of Paris, all of France, and Francois Clavel, Rockville, Md., assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 602,383, Oct. 24, 1990, abandoned, and a continuation of Ser. No. 604,323, Oct. 24, 1990, said Ser. No. 602,383, is a continuation of Ser. No. 916,080, Oct. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,288, said Ser. No. 604,323, is a continuation of Ser. No. 933,184, Nov. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 916,080, Oct. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,288. This application Sep. 9, 1991, Ser. No. 756,998

Claims priority, application France, Jan. 22, 1986, 86 00910; Jan. 22, 1986, 86 00911; Feb. 6, 1986, 86 01635; Feb. 13, 1986, 86 01985

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **4 Claims**



1. An in vitro diagnostic method for the diagnosis of a human immunodeficiency virus type 2 (HIV-2) infection comprising the steps of:

(a) contacting nucleic acid from a body sample suspected of containing viral genetic material with a detectable nucleic acid probe in a hybridization solution to form a mixture of nucleic acids, wherein said nucleic acid probe is selected from the group consisting of:

i) a probe consisting of HIV-2 nucleic acid deposited at the C.N.C.M. under Accession No. I-626;

ii) a probe consisting of HIV-2 nucleic acid deposited at the C.N.C.M. under Accession No. I-627; and

iii) a probe consisting of HIV-2 nucleic acid deposited at the C.N.C.M. under Accession No. I-628;

(b) washing the mixture of nucleic acids with a wash solution, and

(c) detecting the formation of hybrids, wherein steps (a) and (b) are performed under conditions that allow generation of a strong hybridization signal in the presence of genomic nucleic acid of HIV-2 and a faint hybridization signal in the presence of genomic nucleic acid of HIV-1,

wherein said detectable nucleic acid probe is such that (a) hybridization of the nucleic acid probe with nucleic acids of HIV-2 under hybridization conditions can be strongly detected, (b) hybridization of the nucleic acid probe with nucleic acids of STLV-III$_{mac}$ under hybridization conditions can be faintly detected, and (c) hybridization of the nucleic acid probe with nucleic acids of HIV-1 under hybridization conditions cannot be detected;

and further wherein said hybridization conditions comprise contacting said probe with said HIV-2, STLV-III$_{mac}$, or HIV-1 in a hybridization solution consisting essentially of about 3×SSC, about 5×Denhart, and about 50% formamide at about 42° C. followed by washing with a wash solution consisting essentially of about 0.1×SSC and about 0.1% SDS at about 65° C.

5,310,652

REVERSE TRANSCRIPTION WITH THERMOSTABLE DNA POLYMERASE-HIGH TEMPERATURE REVERSE TRANSCRIPTION

David H. Gelfand, Oakland, and Thomas W. Myers, Emeryville, both of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 746,121, Aug. 15, 1991, abandoned, and a continuation-in-part of Ser. No. 455,967, Dec. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 609,157, Nov. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 557,517, Jul. 24, 1990, abandoned, said Ser. No. 746,121, is a continuation-in-part of Ser. No. 585,471, Sep. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,611, Dec. 22, 1989, said Ser. No. 455,967, is a continuation-in-part of Ser. No. 143,441, Jan. 12, 1988, which is a continuation-in-part of Ser. No. 63,509, Jun. 17, 1987, Pat. No. 4,889,818, which is a continuation-in-part of Ser. No. 899,241, Aug. 22, 1986, abandoned. This application Jun. 24, 1993, Ser. No. 82,182

Int. Cl.[5] C12P *19/34*; C12Q *1/68*; C07H *5/04, 15/12*

U.S. Cl. 435—6 **7 Claims**

1. A homogeneous single addition method for copying a target RNA molecule in a sample to produce a cDNA, and then amplifying the resulting cDNA, the method comprising the steps of:

(a) treating said sample in a reaction mixture comprising a first and second primer, wherein said first primer is sufficiently complementary to said target RNA to hybridize therewith and initiate synthesis of a cDNA molecule complementary to said target RNA, and said second primer is sufficiently homologous to said target RNA to hybridize to said cDNA and initiate synthesis of an extension product, and a thermostable DNA polymerase having reverse transcriptase activity in the presence of all four deoxyribonucleoside triphosphates, in an appropriate buffer, wherein said buffer comprises Mn^{+2}, at a temperature sufficient for said thermostable DNA polymerase to initiate synthesis of an extension product of said first primer to provide a cDNA molecule complementary to said target RNA;

(b) treating said reaction mixture at an appropriate temperature to provide single-stranded cDNA;

(c) treating said reaction mixture at an appropriate temperature for said thermostable DNA polymerase to initiate synthesis of an extension product of said second primer to provide a double-stranded cDNA molecule; and

(d) amplifying the double-stranded cDNA molecule of step (c) by a polymerase chain reaction.

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5,310,653

TUMOR MARKER PROTEIN AND ANTIBODIES THERETO FOR CANCER RISK ASSESSMENT OR DIAGNOSIS

Margaret Hanausek-Walaszek, Bastrop; Thomas J. Slaga, Austin, and Zbigniew Walaszek, Bastrop, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 426,428, Oct. 24, 1989, abandoned. This application Feb. 2, 1993, Ser. No. 12,972

Int. Cl.[5] G01N *33/574;* **A61K** *39/00, 37/08;* **C07K** *15/18*

U.S. Cl. 435—7.23 **10 Claims**

1. A process for preparing an immunogen of a tumor-associated protein comprising the steps of:

(a) collecting from plasma, tumor cytosol or ascitic fluid of carcinoma-bearing mammals or from culture medium in which cancer cells were grown, the protein fraction which is precipitated from plasma, tumor, cytosol or ascitic fluid between 30% and 60% saturation of an aqueous ammonium sulfate solution or from culture medium at 90% saturation of an aqueous ammonium sulfate solution, respectively;

(b) chromatographing the protein fraction on a molecular sieving column and collecting a protein fraction having a molecular weight in the range of about 50 to 90 kilodaltons;

(c) applying the collected chromatographed protein fraction to a high performance liquid chromatography (HPLC) phenyl hydrophobic interaction column and allowing protein to bind to the column;

(d) eluting the bound protein on the phenyl hydrophobic interaction column with a buffer comprising about 16% ammonium sulfate;

(e) collecting the first distinct protein peak eluted from the column;

(f) electrophoresing the collected protein;

(g) transblotting the electrophoresed protein to a nitro-cellulose sheet;

(h) cutting from the nitro-cellulose sheet that portion which contains a band of protein corresponding to about 65 kD.

5,310,654

METHOD FOR DETERMINING VIRULENCE OF YERSINIA

Ralph R. Isberg, Brookline, Mass.; Virginia Miller, Los Angeles, and Stanley Falkow, Portola Valley, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 761,222, Jul. 31, 1985, abandoned. This application Apr. 19, 1989, Ser. No. 340,375

Int. Cl.[5] C12Q *1/68;* **C12N** *15/31*

U.S. Cl. 435—6 **2 Claims**

1. A method for determining virulence of a Yersinia strain, said method comprising:

fragmenting the genome of a Yersinia strain with at least one restriction endonuclease to obtain fragments of said genome;

size separating said fragments;

probing said size separated fragments with at least one probe sequence from the inv or ail gene to detect homologous sequences; and

relating the size of said sequences to the size of homologous sequences from a virulent strain.

5,310,655

PROCESS FOR THE DETECTION OF KIDNEY TUBULE FUNCTIONING

Lothar Zimmerhackl, Nimburg; Rolf Kinne, Dortmund; Thomas Fabricius, Dortmund; Fricke Pietruschka, Dortmund, and Mathias Brandis, Freiburg, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften E.V., Göttingen, Fed. Rep. of Germany

PCT No. PCT/EP89/01070, § 371 Date Mar. 22, 1991, § 102(e) Date Mar. 22, 1991, PCT Pub. No. WO90/03578, PCT Pub. Date Apr. 5, 1990

PCT Filed Sep. 14, 1989, Ser. No. 663,832

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1988, 3832432

Int. Cl.[5] C12Q *1/00;* **G01N** *33/535;* **C12N** *5/16*

U.S. Cl. 435—7.9 **9 Claims**

1. A process for the detection of the level of functioning kidney tubules for a transplanted kidney function, a blood supply disturbance or kidney damage in a patient comprising

determining the content of THP in a urine sample of said patient by immunoassay wherein a monoclonal antibody 2B3 (ECACC No. 88092301) reacts specifically with the protein component of urinary THP,

by incubating the sample solution with the monoclonal antibody 2B3 and a labelled polyclonal specifically bindable with urinary THP or the complex of THP and the monoclonal antibody 2B3,

and measuring the amount of the label as a measure of the amount of urinary THP to determine transplanted kidney function, extent of blood supply disturbance or extent of kidney damage.

5,310,656

VITAMIN B12 ASSAY

Mohammad T. Pourfarzaneh, Alameda, and George W. Katsilometes, Davis, both of Calif., assignors to Tritech Partners, Tarrytown, N.Y.

Continuation of Ser. No. 371,324, Jun. 26, 1989, abandoned. This application Jun. 12, 1992, Ser. No. 898,240

Int. Cl.[5] G01N *33/82, 33/53, 33/537, 33/543*

U.S. Cl. 435—7.93 **9 Claims**

3. A process for the determination of the concentration of vitamin B_{12} in a fluid containing vitamin B_{12} bound to binding proteins comprising the steps of:

(a) treating a sample of the fluid to free vitamin B_{12} from the binding proteins;

(b) contacting the sample with labelled monoclonal antibodies specific to the vitamin B_{12} binding site on intrinsic factor thereby blocking the binding of vitamin B_{12} to intrinsic factor and labelled intrinsic factor which is labelled with a different label from that used with the monoclonal antibodies, one of the labels being capable of being bound by a capture ligand of a solid phase and the other label being a signal generating label to form intrinsic factor:antibody and intrinsic factor:vitamin B_{12} complexes;

(c) adding the solid phase containing the capture ligand for one of said labels to said complexes to form bound and unbound complexes;

(d) separating the bound and unbound complexes and washing; and

(e) measuring either the amount of bound complex or unbound complex to quantify the amount of vitamin B_{12} present in the sample.

5,310,657

KINETIC ASSAY FOR ENDOTOXIN USING LIMULUS AMEBOCYTE LYSATE AND CHROMOGENIC SUBSTRATE

Ronald N. Berzofsky, Timonium, Md., assignor to Whittaker Bioproducts, Inc., Walkersville, Md.

Division of Ser. No. 428,300, Oct. 30, 1989, abandoned. This application Jul. 13, 1992, Ser. No. 911,375

Int. Cl.[5] F27B *9/40, 14/00, 9/12;* **F27D** *7/00*

U.S. Cl. 435—34 **5 Claims**

1. A kinetic method for determination of endotoxin in a test fluid using a kinetic assay substrate composition comprising the steps of:

(a) mixing a sample of the test fluid with a kinetic assay substrate composition containing a chromogenic substrate of the clotting enzyme of *Limulus amebocyte* lysate and a *Limulus amebocyte* lysate comprising a pro-clotting enzyme and having sensitivity to endotoxin in a vessel containing a spectrophotometric path under conditions suitable for endotoxin assay to form a sample-kinetic assay substrate composition mixture, wherein both said chromogenic substrate and said lysate are present in an endotoxin determining amount;

(b) placing said vessel in a spectrophotometer so that the spectrophotometer beam passes through the vessel and the sample-kinetic assay substrate composition mixture;

(c) monitoring the change in optical absorbance of this sample-kinetic assay substrate composition mixture over time;

(d) determining the time required for a predetermined absorbance change to occur, wherein said predetermined absorbance change optimizes assay sensitivity and assay duration;

(e) calculating endotoxin concentration in the sample by comparison of said time to a standard curve obtained by correlating the concentration of endotoxin in standard endotoxin solutions with the time required to reach said predetermined absorbance change for each standard endotoxin solution, wherein said standard endotoxin solutions are mixed with said kinetic assay substrate composition under conditions suitable for endotoxin assay before determining the time required for the predetermined absorbance change to occur.

5,310,658

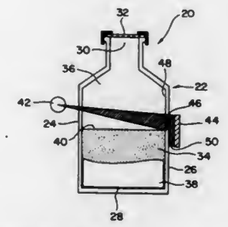
METHOD AND APPARATUS FOR DETECTING BIOLOGICAL ACTIVITIES IN A SPECIMEN

Klaus W. Berndt, Stewartstown, Pa., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 9, 1992, Ser. No. 959,192

Int. Cl.[5] C12Q *1/06;* **C12M** *1/34*

U.S. Cl. 435—34 **30 Claims**



1. An instrument for detecting microorganisms in fluid samples, said instrument comprising:

a sealable container containing a fluid medium and a gaseous head space above a fluid-gas interface;

a compressible member submerged in said fluid medium within said sealable container; and

means for measuring the amount of movement of said fluid-gas interface resulting from microorganism growth related pressure changes within said gaseous head space and compression of said compressible member.

5,310,659

GL-7ACA ACYLASE

Ichiro Aramori, Kyoto; Masao Fukagawa, Tsuchiura; Hiroki Ono, Osaka; Yosuke Ishitani, Kobe; Mana Tsumura; Morita Iwami, both of Tsukuba, and Hitoshi Kojo, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 18, 1991, Ser. No. 779,049

Claims priority, application United Kingdom, Oct. 22, 1990, 9022907

Int. Cl.[5] C12P *39/00;* **C12N** *9/80*

U.S. Cl. 435—43 **4 Claims**

1. An isolated and purified 7-(4carboxybutanamido)-3-acetoxymethyl-3-cephem-4-carboxylic acid (GL-7-ACA) acylase having the following characteristics:

(a) catalyzes the enzymatic conversion of glutaryl 7 aminocephalosporic acid (7-ACA), adipyl 7-ACA, and succinyl 7-ACA, into 7-aminocephalosporanic acid,

(b) has a molecular weight of 70,000 daltons (SDS-PAGE)

(c) has an N-terminal amino acid sequence (SEQ ID NO: 1) of the formula:

Gln-Ser-Glu-Gln-Glu-Lys-Ala-Glu-Glu SEQ ID NO. 1

and

(d) is derived from Bacillus laterosporus J1.

5,310,660

METHOD AND A HYBRID PROMOTER FOR CONTROLLING EXOGENOUS GENE TRANSCRIPTION

Grant A. Bitter, Thousand Oaks, Calif., assignor to Amgen, Thousand Oaks, Calif.

Continuation of Ser. No. 336,604, Apr. 7, 1989, abandoned, which is a continuation of Ser. No. 720,587, Apr. 8, 1985, abandoned. This application Oct. 1, 1991, Ser. No. 769,472

Int. Cl.[5] C12N *15/00, 15/63, 15/81;* **C12P** *21/00*

U.S. Cl. 435—69.1 **18 Claims**

1. A hybrid promoter which functions is control transcription of an exogenous gene in yeast comprising:

a portion of a yeast glyceraldehyde-3-phosphate dehydrogenase promoter effective for promoting transcription;

a TATA box homology adjacent a downstream end of the hybrid promoter; and

an insert comprising an extrinsic upstream regulatory sequence at a location in said glyceraldehyde-3-phosphate dehydrogenase promoter upstream of said TATA box homology.

5,310,661

NUCLEIC ACID ENCODING THE ALPHA CHAIN PRODOMAINS OF INHIBIN AND METHOD FOR SYNTHESIZING POLYPEPTIDES USING SUCH NUCLEIC ACID

Anthony J. Mason, and Peter H. Seeburg, both of San Francisco, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 744,207, Aug. 12, 1991, Pat. No. 5,215,893, which is a division of Ser. No. 215,466, Jul. 5, 1988, Pat. No. 5,089,396, which is a division of Ser. No. 906,729, Dec. 31, 1986, Pat. No. 4,798,885, which is a continuation-in-part of Ser. No. 827,710, Feb. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 783,910, Oct. 3, 1985, abandoned. This application Oct. 8, 1992, Ser. No. 958,414

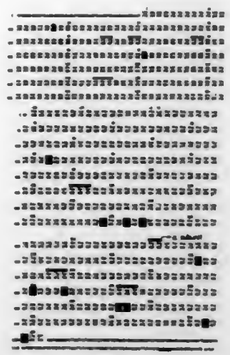
Int. Cl.[5] C12P *21/02;* **C12N** *15/12, 1/21, 5/10*

U.S. Cl. 435—69.1 **16 Claims**

1. A method for producing an inhibin α chain prodomain polypeptide comprising a sequence selected from the group

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consisting of amino acid residues 1-230 of FIG. 1B, and amino acid residues 1-29 and 30-199 of FIG. 6, comprising (a) constructing a vector that comprises a nucleic acid encoding said



prodomain, (b) transforming a host cell with the vector, and (c) culturing the transformed cell under conditions appropriate for expression of said polypeptide.

5,310,662
RECEPTORS: THEIR IDENTIFICATION, CHARACTERIZATION, PREPARATION AND USE

Ronald M. Evans, La Jolla, and Stanley M. Hollenberg, Del Mar, both of Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Division of Ser. No. 278,614, Nov. 30, 1988, Pat. No. 5,217,867. This application Jun. 8, 1993, Ser. No. 73,928
Int. Cl.[5] C12N *15/62, 15/63*
U.S. Cl. 435—64.1 **13 Claims**

1. A DNA molecule encoding a member of the steroid hormone superfamily of receptors having trans-activation transcription domains in addition to those of the parental receptor,

wherein said additional trans-activation transcription domains are selected from the group consisting of τ_1, τ_2, and functional fragment(s) thereof,

wherein said additional trans-activation transcription domains are independent of both the DNA-binding and ligand-binding domains of parent receptor, and

wherein said additional trans-activation transcription domains are located outside of said DNA-binding and ligand-binding domains, if present.

5,310,663
AFFINITY PEPTIDES

Heinz Döbeli, Ziefen; Bernhard Eggimann, Basel, both of Switzerland; Reiner Gentz, Rheinfelden, Fed. Rep. of Germany; Erich Hochuli, Arisdorf, Switzerland, and Dietrich Stüber, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 158,962, Feb. 22, 1988. This application Jun. 18, 1993, Ser. No. 80,043
Claims priority, application Switzerland, Oct. 3, 1987, 895/87
Int. Cl.[5] C12N *15/00;* C12P *21/02*
U.S. Cl. 435—69.7 **11 Claims**

1. A DNA sequence coding for a fusion protein comprising a biologically active polypeptide or protein linked by its amino- or carboxy-terminus to one or two affinity peptides, which peptides have from 2 through 6 adjacent histidine residues.

5,310,664
SITE SPECIFIC DOUBLE STRANDED DNA ENDONUCLEASE

Ronald A. Butow, Dallas, Tex., and Philip S. Perlman, Worthington, Ohio, assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 456,100, Dec. 22, 1989, abandoned. This application Dec. 28, 1992, Ser. No. 997,653
Int. Cl.[5] C12P *19/34;* C12N *9/22*
U.S. Cl. 435—91.53 **16 Claims**

1. An endonuclease protein encoded in the fourth intron of yeast cytochrome oxidase having an apparent molecular weight of about 29,000 daltons as determined by SDS-PAGE, and which is capable of cleaving double-stranded DNA at a site identified as follows:



5,310,665
GLUCOSE ISOMERASES HAVING ALTERED SUBSTRATE SPECIFICITY

Anne-Marie Lambeir, Heverlee; Ignace Lasters, Antwerpen, both of Belgium; Wilhemus J. Quax, Voorschoten, and Jan M. Van der Laan, Groningen, both of Netherlands, assignors to Gist-brocades, N.V., Delft, Netherlands

Filed Jan. 4, 1991, Ser. No. 637,870
Claims priority, application European Pat. Off., Jan. 4, 1990, 90200029.8
Int. Cl.[5] C12P *19/24;* C12N *9/92*
U.S. Cl. 435—94 **16 Claims**

1. A glucose isomerase which is a modified form of a naturally occurring glucose isomerase having a determinable three dimensional structural wherein said modification comprises substituting a different amino acid from that occurring at at least one position of said naturally occurring glucose isomerase, wherein said position is identified by:

selecting all residues and crystallographically assigned water molecules as they exist in said three-dimensional structure which have at least one atom within a sphere of 4 angstroms surrounding the atoms of a substrate bound in the active site of said glucose isomerase and residues which are in van der Waal's contact with said residues and water molecules thus selected, to obtain ia first list of residues and water molecules;

discarding from said list of residues and water molecules those that are involved in catalysis, cofactor binding and essential intersubunit interactions to obtain a reduced list of residues and water molecules;

discarding from said reduced list of residues and water molecules those that interfere with the structural roles of those resides discarded from said first list to obtain a twice-reduced list of residues and water molecules,

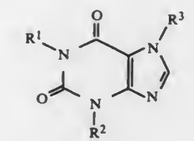
wherein said position to be substituted is selected from among those residues on said twice-reduced list.

5,310,666
PROCESS FOR THE ENANTIOSELECTIVE PREPARATION OF (β-1)-HYDROXYALKYLXANTHINES BY REDUCTION USING RHODOTORULA RUBRA

Werner Aretz, Königstein/Taunus; Harald Furrer, Hofheim am Taunus; Ulrich Gebert, Schlossborn, and Heinz-Joachim Hinze, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 631,400, Dec. 21, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,996
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942872
Int. Cl.[5] C12P *17/18*
U.S. Cl. 435—119 **8 Claims**

1. A process for the enantioselective preparation of an (ω-1)-hydroxyalkylxanthine which comprises incubating the compound of the formula I



I

in which

R^1, R^2 and R^3, which can be identical or different, are selected from the group consisting of the substituents CH_3—CO—$(CH_2)_m$— and (C_1 to C_6)-alkyl, where one of the substituents of the group must be CH_3—CO—$(CH_2)_m$, m is an integer from 2 to 6, and (C_1 to C_6)-alkyl can be straight-chain or branched, or

in which

R^1 is CH_3—CO—$(CH_2)_4$—, R^2 is CH_3— and R^3 is CH_3—O—CH_2—, with *Rhodotorula rubra* DSM 5436 to prepare S-(+)-(ω-land recovering said S-(+)-(ω-1)-hydroxyalkylxanthine.

5,310,667
GLYPHOSATE-TOLERANT 5-ENOLPYRUVYL-3-PHOSPHOSHIKIMATE SYNTHASES

David A. Eichboltz, St. Louis; Charles S. Gasser, and Ganesh M. Kishore, both of Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 17, 1989, Ser. No. 380,963
Int. Cl.[5] C12N *15/01, 15/29, 15/32*
U.S. Cl. 435—172.3 **4 Claims**

1. A method for producing a gene encoding a glyphosate-tolerant 5-enolpyruvyl-3-phosphoshikimate (EPSP) synthase enzyme which comprises the steps of altering a gene encoding EPSP synthase to cause the substitution of an alanine residue for the second glycine residue in a first amino acid sequence:

—L—G—N—A—G—T—A—

located between positions 80 and 120 in a mature EPSP synthase sequence and further altering said gene to cause the substitution of an amino acid residue selected from the group consisting of aspartic acid and asparagine for the terminal glycine residue in a second amino acid sequence:

—E—R—P—I—x_1—x_2—L—V—x_3—x_4—L—x_5—x_6—x_7—G—A —

wherein x_1, x_2, x_3, x_4, x_6 and x_7 are any amino acid residue, and x_5 is either arginine or lysine, said second amino acid sequence located between positions 120 and 160 in the mature EPSP synthase sequence.

5,310,668
VARICELLA-ZOSTER VIRUS AS A LIVE RECOMBINANT VACCINE

Ronald W. Ellis, Overbrook Hills, Pa.; Elliott Kieff, Brookline, Mass.; Edward M. Scolnick, Wynnewood, and Robert S. Lowe, Harleysville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 376,788, Jul. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 276,984, Nov. 28, 1988, abandoned, which is a continuation of Ser. No. 263,562, Oct. 27, 1988, abandoned, which is a continuation of Ser. No. 51,444, May 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 20,617, Mar. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 876,956, Jun. 20, 1986, abandoned. This application Feb. 27, 1992, Ser. No. 846,751
Int. Cl.[5] C12N *15/86, 7/01;* A61K *39/295, 39/25*
U.S. Cl. 435—172.3 **13 Claims**

1. VZV modified by the presence in a nonessential gene or region of its genome of non-VZV viral DNA whose coding sequence specifies an immunogenic protein of a human pathogen.

5,310,669
FULLERENE COATED SURFACES AND USES THEREOF

Robert C. Richmond, Etna, and Ursula J. Gibson, West Lebanon, both of N.H., assignors to The Trustees of Dartmouth College, Hanover, N.H.

Filed Jun. 22, 1992, Ser. No. 901,911
Int. Cl.[5] C12M *3/00;* C12N *5/00, 11/00, 11/02*
U.S. Cl. 435—177 **16 Claims**

4. A cell culture substrate comprising a surface coated with fullerene sufficient to support the attachment and growth of cells.

5,310,670
METHOD FOR THE PURIFICATION OF ERWINIA L-ASPARAGINASE

Christopher R. Goward, London, England, assignor to Public Health Laboratory Service Board, London, England

PCT No. PCT/GB91/01308, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/02616, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 1, 1991, Ser. No. 867,105
Claims priority, application United Kingdom, Aug. 2, 1990, 9017002
Int. Cl.[5] C12N *9/82*
U.S. Cl. 435—229 **10 Claims**

1. A process for producing purified asparaginase which comprises the steps of

(i) extracting L-asparaginase from disrupted cells at a pH of from 11.3 to 11.5,

(ii) adjusting the pH to within the range 6.3 to 6.7,

(iii) separating supernatant from precipitated impurities,

(iv) subjecting supernatant from step (iii) to adsorption on a solid medium, having cation exchange groups so as to adsorb L-asparaginase on the solid medium wherein the cation exchange groups comprise sulphonate groups, and

(v) eluting adsorbed L-asparaginase,

and wherein the contacting of the supernatant with the solid medium in step (iv) is effected at a pH of from 4.0 to 5.5, and wherein the eluting of adsorbed L-asparaginase in step (v) is effected at a pH of from 6.0 to 7.5.

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5,310,671

FOWLPOX VIRUS NON-ESSENTIAL REGIONS

Matthew M. Binns; Michael E. G. Boursnell; Joan I. A. Campbell, all of Huntingdoo, and Fiona M. Tomley, Cambridge, all of England, assignors to British Technology Group Limited, London, England

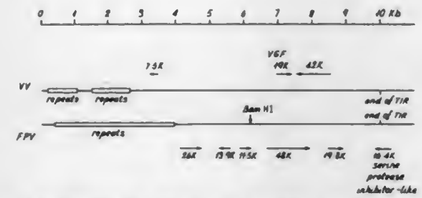
PCT No. PCT/GB89/00698, § 371 Date Nov. 28, 1990, § 102(e) Date Nov. 28, 1990, PCT Pub. No. WO89/12684, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 22, 1989, Ser. No. 613,565

Claims priority, application United Kingdom, Jun. 24, 1988, 815098; Feb. 27, 1989, 8904411; Mar. 31, 1989, 8907374; May 8, 1989, 8910520

Int. Cl.[5] C12N *7/01, 15/39, 15/86, 5/10*

U.S. Cl. 435—235.1 10 Claims



1. A recombinant fowlpox virus (FPV) which contains within the long unique sequence of the terminal inverted repeat of the fowlpox virus genome, at least one foreign gene and at least one sequence for regulating the expression of the or each foreign gene.

5,310,672

INDUCTION OF SOMATIC EMBRYOGENISIS IN TAXUS, AND THE PRODUCTION OF TAXANE-RING CONTAINING ALKALOIDS THEREFROM

Steven R. Wann, Lawrenceville, N.J., and William R. Goldner, Langhorne, Pa., assignors to Union Camp Corporation, Wayne, N.J.

Continuation of Ser. No. 860,712, Apr. 1, 1992, abandoned. This application Aug. 5, 1993, Ser. No. 102,517

Int. Cl.[5] C12N *5/00;* C12P *17/02*

U.S. Cl. 435—240.45 6 Claims

1. A method of producing taxane ring-containing compounds from somatic embryos of Taxus which are capable of producing said compounds, comprising the steps of:

culturing embryos from the genus Taxus in a culture medium under conditions which produce somatic embryos; and

isolating said taxane ring-containing compounds from said embryos or said medium.

5,310,673

MASS PROPAGATION THROUGH SHOOT PRIMORDIA AND REGENERATION OF PLANTS FROM PROTOPLASTS OF SHOOT PRIMORDIA

Masaru Shibata, Kameyama; Kazuya Ito, Yokkaichi; Keigo Doi, Kameyama, and Masaki Ito, Yokkaichi, all of Japan, assignors to Oji Paper Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 453,388, Dec. 15, 1989, abandoned, which is a continuation of Ser. No. 63,871, Jun. 19, 1987, abandoned. This application Jul. 22, 1992, Ser. No. 917,677

Claims priority, application Japan, Jun. 26, 1986, 61-148282; Jun. 2, 1987, 62-137647

Int. Cl.[5] C12N *5/02, 5/00*

U.S. Cl. 435—240.47 2 Claims

1. A process for regeneration of a poplar plant, the process comprising:

preparing shoot primordia from a poplar plant, said shoot primordia being an aggregation of cells prepared by rotary culture of shoot tips at a temperature of between 15° C. and 30° C. at an illumination strength of between 2,000 and 20,000 lux, and at a rotation rate of between 0.5 and 5 rpm in a medium containing an auxin and a cytokinin;

treating the shoot primordia with at least one enzyme to obtain a protoplast;

culturing the protoplast in a Gamborg's B5 medium containing Gelrite TM (polysaccharide), naphthaleneacetic acid, benzyladenine and 2,4- dichlorophenoxyacetic acid, and inorganic and organic salts as the main ingredients to form a callus; and

incubating the callus in a regeneration medium containing naphthaleneacetic acid and benzyladenine to regenerate shoots.

5,310,674

APERTURED CELL CARRIER

Arye Weinreb, Jerusalem, and Mordechai Deutsch, Moshav Olesh, both of Israel, assignors to Bar-Ilan University, Ramat-Gan, Israel

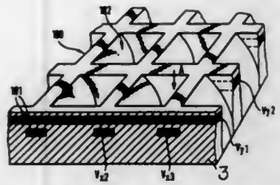
Continuation of Ser. No. 165,070, Mar. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 550,233, Nov. 8, 1983, Pat. No. 4,729,949, which is a continuation-in-part of Ser. No. 489,605, May 2, 1983, abandoned. This application Jul. 29, 1991, Ser. No. 737,920

Claims priority, application Switzerland, May 10, 1982, 2897/82

The portion of the term of this patent subsequent to Mar. 8, 2005, has been disclaimed.

Int. Cl.[5] C12M *1/32, 1/12*

U.S. Cl. 435—293 13 Claims



1. Apparatus for holding living cells at identifiable locations comprising an apertured cell carrier having a configuration defining first and second outer surfaces, said carrier comprising an ordered array of holes including a plurality of different sub-groups therethrough, the positions on the carrier of the holes being identifiable and the holes being sized to have the ability to contain individual living cells having a generally spherical shape therewithin, one cell only per hole, in that the holes have (i) a first cross section at the first outer surface of the carrier of such dimensions that living cells can pass through the first cross section without suffering substantial damage, (ii) a second cross section at a level intermediate between said first and second outer surfaces and of such dimensions that said living cells cannot pass through the second cross section, and (iii) a height between the first outer surface and the level of the second cross section such that either such an entire living cell or substantially such an entire living cell is containable within the hole, and wherein said ordered array comprises a first sub-group of uniformly shaped holes and at least one other sub-group of uniformly shaped holes, wherein the cross sectional dimensions of said first sub-group are different from the cross sectional dimensions of said at least one other sub-group, whereby the holes in said first sub-group are adapted to accommodate individual living cells of a preselected first size therewithin, one cell only per hole, and the holes in said at least one other sub-group are adapted to accommodate individual living cells of at least one preselected other size therewithin, one cell only per hole, which cells are different from the cells of said preselected first size.

5,310,675

PROCARYOTIC CARBONYL HYDROLASES

David A. Estell, Mountain View; Eugenio Ferrari, Daly City; Dennis J. Henner, Pacifica, and James A. Wells, San Mateo, all of Calif., assignors to Genencor, Inc., So San Francisco, Calif.

Continuation of Ser. No. 352,326, May 15, 1989, abandoned, which is a continuation of Ser. No. 866,389, May 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 614,616, May 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 507,419, Jun. 24, 1983, abandoned. This application Dec. 10, 1991, Ser. No. 805,605

Int. Cl.[5] C12N *15/52, 15/75*

U.S. Cl. 435—320.1 2 Claims

1. A recombinant expression vector comprising DNA encoding a subtilisin having a site specific mutation at any one of the amino acid residues equivalent to −1, +32, +155, +104, +222, +166, +64, +33, +169, +189, +217, +156, +221 or +152 in the corresponding amino acid sequence of the mature subtilisin naturally produced by *Bacillus amyloliquefaciens* as shown in FIG. 1B.

5,310,676

CELL CULTIVATING DEVICE

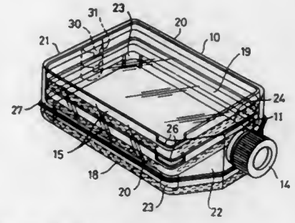
Arne Johansson, Lejre, and Peter Esser, Copenhagen, both of Denmark, assignors to A/S Nunc, Roskilde, Denmark

Continuation-in-part of Ser. No. 804,085, Dec. 6, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,624

Claims priority, application European Pat. Off., Nov. 15, 1991, 91610090.2; PCT Int'l Appl., Oct. 7, 1992, PCT/DK92/00295

Int. Cl.[5] C12M *3/04, 1/24, 1/14*

U.S. Cl. 435—285 36 Claims



1. A cell cultivating device comprising

an outer closable container having a substantially flat container bottom wall, a top wall, a substantially flat first end wall extending at substantially right angles to the flat container bottom wall, a second end wall, and opposite side walls interconnecting the top and container bottom walls and the end walls, one of said walls defining a closable filling opening therein,

an insert positioned within the outer container and including at least first and second interconnected partition wall members, each of the partition wall members including a flat chamber bottom wall extending substantially parallel with the flat container bottom wall and a peripheral wall surrounding the partition wall at its outer edge and extending therefrom toward the container top wall, each of said peripheral walls engaging with adjacent inner surface parts of the container walls, and said chamber bottom walls dividing an inner space defined by the outer container into superposed cultivating chambers,

passage means for mutually fluidly interconnecting all of the superposed cultivating chambers so that liquid introduced into the container via the closable filling opening may distribute itself in all of the interconnected chambers when the container is placed in an upright position in which it is supported by the flat first end wall, said passage means comprises an interconnecting passage defined adjacent to an inner side surface part of the flat first end wall, each chamber communicating with the interconnecting passage through a connecting opening provided in the respective peripheral wall extending along only a fraction of the width of the first end wall being spaced from the bottom wall of the respective cultivating chamber.

5,310,677

RIFAMPICIN RESISTANT XANTHAN HYPERPRODUCING *XANTHOMONAS CAMPESTRIS* STRAIN

Thomas J. Pollock, and Linda Thorne, both of San Diego, Calif., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan and Shin-Etsu Bio, Inc., San Diego, Calif.

Continuation of Ser. No. 479,196, Feb. 13, 1990, Pat. No. 5,194,386, which is a continuation of Ser. No. 38,302, Apr. 14, 1987, abandoned. This application Nov. 5, 1992, Ser. No. 971,944

Int. Cl.[5] C12N *1/20*

U.S. Cl. 435—252.1 2 Claims

2. A biologically pure culture of a *Xanthomonas campestris* strain produced from parent strain NRRL-B1459 S-4L II which biologically pure culture strain is rifampicin resistant and produces more xanthan than said parent strain, said biologically pure culture strain being obtained by the steps comprising:

a) selecting rifampicin resistant colonies from said parent strain by growing said parent strain on medium containing rifampicin;

b) measuring the xanthan gum production levels of said selected rifampicin resistant colonies; and

c) selecting those rifampicin resistant colonies which produce xanthan gum in excess to that produced by said parent strain.

5,310,678

NEWCASTLE DISEASE VIRUS GENE CLONES

Richard W. Bingham, Liberton, Scotland; Philip Chambers, Newcastle upon Tyne, England; Peter T. Emmerson, Ponteland, England, and Neil S. Millar, Sheffield, England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 885,765, Jul. 15, 1986, abandoned. This application Nov. 17, 1989, Ser. No. 438,945

Claims priority, application United Kingdom, Dec. 18, 1985, 8531147; Apr. 14, 1986, 8609037

Int. Cl.[5] C12N *1/21, 1/19, 15/45, 15/63*

U.S. Cl. 435—252.3 12 Claims

1. DNA encoding a polypeptide bioprecursor of the HN glycoprotein of Newcastle Disease Virus.

7. DNA encoding a polypeptide bioprecursor of the F glycoprotein of Newcastle Disease Virus.

5,310,679

COMPOSITION FOR REDUCING TURBIDITY IN SAMPLES OF BIOLOGICAL FLUIDS

Joseph D. Artiss, 2761 Avondale Court, Windsor, Ontario, Canada N9E 1X1 , and Bennie Zak, 6692 Maple Lakes Dr., West Bloomfield, Mich. 48033

Continuation-in-part of Ser. No. 733,267, May 13, 1985, Pat. No. 4,626,511. This application Dec. 1, 1986, Ser. No. 936,267

The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.

Int. Cl.[5] G01N *31/00*

U.S. Cl. 436—18 21 Claims

1. A composition for reducing turbidity in fluid samples consisting essentially of:

a buffering agent;

a nonionic surfactant;

a lipolytic enzyme; and

water.

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5,310,680

TEST FOR FECAL OCCULT BLOOD

Josefina T. Baker, Cupertino; Peter U. Ly, San Jose, and Eli Z. Olivet, Sunnyvale, all of Calif., assignors to Smithkline Diagnostics, Inc., San Jose, Calif.

Continuation of Ser. No. 681,489, Apr. 3, 1991, abandoned, which is a continuation of Ser. No. 96,995, Sep. 16, 1987, abandoned. This application Feb. 24, 1993, Ser. No. 23,133

Int. Cl.[5] **G01N** *33/72*

U.S. Cl. 436—66 **6 Claims**

1. In a fecal occult blood test using a solid test matrix containing guaiac having a fecal smear applied to said matrix and an alcoholic hydrogen peroxide developing solution placed on said smear, the improvement comprising said developing solution additionally containing a phenolic enhancing compound before said developing solution is placed on said matrix having a fecal smear.

5,310,681

SELECTIVE DETECTION WITH HIGH SPEED GAS CHROMATOGRAPHY

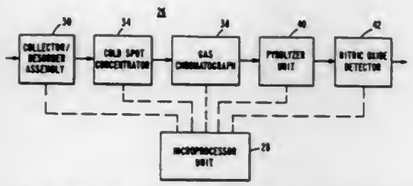
David P. Rounbehler, Bedford; Eugenie Hainsworth, Arlington, and David P. Lieb, Lexington, all of Mass., assignors to Thermedics Inc., Woburn, Mass.

Continuation of Ser. No. 837,785, Feb. 13, 1992, abandoned, which is a division of Ser. No. 81,917, Jul. 8, 1987, Pat. No. 5,099,743. This application Jun. 9, 1993, Ser. No. 73,917

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] **G01N** *33/22, 25/54*

U.S. Cl. 436—106 **9 Claims**



1. A method of performing a gas chromatographic (GC) analysis on a sample to detect nitrogen-containing organic compounds of explosives in said sample comprising:

trapping vapors of said compounds from an air sample in a vapor concentration device;

in a total time interval of less than about thirty seconds, performing the steps of:

(a) flash-heating said vapor concentration while directing a non oxidizing carrier gas into contact with portions of said vapor concentration device holding said vapors from said trapping step, said flash-heating being conducted under conditions effective to release said vapors into said carrier gas without decomposing said vapors,

(b) directing said vapors with said carrier gas into a capillary column of a gas chromatograph containing an inner coating of an organic material operable to selectively retain and timewise-separate said vapors,

(c) timewise-separating said vapors of explosives from each other and from other compounds, and

(d) detecting in said separated vapors the explosives of interest.

5,310,682

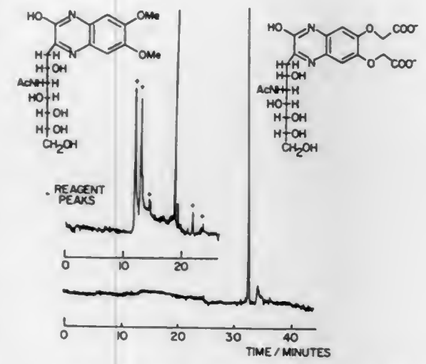
FLUOROGENIC REAGENTS FOR DETECTION OF GLYCOCONJUGATES, α-KETOACIDS AND DIKETONES

Milos V. Novotny, Bloomington, Ind.; Osamu Shirota, Yokohama, Japan, and Donald Wiesler, Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Jun. 17, 1992, Ser. No. 900,207

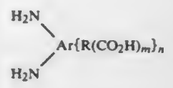
Int. Cl.[5] **G01N** *21/64, 33/64;* **C07C** *205/00, 229/00*

U.S. Cl. 436—128 **31 Claims**



1. A method for detecting the presence of at least one α-dicarbonyl-containing analyte in a liquid sample, said method comprising:

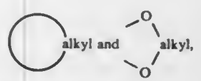
(a) treating said sample with a compound having the formula



in which:

Ar is an aryl radical selected from the group consisting of phenyl and fused polycyclic aromatic radicals, with the two H_2N radicals shown in said formula bonded to Ar at ortho-positions relative to each other,

R is a radical bonded to Ar through one or two single bonds, and is a member selected from the group consisting of —O—alkyl,



m is an integer of 1 to 4, and

n is an integer of 1 to 4, wherein m×n is at least 2,

to form fluorescently tagged derivatives of said at least one gem-dicarbonyl-containing analyte, said derivatives each containing at least one carboxylic acid group;

(b) passing said liquid sample so treated through a chromatographic separation medium to chromatographically separate components of said liquid sample from each other; and

(c) detecting said fluorescently tagged derivatives among said components so separated, by fluorescence emission.

5,310,683

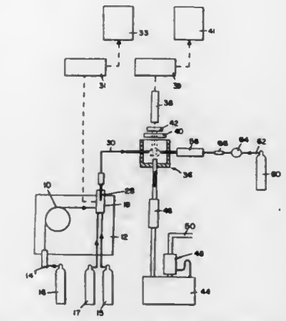
PROCESS FOR SIMULTANEOUS MEASUREMENT OF SULFUR AND NON-SULFUR CONTAINING COMPOUNDS

Richard Godec, Erie; Neil Johansen, Boulder, and Donald H. Stedman, Englewood, all of Colo., assignors to Sievers Research, Inc., Boulder, Colo.

Division of Ser. No. 444,636, Dec. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 275,980, Nov. 25, 1988. This application Sep. 6, 1991, Ser. No. 754,889

Int. Cl.[5] **G01N** *25/22*

U.S. Cl. 436—123 **10 Claims**



1. A process for the simultaneous detection of sulfur-containing compounds using chemiluminescence and non-sulfur-containing compounds using flame ionization, comprising:

combusting a fluid stream containing a mixture of sulfur-containing compounds and non-sulfur-containing compounds in a flame to produce sulfur monoxide, ionic species, and other products;

detecting said ionic species by subjecting said flame to an applied electrical potential and measuring the conductance of said flame during said step of said combusting the fluid stream; and

collecting said sulfur monoxide from the flame;

reacting said sulfur monoxide to form a chemiluminescent species;

detecting the chemiluminescent species which is representative of the sulfur compounds in the fluid stream.

5,310,684

REAGENT FOR DETECTING OCCULT BLOOD

Tabata Kazuo, 22-21 Kamishijyocho, Higashiosaka-shi, Osaka-fu 579, Japan

Filed Apr. 27, 1992, Ser. No. 876,739

Claims priority, application Japan, Apr. 27, 1991, 3-191374

Int. Cl.[5] **G01N** *21/75*

U.S. Cl. 436—166 **1 Claim**

1. A reagent for detecting occult blood comprising a mixed solution of sodium carbonate, 3-amino phthalic acid hydrazide, and iron and sodium derivative of ethylene-diaminetetraacetic acid, and hydrogen peroxide.

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APPARATUS FOR DELIVERING A CALIBRATION STANDARD

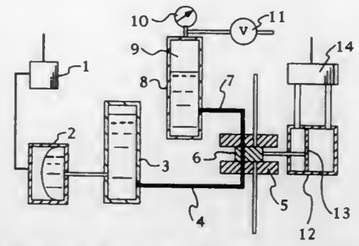
Harry I. Husby, Milton, and Robert D. Steinmeyer, Carrollton, both of Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 2, 1992, Ser. No. 939,322

Int. Cl.[5] **G01N** *1/10*

U.S. Cl. 436—180 **18 Claims**

4. A sample delivery apparatus comprising: a pump separated into a pressure chamber and a sample chamber by an expandable means, the sample chamber connected to a first reservoir, the first reservoir connected through a sample valve having a positionable sample well to a second reservoir; where the sample chamber, the first reservoir, the sample valve, and the second reservoir for a closed pressurizable system containing a fluid sample and means for pressurizing said system and the positionable sample well has a first position within the sample valve which permits fluid transfer between the first reservoir and the second reservoir and a second position within the sample valve which permits fluid in the positionable sample well to be removed from the sample delivery apparatus.



5,310,686

POLYMER-COATED OPTICAL STRUCTURES

Craig G. Sawyers, Cambridgeshire, and Rosemary A. L. Drake, Hertfordshire, both of England, assignors to Ares Serono Research & Development Limited partnership, Switzerland

PCT No. PCT/GB88/00177, § 371 Date Nov. 4, 1988, § 102(e) Date Nov. 4, 1988, PCT Pub. No. WO88/07203, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 9, 1988, Ser. No. 270,339

Claims priority, application United Kingdom, Mar. 10, 1987, 8705649

Int. Cl.[5] **G01N** *33/543, 33/553, 33/551*

U.S. Cl. 436—518 **9 Claims**

1. A method of preparing a diffraction grating useful for the detection of a ligand comprising

(a) applying a metered volume of a polymerizable material to the surface of said diffraction grating and spinning said diffraction grating to distribute said polymerizable material as a thin, uniform layer over the surface thereof;

(b) polymerizing said material; and

(c) adsorbing on or binding to said polymerized material, either directly or indirectly, a specific binding partner for said ligand.

2. A method according to claim 1 wherein said diffraction grating is a metallized diffraction grating.

5,310,687

LUMINESCENT METAL CHELATE LABELS AND MEANS FOR DETECTION

Allen J. Bard, Austin, Tex., and George M. Whitesides, Newton, Mass., assignors to Igen, Inc., Rockville, Md.

Continuation of Ser. No. 858,353, Apr. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 789,113, Oct. 24, 1985, Pat. No. 5,235,808, which is a continuation-in-part of Ser. No. 666,987, Oct. 31, 1984, abandoned. This application Nov. 4, 1991, Ser. No. 789,418

Int. Cl.[5] **G01N** *33/543, 33/532;* **C07F** *15/00*

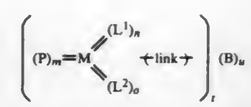
U.S. Cl. 436—518 **18 Claims**

1. A method of determining the presence of a chemical moiety, which comprises

(a) forming a reagent mixture containing the chemical moiety, or the chemical moiety and an agent which upon exposure of the reagent mixture to electrochemical energy forms either a reductant or an oxidant;

said chemical moiety having the formula

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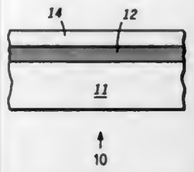


wherein:
M is ruthenium or osmium;
P, L^1, and L^2, each is a bidentate aromatic heterocyclic nitrogen-containing ligand of M selected from the group consisting of bipyridyl, substituted bipyridyl, bipyrazyl, substituted bipyrazyl, phenanthrolyl and substituted phenanthrolyl, wherein each of said substituted groups is substituted by an alkyl, aryl, aralkyl, carboxylate, carboxaldehyde, carboxamide, cyano, amino, hydroxycarbonyl, hydroxyamino, aminocarbonyl, amidine, guanidinium, ureide, sulfur-containing group, phosphorus-containing group, or the carboxylate ester of N-hydroxysuccinimide, each of said ligands being the same or not the same as each other ligand;
B is a biological substance, a synthetic substance which is capable of competing with a biological substance in a competitive binding reaction with a complementary material, or a non-biological polymer;
m is 1;
each of n and o is 1;
t is an integer equal to or greater than 1; and
u is 1;
said link being covalent bonding linking B with at least one of P, L^1 or L^2;
P, L^1, L^2 and B being of such composition and number that the chemical moiety is capable of being induced to electrochemiluminesce;
(b) exposing the reagent mixture to electrochemical energy the potential of which oscillates between a potential sufficiently positive to oxidize the chemical moiety and a potential sufficiently negative to reduce the chemical moiety, or to electrochemical energy such that said chemical moiety is oxidized and the agent forms a reductant, or such that said chemical moiety is reduced and the agent forms an oxidant, thereby to induce the chemical moiety to electrochemiluminesce; and
(c) detecting emitted luminescence thereby to determine the presence of the chemical moiety.

5,310,688
METHOD AND APPARATUS FOR ELUTING PROTEINS IN AFFINITY MEMBRANE PROCESS
Stephen E. Zale, Uxbridge, and Clark K. Colton, Newton, both of Mass., assignors to Sepracor Inc., Marlborough, Mass.
Continuation of Ser. No. 487,668, Mar. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 428,263, Oct. 26, 1989, which is a continuation-in-part of Ser. No. 265,061, Oct. 31, 1988, abandoned. This application Mar. 23, 1993, Ser. No. 35,549
Int. Cl.[5] G01N *33/545;* **B01D** *15/08, 61/00*
U.S. Cl. 436—535 **4 Claims**

1. A method for eluting a pH-sensitive ligate from a ligate-loaded membrane comprised of the ligate associated with an immobilized ligand, the ligand being bound to a microporous membrane, said method comprising the steps of:
a) delivering an acidic or basic eluent to a first side of the ligate-loaded membrane and causing said eluent to pass transversely therethrough to a second side of the membrane, wherein said eluent dissociates the ligate from the immobilized ligand, whereby a solution of eluted ligate in eluent is obtained; while simultaneously
b) delivering a quenching solution to the second side of the membrane, such that the eluted ligate solution is neutralized to a pH of from about 6 to about 8.5 upon emerging from the second side of the microporous membrane.

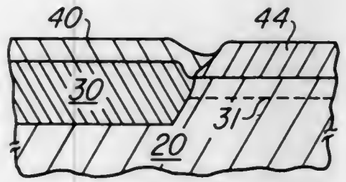
5,310,689
METHOD OF FORMING A SIMOX STRUCTURE
Mamoru Tomozane, and H. Ming Liaw, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 2, 1990, Ser. No. 502,885
Int. Cl.[5] H01L *21/265, 21/76*
U.S. Cl. 437—24 **9 Claims**



1. A method of reducing defects in a SIMOX structure, comprising the steps of:
annealing the SIMOX structure in a first ambient comprised of hydrogen; and
annealing the SIMOX structure in a second ambient comprised of an inert gas at a temperature of approximately 1200° to 1300 ° C.

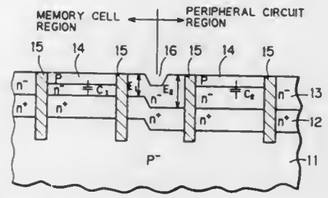
4. A method of forming a SIMOX structure, comprising the steps of:
providing a semiconductor substrate;
implanting oxygen into the substrate;
annealing the substrate in a first ambient comprised of argon and oxygen, thus forming a buried oxide layer and a superficial layer having a surface; and
annealing the substrate in a second ambient comprised of hydrogen and a silicon compound, wherein a quasi-equilibrium is established at the surface of the superficial layer, wherein etching of the superficial layer is prevented and deposition of silicon is negligible.

5,310,690
METHOD FOR FORMING INTEGRATED CIRCUITS HAVING BURIED DOPED REGIONS
David A. Bell, Richardson, and Robert H. Havemann, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 632,437, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 265,074, Oct. 31, 1988, abandoned. This application May 6, 1992, Ser. No. 880,477
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **16 Claims**



1. A method for fabricating an integrated circuit at a surface of a semiconductor substrate of a first conductivity type, comprising:
forming a first masking layer at a first location of said surface;
doping a second location of said surface, said second location not covered by said first masking layer, with dopant of a second conductivity type;
implanting both said first and second locations with dopant of said first conductivity type through said first masking layer; and
forming a layer of semiconductor material over said first and second locations after said implanting step, so that said doped second location of said surface forms a buried doped region.

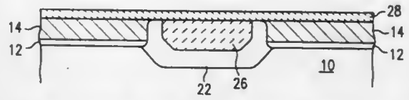
5,310,691
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE INCLUDING FORMATION OF ALIGNMENT MARK
Kakutaro Suda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 793,942, Oct. 22, 1991, Pat. No. 5,256,898. This application May 27, 1993, Ser. No. 67,955
Claims priority, application Japan, Nov. 6, 1990, 2-301543
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **15 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:
(a) preparing a first conductivity type semiconductor substrate;
(b) selectively removing a surface of said semiconductor substrate to thereby provide said semiconductor substrate with a first region formed with a relatively high surface and a second region adjacent to the first region and formed with a relatively low surface;
(c) forming a second conductivity type buried semiconductor layer of a relatively high impurity concentration with substantially uniform thickness formed on said semiconductor substrate in said first and second regions;
(d) growing a second conductivity type epitaxial layer of a relatively low impurity concentration in substantially uniform thickness on said buried semiconductor layer; and
(e) selectively removing said epitaxial layer in said first region to thereby equalize the height of a portion of the surface of said epitaxial layer in said first and second regions, and to provide said surface of said epitaxial layer with a concave or convex step in a boundary portion between said first and second regions.

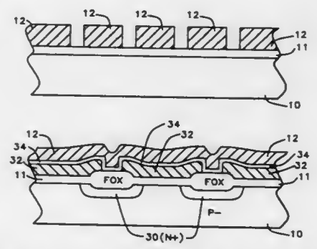
5,310,692
METHOD OF FORMING A MOSFET STRUCTURE WITH PLANAR SURFACE
Tsin C. Chan, Carrollton, and Frank R. Bryant, Denton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed May 29, 1992, Ser. No. 889,822
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **31 Claims**

1. A method of forming a planar surface of a semiconductor integrated circuit, comprising the steps of:
forming an insulated conductive layer, with an oxidation-resistant layer thereover, over a substrate;
forming an opening, having sidewalls, through said oxidation-resistant layer and said conductive layer to expose a portion of said substrate;
oxidizing a portion of said substrate in said opening and a portion of said conductive layer along said sidewalls in said opening;
forming an insulating region to planarize said opening; and



forming a planar silicide layer over said insulating region and said conductive layer.

5,310,693
METHOD OF MAKING SELF-ALIGNED DOUBLE DENSITY POLYSILICON LINES FOR EPROM
Peter C. C. Hsue, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan
Division of Ser. No. 838,843, Feb. 21, 1992, Pat. No. 5,236,853. This application Jun. 24, 1993, Ser. No. 80,503
Int. Cl.[5] H01L *21/265, 27/115*
U.S. Cl. 437—43 **6 Claims**



1. The method of manufacturing single level polysilicon conductor lines in a EPROM integrated circuit comprising:
forming buried regions of a conductivity type in an opposite conductivity type semiconductor substrate;
forming an insulating layer structure over said semiconductor substrate;
forming floating gate and gate dielectric layer structures on the surface of said semiconductor substrate;
forming a conductive polysilicon layer over said gate dielectric layer which comprises a first and a second designated plurality of polysilicon conductive lines;
forming a silicon oxide layer over said polysilicon layer and patterning said oxide layer;
said oxide layer is patterned such that it covers the first designated plurality of polysilicon conductive lines and exposes the second designated plurality of polysilicon conductive lines and the portion of the polysilicon conductive layer which will be removed to provide planned spacing between the first and second designated pluralities of polysilicon conductive lines;
depositing a uniform thickness silicon nitride layer over said oxide layer and said exposed polysilicon layer wherein said thickness is the width of said planned spacing;
anisotropically etching said nitride layer to produce sidewall structures having the width of said planned spacing;
oxidizing the exposed portion of said polysilicon layer;
removing said sidewall structures by etching;
anisotropically etching the resulting exposed said polysilicon layer to form said single level polysilicon conductor lines;
removing the remaining portions of said oxide layer; and
electrically connecting said polysilicon lines to form word lines and said floating gate structures and said buried regions as bit lines to form said EPROM integrated circuit.

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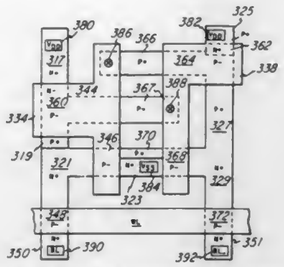
METHOD FOR FORMING A TRANSISTOR DEVICE WITH RESISTIVE COUPLING

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 719,430, Jun. 24, 1991, Pat. No. 5,206,533. This application Nov. 6, 1992, Ser. No. 972,671

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **16 Claims**



11. A method of forming a semiconductor transistor device comprising the steps of:

forming a heavily doped source region and drain regions of a first conductivity type;

forming a lightly doped channel region formed adjacent to said source region, said lightly doped channel region of a second conductivity type different than said first conductivity type;

forming a lightly doped drain region of said first conductivity type, said lightly doped drain region formed between said drain region and said channel region and including an extended portion for making a resistive contact to another region; and

forming a gated resistor between said drain region and said another region, wherein said gated resistor comprises said drain region, said lightly doped drain region, and a heavily doped region of said first conductivity type which is coupled to said another region.

5,310,695

INTERCONNECT STRUCTURE IN SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

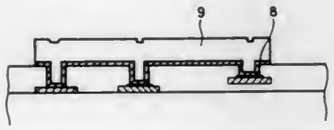
Yasuyuki Suzuki, Tokyo, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,659

Claims priority, application Japan, Sep. 19, 1991, 3-238486

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—60 **2 Claims**



1. A method of fabricating an interconnect structure in a semiconductor device comprising the steps of:

forming an electrode or resistor element containing tungsten (W) over a substrate;

forming a metal layer of an Au type at a contact hole region on said electrode or resistor element;

depositing an interlayer insulating film over a surface resulting from the above steps;

forming a contact hole in said interlayer insulating film on said metal layer; and

forming an interconnect wirings connected with said electrode or resistor element through said metal layer at said contact hole.

5,310,696

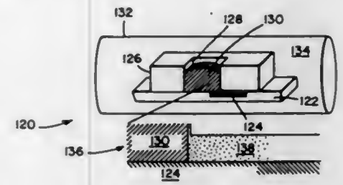
CHEMICAL METHOD FOR THE MODIFICATION OF A SUBSTRATE SURFACE TO ACCOMPLISH HETEROEPITAXIAL CRYSTAL GROWTH

Patrick J. McCann, and Glifton G. Fonstad, both of Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 367,459, Jun. 16, 1989, abandoned. This application Sep. 30, 1991, Ser. No. 768,349

Int. Cl.[5] H01L *21/20, 21/265, 21/324, 21/84*

U.S. Cl. 437—84 **21 Claims**



1. A liquid phase epitaxy method for heteroepitaxial crystal growth comprising:

exposing an insulating substrate characterized by a substrate chemical composition and selected from the group consisting of barium fluoride, strontium fluoride, calcium fluoride and alloys thereof to a reactive substance characterized by a reactive substance chemical composition which reacts chemically with said substrate and wherein said reactive substance includes a Group VI element selected from the group consisting of oxygen, sulfur, selenium and tellurium under conditions sufficient to react with said substrate to form a compound layer on said substrate wherein said compound layer is further characterized by a compound layer chemical composition different from said substrate chemical composition and different from said reactive substance chemical composition followed by growing a heteroepitaxial crystalline layer which is a compound semiconductor including a first element selected from the group consisting of carbon, silicon, germanium, tin and lead and a second element selected from the group consisting of oxygen, sulphur, selenium and tellurium on said compound layer by liquid phase epitaxy.

5,310,697

METHOD FOR FABRICATING AN ALGAINP SEMICONDUCTOR LIGHT EMITTING DEVICE INCLUDING THE STEP OF REMOVING AN OXIDE FILM BY IRRADIATION WITH PLASMA BEAMS AND AN AS OR P MOLECULAR BEAM

Yasuo Kan; Kosei Takahashi, both of Nara; Masahiro Hosoda, Kashiba; Atsuo Tsunoda, Yamatokoriyama, and Kentaro Tani, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 993,058

Claims priority, application Japan, Dec. 20, 1991, 3-338804

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **3 Claims**

1. A method for fabricating an AlGaInP semiconductor light emitting device having a substrate and a multilayer structure including an AlGaInP first semiconductor layer formed on the substrate, the method comprising the steps of:

removing part of the multilayer structure so that the first semiconductor layer is exposed;

irradiating with plasma beams an oxide film formed on the exposed first semiconductor layer with the substrate temperature being kept at 500° C. or less, so as to remove the oxide film from the first semiconductor layer; and

growing a second semiconductor layer on the first semiconductor layer;

wherein a molecular beam selected from the group consisting of As molecular beams and P molecular beams is used to irradiate the oxide film simultaneously with the step of irradiating the oxide film with the plasma beams.

5,310,698

PROCESS FOR PRODUCING AN ARSENIC-DOPED SMOOTH POLYCRYSTALLINE SILICON LAYER FOR VERY LARGE SCALE INTEGRATED CIRCUITS

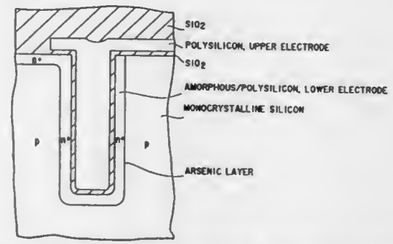
Barbara Wild, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,712

Claims priority, application European Pat. Off., Dec. 21, 1990, 90125289.0

Int. Cl.[5] H01L *21/225*

U.S. Cl. 437—160 **15 Claims**



1. A multistage process for producing a smooth polycrystalline silicon layer for very large scale integrated circuits by thermal decomposition of gaseous compounds, which comprises:

a) initially depositing a surface-covering arsenic layer being at most a few atoms thick, as a preliminary lining,

b) then depositing an undoped amorphous silicon layer on the arsenic layer at a temperature of less than 580° C.,

c) subsequently uniformly doping the silicon layer with the arsenic layer serving as a diffusion source, by temperature treatment, and

d) simultaneously making the amorphous silicon into a polycrystalline silicon layer.

5,310,699

METHOD OF MANUFACTURING A BUMP ELECTRODE

Yasunori Chikawa; Shigeyuki Sasaki; Katsunobu Mori; Takamichi Maeda, all of Nara, and Masao Hayakawa, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 587,669, Sep. 25, 1990, abandoned, which is a continuation of Ser. No. 449,242, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 298,775, Jan. 17, 1989, abandoned, which is a continuation of Ser. No. 77,992, Jul. 24, 1987, abandoned, which is a continuation of Ser. No. 873,469, Jun. 9, 1986, abandoned, which is a continuation of Ser. No. 760,261, Jul. 29, 1985, abandoned. This application Jun. 29, 1992, Ser. No. 905,683

Claims priority, application Japan, Aug. 28, 1984, 59-181291

Int. Cl.[5] H01L *21/28, 21/447, 21/92*

U.S. Cl. 437—183 **12 Claims**

1. A method of manufacturing a semiconductor device with a bump electrode of gold crystals, comprising the steps of

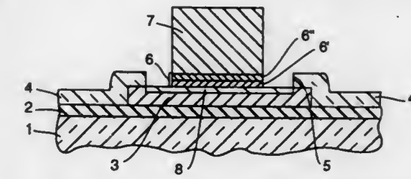
providing a semiconductor substrate including a plurality of circuit elements and an insulative layer formed on the surface thereof,

forming an electrode section on said insulative layer, wherein said electrode section is electrically connected to said circuit elements,

forming a passivation layer on said insulative layer and on an edge portion of said electrode section, wherein the center region on the surface of said electrode section is exposed to form a concave portion,

forming a multi-layer film covering the whole surface of the semiconductor substrate inclusive of the exposed part of the electrode section, which comprises at least a two-layer material, including a lower layer which is a material with good adhesion to said electrode section and serves as a barrier to prevent mutual diffusion between the bump electrode and the electrode section, and an upper layer which is a metal with good adhesion to said bump electrode of gold crystals,

forming a masking material with a thickness necessary for forming a bump electrode on said multi-layer film excluding a region which is inside the concave portion wherein the area of the region of said multi-layer film that is not covered with said masking material is smaller than the



center region where the edge of the photoresist layer is inside the concave portion of the electrode section, and is outside the edge of the multi-layer film over the passivation layer,

forming a bump electrode of gold crystals with the surface of the bump electrode lower than or equal to the surface of said masking material on said electrode section by electroplating,

thereafter removing the masking material,

thereafter subjecting said bump electrode to a stress-reducing heat treatment, wherein an anticorrosive alloy layer is formed by the reaction of a part of the electrode section with a part of the lower layer of the multi-layer film, and

thereafter removing by etching said multi-layer film completely from areas unoccupied by said bump electrode by using not only said bump electrode as a mask for etching said multi-layer film but also said anticorrosive alloy layer as a mask for protecting said electrode section,

wherein said lower layer of said multi-layer film is selected from the group consisting of titanium nitride and titanium tungsten.

5,310,700

CONDUCTOR CAPACITANCE REDUCTION IN INTEGRATED CIRCUITS

Chuen-Der Lien, Mountain View; Jimmy J. Lee, Palo Alto; Daniel J. L. Liao, Pleasanton, and Joe F. Santandrea, Los Altos Hills, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Mar. 26, 1993, Ser. No. 37,268

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—195 **6 Claims**

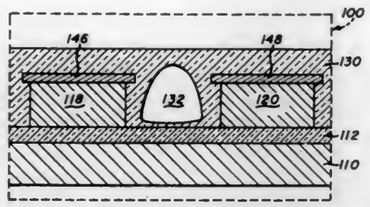
1. A method for capacitance reduction between a first conductor (**118**) and a second conductor (**120**) located on top of a semiconductor substrate (**110**) and comprising the steps of

a) depositing a first insulating medium (**112**) on top of the substrate;

b) depositing a conducting medium (**152**) on top of the first medium;

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c) masking and etching the conducting medium to obtain a first conductor (118) and a second conductor (120); and
d) growing a second insulating medium (130) on top of the



substrate and the conductors such that the growing medium coalesces in the vicinity of the top of the conductors leaving an elongated cavity (132) with an apex between the conductors.

5,310,701

METHOD FOR FIXING SEMICONDUCTOR BODIES ON A SUBSTRATE USING WIRES

Franz Kaussen, Warstein, and Martin Figura, Ruethen-Kallenhardt, both of Fed. Rep. of Germany, assignors to Eupec Europaeische Gesellschaft für Leistungshalbleiter mbH&Co, Warstein-Belecke, Fed. Rep. of Germany

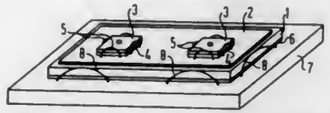
Filed Jan. 13, 1993, Ser. No. 3,539

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1992, 4201931

Int. Cl.[5] H01L *21/58, 21/68*

U.S. Cl. 437—209 **6 Claims**





1. A method for mounting semiconductor bodies on a substrate, which comprises:
bonding wires to a substrate being formed of metal at least in given locations;
laterally fixing semiconductor bodies to the given locations of the substrate with the wires; and
subsequently materially joining the semiconductor bodies to the substrate in the given locations.

5,310,702

METHOD OF PREVENTING SHORT-CIRCUITING OF BONDING WIRES

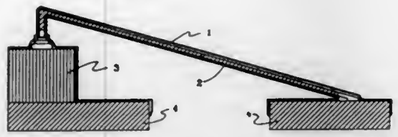
Toshiki Yoshida, Huntingdon Valley, Pa.; Ryuichi Kyomasu, and Toshihiro Satoh, both of Tokyo, Japan, assignors to Kulicke and Soffa Industries, Inc., Willow Grove, Pa.

Filed Mar. 20, 1992, Ser. No. 856,094

Int. Cl.[5] H01L *21/56, 21/60*

U.S. Cl. 437—211 **15 Claims**

1. A method of preventing bonding wires from shorting against each other after a semiconductor chip is bonded to a carrier and placed in a wire bonding machine, comprising the steps of:
bonding interconnecting fine wires to pads on the leads on said carrier at a bonding station to provide wire bonded semiconductor device,
transferring said semiconductor device from said bonding station into an insulating station without disturbing the fine wires,
coating the outside of said semiconductor device and said interconnecting fine wires with a non-reactive plastic fluid insulating material in a manner which covers all exposed surfaces but does not move the interconnecting wires one against the other,



removing said coated semiconductor device from said insulating station, and
promptly curing said non-reactive plastic fluid insulation material sufficient to reinforce the rigidity of said fine wires in a fixed position, thereby electrically insulated one wire from the other during further handing and encapsulation.

5,310,703

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE, IN WHICH PHOTORESIST ON A SILICON OXIDE LAYER ON A SEMICONDUCTOR SUBSTRATE IS STRIPPED USING AN OXYGEN PLASMA AFTERGLOW AND A BIASED SUBSTRATE

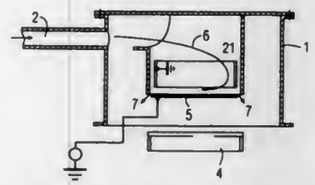
Jan Visser, Eindhoven, and Lukas De Boer, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 520,982, May 7, 1990, abandoned, which is a continuation of Ser. No. 272,665, Nov. 17, 1988, abandoned. This application Feb. 7, 1992, Ser. No. 833,570

Claims priority, application Netherlands, Dec. 1, 1987, 8702875

Int. Cl.[5] H01L *21/00, 21/02, 21/312, 21/471*

U.S. Cl. 437—229 **11 Claims**



1. In a method of manufacturing a semiconductor device having a layer of silicon oxide provided on a surface of a semiconductor substrate and a photoresist provided over said layer of silicon oxide in a processing chamber, the method of limiting contamination of said layer of silicon oxide by carrying out the steps comprising
(a) connecting a first electrode to another surface of the semiconductor substrate, said first electrode being connected to a positive terminal of an electrical source,
(b) arranging a second electrode in the processing chamber at a distance from the photoresist, said second electrode being connected to a negative terminal of said electrical source,
(c) applying at least a direct current electrical voltage between aid first and second electrodes,
(d) stripping said photoresist from the layer of silicon oxide by placing said photoresist in an afterglow of an oxygen plasma, and
(e) maintaining an electric field of said electrical voltage between said layer of silicon oxide and said plasma with said first and second electrodes in order to reduce contamination of said layer of silicon oxide by decelerating ions of said plasma.

5,310,704

METHOD OF MANUFACTURING SUPERCONDUCTIVE CONDUCTOR

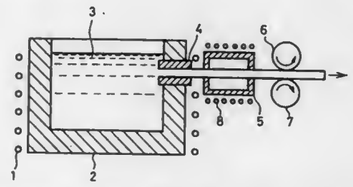
Hajime Hitotsuyanagi; Kazuo Sawada; Kengo Ohkura; Yoshihiro Nakai, and Kazuhiko Hayashi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Continuation of Ser. No. 170,205, Mar. 18, 1988, abandoned. This application Mar. 6, 1992, Ser. No. 845,824

Claims priority, application Japan, Mar. 20, 1987, 62-67647; Apr. 2, 1987, 62-81817

Int. Cl.[5] H01L *39/12*

U.S. Cl. 505—430 **10 Claims**



1. A method of manufacturing a superconductive conductor formed by a ceramic superconductive material having a composition generally expressed by a formula AaBbCc, where A represents at least an element selected from the group consisting of Ia, IIa and IIIb of the periodic table, B represents at least copper, C represents at least oxygen and a, b and c represent numbers showing composition ratios of A, B and C respectively, said method comprising:
a step of melting a material generally expressed by a formula AaBb in a frame, where A, B, a and b represent those described above and wherein said AaBb when coupled with said Cc is capable of forming a superconductor;
a step of continuously drawing out a melt of AaBb through a hole provided in said frame;
a step of solidifying by forcible cooling or standing under ambient conditions said AaBb melt drawn out from said hole; and
a step of heating to at least 700° C. a solidified body of said AaBb in an atmosphere containing said C
wherein said AaBb is coupled with said C to form a superconductive conductor.

5,310,705

HIGH-FIELD MAGNETS USING HIGH-CRITICAL-TEMPERATURE SUPERCONDUCTING THIN FILMS

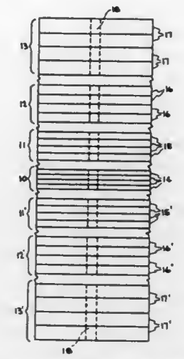
Fred Mitlitsky, and Ronald W. Hoard, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1993, Ser. No. 312

Int. Cl.[5] H01B *12/00;* **H01F** *7/22, 10/08*

U.S. Cl. 505—211 **23 Claims**

1. A high-field magnet comprising:
a plurality of disk-like substrates, said disk-like substrates being of variable thickness;
each of said substrates having at least one pattern of high-critical-temperature superconducting material having a thickness of 0.5–1 μm deposited on at least one side thereof;
said disk-like substrates being stacked such that thinner substrates are located in an axially central location and thicker substrates are located in an axially outer location,



such that the thickness of the substrates increases in thickness from the central location to the outer location.

5,310,706

METHOD FOR MANUFACTURING HIGH T_c SUPERCONDUCTING CIRCUIT ELEMENTS WITH METALLIC SUBSTRATE

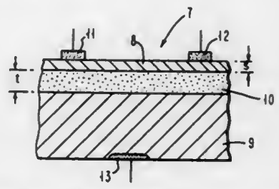
Frank Litchenberg, Adliswil; Jochen Mannhart, Au, and Darrell Schlom, Thalwil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 843,880, Feb. 27, 1992, Pat. No. 5,266,558. This application Jul. 16, 1993, Ser. No. 93,503

Claims priority, application European Pat. Off., May 1, 1991, 91810336.7

Int. Cl.[5] B05D *5/12;* **H01L** *39/24*

U.S. Cl. 505—451 **10 Claims**



1. A method for manufacturing superconducting circuit elements, comprising:
weighing and grinding a ratio of strontium carbonate $SrCO_3$ and ruthenium dioxide RuO_2 to form powder;
mixing the powder with water and pressing it to form rods;
sintering the rods in air;
melting the rods in a floating zone melting process to form a melt.
Growing crystal materials form the melt having cylindrical shape with layers of strontium ruthenate Sr_2RuO_4 along the axis of the cylindrical shape;
cleaving the melt-grown crystal materials of Sr_2RuO_4 to obtain single-crystal substrates having defined crystallographic surfaces;
epitaxially growing on at least one (001)-surface of the Sr_2RuO_4 substrate a film of a high-T_c copper oxide-based superconductor material, the thickness of the superconductor film being in the range of 1 to 1000 nm;
depositing metal pads onto said superconductor film to form electrical contacts; and

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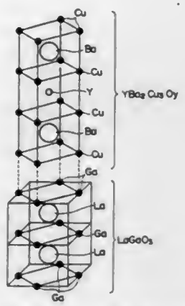
applying a metal pad to the surface of the substrate to form an electrical contact.

5,310,707

SUBSTRATE MATERIAL FOR THE PREPARATION OF OXIDE SUPERCONDUCTORS

Akira Oishi; Toshio Usui; Hidekazu Teshima, and Tadataka Morishita, all of Tokyo, Japan, assignors to Superconductivity Research Laboratory International, Tokyo, Japan

Continuation-in-part of Ser. No. 675,801, Mar. 27, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,212
Claims priority, application Japan, Mar. 28, 1990, 2-82498
Int. Cl.[5] C04B *35/50*
U.S. Cl. 501—126 **1 Claim**



1. A substrate material for preparing an oxide superconductor comprising:

a mixed crystal material made up of Nd, A^1, Ga, and O in an atomic ratio of $A^1_{1-x}Nd_xGaO_3$ where A^1 is a rate earth element excluding La and Nd, and $0.2 \leqq x < 1.0$, said mixed crystal material forming a $FdFeO_3$-type structure.

5,310,708

METHOD OF PRODUCING SILICA BRICK

Hisayuki Harako, Tokyo, and Shushi Akahori, Okayama, both of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00595, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO93/00309, PCT Pub. Date Jan. 7, 1993
PCT Filed May 11, 1992, Ser. No. 993,666
Claims priority, application Japan, Jun. 26, 1991, 3-154411
Int. Cl.[5] C04B *35/16*
U.S. Cl. 501—133 **11 Claims**

1. A method of producing a silica brick, comprising the steps of: pulverizing a siliceous stone material containing silica as a main component; forming the pulverized material; and firing the formed material; wherein the improvement comprises that 0.2 to 5 wt % of Na_2O—CaO—SiO_2 fused and solidified material is added to said siliceous stone material so as to cause the Na_2O—CaO—SiO_2 fused and solidified material to react with silica as the main component of said siliceous stone material, thereby promoting transformation of silica into cristobalite and tridymite, said Na_2O—CaO—SiO_2 fused and solidified material containing, at least, SiO_2, CaO, Na_2O, Al_2O_3 and MgO, the contents being:

SiO_2: 70 to 75 wt %
CaO: 5 to 13 wt %
Na_2O: 10 to 40 wt %
Al_2O_3: 0.5 to 2 wt %
MgO: 0.5 to 4 wt %.

5,310,709

PRODUCTION OF NONREDUCIBLE DIELECTRIC CERAMIC COMPOSITION

Nobuyuki Wada, Shiga, and Yoshiaki Kohno, Moriyama, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 14, 1992, Ser. No. 836,089
Claims priority, application Japan, Feb. 16, 1991, 3-44399
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—134 **7 Claims**

1. A method for production of nonreducible dielectric ceramic composition of a perovskite structure expressed by the general formula:

$$(A_{1-x}R_x)_yBO_3$$

wherein A is at least one element selected from the group consisting of Ba, Sr, Ca and Mg, R is at least one rare earth element, B is at least one element selected from the group consisting of Ti, Zr and Sn, and x and y take respective values in the following ranges: $0.001 \leqq x \leqq 0.020$, and $1.002 \leqq y \leqq 1.03$, said method comprising the steps of

(a) mixing at least one compound of element A selected from the group consisting of carbonates and oxides of element A, at least one compound of element B selected from the group consisting of oxides and carbonates of element B; and at least one compound of rare earth element R, so that a molar ratio of $(A_{1-x}R_x)$-site to B-site is not less than 1.002 but not more than 1.03, said at least one compound of rare earth element R being selected from the group consisting of water-soluble inorganic compounds and organic-solvent-soluble organometallic compounds;

(b) milling the resultant mixture together with a suitable amount of a solvent; and

(c) calcining the resultant mixture in an oxidizing atmosphere.

5,310,710

MICROWAVE DIELECTRIC CERAMIC COMPOSITION

Masanori Takase, and Hirofumi Ozeki, both of Nagoya, Japan, assignors to NGK Spark Plug Company, Ltd., Aichi, Japan

Filed Apr. 6, 1992, Ser. No. 864,357
Claims priority, application Japan, Apr. 9, 1991, 3-103820
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—139 **6 Claims**

1. A microwave dielectric ceramic composition which comprises a composition represented by $xBaO.yNd_2O_3.zTiO_2$ (where $8.5 < x < 20$ mol %, $5 < y < 23$ mol %, $62 < z < 85$ mol %, and $x+y+z=100$ mol %), Y_2O_3 in an amount of 5 to 15 wt % of the amount of said composition, and Al_2O_3 in an amount of 0.1 to 2 wt % of the total amount of the principal components BaO, Nd_2O_3, TiO_2, and Y_2O_3.

5,310,711

METHOD OF FORMING DOPED SHALLOW ELECTRICAL JUNCTIONS

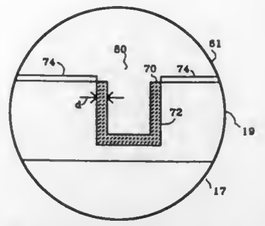
Clifford I. Drowley, Phoenix, Ariz., and John E. Turner, Woodside, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 694,309, May 1, 1991, Pat. No. 5,256,162. This application Aug. 2, 1993, Ser. No. 101,145
Int. Cl.[5] H01L *21/22*
U.S. Cl. 437—141 **11 Claims**

1. A method of forming electrical junctions in semiconductor material comprising the steps of:

exposing an oxide free region of the surface of a semiconductor material to an ambient including a dopant gas the concentration of which is from about 1 part per million to about 1 part per billion;

heating the region to a temperature in the range of about 750° C. to about 1100° C.; and



controlling the duration of exposure of the heated region to the said dopant gas to be in the range of about 0.5 to about 100 minutes.

5,310,712

PROCESS FOR THE PREPARATION OF A SUPPORTED CATALYST FOR THE POLYMERIZATION OF α-OLEFINS

Guido Funk, Worms; Rainer Hemmerich, Gruenstadt; Hans Gropper, Limburgerhof; Erich Kolk, Bad Duerkheim, and Godofredo Follmer, Maxdorf, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 953,629
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132894
Int. Cl.[5] B01J *35/08, 37/08*
U.S. Cl. 502—9 **7 Claims**

1. A process for the preparation of a supported catalyst for the polymerization of α-olefins, in which

(1) a silica-containing carrier gel is first prepared by a method in which

(1.1) a sodium or potassium waterglass solution is introduced into a stream of an aqueous mineral acid which is subjected to angular momentum, longitudinally and tangentially to the stream, the resulting silica hydrosol is sprayed in the form of drops into a gaseous medium and is allowed to solidify to a hydrogel, and the resulting hydrogel is freed from salts by washing without prior aging,

(1.2) if necessary, not more than 30% by weight of the water present in the hydrogel is extracted from the hydrogel (1.1) with the aid of at least one C_1–C_4-alcohol or C_3–C_5-ketone,

(1.3) the resulting hydrogel (1.1) or (1.2) is dried, carrier gel formation taking place, and

(1.4) the resulting carrier gel (1.3) is milled and is fractionated according to particle size,

(2) the carrier gel (1) is laden with chromium trioxide or with a chromium compound which can be converted into chromium trioxide under the conditions of process step (3), resulting in a chromium-containing carrier gel, and

(3) the chromium-containing carrier gel (2) is heated at from 400° to 1100° C. for from 10 to 1,000 minutes in an anhydrous gas stream containing oxygen in a concentration of more than 10% by volume,

wherein the hydrogel resulting from process step (1.1) or (1.2) is dried in process step (1.3) in the course of not more than 300 seconds in a fast dryer at an inlet temperature of from 200° to 600° C.

5,310,713

REGENERATION OF AN ALKYLATION CATALYST WITH HYDROGEN

Masami Kojima, Mt. Prospect, and Joseph A. Kocal, Gurnee, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Apr. 5, 1993, Ser. No. 43,954
Int. Cl.[5] B01J *20/20, 23/96, 27/32, 38/58*
U.S. Cl. 502—30 **10 Claims**

1. A method of regenerating an alkylation catalyst, said catalyst consisting essentially of 1) the reaction product of a first metal halide and the bound surface hydroxyl groups of refractory inorganic oxide and 2) a zerovalent second metal, where said first metal halide is a fluoride, chloride, or bromide and the first metal is selected from the group consisting of aluminum-7 zirconium, tin, tantalum, titanium, gallium, antimony, phosphorus, and boron and any combination thereof, and said second zerovalent metal is selected from the group consisting of platinum, palladium-7 nickel, ruthenium, rhodium, osmium and iridium, and any combination thereof, said catalyst having become at least partially deactivated during its catalysis of the liquid phase alkylation of an alkene having from 2 up to 6 carbon atoms with an alkane having from 4 up to about 6 carbon atoms, said method comprising removing all of the liquid phase from the catalyst, treating said catalyst with hydrogen at a partial pressure of from about 1 up to about 2000 psi for a time from about 1 un to about 20 hours, at a temperature from about 10 up to about 300° C. in the presence of liquid alkane and a chloride source and recovering a regenerated catalyst having substantially increased activity.

5,310,714

SYNTHESIS OF ZEOLITE FILMS BONDED TO SUBSTRATES, STRUCTURES AND USES THEREOF

Robert K. Grasselli, Chadds Ford; Rudolph M. Lago, Yardley; Richard F. Socha, newtown, all of Pa., and John G. Tsikoyiannis, Princeton, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Jul. 8, 1992, Ser. No. 910,861
Int. Cl.[5] B01J *29/06;* **C01B** *33/26*
U.S. Cl. 502—64 **21 Claims**

1. A method for preparing a structure which comprises a medium pore zeolite film bonded to a substrate with minimal homogeneous nucleation, the method comprising:

preparing a chemical mixture capable of forming the zeolite film wherein when the YO_2/X_2O_3 ratio in the reaction mixture is greater than about 400, the mixture comprises a H_2O/YO_2 molar ratio of at least 25, when the YO_2/X_2O_3 is greater than about 150 and less than about 400, the H_2O/YO_2 is at least about 35, when the YO_2/X_2O_3 is less than about 150, the H_2O/YO_2 is at least about 45, and Y is a tetravalent element and X is a trivalent element;

contacting the substrate with the chemical mixture under crystallization conditions until a substantially continuous layer of zeolite forms as bonded to the substrate surface.

5,310,715

METHOD FOR PREPARING A PILLARED LAYERED OXIDE MATERIAL

Charles T. Kresge, West Chester, Pa., and Wieslaw J. Roth, Sewell, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 811,360, Dec. 20, 1991, which is a continuation-in-part of Ser. No. 776,718, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 640,330, Jan. 11, 1991, abandoned. This application May 8, 1992, Ser. No. 880,409
Int. Cl.[5] B01J *21/06*
U.S. Cl. 502—84 **17 Claims**

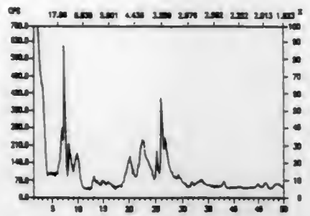
1. A method for preparing pillared layered material, designated MCM-36, said method comprising the steps of:

(i) preparing a reaction mixture capable of forming a layered material upon crystallization, said reaction mixture containing sufficient amounts of alkali or alkaline earth metal cations, a source of silica containing at least about 30 wt %

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solid silica, an oxide of aluminum, water and hexamethyleneimine;

(ii) maintaining said reaction mixture under sufficient crystallization conditions until crystals of layered material are formed;



(iii) swelling said layered material of step (ii) by contacting said layered material with a suitable swelling agent, and

(iv) pillaring the swollen material of step (iii) by contacting the swollen material with a quaternary ammonium silicate solution under conditions sufficient to pillar said swollen material.

5,310,716

CATALYST FOR THE POLYMERIZATION OF OLEFINS

Lodiano Luciani, Ferrara; Federico Milani, Maria Maddalena; Renzo Invernizzi, Milan; Italo Borghi, Ferrara, and Antonio Labianco, Stienta, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy

Filed Jul. 22, 1992, Ser. No. 918,577

Claims priority, application Italy, Jul. 25, 1991, MI91-A-002057

Int. Cl.[5] C08F *4/60*

U.S. Cl. 502—107 **26 Claims**

1. Procedure for the preparation of a solid component of catalyst, active in the polymerization of propylene and other α-olefins into stereoregular polymers, composed of a silica support and a catalytically active part including magnesium, halogen, titanium and a Lewis base, which includes:

(i) treating a non-activated silica support by contact of said silica with a solution, in an inert hydrocarbon solvent, of a magnesium dialkyl or halide of magnesium alkyl, operating with a weight ratio between the magnesium compound and the silica of 0.1/1 to 10/1, at a temperature ranging from 20° C. to the boiling point of the liquid phase, for a period which is sufficient to completely, or almost completely deposit the magnesium compound onto the silica;

(ii) halogenating the support treated in (i) by contact of said activated support with a solution, in an inert hydrocarbon solvent, of a halogenating agent selected from silicon, tin or antimony halides, operating with a molar ratio between the halogenating agent and the magnesium compound deposited in step (i) of 0.1/1 to 100/1, at a temperature ranging from −20° C. to 100° C. and for a period of 0.5 to 5.0 hours;

(iii) titanating the support halogenated in (ii) by contact of said halogenated support with an excess of a titanium tetrahalide either liquid or in solution in an inert hydrocarbon solvent, operating at a temperature ranging from 80° to 120° C. and for a period of 0.5 to 5.0 hours.

(iv) forming the solid component of catalyst by contact of the support titanated in (iii) with a Lewis base either liquid or in solution in an inert hydrocarbon solvent, operating with a ratio between said Lewis base and the magnesium compound absorbed in step (i) of 0.05/1 to 0.5/1, at a temperature ranging from 80° to 120° C. and for a period of 0.5 to 5.0 hours; and

(v) recovering the solid component of catalyst from the reaction products of step (iv).

5,310,717

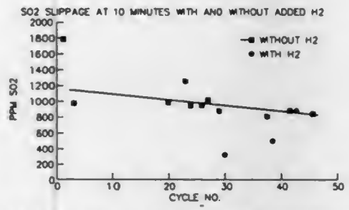
SULFUR ABSORBENTS

Gary A. Delzer, and Randall A. Porter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 718,054, Jun. 20, 1991. This application Dec. 11, 1992, Ser. No. 989,258

Int. Cl.[5] B01J *20/10*

U.S. Cl. 502—407 **17 Claims**



1. An absorbent composition consisting essentially of:

zinc oxide;

silica; and

at least some molybdenum disulfide up to about 25 parts by weight molybdenum disulfide per 100 parts by weight of the sum weight of zinc oxide, silica, and molybdenum disulfide.

5,310,718

METHOD OF COMPENSATING FOR DISTORTION IN RECORDING LAYER IN REVERSIBLE THERMOSENSITIVE RECORDING MEDIUM

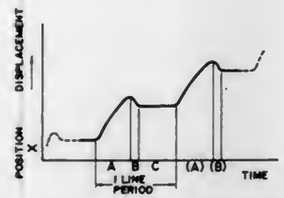
Tetsuya Amano, Numazu; Makoto Kawaguchi, Shizuoka; Yoshihiko Hotta, Mishima; Atsushi Kutami; Kunichika Morohoshi, both of Numazu; Akihide Ito; Fumihito Masubuchi, both of Mishima; Takao Igawa, Numazu; Tsutomu Kagawa, Shizuoka; Nobuo Yamada, and Katsuyoshi Kodama, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,744

Claims priority, application Japan, Dec. 20, 1991, 3-355081; Mar. 18, 1992, 4-093912; Mar. 18, 1992, 4-093913; Mar. 26, 1992, 4-100725; Jun. 30, 1992, 4-196074

Int. Cl.[5] B41M *5/36*

U.S. Cl. 503—201 **14 Claims**



1. A method of compensating for distortion in a recording layer of a reversible thermosensitive recording medium, the transparency of said recording layer being changeable depending upon the temperature thereof, and said recording layer being capable of forming images and erasing said images reversibly, said distortion in said recording layer being caused by the repeated image formation by image formation means and/or image erasure by image erasing means, comprising the step of applying stress to said recording layer before and/or after image formation by moving said recording medium relative to said image formation means, in a direction different from the direction of the application of stress in the course of a previous image formation or image erasure, thereby compensating for the distortion, wherein said recording layer comprises: (a) an organic low-molecular-weight material and a resin matrix in which the organic low-molecular-weight material is dispersed; or (b) a leuco dye.

5,310,719

DYE ACCEPTOR ELEMENT FOR THERMOSUBLIMATION PRINTING

Rolf Wehrmann, Krefeld; Geert Defieuw, Kessel-Lo, both of Fed. Rep. of Germany; Emil Verdonck, Berlaar; Herman Uytterhoeven, Bouheiden, both of Belgium; Rolf Dbeim, Krefeld, and Walter Schafer, Leichlingen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen

Filed Mar. 12, 1992, Ser. No. 849,948

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108450

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **6 Claims**

1. A thermosublimation printing dye acceptor element in combination with a sheet-form or web-form donor material containing a sublimatable dye, said dye acceptor element comprising a support and, coated thereon, a dye acceptor layer consisting essentially of a polyurethane formed by crosslinking, wherein the polyurethane has been formed from a polymer that contains hydroxyl groups by crosslinking said polymer with a polyisocyanate, said polymer being selected from the group consisting of

a) polyethers;

b) polyesters;

c) polymers containing polymerized acrylate monomers; and

d) polymers containing polymerized monomers selected from the group consisting of vinyl acetate, vinyl butyral, maleic acid, dibutyl maleate, crotonic acid, vinyl laurate, acrylonitrile and ethylene,

and the polyurethane contains at least 4% by weight urethane groups (—O—CO—NH—).

5,310,720

PROCESS FOR FABRICATING AN INTEGRATED CIRCUIT DEVICE BY FORMING A PLANARIZED POLYSILAZANE LAYER AND OXIDIZING TO FORM OXIDE LAYER

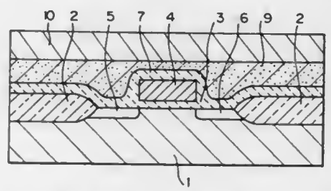
Daitei Shin, Kawasaki, and Hideki Harada, Kagoshima, both of Japan, assignors to Fujitsu Limited, Kanagawa and Kyushu Fujitsu Electronics Limited, Kagoshima, both of Japan

Filed Feb. 24, 1993, Ser. No. 21,573

Claims priority, application Japan, Feb. 28, 1992, 4-042770

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—231 **10 Claims**



1. A process for fabricating an integrated circuit device, which comprises:

preparing an integrated circuit device comprising a substrate having a stepped portion on an upper surface thereof;

coating a polysilazane on the upper surface of said substrate to form a polysilazane layer having a planar top surface; and

firing the polysilazane layer in an oxygen-containing atmosphere to convert the polysilazane layer to a silicone dioxide layer, wherein the silicon dioxide layer has a planar top surface and covers the upper surface of the substrate including the stepped portion thereon.

5,310,721

PROCESS FOR THE PREPARATION OF MICROCAPSULES USING A SALT OF A PARTIAL ESTER OF A STYRENE-MALEIC ANHYDRIDE COPOLYMER

Chien-Cho Lo, Greensboro, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 818,029, Jan. 3, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 52,510

Int. Cl.[5] A01N *25/28*

U.S. Cl. 504—116 **14 Claims**

1. A process for the preparation of an aqueous suspension of microcapsules having a capsule wall of a solid polymeric substance enclosing a water-immiscible material, which process comprises preparing a solution of a first reactive component required to form said capsule wall in said water-immiscible material, then uniformly dispersing said solution in an aqueous medium which contains, in an effective amount to form an oil-in-water emulsion, a surfactant which is a salt of a partial ester of a styrene-maleic anhydride copolymer, and subsequently adding thereto, with agitation, a second reactive component required to form said capsule wall which is complementary to the first one and reacts with it under the mixing conditions, whereby a solid polymeric wall is formed about the dispersed water-immiscible material.

5,310,722

SYNERGISTIC COMPOSITION COMPRISING A SULFONYLUREA AND A THIADIAZOLO[3,4-A]PYRIDAZINE AND METHOD OF SELECTIVE WEED CONTROL

Willy Maurer, Riehen, and Urs Hofer, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 753,490, Sep. 3, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 931,120

Claims priority, application Switzerland, Sep. 6, 1990, 2890/90

Int. Cl.[5] A01N *43/48, 43/64, 43/82, 47/36*

U.S. Cl. 504—134 **16 Claims**

1. A herbicidal composition comprising a sulfonylurea of formula I



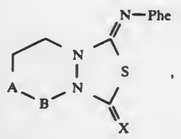
(I)

wherein

Z is a substituted phenyl radical;

M is hydrogen; or C[1]–C[4]alkyl; and

Het is a substituted five- or six-membered heterocycle having 2 or 3 nitrogen atoms, or an agrochemically acceptable salt thereof, and a synergistically effective amount of a 5,6,7,8-tetrahydro-1H,3H-(1,3,4)-thiadiazolo[3,4-alpyridazine or 7,8-dihydro-1H,3H-(1,3,4)-thiadiazolo[3,4-alpyridazine of the general formula II



(II)

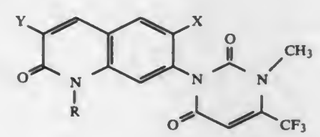
wherein

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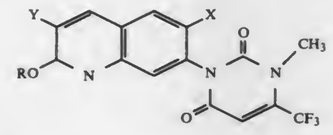
X is oxygen; or sulfur,
A-B is $—CH_2—CH_2—$; or $—CH=CH—$; and
Phe is a substituted phenyl radical.

5,310,723
HERBICIDAL 3-(1-SUBSTITUTED-QUINOLIN-2-ON-7-YL)-1-SUBSTITUTED-6-TRIFLUOROMETHYLURACILS
George Theodoridis, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.
Filed Aug. 5, 1993, Ser. No. 102,357
Int. Cl.[5] A01N *43/42, 43/54;* C07D *401/02*
U.S. Cl. 504—243 **17 Claims**

1. A compound of the formula



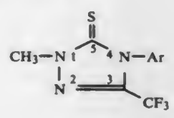
or



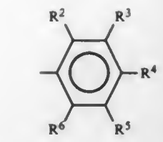
in which
R is lower alkyl, lower alkenyl, lower alkynyl, lower haloalkyl, lower cyanoalkyl, lower alkoxy, lower alkoxy lower alkylene, and benzyl;
X is hydrogen or halogen; and
Y is hydrogen, lower alkyl, lower haloalkyl, halogen, lower alkoxy, lower haloalkoxy, lower alkythio, lower alkoxy lower alkylene, lower alkylthio lower alkylene, and hydroxy.

5,310,724
HERBICIDAL SUBSTITUTED PHENYL-1,2,4-TRIAZOL-5(1H)-THIONES
Kiyoshi Kondo, Kanagawa; Hiromichi Kono, Tokyo, both of Japan; Kirk A. Simmons; John A. Dixson, both of Newtown, Pa.; Blaik P. Halling, Yardley, Pa.; Ernest L. Plummer; Marjorie J. Plummer, both of Washington Crossing, Pa., and John M. Tymonko, Hamilton Square, N.J., assignors to FMC Corporation, Philadelphia, Pa.
Continuation of Ser. No. 680,771, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 477,773, Feb. 9, 1990, abandoned. This application Aug. 20, 1992, Ser. No. 933,598
Int. Cl.[5] A01N *43/653;* C07D *249/12*
U.S. Cl. 504—273 **15 Claims**

1. A compound of formula



wherein:
Ar is



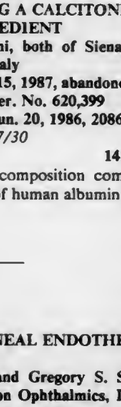
R^2 is hydrogen, halogen, alkyl, haloalkoxy, haloalkyl, or alkoxy, and;
R^3 is hydrogen, halogen, alkyl, alkoxy, amino, or mono- or disubstituted amino;
R^4 is hydrogen, halogen, alkyl, alkenyl, alkynyl, amino, haloalkyl, mono- or disubstituted amino, alkoxy, alkylthio, alkylthioalkoxy, vinyloxy, alkylvinyloxy, halovinyloxy, allyloxy, cycloalkoxy, or haloalkoxy;
R^5 is hydrogen, halogen, alkyl, alkoxy, haloalkoxy, or haloalkyl; and
R^6 is hydrogen, halogen, alkyl, or alkylthio; provided that each alkyl group and alkyl portion of any group contain 1–6 carbon atoms, that each alkenyl and alkynyl group and each alkenyl and alkynyl portion of any group contain 3–6 carbon atoms, and that each amino substituent of R^3 and R^4 is selected from alkyl or fluoroalkyl of 1 to 4 carbon atoms.

5,310,725
METHOD OF ERADICATION OF UNDESIRABLE VEGETATION USING FLUORESCEIN DYES
Putsche, Jr. Fred W., 517 La Claire Ave., Linthicum Heights, Md. 21090
Continuation-in-part of Ser. No. 820,764, Jan. 15, 1992, Pat. No. 5,252,541. This application Sep. 3, 1993, Ser. No. 116,366
Int. Cl.[5] A01N *43/16*
U.S. Cl. 504—297 **18 Claims**

1. A method of eradicating unwanted vegetation comprising the steps of:
preparing a dye solution having a predetermined concentration of a regenerative fluorescein dye, said dye being a photodynamic pigment which in the presence of oxygen acts as a sensitizer for photo-oxidation in the vegetation, and
applying a charge of the fluorescein dye solution, using dispersion means to soil in the vicinity of the roots of the vegetation for subsequent absorption thereby, so as to initiate a reaction between the fluorescein dye and proteins, fatty acids, and lipids at a cellular membrane of the vegetation, which thereby causes membrane lipid peroxidation, resulting in the destruction of cell fibers in the vegetation and the subsequent death thereof.

5,310,726
LIPOPEPTIDE COMPOUNDS
James M. Balkovec, N. Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Mar. 19, 1990, Ser. No. 495,652
Int. Cl.[5] A61K *37/02;* C07K *5/12, 7/06*
U.S. Cl. 514—11 **5 Claims**

1. A compound having the formula:



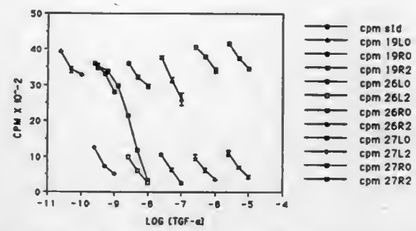
where
X is H or OH,
R is
(a) a straight or branched chain alkyl from 5 to 23 carbon atoms,
(b) a straight or branched chain alkenyl from 5 to 23 carbon atoms,
(c) phenyl and substituted phenyl wherein the substituent is C_1 to C_{10} alkyl, C_1 to C_{10} alkoxy, C_1 or C_{10} alkylamino, or C_1 to C_{10} thioalkoxy; or
(d) heteroaryl selected from the group consisting of pyryl, thiophenyl, furyl, indolyl, benzothiophenyl, benzofuryl, imidazolyl, benzimidazolyl, and pyridinyl.

5,310,727
PHARMACEUTICAL COMPOSITIONS FOR PARENTERAL USE CONTAINING A CALCITONIN AS THE ACTIVE INGREDIENT
Filippo Lattanzi, and Riccardo Vanni, both of Siena, Italy, assignors to Scalvo S.p.A., Siena, Italy
Continuation of Ser. No. 61,664, Jun. 15, 1987, abandoned. This application Nov. 30, 1990, Ser. No. 620,399
Claims priority, application Italy, Jun. 20, 1986, 20865 A/86
Int. Cl.[5] A61K *37/30*
U.S. Cl. 514—12 **14 Claims**

1. A lyophilized pharmaceutical composition comprising calcitonin and from 0.005 to 2.5 mg of human albumin per IU of calcitonin.

5,310,728
METHOD FOR TREATING CORNEAL ENDOTHELIAL WOUNDS
Robert W. Shimizu, Irvine, Calif., and Gregory S. Schultz, Gainesville, Fla., assignors to Chiron Ophthalmics, Inc., Irvine, Calif.
Continuation of Ser. No. 562,003, Aug. 1, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,808
Int. Cl.[5] A61K *37/36*
U.S. Cl. 514—12 **7 Claims**

1. A method for treating corneal endothelial wounds of a warm-blooded animal in need of the treatment which comprises administering into the anterior chamber of the eye of said animal and in contact with the corneal endothelium an ophthalmic composition in an amount effective to promote



healing of the corneal wound comprising TFG-α in a viscoelastic carrier.

5,310,729
INTERFERON-RELATED POLYPEPTIDES AS CR2 LIGANDS AND THEIR USE FOR MODULATING IMMUNE CELL FUNCTIONS
Waldemar Lernhardt, Solana Beach, Calif., assignor to California Institute of Biological Research, La Jolla, Calif.
Filed Apr. 20, 1990, Ser. No. 512,118
Int. Cl.[5] A61K *37/00, 37/02;* C07K *5/00, 7/00*
U.S. Cl. 514—15 **2 Claims**

1. A CR2 ligand consisting of a polypeptide selected from the group consisting of:

QLNDLEA,
QLNDLEAC,
QLNDLEACV,
QLNDLEACVI,
QLNDLEACVIQ,
QQLNDLEA,
YQQLNDLEA,
LYQQLNDLEA,
QLNNLEA,
QLNNLEAC,
QLNNLEACV,
QLNNLEACVI,
QLNNLEACVIQ,
QQLNNLEA,
YQQLNNLEA, and
LYQQLNNLEA,

said ligand being capable of specifically binding to CR2.

5,310,730
SKIN TREATMENT COMPOSITION
Yoshimori Fujinuma; Tomohisa Asahara, both of Yokohama; Satoru Akiu, Sagamihara; Yumiko Suzuki, Yokohama; Hideyuki Ichikawa, Yokohama, and Yoshio Katsumura, Yokohama, all of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan
Division of Ser. No. 713,961, Mar. 20, 1985, Pat. No. 4,764,505. This application Apr. 16, 1987, Ser. No. 39,499
Claims priority, application Japan, Sep. 7, 1983, 58-164815; Feb. 28, 1985, 60-37655
The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—35 **3 Claims**

1. A skin treatment composition comprising 10% to 20% by weight of a glycoside of hydroquinone having the formula

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(I)

wherein R represents a pentose residue, a hexose residue, an amino sugar residue, or an uronic acid residue, or the methylated product thereof in a skin treatment base comprising 0 to 35% by weight of an alcohol, 0.01% to 5% by weight of a surfactant, 0 to 10% by weight of oil, and water or wax.

5,310,731

N-6 SUBSTITUTED-5'-(N-SUBSTITUTEDCARBOXAMIDO)ADENOSINES AS CARDIAC VASODILATORS AND ANTIHYPERTENSIVE AGENTS

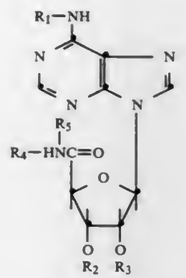
Ray A. Olsson, Odessa, Fla., and Robert D. Thompson, Irvine, Calif., assignors to Whitby Research, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 625,450, Jun. 28, 1984, abandoned. This application Jun. 12, 1985, Ser. No. 742,565

Int. Cl.[5] A61K *31/70*; C07H *19/167*

U.S. Cl. 514—46 **35 Claims**

1. Compounds of the formula:



wherein:

R_1 represents secondary alkyl having from 3 to 10 carbons, phenylalkyl, having from 1 to 7 carbons in the alkyl chain: mono- to penta-alkoxy phenylalkyl wherein said alkoxy contains from 1 to 3 carbons and said alkyl contains from t to 7 carbons; monohalophenylalkyl wherein said alkyl contains from 1 to 4 carbons; cycloalkyl wherein the ring contains from 3 to 8 carbons; bicycloalkyl wherein the rings together contain from 7 to 10 carbons; thienylalkyl wherein said alkyl contains from one to four carbons; pyridylalkyl wherein said alkyl contains from one to four carbons;

R_2 and R_3 are hydrogen;

R_4 is alkyl having 1 to 7 carbon atoms; or hydroxyalkyl which contains from 1 to 4 carbons; or secondary alkyl which contains from 3–8 carbons; or allylic alkenyl which contains from 3 to 7 carbons; or cycloalkyl wherein the ring contains from 3 to 7 carbons; or phenylalkyl wherein said alkyl contains from 1 to 4 carbons; or monoalkoxy phenylalkyl wherein said alkoxy and said alkyl each contain from 1 to 4 carbons; or thienylalkyl wherein said alkyl contains from 1 to 4 carbons; and R_5 is hydrogen, or straight chain lower alkyl having 1 to 4 carbons.

5,310,732

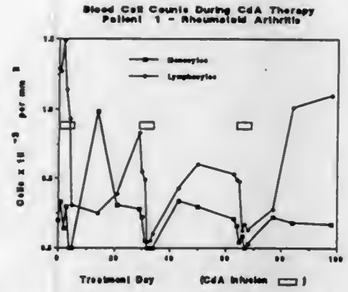
2-HALO-2'-DEOXYADENOSINES IN THE TREATMENT OF RHEUMATOID ARTHRITIS

Dennis A. Carson, Del Mar, and Carlos J. Carrera, San Digeo, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 460,351, Jan. 3, 1990, Pat. No. 5,106,837, which is a continuation-in-part of Ser. No. 323,350, Mar. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 169,618, Mar. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 825,215, Feb. 3, 1986, abandoned. This applicatioe Feb. 19, 1992, Ser. No. 838,546

Int. Cl.[5] A61K *31/70*; C07H *19/173*

U.S. Cl. 514—46 **5 Claims**



1. A method of treating rheumatoid arthritis in a human comprising:

administering to said human a composition containing a therapeutically effective dose of a substituted adenine derivative that is a 2-halo-2'-deoxyadenosine as an active ingredient dissolved or dispersed in a physiologically tolerable carrier, said substituted adenine derivative being administered in an amount sufficient to decrease the level of monocytes in the blood of said human by at least about 50 percent during the course of said treatment.

5. A method of treating rheumatoid arthritis in a human comprising:

administering to said human a composition containing a therapeutically effective dose of a substituted adenine derivative that is 2-chloro-2'-deoxyadenosine as an active ingredient dissolved or dispersed in a physiologically tolerable carrier, said substituted adenine derivative being repeatedly administered in an amount sufficient to decrease the level of monocytes in the blood of said human by at least about 50% during the course of said treatment.

5,310,733

BIOCIDAL COMPOSITIONS AND USE THEREOF

Wilson K. Whitekettle, Jamison, Pa., and Deborah K. Donofrio, The Woodlands, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed May 19, 1993, Ser. No. 64,200

Int. Cl.[5] A01N *43/08*, *57/00*

U.S. Cl. 514—75 **7 Claims**

1. A bacterial inhibiting composition comprising a synergistic mixture of (A) n-tributyltetradecyl phosphonium chloride and (B) 2-(2-bromo-2-nitroethenyl) furan wherein the weight ratio of (A):(B) (100% actives basis) is from about 25:1 to about 1:2.

5,310,734

PHOSPHOLIPID COMPOSITION

Rainer Losch, Bonn; Bernd-Rainer Günther, Bergheim, and Jörg Hager, Cologne, all of Fed. Rep. of Germany, assignors to Rhone-Poulenc Rorer, Cologne, Fed. Rep. of Germany

Filed Jun. 30, 1992, Ser. No. 906,620

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1991, 4122300; Jun. 17, 1992, 4219715

Int. Cl.[5] A61K *31/685, 47/60*

U.S. Cl. 514—78 **14 Claims**

1. A process for the manufacture of a granulated phospholipid composition comprising

cooling a phospholipid starting material having a phosphatidylcholine content of at least 80% by weight and is substantially free from additives to a temperature below −50° C., and

comminuting said cooled phospholipid starting material until it has a particle size between 18 mm and 0.07 mm.

5,310,735

CARBAPENEM DERIVATIVES HAVING ANTIBIOTIC ACTIVITY, THEIR PREPARATION AND THEIR USE

Isao Kawamoto; Masao Miyauchi; Eiji Nakayama; Rokuro Endo; Satoshi Ohya, and Yukio Utsui, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

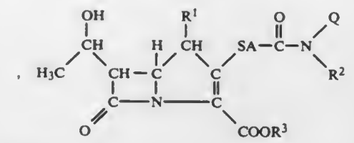
Continuation of Ser. No. 658,975, Feb. 21, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 938,483

Claims priority, application Japan, Feb. 23, 199[illegible], 2-42796; Aug. 10, 1990, 2-212283

Int. Cl.[5] A01N *43/00*; A61K *31/395*; C07D *487/04*

U.S. Cl. 514—210 **12 Claims**

1. A compound of formula (I):



(I)

in which:

A is a fully saturated heterocyclic group having from 4 to 6 ring atoms, of which one is a nitrogen atom and the remainder are carbon atoms, said nitrogen atom having on its remaining valence a group or atom R^4, wherein:

R^4 is a hydrogen atom; an alkenyl group having from 2 to 5 carbon atoms; an alkynyl group having from 2 to 5 carbon atoms; an alkyl group having from 1 to 6 carbon atoms; a substituted alkyl group having from 1 to 6 carbon atoms and having at least one substituent selected from the group consisting of substituents (a), defined below; or a group of formula —C(=NH)R^5, wherein R^5 is a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms;

R^1 is a hydrogen atom or a methyl group;

R^2 is a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms;

R^3 is a hydrogen atom or a negative ionic charge or forms an ester;

Q is

(i) a group of formula —B—N+$R^8R^9R^{10}$, wherein: R^8, R^9 and R^{10} are independently selected from the group consisting of alkenyl groups having from 2 to 5 carbon atoms, alkynyl groups having from 2 to 5 carbon atoms, alkyl groups having from 1 to 6 carbon atoms and substituted alkyl groups which have from 1 to 6 carbon atoms and which have at least one substituent selected from the group consisting of substituents (b), defined below; and B represents an alkylene or alkylidene group having from 1 to 4 carbon atoms;

substituents (a):

hydroxy groups, carboxy groups, cyano groups, sulfamoyl groups, sulfo groups, halogen atoms, and groups of formula —NR^aR^b or —CONR^aR^b, where R^a and R^b are independently selected from the group consisting of hydrogen atoms and alkyl groups having from 1 to 4 carbon atoms;

substituents (b):

hydroxy groups; carboxy groups; groups of formula —NR^aR^b, where R^a and R^b are as defined above; groups of formula —CONR^aR^d or —OCONR^cR^d, where R^c and R^d are independently selected from the group consisting of hydrogen atoms, alkyl groups having from 1 to 4 carbon atoms and substituted alkyl groups which have from 1 to 4 carbon atoms and which have at least one substituent selected from the group consisting of substituents (d) defined below; cyano groups; sulfamoyl groups; ureido groups; sulfo groups; halogen atoms; alkoxy groups having from 1 to 4 carbon atoms; alkoxycarbonyl groups having from 2 to 5 carbon atoms; alkanoyl groups having from 1 to 4 carbon atoms; alkanoylamino groups having from 1 to 4 carbon atoms; alkanoyloxy groups having from 1 to 4 carbon atoms; alkylthio groups having from 1 to 4 carbon atoms; alkylsulfinyl groups having from 1 to 4 carbon atoms and alkylsulfonyl groups having from 1 to 4 carbon atoms;

substituents (d):

hydroxy groups, carboxy groups and groups of formula —CONR^aR^b or —OCONR^aR^b, where R^a and R^b are as defined above;

or a pharmaceutically acceptable salt thereof and, where R^3 is a hydrogen atom or forms an ester compound, the compound also includes an anion provided by a pharmaceutically acceptable acid.

5,310,736

FUNGICIDAL N-(2-CYANO-2-ALKOXYIMINO ACETAMIDO)CYCLOHEXAMETHYLENEIMINE DERIVATIVES

Winfried Lunkenheimer, Wuppertal, and Wilhelm Brandes, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

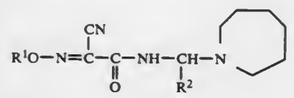
Division of Ser. No. 596,251, Oct. 12, 1990, Pat. No. 5,210,197. This application Aug. 25, 1992, Ser. No. 935,870

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1989, 3938287

Int. Cl.[5] C07D *223/04*; A61K *31/55*

U.S. Cl. 514—212 **6 Claims**

1. An aminal of the formula



in which

R^1 represents straight-chain or branched alkyl having 1 to 6 carbon atoms which is optionally substituted by one to five identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, iodine, cyano, —$COOR^I$, —$CONR^{II}R^{III}$, —OR^{IV}, acyl having 2 to 9 carbon atoms and phenyl which is optionally substituted by one to five identical or different substituents, substituents on the phenyl being halogen, alkyl or alkoxy having in each case 1 to 4 carbon atoms or halogenoalkyl or halogenoalkoxy having in each case 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms; further possible substituents on the alkyl being cycloalkyl having 3 to 6 carbon atoms which is optionally substituted by one to five identical or different alkyl radicals having 1 to 4 carbon atoms; or R^1 represents straight-chain or branched alkenyl or alkynyl having 2 to 6 carbon atoms,

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in each case optionally substituted by one to three identical or different alky groups having 1 to 4 carbon atoms; or R^1 represents cycloalkyl having 3 to 6 carbon atoms or cycloalkenoyl having 5 to 7 carbon atoms, in each case optionally substituted by one to five identical or different alkyl groups having 1 to 4 carbon atoms;

R^2 represents hydrogen, or represents straight-chain or branched alkyl having 1 to 6 carbon atoms which is optionally substituted by one to five identical or different substituents selected from the group consisting of cyano, alkoxy and alkylthio having in each case 1 to 4 carbon atoms, —COOR^I, acylamino having 2 to 9 carbon atoms and phenyl which is optionally substituted by one to five identical or different substituents, possible substituents being the substituents on phenyl already mentioned for R^1; further possible alkyl substituents are cycloalkyl having 3 to 6 carbon atoms which is optionally substituted by one to five identical or different alkyl groups having 1 to 4 carbon atoms; or R^2 represents straight-chain or branched alkenyl or alkynyl having 2 to 6 carbon atoms, in each case optionally substituted identically or differently one to three times by phenyl which is optionally substituted by one to five identical or different halogen atoms and alkyl groups having 1 to 4 carbon atoms; or R^2 represents cycloalkyl having 3 to 6 carbon atoms or cycloalkenyl having 5 to 7 carbon atoms, in each case optionally substituted by one to five identical or different alkyl groups having 1 to 4 carbon atoms; or R^2 represents phenyl which is optionally substituted by one to five identical or different substituents, possible substituents being the substituents on phenyl already mentioned for R^1;

R^I represents hydrogen or straight-chain or branched alkyl having 1 to 6 carbon atoms,

R^{II} and R^{III} are identical or different and represent hydrogen, straight-chain or branched alkyl having 1 to 6 carbon atoms and phenylalkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl part and is optionally substituted by one to five identical or different substituents, substituents on phenyl being selected from the group consisting of halogen, alkyl and alkoxy having in each case 1 to 4 carbon atoms, and halogenoalkyl and halogenoalkoxy having in each case 1 or 2 carbon atoms and 2 to 5 identical or different halogen atoms; or R^{II} furthermore represents alkoxycarbonylalkyl, carbamoylalkyl, alkylcarbamoylalkyl or dialkylcarbamoylalkyl having in each case 1 to 4 carbon atoms in each alkyl part, or represents cycloalkyl having 3 to 6 carbon atoms which is optionally substituted by one to five identical or different straight-chain or branched alkyl radicals having 1 to 4 carbon atoms;

R^{IV} represents hydrogen, straight-chain or branched alkyl having 1 to 6 carbon atoms or phenylalkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl part and is optionally substituted by one to five identical or different substituents on the phenyl by those substituents mentioned for R^{II}; or R^{IV} furthermore represents acyl having 2 to 9 carbon atoms; and

R^V represents hydrogen, straight-chain or branched alkyl having 1 to 6 carbon atoms or phenylalkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl part and is optionally substituted by one to five identical or different substituents, possible substituents on phenyl being the substituents on phenyl mentioned for R^{II}.

5,310,737

BENZO-FUSED LACTAMS THAT PROMOTE THE RELEASE OF GROWTH HORMONE

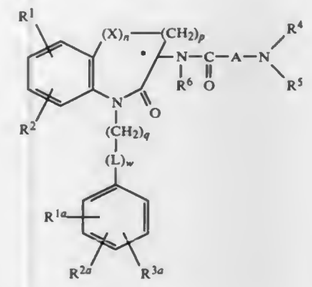
Michael H. Fisher, Ringoes; William R. Schoen, Edison; Matthew J. Wyvratt, Mountainside, and Robert J. DeVita, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 839,742, Feb. 28, 1992, Pat. No. 5,206,235, which is a continuation-in-part of Ser. No. 673,695, Mar. 20, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,190

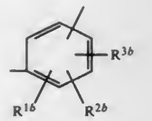
Int. Cl.^{5} A61K *31/55;* **C07D** *281/02*

U.S. Cl. 514—215 **9 Claims**

1. A compound having the formula:



where L is



n i l;

p is 1;

q is 0 to 4;

w is 0 to 1;

X is $S(O)_m$,

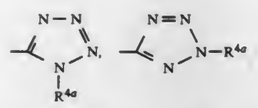
m is 0 to 2;

R^1, R^2, R^1, R^{2a}, R^{1b}, and R^{2b} are independently hydrogen, halogen, C_1–C_7 alkyl, C_1–C_3 perfluoroalkyl, C_1–C_3 perfluoroalkoxy, $—S(O)_mR^{7a}$, cyano, nitro, $R^{7b}O(CH_2)_r—$, $R^{7b}COO(CH_2)_r—$, $R^{7b}OCO(CH_2)_n$, phenyl or substituted phenyl where the substituents are from 1 to 3 of halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, or hydroxy;

R^{7a} and R^{7b} are independently hydrogen, C_1–C_3 perfluoroalkyl, C_1–C_6 alkyl, substituted C_1–C_6 alkyl, where the substituents are phenyl or substituted phenyl; phenyl or substituted phenyl where the phenyl substituents are from 1 to 3 of halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, or hydroxy and v is 0 to 3; R^{3a} and R^{3b} are independently hydrogen, R^9, C_1–C_6 alkyl substituted with R^9, phenyl substituted with R^9 or phenoxy substituted with R^9;

R^9 is

R^9 is



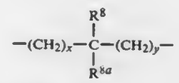
$R^{7b}O(CH_2)_r—$, $R^{7b}COO(CH_2)_r—$, $R^{7b}OCO(CH_2)_r—$, $R^{7b}CO(CH_2)_r—$, $R^{7b}O(CH_2)_rCO—$, $R^4R^5N(CH_2)_r—$j, $R^{7b}CON(R^4)(CH_2)_r—$, $R^4R^5NCO(CH_2)_r—$, $R^4R^5NCS(CH_2)_r—$, $R^4R^5NN(R^5)CO(CH_2)_r—$, $R^4R^5NN(R^5)CS(CH_2)_r—$, $R^{7b}CON(R^4)N(R^5)CO(CH_2)_r—$, $R^{7b}CON(R^4)N(R^5)CS(CH_2)_r—$, $R^4N(OR^{7b})CO(CH_2)_r—$ or $R^{7a}CON(OR^{7b})CO(CH_2)_r—$;

and v is as defined above;

R^4, R^{41}, R^5 are independently hydrogen, phenyl, substituted phenyl, C_1–C_{10} alkyl, substituted C_1–C_{10} alkyl, C_3–C_{10} alkenyl, substituted C_3–C_{10} alkenyl, C_3–C_{10} alkynyl, or substituted C_3–C_{10} alkynyl where the substituents on the phenyl, alkyl, alkenyl or alkynyl are from 1 to 5 of hydroxy, C_1–C_6 alkoxy, C_3–C_7 cycloalkyl, phenyl C_1–C_3 alkoxy, fluoro, R^1 substituted or R^1, R^2 independently disubstituted phenyl C_1–C_3 alkoxy, phenyl, R^1 substituted or R^1, R^2 independently disubstituted phenyl, where the substituents on the phenyl are as defined above, C_1–C_5-alkanoyloxy, C_1–C_5 alkoxycarbonyl, carboxy, formyl, or $—NR^{10}R^{11}$ where R^{10} and R^{11} are independently hydrogen, C_1–C_6 alkyl, phenyl, phenyl C_1–C_6 alkyl, C_1–C_5-alkoxycarbonyl or C_1–C_5-alkanoyl-C_1–C_6 alkyl; or R^4 and R^5 can be taken together to form $—(CH_2)_rB(CH_2)_s—$ where B is CH_2, O or $S(O)_m$ or N-R^{10}, r and s are independently 1 to 3, and R^{10} is as defined above;

R^6 is hydrogen, C_1–C_{10} alkyl, phenyl or phenyl C_1–C_{10} alkyl;

A is



where x and y are independently 0–3;

R^8 and R^{8a} are independently hydrogen, C_1–C_{10} alkyl, trifluoromethyl, phenyl, substituted C_1–C_{10} alkyl where the substituents are from 1 to 3 of imidazolyl, indolyl, hydroxy, fluoro, $S(O)_mR^{7a}$, C_1–C_6 alkoxy, C_3–C_7 cycloalkyl, phenyl C_1–C_3 alkoxy, R^1 substituted or R^1, R^2 independently disubstituted phenyl C_1–C_3 alkoxy, phenyl, R^1 substituted or R^1, R^2 independently disubstituted phenyl, C_1–C_5-alkanoyloxy, C_1–C_5 alkoxycarbonyl, carboxy, formyl, or $—NR^{10}R^{11}$ where R^{10} and R^{11} are as defined above; or

R^8 and R^{8a} can be taken together to form $—(CH_2)_t—$ where t is 2 to 6; and R^8 and R^{8a} can independently be joined to one or both of R^4 and R^5 to form alkylene bridges between the terminal nitrogen and the alkyl portion of the A group wherein the bridge contains from 1 to 5 carbon atoms;

and pharmaceutically acceptable salts thereof.

5,310,738

PROCESS FOR PRODUCING A HEXAHYDROPYRIDAZINE-1,2-DICARBOXY DERIVATIVE

Tadashi Nakayama, Shizuoka, Japan, assignor to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01772, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO92/12136, PCT Pub. Date Jul. 23, 1992

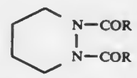
PCT Filed Dec. 26, 1991, Ser. No. 920,465

Claims priority, application Japan, Dec. 27, 1990, 2-416789

Int. Cl.^{5} C07D *237/04*

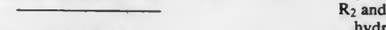
U.S. Cl. 544—224 **2 Claims**

1. A process for producing a hexahydropyridazine-1,2-dicarboxy compound represented by the formula:



(3)

(wherein R has the same meaning as R in the following formula (1)), which comprises reacting a hydrazine dicarboxy compound represented by the formula:



(1)

(wherein R is an alkoxy group or an aryl group) with a dihalogenobutane represented by the formula:



(2)

(wherein X is a chlorine or bromine atom) in the presence of a base selected from an alkali metal carbonate or hydroxide, wherein when R is alkoxy, said base is an alkali metal carbonate.

5,310,739

1-AMIDOOCTAHYDROPYRIDO[2,1-C][1,4]OXAZINE COMPOUNDS

Henri P. Husson, Chevreuse; Jean C. Quirion; Martine Bonin, both of Gif sur Yvette; Béatrice Guardiola, Neuilly sur Seine; Gérard Adam, Le Mesnil le Roi, and Pierre Renard, Versailles, all of France, assignors to Adir et Compagnie, Courbevoie, France

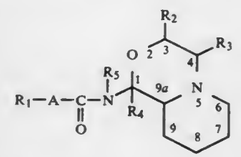
Filed May 13, 1992, Ser. No. 882,273

Claims priority, application France, May 14, 1991, 91 05765

Int. Cl.^{5} A61K *31/535;* **C07D** *498/04*

U.S. Cl. 514—230.5 **10 Claims**

1. A compound selected from 1-acylaminooctahydropyrido[2,1-][1,4]oxazines of formula (I):



(I)

in which:

R_1 represents hydrogen or an optionally-substituted mono- or bicyclic system chosen form phenyl, naphthyl, pyridyl, thienyl, furyl, quinolyl, isoquinolyl, indolyl, indolinyl, perhydroindolyl, and benzofuryl,

A represents a σ bond or a saturated or unsaturated, linear or branched alkylene having 1 to 4 carbon atoms inclusive, with the reservation that, when R_1 represents hydrogen, A cannot represent a σ bond,

R_2 and R_3 each represent, independently of one another:

hydrogen,

linear or branched and optionally-substituted alkyl having 1 to 6 carbon atoms inclusive,

a group $—(CH_2)_nB$, n being 0, 1, 2, or 3 and B representing a C_5–C_7 cycloalkyl or phenyl monocyclic system, substituted or unsubstituted,

R_4 and R_5 each represent, independently of one another, hydrogen, linear or branched alkyl having 1 to 4 carbon atoms inclusive or a group $—(CH_2)_nB$ as above defined, the term substituted associated with the expression "monocyclic system" means that the system may be substituted with 3 or 4 lower-alkoxy having 1 to 4 carbon atoms inclusive branched or linear or 2 lower-alkoxy plus 2 halogen atoms SO_2R_6, the substituents being identical or different,

wherein the term associated with the expression alkyl means that this group may be substituted wit one or more linear or branched lower-alkoxy having 1 to 4 carbon atoms inclusive,

its isomers, diastereoisomers and enantiomers, isolated or in the form of a mixture, and

its addition salts with a pharmaceutically-acceptable inorganic or organic acid.

9. A method for treating a living animal or human afflicted with a psycho-behavioral disorder selected from depressive

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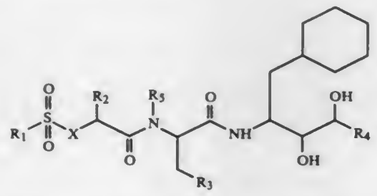
states and psychosis, comprising the step of administering to the said living animal or human an amount of a compound of claim 1 which is effective for alleviation of said condition.

5,310,740
RENIN INHIBITORS

Saul H. Rosenberg, Libertyville, and Jon F. Denissen, McHenry, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 683,663, Apr. 15, 1991, which is a continuation-in-part of Ser. No. 564,925, Aug. 9, 1990, which is a continuation-in-part of Ser. No. 522,349, May 11, 1990. This application Jun. 19, 1992, Ser. No. 901,368
Int. Cl.[5] A61K *31/535, 31/495;* **C07D** *237/30, 413/00*
U.S. Cl. 514—236.8 **15 Claims**

1. A compound of formula:



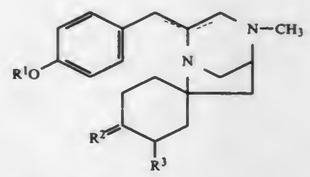
wherein R_1 is 4-morpholinyl or 4-thiomorpholinyl;
R_2 is benzyl, 2-phenylethyl, 1-naphthylmethyl or 2-naphthylmethyl;
R_3 is 4-thiazolyl, 2-amino-4-thiazolyl, 2-thiazolyl, 5-thiazolyl, 1-pyrazolyl, 3-pyrazolyl, 1-imidazolyl, n-propyl, isopropyl, CH_3S— or CH_3SCH_2;
R_4 is isobutyl or cyclopropyl;
R_5 is hydrogen or loweralkyl; and
X is CH_2; or a pharmaceutically acceptable salt, ester or prodrug thereof.

5,310,741
TAN-1251 COMPOUNDS AND THEIR PRODUCTION FROM *PENICILLIUM THOMII*

Hideo Shirafuji, Nagaokakyo; Shigetoshi Tsubotani, Kawanishi; Takenori Ishimaru, Toyonaka, and Setsuo Harada, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP91/00295, § 371 Date Apr. 22, 1991, § 102(e) Date Apr. 22, 1991, PCT Pub. No. WO91/13887, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 5, 1991, Ser. No. 674,342
Claims priority, application Japan, Mar. 6, 1990, 2-55749; Mar. 1, 1991, 3-036107; Mar. 4, 1991, 3-037268
Int. Cl.[5] A01N *43/58;* **A61K** *31/495;* **C07D** *237/00;* **C12P** *17/12*
U.S. Cl. 514—249 **12 Claims**

1. A compound of the formula



wherein R^1 is hydrogen or a substituted or unsubstituted alkyl, alkenyl, or alkynyl group; R^2 is oxo or hydrogen and hydroxy, which may be acylated; R^3 is hydrogen or hydroxy which may be acylated; at least one of the dotted lines represents a single bond, or a salt thereof.

5,310,742
USES FOR THIOUREYLENES

Alan N. Elias, 2984 Alpine Way, Laguna Beach, Calif. 92651

Filed Nov. 30, 1992, Ser. No. 982,702
Int. Cl.[5] A61K *31/505*
U.S. Cl. 514—274 **7 Claims**

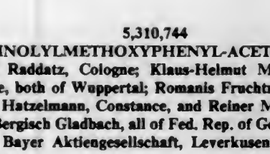
1. A method of treatment of psoriasis in a mammalian patient suffering from psoriasis, comprising the step of:
administering to said patient an effective psoriasis-reducing amount of a thioureylene compound.

5,310,743
1-ACYLPIPERIDINE COMPOUNDS

Walter Schilling, Himmelried; Silvio Ofner, Münchenstein, and Siem J. Veenstra, Basel, all of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Filed Aug. 11, 1992, Ser. No. 929,186
Claims priority, application Switzerland, Dec. 8, 1991, 2374/91
Int. Cl.[5] C07D *215/12, 215/16;* **A01N** *43/42*
U.S. Cl. 514—311 **10 Claims**

1. A 1-acylpiperidine compound of the formula I



(I)

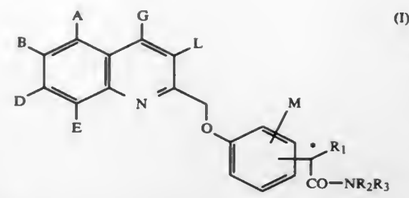
wherein R_1 is a benzoyl, naphthoyl or fluorenoyl radical, each of which is unsubstituted or substituted by lower alkyl, lower alkoxy, hydroxyl, di-lower-alkylamino, halogen, cyano and/or trifluoromethyl, R_2 is a phenyl or naphtyl radical, each of which is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen and/or trifluoromethyl, R_3 is hydrogen, lower alkyl, carbamoyl, lower alkanoyl, carboxy-lower-alkanoyl or carboxy-lower-alkenoyl, lower alkoxycarbonyl-lower-alkyl, carbamoyl-lower-alkanoyl, N-mono- or N,N-di-lower-alkyl-carbamoyl-lower-alkanoyl, N-cyclalkylcarbamoyl-lower-alkanoyl or N-phenylcarbamoyl-lower-alkanoyl, R_4 is a quinolinyl radical which is unsubstituted or C-substituted by lower alkyl, lower alkoxy, halogen and/or trifluoromethyl and optionally N-substituted by lower alkanoyl, X_1 is methylene or ethylene, X_2 is a direct linkage, and X_3 is a lower alkylene radical, or a salt thereof.

5,310,744
QUINOLYLMETHOXYPHENYL-ACETAMIDES

Siegfried Raddatz, Cologne; Klaus-Helmut Mohrs; Michael Matzke, both of Wuppertal; Romanis Fruchtmann, Cologne; Armin Hatzelmann, Constance, and Reiner Müller-Peddinghaus, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

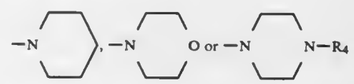
Filed Nov. 23, 1992, Ser. No. 979,745
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139749
Int. Cl.[5] C07D *215/14;* **A61K** *31/47, 31/495*
U.S. Cl. 514—314 **11 Claims**

1. Quinolylmethoxyphenyl-acetamide of the formula



(I)

in which
A, B, D, E, G, L and M independently of one another represent hydrogen, hydroxyl, halogen, cyano, carboxyl, nitro, trifluoromethyl, trifluoromethoxy or represent straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms, or represent aryl having 6 to 10 carbon atoms, which is optionally substituted by halogen, hydroxyl, nitro or cyano,
R^1 represents cycloalkyl having 3 to 12 carbon atoms, which is optionally substituted by straight-chain or branched alkyl having up to 8 carbon atoms,
R^2 and R^3 are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, or represent benzyl, or represent cycloalkyl having 3 to 12 carbon atoms, which is optionally substituted by straight-chain or branched alkyl having up to 8 carbon atoms, or
R^2 and R^3, together with the nitrogen atom, form a heterocyclic ring of the formula



in which
R^4 denotes straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, each of which is optionally substituted by phenyl or denotes phenyl which is optionally substituted by halogen or trifluoromethyl,
optionally in an isomeric form, or a salt thereof.

5,310,745
ANTIVIRAL COMPOUNDS

Richard A. Partis, Evanston; Francis J. Koszyk, Prospect Heights, and Richard A. Mueller, Glencoe, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 639,472, Jan. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 418,091, Oct. 12, 1989, Pat. No. 5,003,702, which is a continuation-in-part of Ser. No. 266,767, Nov. 3, 1988, abandoned. This application Aug. 13, 1992, Ser. No. 929,325
Int. Cl.[5] A61K *31/445*
U.S. Cl. 514—315 **4 Claims**

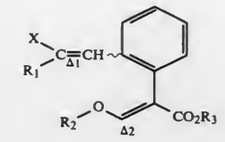
1. The method of inhibiting lentivirus by orally administering to a mammalian host susceptible to said lentivirus a virally inhibitory effective amount of an O-acylated derivative of 1,5-dideoxy-1,5-imino-D-glucitol containing an N-aroyl radical selected from the group consisting of phenylacetyl, benzyloxycarbonyl, biphenylacetyl, phenoxyacetyl, chlorophenylacetyl, cinnamoyl, hydrocinnamoyl and nicotinoyl, and in which from one to four of the free hydroxy groups are acylated with carboxylic alkanoyl groups having from one to eight carbon atoms, provided that when N-aroyl is benzyloxycarbonyl, the carboxylic alkanoyl groups contain from four to eight carbon atoms.

5,310,746
ALPHA-METHYLENE-6-STYRYL-ACRYLIC ACID DERIVATIVES

Jean-Louis Brayer, Nanteuil Le Haudoin; Jean-Pierre Demonte, Neuilly Plaisance; Yannick Le Stanc, Pontault Combault, and Nicole Reinier, Marseille, all of France, assignors to Roussel Uclaf, France

Filed Nov. 24, 1992, Ser. No. 981,071
Claims priority, application France, Nov. 26, 1991, 91 14556
Int. Cl.[5] C07C *69/618;* **C07D** *277/30;* **A01N** *37/10, 43/78*
U.S. Cl. 514—361 **16 Claims**

1. All possible stereoisomer forms and mixtures of a compound of the formula



I

wherein X is a halogen, R_2 and R_3 are individually selected from the group consisting of alkyl and cycloalkyl of up to 8 carbon atoms optionally substituted with at least one halogen, R_1 is selected from the group consisting of alkyl, alkenyl, alkynyl and cycloalkyl of up to 12 carbon atoms optionally substituted with at least one halogen, hydrocarbyl aryl and heterocycle selected from the group consisting of pyridyl, pyrimidyl, pyridazinyl, oxazolyl, thiazolyl, isoxazolyl, isothiazolyl, (1,3,4)-oxadiazolyl, (1,2,4)-oxadiazolyl, thiadiazolyl and triazolyl optionally substituted with at least one member of the group consisting of halogen, alkyl, alkenyl, alkynyl and cycloalkyl of up to 8 carbon atoms optionally substituted with at least one member of the group consisting of —NO_2, —NH_2, —CN, —OR′, —SR″, —SOR″, —SO_2R″, —NR‴$_2$, —Ar, —OAr$_1$ and SAr$_2$, R′, R″ and R‴ are individually selected from the group consisting of alkyl, alkenyl alkynyl and cycloalkyl of up to 12 carbon atoms optionally substituted by at least one halogen, Ar, Ar$_1$ and Ar$_2$ are hydrocarbyl aryl of up to 14 carbon atoms or heteroaryl selected from the group consisting of pyridyl, pyrimidyl, pyridazinyl, oxazolyl, thiazolyl, isoxazolyl, isothiazolyl, (1,3,4) -oxadiazolyl, (1,2,4) -oxadiazolyl, thiadiazolyl and triazolyl optionally substituted with at least one member of the group consisting of halogen and alkyl, alkenyl, alkynyl and cycloalkyl of up to 8 carbon atoms optionally substituted by at least one member of the group consisting of —NO_2, —NH_2, —CN, —OR′, —SR″, —SOR″, —SO_2R″, —NR‴$_2$, R′, R″ and R‴ have the above definitions.

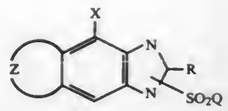
5,310,747
BENZIMIDAZOLE DERIVATIVES, AGRICULTURAL AND HORTICULTURAL FUNGICIDES CONTAINING THE SAME AS AN ACTIVE INGREDIENT AND INTERMEDIATE COMPOUNDS THEREOF

Masayuki Enomoto, Takarazuka; Junya Takahashi, Kawabe; Tomoyuki Kusaba, Toyonaka; Masayo Sugano, Kyoto; Rei Matsunaga, Takarazuka, and Masahiro Tamaki, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 2, 1992, Ser. No. 894,007
Claims priority, application Japan, Jun. 3, 1991, 3-131101; Jun. 5, 1991, 3-134048; Jul. 24, 1991, 3-184442; Feb. 26, 1992, 4-039302
Int. Cl.[5] A01N *43/90;* **C07D** *491/056, 235/02*
U.S. Cl. 514—395 **10 Claims**

1. A benzimidazole derivative having the formula,

VOL 1162 ISS 2 MY 10 1994 UMI



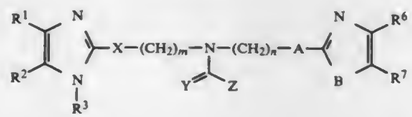
wherein R is cyano or thiocarbamoyl; Q is lower alkyl or a group represented by the formula NQ^1Q^2, in which Q^1 and Q^2 are independently lower alkyl, lower alkyl substituted with phenyl, lower alkenyl or lower alkynyl, or when taken together at their ends, they form a lower alkylene ring or $CH_2CH_2OCH_2CH_2$ or $CH_2CH_2SCH_2CH_2$; X is hydrogen or halogen; and Z is $—OCF_2O—$, $—OCF_2CFHO—$, $—OCF_2CFClO—$, $—OCF_2CF_2O—$ or $—OCF_2CH_2O—$.

5,310,748
IMIDAZOLES FOR THE TREATMENT OF ATHEROSCLEROSIS

Richard G. Wilde, New Castle; C. Anne Higley, Newark, both of Del.; Jeffrey T. Billheimer, West Chester, Pa., and Ruth R. Wexler, Wilmington, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed May 11, 1992, Ser. No. 881,034
Int. Cl.[5] C07D *403/12;* A61K *31/415*
U.S. Cl. 514—397 **9 Claims**

1. A compound of the formula:



or stereosiomers and pharmaceutically acceptable salts thereof wherein:

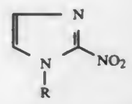
X is $S(O)_p$, CH_2 or NR^4;
A is CH_2, O, S, $S(O)_r$ or NR^8;
B is NR^9;
Y is O, S or H_2;
Z is NHR^5, OR^5 or R^5
R^1, R^2, R^6 and R^7 are selected independently from H, C_1–C_8 alkyl, C_3–C_8 branched alkyl, C_3–C_7 cycloalkyl, thienyl, furanyl, or phenyl optionally substituted with 1–3 groups independently selected from C_1–C_4 alkoxy, C_1–C_4 alkyl, $CH_3S(O)_n$, F, or $NR^{15}R^{16}$;
R^3 is H, and C_1–C_6 alkyl, allyl, benzyl, or phenyl, each being optionally substituted with F, Cl, CH_3, OCH_3, or CF_3;
R^5 is C_1–C_8 alkenyl, C_1–C_8 alkynyl, C_3–C_7 cycloalkyl, C_4–C_{10} cycloalkyl, C_7–C_{14} aralkyl, phenyl optionally substituted with 1–3 groups independently selected from C_1–C_4 alkyl, C_3–C_8 branched alkyl, F, Cl, C_1–C_4 alkoxy, or CN, pyrrolidyl, or imidazolyl;
R^4, R^8, R^9, R^{15}, and R^{16} are selected independently from H, C_1–C_8 alkyl, benzyl, or phenyl;
m is 2–8;
n is 0–5; and
p, r and t are independently 0–2.

5,310,749
ANTIPROTOZOAL COMPOSITION CONTAINING A 2-NITROIMIDAZOLE DERIVATIVE AND METHOD THEREOF

Yoshiyuki Miyata; Masakazu Sakaguchi; Toshimitsu Suzuki, all of Yokohama; Tsutomu Takeuchi, Tokyo, and Seiki Kobayashi, Ichikawa, all of Japan, assignors to Pola Chemical Industries Inc., Shizuoka, Japan

Filed May 21, 1991, Ser. No. 703,839
Int. Cl.[5] A61K *31/04*
U.S. Cl. 514—398 **2 Claims**

1. An antiprotozoal composition which is effective against the protozoan *Trypanosoma cruzi* containing a 2-nitroimidazole derivative of Formula (I):



(I)

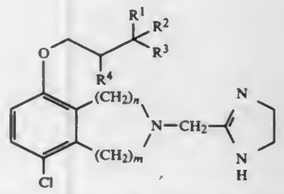
wherein R is $—CH_2OCH_2CH=CHCH_2OH$ or $—CH_2OCH(CH_2OH)_2$, and an acrylic acid-diisobutylvinyl ether copolymer.

5,310,750
HETEROCYCLIC COMPOUNDS USEFUL AS α_2-ADRENOCEPTOR ANTAGONISTS

John M. Berge, and Michael A. Cawthorne, both of Epsom, England, assignors to Beecham Group P.L.C., Epsom, England

Division of Ser. No. 581,202, Sep. 10, 1990, Pat. No. 5,021,445, which is a continuation of Ser. No. 260,004, Oct. 19, 1988, abandoned. This application Mar. 1, 1991, Ser. No. 663,393
Claims priority, application United Kingdom, Oct. 19, 1987, 8724441; Nov. 9, 1987, 8726197
Int. Cl.[5] A61K *31/415;* C07D *401/06, 403/06*
U.S. Cl. 514—402 **9 Claims**

1. A compound of formula (I):



(I)

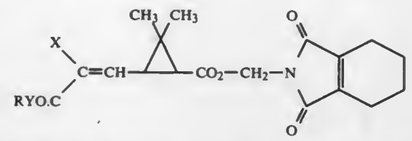
or a pharmaceutically acceptable salt thereof, wherein:
R^1 and R^2 may each represent hydrogen or $C_{1\text{-}12}$ alkyl providing that at least one of R^1 and R^2 represents alkyl;
R^3 and R^4 each represent hydrogen;
and m and n are equal to each other and represent an integer 1 or 2.

5,310,751
PYRETHRINOID ESTERS OF 1,3,4,5,6,7-HEXAHYDRO-1,3-DIOXO-2H-ISOINDOL-2-YL-METHANOL AND PESTICIDAL COMPOSITIONS THEREOF

Didier Babin, Montigny; Marc Benoit, Roquevaire; Jacques Demassey, Montevrain, and Jean-Pierre Demoute, Neuilly Plaisance, all of France, assignors to Roussel Uclaf, France

Filed Jul. 1, 1992, Ser. No. 906,405
Claims priority, application France, Jul. 4, 1991, 91 08379
Int. Cl.[5] A61K *31/40;* C07D *209/49*
U.S. Cl. 514—417 **18 Claims**

1. A compound selected from the group consisting of all possible steroisomer forms and mixtures thereof of a compound of the formula



I

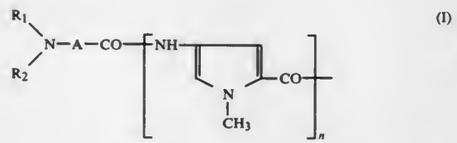
wherein X is fluorine, Y is —O— or —S— and R is alkyl or cycloalkyl of up to 4 carbon atoms.

5,310,752
SITE SPECIFIC ALKYLATING AGENTS

Ettore Lazzari; Federico Arcamone; Sergio Penco; Maria A. Verini, and Nicola Mongelli, all of Milan, Italy, assignors to Farmitalia Carlo Erba SpA, Milan, Italy

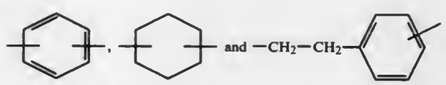
Continuation of Ser. No. 686,457, Apr. 17, 1991, abandoned, which is a division of Ser. No. 607,339, Oct. 31, 1990, Pat. No. 5,049,579, which is a continuation of Ser. No. 485,847, Feb. 21, 1990, Pat. No. 5,017,599, which is a continuation of Ser. No. 336,603, Apr. 7, 1989, abandoned, which is a continuation of Ser. No. 49,987, May 15, 1987, abandoned. This application Aug. 10, 1992, Ser. No. 925,408
Claims priority, application United Kingdom, May 20, 1986, 8612218
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/40;* C07D *403/14*
U.S. Cl. 514—422 **6 Claims**

1. A compound of formula (I)

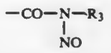


(I)

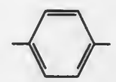
wherein
n is 2, 3, or 4;
A is a divalent carbocyclic radical selected from the group consisting of



wherein the radical is unsubstituted or substituted by one or more substituents selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, cyano, and trifluoromethyl; and either one of R_1 and R_2 is a hydrogen and the other is
a) a group



in which R_3 is a C_1–C_6 alkyl unsubstituted or substituted by halogen atoms; phenyl; or cyclohexyl; or
b) a group $—CO—(CH_2)_m—R_4$ in which m is zero, 1, 2, or 3 and R_4 is hydrogen, halogen. hydroxy, aziridinyl, or oxiranyl; or R_1 and R_2 are the same and they are both hydrogen or both a C_1–C_6 alkyl group unsubstituted or substituted by halogen, hydroxy, or C_1–C_6 alkoxy, provided however, that when R_1 and R_2 are both chloroethyl and A is



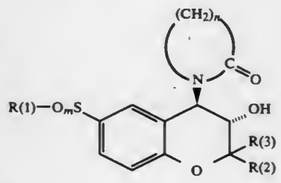
then n is 2 or 4, and the pharmaceutically acceptable salts thereof.

5,310,753
ETHANOL ADDUCTS OF 6-SULFONYL-SUBSTITUTED 3-HYDROXY-CHROMANS AND THEIR USE AS INHALANTS IN DISEASES

Heinrich Englert, Hofheim am Taunus; Dieter Mania, Königstein am Taunus; Paul-Gerhard Kibat, Wiesbaden; Doris Gehring, Kelkheim, and Erich Paulus, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,839
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141350
Int. Cl.[5] A61K *31/40, 31/445;* C07D *405/04*
U.S. Cl. 514—422 **6 Claims**

1. A crystalline ethanol adduct of the formula I



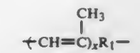
I

in which
R(1) is phenyl which can be substituted by 1 or 2 methyl groups, a chlorine group or both methyl and chlorine groups,
R(2) and R(3) are identical or different and are hydrogen, methyl or ethyl,
n is the number 3 or 4,
and m is 1 or 2.

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5,310,754
METHOD FOR CONTROLLING INSECTS
Muraleedharan G. Nair, Okemos, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.
Division of Ser. No. 811,950, Dec. 23, 1991, Pat. No. 5,250,566, which is a continuation-in-part of Ser. No. 177,311, Apr. 5, 1988, abandoned. This application Jan. 15, 1993, Ser. No. 5,154
Int. Cl.[5] A01N *43/16*
U.S. Cl. 514—459 **16 Claims**

1. A composition for controlling insects and nematodes which comprises:
(a) a nitrophenyl



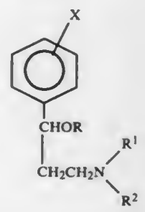
pyrone wherein x is an integer between 0 and 8 and wherein R_1 is selected from the group consisting of a direct bond, —CH=CH— and —CH= furanyl substituents; and
(b) an agricultural carrier other than water alone, wherein the pyrone is present in an amount in the carrier which provides between about 0.001 and 100 ppm by weight sufficient to control the insects and nematodes.

5,310,755
BIOCIDAL COMPOSITIONS AND USE THEREOF
Deborah K. Donofrio, The Woodlands, Tex., and Wilson K. Whitekettle, Jamison, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed May 19, 1993, Ser. No. 64,196
Int. Cl.[5] A01N *33/24, 43/08*
U.S. Cl. 514—471 **7 Claims**

1. A bacterial inhibiting composition comprising a synergistic mixture of (A) n-4-dihydroxy-oxobenzene ethanimidoyl chloride and (B) 2-(2-bromo-2-nitroethenyl) furan wherein the weight ratio of (A):(B) (100% actives basis) is from about 2.3:1 to about 1:26.7.

5,310,756
ARYLOXYPHENYLPROPYLAMINES AND THEIR CALCIUM OVERLOAD BLOCKING COMPOSITIONS AND METHODS OF USE
Palle Jakobsen, and Jorgen Drejer, both of Vaerlose, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark
Continuation of Ser. No. 529,004, May 24, 1990, Pat. No. 5,145,870. This application Jun. 12, 1992, Ser. No. 898,060
Claims priority, application Denmark, May 26, 1989, 2583/89
The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/275;* **C07C** *255/50*
U.S. Cl. 514—524 **32 Claims**

1. A compound of formula I

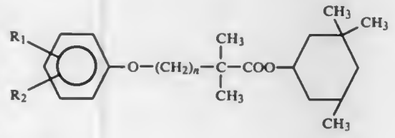


(I)

wherein
X is H. cyano, halogen, C_{1-6}-alkoxy or C_{3-5}-alkylene;
R is phenyl which is substituted with trifluoromethyl; and
R^1 and R^2 independently are C_{3-7}-cycloalkyl, C_{2-10}-alkenyl or C_{1-5}-alkyl-C_{3-6}-cycloalkyl which are optionally substituted with C_{1-5}-alkoxy or cyano; or a pharmaceutically acceptable salt thereof.

5,310,757
3,3,5-TRIMETHYLCYCLOHEXYL 2-METHYLPROPIONATE DERIVATIVES, THEIR METHOD OF PREPARATION AND THERAPEUTIC COMPOSITIONS IN WHICH THEY ARE PRESENT
Claude Laruelle, Villeneuve-Loubet, and Marcel Lepant, Vence, both of France, assignors to Panmedica, Carros, France
PCT No. PCT/FR90/00806, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO91/07373, PCT Pub. Date May 30, 1991
PCT Filed Nov. 12, 1990, Ser. No. 856,071
Claims priority, application France, Nov. 13, 1989, 89 14832
Int. Cl.[5] A01N *37/10;* **C07C** *69/76*
U.S. Cl. 514—545 **6 Claims**

1. A 3,3,5-trimethylcyclohexanol derivative, characterized in that it has the general formula



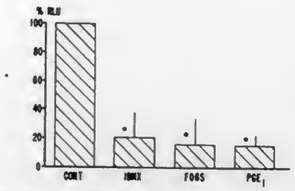
(I)

in which:
n=0,1,2,3,4 or 5 and
R_1 is H and R_2 is a 4-benzoyl group in which the benzoyl ring can be substituted by one or more of the following moieties: Cl—, F—, Br—, CF_3—, CH_3—, and CH_3O—.

5,310,758
BATHING PREPARATION
Hidenori Yorozu; Hirotaka Sato, both of Utsunomiya, and Yasuhiro Doi, Ichikaimachi, all of Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Jun. 8, 1992, Ser. No. 895,006
Claims priority, application Japan, Jun. 10, 1991, 3-137829
Int. Cl.[5] A61K *31/19*
U.S. Cl. 514—557 **4 Claims**

1. An aluminum carboxylate containing bathing preparation comprising 0.5 to 50% by weight of the total weight of the bathing preparation of a soluble aluminum carboxylate selected form the group consisting of aluminum glycolate, aluminum lactate, aluminum glycerate, aluminum gluconate, aluminum tartrate, aluminum malate, aluminum citrate, and mixtures thereof; an acid selected from the group consisting of succinic acid, fumaric acid, malic acid, adipic acid and tartaric acid; a carbonate selected from the group consisting of sodium carbonate, sodium hydrogen carbonate, magnesium carbonate, and potassium carbonate, said acid and carbonate being present in said bathing preparation in amounts such that the pH of bath water falls in a range of 5–7 when dissolved in said bath water to form a bath having soluble aluminum carboxylate in a concentration range of 6.7×10^{-5} to 1.3×10^{-2} wt. % based on the total weight of the bath.

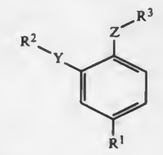
5,310,759
METHODS OF PROTECTING AND PRESERVING CONNECTIVE AND SUPPORT TISSUES
Richard S. Bockman, 22 Spring St., Sag Harbor, N.Y. 11963
Filed Aug. 12, 1992, Ser. No. 929,197
Int. Cl.[5] A61K *31/557*
U.S. Cl. 514—573 **9 Claims**



1. A method of inhibiting neutral metalloproteinase gene expression in human and animal cells comprising administering a pharmaceutically acceptable prostaglandin E_1 compound to said cells.

5,310,760
3,4-DISUBSTITUTED ANILINES-IMMUNOMODULATING AGENTS
William N. Washburn, Titusville, N.J.; Lee H. Latimer; Barbara B. Lussier, both of Rochester, N.Y.; Carl R. Illig, Phoenixville, Pa., and Alexander L. Weis, San Antonio, Tex., assignors to Sterling Winthrop Inc., Malvern, Pa.
Continuation of Ser. No. 816,504, Dec. 31, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,007
Int. Cl.[5] A61K *31/165;* **C07C** *233/65*
U.S. Cl. 514—619 **8 Claims**

1. An immunomodulating compound or a pharmaceutical acceptable salt thereof having the formula



wherein
Y is



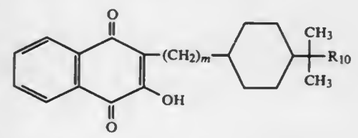
where R^4 is H;
Z is —O—
R^1 is $—NH_2$ or $—NHCH_3$;
R^2 is substituted or unsubstituted phenyl wherein said substituents are selected from the group consisting of lower alkyl, lower alkoxy, amino, lower alkyl amino, hydroxy, hydroxy lower alkyl, and halo; and
R^3 is substituted phenyl,
wherein said substituted phenyl contains no more than three substituents selected from the group consisting of halo, C_3–C_{10}alkyl, cycloalkyl and alkoxy.

5,310,761
BIOCIDAL COMPOSITIONS AND USE THEREOF
Wilson K. Whitekettle, Jamison, Pa., and Deborah K. Donofrio, The Woodlands, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed Jul. 22, 1993, Ser. No. 95,977
Int. Cl.[5] A01N *37/52, 41/10*
U.S. Cl. 514—634 **9 Claims**

1. A microbial composition comprising (a) diiodomethyl-p-tolylsulfone and (b) dodecylguanidine hydrochloride wherein (a) and (b) are present in an amount synergistically effective to reduce the growth of fungi, the weight ratio of (a) to (b) from about 1:21.7 to 11.6:1.

5,310,762
MEDICAMENTS
Victoria S. Latter; Winston E. Gutteridge, and Alan T. Hudson, all of Beckenham, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.
Division of Ser. No. 394,224, Aug. 15, 1989, Pat. No. 5,206,268. This application Nov. 22, 1991, Ser. No. 796,324
Claims priority, application United Kingdom, Aug. 16, 1988, 8819478; Aug. 16, 1988, 8819479; Aug. 16, 1988, 8819480
Int. Cl.[5] A61K *31/12*
U.S. Cl. 514—682 **4 Claims**

1. A method of treating in a mammal *Pneumocystis carinii* infections which comprises administering to said mammal suffering with *P. carinii* an effective treatment amount of a naphthoquinone of the general formula:

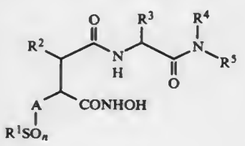


(II)

wherein R^{10} is an alkyl group of from 1 to 10 carbon atoms and m is 0 to 1; and physiologically acceptable salts thereof.

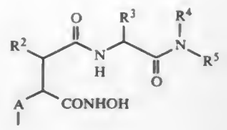
5,310,763
HYDROXAMINO ACID BASED COLLAGENASE INHIBITORS
Colin Campion; Alan H. Davidson, both of Oxon; Jonathan P. Dickens, Buckinghamshire, and Michael J. Crimmin, Ascot, all of England, assignors to British Bio-technology Limited, Oxford, England
Continuation of Ser. No. 689,848, Jul. 8, 1991, Pat. No. 5,240,958. This application Apr. 14, 1993, Ser. No. 48,413
Claims priority, application United Kingdom, Nov. 23, 1988, 8827305
Int. Cl.[5] A61K *31/19, 31/16;* **C07C** *327/04*
U.S. Cl. 514—575 **1 Claim**

1. A compound of general formula I:



wherein:
R^1 represents a hydrogen atom C_1–C_6 alkyl, phenyl, substituted phenyl, phenyl (C_1–C_6) alkyl, (C_1–C_6) alkylcarbonyl or phenacyl or substituted phenacyl group; or when n=0, R^1 represents SR^x, wherein R^x represents a group:

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R^2 represents a hydrogen atom or a C_1–C_6 alkyl, C_1–C_6 alkenyl, phenyl (C_1–C_6) alkyl, cycloalkyl (C_1–C_6) alkyl or cycloalkenyl (C_1–C_6) alkyl group;
R^3 represents an amino acid side chain or a C_1–C_6 alkyl, benzyl, (C_1–C_6 alkoxy)benzyl or benzyloxy (C_1–C_6 alkyl) or benzyloxy benzyl group;
R^4 represents a hydrogen atom or a C_1–C_6 alkyl group;
R^5 represents a hydrogen atom or a methyl group;
n is an integer having the value 0, 1 or 2; and
A represents a C_1–C_6 hydrocarbon chain, optionally substituted with one or more C_1–C_6 alkyl, phenyl or substituted phenyl groups;
or salt thereof.

5,310,764
TREATMENT OF AGE RELATED MACULAR DEGENERATION WITH BETA-CAROTENE
Steven Baranowitz, 85 Tices La. - Apt. 39, East Brunswick, N.J. 08816, and Andrew Brookner, 25 Spenser Dr., Short Hills, N.J. 07078
Filed May 8, 1992, Ser. No. 880,709
Int. Cl.[5] A67K *31/07*
U.S. Cl. 514—725 **19 Claims**

1. A method for preventing impairment of the vision or for improving impaired vision of a mammal whose eye has drusen comprising administering to said mammal, a therapeutically effect amount of beta-carotene.

5,310,765
PROCESS FOR HYDROLYSIS OF ION EXCHANGE MEMBRANES
Shoibal Banerjee, Newark, Del., and Walther G. Grot, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 3, 1993, Ser. No. 25,921
Int. Cl.[5] C08J *5/20*
U.S. Cl. 521—33 **7 Claims**

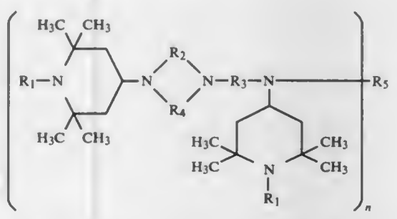
1. A process for hydrolyzing a fluorinated ion exchange membrane having sulfonyl or carboxyl precursor groups comprising contacting said membrane with an aqueous solution comprising of at least one compound having an ether or epoxy; linkage and an alcohol group for a period of time to hydrolyze the sulfonyl precursor groups or the carboxyl precursor groups or both to sulfonate groups and carboxylate groups, respectively.

5,310,766
FOAM STABILIZING ADDITIVE AND POLYURETHANE FOAM PREPARED IN THE PRESENCE THEREOF
Robert Baumann, Adliswil, and Rajinder Sood, Wollerau, both of Switzerland, assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 15, 1992, Ser. No. 898,616
Int. Cl.[5] C08J *9/08*; C08K *5/01*
U.S. Cl. 521—130 **16 Claims**

1. A process for preparing a rigid polyurethane foam by reacting an organic polyisocyanate with a polyahl, which is a liquid at room temperature, in the presence of a blowing agent and a foam stabilizing additive characterized in that the additive, present in an amount of from about 1 to about 10 parts by weight per 100 parts liquid polyahl, comprises, based on total weight of (a) and (b):
(a) from about 10 to about 50 weight percent of a hydrocarbon oil; and
(b) from about 90 to about 50 weight percent of a polyester polyol which has a melting point of from about 50° C. to about 115° C., and
wherein the blowing agent consists essentially of water present in from about 3.5 to about 10 parts by weight per 100 parts of liquid polyahl.

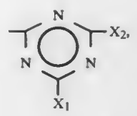
5,310,767
TETRAMETHYLPIPERIDINE COMPOUNDS FOR USE AS STABILIZERS FOR ORGANIC MATERIALS
Valerio Borzatta, Bologna, and Graziano Vignali, Sasso Marconi, both of Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Dec. 10, 1992, Ser. No. 988,503
Claims priority, application Italy, Dec. 17, 1991, MI 91 A 003374
Int. Cl.[5] C07D *401/12, 401/14*; C08K *5/34*
U.S. Cl. 524—100 **14 Claims**

1. A compound of the formula (I)



(I)

in which R_1 is hydrogen, C_1–C_8alkyl, O, OH, CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or C_1–C_8acyl, R_2 and R_3 which can be identical or different are C_2–C_3alkylene, R_4 is —CO—, —COCO— or —$COCH_2CO$—, n is 1, 2, 3 or 4, and, when n is 1, R_5 is hydrogen, C_1–C_{18}alkyl, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or R_5 is one of the groups of the formulae (IIa)–(IIc)



(IIa)

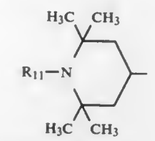
$$-COR_6, \quad \text{(IIb)}$$

$$-(CO)_pOOR_7 \quad \text{(IIc)}$$

in which X_1 and X_2 which can be identical or different are a group —OR_8, —SR_8 or

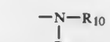


where R_8, R_9 and R_{10} which can be identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_3–C_{18}alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl or C_1–C_4alkoxy; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; C_2–C_4alkyl substituted in the 2, 3- or 4-position by OH, by C_1–C_8alkoxy, by di(C_1–C_4alkyl)amino or by a nitrogen-containing to 7-membered heterocyclic group with the free valency on the nitrogen atom; tetrahydrofurfuryl or a group of the formula (III)

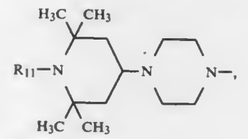


(III)

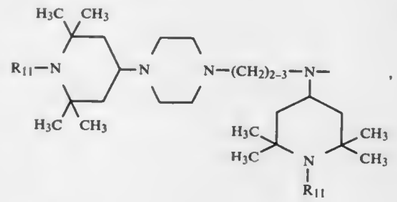
where R_{11} is as defined for R_1, or



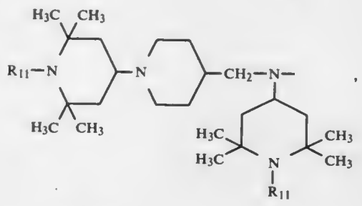
is a 5- to 7-membered heterocyclic group, or X_1 and X_2 are one of the groups of the formulae (IVa)–(IVd)



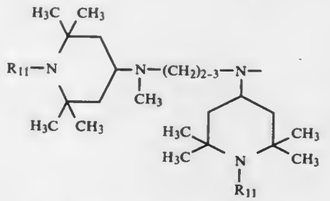
(IVa)



(IVb)

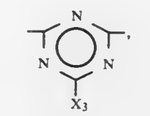


(IVc)

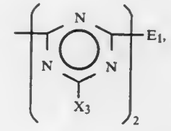


(IVd)

with R_{11} as defined above, R_6 is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_2–C_{18}alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl or C_1–C_4alkoxy and/or by an OH group; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl and/or an OH group; p is zero or 1, and R_7 is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_3–C_{18}alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or a group of the formula (III), and, when n is 2, R_5 is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms; 2-hydroxytrimethylene, phenylenedimethylene or one of the groups of the formulae (Va)–(Ve)



(Va)



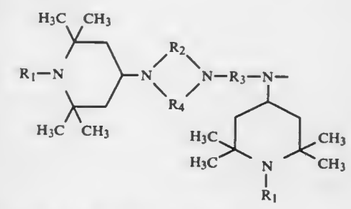
(Vb)

$$-CO-R_{12}-CO-, \quad \text{(Vc)}$$

$$-COO-R_{13}-OOC-, \quad \text{(Vd)}$$

$$-(CH_2)_6CO- \quad \text{(Ve)}$$

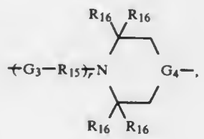
in which X_3 is as defined above for X_1 and X_2 or is a group of the formula (VI)



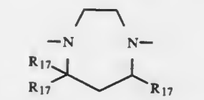
(VI)

where R_1, R_2, R_3 and R_4 are as defined above, E_1 is one of the groups of the formulae (VIIa)–(VIIc)

$$-G_1-R_{14}-G_2-, \quad \text{(VIIa)}$$



(VIIb)



(VIIc)

in which G_1, G_2 and G_3 which can be identical or different are —O— or



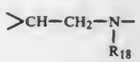
where R_{18} is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which

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is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or a group of the formula (III), R_{14} is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms or by 1 or 2

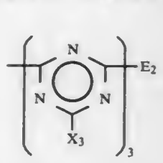


groups where R_{19} is as defined above for R_{18} or is C_1–C_8acyl or (C_1–C_8alkoxy)carbonyl; or R_{14} is further C_5–C_7cycloalkylene unsubstituted or substituted by C_1–C_4alkyl; C_5–C_7cycloalkylenedi(C_1–C_4alkylene), C_1–C_4alkylenedi(C_5–C_7cycloalkylene), C_2–C_4alkylidenedi(C_5–C_7cycloalkylene), phenylene unsubstituted or substituted by C_1–C_4alkyl; phenylenedi(C_1–C_4alkylene), C_1–C_4alkylenediphenylene or C_2–C_4alkylidenediphenylene, R_{15} is C_2–C_6alkylene, G_4 is one of the groups >N—(R_{15}–G_3)$_s$, >CH—O— or

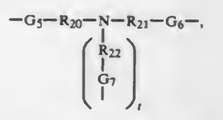


with R_{18} as defined above, r and s which can be identical or different are zero or 1, R_{16} is hydrogen or can also be methyl when r is 1 and G_4 is >CH—O—, and R_{17} is hydrogen or methyl, R_{12} is a direct bond, C_1–C_{12}alkylene, C_2–C_4alkenylene, cyclohexylene, cyclohexenylene or phenylene, R_{13} is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms, C_5–C_7cycloalkylene unsubstituted or substituted by C_1–C_4alkyl; C_5–C_7cycloalkylenedi(C_1–C_4alkylene) or C_2–C_4alkylidenedi(C_5–C_7cycloalkylene) and q is zero or an integer from 1 to 10, and when n is 3, R_5 is aliphatic C_4–C_{18}triacyl, aromatic C_9–C_{18}triacyl or a group of the formula (VIII)

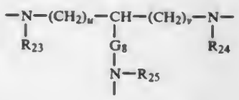
(VIII)



in which X_3 is as defined above and E_2 is one of the groups of the formula (IXa)–(IXc)



(IXa)



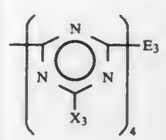
(IXb)



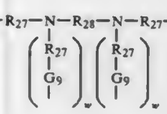
(IXc)

in which G_5, G_6 and G_7 which can be identical or different are as defined above for G_1, G_2 and G_3; R_{20}, R_{21} and R_{22} which can be identical or different are C_2–C_6alkylene, t is zero or 1, R_{23}, R_{24} and R_{25} which can be identical or different are as defined above for R_{18}; G_8 is a direct bond or —CH_2—, u and v which can be identical or different are integers from 2 to 6 and R_{26} is C_3–C_{12}alkanetriyl, and, when n is 4, R_5 is aliphatic C_6–C_{18}tetraacyl, aromatic C_{10}–C_{18}tetraacyl, tetrahydrofuran-2,3,4,5-tetracarbonyl or a group of the formula (X)

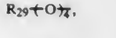
(X)



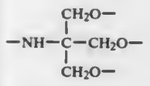
in which X_3 is as defined above and E_3 is one of the groups of the formulae (XIa)–(XIc)



(XIa)



(XIb)



(XIc)

in which G_9 is as defined above for G_1, G_2 and G_3; R_{27} and R_{28} which can be identical or different are C_2–C_6alkylene, w is zero or 1 and R_{29} is C_4–C_{12}alkanetetrayl.

5,310,768

METHOD FOR IMPROVING THE GLUTAMINE CONTENT IN SKELETAL MUSCLE AND COMPOSITION THEREFORE

Erik Vinnars, Stockholm, Sweden, assignor to AB Erik Vinnars, Stockholm, Sweden

Continuation-in-part of Ser. No. 784,127, Oct. 29, 1991, abandoned. This application Jun. 11, 1992, Ser. No. 895,997
Claims priority, application Sweden, Oct. 29, 1987, 04217/87
Int. Cl.[5] A61K *31/19, 31/195*
U.S. Cl. 514—574 **7 Claims**

1. A method of treatment of postoperative and posttraumatic patients for improving the glutamine content in skeletal muscle, said method comprising intravenous administration to a patient in need thereof of a solution comprising alpha-ketoglutarate as the sole active agent for improving said glutamine content, wherein said alpha-ketoglutarate is administered in an amount sufficient to at least partially prevent reduction of said glutamine content in said patients and with the proviso that said solution excludes glutamine.

5,310,769

PROCESS FOR THE PRODUCTION OF POLYAMINE MIXTURES OF THE POLYAMINO-POLYARYL-POLYMETHYLENE SERIES

Christian König, Kaarst; Manfred Gallus, Krefeld; Reinhold Wüllner, Krefeld; Franz-Moritz Richter, Marne; Rudolf Uchdorf, Krefeld, all of Fed. Rep. of Germany, and William C. Forester, Upter St. Clair, Pa., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Miles Inc., Pittsburgh, Pa.

Filed May 1, 1992, Ser. No. 877,684
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—163 **10 Claims**

1. In a process for production of polyamines of the diphenylmethane series through a condensation reaction of aniline with formaldehyde in the presence of an acid catalyst, neutralization

of the acid catalyst after reaction completion, and distillation of the resultant polyamine mixture, the improvement wherein:

a) aniline is reacted with formaldehyde in the mole ratio of 1.5:1 to 10:1 at temperatures between 10° and 150° C.,

b) an acid catalyst is thereafter added to the reaction mixture at a mole ratio of aniline to acid catalyst of from 2:1 to 100:1 (corresponding to a protonation degree of 1 to 50%) and the temperature is from 10° to 150° C., and wherein the water formed during the condensation reaction is removed either before step b) or after step b),

c) the temperature of the mixture obtained from b) is increased by at least 40° C. in no more 15 minutes, and thereafter, if necessary, heating of the mixture is continued to a final temperature between 105° and 200° C., with the proviso that the reaction time is from 10 to 300 minutes after the temperature increase, and

d) the reaction mixture from c) is distilled after neutralization of the acid catalyst.

5,310,770

WATER REDUCIBLE EPOXY-AMINE ADDUCTS BASED ON THE DIGLYCIDYL ETHER OF CYCLOHEXANE DIMETHANOL

William J. DeGooyer, Jeffersontown, Ky., and George A. Roy, II, Georgetown, Ind., assignors to Hi-Tek Polymers, Inc., Jeffersontown, Ky.

Filed Dec. 30, 1992, Ser. No. 998,835
Int. Cl.[5] C08K *3/20;* **C08G** *59/44, 59/50, 65/00*
U.S. Cl. 523—414 **6 Claims**

1. A curing agent for epoxy resins which comprises a water solution of a 1:2 molar epoxy-amine adduct of the diglycidyl ether of cyclohexane dimethanol and a diamine selected from the group consisting of meta-xylylene diamine, isophorone diamine, diaminocyclohexane and 1,3-bisaminomethyl cyclohexane, wherein said water solution includes essentially no cosolvent.

5,310,771

POLYOLEFIN STABILIZATION

John P. Walters, Greer, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

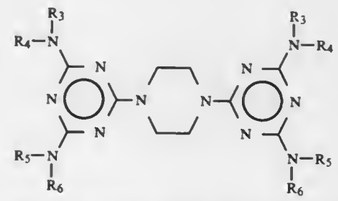
Filed Apr. 23, 1992, Ser. No. 872,863
Int. Cl.[5] C08K *5/5317*
U.S. Cl. 524—100 **24 Claims**

1. A polymer composition comprising:

(a) polypropylene;

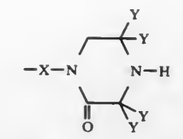
(b) at least one hindered amine selected from the group represented by the following formulas:

substituted di-melamine compounds represented by formula II,



II

wherein R_3 is hydrogen, an alkyl group containing 1 to 10 carbon atoms, or a cycloalkyl group containing 3 to 12 carbon atoms, R_4 is a 1-alkylene piperazinone represented by formula A



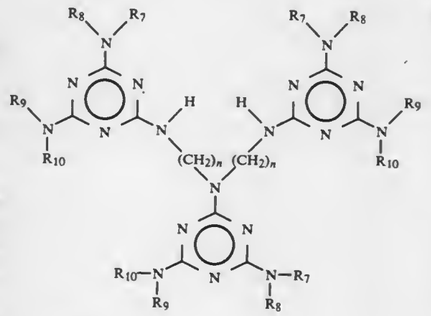
A

wherein

X is an alkylene group containing 1 to 6 carbon atoms and Y is an alkyl group containing 1 to 6 carbon atoms;

R_5 and R_6 are alkyl groups containing 1 to 6 carbon atoms or cycloalkyl groups containing 3 to 12 carbon atoms and can be the same or different, or can be taken together to form a single heterocyclic group containing 4 to 9 carbon atoms;

substituted tri-melamine compounds represented by the formula III,



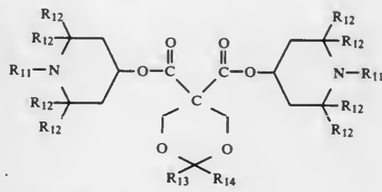
III

wherein

n is 1 to 4;

R_7, R_8, R_9, and R_{10} can be the same or different and are hydrogen, alkyl groups containing 1 to 6 carbon atoms, cycloalkyl groups containing 3 to 12 carbon atoms, and at least one R group is a 1-alkylene piperazinone represented by formula A above, wherein X is an alkylene group containing 1 to 6 carbon atoms and y is an alkyl group containing 1 to 6 carbon atoms; and

ether-substituted dipiperidinyl malonate compounds represented by formula IV,



IV

wherein

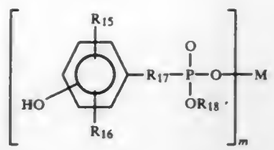
R_{11} is hydrogen or an alkyl group containing 1 to 6 carbon atoms;

R_{12} ia an alkyl containing 1 to 6 carbon atoms; and

R_{13} *and* R_{14} can be the same or different, and are hydrogen or an alkyl group containing 1 to 12 carbon atoms, or taken together to form a single cycloalkyl containing 3 to 20 carbon atoms; and

(c) at least one metal phosphonate selected from the group represented by the formula V,

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wherein
m is 1–3;
R_{15} is an alkyl group having from 1 to 6 carbon atoms;
R_{16} is hydrogen or an alkyl group having from 1 to 6 carbon atoms;
R_{17} is an alkylene radical having from 1 to 4 carbon atoms;
R_{18} is hydrogen or an alkyl having from 1 to 30 carbon atoms; and
M is a metal selected from the group consisting of aluminum, barium, cadmium, calcium, chromium, cobalt, nickel, sodium, tin, and zinc;
wherein said hindered amine and said metal phosphonate are present in an amount effective to provide ultraviolet stabilization.

5,310,772
COEMULSIFICATION OF OXIDIZED POLYETHYLENE HOMOPOLYMERS AND AMINO FUNCTIONAL SILICONE FLUIDS

Robert M. Blanch, Wilmington, Del., and Mark J. Kaszubski, North Massapequa, N.Y., assignors to AlliedSignal Inc., Morristown, N.J.

Division of Ser. No. 578,486, Sep. 7, 1990, abandoned. This application May 8, 1992, Ser. No. 880,816
Int. Cl.[5] C08K *5/24*
U.S. Cl. 524—262 **15 Claims**

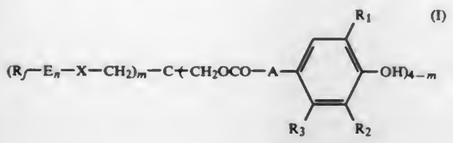
1. A process for producing an aqueous coemulsion, said coemulsion comprising at least one oxidized polyethylene and at least one amino functional silicone, comprising the process steps of:
(a) adding the oxidized polyethylene, the amino functional silicone, and water to a reaction vessel;
(b) while agitating said added constituents, raising the temperature of said added constituents to at least the melt point of the oxidized polyethylene constituent; and
(c) cooling said added constituents.

5,310,773
PERFLUOROALKYL SUBSTITUTED HYDROXYPHENYLALKANOIC ESTER ANTIOXIDANTS AND STABILIZED COMPOSITIONS

Robert A. Falk, New City, and Eduard K. Kleiner, Pound Ridge, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 4, 1992, Ser. No. 893,293
Int. Cl.[5] C07C *69/88, 311/24, 235/48;* **C08K** *5/13, 5/43, 5/20*
U.S. Cl. 524—289 **28 Claims**

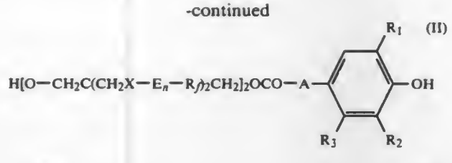
1. A compound of formula I, II or III



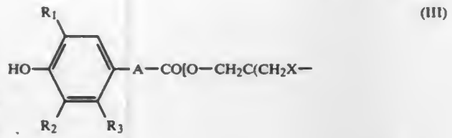
(I)

-continued

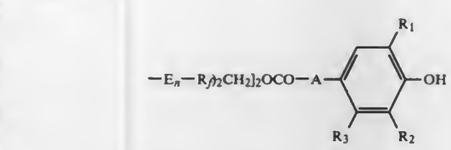
V



(II)

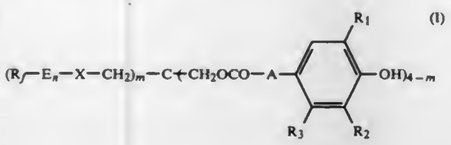


(III)



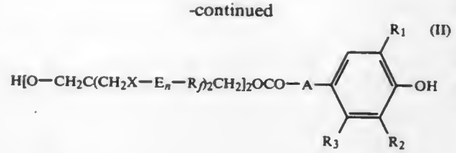
wherein
R_1 and R_2 are independently alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, said cycloalkyl substituted by alkyl of 1 to 4 carbon atoms, phenyl, phenylalkyl of 7 to 15 carbon atoms or said phenyl or said phenylalkyl substituted on the phenyl ring by alkyl of 1 to 4 carbon atoms, by —OH, by methoxy or by a mixture thereof,
R_3 is hydrogen or alkyl of 1 to 4 carbon atoms, or
R_2 and R_3 together are tetramethylene,
A is a direct bond or a straight or branched chain alkylene of 1 to 8 carbon atoms,
R_f is independently a straight or branched chain perfluoroalkyl of 1 to 14 carbon atoms, perfluoroalkyl of 2 to 6 carbon atoms substituted by perfluoroalkoxy of 2 to 6 carbon atoms, or an oligo(hexafluoropropene oxide) terminal group,
n is 1 or 0,
when n is 1, E is independently a branched or straight chain alkylene of 1 to 10 carbon atoms or said alkylene interrupted by one to three groups selected from the group consisting of —NR—, —O—, —S—, $—SO_2—$, —COO—, —OOC—, —CONR—, —NRCO—, $—SO_2NR—$, —NR-$SO_2—$, or terminated at the R_f end with —CONR— or $—SO_2NR—$, where R_f is attached to the carbon or sulfur atom, an X is —S—, —O—, $—SO_2—$, —NR—, or —COO—, or
when n is 0, X is a direct bond, —CONR— or $—SO_2NR—$, where R_f is attached to the carbon or sulfur atom, and where R is independently hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 2 to 6 carbon atoms, and
m is 1, 2 or 3.

12. A stabilized composition which comprises
(a) an organic material subject to thermal and oxidative degradation which is selected from the group consisting of a polymer, a wax, an oil, a fat and a lubricant, and
(b) an effective stabilizing amount of a compound of formula I, II or III

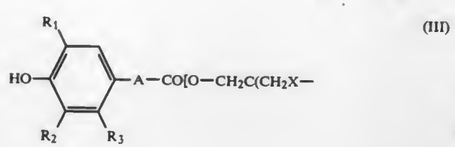


(I)

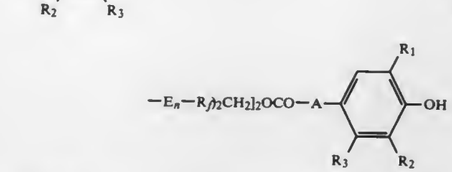
-continued



(II)



(III)



wherein
R_1 and R_2 are independently alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, said cycloalkyl substituted by alkyl of 1 to 4 carbon atoms, phenyl, phenylalkyl of 7 to 15 carbon atoms or said phenyl or said phenylalkyl substituted on the ring by alkyl of 1 to 4 carbon atoms, by —OH, by methoxy or by a mixture thereof,
R_3 is hydrogen or alkyl of 1 to 4 carbon atoms, or
R_2 R_3 together are tetramethylene,
A is a direct bond or a straight or branched chain alkylene of 1 to 8 carbon atoms,
R_f is independently a straight or branched chain perfluoroalkyl of 1 to 14 carbon atoms, perfluoroalkyl of 2 to 6 carbon atoms substituted by perfluoroalkoxy of 2 to 6 carbon atoms, or an oligo(hexafluoropropene oxide) terminal group,
n is 1 or 0,
when n is 1, E is independently a branched or straight chain alkylene of 1 to 10 carbon atoms or said alkylene interrupted by one to three groups selected from the group consisting of —NR—, —O—, —S—, $—SO_2—$, —COO—, —OOC—, —CONR—, —NRCO—, $—SO_2NR—$, —NR-$SO_2—$, or terminated at the R_f end with —CONR— or $—SO_2NR—$, where R_f is attached to the carbon or sulfur atom, and X is —S—, —O—, $—SO_2—$, —NR—, or —COO—, or
when n is 0, X is a direct bond, —CONR— or $—SO_2NR—$, where R_f is attached to the carbon or sulfur atom, and where R is independently hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 2 to 6 carbon atoms, and
m is 1, 2 or 3.

5,310,774
MOLECULAR WEIGHT DEGRADATION STABILIZED POLYMERIC COMPOSITIONS

David Farrar, Bradford, England, assignor to Allied Colloids Limited, England

PCT No. PCT/GB90/00772, § 371 Date Jan. 22, 1991, § 102(e) Date Jan. 22, 1991, PCT Pub. No. WO90/14387, PCT Pub. Date Nov. 29, 1990
PCT Filed May 18, 1990, Ser. No. 635,605
Claims priority, application United Kingdom, May 19, 1989, 8911525.7
Int. Cl.[5] C08L *33/26;* **C08J** *3/00*
U.S. Cl. 524—535 **24 Claims**

1. A polymeric composition comprising a blend formed by mixing a preformed polymer of (meth)acrylamide and containing residual free (meth)acrylamide monomer with viscosity-degradation inhibitor, characterized in that the amount of free (meth)acrylamide monomer is below 0.1% by weight of the polymer and the LD_{50} of the inhibitor is above 400 mg/kg in rats and the oral inhibitor is an ethylenically unsaturated monomer which in the composition does not undergo any substantial reaction with said polymer.

5,310,775
NUCLEATING SYSTEM FOR POLY(CHLOROFLUOROETHYLENE) AND ARTICLES FORMED THEREFROM

John P. Sibilia, Livingston; Yash P. Khanna, Morris; Anthony J. Signorelli, Succasunna, and Dean A. Roberts, Sparta, all of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 20, 1992, Ser. No. 916,552
Int. Cl.[5] C08J *3/20;* **C08K** *5/04, 5/09;* **C08L** *27/18*
U.S. Cl. 524—398 **24 Claims**



Optical Photomicrograph of Poly (CTFE) Crystallized from the Molten State at a Cooling Rate of 0.6 C/min

1. A composition comprising (a) at least one polymer selected from the group consisting of poly(chlorotrifluoroethylene) and copolymers of chlorotrifluoroethylene and one or more ethylenic comonomers; wherein said copolymers comprise at least about 50% by weight of chlorotrifluoroethylene and (b) effective amount of one or more nucleating agents selected from the group of compounds consisting of silver octonate, calcium carbonate, potassium benzoate, talc and lays bentonite, montmorillonite, hectorite and derivatives thereof.

5,310,776
PROCESS FOR PREPARING THERMOPLASTIC RESIN COMPOSITION

Kiyoji Takagi; Yoshihiro Kurasawa; Koji Nishida; Shigekazu Ohi; Kenji Mori; Tsukasa Sato, and Tosio Itou, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,092
Claims priority, application Japan, May 13, 1992, 4-120648; May 13, 1992, 4-120649; May 13, 1992, 4-120651
Int. Cl.[5] C08K *5/01, 5/03;* **C08L** *71/12, 77/00*
U.S. Cl. 524—474 **19 Claims**

1. A process for preparing a thermoplastic resin composition which comprises melting and kneading
(A) 100 parts by weight of a resin comprising 100% by weight in total of:
(a) 5 to 95% by weight of a non-crystalline thermoplastic resin,
(b) 95 to 5% by weight of a crystalline thermoplastic resin,
(c) 0 to 50% by weight of a compatibilizer and
(d) 0 to 40% by weight of an impact modifier
and
(B) 1.0 part by weight or more of an organic solvent in a kneader equipped with vent ports each having a vacuum device while maintaining each vent port at reduced pressure to make an organic solvent content in a final composition less than 1.0% by weight.

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5,310,777

RUBBER COMPOSITION HAVING A LARGE DAMPING CAPACITY

Fumio Sekido, and Katsumi Terakawa, both of Akashi, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed May 15, 1991, Ser. No. 700,608
Claims priority, application Japan, May 15, 1990, 2-124666
Int. Cl.[5] C08K *3/04*
U.S. Cl. 524—496 **9 Claims**

1. A rubber composition having a complex shear elastic modulus of 1–20 kg/cm^2 and a Tanδ of 0.40–1.5 at 30° C. under a frequency of 0.5 Hz±50% comprising:
a) 100 parts by weight of unvulcanized polyisobutylene;
b) x parts by weight of a filler; and
c) y parts by weight of carbon black having an iodine adsorption of 20–120 mg/g;
wherein the value x and y satisfy the relation that:
$x \leqq 450$, $y \leqq 150$, and
$x+y \geqq 100$.

5,310,778

PROCESS FOR PREPARING INK JET INKS HAVING IMPROVED PROPERTIES

Arthur Shor, Concordville, Pa., and Harry J. Spinelli, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 25, 1992, Ser. No. 935,049
Int. Cl.[5] C09D *11/02*
U.S. Cl. 524—556 **17 Claims**

1. In a process for preparing aqueous pigmented ink jet inks wherein a dispersion of pigment and a polymeric dispersant is dispersed in an aqueous carrier medium, the improvement comprising:
(a) charging a two-roll milling apparatus with a pigment and a polymeric dispersant, wherein said polymeric dispersant consists essentially of a random or block polymer having a molecular weight below 10,000 prepared from monomers selected from the group consisting essentially of substituted or unsubstituted acrylates or methacrylates and mixtures thereof;
(b) milling to obtain a dispersion of pigment with polymeric dispersant; and
(c) dispersing the pigment dispersions from step (b) in an aqueous carrier medium.

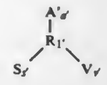
5,310,779

UV CURABLE CROSSLINKING AGENTS USEFUL IN COPOLYMERIZATION

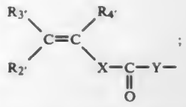
Yu-Chin Lai, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 788,071, Nov. 5, 1991, abandoned, and a continuation-in-part of Ser. No. 884,481, May 15, 1992. This application Jul. 30, 1992, Ser. No. 922,452
Int. Cl.[5] C08L *23/06*
U.S. Cl. 524—588 **36 Claims**

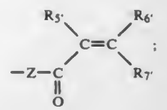
1. A crosslinking composition having at least two different types of ethylenically polymerizable groups said crosslinking composition able to enhance the copolymerization of comonomers having differing rates of reactivity and wherein said composition is present in copolymeric systems in concentrations of from about 0.001 to about 10 weight percent and having the schematic representation:



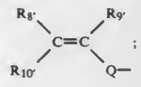
wherein
V denotes a vinyl-containing group having the formula:



A′ denotes an acrylic-containing group having the formula:



S denotes a styrene-containing group having the formula:



wherein
$R_{1'}$ is an alkyl radical derived from substituted and unsubstituted hydrocarbons, polyalkylene oxide, poly(perfluoro) alkylene oxide, dialkyl-capped polydimethylsiloxane, dialkyl-capped polydimethylsiloxane modified with fluoroalkyl or fluoroether groups;
$R_{2'}$–$R_{10'}$ are independently H, or alkyl of 1 to 5 carbon atoms;
Q is an organic group containing aromatic moieties having 6–30 carbon atoms;
X, Y, and Z are independently O, NH or S;
v′ is 1, or higher; and
a′, s′ are independently greater than or equal to 0, and a′+s′ are greater than or equal to 1.

5,310,780

PENETRATING STAINS AND SEALANTS FROM POLYURETHANE DISPENSIONS

Revathi Tomko, North Olmsted; Sanford L. Hertz, Shaker Heights; Buckel, Jr. Charles T., Cleviand, and Mitchell R. Draving, Elyria, all of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 976,726, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 570,932, Aug. 21, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 112,836
Int. Cl.[5] C08G *22/04, 22/32*
U.S. Cl. 524—591 **28 Claims**

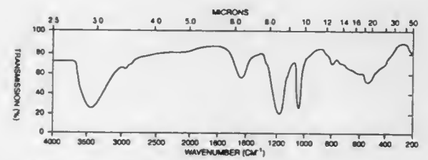
1. A composition comprising:
a) a dispersion of a polyurethane-urea in an aqueous media having a particle size diameter of less than about 0.2 micron; wherein the polyurethane-urea comprises the dispersion in an aqueous media of the reaction product of:
i) at least one diol with
ii) at least one diisocyanate-functional material;
wherein the reaction between i) and ii) takes place in the presence of between about 0.01% to about 0.06% by weight of a catalyst; wherein the ratio of i) to ii) is such that the ratio of isocyanate functionality to hydroxy functionality is in the range of between about 1.01:1 to about 1.5:1; wherein between about 1% and about 10% of the total polymer weight solids is contributed by diols having the ability to contribute ionic or hydrophilic groups to the polyurethane-urea; wherein the reaction product of i) and ii) is at least about 80% neutralized with a weak base prior to dispersion in said aqeuous media; and
b) a surface tension modifying agent selected from the group consisting of the 2,2,4-trimethyl-alkyl diol monoisobutyrate solvents; glycols; glycol ethers; alcohols; and mixtures thereof in an amount effective to lower the surface tension of the composition so that the composition, when applied over a porous architectural substrate, penetrates into said substrate and does not form an appreciable film on said substrate.

5,310,781

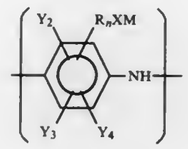
SELF-DOPED POLYMERS FROM POLYANILINE WITH BRONSTED ACID GROUPS

Fred Wudl, and Alan Heeger, both of Santa Barbara, Calif., assignors to The Reagents of the University of California, Oakland, Calif.

Continuation of Ser. No. 243,530, Sep. 12, 1988, abandoned, which is a continnation-in-part of Ser. No. 156,928, Dec. 14, 1987, abandoned. This application Nov. 16, 1990, Ser. No. 616,743
Int. Cl.[5] C08G *73/00*
U.S. Cl. 524—599 **2 Claims**



1. A conducting water-soluble, self-doped polymer having along its backbone a π-electron conjugated system which comprises approximately 100 to 500 monomer units, wherein between about 0.01 and 100 mole % of the units have the following chemical formula



wherein
Y_2 and Y_3 are H;
Y_4 is -R_n-X-M;
n is 0;
X is CO_2; and
M is H.

5,310,782

METHOD FOR MANUFACTURING BIODEGRADABLE HIGH MOLECULAR ALIPHATIC POLYESTER

Eiichiro Takiyama, Kamakura; Takashi Fujimaki, Yokohama; Shigekatu Seki; Takao Hokari, both of Takasaki, and Yoshitaka Hatano, Higashikanbara, all of of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,605
Claims priority, application Japan, May 29, 1992, 4-139063; Apr. 7, 1993, 5-080739
Int. Cl.[5] C08L *75/00*
U.S. Cl. 524—706 **4 Claims**

1. A method for manufacturing a biodegradable high molecular weight aliphatic polyester comprising the steps of:
synthesizing an aliphatic polyester having a number average molecular weight of at least 5,000 by reacting aliphatic or alicyclic glycol with aliphatic dicarboxylic acid or its anhydride, applying a 0.001–0.5 part by weight of organic or inorganic metallic compound as a catalyst with respect to 100 parts by weight of aliphatic polyester to be produced;
adding a 0.01–3 parts by weight of organic or inorganic phosphorus compounds with respect to 100 parts by weight of aliphatic polyester upon completion of the reaction; and
reacting a 0.1–5 parts by weight of polyfunctional isocyanate compound with 100 parts by weight of the aliphatic polyester so that the polyester has a number average weight of at least 10,000.

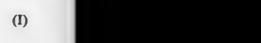
5,310,783

AQUEOUS COMPOSITIONS COMPRISING NITROGEN-CONTAINING POLYSILOXANES

Michael Bernheim, Aystetten; Harald Chrobaczek, Augsburg, and Günther Tsuchida, Schwabmünchen, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

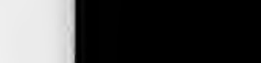
Filed Sep. 30, 1992, Ser. No. 954,841
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 4133358
Int. Cl.[5] C08G *77/26;* C08J *3/03*
U.S. Cl. 524—837 **7 Claims**

1. An aqueous composition in the form of a solution or a dispersion, which consists essentially of
(a) 5 to 40 parts by weight of an organopolysiloxane with on average at least one monovalent organic radical, R, which is bonded to a silicon atom via a carbon atom and which comprises at least one amino or amido group;
(b) 5 to 10 parts by weight a compound of formula I or a mixture of compounds of formula I;



(I)

in which
X is —OH or —NH_2,
Y is



R_1 is H or CH_3,
R_2 is an unbranched or branched alkyl radical having 1 to 4 carbon atoms, which can be substituted by an OH or OR3 group, and
R_3 is an unbranched or branched alkyl radical having 1 to 4 carbon atoms, which can be substituted by an OH group,
(c) 0 to 15 parts by weight of a nonionic dispersant;
(d) 0 to 15 parts by weight of a dispersed polyethylene wax; and 40 to 80 parts by weight of water.

5,310,784

ELECTROMAGNETIC WAVE SHIELDING MATERIAL

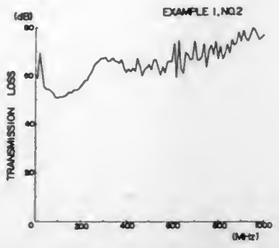
Isamu Ide, Sakai; Hisato Higuchi, Izumiootsu; Masanobu Nishikawa, Osaka; Shigehisa Ishihara, Nagaokakyo, and Shuichi Kawai, Kyoto, all of Japan, assignors to Lignyte Co., Ltd., Osaka, Japan

Division of Ser. No. 561,645, Aug. 1, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 908,613
Int. Cl.[5] C08L *61/04*
U.S. Cl. 524—876 **8 Claims**

1. A method for shielding electromagnetic wave generating sources, comprising applying a composite carbon-resin compound to said source, said composite carbon-resin compound

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being prepared by mixing carbon powder with a resin-forming material selected from the group consisting of phenol and



formaldehyde; melamine and formaldehyde; and furan and polymerizing the resin-forming material.

5,310,785

COATING COMPOSITION AND METHOD OF COATING GRANULAR FERTILIZER WITH SAME

Masanori Hayakawa; Michio Miyazawa; Yoshisada Hayase, all of Yamaguchi; Hiroshi Hotta, and Osamu Kondo, both of Hyogo, all of Japan, assignors to Central Glass Company, Limited and Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Jun. 23, 1992, Ser. No. 902,728

Claims priority, application Japan, Jun. 26, 1991, 3-154730

Int. Cl.[5] C08G *63/49;* **C05G** *3/00*

U.S. Cl. 525—7 **7 Claims**

1. A solvent free coating composition for coating a granular fertilizer therewith, the coating composition consisting essentially of:

an oil-modified alkyd resin;

an unsaturated oil containing a conjugated double bond;

a metal soap for crosslinking said unsaturated oil itself and-/or for crosslinking between said unsaturated oil and said alkyd resin; and

an antiskinning agent for preventing skinning of the coating composition, said antiskinning agent being optionally contained in the coating composition.

5,310,786

REVERSIBLY PRECIPITABLE, WATER-SOLUBLE POLYMER CONJUGATES

Klaus-Dieter Vorlop; Kerstin Steinke, both of Braunschweig; Dieter Wullbrandt, Hofheim am Taunus, and Merten Schlingmann, Königstein am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 683,495, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 529,723, May 29, 1990, abandoned, which is a continuation of Ser. No. 141,126, Jan. 6, 1988, abandoned. This application Aug. 16, 1993, Ser. No. 106,696

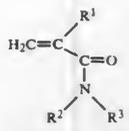
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1987, 3700308

Int. Cl.[5] C08F *8/42*

U.S. Cl. 525—54.1 **11 Claims**

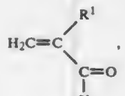
1. A water-soluble polymer conjugate, comprising:

(a) a water-soluble carrier polymer which is completely soluble in water at a temperature in the range of from about 1° C. to 20° C., which is reversibly precipitable from an aqueous solution by raising the temperature and/or by the addition of a salt, and which is completely redissolvable in the aqueous solution by lowering the temperature or salt concentration and wherein the carrier polymer comprises at least one repeating monomer unit selected from the compounds of the formula I:

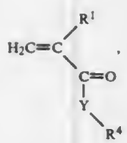


(I)

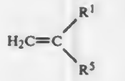
in which R^1 and R^3 are identical or different and denote hydrogen or straight-chain or branched C_1–C_3-alkyl, and R^2 denotes straight-chain or branched C_1–C_3-alkyl, and of at least one other repeating monomer unit selected from the compounds of the formula II, III and IV:



(II)



(III)



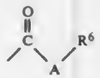
(IV)

wherein

R^1 is as defined under formula I,

R^4 is a hydrophobic group and is a straight-chain C_1–C_6-alkyl which, in the case of C_3–C_6-alkyl radicals, can also be branched or cyclic,

R^5 is an activated group and is 3,4-epoxycyclohexyl or a substituent of the formula V:



(V)

wherein:

A is oxygen, sulfur or an NH group,

R^6 is a $-(CH_2)_n-Z$ radical, in which

n is a number from 1 to 6, and

Z is amino, hydroxyl, carboxyl, carbonyl or 1,2-epoxyethyl,

X is a hydrophilic group and is an OH, NH_2 or SH group, and

Y is oxygen or sulfur; and

(b) a catalytically active compound chemically bonded to the water-soluble carrier polymer, wherein the catalytically active compound is an enzyme, coenzyme, antigen, antibody, metal, metal complex, affinity material or an amino acid.

5,310,787

POLYESTER PACKAGING MATERIAL

Yoshikazu Kutsuwa, Ichikawa; Shigenori Ishii, Chiba, and Toru Fukada, Ichihara, all of Japan, assignors to Du Pont-Mitsui Polychemicals Co., Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,264

Claims priority, application Japan, Jun. 4, 1991, 3-229815

Int. Cl.[5] C08L *67/02*

U.S. Cl. 524—513 **6 Claims**

1. A polyester packaging material having a layer formed from a polyester composition as a content contacting layer, wherein the polyester composition comprises:

70–95 parts by weight of a polyethylene terephthalate copolymer which is derived from terephthalic acid, ethylene glycol and cyclohexanedimethanol, a molar ratio of said ethylene glycol to said cyclohexanedimethanol being within the range of 95/5 to 75/25, and which has an endothermic peak of 180° to 240° C. as measured by a differential scanning calorimeter after heated at 130° C. for 5 hours in nitrogen and an endotherm of 10 and 40 Joule/g at the endothermic peak, and

5–30 parts by weight of an ethylene copolymer ionomer of an ethylene-unsaturated carboxylic acid copolymer having at least part of the carboxyl groups neutralized with a metallic cation.

5,310,788

SAPONIFIED ETHYLENE-VINYL ACETATE COPOLYMER COMPOSITION AND THE USE THEREOF

Takamasa Moriyama, Saita; Hiroshi Takida, Takatsuki, and Tomoyoshi Uemura, Ibaraki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 648,801, Jan. 31, 1991, abandoned. This application Apr. 29, 1992, Ser. No. 876,701

Claims priority, application Japan, Feb. 1, 1990, 2-23015; Oct. 29, 1990, 2-293070

The portion of the term of this patent subsequent to Apr. 29, 2009, has been disclaimed.

Int. Cl.[5] C08L *23/08, 33/04*

U.S. Cl. 525—57 **3 Claims**

1. An improved saponified ethylene-vinyl acetate copolymer-containing composition comprising

(A) 50 to 99.5 weight % of a saponified ethylene-vinyl acetate copolymer, with an ethylene content of 20 to 60 mole % and a degree of saponification of its vinyl acetate component being not less than 95 mole %,

(B) 0.4 to 49.9 weight % of an ethylene copolymer different from copolymer (A) and which has a density of 0.90–0.94 g/cm^3, and

(C) 0.1 to 15 weight % of a graft polymer obtained by grafting 0.05 to 10 parts by weight of an ethylenically unsaturated carboxylic acid or a derivative thereof to 100 parts by weight of a polyolefin resin to produce an adduct and reacting the adduct with a polyamide having a degree of polymerization of 350 to 500 where the reaction ratio of the polyamide to the adduct is 0.01 to 1 mole per mole of carboxyl group of the adduct.

5,310,789

VINYL HALIDE RESIN WITH EPOXY RESIN AND POLYAMINE

Toshikazu Furihata, and Toru Tomoshige, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 959,479, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 569,586, Aug. 20, 1990, abandoned, which is a continuation of Ser. No. 292,391, Dec. 30, 1988, abandoned. This application Apr. 12, 1993, Ser. No. 44,773

Claims priority, application Japan, Jan. 6, 1988, 63-307; Jan. 6, 1988, 63-308

Int. Cl.[5] C08L *63/02, 63/04*

U.S. Cl. 525—58 **9 Claims**

1. An adhesive composition for a vinyl halide resin, which comprises (a) an epoxy resin, (b) a vinyl chloride copolymer resin and (c) an aliphatic polyamine curing agent component having a plurality of ether bonds, wherein the vinyl chloride copolymer resin (b) is a vinyl chloride/vinyl acetate/vinyl alcohol terpolymer.

5,310,790

PROCESS FOR PRODUCING POLYVINYL ESTER HAVING A HIGH DEGREE OF POLYMERIZATION AND PROCESS FOR PRODUCING POLYVINYL ALCOHOL HAVING A HIGH DEGREE OF POLYMERIZATION

Toshiaki Sato, Nishinomiya; Ken Yuki; Junnosuke Yamauchi, both of Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co. Ltd., Kurashiki, Japan

Continuation of Ser. No. 633,199, Dec. 31, 1990, abandoned, which is a continuation of Ser. No. 277,123, Nov. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 79,000, Jul. 29, 1987, Pat. No. 4,818,788. This application Jun. 28, 1993, Ser. No. 82,162

Claims priority, application Japan, Aug. 1, 1986, 61-182097

Int. Cl.[5] C08G *63/91*

U.S. Cl. 525—62 **16 Claims**

1. A process for producing a polyvinyl alcohol having a high degree of polymerization and an intrinsic viscosity of from 1.5 dl g^{-1} to 3.2 dl g^{-1}, said process comprising:

(1) saponifying a polyvinyl ester obtained by subjecting a vinyl ester monomer to an emulsion polymerization under conditions (a), (b), (c), and (d);

wherein:

(a) said emulsion polymerization is carried out in a medium which is water or a mixture of water and at least one member selected from the group consisting of water-soluble alcohols, water-soluble glycols, water-soluble glycerins, and water-soluble inorganic salts;

(b) said emulsion polymerization is carried out in the presence of an emulsifier which is at least one member selected from the group consisting of nonionic emulsifiers, nonionic-anionic emulsifiers, and anionic emulsifiers;

(c) said emulsion polymerization is carried out in the presence of an initiator which is (c1) a combination of at least one member selected from the group consisting of hydroperoxides, peroxides, and peracid esters, and at least one member selected from the group consisting of metal ions capable of transferring one electron, or wherein said initiator is (c2) a combination of at least one member selected from the group consisting of hydroperoxides, peroxides, and peracid esters, at least one member selected from the group consisting of metal ions capable of transferring one electron, and at least one member selected from the group consisting of reducing substances; and

(d) said emulsion polymerization is carried out at a polymerization temperature which is from −60° C. and up to +15° C.; and

(2) obtaining a polyvinyl alcohol having an intrinsic viscosity which is from 1.5 dl g^{-1} to 3.2 dl g^{-1} as measured in acetone at 30° C. for a polyvinyl acetate product obtained by reacetylation of said polyvinyl alcohol.

5,310,791

LOW GLOSS POLYCARBONATE BLENDS OBTAINED BY USING HYDROXY FUNCTIONALIZED GRAFT COPOLYMER

Shripathy Vilasagar, Parkersburg, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1992, Ser. No. 843,127

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 **15 Claims**

1. A thermoplastic blend composition consisting essentially of:

(a) an aromatic polycarbonate polymer,

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(b) an hydroxy functional graft copolymer consisting of an hydroxy functional rigid polymeric portion grafted to a diene rubber substrate, wherein said hydroxy functional rigid polymeric portion is an hydroxy functional vinyl-vinyl aromatic-vinyl cyanide polymer.

5,310,792

THERMOPLASTIC RESIN COMPOSITION AND METHOD FOR PRODUCING THE SAME

Toshio Inoue, Kawasaki, Japan, assignor to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,716

Claims priority, application Japan, Dec. 29, 1990, 2-417668

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] C08L *23/10, 23/26*

U.S. Cl. 525—64 **15 Claims**

1. An improved thermoplastic resin composition comprising the product obtained by subjecting a mixture of:

(A) 60 to 98 wt. % of at least one engineering plastic selected from the group consisting of a copolymer of polypropylene and an α,β-unsaturated carboxylic acid, an ABS resin, an AES resin, an AAS resin, a methacrylic resin, a polyamide resin, a thermoplastic polyamide elastomer, a thermoplastic polyurethane resin, a thermoplastic polyurethane elastomer, a polyacetal resin, a polyphenylene ether resin, a polycarbonate resin, a polyester resin, a thermoplastic polyester elastomer, a polysulfone resin, a polyether sulfone resin, a polyphenylene sulfide resin, a polyallylate resin, a polyether ketone resin, a polyether ether ketone resin and a polyamide imide resin; and

(B) 2 to 40 wt. % of a rubber material containing an α,β-unsaturated carboxylic acid or a derivative thereof

to dynamic heat treatment in the presence of 0.01 to 5 wt. %, based on the total weight of said components (A) and (B), of a carbon radical inducing agent.

5,310,793

MIXTURES OF POLYALKYLENE TEREPHTHALATES, NEW POLYCARBONATES AND/OR POLYESTER-CARBONATES AND ELASTOMERS

Dieter Freitag; Karsten-Josef Idel; Gerd Fengler, all of Krefeld; Ulrich Grigo, Kempen; Jürgen Kirsch, Cologne, and Uwe Westeppe, Mettmann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 472,536, Jan. 30, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,226

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 39031020

Int. Cl.[5] C08L *67/02, 67/03*

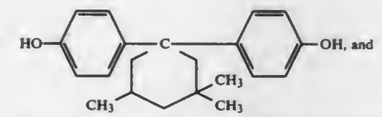
U.S. Cl. 525—67 **3 Claims**

1. A molding composition comprising

(A) from 20 to 80 wt. % of a polyalkylene terephthalate;

(B) from 1 to 50 wt. % of a thermoplastic aromatic polycarbonate and/or polyester-carbonate based on a mixture of aromatic diphenols containing

(1) from 20 to 100 mole percent, based on the total of diphenols (B)(1) and (B)(2), of 1,1-bis(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane corresponding to the formula



(2) 0 to 80 mole percent, based on the total of diphenols (B)(1) and (B)(2), of 2,2-bis(4-hydroxyphenyl)propane, 2,2-bis(3,5-dimethyl-4-hydroxyphenyl)propane, 2,2-bis(3,5-dichloro-4-hydroxyphenyl)propane, 2,2-bis(3,5-dibromo-4-hydroxyphenyl)propane, or 1,1-bis(4-hydroxyphenyl)cyclohexane; and

(C) from 1 to 30 wt. % of an elastomer, wherein said elastomer is a grafted polymer having an average particle diameter d_{50} of from 0.2 to 0.6 obtained by grafting

(1) from 10 to 40 wt. %, based on the grafted polymer, of

(i) at least one (meth)acrylic acid ester and/or

(ii) a mixture comprising from 10 to 35 wt. %, based on the mixture, of acrylonitrile and from 65 to 90 wt. %, based on the mixture, of styrene,

onto

(2) from 60 to 90 wt. %, based on the grafted polymer, of a butadiene polymer having at least 70 wt. %, based on the butadiene polymer, of butadiene radicals as the grafting base, wherein the gel content of the grafting base is at least 70% (as measured in toluene) and the degree of grafting G is from 0.15 to 0.5 μm,

with the proviso that components (A) to (C) total 100 wt. %, based on the total amount of components (A) to (C).

5,310,794

THEROMOPLASTIC BLENDS CONTAINING GRAFT COPOLYMERS OF POLYACRYLATES AS IMPACT MODIFIERS

Anthony J. DeNicola, Jr., Newark, and Thomas A. Giroux, Bear, both of Del., assignors to Himont Incorporated, Wilmington, Del.

Filed Mar. 31, 1992, Ser. No. 860,864

Int. Cl.[5] C08L *51/06, 53/02*

U.S. Cl. 525—71 **17 Claims**

1. A thermoplastic blend consisting essentially of, by weight (A) 30 to 90% of a propylene polymer material grafted with a polymerizable monomer(s) of a polymer(s) having a Tg greater than 80° C. and polymerized monomer(s) content of 5 to 70% selected from the group consisting of styrene, styrene/methyl methacrylate, styrene/methacrylic acid and styrene/acrylonitrile and (B) 10% to 70% of propylene polymer material grafted with a polymerizable monomer(s) of a polymer(s) having a Tg less than 20° C. and a polymerized monomer content of 5 to 50% selected from the group consisting of butyl acrylate, butylacrylate/butyl methacrylate and butyl acrylate/ethylhexyl acrylate.

5,310,795

CARBAMATE-FUNCTIONALIZED ADDITION POLYMERS AND ADDITION POLYMER-RUBBER COPOLYMERS DERIVED THEREFROM

William P. England, Clifton Park; Gregory J. Stoddard, Schenectady, and James J. Scobbo, Jr., Guilderland, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 33,208, Mar. 18, 1993, abandoned. This application Jun. 17, 1993, Ser. No. 77,262

Int. Cl.[5] C08L *55/00*

U.S. Cl. 525—74 **11 Claims**

4. An addition polymer-rubber copolymer represented by the formula:



(II)

wherein:

Q is an elastomeric segment derived from an elastomer functionalized with moieties reactive with amines;

X^1 is a chain terminating group;

X^3 is hydrogen or a chemical linkage between N and Q;

Z^2 is a divalent unit derived from one or more free radical polymerizable vinyl comonomers;

Z^3 is a trivalent unit derived from a carbamate-functionalized divalent unit in an addition polymer by removal of the carbamate group;

k is the number of carbamate-functionalized units and is an integer having a value of 1 or greater;

l is the number of comonomer units and is 0 or an integer having a value of 1 or greater; and wherein k and l may vary independently from one structural unit to the next;

m is the number of structural units and is an integer having a value of 1 or greater; and

n is the number of addition polymer side chains bound to the elastomer and is an integer equal to 1 or greater.

9. An AES copolymer blend having an Izod impact strength of at least about 160 joules/m comprising SAN and the addition polymer-rubber copolymer of claim 4, wherein the rubber segment is EPDM derived from EPDM functionalized with moieties reactive with amines, and wherein the addition polymer segment is derived from a carbamate-functionalized SAN.

5,310,796

ADHESIVE WITH POLYESTERURETHANE, HALOGENATED POLYOLEFIN AND DIELS-ALDER ADDUCT

Patrick A. Warren; William S. Pfister, and Mark A. Weih, all of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Mar. 23, 1993, Ser. No. 36,122

Int. Cl.[5] C08L *9/00, 23/28, 53/02, 75/06*

U.S. Cl. 525—92 **17 Claims**

1. An adhesive composition comprising a linear polyester polyurethane, a halogenated polyolefin, an epoxy/silane adduct, a Diels-Alder adduct of a halogenated cyclic conjugated diene and a block copolymer of styrene and butadiene, and a cross-linking compound.

5,310,797

CONTAINER CLOSURES AND PROCESSES OF MAKING THEM

Steven A. C. White, Ivinghoe, Nr. Leighton Buzzard, England, assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 19, 1991, Ser. No. 762,663

Claims priority, application United Kingdom, Sep. 28, 1990, 9021167

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] C08L *9/00, 47/00, 53/02*

U.S. Cl. 525—99 **11 Claims**

1. A sealing gasket comprising a composition formed from a homogeneous blend of from about 20 to about 60% by weight of the blend butyl rubber and from about 40 to about 80% by weight of the blend of one or more thermoplastic polymers, wherein the composition when formed into a gasket in a container closure and applied to a container containing a pressurized potable product forms an effective seal at pressures below 7 bar but which vents at a pressure in a range of 7 to 12 bar.

5,310,798

DIENE POLYMERS AND COPOLYMERS TERMINATED WITH COMPOUNDS HAVING MULTIPLE-BONDED NITROGEN ATOMS AND PARTIALLY CROSSLINKED WITH POLYFUNCTIONAL REAGENTS

David F. Lawson, Uniontown; Mark L. Stayer, Jr., Mogadore, and Thomas A. Antkowiak, Rittman, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Aug. 16, 1993, Ser. No. 106,729

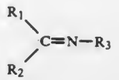
Int. Cl.[5] C08F *8/40*

U.S. Cl. 525—102 **10 Claims**

1. A method for preparing a diene polymer or copolymer having improved processability and adapted to form elastomer compositions having reduced hysteresis properties comprising the steps in sequence of:

(1) preparing a living diene polymer or copolymer containing active organoalkali or organoalkaline earth metal terminals by anionically polymerizing a conjugated diene monomer or mixture of a conjugated diene monomer and vinyl aromatic hydrocarbon monomer in a hydrocarbon solvent using an organoalkali metal or organoalkaline earth metal initiator;

(2) terminating substantially all of the living diene polymer or copolymer chains by reacting the organoalkali or organoalkaline earth metal terminal thereof with from about 0.6 to about 2 moles of a compound having multiple-bonded nitrogen atoms selected from the groups consisting of aromatic nitriles and substituted imines having the formula:



wherein R_1 and R_2 are selected from the group consisting of H, alkyl, cycloalkyl, aryl, dialkylaminoaryl, aralkyl and aprotic O, N and S—containing alkyl, cycloalkyl, aryl and aralkyl groups; wherein R_3 is selected from the group consisting of alkyl, cycloalkyl, aryl, dialkylaminoaryl, aralkyl and aprotic O, N, and S—containing alkyl, cycloalkyl, aryl and aralkyl groups; with the proviso that at least one of the R_1, R_2 and R_3 groups must be a dialkylaminoaryl group and that not all of the R_1, R_2 and R_3 groups can be aryl groups; and

(3) coupling from about 10 to about 70 percent by weight of the terminated polymer chains with a polyfunctional reagent selected from the group consisting of silicon polyhalides, polyisocyanates, phosphoryl halides and polycarboxylic acid halides.

5,310,799

AROMATIC POLYESTER MELT STRENGTH IMPROVER

William G. Carson, Moorestown, N.J.; Choung H. Lai, Newtown, and Nazir A. Memon, Yardley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 755,701, Sep. 6, 1991, Pat. No. 5,268,438. This application Sep. 17, 1993, Ser. No. 91,496

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—176 **7 Claims**

1. A blend comprising:

(a) an aromatic polyester or copolyester; and

(b) a copolymer comprising: (1) about 60 to about 99 percent by weight derived from a vinyl aromatic monomer: (2) about 1.0 to about 40 percent by weight derived from a hydroxy alkyl (meth)acrylate or epoxy alkyl (meth)acrylate; and (3) 0 to about 25 percent by weight derived from an alkyl (meth)acrylate; wherein the copolymer has a molecular weight of about 1.0 million to about 4.0 million;

at a weight ratio of (a) to (b) of about 99/1 to about 70/30.

5,310,800

THERMOPLASTIC ELASTOMER

Shizuo Shimizu, Tokyo; Akira Uchiyama; Kunihide Hiraoka, both of Ichihara; Katsuo Okamoto, Funabashi, and Yasuhiko Otawa, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 408,430, Sep. 15, 1989, abandoned, which is a continuation of Ser. No. 114,027, Oct. 29, 1987, abandoned. This application Mar. 26, 1992, Ser. No. 860,192

Claims priority, application Japan, Oct. 29, 1986, 61-255912; Oct. 29, 1986, 61-255913; Oct. 29, 1986, 61-255914; Dec. 22, 1986, 61-303818

Int. Cl.[5] C08L *23/26*

U.S. Cl. 525—193 **22 Claims**

1. A thermoplastic elastomer composition (B) of a partially cross-linked blend comprising:

(a) 10 to 95 parts by weight of an ethylene/propylene/non-

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conjugated diene rubber in which the molar ratio between ethylene units and propylene units is from 50/50 to 90/10;

(b) 5 to 90 parts by weight of an isotactic or syndiotactic monoolefin homopolymer or copolymer or crystalline polyethylene, the sum of the amounts of the components (a) and (b) being 100 parts by weight, and

(c) 0.1 to 5 parts by weight of an a,B-unsaturated carboxylic acid or an anhydride thereof or ester thereof,

said thermoplastic elastomer composition (B) being graft modified and partially cross-linked by dynamically heat-treating said blend in the presence of an organic peroxide which is incorporated in an amount of 0.1 to 1% by weight based on the total amounts of the components (a), (b) and (c).

5,310,801

PROCESS FOR PRODUCING CYCLOOLEFIN RANDOM COPOLYMERS

Takashi Hayashi; Shunyo Uesugi, and Hiroo Wamura, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 859,983, Mar. 30, 1992, Pat. No. 5,243,005, which is a division of Ser. No. 403,459, Sep. 6, 1989, Pat. No. 5,128,446. This application Apr. 27, 1993, Ser. No. 52,606

Claims priority, application Japan, Sep. 7, 1988, 63-223775; Sep. 7, 1988, 63-223776

Int. Cl.[5] C08L *23/08, 45/00;* **C08J** *3/00*

U.S. Cl. 525—198 **6 Claims**

1. A process for the production of a cycloolefin random copolymer comprising the steps of

(a) admixing a first solution of a first cycloolefin random copolymer (B) in a first hydrocarbon and a second solution of a second cycloolefin random copolymer (C) in a second hydrocarbon to provide a mixed solution comprising from 5 to 100 parts by weight of said second cycloolefin random copolymer (C) based on 100 parts by weight of said first cycloolefin random copolymer (B) present therein;

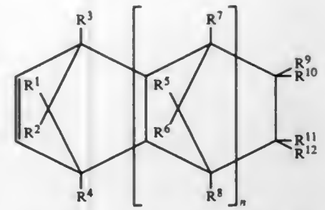
(b) pre-heating the mixed solution from step (a) to a temperature in the range of from about 150° to about 280° C.;

(c) flash drying the pre-heated mixed solution from step (b) at a pressure and temperature at which solidification of copolymer (B) and copolymer (C) is substantially inhibited and the first and second hydrocarbons are substantially removed; and

(d) passing the thus obtained cycloolefin random copolymer from step (c) through a vented extruder equipped with vacuum vents at a temperature higher than the boiling point of any unreacted cycloolefin monomer, whereby unreacted cycloolefin monomer is removed;

said first solution being obtained by copolymerizing of ethylene and a cycloolefin of formula (I), given below, in said first hydrocarbon in the presence of a catalyst, said first cycloolefin random copolymer (B) having an intrinsic viscosity (η) of from 0.05 to 10 dl/g measured in decalin at 135° C. and a softening point (TMA) of at least 70° C.; said second solution being obtained by copolymerizing ethylene, at least one α-olefin other than ethylene and a cycloolefin of formula (I), given below, said second cycloolefin random copolymer (C) having an intrinsic viscosity (η) of from 0.01 to 10 dl/g measured in decalin at 135° C. and a softening point (TMA) of less than 70° C.;

(I)



wherein n is O or a positive integer, and R^1 to R^{12} are the same or different, and each represents a hydrogen or halogen atom or a hydrocarbon group, or R^9 (or R^{10}) and R^{11} (or R^{12}), when taken together, may form a mono- or poly-cyclic ring.

5,310,802

ELASTOMERIC COMPOSITIONS AND PROCESSES FOR THEIR PRODUCTION

Bernard J. Costemalle, Rhode St. Genese, and Pierre T. Hous, Steenokkerzeel, both of Belgium, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 873,527, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 377,347, Jul. 7, 1989, abandoned. This application Mar. 3, 1993, Ser. No. 25,909

Claims priority, application United Kingdom, Jul. 8, 1988, 8816310

Int. Cl.[5] C08L *15/02, 9/00*

U.S. Cl. 525—221 **7 Claims**

1. A polymer composition having improved scorch/cure balance comprising:

(1) a rubber selected from halogenated butyl rubber and blends of a major portion of halogenated butyl rubber with a minor portion of natural rubber, polybutadiene, and styrene butadiene rubber; and (2) an olefin polymer consisting of a copolymer derived from a C_2 to C_5 olefin and an unsaturated carboxylic acid wherein the weight ratio of said copolymer to said rubber is between about 15:85 and 5:95.

5,310,803

HOT-MELT COMPOSITION THAT HAVE GOOD OPEN TIME AND FORM CREEP-RESISTANT BONDS WHEN APPLIED IN THIN LAYERS

Dennis D. Hansen, Luck, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 721,916, Jun. 20, 1991, which is a continuation of Ser. No. 190,039, May 4, 1988, abandoned. This application Dec. 17, 1991, Ser. No. 809,004

Int. Cl.[5] C08L *33/06*

U.S. Cl. 525—228 **41 Claims**

1. A hot-melt composition comprising an ethylene/vinyl acetate copolymer having a melt index of at least 500 and comprising a total of 23% to 35% vinyl acetate, an ethylene/n-butyl acrylate copolymer, and a tackifying resin, wherein said composition has a limited open time of at least 5 seconds when deposited in a thin layer on a room temperature substrate.

5,310,804

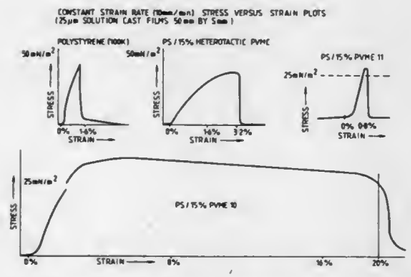
PHASE SEPARATED POLYSTYRENE/POLYVINYL METHYL ETHER ALLOYS

Gregory Beaucage, Athol, and Richard S. Stein, Amherst, both of Mass., assignors to Novacor Chemicals (International) S.A., Fribourg, Switzerland

Continuation-in-part of Ser. No. 522,828, May 14, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,413

Int. Cl.[5] C08L *25/06, 29/10*

U.S. Cl. 525—231 **3 Claims**



1. A process for preparing a two-phase polymer alloy comprising:

(a) from 90 to 60 weight % of polystyrene; and

(b) from 10 to 40 weight % of polyvinyl methyl ether having a molecular weight from 20,000 to 60,000 which is miscible in said polystyrene at temperatures above the melting temperature of the polystyrene and which polyvinyl methyl ether has a degree of crystallinity of about 3% as measured by X-ray diffraction;

said alloy characterized in that:

(i) it has a LCST or a UCST, or both;

(ii) the components of the polymer alloy are miscible over a composition range of polystyrene: polyvinyl methyl ether from 90:10 to 60:40 weight percent at temperatures above the melting temperature of the polymer having the higher Tg; and

(iii) upon subjecting the polymer alloy to temperature conditions which will cause phase separation and quenching, the quenched phase separated polymer alloy will have a yield of at least 10% when subjected to a stress of 30 MN/M^2;

which process comprises:

(A) preparing a homogeneous blend of said polystyrene and said polyvinyl methyl ether by extruding a dry blend of said polystyrene and said polyvinyl methyl ether at a temperature to form a homogeneous alloy;

(B) heating said blend to a temperature at which said polystyrene and said polyvinyl methyl ether are miscible;

(C) causing said polystyrene and said polyvinyl methyl ether to undergo phase separation with no or a minimum of shear by altering the temperature of said blend to cause spinodal phase separation; and

(D) quenching the phase separated blend over a period of time from 2 to 5 minutes to a temperature below the Tg of said polystyrene to create said phase separated polymer alloy.

5,310,805

POLYVINYL CHLORIDE RESIN COMPOSITION FOR POWDER MOLDING

Toshio Igarashi, Kyoto; Akira Wakatsuki, Ibaraki, and Yuu Shida, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 22, 1992, Ser. No. 964,862

Claims priority, application Japan, Oct. 28, 1991, 3-281309

Int. Cl.[5] C08L *33/06*

U.S. Cl. 525—239 **16 Claims**

1. A polyvinyl chloride resin powder composition for rotational molding, which is prepared by dry-blending a plasticizer and a stabilizer with a polyvinyl chloride resin followed by incorporating from 1 to 5 parts by weight, to 100 parts by weight of the polyvinyl chloride resin, of a finely divided polyvinyl chloride resin having a viscosity average polymerization degree of from 3000 to 4000 into the resulting dry blend.

5,310,806

PROCESS FOR PREPARING AN ETHYLENE-UNSATURATED POLYCARBOXYLIC COMPOUND GRAFT COPOLYMER

Leslie Wild, Wyoming, Ohio, and Jeffrey A. Jones, Palatine, Ill., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed May 22, 1991, Ser. No. 703,968

Int. Cl.[5] C08F *255/02, 222/06*

U.S. Cl. 525—285 **3 Claims**

1. A process for preparing an ethylene-maleic anhydride graft copolymer comprising contacting a polyethylene wax having a viscosity in the range of between about 100 cp and about 20,000cp and charr terized by terminal double bond functionality of between about 1.25 and about 2.5 unsaturated branches per 1,000 carbon atoms with maleic anhydride, present in a concentration of between about 1 wt. % and about 15 wt. %, based upon the weight of said polyethylene wax, in the presence of an organic peroxide, present in a concentration of between about 0.01% and about 1% by weight, based on the weight of the polyethylene wax, said organic peroxide selected from the group consisting of 2,5-dimethyl-2,5-di(tert-butyl-peroxy)hexane and ditertiarybutyl peroxide.

5,310,807

STAR POLYMERS MADE FROM MACROMONOMERS MADE BY COBALT CHAIN TRANSFER PROCESS

Joseph A. Antonelli, Riverton, N.J., and Christopher Scopazzi, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1992, Ser. No. 998,350

Int. Cl.[5] C08F *265/04, 265/06, 265/10*

U.S. Cl. 525—286 **10 Claims**

1. A polymer dispersion comprising a star polymer dispersed in an organic liquid; wherein the star polymer consists essentially of a crosslinked core having attached thereto at least three arms each arm consisting of a macromonomer; where

(1) the core consists essentially of monomers polymerized by free radical polymerization having at least two ethylenically unsaturated double bonds which are crosslinked with each other and the core has at least 3 free radical polymerizable sites each of which are reacted with the macromonomer; and

(2) the macromonomer that forms the arms of the star polymer consists of ethylenically unsaturated monomers that have been polymerized by free radical polymerization in the presence of a free radical polymerization initiator and a catalytic chain transfer agent containing Co^{+2} to provide the macromonomer having a weight average molecular weight of about 1,000–40,000 with a terminal ethylenically unsaturated group that is polymerized with the free radical polymerizable site on the core to form the star polymer; and

wherein the star polymer consists essentially of about 10–90%

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by weight of the core and correspondingly about 90–10% by weight of the arms.

5,310,808

FLAME-RETARDANT THERMOPLASTIC COPOLYMERS BASED ON VINYL PHOSPHONATE DERIVATIVES GRAFTED ONTO RUBBER

Roger A. Grey, and Shao H. Guo, both of West Chester, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Jul. 30, 1992, Ser. No. 922,600
Int. Cl.[5] C08F *255/06, 279/02*
U.S. Cl. 525—287 **7 Claims**

1. A flame-retardant polymer composition comprising recurring units of:

(a) a vinyl aromatic monomer;

(b) a vinyl phosphonic acid derivative selected from the group consisting of vinyl phosphonic acids and vinyl phosphonate mono- and diesters; and

(c) optionally, one or more additional ethylenically unsaturated monomers;

wherein the composition is grated onto from about 1 to about 50 wt. % based on the total amount of polymer composition of a rubber selected from the group consisting of polybutadiene, polyisoprene, EPDM rubber, styrene-isoprene copolymers, and styrene-butadiene copolymers; and wherein the polymer composition has a number average molecular weight within the range of about 30,000 to about 400,000.

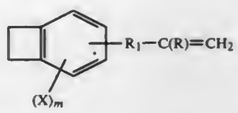
5,310,809

ARYLCYCLOBUTENE GRAFTED POLYOLEFINS

Raul A. Pabon, Jr., Houston, Tex., and Robert A. DeVries, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

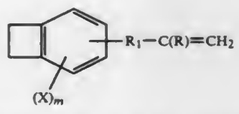
Filed May 20, 1993, Ser. No. 64,533
Int. Cl.[5] C08F *255/02;* C08L *51/06*
U.S. Cl. 525—289 **20 Claims**

1. An olefinic polymer derived from one or monomers having the formula $H_2C{=}CHR'$ where R' is hydrogen or an alkyl group grafted with a vinyl arylcyclobutene of the formula:



where R is hydrogen or CH_3; R_1 is $—CH_2)_n$ where n is from 0 to 6; X is halgen, an alkyl group having from 1 to 4 carbon atoms, phenyl, or $Si(CH_3)_3$; and m is 0 or 1.

8. A method for preparing the arylcyclobutene grafted olefinic polymer of claim 1 which method comprises reacting an olefinic polymer with a vinyl arylcyclobutene of the formula:



wherein R is hydrogen or CH_3; R_1 is $CH_2)_n$where n is from 0 to 6; X is halogen, an alkyl group having from 1 to 4 carbon atoms, phenyl, or $Si(CH_3)_3$; and m is 0 or 1 in the presence of an amount of a free radical initiation means and at conditions sufficient to graft the vinyl arylcyclobutene on the olefinic polymer chain.

5,310,810

SEGMENTED COPOLYMERS

John Natoli, Ambler, Pa., and Min-Yin Chang, Houston, Tex., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 898,979, Jun. 15, 1992, Pat. No. 5,247,024. This application Mar. 16, 1993, Ser. No. 33,657
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] C08L *23/04, 23/10, 23/16, 33/10*
U.S. Cl. 525—298 **12 Claims**

1. A process for preparing a segmented copolymer of at least one segment of a polyolefin and of at least one segment of a polymer comprised of greater than about 50 weight percent of units derived from at least one alkyl methacrylate, comprising:

a) preparing a reaction mixture of about 100 parts of particles of polyolefin of average particle size below about 6 mm. with

(i) from about 150 to about 2000 parts of water;

(ii) from about 10 to about 100 parts of a monomer mixture which is greater than 50% by weight of at least one alkyl methacrylate;

(iii) from about 40 to about 200 parts of one or more organic solvents, miscible with the monomer mixture;

(iv) from about 0.2 to about 5 parts of at least one dispersant, the at least one dispersant maintaining the polyolefin particles in particulate form, at least one dispersant being chosen from polymers which are copolymers of units derived from (meth)acrylic esters and units derived from one or more partially or totally neutralized copolymerizable unsaturated acids;

(v) from about 0.1 to about 2 parts of at least one polymerization initiator;

b) polymerization the reaction mixture in a pressure vessel with agitation at a heating rate of at least 0.5° C./minute until a temperature of at least about 75° C. is obtained;

c) holding the reaction mixture at the temperature of at least about 75° C. until the monomer is polymerized, the alkyl methacryiate polymer being formed being at least partially grafted to the polyolefin to form the segmented copolymer, the segmented copolymer remaining in particulate form;

d) optionally further adding to the reaction vessel

(i) from about 10 to about 70 parts of a second monomer mixture which is greater than 50% by weight of at least one alkyl methacrylate;

(ii) from about 5 to about 150 parts of organic solvent, miscible with the second monomer mixture;

(iii) up to about 1 part of at least one dispersant, the at least one dispersant maintaining the polyolefin particles in particulate form, at least one dispersant being chosen from polymers which are copolymers of units derived from (meth)acrylic esters and units derived from one or more partially or totally neutralized copolymerizable unsaturable acids;

(iv) from about 0.01 to about 2 parts of at least one polymerization initiator;

e) optionally continuing heating at a temperature increase of at least about 0.5° C./minute until essentially complete conversion of the monomers to polymer occurs, the alkyl methacrylate polymer being formed being at least partially grafted to the polyolefin to form the segmented copolymer, the segmented copolymer remaining in particulate form;

f) separating the solvent from the particulate segmented copolymer particles;

g) separating any remaining water from the particulate segmented copolymer particles.

5,310,811

FREE RADICAL CURED RUBBER EMPLOYING ACRYLATE OR METHACRYLATE ESTERS OF HYDROXYBENZENE AND HYDROXYNAPHTHALENE COMPOUNDS AS CO-CURING AGENTS

Kirkwood S. Cottman, Akron, and Kevin L. Rollick, Munroe Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 22, 1993, Ser. No. 124,787
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—305 **20 Claims**

1. A process for free radical curing of a polymer or mixture thereof which comprises using a free radical initiator and as a co-curing agent an acrylate or methacrylate ester of a hydroxybenzene or hydroxynaphthalene compound, wherein said ester contains at least two acrylate or methacrylate groups per molecule, or a mixture thereof wherein said polymer is selected from the group consisting of ethylene-propylene-diene terpolymer, natural polyisoprene rubber, synthetic polyisoprene, styrene isoprene rubber, styrene butadiene rubber, styrene isoprene butadiene rubber, polybutadiene rubber, nitrile rubber, partially hydrogenated nitrile rubber, polychloroprene and mixtures thereof.

5,310,812

BINDER RESIN FOR A TONER FOR DEVELOPING ELECTROSTATIC IMAGES, AND PROCESS FOR PRODUCTION THEREOF

Satoshi Yasuda, Matsudo; Kiichiro Sakashita, Inagi; Yasuo Mitsuhashi; Seiichi Takagi, both of Yokohama; Shuichi Aita, Toride; Yoshinobu Nagai, Kobbe, and Toshiaki Nakahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 514,516, Apr. 23, 1990, Pat. No. 5,219,947, which is a division of Ser. No. 275,599, Nov. 23, 1988, Pat. No. 4,966,829, which is a continuation of Ser. No. 94,389, Sep. 8, 1987, abandoned. This application Dec. 7, 1992, Ser. No. 986,259
Claims priority, application Japan, Sep. 8, 1986, 61-212179; Mar. 12, 1987, 62-057358; Mar. 12, 1987, 62-057359
Int. Cl.[5] C08F *257/02, 265/02, 265/06;* G03G *9/08*
U.S. Cl. 525—309 **18 Claims**

1. A process for producing a binder resin for a toner, comprising:

forming a first polymer providing a molecular weight distribution thereof according to GPC such that there is a main peak in the molecular weight range of 2,000 to 10,000 and having a ratio (Mw/Mn) of weight-average molecular weight (Mw)/number-average molecular weight (Mn)≦3.5 by solution polymerization of at least one monomer selected from styrene monomers, acrylic acid monomers, methacrylic acid monomers and derivatives thereof;

dissolving the first polymer in a polymerizable monomer comprising at least one monomer selected from styrene monomers, acrylic acid monomers, methacrylic acid monomers and derivatives thereof to formulate a monomer composition; and

subjecting the monomer composition to suspension polymerization in the presence of a crosslinking agent, thereby forming a resin composition comprising 10 to 70 wt. % of a THF(tetrahydrofuran)-insoluble component and a THF-soluble component; the THF-soluble component having a molecular weight distribution in GPC chromatogram thereof which provides a least one peak in the molecular weight range of 2,000 to 10,000 and at least one peak or shoulder in the molecular weight range of 15,000 to 100,000; where the ratio Mw/Mn for the THF-soluble component is ≧5; and wherein components having molecular weights of 10,000 or less are contained in a proportion of 10–50 wt. % of the total composition.

5,310,813

THERMOSETTING COATING RESIN AND PROCESS FOR PRODUCING THE SAME

Mitsuru Nagasawa, Nagoya; Kazuyuki Kuwano, Toyota; Masataka Muramatsu, Okazaki; Kishiro Azuma, Tokai; Hiroshi Hibino, and Kazuko Nakanishi, both of Nagoya, all of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Minato and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Continuation-in-part of Ser. No. 749,075, Aug. 23, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,585
Claims priority, application Japan, Aug. 24, 1990, 2-221145
Int. Cl.[5] C08F *265/06, 265/04, 267/02, 265/02*
U.S. Cl. 525—309 **11 Claims**

1. A coating composition comprising a solution in a suitable solvent of a thermosetting resin containing a branched polymer,

wherein said branched polymer is obtained by copolymerizing (1) a macromolecular monomer having a radical-polymerizable group at one end of the molecule and having a weight-average molecular weight of 1,000 to 10,000 with (2) another radical-polymerizable monomer,

which branched polymer contains the unit of said macromolecular monomer in a proportion of 65–95% by weight based on the total amount of constitutional units, which branched polymer has a crosslinkable functional group and contains a unit of an alkyl (meth)acrylate monomer having an alkyl group of 1–8 carbon atoms, in a proportion of 50% by weight or more based on the amount of total monomer units constituting the branched polymer, and which branched polymer has a weight-average molecular weight of 5,000–30,000; and

the monomer constituting the polymer backbone of the macromolecular monomer is selected from the group consisting of methyl (meth)acrylate, ethyl (meth)acrylate, butyl (meth)acrylate, 2-ethylhexyl(meth)acrylate, perfluoroalkyl acrylates, 2-hydroxyethyl(meth)acrylate, 2-hydroxypropyl(meth)acrylate, styrene, α-methylstyrene, (meth)acrylonitrile and polyethylene glycol mono(meth-)acrylate.

5,310,814

VISCOSITY MODIFIER POLYBUTADIENE POLYMERS

Mark J. Struglinski, Bridgewater; Gary W. VerStrate, Atlantic Highlands, and Lewis J. Fetters, Annandale, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 15, 1991, Ser. No. 670,114
Int. Cl.[5] C08L *53/00;* C10M *143/12*
U.S. Cl. 525—314 **18 Claims**

1. A composition comprising (a) oil; and (b) at least one polybutadiene block copolymer comprising polymerization products derived from monomeric units of 1,4-butadiene and 1,2-butadiene, the copolymer being hydrogenated and comprising at least 10 percent by weight of at least one crystallizable segment comprised of methylene units and having an average methylene content corresponding to a 1,4-polybutadiene content of at least about 20 mole percent, and more than one low crystallinity segment comprised of methylene units and substituted methylene units and having an average methylene content less than about 75 mole percent.

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5,310,815

POLYMERS DERIVED FROM A CONJUGATED DIOLEFIN, A VINYL-SUBSTITUTED AROMATIC COMPOUND, AND OLEFINICALLY UNSATURATED NITRILE

Michael L. Senyek, and Howard A. Colvin, both of Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 2,375, Jan. 8, 1993, abandoned, which is a division of Ser. No. 777,953, Oct. 17, 1991, Pat. No. 5,225,479. This application Sep. 17, 1993, Ser. No. 122,169

Int. Cl.[5] C08F *236/12*

U.S. Cl. 525—329.3 **14 Claims**

1. A rubber stock comprising:

(a) a polymer resulting from the copolymerization of at least three monomers wherein:

(1) from about 40 to about 84 weight percent of the polymer being derived from a conjugated diolefin selected from the group consisting of 1,3-butadiene, 2,3-dimethyl-1,3-butadiene, 2-methyl-1-3-butadiene, 2-ethyl-1,3-butadiene, 1,3-pentadiene, 2-methyl-1,3-pentadiene, 1,3-hexadiene, 2-phenyl-1,3-butadiene, 3,4-dimethyl-1,3-hexadiene, 1,3-heptadiene, 1,3-octadiene, 4,5-diethyl-1,3-octadiene, 3-methyl-1,3-pentadiene, 4-methyl-1,3-pentadiene or mixtures thereof;

(2) from about 15 to about 50 weight percent of the polymer being derived from a vinyl-substituted aromatic compound containing from 8 to 16 carbon atoms; and

(3) from about 1 to about 8 weight percent of the polymer being derived from an olefinically unsaturated nitrile selected from the group consisting of acrylonitrile, methacrylonitrile, ethacrylonitrile, crotononitrile or mixtures thereof; and

(b) a sulfur vulcanizing agent.

5,310,816

OXIDATION OF HALOGENATED POLYMERS AND ANTICAKING HALOGENATED POLYMERS

Donald W. Pennington, and Joseph L. Allison, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 522,423, May 10, 1990, abandoned, which is a division of Ser. No. 274,877, Nov. 22, 1988, Pat. No. 4,945,133, which is a continuation-in-part of Ser. No. 101,615, Sep. 26, 1987, Pat. No. 4,923,931. This application Jun. 10, 1992, Ser. No. 898,389

The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.

Int. Cl.[5] C08F *8/38, 14/06, 14/08*

U.S. Cl. 525—331.5 **47 Claims**

1. A process of preparing a graft copolymer comprising steps of

(a) forming an admixture of (1) an acidic oxidizing agent and (2) a suspension of a particulate halogenated polymer in a polar liquid;

(b) heating the admixture to a temperature sufficient to initiate reaction between the polymer and the oxidizing agent; and

(c) continuing the reaction until an oxidized polymer having a preselected extent of oxidation is obtained

(d) grafting to the oxidized polymer at least one addition polymerizable compound.

5,310,817

PROCESS AND CATALYST FOR PRODUCING PARTIALLY HYDROGENATED DIENE POLYMERS CONTAINING ENDO AND EXO CHAIN TRISUBSTITUTED UNSATURATION

William L. Hergenrother, and John M. Doshak, both of Akron, Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Aug. 24, 1993, Ser. No. 111,358

Int. Cl.[5] C08F *8/02*

U.S. Cl. 525—332.8 **6 Claims**

1. A partially hydrogenated and isomerized polymer of at least 50 to 100 parts by weight of a conjugated diene monomer contributed units and 0 to 50 parts by weight of an ethynically unsaturated monomer contributed units, wherein at least 30 to 100 percent of the diene monomer contributed units is in a vinyl configuration in the polymer prior to partial hydrogenation and 0 to 70 percent of the diene monomer contributed units is in a 1,4-trans configuration or 1,4-cis configuration in the polymer prior to partial hydrogenation, and wherein said partially hydrogenated and isomerized polymer has an unsaturation ratio of at least 3 to 1, said unsaturation ratio being defined as a ratio of a combined percentage of carbon to carbon unsaturation groups in the diene monomer contributed units in an endo and an exo configuration to a combined percentage of carbon to carbon unsaturation in the diene monomer contributed units in a 1,4-cis, 1,4-trans and vinyl configuration.

5,310,818

VULCANIZABLE CHLORINE-CONTAINING RUBBER COMPOSITIONS CONTAINING TRIAZINETHIOL AMINE SALT VULCANIZING AGENTS

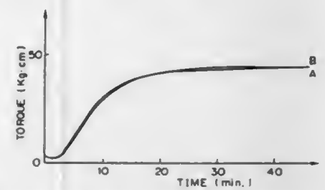
Tetsuo Tojo, Chiba; Keiji Okada, Ichihara; Takashi Nakahara, Ichihara, and Yoshiharu Kikuchi, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 588,076, Sep. 25, 1990, abandoned, which is a division of Ser. No. 195,908, May 19, 1988, Pat. No. 5,004,787. This application Nov. 24, 1992, Ser. No. 981,999

Claims priority, application Japan, May 22, 1987, 62-123665

Int. Cl.[5] C08F *8/34*

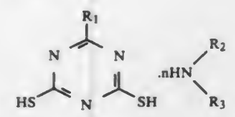
U.S. Cl. 525—333.9 **5 Claims**



1. A vulcanizable rubber composition comprising:

(a) a chlorine-containing rubber selected from the group consisting of chlorinated ethylene-α-olefin copolymer rubber, epichlorhydrin rubber and chlorinated polyethylene; and

(b) as a vulcanization agent, a triazinethiol amine salt having the formula:



(I)

wherein n is a number of 1 to 3;

R_1 represents $—NR_4R_5$, $—OR_4$, or $—SR_4$, where R_4 and R_5 independently represent a hydrogen atom, an unsubstituted or substituted alkyl group or an unsubstituted or substituted aryl group;

R_2 and R_3 independently represent a hydrogen atom, an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms or R_2 and R_3, together with —NH= to which they are attached, form a ring which is not a polyamide.

5,310,819

SURFACE EPOXIDATION OF ELASTOMERS

Charles M. Roland, Waldorf, Md.; Irina Zemel, Arlington, and Chester F. Poranski, Jr., Annandale, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 23, 1992, Ser. No. 902,749

Int. Cl.[5] C08F *8/08;* **C08C** *19/06*

U.S. Cl. 525—385 **11 Claims**

1. An oil-resistant article comprising an elastomer, said oil-resistant article consisting essentially of an elastomeric outer surface and an elastomeric inner portion, said elastomer being epoxidized at least at a portion of said outer surface, said elastomer in said inner portion containing unsaturation, said inner portion and said outer surface having properties differing from each other due to said epoxidation of said outer surface.

5,310,820

PROCESS FOR MODIFICATION OF POLYPHENYLENE ETHER OR RELATED POLYMERS WITH A CYCLIC ACID ANHYDRIDE AND THE USE THEREOF IN MODIFIED, HIGH TEMPERATURE RIGID PLYMER OF VINYL SUBSTITUTED AROMATICS

Laurentius N. I. H. Nelissen, Eindhoven, and Johannes M. Zijderveld, BG Breda, both of Netherlands, assignors to Shell Research Limited, United Kingdom

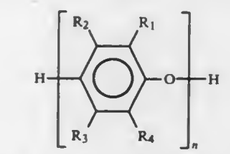
Continuation of Ser. No. 525,552, May 21, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 945,438

Claims priority, application United Kingdom, Jun. 13, 1989, 8913542

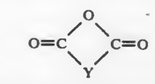
Int. Cl.[5] C08G *65/48*

U.S. Cl. 525—391 **3 Claims**

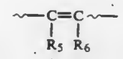
1. Process for incorporating a modified polyphenylene ether into a poly(vinyl substituted aromatic) polymer, comprising polymerizing a vinyl substituted aromatic monomer in the presence of the modified polyphenylene ether obtained by a previous reaction of a polymer of the formula:



wherein R_1 and R_4 each represent hydrogen, halogen, a phenyl group, alkenyl group, alkadienyl group, an aryloxy group, or wherein R_1 and R_4 each represent an alkyl group or an alkoxy group, each of the latter containing 12 or less carbon atoms and each optionally substituted by halogen, cyano, hydroxy, phenyl or amino, whereas alkyl or alkoxy groups attached to the terminal phenol nucleus of the chain optionally are substituted by an amino, dialkylamino or a di(alkanoyl) amide group, wherein the alkyl groups each contain 4 or less carbon atoms, wherein R_2 and R_3 each represent hydrogen, halogen, a phenyl group, alkenyl group, alkadienyl group, aryloxy group, or wherein R_2 and R_3 each represent a primary or secondary alkyl group or alkoxy group as defined for R_1 and R_4, optionally substituted by halogen, cyano, hydroxy, phenyl, and wherein R_1, R_2, R_3 and R_4 represent different or the same groups in one repeating unit, and n represents an integer having a value of at least 50, with a cyclic acid anhydride of the formula:



wherein Y represents a bivalent radical of the formulae



wherein m represents an integer in the range of from 2 to 8 and wherein R_5 and R_6 each independently represent an alkyl group of 1 to 4 carbon atoms, a phenyl group or an aralkyl group or wherein R_5 and R_6 together with the carbon atoms of the double carbon-carbon bond form a cycloalkenyl, cycloalkadienyl or aryl group, in the presence of a non nucleophilic base and in an inert polar organic solvent.

5,310,821

POLYPHENYLENE ETHER RESIN COMPOSITIONS

Tetsuji Kodaira; Hiromi Ishida, and Hidekazu Kabaya, all of Moka City, Japan, assignors to GE Plastics Japan, Ltd., Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,263

Int. Cl.[5] C08L *71/12, 77/06*

U.S. Cl. 525—397 **11 Claims**

1. A resin composition comprising:

(A) 5–80 wt. parts polyphenylene ether resins and

(B) 20–95 wt. parts polyamide resins,

wherein the (B) polyamide resins:

(a) comprise 1–50 wt. %, of polyamide resins having a number-average molecular weight not greater than 11,000, and a terminal amino group content of at least 7.0×10^{-5} mole/g, and

(b) have an overall number-average molecular weight of 9,500 to 32,000, and a terminal amino group content of 5.5×10^{-5} mole/g or less.

5,310,822

IMPACT-RESISTANT POLYOXYMETHYLENE MOLDING MATERIALS

Sabine Kielhorn-Bayer, Maxdorf, and Peter Groll, Dannstadt-Schauernheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigsbafen, Fed. Rep. of Germany

Filed Sep. 27, 1993, Ser. No. 126,884

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1992, 4232416

Int. Cl.[5] C08K *7/14;* **C08L** *77/00, 75/08, 71/00*

U.S. Cl. 525—399 **5 Claims**

1. A thermoplastic molding material containing

A) from 10 to 97% by weight of a polyoxymethylene homo- or copolymer,

B) from 3 to 50% by weight of a thermoplastic elastomer selected from the group consisting of the thermoplastic polyurethanes, the polyetheresters and the polyetheramides, the flexible phase of which is derived from polyetherpolycarbonatediols,

C) from 0 to 50% by weight of a fibrous or particulate filler or a mixture thereof and

D) from 0 to 30% by weight of processing assistants,

wherein the polyetherpolycarbonatediols which form the flexible phase of the thermoplastic elastomer B) are essentially composed of:

b_1) from 3 to 63.7 mol % of units which are derived from a polyoxytetramethylenediol,

b_2) from 63.7 to 3 mol % of units which are derived from a

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polyoxyalkylenediol differing from b_1) and having C_2–C_8-alkylene groups, an aliphatic alkanediol of 2 to 14 carbon atoms, an alicyclic alkanediol of 3 to 14 carbon atoms or an alkylene oxide of 2 or 3 carbon atoms or a mixture thereof, and

b_3) from 33.3 to 50 mol % of units which are derived from phosgene, a dialkyl carbonate having C_1–C_4-alkyl groups or a cyclic carbonate having C_2–C_4-alkylene bridges or a mixture thereof.

5,310,823

POLYACETAL RESIN COMPOSITION

Masaki Kunitomi; Hiromitsu Ishii, both of Nagoya, and Yoshiyuki Yamamoto, Suzuka, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 465,193, Feb. 16, 1990, abandoned. This application Feb. 24, 1993, Ser. No. 23,147

Claims priority, application Japan, Jun. 22, 1988, 63-154386

Int. Cl.[5] C08L *67/02, 59/02, 59/04*

U.S. Cl. 525—400 **9 Claims**

1. A polyacetal resin composition having a volume resistivity not larger than 10^{14} (Ω·cm), which comprises (A) 100 parts by weight of a polyacetal resin, (B) 1 to 100 parts by weight of a polyether-ester block copolymer which is derived from (a) a dicarboxylic acid component composed mainly of terephthalic acid, (b) a glycol component composed mainly of 1,4-butanediol and (c) a poly(ethylene oxide)glycol having a number average molecular weight of 500 to 20,000 and has a poly-(ethylene oxide) dicarboxylate unit content of 20 to 95% by weight, and (C) 0.05 to 20 parts by weight of a compound selected from the group consisting of sodium alkylbenzenesulfonates and metal salts of an organic carboxylic acid.

5,310,824

WATER REPELLENT ARAMIDS

Robert R. Burch, Exton, Pa.; David P. Higley, and James G. Lertola, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 3, 1991, Ser. No. 801,919

Int. Cl.[5] C08G *69/48*

U.S. Cl. 525—420 **9 Claims**

1. A process for increasing the water repellency of shaped aramid articles selected from the group consisting of fibers, filaments, ribbons, tapes, rods, and particles while preventing the individual articles from adhering to one another during the process comprising the steps of:

a) contacting the aramid articles with a solution of:

i) an alkyl sulfoxide solvent;

ii) a base which has a pK_a in the alkyl sulfoxide solvent of at least 19 in a concentration of 0.0001 to 6 molar in the solution; and

iii) a lithium salt soluble in the solution in a concentration of 0.0001 to 6 molar in the solution and at a mole ratio of the lithium with the base of at least 1:1;

b) maintaining the contact for a time sufficient to swell the aramid articles and form anions on aramid molecules on the surface of the aramid articles;

c) contacting the aramid articles with a fluoroalkyl-containing alkylating agent

$R'(CH_2)_mX$ wherein:

R' is a perfluoroalkyl having 1–20 carbon atoms, straight-chain or branched, and substituted by one or more ether oxygens or not;

m is 0–6; and

X is —CH[O]CH_2, —OCH_2CH[O]CH_2, or —$C_6H_4CH_2CH_2Y$ wherein Y is Br, Cl, I, $CH_3C_6H_4SO_3$, or CF_3SO_3 whereby the alkylating agent is grafted to the aramid articles.

5,310,825

EPOXY MATRIX CONTAINING AMINE HARDENER AND MICROPULVERIZED POLYIMIDE

Eduard P. Babayan, Huntington Beach, and Hoa X. Nguyen, Santa Ana, both of Calif., assignors to BP Chemicals (Hitco) Inc., Santa Ana, Calif.

Continuation of Ser. No. 391,907, Aug. 10, 1989, abandoned. This application Sep. 11, 1991, Ser. No. 758,194

Int. Cl.[5] C08L *63/02, 63/04*

U.S. Cl. 525—423 **16 Claims**

1. A toughened epoxy matrix formulation comprising at least two epoxy components, an amine hardener and 12.2% by weight to about 25% of a micropulverized polyimide thermoplastic having a Tg of at least about 220° C.

5,310,826

THIOLIC COMPOUND POLYMERIZATION COCATALYSTS

Gualtiero Giovando, Monforte d'Alba, Italy, assignor to Akzo N.V., Arnhem, Netherlands and Saint Peter S.r.l., Turin, Italy, a part interest

PCT No. PCT/EP90/00729, § 371 Date Oct. 21, 1991, § 102(e) Date Oct. 21, 1991, PCT Pub. No. WO90/12826, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 26, 1990, Ser. No. 768,266

Claims priority, application Italy, Apr. 26, 1989, 67301A89; Apr. 26, 1989, 67302A89; Nov. 7, 1989, 67954A89; Dec. 18, 1989, 68109A89

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—438 **26 Claims**

1. An accelerator composition for the curing or polymerization of resins selected from the group consisting of unsaturated maleic, allylic, vinylic, and polyester resins, epoxy resins and polyurethanes, said composition comprising a complex of a salt of a metal selected from the group consisting of lithium, aluminum, magnesium manganese, zinc and tin, and a compound selected from the group consisting of thiols, which are selected from the group consisting of dipentene-dimercaptan; ethylcyclohexyldimercaptan; ethylene-1,2-bis-3-mercaptoacetate; ethylene-1,2-bis-3-mercaptopropionate; 1,2,3-propanetrithiol; 1,2,6-hexanetrithiol; pentaerythritolthiol; pentaerythritoltetramercaptoacetate; pentaerythritoltetramercaptopropionate; thioesters of polyalcohols, thioesters of sugars, thiolic derivatives of the formula:

$$R-(R-\underset{\displaystyle OH}{\underset{|}{C}}-CH_2-SH)_n$$

wherein R is a linear alkyl group having 3–30 carbon atoms and n is an integer of 2–6, and adducts of these thiols with epoxides and anhydrides.

5,310,827

POLYAMIDE COPOLYMERS

Yukiatsu Komiya; Masao Ishida; Koji Hirai; Setuo Yamashita; Shinji Komori, all of Kurashiki, Japan, and Takuji Okaya, Nagaokakyo, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 593,254, Oct. 1, 1990, Pat. No. 5,093,437, which is a continuation of Ser. No. 146,477, Jan. 21, 1988, abandoned. This application Nov. 13, 1991, Ser. No. 791,163

Claims priority, application Japan, Jan. 22, 1987, 62-13455; Mar. 6, 1987, 62-52270; Mar. 6, 1987, 62-52272; Aug. 25, 1987, 62-212171; Dec. 7, 1987, 62-309992

Int. Cl.[5] C08L *77/00, 69/00*

U.S. Cl. 525—439 **8 Claims**

1. A polyamide copolymer, comprising repeating units having the formulae (I) and (II) described below wherein a repeating unit of the formula (II) is contained therein in an amount of at least 10 mol. %, said polyamide copolymer having a number average molecular weight of 5,000 to 250,000:

$$\text{(I)}\quad +NH-R_1-NH-\overset{O}{\overset{\|}{C}}-R_2-\overset{O}{\overset{\|}{C}}+$$

$$\text{(II)}\quad +NH-R'_1-NH-\overset{O}{\overset{\|}{C}}-A-\overset{O}{\overset{\|}{C}}+$$

wherein R_1, R'_1 and R_2, which are the same or different, each represents a hydrocarbon residue and A represents a segment containing at least 30 mol. % of a repeating unit of the formula (VI) described below:

$$\text{(VI)}\quad +O-R_4-O-\overset{O}{\overset{\|}{C}}+$$

wherein R_4 represents a combination of a branched hydrocarbon residue and a linear hydrocarbon residue.

5,310,828

SUPERIOR STAIN RESISTANT COMPOSITIONS

Michael S. Williams, Rome, Ga., assignor to Peach State Labs, Inc., Rome, Ga.

Continuation-in-part of Ser. No. 457,348, Dec. 27, 1989, Pat. No. 5,061,763, and a continuation-in-part of Ser. No. 341,774, Apr. 20, 1989, Pat. No. 4,940,757. This application Oct. 28, 1991, Ser. No. 783,580

Int. Cl.[5] C08G *8/30, 63/48*

U.S. Cl. 525—502 **14 Claims**

1. An aromatic polymeric stain resistant composition wherein at least some of the aromatic moieties in the polymer are sulfonated and at least some of the aromatic moieties in the polymer contain free hydroxyl groups, prepared by:

(i) allowing a hydroxyaromatic compound to react with a compound selected from the group consisting of an unsaturated carboxylic acid, unsaturated carboxylic acid anhydride, unsaturated carboxylic acid chloride, unsaturated carboxylic acid precursor, saturated carboxylic acid, saturated carboxylic acid anhydride, saturated carboxylic acid chloride, saturated carboxylic acid precursor, saturated isocyanate and an unsaturated isocyanate;

(ii) homopolymerizing or copolymerizing the ester formed in step (i) with an aldehyde in an aldehyde condensation reaction to form an aromatic condensation polymer; and then (iii) allowing the product of step (ii) to react with an acrylic acid, or α-substituted acrylic acid, or a mixture thereof in the presence of a free radical agent.

5,310,829

QUATERNARY POLY(ISO) QUINOLINEDIYL AND PREPARATION THEREOF

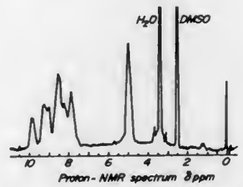
Takakazu Yamamoto, and Takaki Kanbara, both of Yokohama, Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,104

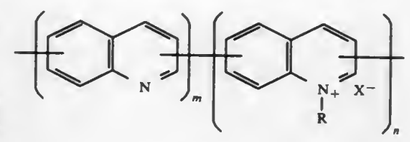
Claims priority, application Japan, Aug. 12, 1992, 4-215113

Int. Cl.[5] C08G *73/06*

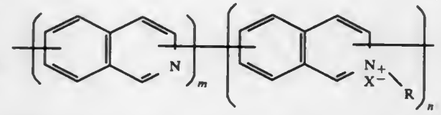
U.S. Cl. 525—540 **4 Claims**



1. A quaternary (iso)quinolinediyl polymer comprising, as a recurring structural unit, a divalent group represented by the following chemical formula (1) or (2):



or



wherein m+n is an integer of at least 5 R represents an alkyl group, and X represents a halogen atom, and which divalent group is derived from a condensed heterocyclic compound in which nitrogen atom in ring is alkylated, quaternary (iso)-quinoline by eliminating two hydrogen atoms at arbitrary positions thereof.

5,310,830

EPOXY RESIN, MALEIMIDE AND OH- AND EPOXY-CONTAINING COMPOUND

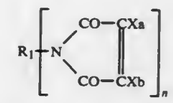
Toshinao Okitsu, and Shinichi Sato, both of Tokyo, Japan, assignors to Konishi Co., Ltd., Osaka, Japan

Continuation of Ser. No. 545,468, Jun. 28, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,026

Int. Cl.[5] C08L *63/02, 63/04, 79/08*

U.S. Cl. 525—502 **19 Claims**

1. A heat-curable two-part heat-resistant resin composition comprising (A) a resin composition as a first part and (B) polyamine hardener as a second part, said composition (A) being prepared by heating a mixture of component (a) maleimide resin represented by a general formula:



where R' is an organic group having a valency of n, Xa and Xb are the same or different monovalent atoms or groups selected from the group consisting of hydrogen atom, halogen atom and organic group, and n is an integer of 1 to 4, component (b) an epoxy resin having at least two epoxy groups in the molecule and component (c) a compound having one alcoholic or phenolic OH group and at least one epoxy group in the molecule with the proviso that component (b) excludes the compound of component (c), to effect a Michael addition reaction between components (a) and (c).

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5,310,831

PROCESS FOR PRODUCING A VINYL TERPOLYMER USING REACTORS ARRANGED IN SERIES

Katsuaki Maeda, Yokohama; Akihiro Watanabe, Tokyo, and Hajime Nishihara, Yokohama, all of Japan, assignors to Asahi Kasei Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP90/00704, § 371 Date Jan. 30, 1991, § 102(e) Date Jan. 30, 1991, PCT Pub. No. WO90/15100, PCT Pub. Date Dec. 13, 1990

PCT Filed May 30, 1990, Ser. No. 640,436

Claims priority, application Japan, May 30, 1989, 1-134568; Sep. 6, 1989, 1-229207; Sep. 6, 1989, 1-229325; Oct. 5, 1989, 1-258925

Int. Cl.[5] C08F *2/00, 26/00*

U.S. Cl. 526—66 **1 Claim**

1. A method for the production of a thermoplastic copolymer comprising the following components:

an aromatic vinyl compound unit in an amount of 30–70% by weight,

an acrylonitrile or methacrylonitrile unit in an amount of 4–40% by weight, and

an N-substituted maleimide unit in an amount of 26–50% by weight of the thermoplastic copolymer;

wherein the content of each of the components in each molecular weight fraction of the thermoplastic copolymer is 80–120% of the content of the components in said thermoplastic copolymer, said thermoplastic copolymer having substantially no acetone-insoluble content, having a weight average molecular weight of not less than 100,000 and not more than 300,000 and a number average molecular weight of not less than 50,000 and not more than 150,000, and having a residual N-substituted maleimide monomer content of not more than 50 ppm in the copolymer, which comprises copolymerizing a monomer mixture comprising 30 to 90% by weight of an aromatic vinyl compound, 4 to 40% by weight of acrylonitrile or methacrylonitrile, and 5 to 50% by weight of an N-substituted maleimide by continuous solution polymerization in a complete mixing type reaction vessel and a laminar flow reaction vessel arranged in series, wherein not less than 30% by weight of the monomer mixture is copolymerized in the complete mixing type reaction vessel and not less than 50% by weight of the monomer mixture is copolymerized in the laminar flow reaction vessel.

5,310,832

PROCESS FOR PRODUCING VINYL CHLORIDE-BASED POLYMER

Shuji Ohnishi, Lake Jackson, Tex., and Tadashi Amano, Kamisu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,610

Claims priority, application Japan, May 19, 1992, 4-151505

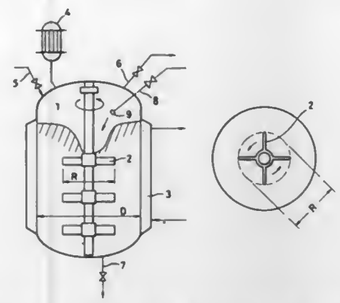
Int. Cl.[5] C08F *2/18, 14/06*

U.S. Cl. 526—86 **6 Claims**

1. A process for producing a vinyl chloride-based polymer by suspension polymerization of vinyl chloride or a vinyl chloride-based monomeric mixture in an aqueous medium in a polymerization vessel equipped with an agitator comprising a centrally located shaft extended downward from the top of said vessel and an agitating element attached to said shaft, comprising the steps of:

introducing a polymerization initiator into an aqueous medium containing the vinyl chloride or the monomeric mixture and flowing under agitation in the polymerization vessel,

wherein said polymerization initiator is introduced onto the surface of the aqueous medium through a nozzle disposed in a gas-phase zone in said polymerization vessel, the



introduction being made at a position located inside the diameter of said agitating element being rotated.

5,310,833

PROCESS FOR FEEDING CATALYST TO FLUIDIZED BED FOR VAPOR PHASE POLYMERIZATION

Kunimichi Kubo, Meguro; Motokazu Watanabe; Mamoru Yoshikawa, both of Kawasaki; Masatoshi Morikawa, Setagaya, and Yoshihisa Yamaguchi, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company, Ltd., Tokyo, Japan

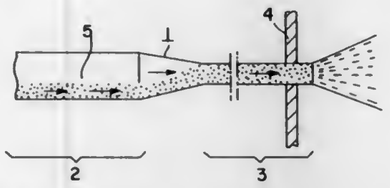
Continuation of Ser. No. 842,094, Mar. 19, 1992, Pat. No. 5,202,396. This application Feb. 22, 1993, Ser. No. 20,758

Claims priority, application Japan, Jul. 20, 1990, 2-192424

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] C08F *2/34*

U.S. Cl. 526—88 **8 Claims**



8. A process according to claim 7 wherein the promoter is a solution of triethylaluminum in hexane.

5,310,834

MIXED CHROMIUM CATALYSTS AND POLYMERIZATIONS UTILIZING SAME

Stanley J. Katzen, Buffalo Grove; Thomas J. Pullukat, Hoffman Estates; Michael W. Lynch, Schaumburg, all of Ill., and Louis J. Rekers, Wyoming, Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 675,378, Mar. 26, 1991, Pat. No. 5,198,400, which is a continuation-in-part of Ser. No. 570,935, Aug. 22, 1990, Pat. No. 5,081,089, which is a division of Ser. No. 338,476, Apr. 14, 1989, Pat. No. 4,981,927, which is a continuation of Ser. No. 52,654, May 20, 1987, abandoned. This application Dec. 16, 1992, Ser. No. 992,289

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] C08F *4/24*

U.S. Cl. 526—114 **21 Claims**

1. In a process for the particle form polymerization of ethylene, to produce high density resins useful for blow molding having broadened molecular weight distributions, the improvement comprising conducting the polymerization in the presence of a mixed catalyst consisting essentially of first and second silica-supported chromium catalyst components present at a weight ratio from 10:1 to 1:10 and each component containing from 0.1 to 2.0 weight percent chromium and thermally activated by heating in a non-reducing atmosphere at a temperature from 450° F. to 1700° F.; at least one of said catalyst components containing an additional metallic or non-metallic element selected from aluminum, titanium, zirconium, boron or phosphorus, the silica support of said first catalyst component having a pore volume from 1.7 to 3.1 cc/g, the silica support of said second catalyst component having a pore volume from 1.0 to 2.0 cc/g, and the silica supports of said first and second catalyst components differing in pore volume by at least 0.3 cc/g.

5,310,835

TRANSPARENT TWO-PART ACRYLIC ADHESIVE COMPOSITION AND THE METHOD OF USE THEREOF

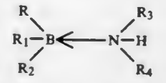
Martin M. Skoultchi, Somerset, and Dilip K. Ray-Chaudhuri, Bridgewater, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Sep. 30, 1993, Ser. No. 130,069

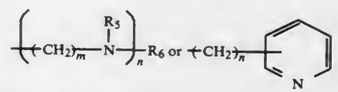
Int. Cl.[5] C08F *4/52*

U.S. Cl. 526—198 **12 Claims**

1. In a curable two-part adhesive composition wherein one part comprises a polymerizable acrylic monomer and an effective amount of a stabilized organoboron amine complex initiator of the formula:



where R, R_1 and R_2 are alkyl of 1 to 10 carbon atoms or phenyl, R_3 and R_4 are hydrogen or alkyl of 1 to 10 carbon atoms; or



where R_5 and R_6 are hydrogen or alkyl of 1 to 10 carbon atoms, m is 2 to 10 and n is 1 to 6; and the second part contains an effective destabilizing amount of an organic acid activator having the formula:

R—COOH

where R is H, alkyl or alkenyl of 1 to 8 carbon atoms or aryl of 6 to 10 carbon atoms, the improved composition providing a transparent or clear bond in the cured adhesive wherein the acrylic monomer comprises about 45% or more by weight, based on the total weight of acrylic monomer in the composition, of a monomer selected from the group consisting of benzyl acrylate or methacrylate, 2-phenoxyethyl acrylate or methacrylate, phenyl acrylate or methacrylate and 2-phenylethyl acrylate or methacrylate.

5,310,836

PROCESS FOR SYNTHESIZING FLUOROPOLYMERS

Theodore A. Treat, Washington, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1993, Ser. No. 103,413

Int. Cl.[5] C08F *2/00*

U.S. Cl. 526—204 **11 Claims**

1. In the process for synthesizing a fluoropolymer, comprising polymerizing at least one fluoromonomer in a polymerization medium containing a non-aqueous liquid phase, the improvement comprising carrying out said polymerization in the presence of a perfluorinated cyclic tri-substituted amine having the nitrogen atom in the ring and no N—F bond, having at least four atoms in the ring, having a total of 3–12 carbon atoms, and optionally containing an additional hetero atom, substantially constituting said non-aqueous liquid phase.

5,310,837

LIQUID CRYSTALLINE COLORANT POLYMER

Michael May, Darmstadt, Fed. Rep. of Germany, assignor to Roehm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

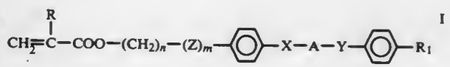
Filed Oct. 23, 1992, Ser. No. 965,703

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135080

Int. Cl.[5] C08F *26/02, 20/34*

U.S. Cl. 526—245 **8 Claims**

1. A liquid crystalline polymer which forms exclusively a nematic liquid crystalline phase comprising repeating units derived from one or more liquid crystalline azo dye monomers M having formula I:



wherein R is hydrogen or methyl; R_1 is an alkyl group of 1 to 8 carbon atoms, or a halogen substituent; X is a —COO—or —N=N—group; Y is a —COO—or —N=N—group; n is an integer from 6 to 11; m is 0 or 1; Z is oxygen; and A is an aromatic group having lateral asymmetry; with the provision that X and Y are each different or both are azo groups, wherein said polymer comprises units derived from said monomer M in an amount of from 5 to 100%.

7. A liquid crystalline polymer as claimed in claim 1, wherein R_2 represents fluorine, chlorine, bromine, or an alkyl group of from 1–2 C atoms.

5,310,838

FUNCTIONAL FLUOROPOLYMERS

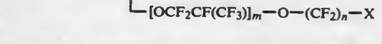
Ming-Hong Hung, and Paul R. Resnick, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 7, 1993, Ser. No. 115,060

Int. Cl.[5] C08F *18/20*

U.S. Cl. 526—245 **8 Claims**

1. Fluoropolymer comprising repeat units of perfluoro-2,2-dimethyl-1,3-dioxole and the repeat unit



wherein X is $(CH_2)_p$—O—COR or COOR and m=0–20, n=1–10, p=1–4, and R is alkyl having 1–6 carbon atoms or phenyl.

5,310,839

COPOLYMERS OF VINYL DIOXOLANES AND MALEIMIDES

Richard W. Blevins, Rochester, and S. Richard Turner, Pittsford, both of N.Y., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 30, 1992, Ser. No. 998,205

Int. Cl.[5] C08F *222/40, 224/00*

U.S. Cl. 526—262 **8 Claims**

1. A copolymer comprising polymerized repeating mono-

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meric units of (a) a maleimide reactant and (b) a 4-vinyl-1,3-dioxolane reactant.

5,310,840

ENERGY-POLYMERIZABLE ADHESIVE, COATING AND FILM

Peggy S. Willett, Stillwater; Janis Robins, St. Paul; Kent S. Tarbutton, Lake Elmo, and Michael A. Kropp, Cottage Grove, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 823,819, Jan. 22, 1992, Pat. No. 5,252,694. This application Jul. 29, 1993, Ser. No. 98,837

Int. Cl.[5] **C08F** *224/00, 220/10;* **C09D** *163/10;* **C09J** *137/00*

U.S. Cl. 526—273 **6 Claims**

1. An epoxy-acrylate coating comprising (a) a substrate, and (b) a polymerized product of an epoxy-acrylate polymerizable composition comprising:
   1. at least one free radically polymerizable acrylate monomer;
   2. at least one cationically polymerizable epoxy monomer;
   3. a catalyst system comprising;
      (a) at least one organometallic complex salt.
      (b) a thermally decomposable ester reaction product of a tertiary alkyl alcohol and an acid that forms a chelation complex with the metal ion of the organometallic complex salt.
      (c) optionally, peroxide, and
      (d) optionally, at least one free radical initiator;
   4. optionally, a buffer compound; and
   5. optionally, a mono- or polyfunctional alcohol.

5,310,841

LIQUID COMPOSITION POLYMERIZABLE TO YIELD ORGANIC GLASSES WITH LOW WATER ABSORPTION AND HIGH THERMAL STABILITY

Fiorenzo Renzi, Gorgonzola; Franco Rivetti, Schio, and Ugo Romano, Vimercate, all of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Continuation of Ser. No. 285,045, Dec. 15, 1988, abandoned. This application Sep. 26, 1990, Ser. No. 590,498

Claims priority, application Italy, Dec. 18, 1987, 23083 A/87

Int. Cl.[5] **C08F** *18/24, 222/12, 222/26*

U.S. Cl. 526—314 **6 Claims**

1. A liquid polymer organic glass composition having low water absorption and high thermal stability, comprising a mixture of monomeric and oligomeric bis(allyl carbonates) which are the transesterification reaction product of:
   (a) a diallyl-carbonate, and
   (b) 1,4-cyclohexane dimethanol, with a molar ratio of the diallyl-carbonate to the 1,4-cyclohexane dimethanol of from 3:1 to 6:1.

5,310,842

HIGHER ALKOXY-SUBSTITUTED ORGANOPOLYSILOXANE

Shoji Ichinohe, and Syuichi Arai, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 973,530, Nov. 9, 1992, abandoned, which is a continuation of Ser. No. 759,340, Sep. 13, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 46,287

Claims priority, application Japan, Sep. 14, 1990, 2-245944

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] **C08G** *77/08*

U.S. Cl. 528—12 **3 Claims**

1. A method for the preparation of a higher alkoxy-substituted diorganopolysiloxane represent-ed by the general formula

$$R^4R^2_2Si{-}O{-}(-SiR^2_2{-}O{-})_p{-}(-SiR^2R^3{-}O{-})_r{-}SiR^2_2R^4,$$

in which R^2 is, each independently from the others, an unsubstituted or substituted monovalent hydrocarbon group having 1 to 15 carbon atoms, R^3 is an alkoxy group having 4 to 30 carbon atoms, R^4 is R^2 or R^3, the subscript p is zero or a positive integer and the subscript q is a positive integer with the proviso that p+q is 13 or larger, which comprises: subjecting an organohydrogenpolysiloxane represented by the general formula

$$R^1R^2_2Si{-}O{-}(-SiR^2_2{-}O{-})_p{-}(-SiR^2H{-}O{-})_q{-}SiR^2_2R^1,$$

in which R^2 has the same meaning as defined above, R^1 is a hydrogen atom directly bonded to the silicon atom or R^2 and the subscripts p and q each have the same meaning as defined above, and an aliphatic alcohol represented by the general formula

$$R^3H,$$

in which R^3 has the same meaning as defined above, to a dehydrogenation reaction in the presence of a platinum compound and an organic acid.

5,310,843

ORGANOPOLYSILOXANE AND METHOD FOR THE PREPARATION THEREOF

Yoshitsugu Morita, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 953,436

Claims priority, application Japan, Oct. 17, 1991, 3-298315

Int. Cl.[5] **C08G** *77/08*

U.S. Cl. 528—15 **7 Claims**

1. A method for producing an organopolysiloxane having an epoxy-containing organic group comprising reacting in the presence of
   (A) a hydrosilylation-reaction catalyst, with
   (B) an SiH-containing organopolysiloxane with the general formula

$$(R^1{-}SiO_{1/2})_d(H{-}SiO_{1/2})_e(SiO_{4/2})_f$$

   R^1 is a non-alkenyl monovalent hydrocarbon group, d is 0 or a positive number, e and f are positive numbers, d/f has a value of 0 to 4, e/f has a value of 0.05 to 4, and (d+e)/f has a value of 0.2 to 4,
   (C) an aliphatically unsaturated epoxy-containing organic compound, and optionally
   (D) an alkoxysilylalkene, where the moles of aliphatic unsaturation in (C) and (D) is less than the moles of silicon-bonded hydrogen atoms in (B).

5,310,844

PROCESS FOR THE PRODUCTION OF ORGANYLOXY END-TERMINATED POLYSILOXANES

Wilhelm Weber, and Karl-Heinz Sockel, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,550

Int. Cl.[5] **C08G** *77/06*

U.S. Cl. 528—14 **2 Claims**

1. In the production of a triorganyloxysilyl or organodiorganyloxysilyl end-terminated poly-(diorganosiloxane) by reacting an α,ω-dihydroxypoly(diorganosiloxane) with a tetraorganyloxysilane or organotriorganyloxysilane in the presence of at least one alkali metal hydroxide, alkali metal alkoxide or alkali metal silanolate as a catalyst, the improvement which comprises effecting the reaction also in the presence of additionally at least one alkali metal salt which is soluble in the reactive system and is selected from the group consisting of:
   a) formic acid or an optionally substituted, linear, branched or cyclic alkyl carboxylic acid or a polycarboxylic acid with 1 to 30 C atoms,
   b) an optionally substituted aromatic carboxylic acid,
   c) a semi-ester of carbonic acid of the formula R^6-O(CO)OH,
   d) an aryl or alkyl sulphonic acid of the formula R^7-SO_2-(OH) and
   e) an aryl or alkyl phosphonic acid of the formula R^8-PO-$(OH)_2$ wherein
   R^6, R^7, or R^8 designate an aliphatic or aromatic, optionally substituted hydrocarbon group with 1 to 10 atoms.

5,310,845

METHOD OF PREPARING CURABLE SILOXANE POLYMERS CONTAINING INTEGRAL UV ABSORBERS

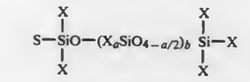
William J. Raleigh, Rensselaer; Raymond J. Thimineur, Scotia, both of N.Y., and James A. Campagna, Pittsfield, Mass., assignors to General Electric Company, Waterford, N.Y.

Filed Nov. 10, 1992, Ser. No. 974,054

Int. Cl.[5] **C08G** *77/06*

U.S. Cl. 528—18 **10 Claims**

1. A method of preparing a curable siloxane polymer containing integral UV stabilizers comprising those of the following general formula:



wherein each X is the same or different and represents hydrogen, hydroxyl, hydrocarbon or substituted hydrocarbon or a curable silylated ultraviolet absorbing group provided at least one of X is a curable silylated ultraviolet absorbing group, a is 0, 1 or 2, and b is above about 1, said method comprising:
   (a) mixing a curable solvent and a siloxane to form a siloxane mixture;
   (b) adding to said siloxane mixture a curable silylated UV agent;
   (c) diluting the mixture obtained in step (b) with a co-solvent and mixing to form a solution;
   (d) adding a catalyst selected from aminofunctional silanes, quaternary ammonium salts, organofunctional amines or aminofunctional siloxanes to said solution and reacting.

5,310,846

FLUORINE-CONTAINING SILICONE RUBBER COMPOSITION

Hiroshi Inomata; Hirofumi Kishita; Shinichi Sato, all of Annaka; NOriyuki Koike, Yoshii, and Takashi Matsuda, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

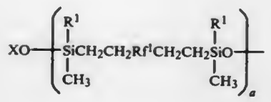
Filed Mar. 24, 1993, Ser. No. 36,252

Claims priority, application Japan, Mar. 24, 1992, 4-097043

Int. Cl.[5] **C08G** *77/08*

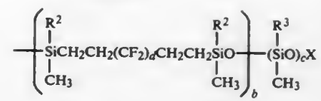
U.S. Cl. 528—24 **7 Claims**

1. A fluorine-containing silicone rubber composition comprising:
   (A) fluorocarbonsiloxane having the following general formula (1):



(1)

-continued

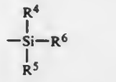


wherein
a is an integer of 2 to 300,
b is an integer of 0 to 300,
c is an integer of 0 to 5,000,
d is a integer of 2 to 8,
R^1 and R^2 are may be the same or different and each a substituted or unsubstituted monovalent hydrocarbon group free of aliphatic unsaturated groups,
R^3 is a substituted or unsubstituted monovalent hydrocarbon group containing an aliphatic unsaturated bond,
Rf^1 is a fluorine-containing organic group having the following general formula (2):



(2)

wherein f and h are each an integer of 1 to 5, g is an integer of 0 to 8, and e and i are each an integer of 0 to 1, provided that the number of the entire carbon atoms contained ranges from 11 to 30,
X is a triorganosiloxy group having the following general formula (3):



(3)

where R^4, R^5 and R^6 may be the same or different and each a monovalent hydrocarbon group having 1 to 8 carbon atoms, and
   (B) an organic peroxide.

5,310,847

POLYMER COMPOSITIONS BASED ON POLYTHIOURETHANES FOR THE MANUFACTURE OF ORGANIC GLASSES

Leanirith Yean, Longjumeau, and Christophe Bochu, Maisons-Alfort, both of France, assignors to Essilor International (Compagnie Generale d'Optique), Creteil, France

Continuation of Ser. No. 552,177, Jul. 13, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 896,795

Claims priority, application France, Jul. 13, 1989, 89 09492

Int. Cl.[5] **C08G** *18/00*

U.S. Cl. 528—44 **23 Claims**

1. A polyurethane composition suitable for the production of optical lenses having a refractive index higher than 1.6 and a glass transition temperature higher than 100° C., said polyurethane obtained by reacting a first component made of an at least difunctional polyisocyanate free of intramolecular sulfur atoms and a second component made of an acyclic saturated monomer having at least three reactive groups with respect to isocyanates per molecule, in respective amounts, to polymerize through formation of thiocarbamate and, optionally, carbamate links, wherein said reactive groups are —SH mercapto groups for at least 40% in number and are present in a proportion at least amounting to 45% by weight with respect to the molecular weight of said monomer.

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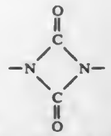
5,310,848

RESIN COMPOSITION FOR POWDER COATING

Tokuzo Nozaki; Katsuyoshi Atsumi, and Makiko Sakai, all of Aichi, Japan, assignors to Nippon Ester Co., Ltd., Aichi, Japan

Filed Jan. 29, 1993, Ser. No. 10,763
Claims priority, application Japan, Jan. 29, 1992, 4-038552
Int. Cl.[5] C08G *18/30, 18/80*
U.S. Cl. 528—45 **6 Claims**

1. A resin composition for a powder coating comprising a polyester A which does not substantially set to gel and has a hydroxyl value of at least 1,200 g eq/10^6 g, a polyester B which does not substantially set to gel and has a hydroxyl value of from 200 to 1,000 g eq/10^6 g, and an inner blocked isocyanate hardener, containing, self-blocked isocyanate groups of the formula:



wherein the weight ratio of said polyester A to said polyester B is 70:30 to 10:90 and the difference (absolute value) in gel time between said polyester A and said polyester B is at least 3 minutes.

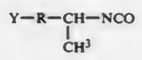
5,310,849

AMINO AND AMMONIUM ISOCYANATES, A PROCESS FOR THEIR PREPARATION, THEIR USE FOR THE PRODUCTION OF POLYMERS CONTAINING AMMONIUM GROUPS AND THE POLYMERS THUS PRODUCED

Hans-Josef Buysch, Krefeld; Klaus König, Odenthal; Alexander Klausener, Krefeld; Klaus Szablikowski, Walsrode, and Jörg Breckwoldt, Rotenburg, all of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany

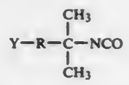
Filed Apr. 28, 1992, Ser. No. 875,622
Claims priority, application Fed. Rep. of Germany, May 1, 1991, 4114221
Int. Cl.[5] C08G *18/70*
U.S. Cl. 528—71 **6 Claims**

1. Amino and ammonium isocyanates corresponding to the general formula I



(I)

or formula (Ia)



(Ia)

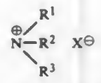
wherein

R denotes an alkylene group wherein the number of carbon atoms between Y and —NCO is 2 to 10,

Y denotes an amino group of the formula



an ammonium group of the formula



R^1, R^2 and R^3 are identical or different and denote alkyl groups having 1 to 5 carbon atoms or

R^1 and R^2 together with the N atom optionally denote (CH_2), $(CH_2)_5$ or $(CH_2CH_2)O$,

R^3 optionally denotes allyl, methallyl or benzyl, and

$X^{\oplus}$ denotes an anion of a strong acid.

5,310,850

HEAT RESISTANT POLY(URETHANE AMIDEIMIDE) COMPOSITION AND METHOD FOR PREPARING THE SAME

Jyh-Chien Chen, Chayi; Sheng Yaw Hsu, Taichung; Tzong-Ming Lee, Tainan, and Jing-Pin Pan, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 26, 1992, Ser. No. 966,738
Int. Cl.[5] C08G *18/34, 18/66*
U.S. Cl. 528—73 **18 Claims**

1. A method for making linear heat resistant urethane-amide-imide copolymer composition for use as wire coating varnish and film material comprising the steps of:

(a) dissolving X mols of at least one diol compound in an inert organic solvent to form a mixture solution;

(b) adding Y mols of at least one diisocyanate compound into the mixture solution from step (a), wherein Y is greater than X, thus indicating an excess amount of diisocyanate compound in the mixture solution, and stirring the mixture solution resulted therefrom;

(c) adding Z mols of trimellitic anhydride into the mixture solution from step (b) wherein Y equals X plus Z; and

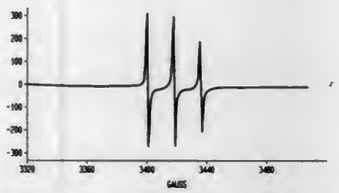
(d) stirring the mixture solution from step (c) to produce said linear urethane-amide-imide copolymer composition.

5,310,851

SPIN-LABELLED THICKENERS

Willie Lau, Ambler, Pa., assignor to Rohm & Haas, Philadelphia, Pa.

Filed Feb. 4, 1993, Ser. No. 13,887
Int. Cl.[5] C08G *18/00, 18/28, 18/77, 18/81*
U.S. Cl. 528—73 **6 Claims**



1. A hydrophobically-modified thickener comprising a polymer comprising:

(a) at least one hydrophilic portion; and

(b) at least two terminal hydrophobic portions, wherein at least one terminal hydrophobic portion comprises a covalently bonded stable free radical

wherein said polymer is the reaction product of:

(i) at least one water-soluble polyether polyol;

(ii) at least one water-insoluble organic polyisocyanate; and

(iii) at least one hydrophobic monofunctional active hydrogen compound containing a covalently-bonded stable free radical.

5,310,852

ELASTIC POLYURETHANE FIBER

Koji Hirai; Michihiro Ishiguro; Tatuya Oshita; Setuo Yamashita; Katsura Maeda, and Yukiatsu Komiya, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

PCT No. PCT/JP92/00539, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/19800, PCT Pub. Date Nov. 12, 1992
PCT Filed Mar. 18, 1992, Ser. No. 958,320
Claims priority, application Japan, Apr. 26, 1991, 3-124839
Int. Cl.[5] C08G *18/30*
U.S. Cl. 528—83 **9 Claims**

1. An elastic polyurethane fiber comprising a polyurethane obtained by copolymerizing a polymer diol (A) an organic diisocyanate (B) and a chain extender (C);

said polymer diol (A) that constitutes the polyurethane being a polyester diol and/or polyesterpolycarbonate diol having an average molecular weight of 1,000 to 6,000, and satisfying the following condition (I);

$$5.4 \leqq \frac{\text{total number of carbon atoms}}{\text{numbers of ester bonds and carbonate bonds}} \leqq 10.0 \quad \text{(I)}$$

wherein the total number of carbon atoms means the number of the carbon atoms contained in the polymer diol and excluding those contained in the ester bonds and carbonate bonds thereof;

the diol units that constitute said polymer diol containing branched diols in an amount of at least 10 mol%;

said polyurethane constituting said elastic fiber satisfying the following conditions (II) and (III)

$$45\% \leqq \text{long chain hard segment content} \leqq 75\% \quad \text{(II)}$$

wherein the long chain hard segment content means the ratio of the amount of long chain hard segments containing at least 3 repeating units from (B) and (C) combinedly, to the amount of total hard segments comprising components (B) and (C) and, linked thereto via urethane bonds, the terminal diol component of (A) , the amounts of said three components being determined on the three components taken out by alcoholysis of component (A) of said polyurethane with an alkali-reethanol solution;

$$\text{Retention of long chain hard segment content after heat melting} \geqq 85\% \quad \text{(III)}$$

wherein the retention of long chain hard segment content after heat melting means the ratio between the contents of long chain hard segments after and before melt-kneading at 230° C. for 60 minutes of said polyurethane constituting said elastic fiber.

5,310,853

PRECATALYZED CATALYST COMPOSITIONS, PROCESS FOR PREPARING RESINS, CURABLE COMPOSITIONS, ARTICLES RESULTING FROM CURING THE RESULTANT COMPOSITIONS

Ha Quoc Pham; Michael B. Cavitt, and Pamela A. Hardcastle, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 825,466, Jan. 24, 1992, Pat. No. 5,202,407. This application Jan. 21, 1993, Ser. No. 6,876
Int. Cl.[5] C08G *59/68*
U.S. Cl. 528—89 **10 Claims**

1. In a process for preparing advanced resins by reacting one or more compounds having an average of more than one vicinal epoxide group per molecule with one or more compounds having an average of more than one, but not more than about two hydrogen atoms which are reactive with a vicinal epoxide group per molecule in the presence of a phosphonium or phosphine catalyst, with the proviso that (i) the composition can contain minor amounts of one or more compounds having an average or more than two hydrogen atoms which are reactive with a vicinal epoxide group per molecule which amounts are insufficient to cause gellation of the reaction mixture, and/or (ii) the composition can contain minor amounts of one or more compounds having an average of more than two vicinal epoxide groups per molecule which amounts are insufficient to cause gellation of the reaction mixture; wherein the improvement comprises employing as the phosphonium or phosphine catalyst, one having at least three C_1 to C_4 alkyl phenyl groups attached to the phosphorus atom per molecule.

5,310,854

EPOXY RESIN COMPOSITION AND PROCESS THEREFOR

Ben W. Heinmeyer; Pong S. Sheih, and David S. Wang, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 23, 1989, Ser. No. 398,034
Int. Cl.[5] C08G *59/00;* **C08F** *283/00;* **B32B** *27/38*
U.S. Cl. 528—104 **37 Claims**

1. An advanced resin composition prepared from a compound having an average of more than one vicinal epoxide group per molecule and an epoxide equivalent weight of from about 170 to about 200 and a compound having an average of more than one aromatic hydroxyl group per molecule wherein the resultant advanced resin has an epoxide or aromatic hydroxyl equivalent weight of from about 200 to about 50,000 and a weight average molecular weight of from about 400 to about 200,000; said advanced epoxy resin composition containing from about 0.01 to about 3 percent by weight of an organic solvent based on the combined weight of advanced epoxy resin and organic solvent.

5,310,855

AROMATIC CONDENSATION PRODUCTS

Klaus Walz; Udo Hendricks; Hans-Albert Ehlert, all of Leverkusen, and Fritz Lesszinsky, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 751,270, Aug. 28, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,290
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028534
Int. Cl.[5] C08G *8/18, 8/28*
U.S. Cl. 528—137 **5 Claims**

1. A method of producing a substantially colorless, water-soluble aromatic formaldhyde-condensation product containing sulphonate or carboxylate groups, comprising adding from 0.1 to 20% (by weight of the finished condensation product) of a reducing agent during or after the condensation reaction of formaldehyde with at least one aromatic compound capable of undergoing condensation therewith, said aromatic compound being selected from the group consisting of xylene, mesitylene, phenol, cresols, xylenols, butylphenol, cyclohexylphenol, anisole, phenoxyethanol, phenoxypropanol, phenoxyacetic acid, phenolsulphinic acid, anisole-sulphonic acid, diphenyl ether, ditolyl ether, dihydroxydiphenyl sulphone, 2,2-bis-4-hydroxyphenylpropane, 4-hydroxydiphenyl sulphone, bis-(hydroxyethoxyphenyl) sulphone, salicylic acid, 4-hydroxybenzoic acid, naphthalene, naphthols, isobutylnaphthalene, naphtholsulphonic acids, naphthyl methyl ether, biphenylsulphonic acid, sulphonated dihydroxydiphenyl sulphone and diphenyl-ether-sulphonic acid, optionally in the presence of at least one non-aromatic compound capable of undergoing condensation, the reducing agent being selected from the group consisting of hydrogen, activated hydrogen, metal hydride, dithionite, thiosulfate, sulphoxylate, hydroxymethanesulphinate, sulphinate, thiourea dioxide, phosphorous acid, hypophosphorous acid and salts thereof.

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5,310,856

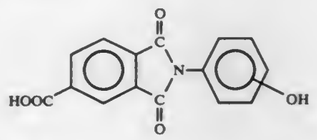
HIGH-TRANSPARENT AND HEAT-RESISTANT POLYESTERIMIDE

Chien-Hui Li, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 11, 1993, Ser. No. 2,143
Int. Cl.[5] C08G *73/10*
U.S. Cl. 528—170 **13 Claims**

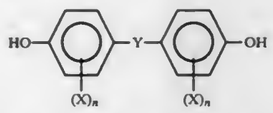
1. A heat-resistant and transparent polyesterimide prepared from a reaction mixture consisting essentially of:

(a) imidihydroxycarboxylic acid represented by the following formula:



(b) at least one dicarboxylic acid; and

(c) at least one dihydroxy compound represented by the following formula:



wherein Y is selected from the group consisting of $-C(CH_3)_2-$, $-SO_2-$, $-CH(CH_3)-$, $-(CH_2)_m-$, wherein m is an integer of 1 to 10, —O—, and —S—; X is selected from the group consisting of H, Cl, and Br; and n is an integer of 0 to 4.

5,310,857

POLY(ETHYLENE 2,6-NAPHTHALENE DICARBOXYLATE)/AROMATIC KETONE COMPOSITIONS HAVING REDUCED FLUORESCENCE

Allan S. Jones, Church Hill; David E. Mills, Kingsport, both of Tenn., and Mitchell A. Winnik, Toronto, Canada, assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 9, 1993, Ser. No. 103,645
Int. Cl.[5] C08G *14/00*
U.S. Cl. 528—220 **18 Claims**

1. A poly(ethylene 2,6-naphthalene dicarboxylate) composition with reduced fluorescence comprising repeat units from:

(a) a dicarboxylic acid component which comprises at least 85 mole percent of a dicarboxylic acid selected from the group consisting of naphthalene-2,6-dicarboxylic acid, and naphthalene-2,6-dicarboxylate ester;

(b) a diol component which comprises at least 85 mole percent of ethylene glycol; and

(c) 0.1 to 5 mole percent, based on 100 mole percent dicarboxylic acid and 100 mole percent diol, of a copolymerizable aromatic ketone which has at least one acyl group directly attached to the aromatic ring.

5,310,858

PROCESS FOR PREPARING POLYMERS OF P-XYLYLENE FROM P-XYLYLENE DIESTERS

Andreas Greiner, and Peter Simon, both of Marburg, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,431
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202672
Int. Cl.[5] C08G *61/04*
U.S. Cl. 528—271 **7 Claims**

1. A process for preparing polymers of p-xylylene having repeating units of the formula (I)

$$+CH_2-Ar-CH_2\overline{)_n} \quad (I)$$

by pyrolysis, where n is the degree of polymerization and is $\geqq 2$, wherein ester compounds of the formula (II)

$$-R-CO-O-CH_2-Ar-CH_2-O-CO-R \quad (II)$$

are pyrolyzed in one stage under conditions resulting in cleavage of the ester bonds under a partial pressure of the esters of $p \leqq 10$ mbar at temperatures $T \geqq 500°$ C., with the formation of corresponding derivatives of 1,4-dimethylene-2,5-cyclohexadiene, but without the latter being cleaved further in subsequent reactions, and the polymers of p-xylylene formed by spontaneous polycondensation of the derivatives of 1,4-dimethylene-2,5-cyclohexadiene were then cooled, Ar and R have the following meanings:

—Ar— is a 1,4-phenylene radical or another C_6–C_{12} aromatic or heteroaromatic radical in which the bonds are in the para position or a comparable coaxial or antiparallel position and which is unsubstituted or substituted by one or more branched or unbranched, unsubstituted or halo-substituted C_1–C_4-alkyl, alkenyl or alkoxy radicals or C_6–C_{12}-aryl or heteroaryl radicals, hydroxyl, nitro, nitrile or amino groups or with R•—S— or R•—CO—O radicals, where R• is a C_1–C_4-alkyl radical or a C_6–C_{12}-aryl radical;

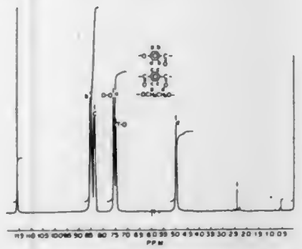
R— is branched or unbranched C_1–C_4-alkyl or C_6–C_{12}-aryl radical or an R•—CO—O radical, where R• has the meaning given above.

5,310,859

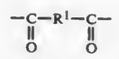
LIQUID CRYSTALLINE POLYESTERS AND METHODS FOR THEIR PRODUCTION

Osamu Kishiro, Atsugi; Rie Shirahama, Sagamihara; Yasuyuki Sakata, Machida; Hideaki Tanaka, Yokohama, and Ken Honma, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Apr. 5, 1991, Ser. No. 681,066
Claims priority, application Japan, Apr. 6, 1990, 2-91640
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—308 **6 Claims**



1. A liquid crystalline polyester consisting essentially of dicarboxylic acid units of the following formula (1):

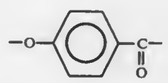


(I)

wherein R^1 is bivalent aromatic hydrocarbon group having from 6 to 18 carbon atoms, diol units of the following formula (2):

$$-OCH_2CH_2O- \quad (2)$$

and p-oxybenzoic acid units of the following formula (3):



(3)

wherein (i) where moles of said units (1), (2) and (3) are represented by [1], [2] and [3], respectively, they satisfy the following formula (I):

$$0.65 \leqq \frac{[3]}{[1]+[3]} \leqq 0.88 \quad (I)$$

and

$$0.80 \leqq \frac{[1]}{[2]} \leqq 1.2$$

(ii) the sequence of the units satisfies the following formula

$$0 \leqq r_1 \leqq 0.88 \text{ or } 0 \leqq r_2 \leqq 0.88$$

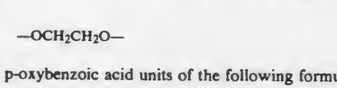
wherein r_1 is a sequence forming ratio which is defined by formula (II):

$$\frac{[3\text{-}1]}{[3]} = \frac{r_1 \times [3]}{r_1 \times [3] + 2 \times [1]} \quad (II)$$

and r_2 is a sequence forming ratio which is defined by formula (III):

$$\frac{[3]-[3\text{-}4]}{[3]} = \frac{r_2 \times [3]}{r_2 \times [3] + 2 \times [2]} \quad (III)$$

where [3-1] represents the mole of p-oxybenzoic acid units having on their —O— side a further p-oxybenzoic acid, represented by the underlined portion of formula (3-1):



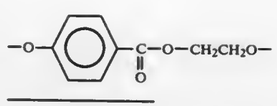
(3-1)

and [3-4] represents the mole of p-oxybenzoic acid units having on their



side a diol unit of formula (2),

represented by the underlined portion of the formula (3-4):



(3-4)

each among the p-oxybenzoic acid units of the formula (3), and

(iii) the viscosity of a solution of the polyester as measured in p-chlorophenol/o-dichlorobenzene (30° C., concentration: 0.5 g/dl) is at least 0.4 dl/g.

5,310,860

PROCESS FOR THE PREPARATION OF POLYAMIDES WITH OLIGOMER FORMATION

Philippe Maj, Bad Honnes, Fed. Rep. of Germany; Jean-Marc Sage, Serquigny, France; Philippe Blondel, Bernay, France; Didier Judas, Paris, France, and Didier Judas, Paris, France, assignors to Elf Atochem, S. A., France

Filed Dec. 30, 1992, Ser. No. 999,484
Claims priority, application France, Dec. 31, 1991, 91 16404
Int. Cl.[5] C08G *69/16*
U.S. Cl. 528—324 **19 Claims**

1. A process for the manufacture of polyamides consisting of the following reactants:

(a) lactam(s), corresponding amino acid(s) or the substantially stoichiometric combination of one or more aliphatic diamine(s) and of one or more dicarboxylic aliphatic acid(s), or a mixture thereof,

(b) aromatic diacid(s) HOOC-Ar-COOH, where Ar is a divalent aromatic radical, and (c) cycloaliphatic, aliphatic, aromatic-aliphatic diamine(s) or a mixture thereof comprising the steps of:

(i) reacting 10 to 90% by weight of the aliphatic, cycloaliphatic, aromatic-aliphatic diamine or a mixture thereof with the lactam, corresponding amino acid or the substantially stoichiometric combination of one or more aliphatic diamine(s) and of one or more dicarboxylic aliphatic acid(s) of a mixture thereof and with the aromatic diacid reactants, to produce a polyamide oligomer; and

(ii) reacting the remainder of the aliphatic, cycloaliphatic, aromatic-aliphatic diamine(s) or a mixture therefore with the oligomer produced in stage (i) in one or more subsequent stages.

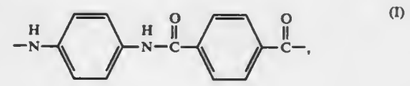
5,310,861

DRAWABLE HIGH TENSILE STRENGTH ARAMIDS

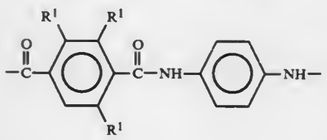
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 19, 1992, Ser. No. 904,192
Int. Cl.[5] C08G *69/26*; C09K *3/00*
U.S. Cl. 528—339 **14 Claims**

1. A drawable aramid random copolymer, consisting essentially of repeat units of the formulas



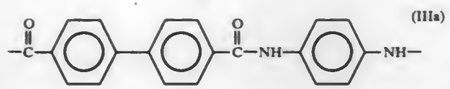
(I)



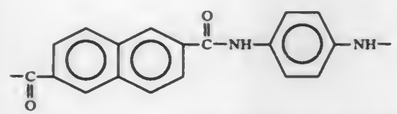
(II)

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-continued
and


(IIIa)

or


(IIIb)

wherein each R^1 is independently hydrogen, chloro, bromo, or nitro, provided that one or two of R^1 are chloro, bromo or nitro, and that at least one of R^1 is hydrogen; and further provided that the molar ratio of I to II plus IIIa or IIIb is about 75:25 to about 90:10, and the molar ratio of II to IIIa or IIIb is about 90:10 to about 10:90.

5,310,862
PHOTOSENSITIVE POLYIMIDE PRECURSOR COMPOSITIONS AND PROCESS FOR PREPARING SAME

Hideshi Nomura, Otsu; Masuichi Eguchi, Kyoto, and Masaya Asano, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

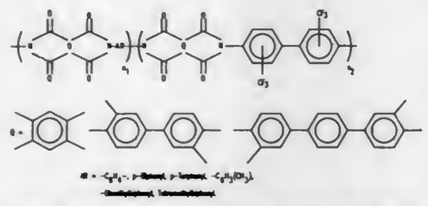
Filed Aug. 6, 1992, Ser. No. 926,766
Claims priority, application Japan, Aug. 20, 1991, 3-208312; Oct. 14, 1991, 3-264836
Int. Cl.[5] C08G *69/26, 73/12*
U.S. Cl. 528—353 **25 Claims**

1. A photosensitive polyimide precursor composition containing (a) a poly(amic acid) wherein at least one molecular end is an acid ester of an alcohol, (b) a compound containing carbon-carbon unsaturation having photoreactivity and (c) a photopolymerization initiator.

5,310,863
POLYIMIDE MATERIALS WITH IMPROVED PHYSICO-CHEMICAL PROPERTIES

Krishna G. Sachdev, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1993, Ser. No. 1,985
Int. Cl.[5] C08G *73/12, 69/26*
U.S. Cl. 528—353 **19 Claims**



1. A copolyamic acid composition, comprising the following components:

about 100 mole parts of a combination of a linear aromatic diamine and a linear or non-coplanar aromatic diamine containing a $—CF_3$ group, said linear or non-coplanar aromatic diamine containing said $—CF_3$ group comprising 5–30% of said combination and said linear aromatic diamine comprising 70–95% of said combination; and

about 98 to 100 mole parts of a rigid or semi-rigid aromatic dianhydride.

5,310,864
GLYCIDYL ESTER/IMIDAZOLE ADDUCT-CONTAINING COMPOSITION

Johannes J. M. H. Wintraecken; Antonius J. M. Zwijnenberg, and Virgilius C. J. N. Van Liempd, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

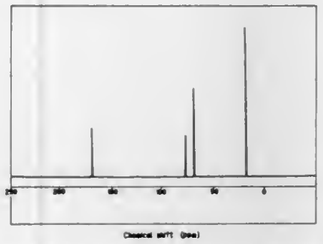
Filed Nov. 20, 1992, Ser. No. 984,173
Claims priority, application European Pat. Off., Nov. 22, 1991, 91203069.9
Int. Cl.[5] C08G *59/68, 65/10;* **C07D** *233/54*
U.S. Cl. 528—361 **2 Claims**

1. A composition comprising an adduct of (a) a glycidyl ester of an alpha,alpha-branched saturated monocarboxylic acid containing a total of 5 to 18 carbon atoms and (b) 2-isopropyl imidazole, said adduct being the product of contacting the glycidyl ester and the 2-isopropyl imidazole at a temperature within the range of about 100° to about 150° C. for a time within the range of about 1 to about 5 hours.

5,310,865
POLYHYDROXYCARBOXYLIC ACID AND PREPARATION PROCESS THEREOF

Katashi Enomoto; Masanobu Ajioka, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,696
Claims priority, application Japan, Dec. 18, 1991, 3-336820; Jun. 16, 1992, 4-156526
Int. Cl.[5] C08G *63/06*
U.S. Cl. 528—361 **37 Claims**



1. A process for preparing polyhydroxycarboxylic acid comprising conducting dehydration condensation of a hydroxycarboxylic acid or an oligomer thereof in a reaction mixture containing an organic solvent and less than 500 ppm of water to obtain polyhydroxycarboxylic acid having a weight average molecular weight of at least about 15,000.

5,310,866
PROCESS FOR STRETCHING A SWOLLEN FLEXIBLE-CHAIN POLYMER

Hendrikus J. J. Rutten, Maastricht, and Adrianus W. M. Braam, Susteren, both of Netherlands, assignors to DSM N.V., Netherlands

Filed Aug. 31, 1992, Ser. No. 937,185
Claims priority, application Netherlands, Sep. 6, 1991, 9101503
Int. Cl.[5] C08F *6/00*
U.S. Cl. 528—502 **17 Claims**

1. A process for stretching an article containing a flexible-chain polymer, and article consisting essentially of a block copolymer of a first and a second polymer, said first polymer being said flexible-chain polymer, wherein said article is swollen in a solvent selected from said first polymer, and then stretched, whereby an article containing an oriented first polymer is obtained.

5,310,867
PRODUCTION OF PARTICULATE POLY(METH)ACRYLIMIDES

Siegmund Besecke, Hameln; Andreas Deckers, Ludwigshafen; Hermann Fischer, and Eckhard Neufeld, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,110
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1992, 4205882
Int. Cl.[5] C08F *6/06*
U.S. Cl. 528—502 **1 Claim**

1. A process for producing a particulate form of a poly(meth)acrylimide which comprises

A) exiting a solution of the poly(meth)acrylimide having a solids content from 25 to 55% by weight from a nozzle in a multiplicity of jets of liquid,

B) breaking up the jets of liquid into droplets having a narrow size distribution by setting the nozzle swinging longitudinally or transversely or by pulsing the liquid inside the nozzle or by providing for some distance between the point of exit from the nozzle and the point of entry into a coagulating bath,

C) precipitating the resulting droplets by introducing them into a coagulating bath which contains a liquid in which the poly(meth)acrylimide does not dissolve, and

stripping the poly(meth)acrylimide particles of solvent residues and other impurities.

5,310,868
PROCESSES USING SOLID-ACID CATALYST COMPOSITIONS

Howard P. Angstadt, Media, Pa.; Elmer J. Hollstein, Wilmington, Del., and Chao-Yang Hsu, Media, Pa., assignors to Sun Company, Inc., Philadelphia, Pa.

Division of Ser. No. 800,796, Nov. 27, 1991, Pat. No. 5,214,017.
This application Dec. 17, 1992, Ser. No. 995,632
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—721 **10 Claims**

1. In a process for catalytic reaction of an acyclic saturated compound having 2 to 10 carbon atoms per molecule with an acyclic unsaturated compound having 2 to 5 carbon atoms per molecule to form compounds having greater molecular weight than the starting materials, the improvement which comprises utilizing as catalyst for such reaction a sulfated and calcined mixture of (1) a support comprising an oxide or hydroxide of a Group IV-A element, (2) an oxide or hydroxide of a first metal selected from the group consisting of a Group VI, Group VII or Group VIII metal, (3) a second metal selected from the group consisting of a Group I-B, II-B, III-A, III-B, IV-B, V-A or VI-A metal and (4) a third metal selected from the group consisting of the metals of the Lanthanide Series of the IUPAC Periodic Table.

5,310,869
PRINTING PLATES IMAGEABLE BY ABLATIVE DISCHARGE AND SILICONE FORMULATIONS RELATING THERETO

Thomas E. Lewis, E. Hampstead, N.H., and Michael T. Nowak, Gardner, Mass., assignors to Presstek, Inc., Hudson, N.H.

Continuation-in-part of Ser. No. 616,377, Nov. 21, 1990, Pat. No. 5,212,048. This application Feb. 25, 1993, Ser. No. 22,528
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—272 **35 Claims**

1. A recording medium capable of being imaged using ablative discharge, comprising a substrate having applied to at least one surface thereof a composition comprising a cured polymeric silicone matrix consisting essentially of the reaction product of:

a. a first polysiloxane component having a molecular weight in excess of 300,000 and comprising substantially linear chains of substituted siloxane units, some of which units contain, as substituents, at least one reactive functional group, each functional group being randomly interspersed in each first-component chain;

b. a second polysiloxane component having a molecular weight in excess of 5,000 but no greater than 70,000, and comprising substantially linear chains of substituted siloxane units, each of which is capped by terminal siloxane units that each contain, as substituents, at least one reactive functional group; and

c. a cross-linking component having a molecular weight no greater than 5,000 and containing functional groups reactive reactive with at least some of the functional groups of the first component or of the second component or of both components; wherein

d. the relative weight proportion of the first component to the second component is at least 10% and no more than 90%.

5,310,870
FLUOROALKENE/HYDROFLUOROCARBON TELOMERS AND THEIR SYNTHESIS

Richard E. Peavy, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 13, 1992, Ser. No. 929,003
Int. Cl.[5] C08F *14/26, 14/18*
U.S. Cl. 528—392 **12 Claims**

1. A process for preparing a fluorotelomer which consists essentially in reacting tetrafluoroethylene or hexafluoropropylene with a hydrofluorocarbon telogen in solution in said hydrofluorocarbon in the presence of a free radical initiator at a temperature in excess of 110° C. and up to 200° C., wherein said hydrofluorocarbon:

consists essentially of an acyclic organic compound having a boiling point at atmospheric pressure between 25° C. and 150° C. and containing 2 to 8 carbon atoms, fluorine, at least one hydrogen, with or without one or more ether oxygen atoms, in which there are at least

as many fluorine atoms as there are hydrogen atoms; provided that said organic compound contains neither any

(1) alkyl group which is bonded to a perfluorinated group; nor

(2) adjacent $—CH_2—$ groups, except when said adjacent $—CH_2—$ groups are part of a cyclic organic compound,

and recovering a fluorotelomer having a number average molecular weight between 1800 and 75,000.

5,310,871
PROCESS FOR PREPARING POLYMERS BASED ON CARBON MONOXIDE AND OLEFINS

Anna Sommazzi, S. Margherita Ligure; Fabio Garbassi, Novara; Giovanni Mestroni, Trieste, and Barbara Milani, Gradisca d'Isonzo, all of Italy, assignors to Enichem S.P.A., Milan, Italy

Filed Feb. 8, 1993, Ser. No. 14,527
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 **19 Claims**

1. Process for preparing polymers based on carbon monoxide and at least one olefin, which comprises reacting carbon monoxide and the olefin in the presence of a solvent, and:

(a) a catalyst of general formula (I):

$$[Pd(chel)(chel')]^{++}[A^-]_2 \quad (I)$$

wherein chel and chel', which are the same, or different from each other, represent a nitrogen or phosphorus containing bidentate chelating agent and A^- represents an anion of an acid having a pKa smaller than 6;

without or with

(b) an organic oxidizer agent.

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5,310,872

POLYESTER TYING TAPE-LIKE MATERIALS

Takeshi Takahashi; Ryosuke Kamei; Shigenori Terazono; Tetuya Takahashi; Akira Nakamura, all of Kawasaki, and Eiichiro Takiyama, Kamaknra, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,436

Claims priority, application Japan, May 8, 1992, 4-116241; May 12, 1992, 4-119195; May 12, 1992, 4-119198

Int. Cl.[5] C08G *18/34*

U.S. Cl. 525—440 14 Claims

1. Tying tape-like material formed by extrusion molding, comprising as a main component an aliphatic polyester having a melt viscosity of 1.0×10^3–4.0×10^4 poises at a temperature of 190° C. and a shear rate of 100 sec^{-1}, and having a melting point of 70°–190° C.

5,310,873

CYCLOHEXAPEPTIDE COMPOUND

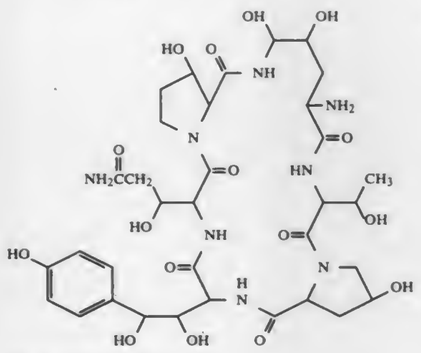
Dennis M. Schmatz, Cranford; Jan S. Tkacz, Piscataway; Robert E. Schwartz, and Mervyn Turner, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 12, 1990, Ser. No. 492,001

Int. Cl.[5] A61K *37/02;* C07K *7/06, 5/12*

U.S. Cl. 530—317 1 Claim

1. A cyclohexapeptide of the formula



(I)

and acid addition salts thereof.

5,310,874

INTEGRIN ALPHA SUBUNIT CYTOPLASMIC DOMAIN POLYPEPTIDES AND ANTIBODIES

Richard N. Tamura, San Diego, and Vito Quaranta, La Jolla, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed May 3, 1991, Ser. No. 695,564

Int. Cl.[5] C07K *7/00, 15/28*

U.S. Cl. 530—324 11 Claims

1. An antibody molecule that immunoreacts with a polypeptide consisting of an amino acid residue sequence shown in SEQ ID NO 3 from residue 1068–1091.

5,310,875

PEPTIDES CORRESPONDING TO MEMBRANE-BOUND IGA

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation of Ser. No. 788,120, Nov. 4, 1991, abandoned, which is a division of Ser. No. 455,080, Dec. 22, 1989, Pat. No. 5,089,603, which is a continuation-in-part of Ser. No. 369,479, Jun. 21, 1989, Pat. No. 5,079,344. This application Apr. 30, 1993, Ser. No. 55,917

Int. Cl.[5] C07K *7/00*

U.S. Cl. 530—324 3 Claims

1. A peptide having the amino acid sequence of SEQ ID NO:1.

5,310,876

EXPRESSION OF HIV1 AND HIV2 POLYPEPTIDES AND THEIR USE

Hubert Bayer, Weilheim, and Erhard Kopetzki, Penzberg, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof

Filed Jan. 25, 1991, Ser. No. 648,796

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1990, 4002636

Int. Cl.[5] C07K *3/00;* C12Q *1/70;* C07H *15/12*

U.S. Cl. 530—350 4 Claims

1. A fusion protein, comprising at least one antigenic or immunogenic determinant from a protein coded for by an HIV2 env region and having the amino acid sequence set forth in SEQ ID NO: 4,

fused to a polypeptide not having an antigenic or immunogenic determinant, said polypeptide consisting essentially of an N-terminal sequence —NH_2—Met—Tyr—Leu.

5,310,877

METHOD FOR SEPARATING SERUM ALBUMIN AND GAMMA GLOBULIN

Harold G. Spencer, Clemson, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 8, 1993, Ser. No. 44,515

Int. Cl.[5] C07K *3/02, 3/26, 15/06*

U.S. Cl. 530—364 3 Claims

1. A method for the separation of gamma globulin from albumin contained in an aqueous solution of both by ultrafiltration using an altered substrate microfilter having a water permeability of 0.2–25 gallons per square foot per day per pound per square inch comprising a porous solid filter substrate one surface of which is impregnated with particulate solids affixed within the pores of the substrate having an average particle size of 0.1–0.5 micrometer at the feed interface, the aqueous solution being characterized in that the total concentration of protein in the aqueous solution is 0.1–2% by weight, the pH of the aqueous solution is 8–10 and the solution contains no more than 0.01 mole per liter of inorganic electrolyte, the albumin being enriched in the retentate and the gamma globulin being enriched in the permeate.

5,310,878

BIOSYNTHETIC CEREBROSPINAL FLUID CONTROL AND METHOD OF USE

Kathryn D. Herring, Miami, Fla., assignor to Baxter Diagnostics Inc., Deerfield, Ill.

Filed Oct. 23, 1992, Ser. No. 965,456

Int. Cl.[5] C07K *3/28, 3/20, 3/28*

U.S. Cl. 530—369 5 Claims

1. A method for purifying prealbumin comprising:

(a) diluting human serum with a first buffer;

(b) extracting globulins, ceroplasm and albumin from said human serum of Step (a) after dilution using ion exchange chromatography resulting in at least one fraction containing prealbumin;

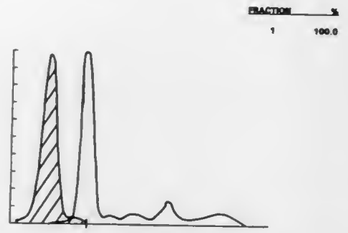
(c) isolating said prealbumin containing fractions eluted from Step (b) by immunodiffusion;

(d) pooling said prealbumin containing fractions of Step (c) and concentrating and buffer exchanging said resulting prealbumin containing pooled fraction with a second buffer;

(e) removing albumin from said prealbumin containing pooled fraction of Step (d) affinity chromatography;

(f) isolating the prealbumin containing fractions eluted from Step (e) by immunodiffusion;

(g) pooling said prealbumin containing fractions of Step (e) and concentrating and buffer exchanging said resulting prealbumin containing pooled fraction of Step (f) with a third buffer;



(h) removing globulins from said prealbumin containing pooled fraction of Step (g) by ion exchange chromatography;

(i) pooling, concentrating and buffer exchanging said prealbumin containing fraction of Step (h) with a fourth buffer;

(j) purifying said prealbumin containing fraction of Step (i) by gel filtration to remove any residual proteins;

(k) isolating said purified prealbumin fractions from Step (j); and

(l) pooling, concentrating and sterile filtering said purified prealbumin fractions of Step (k); wherein the method yield is greater than about 60% prealbumin.

5,310,879

ANTIBODIES WHICH IMMUNOREACT WITH LAPINE LIPOPOLYSACCHARIDE BINDING PROTEIN (LBP)

Richard J. Ulevitch, Del Mar, and Peter S. Tobias, Encinitas, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 367,454, Jun. 16, 1989, Pat. No. 5,245,013, which is a continuation-in-part of Ser. No. 6,710, Dec. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 728,833, Apr. 30, 1985, abandoned. This application Mar. 2, 1992, Ser. No. 847,562

Int. Cl.[5] C07K *15/28, 3/0*

U.S. Cl. 530—388.1 4 Claims

1. Antibodies that immunoreact with denatured lapine lipopolysaccharide binding protein and with a synthetic polypeptide containing about 6 to about 39 amino acid residues corresponding to all or a portion of the sequence of the amino-terminal 39 residues of lapine lipopolysaccharide binding protein, said 39 amino-terminal residues having the amino acid residue sequence, from left to right and in the direction from amino-terminus to carboxy-terminus, of

Thr—Asn—Pro—Gly—Leu—Ile—Thr—Arg—Ile—Thr—Asp—Lys—Gly—Leu—Glu—Tyr—Ala—Ala—Arg—Glu—Gly—Leu—Leu—Ala—Leu—Gln—Arg—Lys—Leu—Asn(Leu)—Gly—Val—Thr—Leu—Pro—Asp—Phe(Ser)—Asp—Gly;

wherein each of said parenthesized amino acid residues is an alternative to the immediately preceding residue in said sequence.

5,310,880

PURIFICATION OF MULLERIAN INHIBITING SUBSTANCE

Patricia K. Donahoe, Weston; Richard C. Ragin, Brayton, and David T. MacLaughkin, Saugus, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Apr. 12, 1991, Ser. No. 683,957

Int. Cl.[5] C07K *3/20, 15/06, 15/14*

U.S. Cl. 530—395 9 Claims

1. A method of purifying recombinant MIS from host cells capable of expressing recombinant MIS comprising

(a) binding the recombinant MIS to an antibody-chromatography matrix, said antibody being specific to MIS,

(b) substantially removing contaminating enzymes having MIS proteolytic activity or inhibitors of MIS antiproliferative activity by adding to the matrix an effective amount of an alkali metal halide solution wherein said solution contains an effective amount of chelating agent, and

(c) recovering the recombinant MIS by eluting with an acid solution having a pH of between about 2.5 and 4.0.

5,310,881

GLYCOSAMINOGLYCAN-MODIFIED PROTEIN

Katsukiyo Sakurai, and Kyosuke Miyazaki, both of Tokyo, Japan, assignors to Seikagaku Corporation, Tokyo, Japan

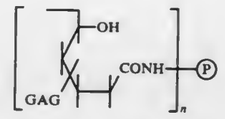
Continuation of Ser. No. 596,830, Oct. 12, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,910

Claims priority, application Japan, Mar. 30, 1990, 2-081163

Int. Cl.[5] C07K *15/14*

U.S. Cl. 530—395 7 Claims

1. A glycosaminoglycan-modified protein represented by the formula:



(III)

wherein P represents a protein residue exclusive of n amino groups from the protein; n is an integer of from 1 to 100; and GAG represents a glycosaminoglycan residue exclusive of a reducing terminal sugar moiety from the glycosaminoglycan.

5,310,882

SOMATOTROPINS WITH ALTERATIONS IN THE α-HELIX 3 REGION

Deborah T. Chaleff, Pennington, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Nov. 30, 1990, Ser. No. 621,197

Int. Cl.[5] C12N *15/18;* G02B *5/30*

U.S. Cl. 530—399 10 Claims

1. A somatotropin in which the alpha-helix 3 region is mutated, thereby enhancing the aqueous solubility of said somatotropin over the aqueous solubility of the native alpha-helix 3 form of said somatotropin while maintaining biological activity in a sustained release formulation.

5,310,883

CHIMERIC FIBROBLAST GROWTH FACTORS

Andrew P. Seddon, Monroe; Peter Bohlen, Peekskill, both of N.Y., and Yakov Gluzman, Upper Saddle River, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 615,202, Nov. 23, 1990, abandoned. This application Nov. 4, 1991, Ser. No. 783,694

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—399 3 Claims

1. A recombinant chimeric basic fibroblast growth factor selected from the group consisting of:

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(a) a chimeric basic fibroblast growth factor having about 155 amino acids wherein the alanine at position 3 and the serine at position 5 are replaced with glutamic acid;
(b) a chimeric basic fibroblast growth factor having about 155 amino acids wherein the alanine at position 3 and the serine at position 5 are replaced with glutamic acid, and the cysteines at positions 78 and 96 are replaced with an amino acid selected from the group consisting of serine, lysine, aspartic acid, glutamic acid, asparagine, glutamine, histidine, isoleucine, leucine, valine, phenylalanine, tyrosine, methionine, threonine, proline, alanine, glycine, arginine and tryptophan; and
(c) the chimeric basic fibroblast growth factor of (a) or (b) having no N-terminal methionine;

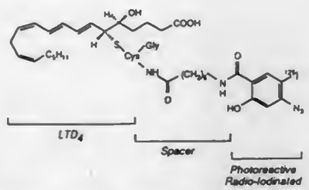
wherein the amino acid at positions 78 and 96 are derivatized with a substituent selected from the group consisting of: CH_2COOH, $CH(CO_2H)$ $(CH_2)_x(CO_2H)$, $CH_2CONR_3R_4$, R_5, $(CH_2)_nSO_3$, $CHCH_2CONR_3CO(CH_2)_mNR_3R_4$, CH_2O-$COCH_2R_5$ and SR_6; wherein R_3 and R_4 are each H, $(CH_2)_xCO_2H$, $CHCO_2H(CH_2)_xCO_2H$ or C_1–C_6 alkyl optionally substituted with from 0 to 2 hydroxyl groups or polyethylene glycol; R_5 is C_1–C_6 alkyl or C_1–C_4 alkoxymethyl and R_6 is C_1–C_6 alkyl, polyethylene glycol or phenyl optionally substituted with one or two carboxylic acid or sulfuric acid groups; n is an integer of from 0 to 4; m is an integer of from 2 to 4; and x is an integer of from 1 to 3.

5,310,884

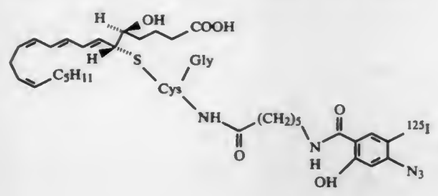
LTD$_4$ RECEPTOR AND PHOTOAFFINITY PROBE

Robert Zamboni, Pointe-Claire, and Kathleen M. Metters, Montreal, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Apr. 3, 1992, Ser. No. 862,692
Int. Cl.^{5} C07K *3/06, 15/14, 7/00*
U.S. Cl. 530—408 **1 Claim**



1. The LTD$_4$ receptor, which is a 45 kD protein, as determined by SDS-PAGE, bound to [^{125}I]azido of the formula:

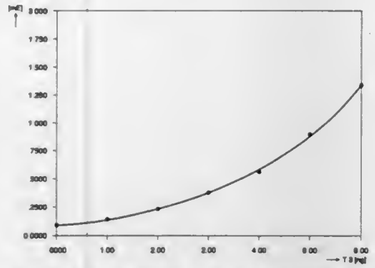


5,310,885

PROCESS FOR IMMOBILIZING A PROTEIN CONTAINING SUBSTANCE ON A SOLID PHASE

Josef Maier, Weilheim; Dieter Mangold, Maxdorf, and Reiner Schlipfenbacher, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 450,556, Dec. 14, 1989, abandoned. This application May 19, 1992, Ser. No. 887,239
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842700
Int. Cl.^{5} C07K *3/18, 17/02, 17/08, 17/12*
U.S. Cl. 530—413 **9 Claims**



1. Process for immobilizing a protein containing substance onto a solid phase comprising:
(i) forming a water soluble aggregate of a polymer containing more than one molecule of a particular protein;
(ii) contacting a liquid containing said aggregate in dissolved form with a hydrophilic solid phase so as to adsorptively, and non-covalently bind said aggregate to said hydrophilic solid phase; and
(iii) drying said solid phase to form a solid phase having said aggregate immobilized and non-covalently bound thereon.

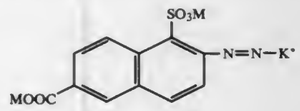
5,310,886

AZO COMPOUNDS WHICH CONTAIN A 1-SULFO-6-CARBOXY-2-AMINONAPHTHALENE DIAZO COMPONENT RADICAL AND USE THEREOF AS DYES

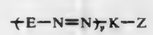
Hartmut Springer, Königstein/Taunus, and Kurt Hussong, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/02201, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/09914, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 17, 1990, Ser. No. 867,184
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1989, 3943287
Int. Cl.^{5} C09B *62/507;* **D06P** *1/38*
U.S. Cl. 534—638 **21 Claims**

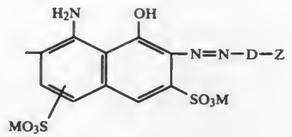
1. An azo compound conforming to the formula (1)


(1)

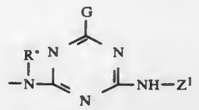
where:
M is hydrogen or a salt-forming metal atom,
K^o is a radical of the formula (2A) or (2B)


(2A)

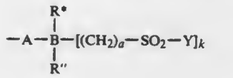
-continued


(2B)

where
M is as defined above,
Z is a radical of the formula (3)

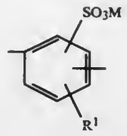

(3)

where
R^o is hydrogen or alkyl of 1 to 4 carbon atoms or is alkyl of 1 to 4 carbon atoms which is substituted by sulfo, carboxyl, sulfato, phosphato, hydroxyl, methoxy, ethoxy, phenyl, monosulfophenyl or disulfophenyl,
G is halogen, methoxy, hydroxyl or a substituted or unsubstituted anilino radical in which one of the substituents may also be a fiber-reactive group, and
Z^1 is a radical of the formula (3a) or (3b)

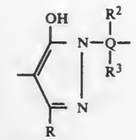

(3a)

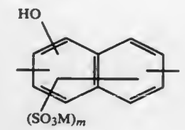

(3b)

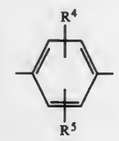
where
A is a direct bond, alkylene of 2 to 6 carbon atoms, or phenylene which may be substituted by 1 or 2 substituents selected from the group consisting of methyl, ethyl, methoxy, ethoxy, chlorine, sulfo and carboxyl,
B is a benzene or naphthalene radical,
$R^\bullet$ is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, fluorine, bromine, chlorine, sulfo, carboxyl, carbalkoxy of 2 to 5 carbon atoms, trifluoromethyl, carbamoyl or N-(C_1–C_4-alkyl)carbamoyl, if B is a benzene ring, or is hydrogen or sulfo if B is a naphthalene ring,
R'' is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, nitro or sulfo, if B is a benzene ring, or is hydrogen or sulfo if B is a naphthalene radical,
Y is vinyl or an ethyl group which contains in the β-position a substituent which is eliminable under alkaline conditions to leave a vinyl group,
alk is alkylene of 2 to 6 carbon atoms,
a is zero, 1 or 2, and
k is 1 or 2,
D is a radical of the formula (4)

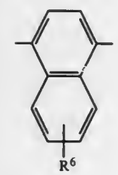

(4)

where
M is as defined above, and
R^1 is hydrogen or alkyl of 1 to 4 carbon atoms,
E is a radical of the formula (5a), (5b), (5c) or (5d)


(5a)


(5b)


(5c)


(5d)

where
R is hydrogen, alkyl of 1 to 4 carbon atoms, cyano, carboxyl, carbalkoxy of 2 to 5 carbon atoms, carbamoyl or phenyl,
Q is a benzene or naphthalene radical,
R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, fluorine, bromine, chlorine, sulfo, carboxyl, carbalkoxy of 2 to 5 carbon atoms, trifluoromethyl, carbamoyl or N-(C_1–C_4-alkyl)-carbamoyl, if Q is a benzene ring, or is hydrogen or sulfo if Q is a naphthalene ring,
R^3 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine or sulfo if Q is a benzene radical, or is hydrogen or sulfo if Q is a naphthalene radical,
R^4 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, bromine, chlorine, trifluoromethyl, sulfo, carboxyl or cyano,
R^5 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, amino, alkylamino of 1 to 4 carbon atoms, alkanoylamino of 2 to 5 carbon atoms, benzoylamino, ureido, N'-phenylureido, N'-(C_1–C_4-alkyl)-ureido, phenylsulfonyl or alkylsulfonyl of 1 to 4 carbon atoms,
R^6 is hydrogen or sulfo,
M is as defined above,
m is 1 or 2,
v is zero or 1, and
—K—N(R^o)— is the bivalent radical of a water-soluble coupling component.

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5,310,887
AQUEOUS INK COMPOSITION AND COLORANTS USEFUL THEREIN

Patrick D. Moore, Pacolet; Clifford R. King, Taylors, and Raj Batlaw, Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 806,926, Dec. 11, 1991, Pat. No. 5,176,745. This application Dec. 1, 1992, Ser. No. 983,960
Int. Cl.[5] C09B *29/00*
U.S. Cl. 534—729 **20 Claims**

1. A colorant comprising a compound of the formula:

$$A\text{—}\{Y\text{—}X\text{—}C(O)\text{—}R_1\text{—}C(O)OH\}_p$$

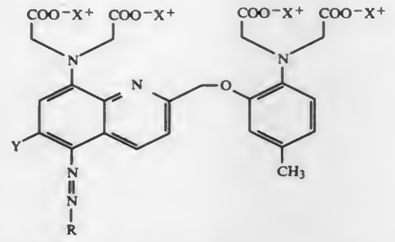
where A is an organic chromophore; Y is a polyoxyalkylene substituent having from 1 to 200 alkylene oxide radicals of $C_{2\text{-}18}$ alkylene oxides; X is a nucleophile selected from O, NR_2 and S, where R_2 is H or $C_{1\text{-}18}$ alkyl; R_1 is selected from alkylene, alkenylene, phenylene and phenylenealkylene, which may optionally be substituted with alkyl or alkenyl, provided that the total number of carbon atoms is between 2 and 30; and p is an integer from 1 to 6.

5,310,888
ARYLAZO CHROMOIONOPHORES

Michael L. Bloczynski, Elkhart, Ind.; Thomas Boecker, Leichlingen, United Kingdom, and Paul F. Corey, Elkhart, Ind., assignors to Miles Inc., Elkharb, Ind.

Filed Oct. 22, 1992, Ser. No. 964,860
Int. Cl.[5] C09B *29/44*; G01N *31/22, 33/52*
U.S. Cl. 534—767 **17 Claims**

1. An arylazo chromoionophore characterized by the formula:



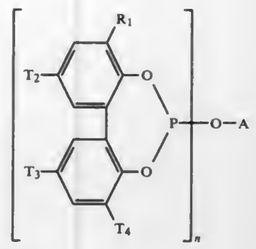
wherein X is hydrogen or a monovalent cation, Y is H or methoxy and R is a ringed aromatic organic structure which completes the structure of the azo dye.

5,310,889
CARBOHYDRATE SUBSTITUTED DIBENZO(D,F)(1,3,2)DIOXAPHOSPHEPIN STABILIZERS

Stephen D. Pastor, Danbury, Conn., and Joseph E. Babiarz, Amawalk, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,324
Int. Cl.[5] C07H *15/00*; C08K *5/00*; C08L *77/00*
U.S. Cl. 536—17.1 **11 Claims**

1. A compound of formula I



(I)

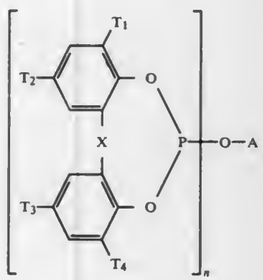
wherein
n is 1 to 6,
T_1, T_2, T_3 and T_4 are independently alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aryl of 6 to 10 carbon atoms or phenylalkyl of 7 to 15 carbon atoms, and
A is a carbohydrate residue which is a radical, diminished by a hydroxyl or thiol group or an amine hydrogen atom, of a protected monohydroxy-functional, monothiol-functional or monoamine-functional sugar, thio-sugar or amino-sugar or derivatives thereof belonging to the group of sugar alcohols, esters of sugar acid, aldo-sugar acid or keto-sugar acid, amino-sugar, sugar mercaptal or deoxy-sugar.

5,310,890
CARBOHYDRATE SUBSTITUTED DIBENZO[1(D,G)(1,3,2)DIOXAPHOSPHOCIN STABILIZERS

Stephen D. Pastor, Danbury, Conn., and Joseph E. Babiarz, Amawalk, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,323
Int. Cl.[5] C07H *15/00*; C08L *77/00*; C08K *5/00, 5/53*
U.S. Cl. 536—171 **13 Claims**

1. A compound of formula I



(I)

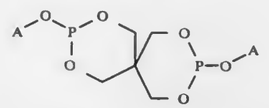
wherein
n is 1 to 6,
X is methylene, alkylidene of 2 to 8 carbon atoms or —S—,
T_1, T_2, T_3 and T_4 are independently alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aryl of 6 to 10 carbon atoms or phenylalkyl of 7 to 15 carbon atoms, and
A is a carbohydrate residue which is a radical, diminished by a hydroxyl or thiol group or an amine hydrogen atom, of a protected monohydroxy-functional, monothiol-functional or monoamine-functional sugar, thio-sugar or amino-sugar or derivatives thereof belonging to the group of sugar alcohols, esters of sugar acid, aldo-sugar acid or keto-sugar acid, amino-sugar, sugar mercaptal or deoxy-sugar; and with the proviso that when X is —S—, A is not 1,2:5,6-di-O-isopropylidene-D-glucofuranosyl.

5,310,891
3,9-CARBOHYDRATE SUBSTITUTED 2,4,8,10-TETRAOXA-3,9-DIPHOSPHASPIRO(5.5)UNDECANE PHOSPHITE STABILIZERS

Joseph E. Babiarz, Amawalk, N.Y., and Stephen D. Pastor, Danbury, Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,326
Int. Cl.[5] C07H *15/00*
U.S. Cl. 536—17.1 **5 Claims**

1. A compound of formula I



I

where A is a carbohydrate residue which is a radical, diminished by a hydroxyl or thiol group or an amine hydrogen atom, of a protected monohydroxy-functional, monothiol-functional or monoamine-functional sugar, thio-sugar or amino-sugar or derivatives thereof belonging to the group of sugar alcohols, esters of sugar acid, aldo-sugar acid or keto-sugar acid, amino-sugar, sugar mercaptal or deoxy-sugar.

5,310,892
NUCLEIC ACID SEQUENCE WHICH CODES FOR AND EXPRESSES HUMAN FIBRILLARIN AND USES THEREOF

John Aris, and Günter Blobel, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Dec. 10, 1990, Ser. No. 626,680
Int. Cl.[5] C07H *21/04*; C12N *15/12*
U.S. Cl. 536—23.5 **10 Claims**

1. An isolated nucleic acid molecule consisting essentially of a nucleatide sequence found in human genomic DNA encoding fibrillarin.

5,310,893
METHOD FOR HLA DP TYPING

Henry A. Erlich, Oakland, Calif.; Glenn T. Horn, Framingham, Mass.; Teodorica Bugawan, San Leandro, and Ann B. Begovich, El Cerrito, both of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 258,212, Oct. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 196,660, May 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 899,344, Aug. 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 893,331, Mar. 31, 1986, abandoned. This application May 4, 1989, Ser. No. 347,506
Int. Cl.[5] C07H *21/04*; C12Q *1/68*; C12N *15/00*
U.S. Cl. 536—24.31 **2 Claims**

1. An oligonucleotide probe selected from the group consisting of:

5'GAATTACCTTTCCAGGGA;
5'ATTACGTGTACCAGTTACG;
5'ATTACGTGTACCAGTTA;
5'CGTAACTGGTACACGTAAT;
5'CGTCCCTGGTACACGTAAT;
5'ATTACGTGCACCAGTTACG;
5'CCTGCTGCGGAGTACTG;
5'CAGTACTCCTCATCAGG;
5'CAGTACTCCGCCTCAGG;
5'CCTGAGGCGGAGTACTG;
5'CCTGATGAGGACTACTG;
5'GACATCCTGGAGGAGAAGC;
-continued
5'GCTCCTCCTCCAGGATGTC;
5'GACCTCCTGGAGGAGAAGC;
5'GCTCCTCCTCCAGGAGGTC;
5'GACCTCCTGGAGGAGGAG;
5'GACCTCCTGGAGGAGAGG;
5'CTGCAGGGTCATGGGCCCCCG;
5'CTGCAGGGTCACGGCCTCGTC;
5'GAATTACCTTTTCCAGGGAC;
5'GACCTCCTGGAGGAGGAGC;
5'GACCTCCTGGAGGAGAGGC;
5'AGCTGGGCGGGCCCATGAC;
5'AGCTGGACGAGGCCGTGAC;
5'CTGGTCGGGCCCATGACC;
5'ACATCCTGGAGGAGAAGC;
5'ACATCCTGGAGGAGGAGC;
5'ACCTCCTGGAGGAGAAGC;
5'TTACGTGTACCTGGGAC;
5'CCTGATGAGGAGTACTG;
5'CTGGGCGGGCCCATG; and
5'CTGGACGAGGCCGTG.

5,310,894
SOLID PHASE POLYNUCLEOTIDE SYNTHESES

Allen R. Zeiger, Philadelphia, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 666,342, Mar. 8, 1991, abandoned, which is a division of Ser. No. 581,063, Sep. 11, 1990, Pat. No. 5,021,550. This application Mar. 3, 1993, Ser. No. 25,891
Int. Cl.[5] C07H *21/04*
U.S. Cl. 536—25.3 **11 Claims**

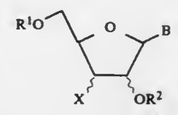
1. A method of preparing a polynucleotide comprising:
(a) reacting a nucleotide moiety with an intermediate which has a 3' hydroxyl end a 5' hydroxyl end and which is covalently bound to a solid support at a first hydroxyl end of said intermediate polynucleotide under conditions selected to covalently bond the nucleotide moiety with the intermediate polynucleotide, and;
(b) exposing the products of step (a) to reaction conditions selected to effect covalent bonding of at least a portion of any unreacted intermediate polynucleotide remaining after step (a) with the solid support at a second hydroxyl end of said intermediate polynucleotide.

5,310,895
METHOD FOR PRODUCTION OF NUCLEOSIDE DERIVATIVES BY SELECTIVE HYDROLYSIS

Hiroshi Shiragami; Yasuhiro Tanaka, and Hisao Iwagami, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 21, 1990, Ser. No. 631,953
Claims priority, application Japan, Dec. 21, 1989, 1-331951; Dec. 21, 1989, 1-331952
Int. Cl.[5] C07H *19/00*
U.S. Cl. 536—27.14 **32 Claims**

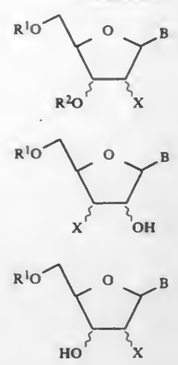
1. A process for production of a nucleoside represented by the structure of formula (III) or (IV) which comprises selectively hydrolyzing a nucleoside compound represented by the structure of formula (I) or (II) in the presence of a cyclodextrin and an inorganic base to selectively convert said compound into a nucleoside compound (III) or (IV);



(I)

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-continued



wherein:

B: a nucleoside base

R^1, R^2: a hydrolyzable acyl group having 1 to 12 carbon atoms;

R^3: a hydrolyzable acyl group having 1 to 12 carbon atoms or hydrogen; and,

X: a hydrogen atom, a halogen atom, an alkyl group having 1 to 12 carbon atoms or an acyloxy group having 1 to 12 carbon atoms.

5,310,896

PROCESS FOR PREPARING $\Delta^{1,4}$-PREGNADIENE-3,20-DIONES

Luc Devocelle, Saint Gratien, and Philippe Mackiewicz, Livry Gargan, both of France, assignors to Roussel UCLAF, France

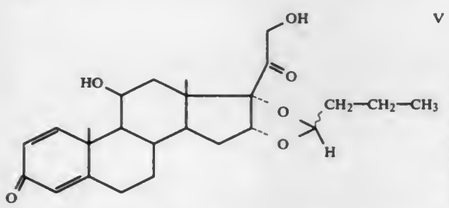
Division of Ser. No. 856,546, Mar. 24, 1992, abandoned. This application Nov. 12, 1992, Ser. No. 974,484

Claims priority, application France, Apr. 10, 1991, 91 04339

Int. Cl.[5] **C07J** *75/00*

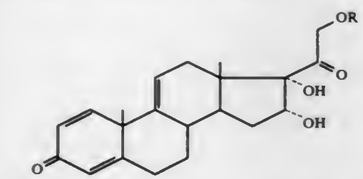
U.S. Cl. 540—63 **7 Claims**

1. A process for the preparation of a compound of the formula



V

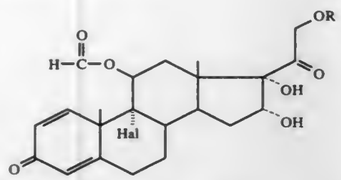
wherein the wavy line indicates the existence of two isomers, and reacting a compound of the formula



II

wherein R is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of 1 to 8 carbon atoms, allyloxycarbonyl, alkyoxycarbonyl and aralkoxycarbonyl of up to 8 carbon atoms, and alkyl sulfonyl and arylsulfonyl of up to 8 carbon atoms with a bromination agent or chlorination agent and a formyloxylation agent in an acid medium to obtain a compound of the formula

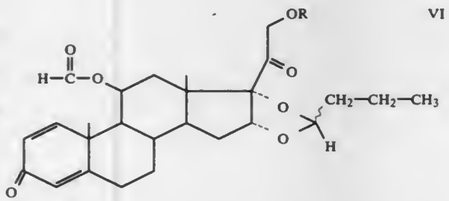
(III)



III

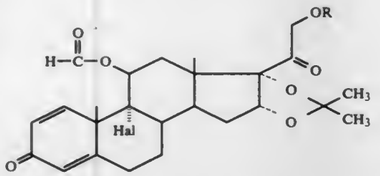
(IV)

wherein R is defined as above and Hal is bromine or chlorine, reacting the latter with acetone in the presence of a strong acid to obtain a compound of the formula



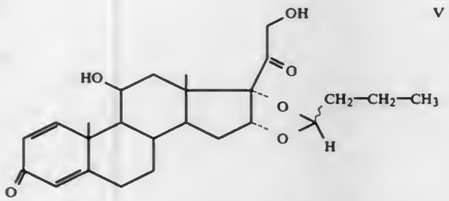
VI

and reacting the latter with a dehalogenation agent to obtain a compound of formula I



IV

wherein R is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of 1 to 8 carbon atoms, allyloxycarbonyl, alkyoxycarbonyl and aralkoxycarbonyl of up to 8 carbon atoms, and alkylsulfonyl and arylsulfonyl of up to 8 carbon atoms reacting the latter with butanal in the presence of a strong acid catalyst to obtain a compound of the formula



V

wherein R has the above definition and subjecting the latter to a solvolysis in a basic medium to form a compound of formula V.

5,310,897

BETA-LACTAMS AND THEIR PRODUCTION

Makoto Sunagawa; Akira Sasaki, and Koshiro Goda, all of Osaka, Japan, assignors to Sumitomo Pharmaceuticals Co., Ltd., Osaka, Japan

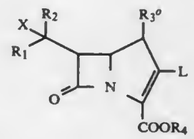
Continuation of Ser. No. 696,110, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 358,536, May 26, 1989, abandoned, which is a continuation of Ser. No. 813,723, Dec. 27, 1985, abandoned. This application Nov. 10, 1992, Ser. No. 974,302

Claims priority, application Japan, Dec. 27, 1984, 59-279452; Jul. 4, 1985, 60-147214

Int. Cl.[5] **C07D** *487/04*

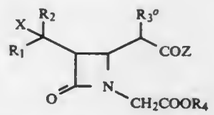
U.S. Cl. 540—302 **20 Claims**

1. A process for preparing carbapenem compounds of the formula:



(IX)

wherein R_1 and R_2 are, the same or different, each a hydrogen atom or a lower alkyl group, $R_3{}^0$ is a lower alkyl group having a beta-configuration, R_4 is a carboxyl-protecting group, X is a hydrogen atom or a protected hydroxyl group and L is an activated hydroxyl group, which comprises subjecting a compound of the formula:



(I-8^a)

wherein R_1, R_2, $R_3{}^0$, R_4 and X are each as defined above and COZ is a protected thiolcarboxyl group to (a) treatment with a base, (b) treatment with an alkylating or acylating agent for catching of the residue Z^- and (c) treatment with a hydroxyl-activating agent in order, said treatments (a), (b) and (c) being carried out without isolation of the intermediates as produced.

5,310,898

ALKYLENEDIAMMONIUM DICLAVULANATE DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF AS WELL AS THE USE THEREOF

Anton Copar, Smartno pri Litiji, Spratly Islands, assignor to LEK, torvarna farmacevtskih, Spratly Islands

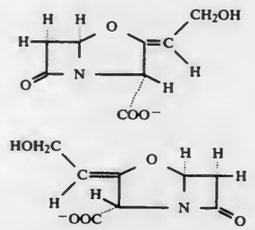
Filed Mar. 25, 1993, Ser. No. 36,893

Claims priority, application Austria, Mar. 26, 1992, A-619/92

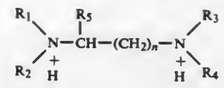
Int. Cl.[5] **A61K** *31/42;* **C07D** *498/047;* **C07B** *63/02*

U.S. Cl. 540—349 **4 Claims**

1. Alkylenediammonium diclavulanate of the formula I



-continued



wherein the substituents R_1, R_2, R_3, and R_4 each individually denote

a hydrogen atom,

a straight chain or a branched chain alkyl group having 1 to 8 carbon atoms, or

a hydroxyalkyl group having 2 to 4 carbon atoms, or

NR_1R_2 or NR_3R_4 jointly denote a heterocyclic ring having 3 to 6 methylene groups attached to the nitrogen atom, one of these groups being optionally substituted by an oxygen or a sulfur atom or by an imino group,

R_5 denotes a hydrogen atom or a methyl group, and

n denotes an integer from 1 to 3.

5,310,899

PROCESS FOR THE PREPARATION OF CHIRAL 4-ARYLOXYAZETIDINONES

Michael S. Ashwood; Brian C. Bishop, both of Bishops Stortford; Peter G. Houghton, Bassingbourn, all of England, and Guy R. Humphrey, Bell Mead, N.J., assignors to Merck Sharpe & Dohme Ltd., Hertfordshire

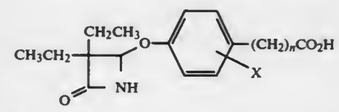
Continuation of Ser. No. 839,989, Feb. 20, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 20,518

Claims priority, application United Kingdom, Feb. 21, 1991, 9103654

Int. Cl.[5] **C07B** *53/00, 55/00;* **C07D** *205/08*

U.S. Cl. 540—360 **6 Claims**

1. A process for the preparation of the 4(S) enantiomer of a 4-aryloxyazetidin-2-one derivative of the formula I:



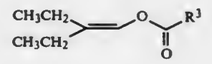
(I)

wherein

n is zero or a positive whole integer from 1 to 6; and

X is selected from the group consisting of hydrogen, halogen, $C_{1\text{-}6}$ alkyl and $C_{1\text{-}6}$ alkoxy; which process comprises the following steps:

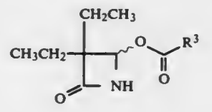
(i) reaction of a compound of formula II:



(II)

wherein

R^3 represents a hindered acyl residue, $—CHR^aR^b$, in which R^a is selected from the group consisting of hydrogen, methyl and ethyl and R^6 represents methyl or ethyl; with chlorosulphonyl isocyanate, to obtain a β-lactam derivative of formula III:



(III)

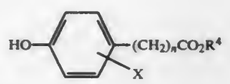
wherein

R^3 is as defined above, and the wavy line indicates that a

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mixture of enantiomers at the position indicated is obtained:

(ii) reaction of the β-lactam derivative of formula III with a phenolic compound of formula IV:

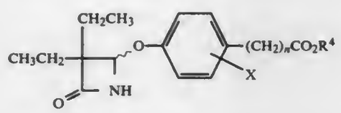


(IV)

wherein

n and X are as defined above, and

R^4 represents a carboxy-protecting group; in the presence of a base, to obtain a compound of formula V:

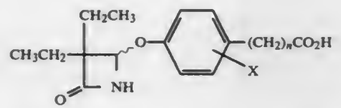


(V)

wherein

n, R^4, X and the wavy line are as defined above;

(iii) removal of the carboxy-protecting group R^4 from the compound of formula V thereby obtained, to obtain a compound of formula IA:



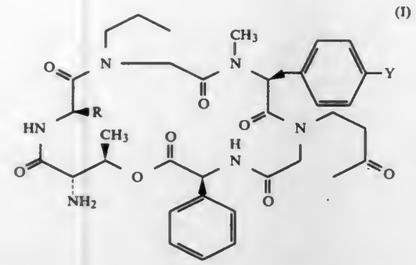
(IA)

wherein n, X and the wavy line are as defined above;

(iv) treatment of the compound of formula IA thereby obtained with an approximately equimolar amount of a chiral amine, to obtain the corresponding chiral amine salt of the 4(S) enantiomer of the β-lactam carboxylic acid of formula I;

(v) filtering the reaction mixture; and

(vi) acidifying the solid salt thereby obtained in order to regenerate the desired 4(S) enantiomer of the 4-aryloxyacetidin-2-one derivative of formula I in substantially optically-pure form.

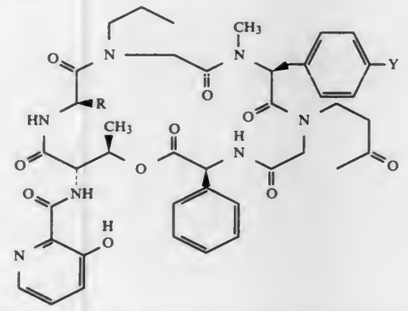


(I)

in which Y is a hydrogen atom or a methylamino or dimethylamino radical or a radical of structure:



in which R' is an amino-protecting radical and R is a methyl or ethyl radical, comprising the reductive cleavage of a streptogramin of formula:



in which Y and R are defined as above, is performed in an acid medium, and the product obtained is then optionally converted to an addition salt with an acid.

5,310,900

STREPTOGRAMIN DERIVATIVES AND THEIR PREPARATION

Jean-Claude Barriere, Bures-sur-Yvette; Marie-Christioe Dubroueucq, Enghien-les-Bains; Maurice Fleury; Martine Largeron, both of Neuilly-sur-Seine, and Jean-Marc Paris, Vaires-sur-Marne, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR91/00590, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/01691, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 18, 1991, Ser. No. 961,924

Claims priority, application France, Jul. 19, 1990, 90 09235

Int. Cl.[5] C07D *471/14;* A61K *31/395*

U.S. Cl. 540—455 **5 Claims**

1. Process for preparing a streptogramin of formula:

5,310,901

O-HETEROARYL, O-ALKYLHETEROARYL, O-ALKENYLHETEROARYL AND O-ALKYNLHETEROARYLRAPAMYCIN DERIVATIVES

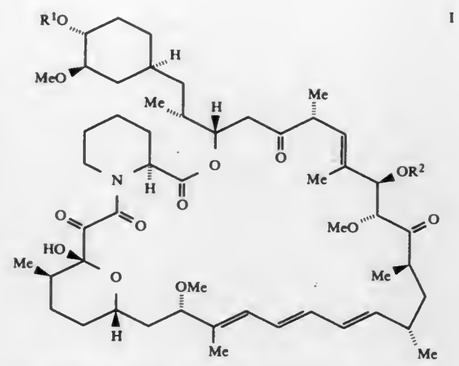
William H. Parsons, Edison; Peter J. Sinclair, Highland Park; Frederick Wong, Glen Ridge, and Matthew J. Wyvratt, Monntainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 5, 1993, Ser. No. 26,926

Int. Cl.[5] A61K *31/395;* C07D *471/18*

U.S. Cl. 540—456 **5 Claims**

1. A compound of Formula I:

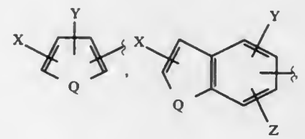


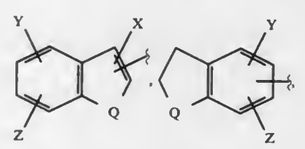
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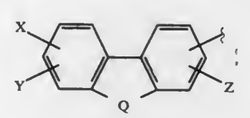
or a pharmaceutically acceptable salt thereof, wherein:

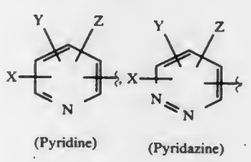
R^1 is selected from:

(1) heteroaryl, wherein heteroaryl is selected from the group consisting of

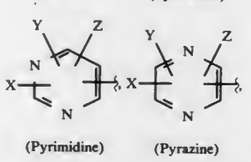






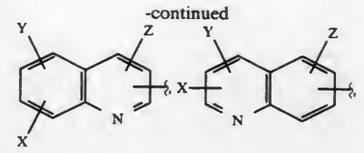


(Pyridine) (Pyridazine)

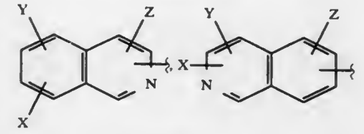


(Pyrimidine) (Pyrazine)

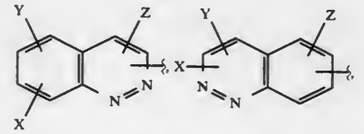
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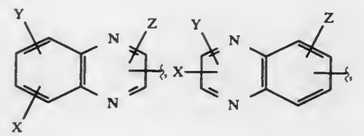
(Quinoline)



(Isoquinoline)



(Cinnoline)



(Quinoxaline)

wherein O is —N(X)—, —O—, or —S—;

(2) substituted heteroaryl, wherein heteroaryl is as defined above, and in which the substituents are X, Y and Z;

(3) heteroaryl-C_{1-10}alkyl, wherein heteroaryl is as defined above;

(4) substituted heteroaryl-C_{1-10}alkyl, wherein heteroaryl is as defined above and in which the heteroaryl group is substituted by X, Y and Z and the alkyl portion may be substituted with one or more of the substituent(s) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}-alkoxy,

(d) aryl-C_{1-3}alkoxy, wherein aryl is selected from the group consisting of phenyl and naphthyl,

(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,

(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,

(g) —OCO—C_{1-6}alkyl,

(h) —NR^6R^7, wherein R^6 and R^7 are independently selected from

(i) hydrogen,

(ii) C_{1-10}alkyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a') aryl, wherein aryl is as defined above and which is unsubstituted or substituted with X, Y and Z,

(b') heteroaryl, wherein heteroaryl is as defined above and which is unsubstituted or substituted with X, Y and Z,

(c') —OH,

(d') C_{1-6}alkoxy,

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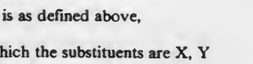
(e') $—CO_2H$,
(f') $—CO_2—C_{1-6}$alkyl,
(g') $—C_{3-7}$cycloalkyl, and
(h') $—OR^{11}$,
(iii) C_{3-10}alkenyl unsubstituted or substituted with one or more of the substituent(s) selected from:
(a') aryl, wherein aryl is as defined above and which is unsubstituted or substituted with X, Y and Z,
(b') heteroaryl, wherein heteroaryl is as defined above and which is unsubstituted or substituted with X, Y and Z,
(c') —OH,
(d') C_{1-6}alkoxy,
(e') $—CO_2H$,
(f') $—CO_2—C_{1-6}$alkyl,
(g') $—C_{3-7}$cycloalkyl, and
(h') $—OR^{11}$,
(iv) or where R^6 and R^7 and the N to which they are attached may form a heterocyclic ring selected from the group consisting of: morpholine, thiomorpholine, piperidine, and piperazine,
(i) $—NR^6CO—C_{1-6}$alkyl-R^7, wherein R^6 and R^7 are as defined above,
(j) $—NR^6CO_2—C_{1-6}$alkyl-R^7,
(k) $—NR^6CONR^6R^7$,
(l) $—OCONR^6R^7$,
(m) $—COOR^6$,
(n) —CHO,
(o) aryl, wherein aryl is as defined above,
(p) substituted aryl wherein aryl is as defined above and in which the substituents are X, Y and Z,
(q) $—OR^{11}$, and
(r) $—S(O)_p—C_{1-6}$alkyl;
(5) heteroaryl-C_{1-10}alkyl wherein heteroaryl is as defined above and one or more of the alkyl carbons is replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, $—NR^6CONR^7—$;
(6) substituted heteroaryl-C_{1-10}alkyl wherein heteroaryl is as defined above and one or more of the alkyl carbons is replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, and $—NR^6CONR^7—$, the heteroaryl group is substituted with X, Y, and Z, and the alkyl group may be substituted with one or more of the substituent(s) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) aryl-C_{1-3}alkoxy, wherein aryl is as defined above,
(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,
(f) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,
(g) $—OCO—C_{1-6}$alkyl,
(h) $—NR_6R^7$, wherein R^6 and R^7 are as defined above,
(i) $—NR^6CO—C_{1-6}$alkyl-R^7,
(j) $—NR^6CO_2—C_{1-6}$alkyl-R^7,
(k) $—NR^6CONR^6R^7$,
(l) $—OCONR^6R^7$,
(m) $—COOR^6$,
(n) —CHO,
(o) aryl, wherein aryl is as defined above,
(p) substituted aryl wherein aryl is as defined above in which the substituents are X, Y and Z,
(q) $—OR^{11}$, and
(r) $—S(O)_p—C_{1-6}$alkyl;
(7) heteroaryl-C_{3-10}alkenyl wherein heteroaryl is as defined above and alkenyl contains one to four double bonds;
(8) heteroaryl-C_{3-10}alkenyl wherein heteroaryl is as defined above and alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons is replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, and $—NR^6CONR^7—$;
(9) substituted heteroaryl-C_{3-10}alkenyl wherein heteroaryl is as defined above and alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons may be replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, and $—NR^6CONR^7$, the heteroaryl group is substituted with X, Y, and Z, and the alkyl group may be substituted with one or more of the substituent(s) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) aryl-C_{1-3}alkoxy, wherein aryl is as defined above,
(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,
(f) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,
(g) $—OCO—C_{1-6}$alkyl,
(h) $—NR^6R^7$, wherein R^6 and R^7 as defined above,
(i) $—NR^6CO—C_{1-6}$alkyl, wherein R^6 is as defined above,
(j) $—NR^6CO_2—C_{1-6}$alkyl,
(k) $—NR^6CONR^6R^7$,
(l) $—OCONR^6R^7$,
(m) $—COOR^6$,
(n) —CHO,
(o) aryl, wherein aryl is as defined above,
(p) substituted aryl wherein aryl is as defined above and in which the substituents are X, Y and Z, and
(q) $—OR^{11}$, and
(r) $—S(O)_p—C_{1-6}$alkyl;

R^2 is selected from:
(1) the definitions of R^1;
(2) hydrogen;
(3) phenyl;
(4) substituted phenyl in which the substituents are X, Y and Z;
(5) 1-or 2-naphthyl;
(6) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z;
(7) biphenyl;
(8) substituted biphenyl in which the substituents are X, Y and Z;
(9) C_{1-10}alkyl;
(10) substituted-C_{1-10}alkyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) aryl-C_{1-3}alkoxy, wherein aryl is as defined above,
(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,
(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,
(g) $—OCO—C_{1-6}$alkyl,
(h) $—NR^6R^7$, wherein R^6 and R^7 are as defined above
(i) $—NR^6CO—C_{1-6}$alkyl-R^7, wherein R^6 and R^7 is as defined above,
(j) $—COOR^6$, wherein R^6 is as defined above,
(k) —CHO,
(l) phenyl,
(m) substituted phenyl in which the substituents are X, Y and Z,
(n) 1- or 2-naphthyl,
(o) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
(p) biphenyl,
(q) substituted biphenyl in which the substituents are X, Y and Z,
(r) $—OR^{11}$, and

(s) $—S(O)_p—C_{1-6}$alkyl;
(11) C_{3-10}alkenyl;
(12) substituted C_{3-10}alkenyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenyl-C_{1-3}alkoxy,
(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,
(f) $—OCO—C_{1-6}$alkyl,
(g) $—NR^6R^7$, wherein R^6 and R^7 are as defined above
(h) $—NR^6CO—C_{1-6}$alkyl, wherein R^6 is as defined above,
(i) $—COOR^6$, wherein R^6 is as defined above,
(j) —CHO,
(k) phenyl,
(l) substituted phenyl in which the substituents are X, Y and Z,
(m) 1- or 2-naphthyl,
(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
(o) biphenyl,
(p) substituted biphenyl in which the substituents are X, Y and Z,
(q) $—OR^{11}$, and
(r) $—S(O)_p—C_{1-6}$alkyl;
(13) C_{3-10}alkynyl;
(14) substituted C_{3-10}alkynyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenyl-C_{1-3}alkoxy,
(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,
(f) $—OCO—C_{1-6}$alkyl,
(g) $—NR^6R^7$, wherein R^6 and R^7 are as defined above,
(h) $—NR^6CO—C_{1-6}$alkyl, wherein R^6 is as defined above,
(i) $—COOR^6$, wherein R^6 is as defined above,
(j) —CHO,
(k) phenyl,
(l) substituted phenyl in which the substituents are X, Y and Z,
(m) 1- or 2-naphthyl,
(n) substituted 1-or 2-naphthyl in which the substituents are X, Y and Z,
(o) biphenyl,
(p) substituted biphenyl in which the substituents are X, Y and Z,
(q) $—OR^{11}$; and
(15) $—R^{11}$;

R^{11} is selected from:
(a) $—PO(OH)O^-M^+$, wherein M^+ is a positively charged inorganic or organic counterion selected from the group consisting of: ammonium, sodium, lithium, potassium, calcium, magnesium, dicyclohexylamine, N-methyl-D-glucamine, arginine and lysine,
(b) $—SO_3^-M^+$,
(c) $—CO(CH_2)_qCO_2^-M^+$, wherein q is 1-3, and
(d) $—CO—C_{1-6}$alkyl-NR^6R^7, wherein R^6 and R^7 are as defined above and the alkyl is unsubstituted or substituted with one or more substituents selected from:
(i) hydroxy,
(ii) C_{1-6}alkoxy,
(iii) $—NR^{16}R^{17}$, wherein R^{16} and R^{17} are independently selected from:
(a') hydrogen, and
(b') C_{1-6}alkyl,
(iv) $—COOR^6$, wherein R^6 is as defined above,
(v) phenyl,
(iv) substituted phenyl in which the substituents are X, Y and Z,
(vii) heteroaryl, wherein heteroaryl is as defined above,
(viii) —SH, and
(ix) $—S—C_{1-6}$alkyl;

X, Y and Z independently are selected from:
(a) hydrogen,
(b) C_{1-10}alkyl, unsubstituted or substituted with one or more substituents selected from:
(i) aryl, wherein aryl is as defined above,
(ii) substituted aryl wherein aryl is as defined above and in which the substituents are X', Y' and Z',
(iii) heteroaryl, wherein heteroaryl is as defined above,
(iv) substituted heteroaryl wherein heteroaryl is s defined above and in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X', Y' and Z',
(vi) $—OR^6$,
(vii) $—OR^{11}$,
(viii) $—OCOR^6$,
(ix) $—OCO_2R^6$,
(x) $—NR^6R^7$,
(xi) —CHO,
(xii) $—NR^6COC_{1-6}$alkyl-R^7,
(xiii) $—NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) $—NR^6CONR^6R^7$,
(xv) $—OCONR^6R^7$,
(xvi) $—CONR^6R^7$,
(c) C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, $—NR^6CONR^7—$, —CO—, —CH(OH)—, alkenyl or alkynyl and the alkyl may be unsubstituted or substituted with one or more substituents selected from:
(i) aryl, wherein aryl is as defined above,
(ii) substituted aryl wherein aryl is as defined above and in which the substituents are X', Y' and Z',
(iii) heteroaryl, wherein heteroaryl is as defined above,
(iv) substituted heteroaryl wherein heteroaryl is as defined above and in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X', Y', and Z',
(vi) $—OR^6$,
(vii) $—OR^{11}$,
(viii) $—OCOR^6$,
(ix) $—OCO_2R^6$,
(x) $—NR^6R^7$,
(xi) —CHO
(xii) $—NR^6COC_{1-6}$alkyl-R^7,
(xiii) $—NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) $—NR^6CONR^6R^7$,
(xv) $—OCONR^6R^7$,
(xvi) $—CONR^6R^7$,
(d) halogen,
(e) $—NR^6R^7$,
(f) —CN,
(g) —CHO,
(h) $—CF_3$,
(i) $—SR^8$, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) $—SOR^8$,
(k) $—SO_2R^8$,
(l) $—CONR^6R^7$,
(m) $R^9O(CH_2)_m$- wherein R^9 is hydrogen, C_{1-6}alkyl, hydroxy-C_{2-3}alkyl, $—CF_3$, phenyl, R^{11} or naphthyl and m is 0, 1, 2, or 3,
(n) $—CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are C_{1-3}alkyl or taken together form an ethyl or propyl bridge,
(o)



wherein R^9 and m are as defined above,
(p)

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wherein R^9 and m are as defined above, and

(q) $—R^{11}$;

or any two of X, Y and Z may be joined to form a ring selected from the group consisting of dioxolanyl, and dioxanyl;

X', Y' and Z' independently are selected from:

(a) hydrogen,

(b) C_{1-7}alkyl,

(c) C_{2-6}alkenyl,

(d) halogen,

(e) $—(CH_2)_m—NR^6R^7$, wherein R^6, R^7 and m are as defined above,

(f) —CN,

(g) —CHO,

(h) $—CF_3$,

(i) $—SR^8$, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,

(j) $—SOR^8$, wherein R^8 is as defined above,

(k) $—SO_2R^8$, wherein R^8 is as defined above,

(l) $—CONR^6R^7$, wherein R^6 and R^7 are as defined above,

(m) $R^9O(CH_2)_m$- wherein R^9 and m are as defined above,

(n) $—CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are as defined above,

(o)

wherein R^9 and M are as defined above,

(p)



wherein R^9 and M are as defined above, and

(q) $—R^{11}$.

5,310,902

ALKYLENEDIAMINE DERIVATIVES

Mitsuo Masaki, Chiba; Masaru Satoh, Koshigaya; Naoya Moritoh, Kuki; Koichi Hashimoto, Tokyo; Toshiro Kamishiro, Misato, and Haruhiko Shinozaki, Oomiya, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

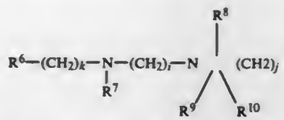
Division of Ser. No. 563,422, Aug. 1, 1990, Pat. No. 5,070,196, which is a continuation of Ser. No. 228,343, Aug. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 165,351, Feb. 29, 1988, abandoned, which is a continuation of Ser. No. 9,170, Jan. 30, 1987, abandoned. This application Aug. 7, 1991, Ser. No. 741,590

Claims priority, application Japan, Feb. 1, 1986, 61-20497; Feb. 1, 1986, 61-20498; Aug. 1, 1987, 62-193201; Aug. 1, 1987, 62-193203

Int. Cl.[5] **C07D** *223/00, 211/26*

U.S. Cl. 540—484 **7 Claims**

1. An alkylenediamine derivative having the formula:



wherein R^6 is a straight or branched chain aliphatic hydrocarbon group containing 3–8 carbon atoms, an alicyclic hydrocarbon group containing 5–8 carbon atoms, an aryl group, or an aralkyl group having an alkyl group containing 1–4 carbon atoms; R^7 is a straight or branched chain aliphatic hydrocarbon group containing 3–11 carbon atoms, an aliphatic hydrocarbon group having 3–11 carbon atoms and containing an ester bonding in the group, an aliphatic hydrocarbon group having 3–11 carbon atoms and containing an ether bonding in the group, or an aralkyl group having an alkyl group containing ether bonding and 2–5 carbon atoms; each of R^8, R^9 and R^{10} independently is hydrogen, a saturated or unsaturated straight or branched chain alkyl group containing 1–6 carbon atoms, an alkoxy group containing 1–6 carbon atoms, an acyloxy group containing 1–6 carbon atoms, an aryl group, an aralkyl group having an alkyl group of 1–5 carbon atoms, hydroxyl, a hydroxylalkyl group having an alkyl group of 1–3 carbon atoms, halogen, nitrile, nitro, amino, carbamoyl, or alkoxycarbonyl having an alkyl group of 1–5 carbon atoms; k is an integer of 1 to 4; i is an integer of 2 to 13; and j is an integer of 4 to 7.

5,310,903

IMIDAZOLIDYL RAPAMYCIN DERIVATIVES

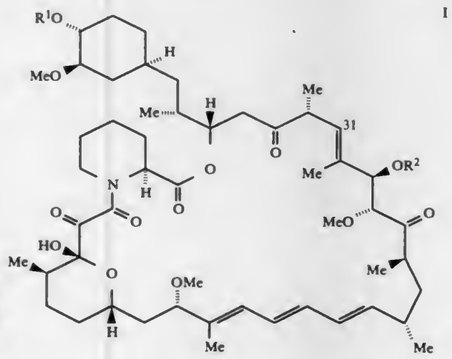
Mark Goulet, Westfied; William H. Parsons, Edison, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 5, 1993, Ser. No. 26,925

Int. Cl.[5] **C07D** *498/18;* **A61K** *31/395*

U.S. Cl. 540—456 **5 Claims**

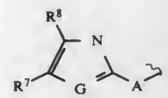
1. A compound of formula I:



I

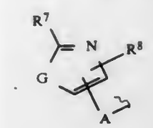
or a pharmaceutically acceptable salt thereof, wherein:

R^1 is selected from the group consisting of:



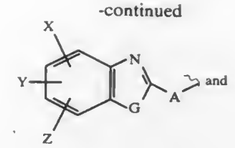
(1)

wherein G is $N—R^6$, O, S, SO, or SO_2,

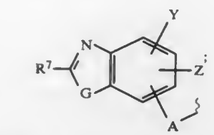


(2)

-continued



(3)



(4)

R^2 is independently selected from:

(1) the definitions of R^1;

(2) hydrogen;

(3) phenyl;

(4) substituted phenyl in which the substituents are X, Y and Z;

(5) 1- or 2-naphthyl;

(6) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z;

(7) biphenyl;

(8) substituted biphenyl in which the substituents are X, Y and Z;

(9) C_{1-10}alkyl;

(10) substituted C_{1-10}alkyl in which one or more substituent(s) is(are) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}-alkoxy,

(d) phenyl-C_{1-3}alkoxy,

(e) substituted phenyl-C_{1-3}-alkoxy, in which the substituents on phenyl are X, Y and Z,

(f) —OCO—C_{1-6}alkyl,

(g) $—NR^9R^{10}$, wherein R^9 and R^{10} are independently selected from:

(i) hydrogen, or

(ii) C_{1-6}alkyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a') phenyl, which may be substituted with X, Y and Z,

(b') —OH,

(c') C_{1-6}alkoxy,

(d') $—CO_2H$,

(e') $—CO_2—C_{1-6}$alkyl,

(f') $—C_{3-7}$cycloalkyl, and

(g') $-OR^{11}$,

(iii) or where R^9 and R^{10} and the N to which they are attached may form a heterocyclic ring selected from the group consisting of: morpholine, thiomorpholine, piperidine, and piperazine,

(h)$—NR^9CO—C_{1-6}$alkyl$—R^{10}$, wherein R^9 and R^{10} are as defined above,

(i) $—COOR^9$, wherein R^9 is as defined above,

(j) —CHO,

(k) phenyl,

(l) substituted phenyl in which the substituents are X, Y and Z,

(m) 1- or 2-napthyl,

(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,

(o) biphenyl,

(p) substituted biphenyl in which the substituents are X, Y and Z,

(q) $—OR^{11}$, and

(r) $—S(O)_p—C_{1-6}$alkyl;

(11) C_{3-10}alkenyl;

(12) substituted C_{3-10}alkenyl in which one or more substituent(s) is(are) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}-alkoxy;

(d) phenyl-C_{1-3}alkoxy;

(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,

(f) —OCO—C_{1-6}alkyl,

(g) $—NR^9R^{10}$, wherein R^9 and R^{10} are as defined above,

(h) $—NR^9CO—C_{1-6}$alkyl, wherein R^9 is as defined above,

(i) $—COOR^9$, wherein R^9 is as defined above,

(j) —CHO,

(k) phenyl,

(l) substituted phenyl in which the substituents are X, Y and Z,

(m) 1- or 2-naphthyl,

(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,

(o) biphenyl,

(p) substituted biphenyl in which the substituents are X, Y and Z,

(q) $—OR^{11}$; and

(15) $—R^{11}$;

R^6 is selected from the group consisting of:

(1) hydrogen,

(2) C_{1-6}-alkyl, unsubstituted or substituted with:

(a) hydroxy,

(b) C_{1-6}alkoxy,

(c) $—N^{12}R^{13}$, wherein R^{12} and R^{13} are independently selected from

(i) hydrogen,

(ii) C_{1-6}alkyl, or

(iii) C_{3-6}alkenyl,

(d) phenyl, unsubstituted or substituted with X, Y and Z,

(e) $—OR^{11}$,

(3) C_{3-6}alkenyl, unsubstituted or substituted with:

(a) hydroxy,

(b) phenyl, unsubstituted or substituted with X, Y and Z, or

(c) C_{1-6}alkoxy,

(4) phenyl, unsubstituted or substituted with X, Y and Z,

(5) $—R^{11}$,

(6) X, Y or Z;

R^7 and R^8 independently are selected from the group consisting of:

(1) hydrogen,

(2) C_{1-7}alkyl,

VOL 1162 ISS 2 MY 10 1994 UMI

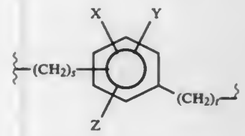
(3) C_{2-6}alkenyl,
(4) $—(CH_2)_m—NR^9R^{10}$, wherein R^9 and R^{10} are as defined above, and m is 0, 1, 2, and 3,
(5) $—CF_3$,
(6) $—CONR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(7) $R^{14}O(CH_2)_m—$ wherein R^{14} is hydrogen, C_{1-6}alkyl, hydroxy—C_{2-3}alkyl, $—CF_3$, phenyl, R^{11} or naphthyl and m is as defined above,
(8)



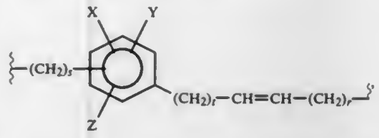
wherein R^{14} and m are as defined above;
(9) phenyl—$(CH_2)_m—$ wherein m is as defined above and the phenyl is unsubstituted or substituted with X, Y and Z,
(10) napthyl—$(CH_2)_m—$ wherein m is as defined above and the napthyl is unsubstituted or substituted with X, Y and Z,
(11) biphenyl—$(CH_2)_m—$ wherein m is as defined above and the biphenyl is unsubstituted or substituted with X, Y and Z,
(12) heteroaryl—$(CH_2)_m—$ wherein heteroaryl is selected from: acridine, carbazole, cinnoline, dibenzofuran, dibenzothiophene, quinoxaline, pyrrazole, indole, imidazole, benzatriazole, furan, benzofuran, quinoline, isoquinoline, pyrazine, pyridazine, pyridine, pyrimidine, and pyrrole, m is as defined above and the heteroaryl is unsubstituted or substituted with X, Y, and Z,
(13) morpholinyl, and
(14) —CH=CH—phenyl wherein the phenyl is unsubstituted or substituted with X, Y and Z;

R^{11} is selected from:
(a) $—PO(OH)O^-M^+$, wherein M^+ is a positively charged inorganic or organic counterion, selected from the group consisting of: ammonium, sodium, lithium, potassium, calcium, magnesium, dicyclohexylamine, N-methyl-D-glucamine, arginine and lysine,
(b) $—SO_3^-M^+$,
(c) $—CO(CH_2)_qCO_2^-M^+$, wherein q is 1 to 3, and
(d) $—CO—C_{1-6}$alkyl$—NR^9R^{10}$, wherein R^9 and R^{10} are as defined above and the alkyl is unsubstituted or substituted with one or more substituents selected from:
(i) hydrogen,
(ii) C_{1-6}alkoxy,
(iii) $—NR^{12}R^{13}$, wherein R^{12} and R^{13} are as defined above,
(iv) $—COOR^6$, wherein R^6 is as defined above,
(v) phenyl,
(vi) substituted phenyl in which the substituents are X, Y and Z,
(vii) imidazolidyl,
(viii) indolyl,
(ix) —SH, and
(x) $—S—C_{1-6}$alkyl;

A is selected from the group consisting of:
(1) a bond,
(2) C_{1-10}alkyl;
(3) substituted C_{1-10}alkyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenyl-C_{1-3}alkoxy,
(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,
(f) $—OCO—C_{1-6}$alkyl,
(g) $—NR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(h) $—NR^9CO—C_{1-6}$alkyl, wherein R^9 is as defined above,
(i) $—COOR^9$, wherein R^9 is as defined above,
(j) —CHO,
(k) phenyl,
(l) substituted phenyl in which the substituents are X, Y and Z,
(m) 1- or 2-naphthyl,
(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
(o) biphenyl,
(p) substituted biphenyl in which the substituents are X, Y and Z,
(q) $—OR^{11}$, and
(r) $—S(O)_p—C_{1-6}$alkyl;
(4) $—C_{1-10}$alkyl wherein one or more of the alkyl carbons is replaced by a group selected from: $—NR^9—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^9—$, $—NR^9CO—$, $—NR^9CONR^{10}—$;
(5) $—C_{3-10}$alkenyl wherein alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons is replaced by a group selected from: $—NR^9—$, —O—, $—S(O)_n—$, $—CO_2C—$, $—CONR^9—$, $—NR^9CO—$, and $—NR^9CONR^{10}—$;


(6)

wherein s is 0 to 6 and t is 0 to 6,


(7)

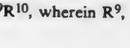
wherein r is 1 to 3 and s, and t are as defined above;
X, Y and Z are independently selected from the group consisting of:
(a) hydrogen,
(b) C_{1-10}alkyl, unsubstituted or substituted with one or more substituents selected from:
(i) aryl, wherein aryl is selected from the group consisting of phenyl and naphthyl,
(ii) substituted aryl wherein aryl is as defined above and in which the substituents are X', Y' and Z',
(iii) heteroaryl, wherein heteroaryl is as defined above,
(iv) substituted heteroaryl wherein heteroaryl is as defined above in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X', Y' and Z',
(vi) $—OR^9$,
(vii) $—OR^{11}$,
(viii) $—OCOR^9$,
(ix) $—OCO_2R^9$,
(x) $—NR^9R^{10}$,
(xi) —CHO,
(xii) $—NR^9COC_{1-6}$alkyl-R^{10},
(xiii) $—NR^9CO_2C_{1-6}$alkyl-R^{10},
(xiv) $—NR^9CONR^9R^{10}$,
(xv) $—OCONR^9R^{10}$,
(xvi) $—CONR^9R^{10}$,
(c) C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from $—NR^9—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^9—$, $—NR^9CO—$, $—NR^9CONR^{10}—$, —CO—, —CH(OH)—, alkenyl or alkynyl and the alkyl may be unsubstituted or substituted with one or more substituents selected from:
(i) aryl, wherein aryl is as defined above,
(ii) substituted aryl wherein aryl is as defined above and in which the substituents are X', Y' and Z',
(iii) heteroaryl, wherein heteroaryl is as defined above,
(iv) substituted heteroaryl wherein heteroaryl is as defined above and in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, in which the substituents on aryl are X', Y', and Z',
(vi) $—OR^9$,
(vii) $—OR^{11}$,
(viii) $—OCOR^9$,
(ix) $—OCO_2R^9$,
(x) $—NR^9R^{10}$,
(xi) —CHO,
(xii) $—NR^9COC_{1-6}$alkyl-R^{10},
(xiii) $—NR^9CO_2C_{1-6}$alkyl-R^{10},
(xiv) $—NR^9CONR^9R^{10}$,
(xv) $—OCONR^9R^{10}$,
(xvi) $—CONR^9R^{10}$,
(d) halogen,
(e) $—NR^9R^{10}$,
(f) —CN,
(g) —CHO,
(h) $—CF_3$,
(i) $—SR^{15}$, wherein R^{15} is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) $—SOR^{15}$,
(k) $—SO_2R^{15}$,
(l) $—CONR^9R^{10}$,
(m) $R^{16}O(CH_2)_m—$ wherein R^{16} is hydrogen, C_{1-6}alkyl, hydroxy-C_{2-3}alkyl, $—CF_3$, phenyl, R^{11} or naphthyl and m is 0, 1, 2, or 3,
(n) $—CH(OR^{17})(OR^{18})$, wherein R^{17} and R^{18} are C_{1-3}alkyl or taken together form an ethyl or propyl bridge,
(o)



wherein R^{16} and m are as defined above,
(p)

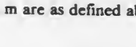


wherein R^{16} and m are as defined above, and
(q) $—R^{11}$;
or any two of X, Y and Z may be joined to form a saturated ring having 5, 6 or 7 ring atoms, said ring atoms comprising 1 or 2 oxygen atoms, the remaining ring atoms being carbon;
X', Y' and Z' independently are selected from:
(a) hydrogen,
(b) C_{1-7}alkyl,
(c) C_{2-6}alkenyl,
(d) halogen,
(e) $—(CH_2)_m—NR^9R^{10}$, wherein R^9, R^{10} and m are as defined above,
(f) —CN,
(g) —CHO,
(h) $—CF_3$,
(i) $—SR^{15}$, wherein R^{15} is as defined above,
(j) $—SOR^{15}$, wherein R^{15} is as defined above,
(k) $—SO_2R^{15}$, wherein R^{15} is as defined above,
(l) $—CONR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(m) $R^{16}O(CH_2)_m—$, wherein R^{16} and m are as defined above,
(n) $—CH(OR^{17})(OR^{18})$, wherein R^{17} and R^{18} are as defined above,
(o)



wherein R^{16} and m are as defined above, and
(q) $—R^{11}$;

wherein R^{16} and m are as defined above,
(p)



wherein R^{16} and m are as defined above, and
(q) $—R^{11}$.

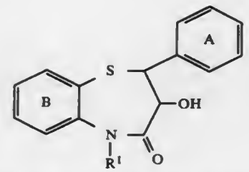
5,310,904

PROCESS FOR PREPARING OPTICALLY ACTIVE BENZOTHIAZEPINE COMPOUNDS BY ASYMMETRIC REDUCTION

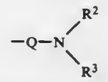
Yasuhiko Ozaki, Osaka; Shinichi Yamada, Hyogo, and Hiroyasu Seko, Nara, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jan. 8, 1993, Ser. No. 2,052
Claims priority, application Japan, Jan. 10, 1992, 4-40040; Jun. 25, 1992, 4-209402
Int. Cl.[5] C07D *281/02*
U.S. Cl. 540—491 **9 Claims**

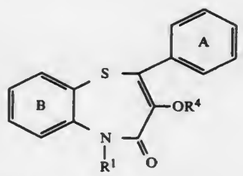
1. A process for preparing an optically active cis-3-hydroxy-2-phenyl-2,3-dihydro-1,5-benzothiazepine compound of the formula (I):


(I)

wherein Ring A and Ring B are each an unsubstituted benzene ring or a benzene ring substituted by a substituent selected from the group consisting of a lower alkyl group, a lower alkoxy group and a halogen atom, R_1 is a hydrogen atom or a group of the formula:



wherein R_2 and R_3 are the same or different and a lower alkyl group or a lower alkoxy-substituted-phenyl lower alkyl group, and Q is a lower alkylene group, which process comprises subjecting a 2-phenyl-1,5-benzothiazepin-4(5H)-one compound of the formula (II):


(II)

wherein R^4 is a hydrogen atom or a lower alkanoyl group, and

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R^1, Ring A and Ring B are the same as defined above, to asymmetric reduction with a reaction product of an optically active α-amino acid and a metal hydride.

5,310,905
CONVERSION OF NYLON 6 AND/OR NYLON 6,6 TO MONOMERS
Edward F. Moran, Jr., Clarksboro, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 14, 1993, Ser. No. 45,780
Int. Cl.[5] C07D *201/12*
U.S. Cl. 540—540 **5 Claims**

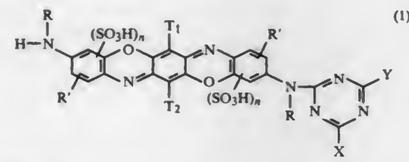
1. A process for recovering caprolactam from waste polycaprolactam comprising supplying an acid of the formula



where n is 0 to 4 and the polycaprolactam to an autoclave in the amount of at least one mole of acid for every two moles of repeat units of the polymer, heating the mixture at a temperature of at least 150° C. and at autogenous pressure or greater for a time sufficient to depolymerize the polymer and form a mixture of caprolactam and a 6-alkylamidohexanoic acid and separating caprolactam from the mixture.

5,310,906
TRIPHENDIOXAZINE DYESTUFFS
Horst Jäger, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 686,056, Apr. 15, 1991, abandoned.
This application Apr. 26, 1993, Ser. No. 53,851
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1990, 4012954
Int. Cl.[5] C09B *19/00, 62/04*
U.S. Cl. 544—76 **6 Claims**

1. A triphendioxazine dyestuff of the formula


(1)

in which

R represents hydrogen or C_1–C_6-alkyl, which is unsubstituted or substituted by a radical selected from the group consisting of —OH, —OCH_3, OC_2H_5, —COOH, —SO_3H, —CN and —Cl,

R′ represents hydrogen, halogen, carboxyl, C_1–C_4-alkyl or C_1–C_4-alkoxy

T_1 and T_2 each represent hydrogen, chlorine, bromine, substituted or unsubstituted C_1–C_4-alkyl, substituted or unsubstituted C_1–C_4-alkoxy, substituted or unsubstituted phenyl or substituted or unsubstituted phenoxy; the alkyl and alkoxy substituents being selected from the group consisting of C_1–C_4-alkoxy and —OSO_3H, and the phenyl and phenoxy substituents being selected from the group consisting of —Cl, —Br, C_1–C_4-alkyl, C_1–C_4-alkoxy and —SO_3H,

X represents hydrogen, lower alkyl; substituted or unsubstituted phenyl, the substituents being selected from the group consisting of Cl, F, lower alkyl and lower alkoxy, or represents a radical of the formula —S—R_2 or —O—R_3, in which

R_2 represents a phenyl radical which can be substituted by chlorine, sulpho or nitro, or represents a lower alkyl radical which can be substituted by hydroxyl or carboxyl, and

R_3 represents hydrogen, a lower alkyl radical or a phenyl radical which can be substituted by sulpho or carboxyl, or

X represents an amino group of the formula



in which

R_1 represents hydrogen, a lower alkyl radical, which is unsubstituted or mono- or disubstituted by hydroxyl, sulphato, lower alkoxy, sulpho, carboxyl or phenyl; or represents an araliphatic radical or a cycloaliphatic radical, and

Z represents hydrogen, a lower alkyl radical, which is unsubstituted or substituted by hydroxyl, lower alkoxy, sulphato, sulpho or carboxyl, or represents an unsubstituted phenyl or naphthyl radical, or a phenyl or naphthyl radical which is substituted by halogen, lower alkyl, lower alkoxy, nitro, sulpho, carboxyl, sulphamoyl, carbamoyl, alkylcarbonylamino, phenylcarbonylamino, phenylureido, phenylsyulphonylamino, alkylaminocarbonyl, phenylaminocarbonyl, phenylsulphonylamino, phenoxy, thiophenoxy, phenylethenyl, phenylamino, phenylsulphonyl, phenylcarbonyl, each of which is substituted or unsubstituted, and the substituents for the substituted alkylcarbonylamino and alkylaminocarbonyl radicals being independently selected from the group consisting of sulpho, carboxyl, methoxy, hydroxyl and acetylamino, and the substituents for the phenyl parts of the substituted phenylcarbonylamino, phenylureido, phenylsulphonylamino, phenylaminocarbony, phenylsulphonylamino, phenoxy, thiophenoxy, phenylethenyl, phenylamino, phenylsulphonyl and phenylcarbonyl radicals being independently selected from the group consisting of sulpho, carboxyl, lower alkyl, lower alkoxy, chlorine, acetylamino, ureido and hydroxyl,

Z represents unsubstituted benzyl or benzyl which is substituted by lower alkyl, lower alkoxy, sulpho or carboxyl, or

represents hydroxyl, lower alkoxy, amino, phenylamino or lower alkylamino, or

R_1 and Z together with the nitrogen atom to which they are attached form a morpholine, piperidine, pyrrolidine or piperazine ring and

Y represents

in which

R_1' represents hydrogen, a lower alkyl radical, which is unsubstituted or mono- or disubstituted by hydroxyl, sulphato, lower alkoxy, sulpho, carboxyl or phenyl; or represents an araliphatic radical or a cycloaliphatic radical, and

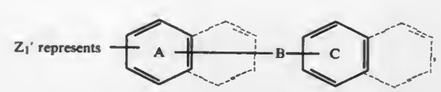
Z′ represents hydrogen, a lower alkyl radical, which is unsubstituted or substituted by hydroxyl, lower alkoxy, sulphato, sulpho and carboxyl, or represents an unsubstituted phenyl or naphthyl radical or a phenyl or naphthyl radical which is substituted by halogen, lower alkyl, lower alkoxy, nitro, sulpho, carboxyl, sulphamoyl, carbamoyl or alkylcarbonylamino, or represents an unsubstituted benzyl radical or a benzyl radical which is substituted by lower alkyl, lower alkoxy, sulpho or carboxyl, or represents hydroxyl, lower alkoxy, amino, phenylamino or a lower alkylamino group, or

R_1' and Z′ together with the nitrogen atom to which they

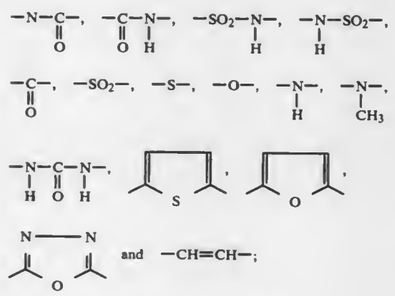
are bound, represent a morpholine, piperidine, pyrrolidine or piperazine ring, or

Z′ represents the radicals Z_1', Z_2' or Z_5' in which

Z_1' represents

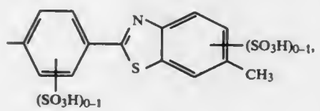


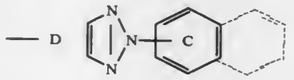
in which the phenylene or naphthylene radical A and the phenyl or naphthyl radical C can be substituted and B represents a direct bond or a bridging member selected from the group consisting of



and —CH=CH—;

Z_2' represents one of the following radicals:





or



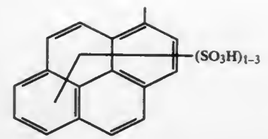
in which

D represents the radical of a substituted or unsubstituted benzene or naphthalene ring and the phenyl or naphthyl ring C can be substituted,

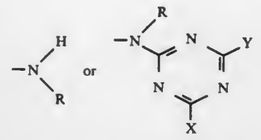
E represents a substituted or unsubstituted phenylene or naphthalene radical and

G represents the radical of a substituted or unsubstituted benzene or naphthalene ring, and

Z_5' represents



n represents 0 or 1, wherein when n represents 1 the sulpho group is in the ortho position relative to substituents

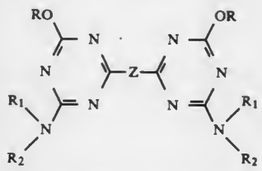


the substituents for A, C, D, E and G being independently selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, nitro, sulpho, carboxyl, hydroxyl, C_1–C_4-alkylcarbonylamino, phenylcarbonylamino, phenylureido and ureido, each of which is itself unsubstituted or substituted by chlorine, methoxy or methyl, and wherein C can further be substituted by phenyl-or naphthylazo groups.

6. A process for the dyeing of a natural or synthetic material selected from the group consisting of paper, cotton, viscose, wool, silk, leather and synthetic polyamide, which comprises dyeing said material with a dyestuff according to claim 1.

5,310,907
AMELINIC COMPOUNDS
Roberto Cipolli, Novara; Gilberto Nucida, Milan; Enrico Masarati, Piacenza; Roberto Oriani, and Mario Pirozzi, both of Milan, all of Italy, assignors to Ministero Dell'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy
Filed Sep. 9, 1991, Ser. No. 756,921
Claims priority, application Italy, Sep. 11, 1990, 21420 A/90
Int. Cl.[5] C07D *403/12, 403/14*
U.S. Cl. 544—209 **12 Claims**

1. A compound of the formula (I):


(I)

wherein n is an integer comprised between 1 and 8; Y is H; CN; —O—(C_1–C_4)-alkyl; —O—(C_2–C_4)-alkenyl; (C_6–C_{12})-cycloalkyl or -alkylcycloalkyl; —O—(C_6–C_{12})-aryl;

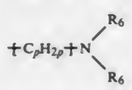


wherein radicals R_4, which may be the same or different, are: (C_1–C_4)-alkyl or (C_3–C_4)-alkenyl or the group:

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is replaced by a heterocyclic radical selected from the group consisting of pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine, 4-ethylpiperazine, said heterocyclic radical bound to the alkyl chain through a nitrogen atom; $(C_2–C_6)$-alkenyl; $(C_6–C_{12})$-cycloalkyl or -alkylcycloalkyl; $(C_6–C_{12})$-aryl or -aralkyl; radicals R_1 and R_2, which can be the same or different, and which can have different meanings on each triazone ring, are: H; $(C_1–C_{18})$-alkyl; $(C_2–C_8)$-alkenyl; $(C_6–C_{16})$-cycloaklyl or -alkylcycloalkyl;



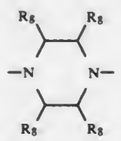
wherein: m is an integer comprised between 2 end 8; p is an integer comprised between 2 and 6; R_5=H; $(C_1–C_8)$-alkyl; $(C_2–C_6)$-alkenyl; $+C_qH_{2q}+O—R_7$ wherein q is an integer comprised between 1 and 4 and R_7 is H or $(C_1–C_4)$-alkyl; $(C_6–C_{12})$-cycloalkyl or -alkylcycloalkyl; radicals R_6, equal or different among them, are: H; $(C_1–C_8)$-alkyl; $(C_2–C_6)$-alkenyl; $(C_6–C_{12})$-cycloalkyl or -alkylcycloalkyl; $(C_1–C_4)$-hydroxyalkyl; or the group:



is replaced by a heterocyclic radical selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine, 4-ethylpiperazine, said heterocyclic radical bound to the alkyl chain through a nitrogen atom; or the group:



is replaced by a heterocyclic radical selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine, 4-ethylpiperazine, 2-methylpiperazine, 2,5-dimethylpiperazine, 2,3,5,6-tetramethylpiperazine, 2,2,5,5-tetramethylpiperazine, 2-ethylpiperazine, 2,5-diethylpiperazine, said heterocyclic radical bound to the triazinic ring through a nitrogen atom; Z is a divalent radical comprised in one of the following formulas:



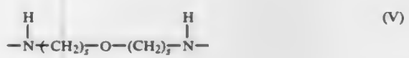
wherein radicals R_8, which may be the same or different, are hydrogen or $(C_1–C_4)$-alkyl;



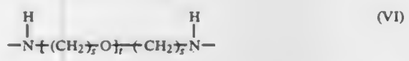
(II)

(IV)

wherein r is an integer comprised between 2 and 14; R_9 is hydrogen; $(C_1–C_4)$-alkyl; $(C_2–C_6)$-alkenyl; $(C_1–C_4)$-hydroxyalkyl;

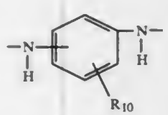


(V)

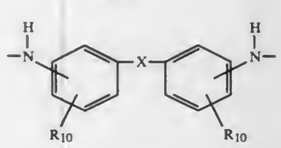


(VI)

wherein s is an integer comprised between 2 and 5 and t is an integer comprised between 1 and 3;



(VII)



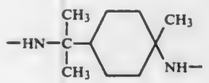
(VIII)

wherein X is a direct bound C—C; O; S; S—S: SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2; R_{10} is hydrogen; hydroxyl; $(C_1–C_4)$-alkyl; $(C_1–C_4)$-alkoxy;

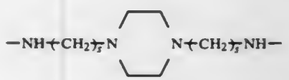


(IX)

wherein A may be either a saturated or an unsaturated ring;



(X)



(XI)

wherein s has the previously defined meaning.

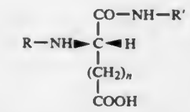
5,310,908

SWEETENING AGENT DERIVED FROM L-ASPARTIC OR L-GLUTAMIC ACID

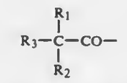
Claude Nofre, 119, Cours Albert Thomas, 69003 Lyon, and Jean-Marie Tinti, 5, Avenue de Grenoble, 69330 Meyzieu, both of France

Division of Ser. No. 601,623, Oct. 23, 1990, Pat. No. 5,196,540. This application Jan. 11, 1993, Ser. No. 2,975
Claims priority, application France, Oct. 24, 1989, 89 14236
Int. Cl.[5] C07D *239/24*
U.S. Cl. 544—335 8 Claims

1. A sweetening agent of the formula



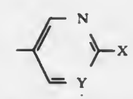
wherein R is an acyl group of the formula



in which R_1 is a methyl, ethyl, propyl, isopropyl, phenyl, methoxy, ethoxy, trihalogenomethyl, chloro or chloro-methyl radical; R_2 is a hydrogen atom or a methyl, ethyl or methoxy radical; or R_1 and R_2, taken together with the carbon atom to which they are bonded, form a cycloalkyl group having from 3 to 6 carbon atoms; and R_3 is an alkyl radical having from 3 to 11 carbon atoms, an alkenyl radical having from 3 to 7 carbon atoms, a cycloalkyl radical having from 3 to 7 carbon atoms, a cycloalkylalkyl radical of which the cycloalkyl part has from 3 to 6 carbon atoms and the alkyl part has from 1 to 3 carbon atoms, a phenyl radical, a phenylalkyl radical of which the alkyl part has from 1 to 3 carbon atoms, an alkoxy radical having from 3 to 10 carbon atoms, a cycloalkoxy radical having from 3 to 6 carbon atoms, in which the two positions adjacent to carbon 1 attached to the oxygen can each be substituted by 1 or 2 methyl groups, a cycloalkylalkoxy radical of which the cycloalkyl part has from 3 to 6 carbon atoms and the alkoxy part has from 1 to 3 carbon atoms, a phenoxy radical or a phenylalkoxy radical of which the alkoxy part has from 1 to 3 carbon atoms;

n is equal to 1 or 2; and

R' is a group of the formula



in which Y and Z, which are identical, are N, and in which X is CN, NO_2, Cl, CF_3, $COOCH_3$, $COCH_3$, $COCF_3$, $CONH_2$, $CON(CH_3)_2$, SO_2CH_3, N_3 or H; or a physiologically acceptable salt thereof.

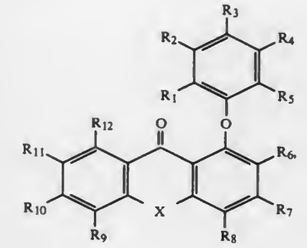
5,310,909

PHOTOCHROMIC COMPOUNDS, A PROCESS FOR THEIR PREPARATION, AND THEIR USE

Evelyn Fischer, Weil am Rhein; Walter Fischer, Reinach; Jürgen Finter, Freiburg, all of Fed. Rep. of Germany; Kurt Meier, Therwil, and Martin Roth, Giffers, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 21, 1990, Ser. No. 616,550
Claims priority, application Switzerland, Nov. 29, 1989, 4270/89
Int. Cl.[5] C07D *471/22, 335/16, 409/14, 311/86*
U.S. Cl. 546—41 15 Claims

1. A compound of the formula I

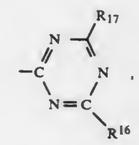


(I)

in which

X is O, S, SO, SO_2 or NR_{13},

R_1 to R_5, independently of one another, are H, $C_1–C_{12}$alkyl, $C_1–C_{12}$alkoxy, $C_1–C_{12}$alkylthio, $C_1–C_4$alkyl—SO—, $C_1–C_4$alkyl—SO_2—, halogen, CF_3, —CN, —NO_2, —OH, —$COOR_{14}$, —$CON(R_{15})_2$, or —$N(R_{15})_2$, or the radical of the formula



in which

R_{16} and R_{17}, independently of one another, are $C_1–C_6$alkyl, phenyl, $C_1–C_6$alkylphenyl or $(C_1–C_6alkyl)_2$-phenyl, or R_3 and R_4 or R_4 and R_5, in each case together, are —CH=CH—CH=CH—, R_6 to R_{12}, independently of one another, are H, $C_1–C_{12}$alkyl, $C_1–C_{12}$alkoxy, $C_1–C_{12}$alkylthio, $C_1–C_{12}$alkyl—SO—, $C_1–C_{12}$alkyl—SO_2—, benzyl or $C_1–C_{46}$alk-1-yl which is 1-substituted by a total of one or two —CN and/or —$COOR_{14}$, phenyl, phenyl—$C_1–C_4$alkylene, phenyl—CO—, phenyloxy, phenylthio, phenyl—SO—, pnenyl—SO_2—, benzyloxy, benzylthio, benzyl—SO—, benzyl—SO_2—, $C_1–C_{18}$acyl—O—, —$COOR_{14}$, —$CON(R_{15})_2$, $C_1–C_{18}$acyl—NR_{15}—, $(R_{15})_2N$—, halogen, —CF_3 or —CN, or each two adjacent racicals of R_6 to R_{12} are the groups —CO—O—CO— or —CO—NR_{13}—CO— the pheynyl radicals and radicals containing pnehyl groups being unsubstituted or substituted by halogen, —CN, —CF_3, $C_1–C_6$alkylthio, $C_1–C_6$alkoxy, $C_1–C_6$alkyl, —$COOR_{14}$, —CO—$N(R_{15})_2$ or $C_1–C_{12}$acyl—O—,

R_{13} is H, $C_1–C_{12}$alkyl or $C_1–C_{12}$acyl, phenyl or benzyl, which are unsubstituted or substituted by $C_1–C_6$alkyl, $C_1–C_6$alkoxy, $C_1–C_6$alkylthio, halogen or —$COOR_{14}$,

the two R_{15} together are $C_4–C_8$alkylene, 3-oxa-1,5-pentylene, 3-thia-1,5-pentylene, 1.3-butadiene-1,4-diyl or 2-aza-1,3-butadiene-1,4-diyl, or the R_{15} radicals, independently of one another, are H, $C_1–C_{12}$alkyl, or phenyl or benzyl which is unsubstituted or substituted by $C_1–C_6$alkyl,

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C_1–C_6alkoxy, C_1–C_6alkylthio, halogen or —$COOR_{14}$, and

R_{14} is phenyl, (C_1–C_4alkyl)phenyl, benzyl, 1-phenyleth-2-yl, benzyl or 1-phenyleth-2-yl substituted by 1 or 2 C_1–C_{12}-alkyl, C_1–C_{20}-alkyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkyl-methyl, or a polyoxaalkylene radical of the formula —(C_nH_{n2}—O—)$_m$$R_{18}$, in which n is an integer from 2 to 4, m is a number from 1 to 12, and R_{18} is C_1–C_{18}-alkyl, C_{34}–C_8-cycloalkyl, C_5- or C_6-cycloalkylmethyl, phenyl, benzyl, or phenyl or benzyl, substituted by 1 or 2 alkyl groups having 1 to 12 carbon atoms, with the exception of 1-phenoxy-4-methylxanthen-9-one.

5,310,910

POLYCYCLIC DIAMINES

Gary J. Drtina, Woodbury, and Leif Christensen, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

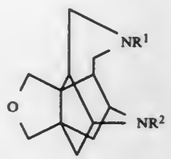
Division of Ser. No. 620,258, Nov. 30, 1990, Pat. No. 5,124,454. This application Apr. 6, 1993, Ser. No. 43,281

Int. Cl.[5] C07D *221/22*

U.S. Cl. 546—49 **6 Claims**

1. Polycyclic diamines and derivatives thereof represented by Formula I:

(I)



wherein R^1 and R^2 are independently selected from hydrogen, alkenyl or alkenylene containing 2 to 20 carbon atoms, alkyl or alkenylene containing 1 to 20 carbon atoms, aryl or arylene containing 5 to 12 ring atoms in which up to 5 of the ring atoms may be selected from S, Si, N, O, and P heteroatoms, cycloalkyl or cycloalkylene containing 3 to 12 ring atoms in which one or more ring atoms may be selected from S, Si, N, O, and P heteroatoms, and acyl, wherein acyl is



wherein R^4 is described as for R^1 and R^2, and further R^1, R^2, R^3, and R^4 may include functional groups selected from the group consisting of aryl, amide, thioamide, ester, thioester, ketone (including oxo-carbons), thioketone, nitrile, nitro, sulfide, sulfoxide, sulfone, disulfide, tertiary amine, ether, urethane, dithiocarbamate, quaternary ammonium and phosphonium, halogen, silyl, and siloxy, wherein the functional groups requiring substituents are substituted with hydrogen.

5,310,911

CHIRAL SYNTHESIS FOR PRODUCING 1-AZABICYCLO(2.2.1)HEPTANE-3-CARBOXYLATES

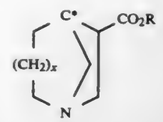
I. F. Cottrell, 75 Ladywood Road, Hertfordshire; S. H. B. Wright, 2 Greenstead, Sawbridgeworth, Hertfordshire, and D. Hands, 52 S. Lodge Drive, Oakwood, London, all of England

Division of Ser. No. 520,945, May 9, 1990, Pat. No. 5,104,989. This application Mar. 11, 1992, Ser. No. 849,268

Int. Cl.[5] C07D *271/02, 209/44*

U.S. Cl. 546—112 **7 Claims**

1. A substantially pure enantiomer of formula (I):



(I)

in exo-, endo- or a mixture of exo- and endo- forms; wherein x is 0 to 1, and CO_2R represents a carboxylic acid group, salt or reactive derivative thereof.

5,310,912

IODINATED NEUROPROBE FOR MAPPING MONOAMINE REUPTAKE SITES

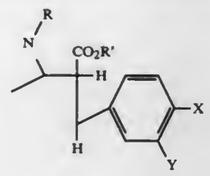
John L. Neumeyer, Wayland; Richard A. Milius, Boston, both of Mass., and Robert B. Innis, Hamden, Conn., assignors to Research Biochemicals Limited Partnership, Natick, Mass.

Filed Feb. 25, 1992, Ser. No. 841,617

Int. Cl.[5] C07D *451/02*

U.S. Cl. 546—132 **8 Claims**

1. An iodinated neuroprobe for mapping monoamine reuptake sites, the iodinated neuroprobe being of the formula:



wherein

R=a monofluoroalkyl group including ^{n}F where n=18 or 19;

R'=a C_nH_{2n+1} group where n=0–6;

X=an isotope of F, an isotope of Cl, an isotope of Br, an isotope of I, CH_3, or $Sn(R''_1R''_2R''_3)$;

R''_1=a C_nH_{2n+1} group where n=1–6, or an aryl group;

R''_2=a C_nH_{2n+1} group where n=1–6, or an aryl group;

R''_3=a C_nH_{2n+1} group where n=1–6, or an aryl group; and

Y=H.

5,310,913

DERIVATIVES OF QUINOLINE-3-CARBOXANILIDE

Per O. Gunnarsson; Torbjörn Stalhandske, both of Helsingborg; Kerstin Strandgarden, Vallakra; Karl-Erik Lundvall, Angelholm, and Kaj Johansson, Helsingborg, all of Sweden, assignors to Kabi Pharmacia Aktiebolag, Sweden

Continuation of Ser. No. 941,866, Sep. 8, 1992, which is a continuation of Ser. No. 651,234, Mar. 22, 1991. This application Aug. 5, 1993, Ser. No. 102,393

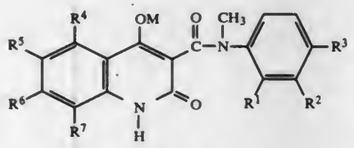
Claims priority, application Sweden, Jun. 9, 1989, 8902076

Int. Cl.[5] C07D *215/56*

U.S. Cl. 546—155 **8 Claims**

1. A novel compound having the formula

I



wherein R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are selected from the group consisting of hydrogen, hydroxy and methoxy,

wherein at most one of R^1, R^2 and R^3 and at most one of R^4, R^5, R^6 and R^7 are selected from the group consisting of hydroxy and methoxy; and M is selected from the group consisting of hydrogen and pharmaceutically acceptable inorganic or organic cations or tautomeric forms thereof.

5,310,914

PROCESS OF PREPARING 5-AMINO-5,6,7,8-TETRAHYDROQUINOLINES AND RELATED COMPOUNDS

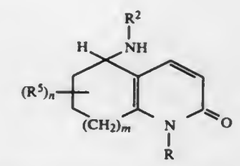
Richard C. Effland, Bridgewater, N.J., and David Fink, Doylestown, Pa., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 833,484, Feb. 10, 1992, Pat. No. 5,216,164, which is a division of Ser. No. 620,811, Dec. 3, 1990, Pat. No. 5,110,815. This application Mar. 19, 1993, Ser. No. 35,335

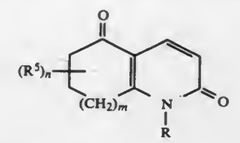
Int. Cl.[5] C07D *215/227, 221/04*

U.S. Cl. 546—157 **4 Claims**

1. A process for the preparation of a compound of the formula



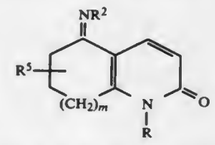
wherein R is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, or arylloweralkyl; R^2 is hydrogen, loweralkyl, arylloweralkyl, diaryloweralkyl, lowercycloalkenylloweralkyl, loweralkoxy, or arylloweralkoxy; R^5 is hydrogen, loweralkyl, or arylloweralkyl; m is 0, 1, or 2; and n is 1 or 2; which comprises (a) contacting a compound of the formula



wherein R, R^5, m and n are as above with a compound of the formula

R^2NH_2

wherein R^2 is as above in the presence of titanium tetra-isopropoxide to provide an imine of the formula



wherein R, R^2, R^5, and m are as above, and (b) contacting the imine with an alkali metal borohydride.

5,310,915

PROCESS FOR THE PURIFICATION OF 7-CHLOROQUINOLINE-8-CARBOXYLIC ACIDS

Gernot Reissenweber, Boehl-Iggelheim; Knut Koob, Mutterstadt, and Winfried Richarz, Stockstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP91/00143, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11436, PCT Pub. Date Aug. 8, 1991

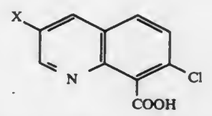
PCT Filed Jan. 25, 1991, Ser. No. 915,992

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1990, 4003174

Int. Cl.[5] C07D *215/10*

U.S. Cl. 546—168 **6 Claims**

1. Process for purifying 7-chloroquinoline-8-carboxylic acids of the general formula I



1

in which X denotes hydrogen, halogen or a lower alkyl group, by recrystallization from lower alcohols which are miscible with water, characterized in that the recrystallization is carried out in the presence of small amounts of a base.

5,310,916

TRIFUNCTIONAL AGENTS USEFUL AS IRREVERSIBLE INHIBITORS OF A1-ADENOSINE RECEPTORS

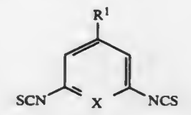
Kenneth A. Jacobson, Silver Spring, Md.; Gary L. Stiles, Chapel Hill, N.C., and Daniel L. Boring, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 221,413, Jul. 19, 1988, abandoned. This application Aug. 24, 1990, Ser. No. 572,410

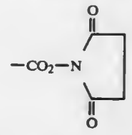
Int. Cl.[5] C07D *331/00*; A61K *31/52, 31/505*

U.S. Cl. 546—224 **18 Claims**

1. Compounds of the formula



wherein X is CH and R^1 is aminocarbonyl or



unsubstituted or substituted with: —OH, —COOH, lower ester of COOH, carboxamide, $NHCOCH_3$, $NHCOCH_2Br$, halo, dimethylamino, triethylammonium, $NHCONH_2$, SO_2NH_2, —SO_3H, or a spectroscopic reporter group, coupled through an amido, sulfonamido, amino, thiourea, unsubstituted biotinylamino, or substituted biotinylamino linkage, wherein said biotinylamino linkage is substituted with a spacer chain or;

wherein R^1 is CONH—R_2 or NHCSNH—R_2, wherein R_2 is lower alkyl unsubstituted or substituted with: —OH, —COOH, lower ester of COOH, carboxamide,

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$NHCOCH_3$, $NHCOCH_2Br$, halo, dimethylamino, triethylammonium, $NHCONH_2$, SO_2NH_2, $-SO_3H$, or a spectroscopic reporter group, coupled through an amido, sulfonamido, amino, thiourea, unsubstituted biotinylamino, or substituted biotinylamino linkage, wherein said biotinylamino linkage is substituted with a spacer chain.

5,310,917

PROCESS FOR THE PREPARATION OF 4-SUBSTITUTED-1,4-DIHYDROPYDRINES

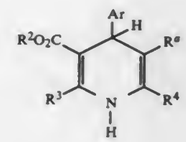
Joseph Auerbach, Brooklyn, N.Y., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 759,026, Sep. 13, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 920,701

Int. Cl.[5] **C07D** *211/02*

U.S. Cl. 540—249 **24 Claims**

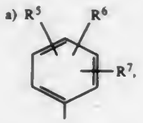
1. A process for the preparation of a compound having the formula I:

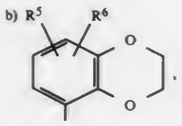


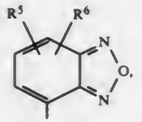
I

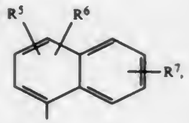
wherein

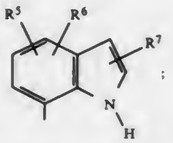
Ar is selected from:

a)  ,

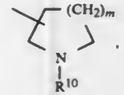
b)  ,

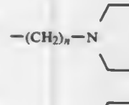
c)  ,

d)  ,

e)  ;

R^a is selected from:

a)  ,

b)  ,

c) CN;

R^1 and R^2 are independently selected from:

a) C_1–C_8-alkyl,

b) C_3–C_8-cycloalkyl,

c) C_2–C_5-alkenyl,

d) C_1–C_4-aralkyl,

e) C_2–C_4-aralkenyl

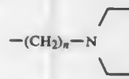
f) $-C_1$–C_5-alkylNR^8R^9,

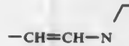
g) $-C_1$–C_4-alkyl-O-C_1–C_4-alkyl,

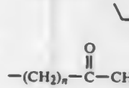
h) $-C_1$–C_4-alkylONO_2,

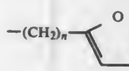
i) ,

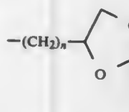
j) ,

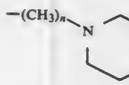
k)  ,

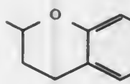
l)  ;

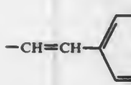
m)  ,

n)  ,

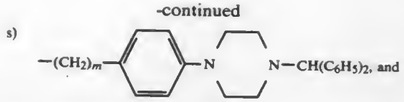
o)  ,

p)  ,

q)  ,

r)  ,

-continued

s)  , and

t) $-(CH_2)_m-C_3$–C_8-cycloalkyl;

wherein C_1–C_4 aralkyl is selected from C_1–C_4-alkyl substituted one to two times with a group selected from phenyl and naphthyl;

wherein C_2–C_4 aralkenyl is selected from C_2–C_4-alkenyl substituted one to two times with a group selected from phenyl and naphthyl;

R^3 is selected from:

a) C_1–C_8-alkyl,

b) C_3–C_8-cycloalkyl,

c) $(CH_2)_n-R^{12}$, and

d) hydrogen;

R^4 is selected from:

a) C_1–C_8-alkyl,

b) C_3–C_8-cycloalkyl,

c) $(CH_2)_n-R^{12}$, and

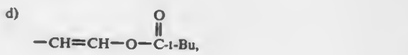
d) hydrogen;

R^5, R^6, and R^7 are independently selected from:

a) hydrogen,

b) halogen,

c) NO_2,

d)  ,

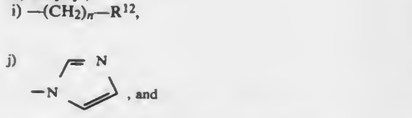
e) CF_3,

f) C_1–C_8-alkyl,

g) C_3–C_8-cycloalkyl,

h) ethynyl,

i) $-(CH_2)_n-R^{12}$,

j)  , and

k) $-O-(CH_2)_n-NH-CH_2-CH(OH)CH_2-O(C_6H_5)$;

R^8 and R^9 are independently selected from:

a) C_1–C_8-alkyl,

b) C_3–C_8-cycloalkyl,

c) aralkyl as defined herein above, and

d) hydrogen;

R^{10} is selected from:

a) hydrogen,

b) C_1–C_8-alkyl,

c) C_3–C_8-cycloalkyl, and

d) C_1–C_4-aralkyl;

R^{11} is selected from:

a) hydrogen,

b) C_1–C_4-aralkyl,

c) dichlorophenyl, and

d) C_1–C_8 alkyl, and

e) C_3–C_8-cycloalkyl;

R^{12} is selected from:

a) halogen,

b) NR^8R^9,

c) $NHC(O)$-C_1–C_8-alkyl,

d) SR^8,

e) SO_2-pyridyl,

f) OR^8, and

g) CO_2R^8;

R^{15} is selected from:

a) $-NR^8R^9$, and

b) -1-piperidinyl;

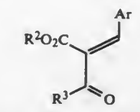
X is O, S, or NR^8;

m is 0 to 2; and

n is 0to 3;

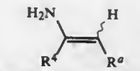
comprising the step of:

a) heating a mixture of a compound of the formula:



II

wherein Ar, R^2, and R^3 are as defined hereinabove and a compound of the formula III:



III

wherein R^a and R^4 are as defined hereinabove, in a solvent at an elevated temperature and for a length of time sufficiently long to consume the maximum amount of the starting materials but sufficiently short to allow only a minimum amount of the starting materials, intermediates or product to decompose with a strong acid, wherein the strong acid is added subsequent to heating to the elevated temperature;

to form the compound of the formula I.

5,310,918

1-ARYL-SUBSTITUTED AZOLE, NON-LINEAR OPTICAL MATERIAL AND NOVEL MOLECULAR CRYSTAL CONTAINING SAME AND METHOD AND MODULE FOR THE CONVERSION OF LIGHT WAVELENGTH USING SAME

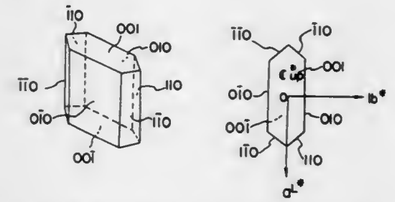
Nobuhiko Uchino; Masaki Okazaki; Makoto Ishihara; Akinori Harada; Yoji Okazaki, and Kazumi Kubo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 15, 1991, Ser. No. 700,285

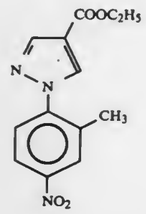
Claims priority, application Japan, May 16, 1990, 2-125848; Jul. 20, 1990, 2-192405; Sep. 21, 1990, 2-253199

Int. Cl.[5] **C07D** *401/00, 249/12, 207/30*

U.S. Cl. 546—276 **2 Claims**



1. A non-linear optical material represented by the formula (II):



(II)

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5,310,919

PESTICIDAL PYRIDYL-SUBSTITUTED ACRYLIC ESTERS

Alexander Klausener, Krefeld; Gerd Kleefeld, Duesseldorf; Dieter Berg, Wuppertal; Stefan Dutzmann, Duesseldorf, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 612,940, Nov. 13, 1990, Pat. No. 5,120,734, which is a division of Ser. No. 477,271, Feb. 8, 1990, Pat. No. 5,008,275. This application Jan. 31, 1992, Ser. No. 829,856

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3904931

Int. Cl.[5] C07D *213/26, 213/30, 213/32*

U.S. Cl. 546—301 **3 Claims**

1. A hydroxyacrylic ester of the formula:



(IIa)

in which

R^1 represents straight-chain or branched alkyl which has 1 to 6 carbon atoms; or represents aralkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the aryl moiety and which is either unsubstituted or monosubstituted to polysubstituted in the aryl moiety by identical or different substituents selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl, alkoxy or alkylthio, each having 1 to 4 carbon atoms, straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms;

X represents oxygen or sulphur or represents a radical $-N(R^4)-$;

M represents hydrogen or represents an alkali metal cation;

Py represents 2-pyridyl, 3-pyridyl or 4-pyridyl, each of which is unsubstituted or monosubstituted to polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl, alkoxy or alkylthio, each having 1 to 6 carbon atoms, straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl, alkoximinoalkyl, dialkylamino or dialkylaminocarbonyl, each having 1 to 4 carbon atoms in the individual alkyl moieties, straight-chain or branched alkenyl or alkynyl, each having 2 to 8 carbon atoms; and

R^4 represents hydrogen, or represents straight-chain or branched alkyl which has 1 to 6 carbon atoms, or represents straight-chain or branched alkanoyl which has 1 to 6 carbon atoms in the alkyl moiety, or represents aralkyl or aryl which has 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the respective aryl moiety and each of which is unsubstituted or monosubstituted to polysubstituted by identical or different substituents as set forth as possible aryl substituents in the case of R^1; with the exception of the compound ethyl 2-(6-methyl-pyrid-3-yloxy)-3-hydroxyacrylate.

5,310,920

N-VINYLIMIDAZOLIDINE DERIVATIVES INSECTICIDES CONTAINING SAME AS AN EFFECTIVE INGREDIENT

Kenji Kodaka; Michihiko Nakaya; Katsutoshi Kinoshita; Koichi Ebihara; Hirozumi Matsuno; Shirou Shiraishi; Kazutomi Ohnuma, and Ei-ich Yamada, all of Mobara, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

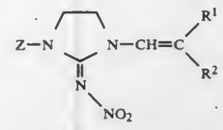
Filed Dec. 15, 1992, Ser. No. 991,051

Claims priority, application Japan, Dec. 16, 1991, 3-331781

Int. Cl.[5] C07D *401/06;* A61K *31/44*

U.S. Cl. 514—341 **8 Claims**

1. An N-vinylimidazolidine compound of the formula (I):



(I)

where R^1 represents a hydrogen atom, a phenyl group, or an alkyl group having from 1 to 4 carbon atoms; R^2 represents a hydrogen atom, a phenoxy group, a benzyl group, a phenyl group, a -C(=O)H group, a 2-chloropyridin-5 ylmethyl group, a benzoylamino group, an alkyl group having from 1 to 18 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, an alkylthio group having from 1 to 4 carbon atoms, a phenyl group substituted by halogen atom(s), a phenyl group substituted by cyano group(s), a phenyl group substituted by phenyl group(s), a phenyl group substituted by benzoyl group(s), a phenyl group substituted by methylenedioxy group(s), a phenyl group substituted by alkyl group(s) having from 1 to 4 carbon atoms, a phenyl group substituted by alkoxy group(s) having from 1 to 4 carbon atoms, a phenyl group substituted by alkylthio group(s) having from 1 to 4 carbon atoms, a phenyl group substituted by haloalkyl group(s) having from 1 to 4 carbon atoms, or a phenyl group substituted by haloalkoxy group(s) having from 1 to 4 carbon atoms; and Z represent a 2-chloropyridin-5-ylmethyl group or a 2 -chlorothiazol-5-ylmethyl group.

5,310,921

BIS-(2,5-POLYTHIO-1,3,4-THIADIAZOLES), RUBBERS CONTAINING SUCH COMPOUNDS, AND A METHOD OF PREPARATION OF BIS-(2,5-POLYTHIO-1,3,4-THIADIAZOLES)

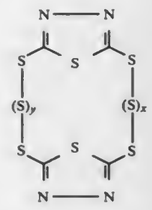
Joseph A. Kuczkowski, Munroe Falls; Michael B. Rodgers, Akron, and Kevin L. Rollick, Munroe Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 26, 1992, Ser. No. 935,324

Int. Cl.[5] C07D *513/18;* C08K *5/46*

U.S. Cl. 548—126 **11 Claims**

1. Bis-(2,5-polythio-1,3,4-thiadiazoles) consisting of the formula:



wherein y and x are independently selected from the group consisting of integers of from 2 to 4.

5,310,922

SQUARAINE DYES

John Pease, Los Altos; Thomas L. Tarnowski, San Francisco; Donald Berger, San Jose; Chiu C. Chang, Sunnyvale, all of Calif., and Chun-Hua Chuang, Akron, Ohio, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

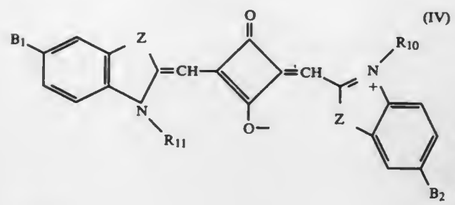
Division of Ser. No. 300,996, Jan. 23, 1989, Pat. No. 5,039,818, which is a division of Ser. No. 834,168, Feb. 27, 1986, Pat. No. 4,830,786. This application Jun. 13, 1991, Ser. No. 714,964

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] C07D *417/08*

U.S. Cl. 548—156 **2 Claims**

1. A compound of the formula



(IV)

wherein:

Z is S;

R_{10} and R_{11} are independently selected from the group consisting of

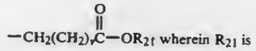
hydrogen,

alkyl (1 to 20 carbon atoms),

cycloalkyl of from 5 to 20 atoms,

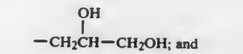


wherein z is 0 to 5,



wherein R_{21} is

hydrogen, or lower alkyl (1 to 4 carbon atoms) and v is 0 to 5, and



β_1 and β_2 are independently hydrogen, chlorine, bromine, fluorine or lower alkoxy (1 to 4 carbon atoms), with the proviso that only one of β_1 or β_2 is hydrogen or chlorine, bromine or fluorine when R_{10} and R_{11} are both hydrogen or lower alkyl of 1 or 2 carbon atoms.

5,310,923

PREPARATION OF HIGH PURITY THIABENDAZOLE

Lynn E. Applegate, and Carl A. Renner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 30, 1993, Ser. No. 55,437

Int. Cl.[5] C07D *417/04*

U.S. Cl. 548—181 **12 Claims**

1. A process for preparing thiabendazole which comprises reacting 4-cyanothiazole with (a) o-phenylenediamine in the presence of an acid catalyst, or (b) a protonic acid salt of o-phenylenediamine, at a temperature in the range between 85° and 145° C. in a liquid polar organic compound for a time sufficient to effect the desired conversion to thiabendazole, and recovering thiabendazole from the reaction mass; said polar organic compound being a liquid in which thiabendazole is substantially insoluble, and 4-cyanothiazole, said catalyst, o-phenylenediamine, and protonic acid salts of o-phenylenediamine, are soluble, and being selected from alkanols containing 3 to 8 carbon atoms, alkanediols containing 2 to 8 carbon atoms, alkane polyethers containing 4 to 10 carbon atoms and 2 to 4 oxygen oxygen atoms, and alkoxyalkanols having 1 to 8 carbon atoms in the alkoxy group and 1 to 8 carbon atoms in the alkanol portion of the molecule.

5,310,924

PROCESS FOR PREPARING THIABENDAZOLE

Patti A. Parziale; Tzu-Ching Chang, and Lynn E. Applegate, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 30, 1993, Ser. No. 55,438

Int. Cl.[5] C07D *417/04*

U.S. Cl. 548—181 **10 Claims**

1. A process for preparing thiabendazole which comprises reacting 4-cyanothiazole with (a) o-phenylenediamine in the presence of an acid catalyst, or (b) a protonic acid salt of o-phenylenediamine, at a temperature in the range between 80° and 145° C. and a pH of from 2.5 to 6.0 in solution in water, or in solution in mixtures of water with miscible co-solvents, for a time sufficient to effect the desired conversion to thiabendazole, and recovering thiabendazole from the reaction mass.

5,310,925

N-SULFONYLOXAZIRIDINES AS BLEACHING COMPOUNDS

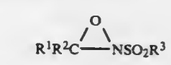
David J. Batal, Secaucus, N.J., and Stephen A. Madison, Valley Cottage, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 494,709, Mar. 16, 1990, Pat. No. 5,045,223. This application Jul. 16, 1991, Ser. No. 731,836

Int. Cl.[5] C07D *513/04*

U.S. Cl. 548—207 **3 Claims**

1. A compound whose structure is:



wherein:

R^1 is a radical selected from the group consisting of phenyl, lower alkyl and cycloalkyl radicals, each said radical having a lower alkyl quaternary di- or tri-alkylammonium substituent; and

R^2 with R^3 is a benzisothiazole ring system.

5,310,926

PROCESS FOR PRODUCING ISOXAZOLE DERIVATIVES

Yu-ichi Hagiwara, Iruma; Motoaki Tanaka, Tokorozawa; Makoto Kajitani, Hidaka, and Mitsugi Yasumoto, Honjo, all of Japan, assignors to Taiho Pharmaceutical Co., Limited, Tokyo, Japan

Division of Ser. No. 761,826, Sep. 12, 1991. This application Sep. 16, 1993, Ser. No. 121,557

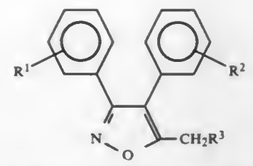
Claims priority, application Japan, Jan. 24, 1990, 2-14239

Int. Cl.[5] C07D *261/08*

U.S. Cl. 548—247 **3 Claims**

1. A process for producing an isoxazole derivative of the formula (II):

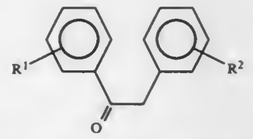
VOL 1162 ISS 2 MY 10 1994 UMI



(II)

wherein R^1 and R^2 are the same or different and are each a hydrogen atom or lower alkoxy and R^3 is cyano or alkoxycarbonyl, comprising the steps of

a) reacting a desoxybenzoin derivative of the formula (III)

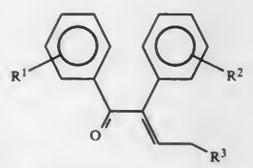


(III)

with an alkoxyacrylonitrile or alkoxyacrylic acid derivative of the formula (IV)

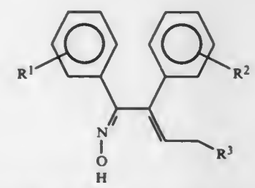
$$ZO-=-R^3 \qquad (IV)$$

wherein Z is a lower alkyl, in a suitable solvent in the presence of a base to produce a compound of the formula (V)



(V)

b) then reacting the resulting compound of the formula (V) with hydroxylamine or a salt thereof in a suitable solvent at a temperature of 0° to 200° C. to obtain an α, β unsaturated ketoxime derivative of the formula (I)



(I)

wherein R^1, R^2, and R^3 are as defined above, and

c) oxidizing the compound of the formula (I).

5,310,927

BENZOFURAN DERIVATIVES

Barry C. Ross; David Middlemiss; David I. C. Scopes; Torquil I. M. Jack; Kevin S. Cardwell; Michael D. Dowle, and Duncan B. Judd, all of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

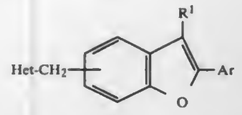
Filed May 15, 1992, Ser. No. 883,164

Claims priority, application United Kingdom, May 16, 1991, 9110625.2

Int. Cl.[5] **C07D** *407/12, 407.14;* **A61K** *31/41, 31/415*

U.S. Cl. 548—251 **16 Claims**

1. A compound of formula (I):

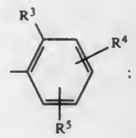


(I)

or a physiologically acceptable salt, solvate or metabolically labile ester thereof wherein

R^1 represents a hydrogen atom or a halogen atom or a group selected from $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, fluoro$C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$alkoxy, —CHO, —CO_2H or —COR^2;

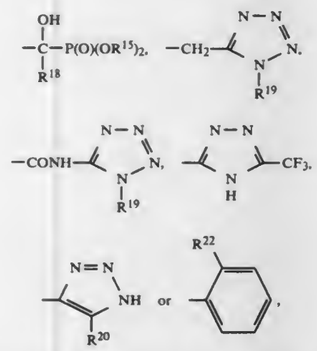
Ar represents the group



;

R^2 represents a group selected from $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, $C_{1\text{-}6}$alkoxy or the group —$NR^{10}R^{11}$,

R^3 represents a group selected from —SO_3R^{15}, —$PO(OR^{15})_2$, —$PO(OR^{16}R^{16}$, —SO_2NHR^{16}, —$CONHSO_2CF_3$, —SO_2NH-heteroaryl, —CH_2SO_2NH-heteroaryl, —SO_2NHCOR^{17}, —$CH_2SO_2NHCOR^{17}$, —$CONHSO_2R^{17}$, —$CH_2CONHSO_2R^{17}$, —$NHSO_2NHCOR^{17}$, —$NHCONHSO_2R^{17}$. —$SO_2NHCONHR^{17}$, —$CONHSO_2NHR^{17}$,



wherein 'heteroaryl' represents a 5 membered aromatic ring containing from 1 to 3 nitrogen atoms said aromatic ring being optionally substituted by 1 or 2 substituents selected from a halogen atom or a group selected from hydroxy, —SH, $C_{1\text{-}4}$alkyl, $C_{1\text{-}4}$alkoxy, —CF_3, —NO_2, —CO_2H, $C_{1\text{-}5}$acyloxy, —NH_2, $C_{1\text{-}4}$alkylamino or di$C_{1\text{-}4}$alkylamino; R^4 and R^5 which may be the same or different each independently represent a hydrogen atom or a halogen atom or a $C_{1\text{-}6}$ alkyl group; Het represents an N-linked imidazolyl group optionally substituted at the 2-position by a $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, $C_{1\text{-}6}$alkylthio, $C_{1\text{-}6}$alkoxy, $C_{3\text{-}7}$cycloalkyl or $C_{3\text{-}7}$cycloalkyl$C_{1\text{-}4}$alkyl group, the imidazolyl group optionally being substituted at the 4-and 5-positions by one or two further substituents selected from a halogen atom or a group selected from cyano, nitro, $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, fluoro$C_{1\text{-}6}$alkyl, $C_{3\text{-}7}$cycloalkyl, $C_{3\text{-}7}$cycloalkyl$C_{1\text{-}4}$alkyl, $(CH_2)_mR^6$, —$(CH_2)_nCOR^7$ or —$(CH_2)_pNR^8COR^9$;

R^6 represents a hydroxy or cl-6alkoxy group;

R^7 represents a hydrogen atom or a group selected from hydroxy, $C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$alkoxy, phenyl, phenoxy or the group —$NR^{10}R^{11}$;.

R^8 represents a hydrogen atom or a $C_{1\text{-}6}$alkyl group;

R^9 represents a hydrogen atom or a group selected from $C_{1\text{-}6}$alkyl,

$C_{1\text{-}6}$alkoxy, phenyl, phenoxy or the group —$NR^{10}R^{11}$;

R^{10} and R^{11}, which may be the same or different, each independently represent a hydrogen atom or a $C_{1\text{-}4}$alkyl group;

R^{15} represents a hydrogen atom or the group —$CH(R^{16})OC(O)R^{21}$;

R^{16} represents a hydrogen atom or a group selected from $C_{1\text{-}6}$alkyl, phenyl or benzyl;

R^{17} represents a group selected from aryl, heteroaryl (as defined above), $C_{3\text{-}7}$cycloalkyl, perfluoro$C_{1\text{-}4}$alkyl or $C_{1\text{-}4}$alkyl optionally substituted by a halogen atom or a group selected from hydroxy, —SH, $C_{1\text{-}4}$alkyl, $C_{1\text{-}4}$alkoxy, $C_{1\text{-}4}$alkylthio, —CF_3, —NO_2, —CO_2H, —$C_{1\text{-}5}$acyloxy, —NH_2, $C_{1\text{-}4}$alkylamino, di$C_{1\text{-}4}$alkylamino, —PO_3H or —$PO(OH)C_{1\text{-}4}$alkoxy, wherein 'aryl' represents a phenyl or naphthalenyl group optionally substituted by 1 or 2 substituents selected from a halogen atom or a group selected from $C_{1\text{-}4}$alkyl, $C_{1\text{-}4}$alkoxy, —NO_2, —CF_3, $C_{1\text{-}4}$alkylthio, hydroxy or —NH_2;

R^{18} represents a hydrogen atom or a group selected from $C_{1\text{-}6}$alkyl, phenyl or benzyl;

R^{19} represents a hydrogen atom or a group selected from $C_{1\text{-}6}$alkyl, $C_{2\text{-}4}$alkenyl or $C_{1\text{-}4}$alkoxy$C_{1\text{-}4}$alkyl;

R^{20} represents a group selected from —CN, —NO_2 or —CO_2R^{16};

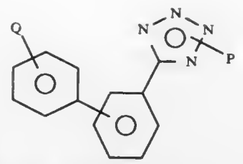
R^{21} represents a group selected from $C_{1\text{-}6}$alkyl, aryl (as defined above) or —CH_2-aryl (as defined above);

R^{22}represents a group selected from —CO_2R , —SO_3R^{15}, —$NHSO_2CF_3$, —$PO(OR^{15})_2$, —SO_2NHR^{18} or a Clinked tetrazolyl group;

m represents an integer from 1 to 4, preferably 1 or 2, especially 1;

n represents an integer from 0 to 4, preferably 0, 1 or 2, especially 0 or 1; and

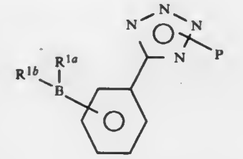
p represents an integer from 1 to 4, preferably 1 or 2.



II

which comprises the following steps:

(a) mixing a compound of formula I



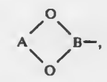
I

wherein:

P is triphenylmethyl, tertiary-butyl, C_1–C_4 alkoxymethyl, methylthiomethyl, phenyl C_1–C_4 alkoxymethyl, p-methoxybenzyl, 2,4,6-trimethylbenzyl, 2-(trimethylsilyl)ethyl, tetrahydropyranyl, piperonyl, or benzenesulfonyl; and

R^{1a} and R^{1b} are each independently chlorine, bromine, C_1–C_4 alkoxy, hydroxy, or

R^{1a} and R^{1b} can be taken together with B to form a structure:



A is phenyl, or $(CH_2)n$,

n is 2–4,

with coupling solvent(s), wherein the coupling solvent(s) is-(are) selected from the group consisting of benzene, toluene, ethyl ether, tetrahydrofuran, dioxane, acetonitrile, dimethylformamide, dimethylacetamide, dimethylsulfoxide, ethanol, methanol, propanol, water, 2-methyl-tetrahydrofuran or diethoxymethane;

(b) mixing into the reaction mixture of step (a), a base, wherein the base is selected from:

(i) an organic tertiary non-nucleophilic base, wherein the organic tertiary non-nucleophilic base is selected from the group consisting of triethylamine or diisopropylethylamine,

(ii) an inorganic base, wherein the inorganic base is selected from potassium carbonate, sodium carbonate, cesium carbonate, thallium hydroxide, potassium alkoxide or sodium alkoxide, and

(iii) an organic solvent soluble base, wherein the organic solvent soluble base is selected from the group consisting of tetra-n-butylammonium carbonate, tetra-n-butylammonium hydroxide, benzyltrimethylammonium carbonate, benzyltrimethylammonium methyl carbonate, benzyltrimethylammonium methoxide, or benzyltrimethylammonium hydroxide;

and a compound having the formula:

5,310,928

PROCESS FOR PREPARING BIPHENYLTETRAZOLE COMPOUNDS

Young S. Lo, Hockessin; Lucius T. Rossano, Newark, both of Del.; Robert D. Larsen, Bridgewater, and Anthony O. King, Hillsborough, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. and Merck & Co., Inc., Rahway, N.J.

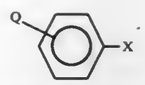
Continuation-in-part of Ser. No. 793,514, Nov. 18, 1991, Pat. No. 5,130,439. This application Jul. 10, 1992, Ser. No. 911,812

Int. Cl.[5] **C07D** *257/04, 257/06, 403/06*

U.S. Cl. 548—252 **29 Claims**

1. A process for preparing a compound of formula II

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X is bromine, iodine, methanesulfonyloxy, toluenesulfonyloxy, fluorosulfonyloxy, or trifluoromethanesulfonyloxy; and

Q is hydrogen, methyl, C_1–C_4 alkyl, hydroxymethyl, triorganosilyloxymethyl, hydroxy C_1–C_4 alkyl, formyl, C_1–C_4 acyl, C_1–C_4 alkoxycarbonyl, or W-L—;

L is a single bond, $—(CH_2)_t—$, $—(CH_2)_rO(CH_2)_r—$, or $—(CH_2)_rS(O)_v(CH_2)_r—$,

t is 1 to 4;

r is 0 to 2; and

W is a mono-, bi-, or multi-cyclic heteroaromatic group, which may be partially or completely hydrogenated, in which each ring member of said group includes at least 1 carbon atom and from 1 to 5 heteroatoms;

(c) charging the reaction mixture of step (b) with a metal catalyst, wherein the metal catalyst is selected from the group consisting of nickel complex, palladium complex or platinium complex, for one to thirty hours at a temperature ranging from room temperature to 150° C.;

(d) purifying the reaction mixture (c) containing the compound of formula II to give the purified compound of formula II; and

(e) recrystallizing the purified compound of formula II with a recrystallizing solvent.

5,310,929

PRODRUGS OF IMIDAZOLE CARBOXYLIC ACIDS AS ANGIOTENSIN II RECEPTOR ANTAGONISTS

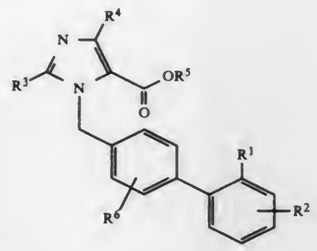
Robert J. Ardecky, Encinitas, Calif.; Carol L. Ensinger, Newark, Del., and James R. Pruitt, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1992, Ser. No. 926,795

Int. Cl.[5] C07D *403/14, 403/12, 401/14;* A61K *31/41, 31/415*

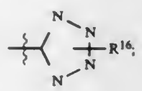
U.S. Cl. 548—253 **10 Claims**

1. A compound of the formula:



wherein

R^1 is $—CO_2H$ or



R^2 is

(a) H,

(b) C1–C5-alkyl,

(c) C1–C5-alkoxy,

(d) halo (F, Cl),

(e) phenyl;

R^3 is C1–C5-alkyl, C2–C5-alkenyl, C2–C5-alkynyl;

R^4 is

(a) H,

(b) halo (Cl, Br, I),

(c) C1–C6-alkyl,

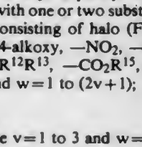
(d) C_vF_w where v=1 to 3 and w=1 to (2v+1);

R^5 is

(a) $—(CH_2)_pNR^{12}R^{13}$,

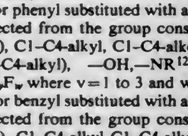
(b) $—(CH_2)_sCH(R^7)(CH_2)_s$, O_2CR^8,

(c)



(d) $—(CH_2)_pCO_2R^{10}$,

(e)



R^6 is

(a) H,

(b) halogen (F, Cl, Br, I),

(c) C1–C5-alkyl,

(d) —OH,

(e) C1–C4-alkoxy,

(f) $—NO_2$,

(g) $—NR^{12}R^{13}$,

(h) $—NR^{12}COR^{15}$,

(i) $—NR^{12}CO_2R^{15}$,

(j) $—S(O)_rR^{14}$ where r is 0, 1 or 2,

(h) $—CO_2R^{15}$,

(i) $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1),

(J) $—OC_vF_w$ where v=1 to 3 and w=1 to (2v+1), or (K) —CN;

R^7 is H or C1–C4-alkyl;

R^8 is

(a) H,

(b) C1–C5-alkyl,

(c) C1–C5-alkyl optionally substituted with a group consisting of:

i) C1–C5-alkoxy,

ii) aryl, wherein aryl is phenyl or napthyl optionally substituted with one or two substituents selected from the group consisting of halo (F, Cl, Br, I), C1–C4-alkyl, C1–C4-alkoxy, $—NO_2$, $—S(O)_r$(C1–C5-alkyl), —OH, $—NR^{12}R^{13}$, $—CO_2R^{15}$, and $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1);

R^9 is

(a) C1–C5-alkyl,

(b) $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1),

(c) C1–C5-alkyl optionally substituted with a group consisting of:

i) C1–C5-alkoxy,

ii) phenyl or phenyl substituted with at least one substituent selected from the group consisting of halo (F, Cl, Br, I), C1–C4-alkyl, C1–C4-alkoxy, $—NO_2$, $—S(O)_r$(C1–C4-alkyl), —OH, $—NR^{12}R^{13}$, $—CO_2R^{15}$, and $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1),

iii) benzyl or benzyl substituted with at least one substituent selected from the group consisting of halo (F, Cl, Br, I), C1–C4-alkyl C1–C4-alkoxy, $—NO_2$, $—S(O)_r$(C1–C4-alkyl), —OH, $—NR^{12}R^{13}$, $—CO_2R^{15}$, and $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1);

R^{10} is

(a) phenyl or phenyl substituted with at least one substituent selected from the group consisting of halo (F, Cl, Br, I), C1–C4-alkyl C1–C4-alkoxy, $—NO_2$, $—S(O)_r$(C1–C4-alkyl), —OH, $—NR^{12}R^{13}$, $—CO_2R^{15}$, and $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1);

(b) benzyl or benzyl substituted with at least one substituent selected from the group consisting of halo (F, Cl, Br, I), C1–C4-alkyl C1–C4-alkoxy, $—NO_2$, $—S(O)_r$(C1–C4-alkyl), —OH, $—NR^{12}R^{13}$, $—CO_2R^{15}$, and $—C_vF_w$ where v=1 to 3 and w=1 to (2v+1);

R^{11} is H, C1–C5-alkyl or benzyl;

R^{12} and R^{13} are independently H, C1–C5-alkyl, phenyl or benzyl;

R^{14} is CF_3, C1–C5-alkyl, or phenyl;

R^{15} is H, C1–C5-alkyl, or $NR^{12}R^{13}$;

R^{16} is H or $CH_2O_2CC(CH_3)_3$;

p is 1–5;

r is 0–2;

s and s' are 0–5;

t is 0 or 1;

or a pharmaceutically acceptable salt thereof.

5,310,930

BENZOFURANYLIMIDAZOLE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THERAPEUTICAL COMPOSITIONS CONTAINING THE SAME

Jesus A. G. Sevilla, Mallorca; José J. M. Martinez, Victoria-Gasteiz; Fernando B. Fernandez, Bizkaia; Fernando A. G. Caballero, Barcelona; Angel M. Banos, Barcelona; Rosendo O. Vidal, Barcelona, and Francesc P. Rodas, Barcelona, all of Spain, assignors to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S), France

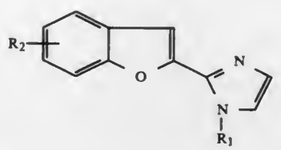
Filed Dec. 23, 1992, Ser. No. 995,790

Claims priority, application United Kingdom, Dec. 27, 1991, 9127430

Int. Cl.[5] C07D *405/04*

U.S. Cl. 548—311.4 **6 Claims**

1. Process for the preparation of benzofuranylimidazole derivatives of the formula (1)



(1)

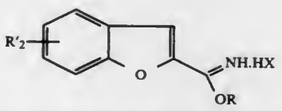
wherein

R_1 represents a hydrogen atom, and

R_2 represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 5 carbon atoms;

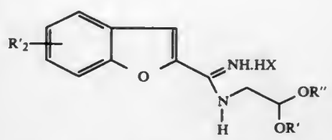
or a therapeutically acceptable salt of such a derivative, the process comprising the following successive steps:

reacting a compound of formula (2)



(2)

wherein R represents an alkyl group having from 1 to 4 carbon atoms and HX represents an acid, with, at least, one molar equivalent of an aminoacetaldehyde dialkyl acetal, in a polar solvent, for 1 to 24 hours, at a temperature of from −5° C. to the boiling point of the reaction mixture thereby obtaining a compound of the formula (3)



(3)

wherein R' and R'' represent, each, an alkyl group having from 1 to 4 carbon atoms, and

cyclizing, in an aqueous acidic medium, for 1 to 24 hours, at a temperature of from 15° to 80° C., the compound of the formula (3), said cyclizing resulting in compounds of the formula (1).

5,310,931

ISOMERIZATION OF CYCLOOLEFIN FROM ENDO-FORM TO EXO-FORM AND COPOLYMERIZATION OF CYCLOOLEFIN AND ETHYLENE

Toshihiro Sagane; Hideaki Yamaguchi, both of Iwakuni; Shuji Minami, Obtake; Akira Mizuno, Ohno, and Hiroo Wamura, Waki, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

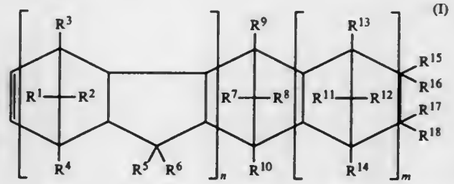
Division of Ser. No. 565,143, Aug. 10, 1990, Pat. No. 5,106,931. This application Jan. 10, 1992, Ser. No. 818,908

Claims priority, application Japan, Aug. 15, 1989, 1-210448; Aug. 15, 1989, 1-210449; Sep. 20, 1989, 1-244493; Sep. 20, 1989, 1-244494; Oct. 23, 1989, 1-275714; Oct. 23, 1989, 1-275715

Int. Cl.[5] C07C *2/76, 13/28, 13/36*

U.S. Cl. 585—360 **4 Claims**

1. An isomer mixture of a cycloolefin of the formula (I)



(I)

wherein R^1 to R^{14} are independently a hydrogen atom, a halogen atom or a hydrocarbon group, R^{15} to R^{18} are independently a hydrogen atom, a halogen atom or a hydrocarbon group, or R^{15} or R^{16} and R^{17} or R^{18} may be bonded to each other to form a monocyclic or polycyclic group, or R^{15} and R^{16} or R^{17} and R^{18} may together form an alkylidene group, n is 0 or 1, and m is 0 or a positive integer, provided that m and n cannot be simultaneously zero, which comprises, based on the cycloolefin having an endo form and the cycloolefin having an exo form in total, up to 80 mol % of the cycloolefin having and endo form and at least 20 mol % of the cycloolefin having an exo form.

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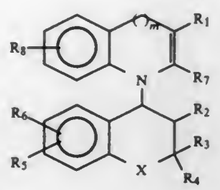
5,310,932

CHROMANYL SUBSTITUTED INDOLE POTASSIUM CHANNEL OPENERS

Karnail Atwal, Newtown, Pa., and George C. Rovnyak, Hopewell, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 685,323, Apr. 15, 1991, abandoned. This application Sep. 11, 1991, Ser. No. 760,030
Int. Cl.[5] C07D *405/04*
U.S. Cl. 548—454 **7 Claims**

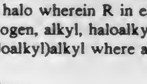
1. A compound of the formula



wherein X is —O—;

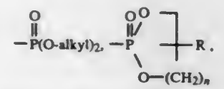
R_1 and R_7 are independently selected from H, alkyl, haloalkyl, cycloalkyl, arylalkyl, CN, NO_2, COR, COOR, CONHR, $CONR_2$, halo wherein R in each of the above groups can be hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl, or (cycloalkyl)alkyl where at least one of R_1 or D_7 is H:

R_2 is hydrogen, hydroxy,



R_3 and R_4 are each independently selected from hydrogen, alkyl or arylalkyl, or, R_3 and R_4 taken together with the carbon atom to which they are attached form a 5- to 7-membered ring;

R_5 is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, cycloalkyl, arylalkyl, (cycloalkyl)alkyl, —CN, $—NO_2$, —COR, —COOR, —CONHR, $—CONR_2$, $—CF_3$, S-alkyl, —SOalkyl, $—SO_2$alkyl,



halogen, amino, substituted amino, O-alkyl, OCF_3, OCH_2CF_3, —OCOalkyl, —OCONRalkyl, —NRCOalkyl and NRCOOalkyl, $NRCONR_2$ wherein R in each of the above groups can be hydrogen, alkyl haloalkyl, aryl, arylalkyl, cycloalkyl, or (cycloalkyl)alkyl;

R_6 is selected from H, alkyl, OH, O-alkyl, amino, substituted amino, NHCOR, CN, and NO_2 wherein R can be hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl, or (cycloalkyl)alkyl;

R_8 is H, alkyl, haloalkyl, cycloalkyl, O—R, CN, NO_2, CF_3, halo, S-alkyl, COR, COOR, NRCOalkyl, OCOalkyl wherein R in each of the above groups can be hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl, or (cycloalkyl)alkyl;

m is O; and

n is 1, 2 or 3.

5,310,933

METHOD FOR PREPARING POLYIMIDES FOR USE IN ELECTRONIC APPLICATIONS

John H. Lupinski, Scotia, and Paul E. Howson, Latham, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 13, 1992, Ser. No. 960,324
Int. Cl.[5] C07D *405/12*
U.S. Cl. 548—461 **12 Claims**

1. A method for preparing a polyimide which comprises contacting at least one aromatic tetracarboxylic acid or acid halide, anhydride or ester thereof with at least one diamine having the formula

(V) $H_2N—Q^2—NH_2$.

wherein Q^2 is an aromatic hydrocarbon radical containing about 6–20 carbon atoms, a halogenated derivative thereof, an alkylene or cycloalkylene radical containing about 2–20 carbon atoms or a bis-alkylene poly(dialkylsiloxane) radical, in the presence of benzonitrile at a temperature in the range of about 110°–200° C., the proportion of benzonitrile being effective to dissolve said acid or derivative thereof, said diamine and said polyimide.

5,310,934

PROCESS FOR PURIFYING PHTHALIMIDOPEROXYCAPROIC ACID (PAP) IN ORDER TO REMOVE CHLORINATED SOLVENT IMPURITIES FROM IT

Claudio Cavallotti; Claudio Troglia, both of Milan, and Roberto Garaffa, Napoli, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 19, 1993, Ser. No. 19,789
Claims priority, application Italy, Feb. 21, 1992, MI 92 A 000381
Int. Cl.[5] C07D *209/48*
U.S. Cl. 548—479 **5 Claims**

1. A process for purifying phthalimido-peroxycaproic acid (PAP) from chlorinated solvents, said process comprising:

(a) dissolving said PAP in a non-chlorinated polar and volatile solvent selected from the group consisting of alcohols, ketones and aliphatic esters; and

(b) recovering said PAP by recrystallization from said non-chlorinated polar and volatile solvent or by evaporating said non-chlorinated polar and volatile solvent; said process being carried out at a temperature lower than +40° C.

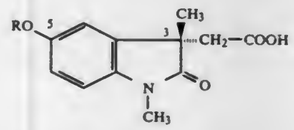
5,310,935

OPTICALLY ACTIVE 5-OXYGENATED (3S)-1,3-DIMETHYLOXINDOLE-3-ACETIC ACIDS

Arnold Brossi, Bethesda, Md.; Danilo C. Massari, Padova, Italy, and Qian-Sheng Yu, Shanghi, China, assignors to Pharmagroup International, Baldwin, N.Y.

Filed Jun. 30, 1992, Ser. No. 906,508
Int. Cl.[5] C07D *209/34*
U.S. Cl. 548—486 **4 Claims**

1. An optically pure (3S) configured compound of the formula



wherein R is CH_3, C_2H_5 or CH_2-Ph.

5,310,936

PREPARATION OF DIVALENT METAL SALTS OF INDOMETHACIN

Hubertus L. Regtop, Scotland Island NSW, and John R. Biffin, Berrima NSW, both of Australia, assignors to Biochemical Veterinary Research Pty. Ltd., Mittagong, Australia

Filed Jan. 15, 1992, Ser. No. 773,601
Claims priority, application Australia, May 22, 1989, PJ4328
Int. Cl.[5] C07D *209/28*
U.S. Cl. 548—501 **21 Claims**

1. A process for the preparation of an indomethacin salt of a divalent metal capable of forming a stable complex with indomethacin comprising forming a solution of indomethacin and of a salt of said divalent metal in a tertiary amide of the following formula:

or in an N-substituted lactam of the following formula:



wherein R_1 is an alkyl having from 1 to 4 carbon atoms, and each R_1 may be the same or different, and R_2 is a cycloalkyl having from 3 to 5 carbon atoms, adding a C_{1-4} alkanol or C_{3-6} ketone to the solution to precipitate the indomethacin metal salt, and separating the precipitated indomethacin metal salt from the solution.

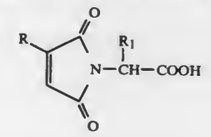
5,310,937

2,5-DIOXO-3-PYRROLINE-1-ACETANILIDE FUNGICIDAL AGENTS AND METHOD FOR THE PREPARATION THEREOF

Jerome M. Lavanish, Yardley, and Bomi Patel, Philadelphia, both of Pa., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 713,179, Jun. 10, 1991, Pat. No. 5,204,366. This application Jan. 8, 1993, Ser. No. 1,970
Int. Cl.[5] C07D *207/38*
U.S. Cl. 548—548 **11 Claims**

1. A method for the preparation of a 2,5-dioxo-3-pyrroline-1-acetic acid compound having the structural formula



wherein

R is hydrogen, halogen or C_1–C_4 alkyl optionally substituted with halogen;

R_1 is hydrogen,

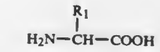
C_1–C_{10} alkyl optionally substituted with C_1–C_9 alkoxy or halogen.

C_3–C_6 cycloalkyl,

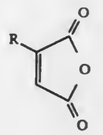
C_2–C_{10} alkylthioalkyl,

C_4–C_{10} cycloalkylalkyl, or phenyl or C_7–C_{10} phenylalkyl optionally substituted with one to three halogen atoms, C_1–C_4 alkoxy groups, nitro groups, cyano groups, or C_1–C_4 alkyl groups optionally substituted with halogen;

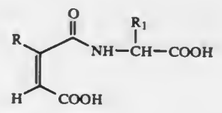
when R_1 is a substituent other than hydrogen, the optical isomers thereof which comprises reacting an amino acid compound having the structural formula



wherein R_1 is as described above with at least one molar equivalent of a maleic anhydride compound having the structural formula



wherein R is as described above in the presence of a carboxylic acid and a polar solvent to form a N-(carboxymethyl)maleamic acid compound having the structural formula



wherein R and R^1 are as described above and heating the N-(carboxymethyl)maleamic acid compound in the presence of at least two molar equivalents of an amine base and an azeotropic organic solvent with the azeotropic removal of water to form the corresponding 2,5-dioxo-3-pyrroline- 1-acetate and admixing the 2,5-dioxo-3-pyrroline-1-acetate with at least one molar equivalent of an aqueous mineral acid to form said 2,5-dioxo-3-pyrroline-1-acetic acid compound.

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5,310,938

SUBSTITUTED ARYLPYRROLE COMPOUNDS

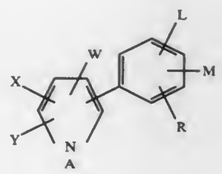
Dale G. Brown, Hopewell, N.J.; Robert E. Diehl, Yardley, Pa.; Donald P. Wright, Jr., Hopewell Township, Mercer County, N.J., and Jack K. Siddens, deceased, late of Des Moines, Iowa by Beverly A. Siddens , assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 396,828, Aug. 18, 1989, which is a continuation-in-part of Ser. No. 208,841, Jun. 23, 1988, Pat. No. 5,010,098, which is a continuation-in-part of Ser. No. 79,545, Jul. 29, 1987, abandoned. This application Jul. 13, 1993, Ser. No. 90,863

Int. Cl.[5] C07D *207/34, 207/42*

U.S. Cl. 548—557 **20 Claims**

1. A compound having the formula I structure:



wherein

X is F, Cl, Br, I, or CF_3;

Y is F, Cl, Br, I, or CF_3 or CN;

W is CN or NO_2;

A is H;

C_1–C_4 alkyl optionally substituted with from one to three halogen atoms,
one hydroxy,
one C_1–C_4 alkoxy,
one C_1–C_4 alkylthio,
one phenyl optionally substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy, or one to three halogen atoms,
one phenoxy optionally substituted with one to three halogen atoms, or
one benzyloxy optionally substituted with one halogen substituent;

C_1–C_4 carbalkoxymethyl;

C_3–C_4 alkenyl optionally substituted with from one to three halogen atoms;

cyano;

C_3–C_4 alkynyl optionally substituted with one halogen atom;

di-(C_1–C_4 alkyl) aminocarbonyl; or

C_4–C_6 cycloalkylaminocarbonyl;

L is H, F, Cl, or Br;

M and R are each independently H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, F, Cl, Br, I, nitro, CF_3, R_1CF_2Z, R_2CO or NR_3R_4, or when M and R are on adjacent positions and taken with the carbon atoms to which they are attached they may form a ring in which MR represents the structure: $—OCH_2O—$, $—OCF_2O—$ or



Z is $S(O)_n$ or O;

R_1 is H, F, CHF_2, CHFCl, or CF_3;

R_2 is C_1–C_3 alkyl, C_1–C_3 alkoxy, or NR_3R_4;

R_3 is H or C_1–C_3 alkyl;

R_4 is H, C_1–C_3 alkyl, or R_5CO;

R_5 is H or C_1–C_3 alkyl; and

n is an integer of 0, 1 or 2.

5,310,939

Patent Not Issued For This Number

5,310,940

PRODUCTION OF THIOPHENE-2,5-DICARBOXYLIC ACID DIESTERS, TETRAHYDROTHIOPHENE-2,5-DICARBOXYLIC ACID DIESTERS AND DIBENZOXAZOLYLTHIOPHENES

Hiroshi Goda; Nario Kimura; Satoshi Kimura; Naohiro Yoshikawa; Masaki Teramoto; Yoshihide Masuda, and Yuuji Matuzaki, all of Hyogo, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

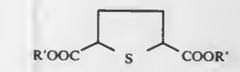
Division of Ser. No. 753,088, Aug. 30, 1991, Pat. No. 5,221,749, which is a division of Ser. No. 492,072, Mar. 12, 1990, Pat. No. 5,093,504. This application Jan. 19, 1993, Ser. No. 5,463

Claims priority, application Japan, Mar. 13, 1989, 1-61185; Mar. 13, 1989, 1-61186; Jul. 19, 1989, 1-188546

Int. Cl.[5] C07D *333/38*

U.S. Cl. 549—71 **13 Claims**

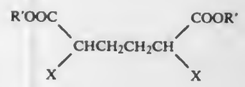
1. A method of producing a tetrahydrothiophene-2,5-dicarboxylic acid diester represented by the formula



(II')

wherein R' represents an alkyl of 1-8 carbons, a phenyl, a substituted phenyl or benzyl, which comprises:

reacting an α, α'-dihaloadipic acid diester represented by the formula



(IV)

wherein R' is the same as before, and X represents a halogen, with an inorganic sulfide in a two phase solvent composed of a water immiscible organic solvent and water.

5,310,941

AMINOETHYLTHIOPHENE DERIVATIVES

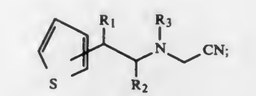
Ronald K. Russell, Titsuville, N.J., and Joseph J. Salata, Newtown, Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 919,650, Jul. 24, 1992, Pat. No. 5,208,252. This application Jan. 13, 1993, Ser. No. 4,155

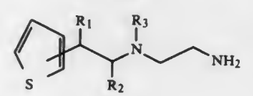
Int. Cl.[5] C07D *333/20, 333/24*

U.S. Cl. 549—74 **4 Claims**

1. An intermediate compound selected from the group consisting of:



and

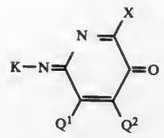


where

R_1 and R_2 are the same or different and are hydrogen, C_1–C_4 straight chain alkyl, C_3–C_5 branched chain alkyl, aryl or substituted aryl where the substituents are halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy;

R_3 is hydrogen, C_1–C_6 straight chain alkyl or C_3–C_5 branched chain alkyl; and

R_5 is C_1–C_4 alkyl or C_3–C_5 branched chain alkyl.



(I)

where

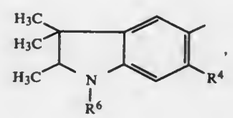
Q^1 is hydrogen, fluorine, chlorine, methyl or radical of the formula $—NH—CO—R^1$, $—NH—CO—OR^1$, $—NH—CO—NR^1R^2$, $NH—CS—OR^1$, $—NH—CO—NR^1R^2$, $—NH—CO—R^3$, $—NH—SO_2R^1$, $—NH—SO_2—R^3$ or $—NH—SO_2—NR^1R^2$, where R^1 and R^2 are identical or different and each is independently of the other C_1–C_8-alkyl, which may be substituted or unsubstituted and which maybe interrupted by one or two oxygen atoms in ether function, C_5–C_7-cycloalkyl, phenyl or tolyl, or else $—NR^1R^2$ is amino, and

R^3 is a five- or six-membered aromatic heterocyclic radical selected from the group consisting of, pyrrole, furan, thiophene, pyrazole, imidazole, oxazole, isoxazole, thiazole, isothiazole, 1,2,3-Ztriazole, 1,2,4-oxadizole, 1,3,4-oxadiazole, 1,2,4-thiadiazole, 1,3,4-thiadiazole, pyridine, pyridazine, pyrimidine and pyrazine, each of which may be substituted,

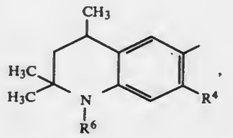
Q^2 is hydrogen, fluorine or chlorine or Q^1 and Q^2 together with the carbon atoms to which they are attached form a five- or six-membered aromatic carbocyclic or heterocyclic ring,

X is a radical of the formula $—CO—OR^1$, $—CO—NHR^1$, $—CO—NH—CO—R^1$, $—CO—NH—CO—R^3$, $—CO—NH—SO_2—R^3$, $—NH—CO—R^1$, $—NH—CO—OR^1$, $—NH—CO—NR^1R^2$, $—NH—CS—OR^1$, $—NH—CS—NR^1R^2$, $—NH—CO—R^3$, $—NH—CO—R^3$, $—NH—SO_2—R^1$, $—NH—SO_2—R^3$ or $—NH—SO_2—NR^1R^2$, where R^1, R^2 and R^3 are each as defined above, and

K is a radical of the formula



(IIb)



(IIc)

5,310,942

PYRIDONE DYES AND THERMAL TRANSFER THEREOF

Volker Bach, Neustadt; Ruediger Sens, Mannheim, and Karl-Heinz Etzbach, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 23, 1991, Ser. No. 764,194

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 4031722

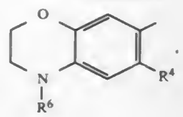
Int. Cl.[5] C07D *413/12, 401/12*

U.S. Cl. 544—105 **2 Claims**

1. A pyridone dye of the formula I

VOL 1162 ISS 2 MY 10 1994 UMI

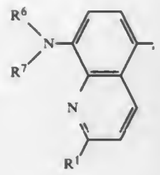
-continued



(IId) R^4 is hydrogen, methyl, methoxy, C_1–C_4-alkylsulfonylamino, C_1–C_4-mono- or -dialkylaminosulfonylamino or the radical —$NHCOR^9$ or —$NHCO_2R^9$, where R^9 is phenyl, benzyl, tolyl or C_1–C_8-alkyl which may be interrupted by one or two oxygen atoms in ether function,

R^6 and R^7 are identical or different and each is independently of the other hydrogen, C_1–C_8-alkyl, which may be substituted or unsubstituted and which may be interrupted by one or two oxygen atoms in ether function, or C_5–C_7-cycloalkyl,

R^8 is hydrogen, halogen, C_1–C_6-alkyl, unsubstituted or C_1–C_4-alkyl- or C_1–C_4alkoxy-substituted phenyl, unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted benzyl, cyclohexyl, thienyl, hydroxyl or C_1–C_8-monoalkylamino and R^1 is as defined above.



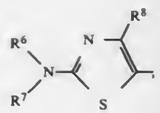
(IIh)

5,310,943

AROMATIC TRISANHYDRIDES

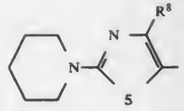
Yefim Blyakhman, Bronx, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 667,718, Mar. 11, 1991, Pat. No. 5,241,082.
This application Apr. 23, 1993, Ser. No. 52,314
Int. Cl.[5] C07D *307/77*
U.S. Cl. 549—242 **5 Claims**

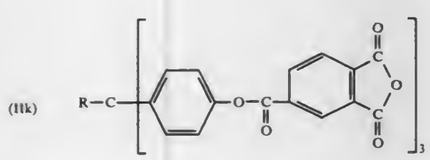


(IIj)

1. An aromatic trisanhydride of formula (I)

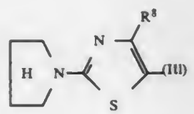


(IIk)



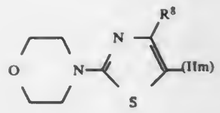
(I)

wherein R is hydrogen, C_1–C_4alkyl or aryl.



(III)

or



(IIm)

where

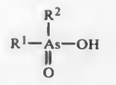
5,310,944

PROCESS FOR PRODUCING CARBOXYLATED COMPOUND

Takao Kawaki, Tokyo; Yuh Miyauchi, Tsukuba; Toshio Watanabe, Tsukuba; Katsushige Hayashi, Tsukuba; Satoshi Ueno, Yamakita; Hiroshi Ogawa, and Fumiya Zaima, both of Tsukuba, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 975,444
Claims priority, application Japan, Jan. 21, 1991, 3-020505; Mar. 6, 1991, 3-065690; Mar. 15, 1991, 3-074353
Int. Cl.[5] C07D *313/04, 309/30, 307/33*
U.S. Cl. 549—266 **12 Claims**

1. A process for producing a carboxylated compound, which comprises reacting a cyclic ketone with hydrogen peroxide in the presence of an organo-arsinic acid of the formula (I),



(I)

to form a reaction system, the reaction system containing not more than 2% by weight of water during the reaction, wherein each of R^1 and R^2 is, independently, a $C_{1\text{-}12}$ alkyl group which may be substituted or an aryl group which may be substituted, or alternatively, R^1 and R^2 may bond to each other to form a five-membered or six-membered ring together with As atoms to which these groups are bonded, and the substituent(s) substituted on the above groups is/are selected from hydroxyl, carboxyl, carbonyl, sulfonyl, sulfonium, amino, ammonium, alkyl, alkoxy and halogen, to thereby form the corresponding carboxylated compound which is a lactone.

5,310,945

PROCESS FOR PREPARING PARA-DIOXANONES

Thomas C. Forschner, Richmond, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1992, Ser. No. 996,218
Int. Cl.[5] C07D *319/12*
U.S. Cl. 549—274 **23 Claims**

1. In a process for the production of para-dioxanones by the catalytic dehydrogenation of dialkylene glycols, the improvement which comprises:

contacting a dialkylene glycol at a temperature within the range of about 200° C. to about 400° C. with an effective amount of a dehydrogenation catalyst comprising catalytically effective amounts of copper, zinc and a promoter selected from the group consisting of alkali metals and alkaline earth metals and mixtures thereof supported on an alumina.

5,310,946

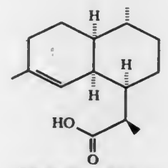
CYCLIC PEROXYACETAL LACTONE, LACTOL AND ETHER COMPOUNDS

Richard K. Haynes, Eastwood, and Simone C. Vonwiller, North Ryde, both of Australia, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

PCT No. PCT/AU90/00456, § 371 Date Mar. 26, 1992, § 102(e) Date Mar. 26, 1992, PCT Pub. No. WO91/04970, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 27, 1990, Ser. No. 842,413
Claims priority, application Australia, Sep. 27, 1989, PJ6595
Int. Cl.[5] C07D *311/78, 323/00;* **C07C** *69/73*
U.S. Cl. 549—276 **15 Claims**

1. A process for converting qinghao acid into qinhaosu comprising

i) reducing qinghao acid to give dihydroqinghao acid of formula



Dihydroqinghao acid

ii) oxygenating dihydroqinghao acid to give the corresponding hydroperoxides and without isolation

iii) oxgenating in the presence of one or more oxidising metal catalysts to give qinghaosu.

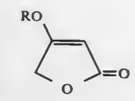
5,310,947

PROCESS FOR THE PRODUCTION OF TETRONIC ACID ALKYL ESTERS

Joachim Lenzner, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

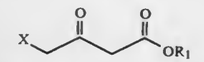
Filed Jun. 8, 1993, Ser. No. 72,955
Claims priority, application Switzerland, Jun. 11, 1992, 1846/92
Int. Cl.[5] C07D *307/32, 307/33*
U.S. Cl. 549—313 **17 Claims**

1. A process for the production of a tetronic acid alkyl esters of formula:



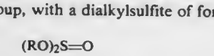
I

wherein R is a C_1–C_6-alkyl group, comprising, in a first step, converting a 4-halo-acetoacetic acid alkyl ester of formula:



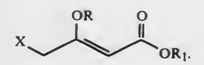
II

wherein X is chlorine or bromine and R_1 is a C_1–C_6-alkyl group, with a dialkylsulfite of formula:



III

wherein R has the above-mentioned meaning, into the corresponding intermediately formed ketal ester, converting the corresponding intermediately-formed ketal ester in the presence of a strong acid into a 4-halo-3-alkoxy-but-2E-enoic acid alkyl ester of formula:



IV

wherein X, R and R_1 have the above-mentioned meanings, and then cyclizing in a second step, the 4-halo-3-alkoxy-but-2E-enoic acid alkyl ester with a formate and a strong acid to the tetronic acid alkyl ester of formula I.

5,310,948

CARBONYLATION OF EPOXIDES

Eit Drent, and Eric Kragtwijk, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1993, Ser. No. 82,211
Claims priority, application European Pat. Off., Jun. 29, 1992, 92201940.1
Int. Cl.[5] C07D *305/12*
U.S. Cl. 549—328 **10 Claims**

1. A process for the carbonylation of epoxides comprising reacting an epoxide with carbon monoxide in the presence of a catalyst system comprising a source of cobalt and a hydroxyl-substituted pyridine compound.

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5,310,949

CHOLESTEROL LOWERING COMPOUNDS

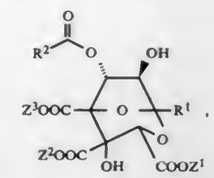
Claude Dufresne, East Brunswick; Prakash S. Masurekar, Warren; Leslie A. Ferrell, Cranford; Deborah L. Zink, Manalapan, and Margaret S. Sosa, Elizabeth, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 2, 1992, Ser. No. 939,258

Int. Cl.[5] C07D *319/04*

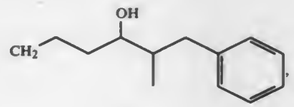
U.S. Cl. 549—363 **9 Claims**

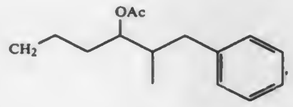
1. A compound of the structural formula (I)



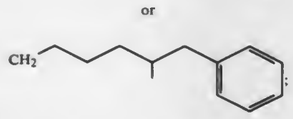
(I)

or pharmaceutically acceptable salt thereof, wherein R^1 is selected from the group consisting of

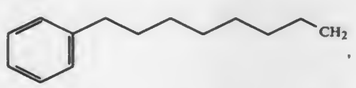


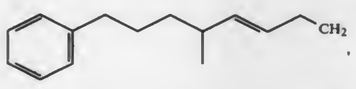


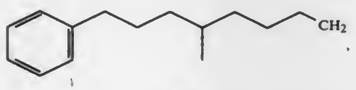
or



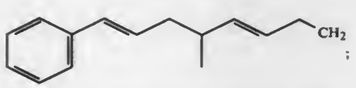
R^2 is selected from the group consisting of







or



Z^1, Z^2 and Z^3 are each independently selected from;

a) H;

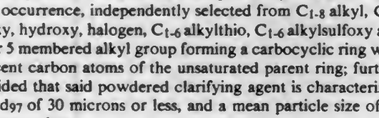
b) C_{1-5}alkyl;

c) C_{1-5}alkyl substituted with a member of the group consisting of:

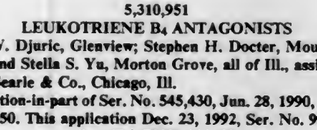
i) phenyl,

ii) phenyl substituted with methyl, methoxy, halogen (Cl, Br, I, F) or hydroxy;

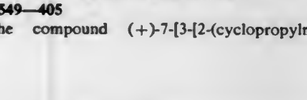
with the proviso that when R^2 is



then R^1 is neither



nor



5,310,950

POLYOLEFIN COMPOSITION CONTAINING ULTRAFINE SORBITOL AND XYLITOL ACETALS

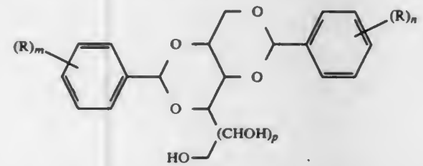
Michael J. Mannion, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 877,405, May 1, 1992, Pat. No. 5,198,484. This application Jan. 21, 1993, Ser. No. 7,260

Int. Cl.[5] C07D *407/04*

U.S. Cl. 549—364 **18 Claims**

1. A powdered clarifying agent of the formula:



wherein p is 0 or 1, m and n are independently 0–3, and R is, at each occurrence, independently selected from C_{1-8} alkyl, C_{1-4} alkoxy, hydroxy, halogen, C_{1-6} alkylthio, C_{1-6} alkylsulfoxy and a 4 or 5 membered alkyl group forming a carbocyclic ring with adjacent carbon atoms of the unsaturated parent ring; further provided that said powdered clarifying agent is characterized by a d_{97} of 30 microns or less, and a mean particle size of 15 microns or less.

5,310,951

LEUKOTRIENE B_4 ANTAGONISTS

Stevan W. Djuric, Glenview; Stephen H. Docter, Mount Prospect, and Stella S. Yu, Morton Grove, all of Ill., assignors to G.D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 545,430, Jun. 28, 1990, Pat. No. 5,124,350. This application Dec. 23, 1992, Ser. No. 995,859

Int. Cl.[5] C07D *311/58*

U.S. Cl. 549—405 **2 Claims**

1. The compound (+)-7-[3-[2-(cyclopropylmethyl)-3-

methoxy-4-[(methylamino)carbonyl]phenoxy]propoxy]-3,4-dihydro-8-propyl-2H-1-benzopyran-2-propanoic acid.

5,310,952

METHOD FOR THE PREPARATION OF 6-HYDROXY-2,5,7,8-TETRAALKYL-2-(4-AMINOPHENOXYMETHYL) CHROMANS

Josef Heveling, Naters, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland and Sankyo Company Ltd., Tokyo, Japan

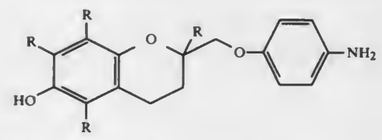
Filed Feb. 19, 1993, Ser. No. 19,695

Claims priority, application Switzerland, Feb. 21, 1992, 532/92

Int. Cl.[5] C07D *311/58*

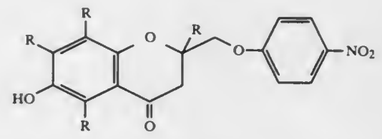
U.S. Cl. 549—407 **20 Claims**

1. A process for the preparation of 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-aminophenoxymethyl)chroman of the formula:



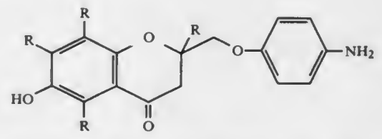
I

wherein R is a C_1–C_4–alkyl group, characterized in that, in a first step, a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-nitrophenoxymethyl) chroman-4-one of the formula:



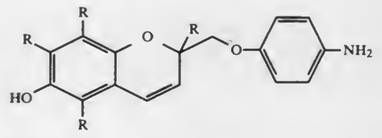
II

wherein R has the above-stated meaning, is hydrogenated with hydrogen in the presence of a hydrogenation catalyst to give a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-aminophenoxymethyl)chroman-4-one of the formula:



III

wherein R has the above-stated meaning, in a second step, said aminochromanone of formula III is reduced under pressure in the presence of a catalyst system of amorphous zirconium oxide/isopropanol to give a 6-hydroxy-2,5,7,8-tetraalkyl-2-(4-aminophenoxymethyl)chrom-3-ene of the formula:



IV

wherein R has the above-stated meaning, and in a third step, the aminochromene of formula IV is finally converted into the final product using hydrogen in the presence of a hydrogenation catalyst.

5,310,953

SUBSTITUTED PENTAALKYLCHROMANS

David Laffan, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland and Sankyo Company Ltd., Tokyo, Japan

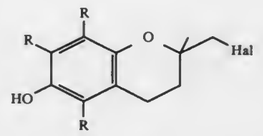
Division of Ser. No. 977,255, Nov. 16, 1992. This application Mar. 5, 1993, Ser. No. 26,810

Claims priority, application Switzerland, Nov. 20, 1991, 3393/91

Int. Cl.[5] C07C *39/19*; C07D *311/04*

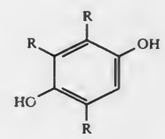
U.S. Cl. 549—407 **11 Claims**

1. A process for the preparation of a substituted pentaalkylchroman of the formula:



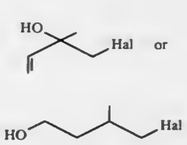
I

wherein R denotes a lower alkyl group having 1 to 4 C atoms and Hal denotes chlorine, bromine or iodine, which comprises reacting a trialkylhydroquinone of the formula:



II

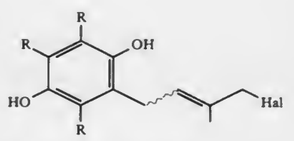
wherein R has the above-stated meaning, with a halogenated butenol of the formula:



IIIa

IIIb

wherein Hal has the above-stated meaning, in the presence of a Lewis acid, to produce a tetraaklylhydroquinone of the formula:



IV

wherein R and Hal have the above-stated meaning, and cyclizing the tetraalkylhydroquinone in the presence of a strong acid to give the final product.

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5,310,954

PROCESS FOR PREPARING TETRAHYDROFURAN

Andrew G. Hiles, Pinner, and Michael W. M. Tuck, London, both of England, assignors to Davy McKee (London) Limited, London, England

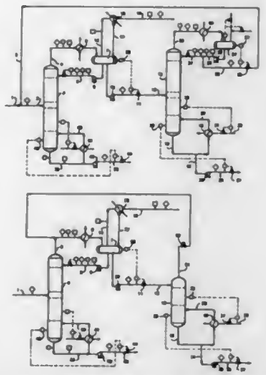
PCT No. PCT/GB90/01166, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO91/01981, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 27, 1990, Ser. No. 828,903

Claims priority, application United Kingdom, Aug. 4, 1989, 8917864

Int. Cl.[5] C07D *307/08*

U.S. Cl. 549—429 **5 Claims**



1. In a process for separating tetrahydrofuran from a feed mixture containing water, lower alkanol and tetrahydrofuran which comprises distilling the mixture in a first distillation zone at a first distillation pressure which is in the range of from about 0.1 bar to about 5 bar, recovering from an upper part of the distillation zone a first vaporous mixture comprising water, lower alkanol and tetrahydrofuran, subjecting the material from the first vaporous mixture to condensation conditions in a condensation zone, passing condensate from the condensation zone to a second distillation zone operated at a second distillation pressure which is higher than the first distillation pressure and is in the range of from about 5 bar to about 20 bar, recovering from an upper part of the second distillation zone a second vaporous mixture comprising water, alkanol and tetrahydrofuran, that has a lower concentration of tetrahydrofuran than the first vaporous mixture, and recovering from a lower part of the second distillation zone a stream comprising substantially pure tetrahydrofuran, the improvement comprising combining the second vaporous mixture with the first vaporous mixture prior to admission to the condensation zone.

5,310,955

VERTICAL CONTINUOUS REACTOR AND PROCESS FOR LIQUID EPOXY RESIN

Robert P. Shirtum, Freeport; Walter L. Wernli, Angleton, and David D. McCoy, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 643,877, Jan. 18, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 107,400

Int. Cl.[5] C07D *301/28, 303/27;* B28C *5/00;* B01J *8/04*

U.S. Cl. 549—517 **12 Claims**

1. A process for the continuous preparation of reaction product of the reaction of reactant materials, the process comprising

contacting the reactant materials for producing the reaction product in a top compartment of a vertical reactor apparatus,

flowing reaction product and by-products of the reaction from the top compartment of the reactor apparatus to at least one more compartment of the reactor apparatus and adding additional reactant materials to each of the at least one more compartment for further reaction,

agitating the reactant materials in each compartment,

withdrawing vapor reaction products from each of the at least one compartment, and withdrawing the reaction product from a lower part of the reactor apparatus;

and wherein said vertical reactor apparatus comprises

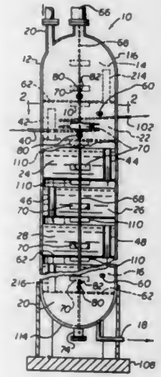
a vessel into which reactant materials for producing the reaction product flow and from which the reaction product and byproducts are withdrawn,

the vessel divided by a plurality of plates into a plurality of intercommunicating compartments in substantially vertical alignment, including at least a top and a bottom compartment each compartment having a top plate and a bottom plate, the reactant materials flowable from the top compartment, through intermediate compartments, if any, and thence to the bottom compartment

said compartments having a vapor outlet for discharging vapor reaction products resulting from reactions in the compartments,

said compartments having a reactant inlet for introducing reactant materials into the compartments,

stirring means in at least one of the said compartments for agitating the reactant materials therein,



the vessel having inlet means through which reactant materials are introduced into the top compartment,

the bottom compartment having discharge means through which the reaction product is withdrawn,

the stirring means comprising a rotatable shaft extending through the at least one compartment, the shaft extending sealingly through the compartment's bottom plate and top plate, a motor connected to the shaft exteriorly of the vessel for rotating the shaft and an impeller mounted on the shaft in the at least one compartment.

9. A process for the continuous preparation of liquid epoxy resins which comprises

contacting reactant materials for producing the liquid epoxy resins in a top compartment of a vertical reactor apparatus,

flowing reaction product and by-products of reaction of the reactant materials from the top compartment of the reactor apparatus to at least one more compartment of the reactor system and adding additional catalyst or reactant materials or both to the at least one more compartment for further reaction.

withdrawing vapor reaction products from each of the compartments, and withdrawing the liquid epoxy resins from a lower portion of the reactor apparatus, said vertical reactor apparatus comprising

a vessel into which reactant materials for producing the reaction product flow and from which the reaction product and byproducts are withdrawn,

the vessel divided by a plurality of plates into a plurality of intercommunicating compartments in substantially vertical alignment, including at least a top and a bottom compartment, the reactant materials flowable from the top compartment, through intermediate compartments, if any, and thence to the bottom compartment, each intermediate compartment having a top plate and a bottom plate,

said compartments having a vapor outlet for discharging vapor reaction products resulting from reactions in the compartment,

said compartments having a reactant inlet for introducing reactant materials into the compartment, a catalyst inlet for introducing catalyst into the compartment and a solvent inlet for introducing a solvent into each compartment,

stirring means in each of the said compartments, for agitating the reactant materials therein, the stirring means comprising a rotatable shaft extending through each intermediate compartment's top plate and bottom plate with a liquid-tight seal about the shaft in each intermediate compartment to inhibit liquid leakage between compartments, an impeller mounted to the rotatable shaft in each compartment,

the vessel having inlet means through which reactant materials are introduced into the top compartment, and the bottom compartment having discharge means through which the reaction product is withdrawn.

5,310,956

OPTICALLY ACTIVE EPOXIDES AND A PROCESS FOR THE PRODUCTION THEREOF

Selichi Takano, and Kunio Ogasawara, both of Sendai, Japan, assignors to Chisso Corporation, Osaka, Japan

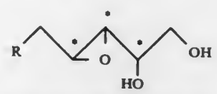
Division of Ser. No. 885,795, May 20, 1992, Pat. No. 5,254,704. This application May 19, 1993, Ser. No. 63,416

Claims priority, application Japan, May 20, 1991, 3-142775

Int. Cl.[5] C07D *301/19, 303/14*

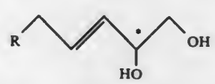
U.S. Cl. 549—529 **4 Claims**

1. A process for the production of an optically active epoxide represented by the general formula:



(2)

wherein R is a hydrocarbon group of 40 or less carbon atoms and it may contain at least an oxygen, a nitrogen or a sulfur, which comprises reacting an alkenyl ethylene glycol represented by the general formula:



(1)

wherein R is the same as that described above, with 0.5 to 2.0 equivalents of a titanium-tetraalkoxyde, a peroxide and an L-(+)- or D-(−)-dialkyl tartrate at a temperature of −78°to 50° C. to asymmetrically oxidize the alkenyl ethylene glycol.

5,310,957

TETRACYANO-1,4-HYDROQUINONE AND TETRACYANO-1,4-BENZOQUINONE

Carlos Vazquez, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Wilmington, Del.

Division of Ser. No. 732,246, Jul. 18, 1991, Pat. No. 5,208,391, which is a division of Ser. No. 472,920, Jan. 31, 1990, Pat. No. 5,068,367. This application Nov. 10, 1992, Ser. No. 974,196

Int. Cl.[5] C07C *50/04*

U.S. Cl. 552—294 **6 Claims**

1. A complex comprising a 1:1 electron-transfer complex of tetracyano-1,4-benzoquinone with a ferrocene, substituted ferrocene, tetrachalcogenfulvalene or substituted tetrachalcogenfulvalene.

5,310,958

LYSOLECITHIN DERIVATIVES

Yutaka Mizushima, 4-25-20, Daida, Setagaya-ku, Tokyo, Japan, assignor to Yutaka Mizushima; Asahi Glass Company Ltd. and Seikagaku Corporation, all of Tokyo, Japan

Division of Ser. No. 547,039, Jul. 2, 1990. This application Feb. 7, 1992, Ser. No. 832,585

Claims priority, application Japan, Jul. 6, 1989, 1-174371; Nov. 29, 1989, 1-310056

Int. Cl.[5] C07C *233/00*

U.S. Cl. 554—41 **1 Claim**

1. A lecithin derivative of the formula (V):

(V)

wherein B is a residue of lysolecithin having a hydroxyl group at the 2-position of glycerol, with the hydrogen atom of the hydroxyl group removed, R^3 is $—R^2—C(O)NH—R^1$ or a sulfur-containing group wherein R^1 and R^2 are C_1–C_{24} alkylene groups and Z is a carboxyl group, a protected carboxyl group, or a carbonyl group having an ester active group bonded thereto.

5,310,959

EICOSATRIYNOIC ACID ESTERS AND AMIDES AND METHODS OF PREPARATION

Braham Shroot, Antibes; Christopher Hensby, Biot; Jean Maignan, Tremblay les Gonesses; Gerard Lang, Saint Gratien; Serge Restle, Aulnay sous Bois, and Michel Colin, Livry Gargan, all of France, assignors to Centre International de Recherches Dermatologiques Galderma (Cird Galderma), Valbonne, France

Continuation of Ser. No. 734,560, Jul. 23, 1991, abandoned, which is a division of Ser. No. 411,043, Sep. 22, 1989, Pat. No. 5,066,427, which is a division of Ser. No. 881,776, Jul. 3, 1986, Pat. No. 4,877,789. This application May 17, 1993, Ser. No. 61,268

Claims priority, application France, Jul. 5, 1985, 85 10363

Int. Cl.[5] C07C *231/100*

U.S. Cl. 554—69 **5 Claims**

1. A process for preparing an amide of 5,8,11-eicosatriynoic acid having the formula



wherein R_1 and R_2, each independently, represent hydrogen or linear or branched C_1–C_8 lower alkyl, optionally interrupted by one or more hetero atoms chosen from oxygen, sulfur and nitrogen, said lower alkyl being unsubstituted or substituted with one or more hydroxyl groups, R_1 and R_2 not

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being able to denote hydrogen simultaneously, or alternatively, R_1 and R_2 together with the nitrogen atom to which they are attached form a heterocycle selected from pyrrolidino, morpholino, piperazinyl and 4-(2'-hydroxyethyl) piperazinyl, said process comprising

(a) reacting 1-decyne having the formula $C_8H_{17}—C{\equiv}C—H$ with 1,4-dihalo-2-butyne having the formula $XCH_2C{\equiv}C—CH_2X$ wherein X is halogen in the presence of a strong base to form 1-halo-2,5-tetradecadiyne having the formula $C_8H_{17}—C{\equiv}C—CH_2—C{\equiv}C—CH_2X$ wherein X has the meaning given above,

(b) reacting the said 1-halo-2,5-tetradecadiyne from step (a) with 5-hexynoic acid having the formula $H—C{\equiv}C(CH_2)_3COOH$ to form 5,8,11-eicosatriynoic acid, and

(c) reacting said 5,8,11-eicosatriynoic acid with carbonyldiimidazole in the presence of a solvent and adding an excess of an amine having the formula



wherein R_1 and R_2 have the meanings given above so as to form said amide of 5,8,11-eicosatriynoic acid.

5,310,960
LOW TEMPERATURE PROCESS FOR PREPARING NEOMORPHIC IBUPROFEN
Robert P. Geyer, Brookline, Mass., and Vinod V. Tuliani, Media, Pa., assignors to Affinity Biotech, Inc., Boothwyn, Pa.
Filed Jul. 2, 1993, Ser. No. 86,922
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[5] C07L *53/134*
U.S. Cl. 562—496 **16 Claims**

1. A process for preparing neomorphic ibuprofen having a bland taste and an amorphous structure, comprising:

(a) providing molten ibuprofen in a supercooled state at a process temperature below 0° C.;

(b) resolidifying the supercooled ibuprofen into a solid amorphous ibuprofen; and

(c) recovering the solid amorphous ibuprofen.

5,310,961
NEOMORPHIC IBUPROFEN
Robert P. Geyer, Brookline, Mass., and Vinod V. Tuliani, Media, Pa., assignors to Affinity Biotech, Inc., Boothwyn, Pa.
Filed Jul. 2, 1993, Ser. No. 87,573
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[5] C07C *53/134*
U.S. Cl. 562—496 **25 Claims**

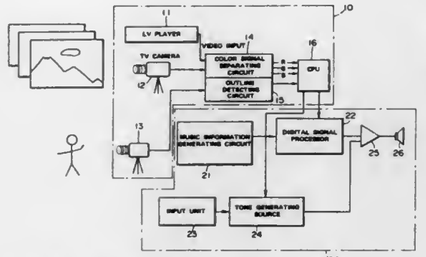
10. A process for preparing neomorphic ibuprofen having a bland taste and an amorphous structure, comprising:

(a) providing molten ibuprofen in a supercooled state;

(b) imparting kinetic energy into the supercooled ibuprofen for a time and intensity sufficient to convert a portion of the supercooled ibuprofen into solid amorphous ibuprofen; and

(c) recovering the solid amorphous ibuprofen.

5,310,962
ACOUSTIC CONTROL APPARATUS FOR CONTROLLING MUSIC INFORMATION IN RESPONSE TO A VIDEO SIGNAL
Mamoru Kimpara, and Takeshi Adachi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Division of Ser. No. 565,894, Aug. 9, 1990, Pat. No. 5,159,140, which is a continuation of Ser. No. 242,781, Sep. 9, 1988, abandoned. This application Mar. 20, 1992, Ser. No. 854,834
Claims priority, application Japan, Sep. 11, 1987, 62-226685; Sep. 25, 1987, 62-145370; Oct. 2, 1987, 62-248123; Oct. 2, 1987, 62-248124; Oct. 2, 1987, 62-248125
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] G10H *1/00*
U.S. Cl. 84—600 **14 Claims**



1. An acoustic control apparatus comprising:

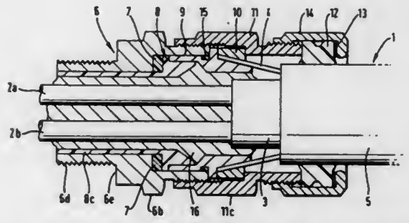
input means for receiving a video signal representative of a plurality of picture elements;

element extracting means for extracting picture element level information from said video signal;

comparison means for comparing said picture element level information with a predetermined threshold value and determining the number of picture elements having a level over said threshold value; and

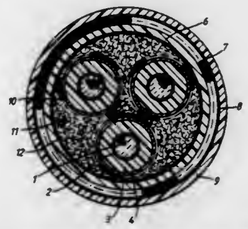
acoustic control means responsive to said comparison means for giving variation to a music information based on the number of picture elements having a level over said threshold level.

5,310,963
ELECTRIC CABLE BARRIER GLAND
Richard Kennelly, Bolton, England, assignor to Hawke Cable Glands Limited, England
Filed Jul. 20, 1992, Ser. No. 915,544
Claims priority, application United Kingdom, Jul. 20, 1991, 9115734
Int. Cl.[5] H02G *3/02, 15/02*
U.S. Cl. 174—65 SS **13 Claims**



1. An electric cable barrier gland for a cable having a sheath enclosing at least one conductor core, the gland comprising an entry body defining an entry bore with a counterbore at one end providing an internal shoulder, a substantially rigid barrier sleeve through which the cable core extends located in said entry body and defining therewith a clearance fit gap, a hard-enable compound disposable in said barrier sleeve to fill said barrier sleeve and surround the cable core, said barrier sleeve having a nose portion with an annular flange received in said counterbore and a sleeve portion of reduced outer diameter received in said entry bore, said flange providing an external shoulder and a side shoulder, said external shoulder being opposite said internal shoulder of said counterbore, an annular seal positioned between said internal and external shoulders on said sleeve portion, a ferrule surrounding said nose portion and abutting said flange on said side shoulder remote from said seal, and a compression body for urging said ferrule axially towards said counterbore of said entry body to compress said seal to close said clearance fit gap between said entry body and said barrier sleeve.

5,310,964
ELECTRIC AND COMMUNICATION CABLES
David G. Roberts, Llangollen, and Mark S. Lloyd, Wrexham, both of Great Britain, assignors to BICC Public Limited Company, London, England
Filed Jul. 23, 1992, Ser. No. 917,316
Claims priority, application United Kingdom, Jul. 23, 1991, 9115888
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—121 A **5 Claims**



1. A cable comprising a core wrapped in a tape of flexible mineral material and enclosed in an external sheath of a char-forming low-smoke-and-fume composition based on an ethylene/vinyl acetate copolymer and having a hot-melt adhesive, wherein the adhesive is based on an ethylene/vinyl acetate copolymer and a tackifying resin and bonds said tape to said sheath.

5,310,965
MULTI-LEVEL WIRING STRUCTURE HAVING AN ORGANIC INTERLAYER INSULATING FILM
Naoji Senba, and Atsushi Nishizawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Aug. 28, 1992, Ser. No. 936,300
Claims priority, application Japan, Aug. 28, 1991, 3-215697; Aug. 28, 1991, 3-215698
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **24 Claims**

1. A multi-level wiring structure, comprising:

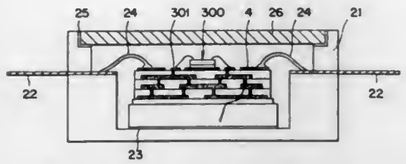
a first level wiring of a laminated structure formed on a main surface of an insulating layer, said first level wiring including a nickel layer and a gold layer, said first level wiring having a first bonding pad portion, a broad width portion, a first strip line portion connecting said first bonding pad portion and said broad width portion and a second strip line portion extending from said broad width portion;

a polyimide layer successively covering said second strip line portion, said broad width portion, a part of said first strip line portion and said second strip line portion of said first level wiring and said insulating layer except said first

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bonding pad portion and a remaining part of said first strip line portion of said first level wiring; and

a second level wiring of a laminated structure formed on a main surface of said polyimide layer, said second level wiring including a nickel layer and a gold layer, said second level wiring having a second bonding pad portion and a third strip line portion extending from said second



bonding pad portion, said second bonding pad portion of said second level wiring being formed over said broad width portion of said first level wiring with isolation therebetween by said polyimide layer to thereby have a substantially even surface, each of said first and second bonding pad portions being provided as an external-lead-out terminal for said multi-level wiring structure.

5,310,966

WIRING BOARDS AND MANUFACTURING METHODS THEREOF

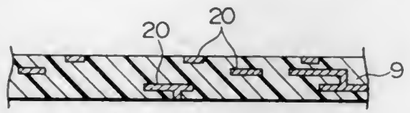
Atsuko Iida; Hiroshi Odaira, both of Kanagawa; Yoshizumi Sato, and Yuichi Yamamoto, both of Tokyo, all of Japan, assignors to Kabusbiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 5, 1993, Ser. No. 724

Claims priority, application Japan, Feb. 17, 1992, 4-029129

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—254 **10 Claims**



1. A multi-layer wiring board comprising:

a laminate of a plurality of flexible wiring boards, each of the flexible wiring boards including

a flexible insulating layer defining at least one through hole, the through hole being electrically conductive;

a first wiring pattern of a first non-metallic conductive layer on the surface of the flexible insulating layer, the first wiring pattern being at least on the through hole; and

a second wiring pattern of a second electroplated metallic layer on the first wiring pattern.

5,310,967

APPLYING CONDUCTIVE LINES TO INTEGRATED CIRCUITS

Pedro A. Chalco, Yorktown; Matthew F. Cali, Harriman; Laertis Economikos, Wappingers Falls, and James L. Speidell, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 981,458, Nov. 25, 1992. This application May 28, 1993, Ser. No. 68,036

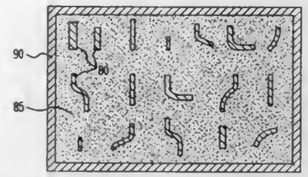
Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—262 **10 Claims**

1. A conductive line for applying to a substrate, comprising:

a carrier having a carrier opening therethrough, said carrier opening defining a conductive line, and said carrier opening being defined by sidewalls; and

conductive material detachably suspended by the sidewalls of the carrier opening, said conductive material having an exposed first surface for applying to a selected area of a



substrate, and an exposed second surface, opposite the exposed first surface, for allowing bonding means to be contacted therewith for effectuating bonding of said conductive material to the selected area of the substrate, and said conductive material being detachable from said carrier subsequent to the bonding.

5,310,968

DIGITIZING DEVICE

Helfried Hanus, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Pfaff Haushaltmaschinen GmbH, Karlsruhe-Durlach, Fed. Rep. of Germany

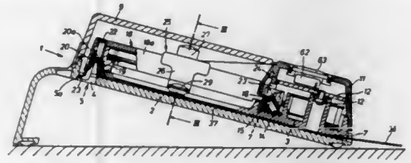
PCT No. PCT/EP90/00975, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO90/16044, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 20, 1990, Ser. No. 778,861

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1989, 3920429

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **6 Claims**



1. A digitizing device for detecting individual points of a continuous line, comprising:

a housing with a base plate for receiving a worksheet on which the continuous line is drawn; a cross slide including a carriage and a slide and an adjusting member connected to said slide, said cross slide being adjustable in directions of X and Y coordinates for manually adjusting a position of said adjusting member to individual points of the continuous line over the base plate; position-indicating element means for determining the position of said adjusting member; signal sensors for sensing said position-indicating elements; transmission elements connecting said cross slide to said position indicating elements for moving said position-indicating elements relative to said signal sensors; circuit means for receiving signals from said sensors relating to a position of said a position-indicating elements; a manually operating releasing element connected to said sensors and said circuit for sending position data determined by said signal sensors to said circuit; a guide provided between said cross slide and said housing, said guide including two horizontally extending guideways, one of said guideways having a V-shaped running track open at a top side; roller bearings connected to said carriage defining simple support rollers, two of said support rollers being mounted obliquely at an angle with respect to horizontal, said two support rollers being positioned in said V-shaped guideway, another of said horizontally extending guideways receiving a third support roller.

5,310,969

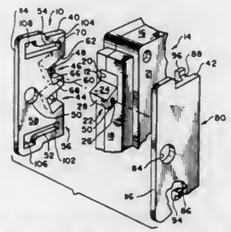
SWITCH LOCKOUTS

Mark E. Turek, Wheaton, and Michael R. Schag, Hanover Park, both of Ill., assignors to Prinzing Enterprises, Inc., Warrenville, Ill.

Filed Apr. 21, 1992, Ser. No. 871,388

Int. Cl.[5] H01H *9/28*

U.S. Cl. 200—43.14 **14 Claims**



1. A lockout adapted for attachment to the handle of a switch to maintain it at one extremity of travel, wherein the handle of the switch extends from a switch body; is normally pivotable between first and second extremities of travel along a path which defines a plane; has a first surface facing the first extremity of travel and a second surface facing the second extremity of travel; and has a recess extending substantially perpendicularly with respect to the plane; said lockout comprising:

A. a first abutment for abutting the first surface of the handle;

B. a second abutment for abutting the second surface of the handle;

C. a third abutment for abutting the switch body;

D. at least one projection for extending into the handle aperture substantially perpendicularly with respect to the plane; and

E. a fourth abutment for abutting the handle opposite said projection, said fourth abutment having an engaged position for preventing said projection from being fully withdrawn from the handle aperture and a disengaged position allowing said projection to be withdrawn fully from the handle aperture, said fourth abutment being movable between said engaged position and said disengaged position generally parallel to the plane;

wherein said first, second, and third abutments and said projection can be at least temporarily fixed, relative to each other, in said abutting and extending positions.

5,310,970

PRESSURE OPERATED SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME

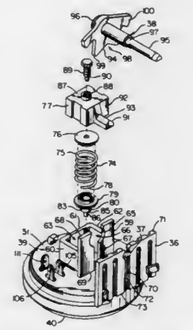
William J. Kaigler, North Huntingdon; Thomas M. Buckshaw, Indiana, and David T. Llewellyn, Ebensburg, all of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 895,092, Jun. 8, 1992, Pat. No. 5,198,632, which is a division of Ser. No. 795,334, Nov. 20, 1991, Pat. No. 5,140,742, which is a division of Ser. No. 479,956, Feb. 14, 1990, Pat. No. 5,136,129. This application Dec. 15, 1992, Ser. No. 990,906

Int. Cl.[5] H01H *35/34*

U.S. Cl. 200—83 R **4 Claims**

1. In a pressure operated switch construction comprising a housing means having an external surface means and carrying an electrical switch unit and a diaphragm assembly therein, said housing means having an opening means passing through said external surface means thereof, said switch unit having opposed sides and an opening passing therethrough in alignment with said opening means, and a compression spring means carried by said housing means and being operatively associated with said switch unit and said diaphragm assembly to control the operation thereof in relation to the compressive setting of said spring means, said spring means comprising a spring retainer operatively interconnected to said switch unit, an actuator carried by said housing means, and a compression spring having opposed end means respectively bearing against



said actuator and said retainer, said actuator being fixed relative to said housing means to provide a certain compressive setting of said spring means, said housing means having an open end chamber therein, said actuator being disposed in said chamber, the improvement wherein said chamber means and said actuator respectively have cooperating rectangular cross-sectional configurations whereby rotation therebetween is prevented by said configurations, and wherein said actuator has been snap-fitted into said chamber of said housing means to fix said actuator thereto.

5,310,971

MOLDED CASE CIRCUIT BREAKER WITH CONTACT BRIDGE SLOWED DOWN AT THE END OF REPULSION TRAVEL

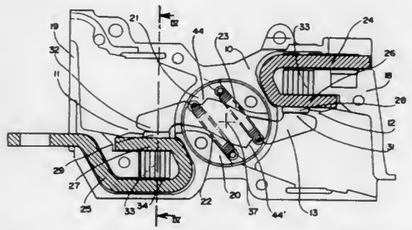
Denis Vial, Fontaine; Jean Bonfils, Seyssins, and Marc Rival, Virieu sur Bourbre, all of France, assignors to Merlin Gerin, France

Filed Mar. 2, 1993, Ser. No. 25,112

Claims priority, application France, Mar. 13, 1992, 92 03142

Int. Cl.[5] H01H *1/22*

U.S. Cl. 200—244 **10 Claims**



1. A molded case low voltage circuit breaker comprising: a rotary contact bridge having a rotation axis; a pair of stationary contacts cooperating with said contact bridge each stationary contact of said pair of contacts having a current input conductor connected thereto, each conductor being arranged to generate electrodynamic forces repelling the contact bridge to a

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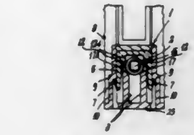
repelled open position in response to a short-circuit current; a rotary bar having a transverse orifice housing with clearance said contact bridge which protrudes out from opposite sides of the bar; a pair of rods mounted in notches in said bar; at least one pair of tension springs fitted between the bar and the contact bridge to provide a contact pressure of the contact bridge on the stationary contacts in a closed position of the circuit breaker, wherein at least one pair of tension springs allows rotation of the contact bridge due to said electrodynamic forces to the repelled open position, said springs being arranged symmetrically on each side of the rotation axis of the contact bridge, each of said springs having one end anchored on the contact bridge and an opposite end anchored on one of said rods; and said contact bridge has a pair of cams arranged symmetrically with respect to said rotation axis, each cam arranged to cooperate with one of the pair of rods to slow down the movement of the contact bridge as said contact bridge approaches said repelled open position.

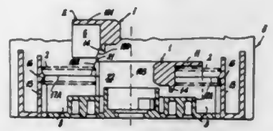
5,310,972

SNAP-ACTION DEVICE FOR COOPERATING WITH TOOTHED WHEELS OR THE LIKE, IN PARTICULAR FOR USE IN ELECTRICAL CHANGE-OVER OR OTHER SWITCHES

Marino Spanio, Milan, Italy, assignor to Bremas S.p.A., Italy

Filed Jun. 30, 1992, Ser. No. 906,370
Int. Cl.[5] H01H *3/8*
U.S. Cl. 200—336 **19 Claims**





1. A snap-action device for cooperating with toothed wheels for use in electrical change-over switches, said device comprising:

a change-over switch having a body comprising a cylindrical wall for supporting at least one toothed wheel, said cylindrical wall being symmetrical about a first axis;

a pawl having a body which is symmetrical about a second axis and comprising a pawl base, side walls, and a cavity for containing at least one elastic means;

connecting means for attaching said pawl to said body of said change-over switch to prevent accidental separation of said pawl from said switch, said connecting means comprising steps on said pawl arranged to cooperate with corresponding counter-steps provided on said cylindrical wall of said body of said change-over switch; and

at least one tang inclined along said second axis,

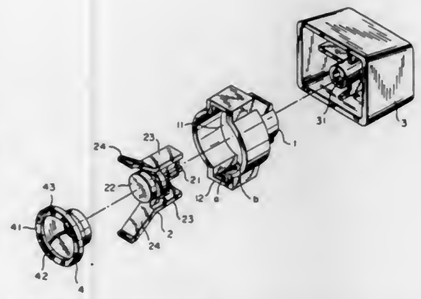
said side walls of said pawl comprising at least one surface inclined from said pawl base to facilitate insertion and pre-loading of said elastic means into said cavity, said cylindrical wall having opposing ends, each of said opposing ends having at least one portion arranged to cooperate with said surfaces of said side walls of said pawl in order to pre-load said elastic means.

5,310,973

STRUCTURE OF KEY SWITCH

Michael Lee, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Oct. 8, 1991, Ser. No. 772,795
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—345 **1 Claim**



1. A key switch, comprising:

a locating member including a substantially ring-shaped body defining therein two opposite sliding ways within a central opening thereof, the central opening having two opposite locations and the opposite sliding ways being located at the two opposite locations, said sliding ways each being formed of a lower surface portion, and upper surface portion and a sloping surface portion therebetween;

a switching member inserted in said central opening of said locating member, said switching member comprising a cross rib and a circular flange longitudinally aligned at a middle portion of the switching member between two opposite sides, and two opposite side plates attached to said cross rib at the two opposite sides, said side plates being moved to slide in said two sliding ways, each of said side plates having an extension obliquely extending downwards and outwards and arranged to engage said lower and sloping surface portions of said sliding ways;

a key cap movably connected to said switching member to drive it to slide in said locating member, said key cap having a cross slot on a bottom at a center into which said cross rib is engaged;

an elastic member adapted to support said switching member on a PC board in a keyboard, said elastic member having a ring-shaped bottom, said ring-shaped bottom having a plurality of notches defining therein a plurality of raised edges, each of said edges having a plurality of raised portions adapted to be supported on said PC board,

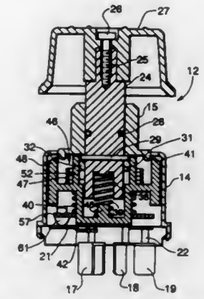
wherein said elastic member is electrically conductive and adapted to contact said PC board and close an electrical circuit thereon when said button is pressed, and wherein said elastic member further comprises a plurality of spaced ribs on an inner wall surface thereof to reinforce the structure of the circular flange and the elastic resilient properties thereof.

5,310,974

SWITCH FOR POWER TAKE-OFF CONTROLS

Stephen J. Churchill, Basildon; Michael E. Langford, Billericay; John G. Appleton, Hullbridge; Alvin J. Budd, South Woodham Ferreys, and Michael P. Rodgers, Ingateston, all of England, assignors to Ford New Holland, Inc., New Holland, Pa.

Division of Ser. No. 891,377, May 29, 1992, Pat. No. 5,237,883.
This application May 17, 1993, Ser. No. 61,521
Claims priority, application United Kingdom, Jun. 1, 1991, 9111811
Int. Cl.[5] H01H *13/62, 19/14*
U.S. Cl. 200—566 **4 Claims**



1. An electrical switch apparatus for initiating actuation in an ON position and deactuation in an OFF position of a power take-off drive comprising:

a housing in which is mounted a shaft for both axial and rotary movement relative to the housing, one end of the shaft being connected through one end of the housing to an operating member, a pair of diametrically opposed extensions being provided on the shaft and being cooperable, to prevent rotary movement of the shaft, with a selected one of a first diametral slot and a second diametral slot in the OFF and ON positions, respectively, of the switch, the slots being formed in a cylindrical axial extension on said one end of the housing and dividing that extension into two pairs of segments with an axial extent of one pair of segments being less than that of the other pair;

a rotary member carried by an opposing end of the shaft so as to be rotatable therewith, the shaft being capable of axial movement relative to the rotary member against the action of a biasing means, the shaft being axially moveable by the operating member against the action of the biasing means to disengage the extensions from the first slot, and the shaft then being rotatable by the operating member to a position in which the resilient means will move the shaft axially in the opposite direction so that the extensions engage the second slot so as again to prevent rotary movement of the shaft without first subjecting it to an axial movement; and

a contact plate carried by the rotary member for rotation therewith and having two electrical contacts disposed thereon, the two electrical contacts being cooperable with corresponding contacts provided on a baseplate, the baseplate being located on the housing on an end opposite the one end, the switch apparatus being in the on position when the contacts engage the corresponding contacts;

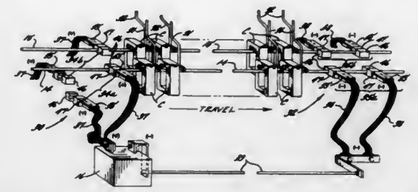
whereby the operating member of the switch apparatus must first be subjected to a linear movement and then subjected to a rotary movement in order to complete actuation of the switch apparatus to render the power take-off drive operative.

5,310,975

METHOD AND APPARATUS FOR THE CONTINUOUS FIELD ANNEALING OF AMORPHOUS METAL TRANSFORMER CORES

Paul R. Eklund, Hickory, N.C.; George J. Heisler, Meadville, Pa., and Rex E. Koeppen, Buffalo, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,131
Int. Cl.[5] H05B *6/10*
U.S. Cl. 219—635 **25 Claims**



1. A method for annealing magnetic cores of the type comprising a closed loop of metallic material which defines a central opening, and comprising the steps of

transporting the cores serially along the length of an electrically conductive rod, and with the cores being oriented so that the rod passes through the central openings of the cores, while

heating the cores, and while

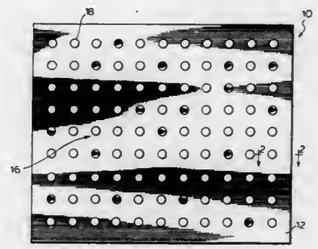
causing a direct electrical current to flow through an electrical loop which includes the length of said rod and so as to generate an electromagnetic field along the length of said rod, and such that the cores pass through said field.

5,310,976

MICROWAVE HEATING INTENSIFIER

Donald G. Beckett, Oakville, Canada, assignor to Beckett Industries Inc., Oakville, Canada

PCT No. PCT/CA90/00355, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/06195, PCT Pub. Date May 2, 1991
PCT Filed Oct. 18, 1990, Ser. No. 835,457
Claims priority, application United Kingdom, Aug. 23, 1989, 8923793.7
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—728 **8 Claims**



1. An article of manufacture suitable for use in the microwave cooking of foodstuffs which comprises a dielectric substrate and an array of discrete dots of electroconductive material of microwave-reflecting thickness supported on said dielectric substrate and having a transverse dimension of about 0.0001 to about 0.1 inch and spaced apart one from another by a distance of about 0.0001 to about 0.1 inch sufficient to effect guidance of an enhanced proportion of incident microwave energy through said substrate.

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5,310,977

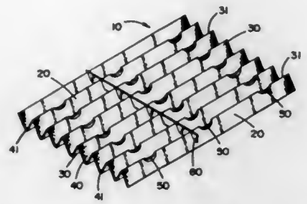
CONFIGURED MICROWAVE SUSCEPTOR

Victoria S. Stenkamp, Maplewood, Minn.; Curtis L. Larson, Hudson, Wis., and Pierre H. LePere, Cottage Grove, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 649,212, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 306,530, Feb. 3, 1989, abandoned. This application Nov. 23, 1992, Ser. No. 980,427

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—730 3 Claims



1. A microwave susceptor comprising a sheet of microwave interactive material adapted for converting microwave energy to heat, said sheet having a multiplicity of alternating substantially parallel ridge apexes and groove nadirs, said ridge apexes adapted for supporting a food item thereon, said sheet adapted for increasing and decreasing the linear distance between sequential ridge apexes by compressing or expanding the pleated sheet.

5,310,978

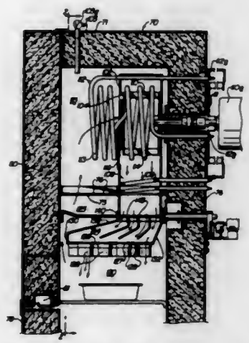
METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE AND SURFACE TEXTURE OF A FOOD PRODUCT

Donald P. Smith; Michael J. Dobie, both of Dallas; Alden B. Sparman, Sr., and John R. Norris, both of Plano, all of Tex., assignors to Patentsmith Corporation, Dallas, Tex.

Division of Ser. No. 463,279, Jan. 10, 1990, Pat. No. 5,147,994. This application Jul. 2, 1992, Ser. No. 909,077

Int. Cl.[5] H05B *6/80, 6/64;* B23K *15/10*

U.S. Cl. 219—681 19 Claims



2. An oven for controlling the temperature and surface texture of a food product comprising: a cabinet; perforated dividing means in said cabinet dividing the interior of the cabinet into a cooking chamber and an air heating chamber; circulating means in said air heating chamber to draw air through said perforated dividing means; a duct formed by a perforated plate having an array of passages formed therein for dispensing air from said air heating chamber into said cooking chamber; an array of tubes secured to said perforated plate for receiving air flowing through said passages; means pivotally mounting said duct in said cabinet for reciprocal movement of said tubes; heater means in said air heating chamber between said perforated dividing means and said circulating means; microwave heating means communicating with said cooking chamber, said perforated dividing means being adapted to prevent transfer of microwave energy from said cooking chamber to said heating chamber; and means positioning said heater means whereby the temperature of said circulating means is greater than the temperature of said perforated dividing means.

5,310,979

MICROWAVE OVENS WITH INFRARED RAYS HEATING UNITS

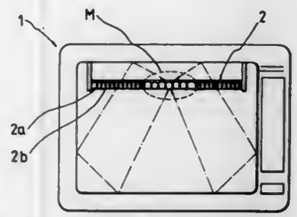
Kyung H. Jung, and Sang Y. Lee, both of Kyungki, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea

Filed Dec. 3, 1992, Ser. No. 985,276

Claims priority, application Rep. of Korea, Dec. 3, 1991, 91-22068

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—680 6 Claims



1. A microwave oven comprising a cooking compartment having side walls, a floor, and a ceiling, and an infrared heating unit mounted on said ceiling, said infrared heating unit comprising a lamp envelope of electrically insulative material having two opposite ends, an electrical lead disposed at each of said ends, and a heating coil disposed within said lamp and having two ends connected to respective ones of said leads, said coil including a series of coil loops extending along a length of said coil, said series of loops including two end groups of loops located at respective end sections of said coil, and an intermediate group of loops located between said end groups of loops, wherein radiant heat reflected off said side walls, floor, and ceiling tends to be concentrated at said intermediate group of loops, said loops of said intermediate group having a larger pitch interval than the loops of either of said end groups.

5,310,980

CONTROL OF MICROWAVE ENERGY IN COOKING FOODSTUFFS

D. Gregory Beckett, Oakville, Canada, assignor to Beckett Industries, Inc., Oakville, Canada

Continuation-in-part of Ser. No. 585,289, Sep. 19, 1990, abandoned, which is a continuation of Ser. No. 442,166, Nov. 28, 1989, abandoned. This application Apr. 24, 1991, Ser. No. 690,570

Claims priority, application United Kingdom, Nov. 28, 1988, 8827707

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—709 9 Claims

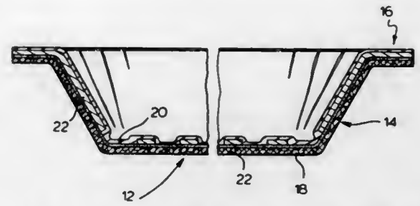
1. A tray for the microwave cooking of a prepared foodstuff contained therein, comprising:

a bottom wall and an upwardly extending peripheral wall against which said prepared foodstuff is in engagement,

said tray having a laminate structure comprising an outer layer of a structural material transparent to microwave energy, an inner layer of a flexible polymeric material coincident with said outer layer, and

a layer of microwave-reflective material located between said inner layer and said outer layer,

said layer of microwave-reflective material being provided as a continuous layer in the region of said peripheral wall



so as to reflect incident microwave energy from said peripheral wall into said prepared foodstuff in the tray,

said layer of microwave-reflective material extending in a microwave energy controlling pattern along said bottom wall which permits a controlled degree of penetration of incident microwave energy through said bottom wall to channel microwave energy preferentially towards a central region of said tray, which results in an improved uniformity of microwave cooking of the prepared foodstuff in the tray.

5,310,981

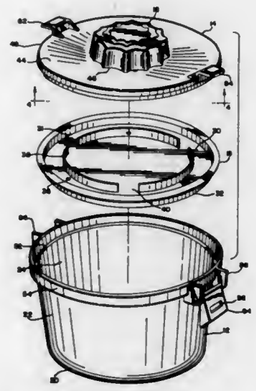
MICROWAVE COOKER

Norton Sarnoff, Northbrook; Carl Fletcher, Kildeer; Laura Giese, Oak Park, and John Chmela, Mount Prospect, all of Ill., assignors to Ensar Corporation, Wheeling, Ill.

Filed Jul. 23, 1993, Ser. No. 96,713

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—731 9 Claims



1. A microwave cooker comprising:

a cooking container member adapted to hold food to be cooked, said container having at least one sidewall defining an open top;

an inner lid member adapted to be inserted into the open top of said container member for closing the container member open top, said inner lid member having at least one upwardly extending baffle rib inwardly spaced from the perimeter of said inner lid member, said inner lid member having at least one vent hole for permitting steam to escape from the container during cooking and a peripheral edge;

formations on at least one of said members for supporting said inner lid member in position within said container member adjacent said open top;

a top cover adapted to overlie and cover said inner lid member and to define with said inner lid member a space therebetween for the accumulation of steam and boiling-over food, said top cover having a downwardly dished central portion and at least one downwardly depending baffle rib spaced inwardly from the outer edges of said top cover and having at least one vent hole in said central portion, said top cover rib being in a spaced relationship to said inner lid baffle rib, and said top cover vent hole being laterally spaced from said inner lid member vent hole when said top cover is positioned in overlying relationship with said inner lid member; and

a means for releasably locking said top cover to said cooking container member, whereby said inner lid member and said top cover will remain in place during cooking and effluent steam will have a tortuous path between said vent holes in said inner lid member and in said top cover.

5,310,982

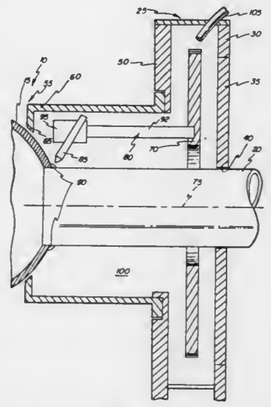
T-JOINT WELDING FIXTURE

Vytantas J. Jusionis, Fountain Valley, Calif., assignor to Hobart Brothers Company, Troy, Ohio

Filed Apr. 26, 1993, Ser. No. 53,097

Int. Cl.[5] B23K *9/12*

U.S. Cl. 219—61 3 Claims



3. A method of welding a branch tube to a header tube comprising the steps of

attaching a fixture to the header tube,

holding the branch tube in place relative to the fixture and to the header tube by means of a clamp

forming a shielding gas chamber in the immediate vicinity of the joint between the header tube and the branch tube by means of a collet extending from the fixture into contact with the header tube surrounding the joint to be welded and the branch tube clamp,

introducing shielding gas into the chamber defined by the welding fixture, and

welding the branch tube to the header tube by rotating a welding electrode around the joint formed between the branch tube and the header tube.

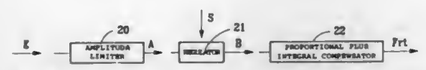
VOL 1162 ISS 2 MY 10 1994 UMI

5,310,983

SERVO-CONTROLLED FEED RATE CONTROL DEVICE FOR CNC ELECTRIC SPARK MACHINES

Yih-Fang Chang, and Yaw-Shen Lai, both of Hsinchu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 23, 1992, Ser. No. 965,352
Int. Cl.[5] B23H *7/18*
U.S. Cl. 219—69.16 **7 Claims**



2. A feed rate control device device for providing a proportional feed rate to an electrode of a computerized controlled electric spark machine in accordance with an input signal by detecting gap voltage across the electrode during discharging period, comprising:

(a) an amplitude limiter containing an input means for receiving an input signal, a first output means for sending out an output signal, and a signal stabilizing means for limiting the amplitude of said output signal and increasing stability of said output signal;

(b) a proportional-plus-integral compensator for controlling said feed rate of said electrode, containing a receiving means for receiving said output signal from said amplitude limiter, sensitivity adjusting means for adjusting a sensitivity for said feed rate, and a second output means for generating an output control signal; and

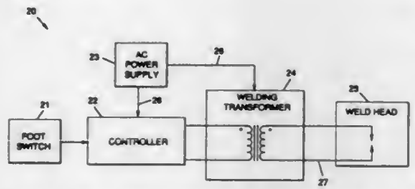
(c) a regulator for manipulating the sensitivity adjustment of said proportional-plus-integral compensator.

5,310,984

LINE VOLTAGE COMPENSATION FOR AC RESISTANCE WELDING SYSTEMS AND THE LIKE

Thomas L. Ratledge, Carlsbad, and Joseph E. Donner, Vista, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 3, 1992, Ser. No. 970,722
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—110 **7 Claims**



1. An AC line voltage compensation method for use with an AC welding system that is adapted to weld an article, said method comprising the steps of:

providing welding parameters for welding the article.

providing a desired heating percentage P_{230} that is determinative of an RMS output voltage V_{rms} supplied by the AC welding system;

measuring an AC line voltage V_a supplied to the AC welding system;

determining the difference between the measured AC line voltage V_a and a desired nominal AC line voltage V_{230};

adjusting an actual percent heat applied P_a to the article as a function of the heating percentage P_{230} and the measured difference between V_{230} and V_a; and

further adjusting the actual percent heat applied P_a to correct for frequency filtering effects of system inductance and resistance comprising the steps of;

manually providing a number N ranging from 0 to 32; and

correcting the actual percent heat applied P_a by a fraction N/32.

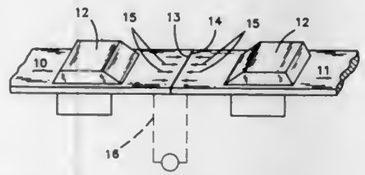
thereby maintaining the RAMS output voltage supplied at the output of the AC welding system at a relatively constant level for all AC line voltages supplied to the AC welding system.

5,310,985

PROCESS FOR JOINING COPPER ALLOYS

Brian Fisk, Franlin Lakes, N.J., and Joseph Winter, New Haven, Conn., assignors to Fisk Alloy Wire, Inc., Hawthorne, N.J.

Filed Apr. 16, 1993, Ser. No. 48,816
Int. Cl.[5] B23K *11/02*
U.S. Cl. 219—117.1 **16 Claims**



1. Process for joining copper alloys to be used for electrical conductors which comprises: providing copper alloy conductors having butt end faces thereof to be joined with closely matching configurations; rigidly clamping the end faces of the alloys to be joined in contacting relationship under a compressive force but below the yield strength of the copper alloy in the room temperature condition, wherein the copper alloy to be joined contains less than about 20% alloying additions and at least 0.01% each of at least one of the alloying elements tin, iron, zirconium, cadmium, beryllium, silver and magnesium; applying heat to the contacting end faces while said end faces are under continuous compression at a temperature of at least 300° C. but below the solvus temperature of the copper alloy in at least one heating cycle while maintaining the alloying elements out of solution; whereby the contacting end faces form a joined copper alloy with good strength and conductivity properties.

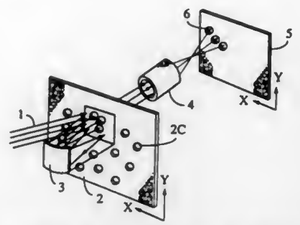
5,310,986

LASER MACHINING APPARATUS

Nobuyuki Zumoto; Toshinori Yagi; Masao Izumo, and Masaaki Tanaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 52,897
Claims priority, application Japan, Apr. 28, 1992, 4-109403; Feb. 24, 1993, 5-35306
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.7 **17 Claims**

1. A laser machining apparatus which comprises a mask having light transmitting portions which allow a laser light received from a light source to pass through and reflecting portions which reflect said laser light, and a reflecting mirror, mounted substantially in parallel with said mask and separated by a predetermined distance from said mask, which causes the laser light received from the reflecting portions of the mask to reflect toward said mask, and an imaging optical system, for machining a work by laser light which passes through the light transmitting portions of the mask, the laser machining apparatus comprising:



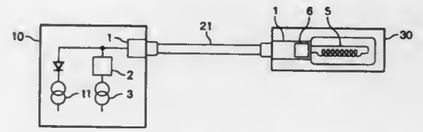
means for causing said mask to move in parallel with said work for machining the work.

5,310,987

ELECTRON BEAM GUN CONNECTOR

Robert E. Rutz, Orinda, Calif., assignor to RPC Industries

Filed Nov. 25, 1992, Ser. No. 981,552
Int. Cl.[5] B23K *15/00*
U.S. Cl. 219—121.34 **4 Claims**



1. In a high power hot cathode electron beam gun wherein said cathode and cathode heater are caused to float at high potential, the improvement comprising providing a high voltage cable termination with built in transformer, said transformer having an input impedance matched to said cable and an output impedance matched to said cathode heater.

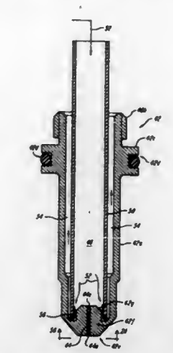
5,310,988

ELECTRODE FOR HIGH CURRENT DENSITY PLASMA ARC TORCH

Richard W. Couch, Jr., Hanover, N.H.; Nichols A. Sanders, Norwich, Vt.; Lifeng Luo, Lebanon, N.H.; Zhipeng Lu, Lebanon, N.H.; Patrik Bäckander, Lebanon, N.H., and John Sobr, Enfield, N.H., assignors to Hypertherm, Inc., Hanover, N.H.

Filed May 20, 1992, Ser. No. 886,067
Int. Cl.[5] B23K *10/00*
U.S. Cl. 219—121.52 **16 Claims**

1. In an electrode for a plasma arc cutting torch, the electrode having (i) a body formed of a material having a high thermal heat conductivity and extending along the central axis of said torch to a bottom end, and (ii) an insert of a material characterized by a high thermionic emission that is secured in the bottom end of the body with an emissive surface with an area A exposed to the plasma gas and with an emissive spot that becomes molten during cutting, the improvement comprising said insert having its emissive surface area corresponding to the level of the operating current carried by the electrode, said emissive surface area being (i) at least equal to the area of the emissive spot produced by cutting at a given operating current level (ii) sufficiently small that the insert material in said emissive area does not boil, and the size of said emissive spot selected in coordination with the operating current level



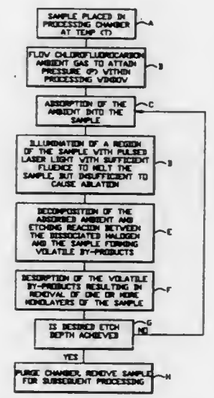
so that the current density during cutting is substantially constant at a value of at least 1.2×10^5 amperes/inch^2.

5,310,989

METHOD FOR LASER-ASSISTED ETCHING OF III-V AND II-VI SEMICONDUCTOR COMPOUNDS USING CHLOROFLUOROCARBON AMBIENTS

Stephen D. Russell; Douglas A. Sexton, and Richard J. Orazi, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 508,317, Apr. 10, 1990. This application Jan. 21, 1992, Ser. No. 831,830
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.68 **26 Claims**



1. An apparatus for maskless laser-assisted etching of III-V semiconductor compound sample in a gaseous chlorofluorocarbon ambient comprising:

a source of said gaseous chlorofluorocarbon ambient;

a chamber sized to contain said III-V semiconductor compound sample therein and coupled to said source of said gaseous chlorofluorocarbon ambient to receive said gaseous chlorofluorocarbon ambient therein to provide said gaseous chlorofluorocarbon ambient in contact with said III-V semiconductor compound sample;

an emitter of radiant energy oriented to direct said radiant

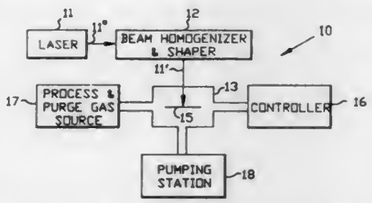
VOL 1162 ISS 2 MY 10 1994 UMI

energy into said chamber and onto said III–V semiconductor compound sample in contact with said gaseous chlorofluorocarbon ambient, said radiant energy being emitted at a sufficient level to create a melted portion of said III–V semiconductor compound sample where the radiant energy impinges to etch away only said melted portion of said III–V semiconductor compound in contact with said gaseous chlorofluorocarbon ambient which has said radiant energy impinging thereon.

5,310,990
METHOD OF LASER PROCESSING FERROELECTRIC MATERIALS

Stephen D. Russell, and Douglas A. Sexton, both of San Diego, Calif., assignors to The United Stated of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1991, Ser. No. 709,671
Int. Cl.[5] B23K *26/12*
U.S. Cl. 219—121.69 **13 Claims**



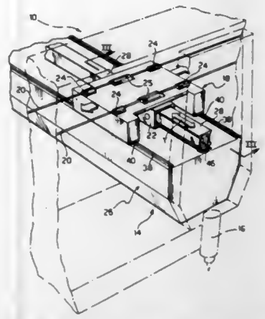
1. A method of laser patterning a region of a thin film ferroelectric material comprising:
placing said thin film ferroelectric material in an appropriate processing chamber;
contacting said region of said thin film ferroelectric material with a suitable ambient;
providing a beam of UV laser light having a substantially flat homogenized-intensity-profile response that is shaped to cover said region; and
illuminating said region of said thin film ferroelectric material in said suitable ambient with said beam of UV laser light having a substantially flat homogenized-intensity-profile response that is shaped to cover said region with the proper amount of fluence to cause substantial uniform ablation of said region of said thin film ferroelectric material to create said laser patterning without damage to adjacent or underlying materials.

5,310,991
MACHINE TOOL, IN PARTICULAR A LASER MACHINE, WITH AN OPERATING HEAD SUPPORTED BY A CANTILEVER BEAM

Sartorio Franco, Turin, Italy, assignor to Prima Industrie S.p.A., Turin, Italy

Filed Nov. 30, 1992, Ser. No. 982,994
Claims priority, application Italy, Jan. 27, 1992, T092A000053
Int. Cl.[5] B23K *26/08*
U.S. Cl. 219—121.78 **7 Claims**

1. A cartesian-type machine tool, particularly but not exclusively a laser machine, including a support structure, a main beam which is cantilevered on the support structure and is movable relative to the support structure in the direction of its own longitudinal axis, and an operating head disposed at the end of the main beam and movable in at least two directions at right-angles to one another, wherein it also includes an auxiliary beam which is movable parallel with the main beam and is cantilevered on the support structure, and support means through which the auxiliary beam supports a considerable part of the weight of the main beam and of the operating head and which can transmit the main part of the weight of the main

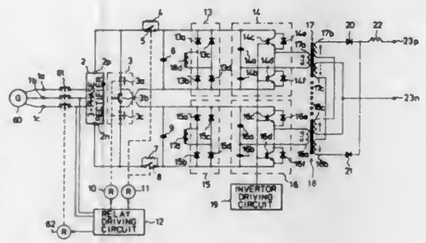


beam to the auxiliary beam without rigid constraints of distance between the main beam and the auxiliary beam.

5,310,992
ARC WELDER

Kunio Karino, Suita; Haruo Moriguchi, Itami; Toshikazu Fujiyoshi, Kawanishi; Tetsurou Ikeda, Osaka; Kenzo Danjo, Soraku, and Masahiro Aoyama, Higashi-osaka, all of Japan, assignors to Sansha Electric Manufacturing Company, Ltd., Osaka, Japan

Filed Apr. 5, 1993, Ser. No. 42,674
Claims priority, application Japan, Apr. 3, 1992, 4-112100
Int. Cl.[5] B23K *9/10*
U.S. Cl. 219—130.21 **2 Claims**



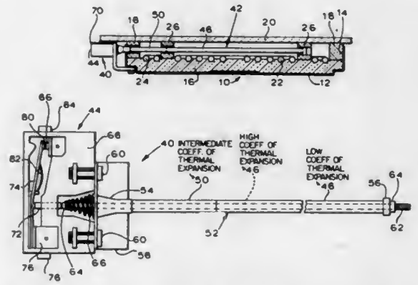
1. In an arc welder:
input terminals for receiving an a.c. power,
an input rectifier for rectifying said a.c. power,
a pair of capacitors connected in series between output terminals of said input rectifier for smoothing an output thereof,
a pair of invertors respectively driven by outputs of said capacitors for generating high frequency outputs,
an output transformer for transforming outputs of said invertors,
an output rectifier for rectifying an output of said output transformer,
a control transformer having a pair of primary windings connected in series between said input terminals,
a d.c. convertor for rectifying and smoothing an output of said control transformer to produce a d.c. control voltage,
means for changing connections of said capacitors and said primary windings of said control transformer from series to parallel when said control voltage is lower than a first predetermined value, and
means for holding said connections in parallel regardless of

increase in said control voltage due to said change of the connections;
the improvement comprising:
initializing means for temporarily shutting off said a.c. power to release operation of said holding means when said control voltage is higher than a second predetermined value.

5,310,993
DEVICE FOR CONTROLLING OR LIMITING TEMPERATURE IN AN ELECTRIC COOKING APPLIANCE

Kevin R. McWilliams, Stratford-upoo-Avon, and Stuart Lamb, Redditch, both of United Kingdom, assignors to Ceramaspeed Limited, United Kingdom

Filed Jan. 5, 1993, Ser. No. 637
Claims priority, application United Kingdom, Jan. 23, 1992, 9201443
Int. Cl.[5] H01H *37/48*
U.S. Cl. 219—449 **11 Claims**



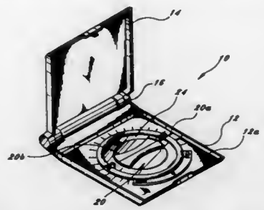
1. A device for controlling or limiting temperature in an electric cooking appliance, the device comprising switch means and a temperature sensor operatively coupled to the switch means, the temperature sensor comprising a rod arranged substantially coaxially within a tube, the rod being made of a material having a first coefficient of thermal expansion and the tube comprising at least two tube portions, one of the tube portions being made from a material having a second coefficient of thermal expansion and another of the tube portions being made from a ceramic material having a third coefficient of thermal expansion intermediate the first and second coefficients of thermal expansion.

5,310,994
FERTILITY PERIOD CALCULATOR

Raymond Thabet, Saint-Jacques, and Louis Cliche, Sainte Foy, both of Canada, assignors to Carole M. Mercier, Nun's Island, Canada

Filed Apr. 1, 1992, Ser. No. 863,671
Int. Cl.[5] G06C *27/00, 3/00*
U.S. Cl. 235—77 **2 Claims**

1. A fertility period calculator comprising:
a flat rigid planar, thin, hand-sized member having an annular aperture centrally disposed therethrough, a plurality of numerical indicia equally surrounding a perimeter of said annular aperture having the numerals 1 through 31 representing the days of the month;
a circular disk having an annular lip sized and rotatably mounted in said annular aperture portion of said flat member, said circular disk including a central upper handles means having an alignment indicia disposed thereon, and a pair of identifying probes, spaced apart, extending radially beyond a circumference of said disk, the space between the probes sized to encompass only one numeral at a time of the total numerals surrounding the perimeter of said planar member aperture, said probes highlighting the actual day of the month, said probes aligned to move relative to said member indicia; said disk including numerical indicia substantially relating to the total number of days within a single average menstrual cycle from 22 to 39 displayed around a predetermined portion of said disk; and
a ring rotatably mounted on top of and engaged with said disk, said ring including a circumferential portion extend-

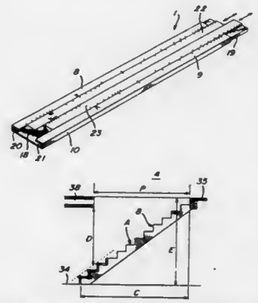


ing radially inward that covers the numerical indicia displayed around said disk relating to the menstrual cycle total days and an observation window, said window sized to view one number of the menstrual cycle total days, said ring having an enlarged circumferential arc area extending radially outward over a segment of the numerical indicia surrounding said annular aperture, thereby covering particular days of the month when conception is most likely to occur.

5,310,995
STAIRWAY CALCULATOR

Nelson Ouellet, and Robert Caouette, both of Mirabel, Canada, assignors to ZNR Concept, Inc., Mirabel, Canada

Filed Aug. 26, 1992, Ser. No. 935,879
Int. Cl.[5] G06G *1/02;* **B43L** *7/10*
U.S. Cl. 235—70 R **16 Claims**



1. A device for calculating the height of risers in a stairway to be installed between a lower floor surface, and an upper floor surface of given elevation above said lower floor surface, comprising:
first and second scale support surfaces adapted to slide with respect to each other;
a first scale means on said first support surface, said first scale means comprising a plurality of indicia representative of numbers of risers;
a second scale means on said second support surface, said first and second scale means being laterally adjacent to each other and said second scale means comprising a plurality of elevation representative indicia; and

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indicia indicating means on said first support surface for indicating indicia of the second scale means;

whereby, in operation, when said first and second scale support surfaces are slid with respect to each other to align indicia of the first and second scale means corresponding to the number of risers in said stairway and the elevation of the upper floor surface above the lower floor surface, respectively, said indicia indicating means indicates on the second scale means the height of said risers.

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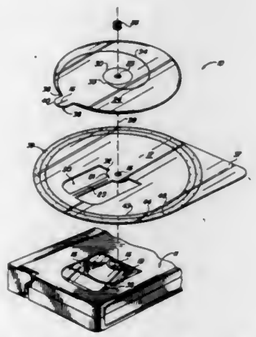
METHOD AND APPARATUS FOR DETERMINING RECORDING TIME AVAILABLE ON A VIDEOTAPE CASSETTE

John A. Canal, 205 NE. 3rd St., Satellite Beach, Fla. 32937, and Warren L. Franz, Orlando, Fla., assignors to John A. Canal, Satellite Beach, Fla.

Continuation-in-part of Ser. No. 890,644, May 28, 1992, abandoned. This application Mar. 11, 1993, Ser. No. 29,772

Int. Cl.[5] G06C *27/00, 3/00*

U.S. Cl. 235—78 R **20 Claims**



1. Apparatus for determining the amount of recording time available on a videotape cassette; said cassette comprising a casing having interior confines; first and second reels having floating hubs and being captured for rotation within said confines; and a length of video recording tape mounted for transportation between said reels and having respective portions wound about said hubs; and said apparatus comprising:

a first transparent disc;

a second transparent disc;

a fastener securing said first and second discs in parallel superposed relationship for rotation of said second disc about an axis relative to said first disc;

an alignment guide for visually establishing a known reference location of said first disc relative to one of said hubs, independent of variations of position of said one of said hubs within said confines;

an index located on a first one of said first and second discs;

a time scale located on a first other of said first and second discs;

a reference line provided on a second one of said first and second discs; and

a spiral provided on a second other of said first and second discs, said spiral expanding radially, circumferentially about said axis;

said index, time scale, reference line and spiral being relatively dimensioned and configured so that rotating said second disc about said axis relative to said first disc with said known reference location established, until intersection of said spiral with said reference line matches an outside edge of an outermost layer of said portion of tape wound about said one of said hubs, will align said index with said time scale to indicate the amount of recording time available.

5,310,997

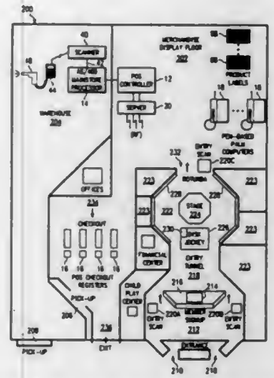
AUTOMATED ORDER AND DELIVERY SYSTEM

John V. Roach, and Richard Hollander, both of Fort Worth, Tex., assignors to Tandy Corporation, Fort Worth, Tex.

Filed Sep. 10, 1992, Ser. No. 942,946

Int. Cl.[5] G06F *15/20*

U.S. Cl. 235—375 **51 Claims**



1. Apparats for processing merchandise sale transactions for customers in a point of sale and warehouse facility, the apparatus comprising:

a main processor including a database for storing customer identification information and merchandise information and including program instructions for processing a sale transaction record for each customer;

a point of sale system coupled with said main processor, said point of sale system including program instructions responsive to entry of a customer identification number for accessing said database to display customer identification information and for generating said sale transaction record;

said point of sale system including item entry means responsive to entry of a merchandise item identification number for accessing said database to display merchandise information pertaining to said item to the customer and for selecting said item for addition to said sale transaction record;

said point of sale system including delivery method entry means for displaying merchandise delivery method information to the customer and for selecting delivery method instructions for addition to said sale transaction record;

said point of sale system including total command means for indicating acceptance of said sale transaction record by the customer and for transmitting said sale transaction record to said main processor to effectuate warehouse delivery of said selected merchandise items to the customer according to said selected delivery method instructions; and

wherein said point of sale system comprises a controller coupled to said main processor and at least one pen-based computer coupled to said controller via radio frequency transmissions;

said customer identification number being entered into said pen-based computer from a customer membership card associated with the customer.

5,310,998

METHOD AND SYSTEM FOR PLACING A BUS ON HOLD DURING THE INSERTION/EXTRACTION OF AN IC CARD INTO/FROM A COMPUTER

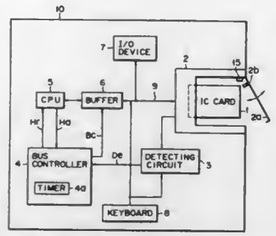
Takashi Okuno, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 603,837, Oct. 26, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 15,282

Claims priority, application Japan, Oct. 31, 1989, 1-126627[U]

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—380 **28 Claims**



11. A computer system comprising:

a bus;

a holder for connecting a process card to said bus, said holder having a door which is opened to insert and extract the card into and from said holder;

a detector for detecting whether said door is opened; and

bus holding means for placing said bus on hold in accordance with a detection result from said detector.

5,310,999

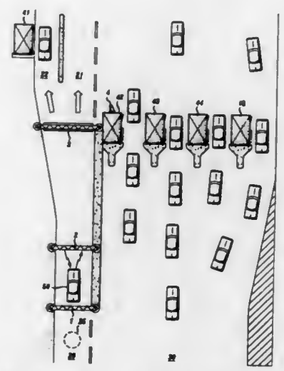
SECURE TOLL COLLECTION SYSTEM FOR MOVING VEHICLES

David M. Claus; Kevin D. Murphy, both of Indianapolis, and Marjorie E. Taylor, Carmel, all of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 2, 1992, Ser. No. 908,195

Int. Cl.[5] G07B *15/02*

U.S. Cl. 235—384 **20 Claims**



1. In a toll collecting system comprising a first transceiver which is located in a moving vehicle and a second transceiver which is located at a relatively fixed location on a roadway, a secure method for collecting tolls from the moving vehicle comprising the steps of:

generating an encryption code at the second transceiver;

transmitting the encryption code to the first transceiver;

storing payment information and a predetermined encryption algorithm in the first transceiver;

encrypting the payment information, using the encryption code, in accordance with the predetermined algorithm;

transmitting the encrypted payment information to the second transceiver; and

verifying the encrypted payment information at the second transceiver.

5,311,000

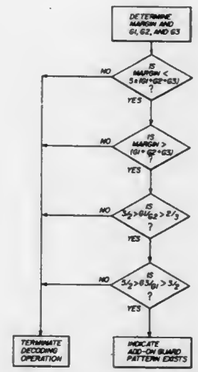
BAR CODE SCANNER AND METHOD OF SCANNING

Michael T. Brooks, Veneta, Oreg., assignor to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.

Filed Jul. 31, 1992, Ser. No. 922,875

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **23 Claims**



1. A method of scanning an Add-On code portion of a bar code label to determine the bar code data printed thereon by sweeping a scanning beam in a scan path across the Add-On code portion of the label, said bar code labels bearing bar codes of the type which include a primary code portion and which may also include an Add-On code portion, comprising the steps of:

sweeping a scanning beam across the label until the beam sweeps a scanning pass along a scan path which traverses a possible Add-On code portion;

providing data indicative of the structure of the possible Add-On code portion;

subjecting the data indicative of the structure of the possible Add-On code portion to at least one test to determine the existence of an adjacent margin;

subjecting the data indicative of the structure of the possible Add-On code portion to at least one test to determine the existence of an Add-On guard pattern;

decoding the characters of the possible Add-On code portion of the label; and

terminating decoding.

5,311,001

ANALOG WAVEFORM DECODER UTILIZING HISTOGRAM OF EDGE SIZES

Eugene B. Joseph, and Theodosios Pavlidis, both of Setauket, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 759,332, Sep. 13, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 96,579

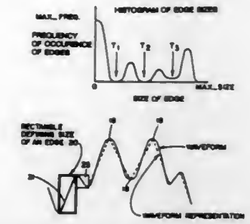
Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **38 Claims**

31. A decoder comprising: means receptive of an analog signal having a waveform representative of a decodable sym-

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bology and including a decodable portion; means for locating the decodable portion of the waveform; means for producing a plurality of waveform descriptors relating to edge sizes of the



decodable portion of the waveform; and means for decoding information contained in the decodable symbology in response to the descriptors.

5,311,002

CIRCUIT FOR DEALING WITH A BAR CODE SIGNAL AND A HIGH SPEED ELECTRIC SIGNAL

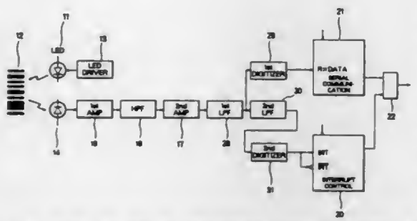
Hiroshi Kamezawa; Hiroshi Hayashi, both of Tokyo, and Nobuyuki Sone, Shizuoka, all of Japan, assignors to NEC Corporation, Japan

Filed Nov. 18, 1992, Ser. No. 977,922

Claims priority, application Japan, Nov. 19, 1991, 3-303315; Dec. 20, 1991, 3-355294

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **6 Claims**



1. A circuit for use in combination with a processor for producing a control signal, said circuit comprising a bar code reader for reading a bar code responsive to code illuminating light for producing reflected light and an optical communication receiver for receiving an optical signal and selectively controlled by said control signal to produce an output signal, said bar code reader and said optical communication receiver including common photoelectric means for converting a combination of said reflected light and said optical signal to an electric signal, wherein:

said bar code reader and said optical communication receiver comprises in common a first low pass filter having a first cutoff frequency and connected to said photoelectric means for filtering said electric signal to produce a first low pass filtered signal;

said optical communication receiver comprising:

a first digitizer connected to said first low pass filter for digitizing said first low pass filtered signal to produce a first digital signal; and

a serial communication unit connected to said first digitizer for converting said first digital signal to said output signal to give a predetermined form to said output signal when said control signal is not received;

said bar code reader comprising:

a second low pass filter having a second cutoff frequency and connected to said first low pass filter for filtering said first low pass filtered signal to produce a second low pass filtered signal;

a second digitizer connected to said second low pass filter for digitizing said second low pass filtered signal to produce a second digital signal; and

an interrupt control unit connected to second digitizer for producing said output signal when said control signal is not received.

5,311,003

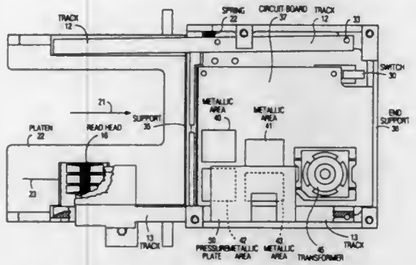
HAND-OPERATED MAGNETIC STRIPE CARD READER

Jagtar S. Saroya, San Pedro, Calif., assignor to American Magnetics Corporation, Carson, Calif.

Filed Jun. 5, 1992, Ser. No. 894,462

Int. Cl.[5] G06K *7/015, 7/08*

U.S. Cl. 235—485 **6 Claims**



1. A reader for a medium bearing a magnetic stripe, said reader including a platen for receiving said medium and first and second guide tracks for receiving first and second advancing edges of said medium, said reader also including a magnetic read head having an axis aligned with said magnetic stripe for reading information on said stripe as it advances in said reader between said tracks, said first and second tracks extending along the entire length of travel of said medium thus defining a plane of travel said first track being in fixed alignment with said axis, said second track being spring loaded for urging said medium against said first track and thus maintaining said stripe in alignment with said axis for avoiding azimuth errors.

5,311,004

FOCUS DETECTING APPARATUS WITH GAZE DETECTION AND FOCUS AREA CHANGING

Yosuke Kusaka, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 954,401, Oct. 5, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 91,084

Claims priority, application Japan, Oct. 17, 1991, 3-298520

Int. Cl.[5] G01J *1/20*

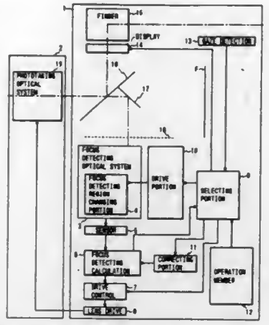
U.S. Cl. 250—201.8 **26 Claims**

1. A focus detecting apparatus characterized by the provision of:

a focus detecting optical system for setting a focus detecting region on the predetermined focal plane of a phototaking optical system, directing a light beam from an object passed through the focus detecting region to photoelectric converting means fixed at a predetermined location, and forming an object image thereon;

region changing means for changing the position of a deflecting member having at least two reflecting surfaces which is installed in the optical path from said focus detecting region to said photoelectric converting means relative to said fixed photoelectric converting means to thereby change the focus detecting region on said predetermined focal plane; and

calculating means for calculating the focus adjusted state of said phototaking optical system in the focus detecting region after changed by said region changing means, on



the basis of the output signal of said photoelectric converting means.

5,311,005

OPTICAL TRANSMITTERS

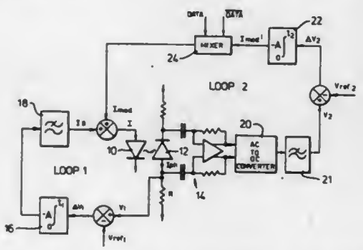
Pasqualino M. Visocchi, Enfield, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 15, 1992, Ser. No. 962,484

Claims priority, application United Kingdom, Oct. 19, 1991, 9122239

Int. Cl.[5] G01J *1/32*

U.S. Cl. 250—205 **8 Claims**



1. An optical transmitter including a laser diode and achieving automatic slope variation compensation of the laser diode, the transmitter further including a photodetector disposed to detect the output optical signal of the laser diode, a first control loop and a second control loop, the first control loop serving to maintain the mean optical signal power output from the laser diode at a first predetermined level by adjustment of bias current applied thereto, in response to comparison of a voltage signal representing mean optical signal power obtained from the photodetector a.c. output signal with a voltage corresponding to the first predetermined level, and the second control loop serving to adjust modulation current applied to the laser diode whereby to maintain the a.c. optical signal power output from the laser diode at a second predetermined level, which modulation current adjustment is carried out in response to the detection of an error signal between the second predetermined level and a mean value of the a.c. optical signal power obtained in the second control loop from the photodetector a.c. output signal by successive amplification and rectification.

5,311,006

INFRARED PHOTODETECTOR FORMED BY ARRAY OF SEMICONDUCTOR ELEMENTS SHAPED TO HAVE INCREASED ELECTRON DIFFUSION AREA

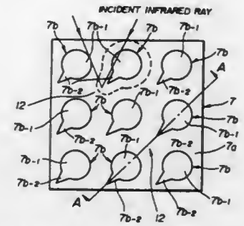
Kenji Awamoto, and Yuichiro Ito, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 5, 1992, Ser. No. 971,599

Claims priority, application Japan, Nov. 20, 1991, 3-304862

Int. Cl.[5] H01L *31/00*

U.S. Cl. 250—208.1 **20 Claims**



1. A photodetector comprising:

a substrate made of a first semiconductor type and having a surface; and

a plurality of independent diffusion regions formed in the surface of said substrate and made of a second semiconductor type which is opposite to the first semiconductor type so that sa pn junction is formed between the substrate and each diffusion region,

discrete photosensitive areas being formed by each of said diffusion regions and blind areas being formed between adjacent ones of said photosensitive areas when a bias voltage is applied across each pn junction,

each of said photosensitive areas having the same area,

at least predetermined ones of said diffusion regions having a main part and at least one auxiliary part which is integrally formed on the main part,

said auxiliary part projecting towards a corresponding one of said blind areas, so that the blind area is reduced by a part of the photosensitive area formed by the auxiliary part of the diffusion region;

each said diffusion region forms a photosensitive area when a bias voltage is applied across a corresponding pn junction,

blind areas are formed between adjacent photosensitive areas, and

the photosensitive areas are arranged in a substantially contiguous manner so that the adjacent photosensitive areas are in contact with or very close to each other.

5,311,007

COVER FOR SOLID-STATE IMAGE SENSING DEVICE WITH A CONCAVE-SHAPED CROSS-SECTION

Kaneyuki Kato, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 29, 1992, Ser. No. 997,082

Claims priority, application Japan, Jan. 9, 1992, 4-1967

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **16 Claims**

1. A solid-state image sensing device comprising:

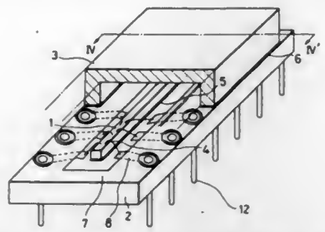
a substrate;

a solid-state image sensing element fixed in place on said substrate; and

a cover disposed above said element and having high light transmissivity, said cover comprising a flat top portion and a side-wall portion surrounding said element to pro-

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vide a concave-shaped cross-section, said side-wall portion being integrally formed with said top portion, said flat



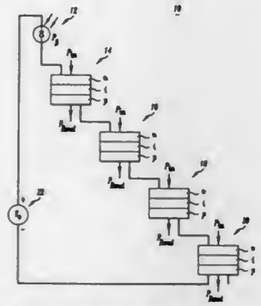
top portion having ga length corresponding to at least a width of said image sensing element.

5,311,008

SELF-ELECTROOPTIC EFFECT DEVICE FOR PROVIDING INTEGER GAIN TO INPUT OPTICAL SIGNALS HAVING SERIES CONNECTED QUANTUM WELL DIODES

David A. B. Miller, Fair Haven, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1992, Ser. No. 997,384
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 LS **23 Claims**



1. Semiconductor apparatus comprising:
a plurality of quantum well diodes;
means for directing an electrical current through each of said diodes in series, each quantum well diode being of a type which absorbs optical power from a light beam passing through it in an amount proportional to the electrical current; and
means for varying the electrical current.

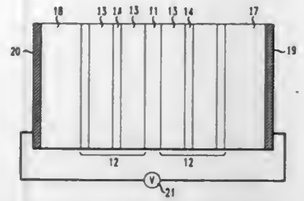
5,311,009

QUANTUM WELL DEVICE FOR PRODUCING LOCALIZED ELECTRON STATES FOR DETECTORS AND MODULATORS

Federico Capasso, Westfield; Alfred Y. Cho, Summit; Jerome Faist, Scotch Plains; Carlo Sirtori, Summit, and Deborah L. Sivco, Warren, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 31, 1992, Ser. No. 923,197
Int. Cl.[5] H01L *27/12*
U.S. Cl. 250—214 LS **8 Claims**

1. A quantum well device for providing a localized state for electrons of energy E measured from the bottom of the well greater than the barrier height ΔE_c of the adjacent barrier layers comprising:
a confinement quantum well layer disposed between a pair of barrier layers, said well layer having a thickness L_w equal to an integral number n of half deBroglie wavelengths of an electron of energy E;
adjacent said well layer on at least one side thereof a quarter wave stack of barrier layers and well layers;



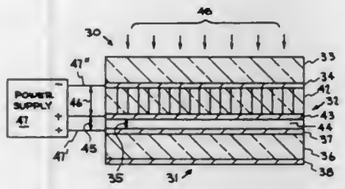
said stack barrier layers having a thickness L_b equal to an odd number of quarter deBroglie wavelengths of an electron of energy E; and
said stack well layers having a thickness L_z equal to an odd number of quarter deBroglie wavelength of an electron of energy E.

5,311,010

BUFFER FOR A GAMMA-INSENSITIVE OPTICAL SENSOR WITH GAS AND A BUFFER ASSEMBLY

Hans W. Kruger, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 1, 1993, Ser. No. 11,918
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT **20 Claims**



1. In a gamma-insensitive sensor comprising a cathode and an anode separated by a gap containing a gas and means for applying an electric potential between the anode and the cathode thereby producing an electric field in the gap, the improvement comprising:
a buffer assembly positioned intermediate said cathode and said anode for preventing chemical incompatibility between materials constituting the cathode and the composition of the gas within the gap.

5,311,011

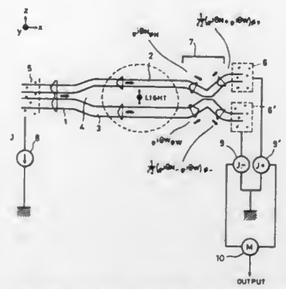
QUANTUM INTERFERENCE DEVICES AND METHODS FOR PROCESSING INTERFERENCE CURRENT

Akira Shimizu, Inagi; Masahiro Okuda, Sagamihara, and Kazuhito Fujii, Atsugui, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 755,803, Sep. 6, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 113,750
Claims priority, application Japan, Sep. 13, 1990, 2-242884
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214.1 **21 Claims**

1. A quantum interference device comprising:

a plurality of quantum structure paths for propagating an electron wave therethrough;
means for branching the electron wave into plural electron waves confined in said plurality of quantum-structure paths;
means for combining the electron waves to generate plural kinds of electron waves having different energy levels and



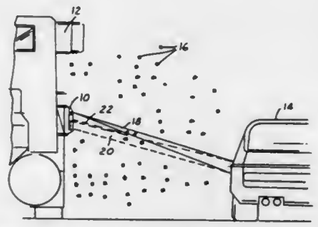
varying in magnitude depending on a phase difference between the branched electron waves;
means for detecting currents of said plural kinds of electron waves, respectively; and
operation means for forming a non-fluctuating current from the detected currents, the non-fluctuating current not being influenced by fluctuations of the current corresponding to the combined electron waves.

5,311,012

METHOD AND APPARATUS FOR DETECTING OBJECTS WITH MODIFYING GAIN AND SENSOR MEANS

Scott Juds, Everett, and Paul Mathews, Langley, both of Wash., assignors to Auto-Sense, Limited, Denver, Colo.

Continuation of Ser. No. 765,860, Sep. 26, 1991, abandoned, which is a division of Ser. No. 508,132, Apr. 10, 1990. This application Mar. 15, 1993, Ser. No. 32,736
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1 **14 Claims**



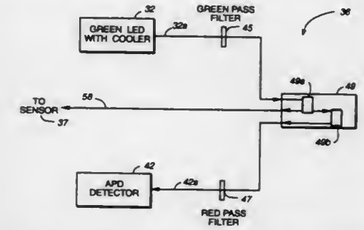
1. An object detector for detecting the presence of an object being remotely located at a distance from said object detector and reflecting a beam of radiation therefrom, said object detector comprising:
(a) sensor means having a modifiable gain defined by said distance of said object from said object detector, for receiving said reflected beam of radiation from said object for producing a signal in response to said received reflected beam of radiation and for amplifying said produced signal according to said modifiable gain thereby producing an amplified signal therefrom;
(b) gain means coupled to said sensor means for increasing said modifiable gain for a placement of said object at a first distance from said object detection, for decreasing said modifiable gain for a placement of said object at a second distance from said object detector, said second distance being greater than said first distance, and for increasing said modifiable gain for a placement of said object at a third distance from said object detector, said third distance being greater than said second distance.

5,311,013

OPTICAL FIBER DISTRIBUTION SYSTEM FOR AN OPTICAL FIBER SENSOR IN A LUMINESCENT SENSOR SYSTEM

Robert A. Gutcheck, Bothell; John M. Lindberg, Redmond, both of Wash., and Gerald G. Vurek, Mountain View, Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 15, 1992, Ser. No. 961,559
Int. Cl.[5] A61B *5/00;* **G01N** *33/48;* **H01J** *5/16*
U.S. Cl. 250—227.23 **14 Claims**

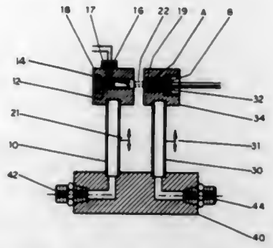


1. A distribution system for a sensor that utilizes an analyte-sensitive indicator module to monitor the concentration of an analyte, the sensor having: a temperature stabilized signal generating component for generating a first optical signal of a precise first wavelength, an indicator molecule for producing a second returned optical signal of a precise second wavelength, the first signal wavelength being such that the intensity and temporal behavior of the signal is predictably altered by the indicator molecule so that the wavelength temporal behavior of the returned signal is predictable; a single-fiber sensor tip that includes the indicator molecule; and a signal-measuring compound for receiving signals from the distribution system, the distribution system comprising:
a temperature stabilized, signal generating component for generating said first optical signal of a precise first wavelength;
a signal detector;
a signal separating component for delivering said first optical signal of a precise first wavelength to the sensor, delivering said second returned optical signal of a precise second wavelength to said signal detector, and including signal interference means to separate said first and second signals and minimize cross-talk therebetween;
at least one discrete spectral interference microfilter for eliminating side bands of the wavelength of the second returned optical signal from the first optical signal and at least another discrete spectral interference microfilter for eliminating the wavelength of the first optical signal from the second returned optical signal to the signal detector; and
a sensor optical fiber for connecting a sensor tip to the signal separating component to transmit said first optical signal to the sensor tip, and to return the resulting indicator signal from the sensor tip to the signal separating component, said
signal detector receiving said second returned signal from the signal separating component and transmitting it to the signal-measuring component, the signal output is substantially smaller than the signal input and whereby the intensity of said first signal is maximized such that the intensity of the indicator signal of a wavelength corresponding to the wavelength of the signal received by the signal-

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measuring component is suitable for monitoring the signal input to the distribution system.

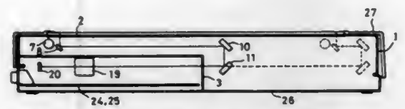
5,311,014
OPTICAL TRANSDUCER FOR MEASURING PRESSURE
Charles A. Liucci, 5 Burns Pl., Cresskill, N.J. 07626
Filed Nov. 6, 1992, Ser. No. 972,541
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.11 **15 Claims**



1. A differential position apparatus for detecting relative motion of a pair of movable member comprising:
(a) a radiation collimator having an aperture, said collimator being attached to one of the relative moveable members, means directing a rectangular beam of light through the collimator apertures,
(b) a pair of photosensitive radiation detectors with sensitive active areas producing an electrical signal proportional to the exposed radiation attached to the other of the relative moveable members, said light sensitive detectors or the collimated light beam being capable or intercepting the differential position of the light beam by perpendicular motion of either moving member bidirectional to where the radiation emitter and dectectors are attached, the relative movement between either changing the light striking one detector element and the light striking the other detector element, wherein said collimator beam is being supported for bidirectional longitudinal micrometer adjustment along an axis perpendicular to the beam to permit sensitive adjustment of the apparatus and means are provided for securely holding the collimator body in any adjusted position,
(c) an optical feedback light sensitive detector located in the path of the said beam radiation pattern, sensitive to any quantum radiation fluctuation correlated to the ratio of measured to referenced radiation thereof, and,
(d) means for changing the differential area between the radiation upon one light sensitive element by producing relative movement of other light sensitive area thus forming an optical bias and circuit means for producing a signal indicative of said differential bias.

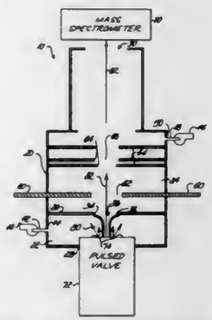
5,311,015
ORIGINAL READING DEVICE WHEREIN A FRAME SUPPORTS BOTH THE ORIGINAL AND THE READING SCANNING SYSTEM
Yukitoshi Takeuchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1992, Ser. No. 900,322
Claims priority, application Japan, Jun. 20, 1991, 3-148645
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—234 **19 Claims**

1. An original reading device, comprising:
an original mount for mounting an original;
a reading scanning system for reading the original mounted on said original mount by scanning the original; and
a single unitary frame for supporting said original mount, said original mount being directly mounted on said frame



and said reading scanning system being directly mounted on said frame at a back side of said frame.

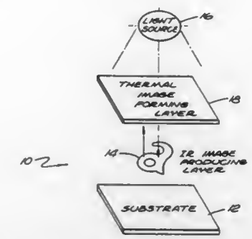
5,311,016
APPARATUS FOR PREPARING A SAMPLE FOR MASS SPECTROMETRY
Eliel Villa-Aleman, Aiken, S.C., assignor to The United States of America as represented by the United State Department of Energy, Washington, D.C.
Filed Aug. 21, 1992, Ser. No. 933,151
Int. Cl.[5] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—288 **9 Claims**



1. An apparatus for preparing a sample fluid for analysis with a mass spectrometer, said apparatus comprising:
a chamber;
a pulsed valve for injecting said sample fluid into said chamber, said pulsed valve having a pulse duration; and
a capacitor carried within said chamber for ionizing at least a portion of said sample fluid, said capacitor having a time constant greater than said pulse duration, said sample fluid activating said capacitor when said sample fluid is proximate to said capacitor.

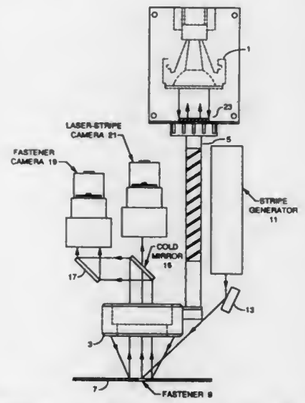
5,311,017
IMAGING DEVICE AND METHOD FOR DEVELOPING, DUPLICATING AND PRINTING GRAPHIC MEDIA
Andrew S. Filo, Cupertino, Calif., assignor to Simon Marketing, Inc., Los Angeles, Calif.
Continuation of Ser. No. 598,266, Oct. 16, 1990, Pat. No. 5,151,595. This application Jun. 23, 1992, Ser. No. 902,611
The portion of the term of this patent subsequent to Sep. 29, 2010, has been disclaimed.
Int. Cl.[5] G03G *5/00*
U.S. Cl. 250—316.1 **6 Claims**

1. Apparatus for reproducing an image, comprising:
a light source for emitting pulses of visible light;
a substrate;
an image including an infrared producing layer on said substrate, an image portion of said image producing layer responsive to said light source for converting said pulses of visible light into infrared light;
an image forming layer responsive to said infrared light to develop at least one portion of said image forming layer; and



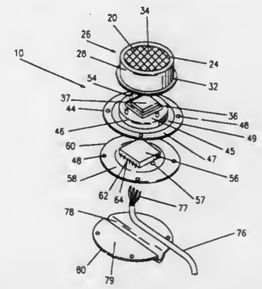
means in said image portion of said infrared image producing layer for forming an infrared image not visible to an unaided eye.

5,311,018
OPTICAL SYSTEM FOR OBTAINING SEPARATE AND SIMULTANEOUS NEAR-INFRARED AND VISIBLE LIGHT IMAGES
Lawrence J. Zana, Hampton Township, and Gerald A. Breakey, Trafford, both of Pa., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 11, 1993, Ser. No. 16,396
Int. Cl.[5] G01S *17/02*
U.S. Cl. 250—330 **18 Claims**



1. A camera system for simultaneously recording separate near-infrared and visible light images comprising:
(a) visible light source means for illuminating a given area with visible white light;
(b) indicia generating means for directing a light stripe image of a wavelength of light longer than wavelengths of light of the visible white light upon said given area, the image having an area substantially smaller than said given area;
(c) first camera means for recording an image of said visible light but not said longer wavelength of light;
(d) second camera means for recording an image of said longer wavelength of light but not said visible light;
(e) a first optical system for transmitting said visible light but not said longer wavelength of light from said given area to said first camera means;
(f) a second optical system for transmitting said longer wavelengths of light but not said visible light to said second camera means; and
(g) mirror means positioned within said first and second optical system and between said given area and both said first and second camera means, said mirror means being configured to reflect said visible light and transmit said longer wavelengths of light through said mirror means to said second camera means.

5,311,019
PYROELECTRIC HYBRIDIZED LONG-WAVE INFRARED LASER RADIATION DETECTOR ASSEMBLY
Rudolph R. Gammarino, Pasadena, Calif., assignor to Loral Electro-Optical Systems, Inc., Pasadena, Calif.
Filed Apr. 14, 1992, Ser. No. 868,677
Int. Cl.[5] G01J *5/00*
U.S. Cl. 250—338.3 **17 Claims**



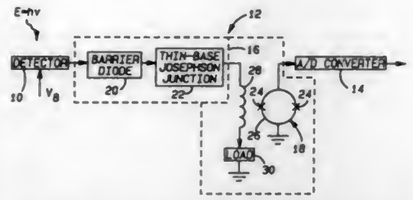
1. An improved pyroelectric detector assembly for detecting infrared radiation of the type having a pyroelectric detector element, a preamplifier, a signal conditioner, and a postamplifier, wherein the improvement comprises:
a thin film pyroelectric detector element coated with a layer of long wave infrared radiation absorbing material for detecting low intensity long wave infrared laser radiation at wavelengths about 10.6 μm;
an ultra low noise charge coupled hybridized preamplifier; a signal conditioner; and
postamplifier including a voltage comparator, a threshold adjustment, and a pulse generator.

5,311,020
MONOLITHICALLY-INTEGRATED SEMICONDUCTOR/SUPERCONDUCTOR INFRARED DETECTOR AND READOUT CIRCUIT
Arnold H. Silver; Hugo W. Chan, both of Rancho Palos Verdes; Bruce J. Dalrymple, Redondo Beach; Szutsun S. Ou, Manhattan Beach; Eugene L. Dines, Lawndale, and Susanne L. Thomasson, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Nov. 4, 1992, Ser. No. 971,502
Int. Cl.[5] H01L *39/22, 31/00*
U.S. Cl. 250—338.4 **10 Claims**

1. A monolithically-integrated semiconductor/superconductor infrared detector and readout circuit, comprising:
a semiconductor blocked-impurity-band (BIB) infrared detector; and
a semiconductor/superconductor transimpedance readout amplifier formed directly on the semiconductor BIB infrared detector using thin-film, integrated circuit processing techniques to provide sensitive, low noise detection of infrared radiation, wherein the transimpedance readout amplifier includes a metal-insulator metal (MIM) semicon-

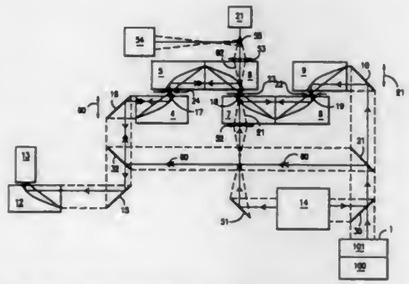
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ductor barrier diode formed directly on the semiconductor BIB infrared detector and a thin-base superconducting



Josephson tunnel junction formed on the semiconductor barrier diode.

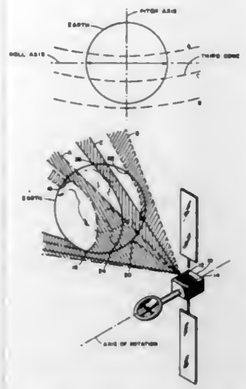
5,311,021
SPECTROSCOPIC SAMPLING ACCESSORY HAVING DUAL MEASURING AND VIEWING SYSTEMS
Robert G. Messerschmidt, Westport, Conn., assignor to Connecticut Instrument Corp., Huntingdon Valley, Pa.
Continuation-in-part of Ser. No. 792,195, Nov. 13, 1991, Pat. No. 5,225,678. This application Mar. 9, 1992, Ser. No. 848,603
Int. Cl.[5] G01N *21/62*; G01J *3/443*
U.S. Cl. 250—339.01 **6 Claims**



1. A microspectrometer accessory, comprising:
a first set of identical symmetrical aberration canceling imaging mirror optics which map a first measuring area on a specimen plane which is to be spectroscopically analyzed with at least a first remote focus, the first measuring area having a size and shape, the specimen plane and the first remote focus being at conjugate foci, and
a first mask positioned at the first remote focus, the first mask delimiting an area which substantially defines the size and shape of the first measuring area on the specimen plane.

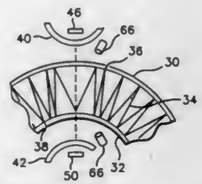
5,311,022
TRI-SCAN HORIZON SENSOR
Robert C. Savoca, Ridgefield, Conn., assignor to EDO Corporation, Barnes Engineering Division, Shelton, Conn.
Filed Jan. 12, 1993, Ser. No. 3,154
Int. Cl.[5] B64G *1/36*
U.S. Cl. 250—347 **2 Claims**

1. A horizon sensor for providing pitch and roll attitude information of an orbiting body by sensing the discontinuity of optical radiation in a scanned field of view between a reference body and outer space from a conical scanner comprising:
scanning means for simultaneously scanning at least three spaced conical scan paths through said field of view about the axis of rotation of said orbiting body,
a common detector means having optical radiation applied thereto from said scanning means for generating detector



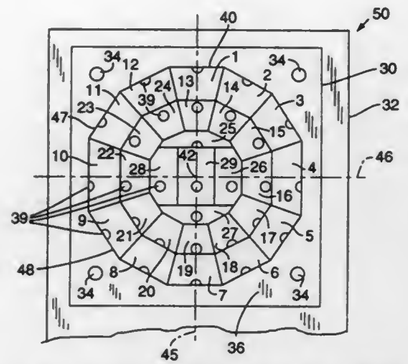
signals used to determine pitch and roll attitude information.

5,311,023
FILTER INSPECTION APPARATUS
Orville D. Means, Jr., 25570 Highway 79, San Ysabel, Calif. 92070, and Milton L. Goff, 23945 Nectar Way, Ramona, Calif. 92065
Filed Oct. 13, 1992, Ser. No. 959,700
Int. Cl.[5] G01N *21/88*
U.S. Cl. 250—349 **13 Claims**



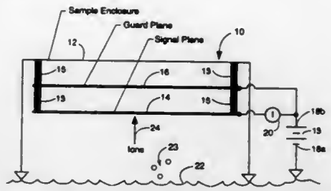
1. A filter inspecting apparatus for inspecting generally tubular filters, comprising:
a support frame;
mounting means mounted on said support frame for supporting a substantially tubular filter having inner and outer surfaces for rotation about its axis;
a source of IR mounted for directing radiation along one of said inner and outer surface of the filter;
IR sensing means mounted adjacent to the other of said inner and outer surfaces for sensing IR passing through said filter and generating a signal responsive thereto;
indicator means responsive to said signal for indicating passage of IR through said filter; and
means for directing air against one of said surfaces during inspecting of said filter for separating folds therein.

5,311,024
LENS ARRANGEMENT FOR INTRUSION DETECTION DEVICE
Douglas H. Marman, Ridgefield, Wash., and William E. Abel, Portland, Oreg., assignors to Sentrol, Inc., Portland, Oreg.
Filed Mar. 11, 1992, Ser. No. 850,339
Int. Cl.[5] G08B *13/18*
U.S. Cl. 250—353 **19 Claims**



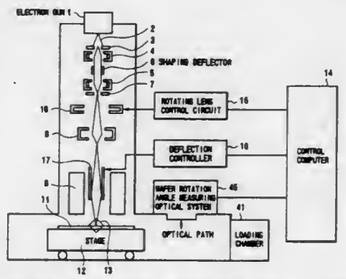
1. A lens arrangement for use in a sensing device capable of being mounted either on a wall or a ceiling for detecting the presence of persons or animals, comprising:
(a) a lens grouping adapted to refract incident radiation having a predetermined characteristic wavelength, said lens grouping having a central axis and defining respective mutually perpendicular first and second planes each including said central axis, and said lens grouping including at least five lens elements, each of said lens elements having an optical axis, radiation having said predetermined wavelength and traveling along each said optical axis being focused generally on a focal point, said at least five lens elements including:
(i) a primary lens element having an optical axis oriented in a preferred direction relative to said lens grouping and having an incident-radiation-gathering ability, said first plane including said optical axis of said primary lens element;
(ii) a plurality of secondary lens elements in addition to said primary lens element, each secondary lens element having a respective optical axis oriented in a respective secondary direction relative to said lens grouping and having a respective incident-radiation-gathering ability no greater than that of said primary lens element, said optical axes of said primary lens element and at least two of said secondary lens elements defining a third plane mutually perpendicular with said first plane but not parallel with said second plane; and
(iii) a plurality of tertiary lens elements in addition to said primary lens element and said secondary lens elements, each tertiary lens element having a respective optical axis oriented in a respective tertiary direction relative to said lens grouping and having a respective incident-radiation-gathering ability less than that of any of said primary lens element and said secondary lens elements, some of said plurality of tertiary lens elements being arranged in an arcuately curved row located in said lens grouping on one side of said second plane, said optical axes of said plurality of tertiary lens elements in said row defining partially the surface of a cone containing therein said optical axis of said primary lens element.

5,311,025
FAN-LESS LONG RANGE ALPHA DETECTOR
Duncan W. MacArthur, and John A. Bounds, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Oakland, Calif.
Filed Aug. 21, 1992, Ser. No. 933,143
Int. Cl.[5] G01Y *5/00*; G01T *1/105*
U.S. Cl. 250—374 **8 Claims**



1. A fan-less long range alpha particle detector for detecting air ions created by collisions with alpha particles originating from a solid or liquid surface, comprising:
an electrically conductive enclosure having five sides, including a top, but open at its bottom, for contacting a solid or liquid surface;
guard plane means insulatively mounted to said top side of said electrically conductive enclosure for preventing leakage currents;
signal plane means insulatively mounted to said guard plane for detecting air ions created by collision with said alpha particles;
indicator means attached to said signal plane means for indicating a current produced by collection of said air ions;
a voltage source connected to said indicator means and to said guard plane, and to said electrically conductive enclosure; so as to establish an electric field between said signal plane means and said solid or liquid surface, such that said field draws said air ions to said signal plane to be detected.

5,311,026
CHARGED PARTICLE BEAM LITHOGRAPHY SYSTEM AND METHOD THEREFOR
Norio Saitou, Iruma; Yoshihiko Okamoto, Ome; Takashi Yamazaki, Katsuta, and Hideo Todokoro, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 27, 1992, Ser. No. 858,575
Claims priority, application Japan, Apr. 1, 1991, 3-068222
Int. Cl.[5] H01J *37/304*
U.S. Cl. 250—492.2 **11 Claims**



1. A charged particle beam lithography method, comprising the steps of:
shaping a charged particle beam by passing the charged particle beam through an aperture;

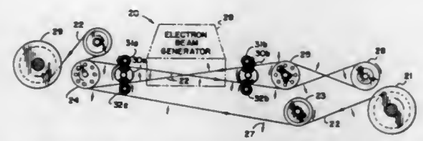
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detecting a rotation angle of a substrate having at least one orientation flat and a mark;
projecting the charged particle beam to the substrate;
rotating the charged particle beam in a direction of the rotation angle of the substrate by an amount substantially equal to the rotation angle; and
drawing a predetermined pattern on the substrate with the rotated charged particle beam.

5,311,027
APPARATUS AND METHOD FOR UNIFORMLY IRRADIATING A STRAND

Marlin N. Schuetz, Raleigh, N.C., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 26, 1993, Ser. No. 23,550
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—492.3 **55 Claims**

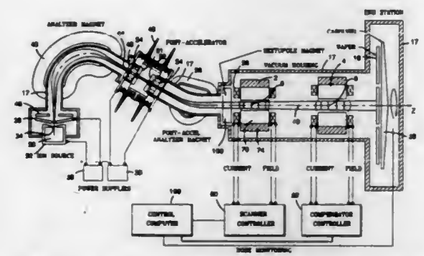


1. An apparatus for irradiating a strand, said apparatus comprising:
beam generator means for generating a radiation beam; and
strand advancing means for advancing such a strand along a predetermined path of travel transverse to the radiation beam, said strand advancing means including twister means for twisting the advancing strand in alternating first and second opposite rotational directions as the strand is exposed to the radiation beam to increase the circumferential dose uniformity of the irradiated strand.

5,311,028
SYSTEM AND METHOD FOR PRODUCING OSCILLATING MAGNETIC FIELDS IN WORKING GAPS USEFUL FOR IRRADIATING A SURFACE WITH ATOMIC AND MOLECULAR IONS

Hilton F. Glavish, Incline Village, Nev., assignor to Nissin Electric Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 575,498, Aug. 29, 1990, Pat. No. 5,132,544. This application Feb. 28, 1992, Ser. No. 843,391
Int. Cl.[5] H01J *37/302, 37/317*
U.S. Cl. 250—492.21 **35 Claims**

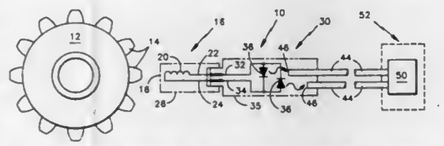


1. A magnetic scanning system for rapidly sweeping a high perveance beam of atomic or molecular ions over a selected surface, said beam initially propagating in a predetermined direction, said scanning system comprising
a magnetic scanning structure and an associated scanning excitation circuit for repeatedly sweeping said ion beam in one dimension in response to an oscillating magnetic field having a fundamental frequency and higher order harmonics induced by excitation current from said circuit, and
a separate magnetic compensating structure and associated compensating excitation circuit spaced from said scanning structure along the beam axis, for continuously deflecting said ion beam after it has been swept by said scanning structure, to re-orient the beam to a direction substantially parallel to an output axis of said system,
said scanning circuit and said compensating circuit having separate power sources having wave forms at the same fundamental frequency for their respective scanning and compensating functions, said circuits being in constant phase relationship with a predetermined phase angle difference.

5,311,029
MAGNETIC SPEED SENSOR WITH OPTICAL CONVERSION

Finton J. Beatrice, Vernon, Conn., assignor to United Technologies Corporation, Windsor Locks, Conn.

Filed May 4, 1992, Ser. No. 878,205
Int. Cl.[5] G02B *27/00*
U.S. Cl. 250—551 **5 Claims**

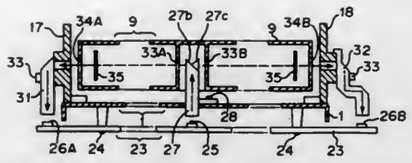


1. A sensor for sensing the speed or rotation of a shaft, comprising:
magnetic speed sensing means for magnetically sensing the speed of rotation of the shaft, and for providing an electrical signal indicative thereof, the magnetic speed sensing means being disposed in close physical proximity to the shaft;
first housing means, having one or more electrical connectors at an output thereof, for housing the magnetic speed sensing means, the electrical signal being in electrical connection with the corresponding one or more electrical connectors;
dual-element optical conversion means, disposed in proximity to the magnetic speed sensing means, for converting the electrical signal indicative of the speed of rotation of the shaft into corresponding optical signals; and
second housing means, having one or more electrical connectors at an input thereof, the second housing means electrical connectors being in electrical connection with the electrical signal, and having one or more optical connectors at an output thereof, the second housing means comprising means for housing the optical conversion means, the second housing means being in releasable mechanical connection with the first housing means.

5,311,030
TAPE END DETECTING DEVICE FOR TAPE DECKS USING CENTER AND SIDE PRISMS FOR DIRECTING LIGHT

Yoshio Higuchi; Osamu Maeda; Hideo Makino; Masami Okada; Hiroshi Kobayashi; Hiroshi Inoue, and Seiji Mori, all of Daito, Japan, assignors to Funai Electric Co., Ltd., Daito, Japan

Filed Sep. 2, 1992, Ser. No. 939,933
Claims priority, application Japan, Sep. 3, 1991, 3-079492[U]; Dec. 11, 1991, 3-351586; Apr. 10, 1992, 4-118391; Jun. 26, 1992, 4-193148
Int. Cl.[5] G11B *23/02, 15/48*
U.S. Cl. 250—561 **5 Claims**

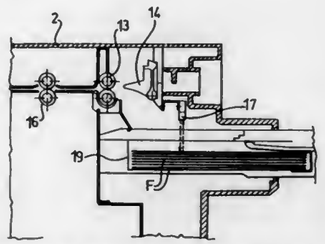


1. A tape end detecting device for detecting the end of the tape enclosed within a cassette comprising:
a light emitting means for generating a light pulse signal;
a pair of side prisms disposed at both sides of said cassette loaded in position;
a central prism for directing the light beam from said light emitting means to said first and second side prisms;
a pair of light receiving means for receiving said light signal from said light emitting means through said side prisms, respectively; and
a tape end signal generating circuit adopted for generating a tape end detecting signal including said light receiving means, which comprises a high pass filter and a comparator for comparing the output voltage of said light receiving element with a reference voltage.

5,311,031
METHOD AND DEVICE FOR DETECTING FULL CONDITION IN A RECEIVING MAGAZINE OF A FILM HANDLING APPARATUS

Andrea Gagliardo, Cosseria, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 10, 1993, Ser. No. 29,160
Claims priority, application Italy, Mar. 27, 1992, MI92A000728
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **19 Claims**

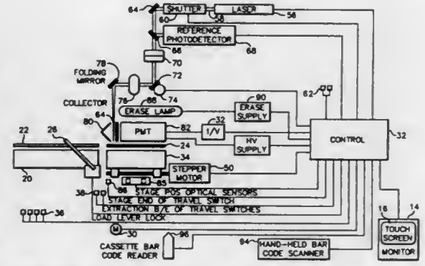


1. A method for detecting at least one condition selected from the group consisting of a) film jammed outside a magazine and b) full magazine conditions in a film receiving magazine of a film handling apparatus, wherein films are driven along a film path to the receiving magazine in which they rest one on the other, characterized by comprising the steps of:
sending an IR light signal toward the films in the magazine;
letting the signal be reflected by the last arrived film in the magazine;
collecting the reflected signal with a photosensor;
having the photosensor emit an alarm when the intensity of the light collected thereby is greater than a threshold value of the photosensor itself, thereby showing that the last arrived film is too near to the photosensor, because of a jam or because the magazine is full; and
repeating the steps every time a film is fed.

5,311,032
STORAGE PHOSPHOR READER DIAGNOSTICS

James C. Montoro, Rochester, and David L. Modney, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1992, Ser. No. 979,992
Int. Cl.[5] G03B *42/00*; G06K *9/20*; G01N *23/04*
U.S. Cl. 250—584 **8 Claims**



1. Storage phosphor reader apparatus comprising:
a laser for producing a laser beam;
scanning means for scanning said laser beam in a line scan direction across a storage phosphor which stores a latent x-ray image to produce an emitted light x-ray image;
translating means for translating said storage phosphor in a page scan direction perpendicular to said line scan direction of said laser beam;
storage phosphor loading means for loading and unloading a storage phosphor relative to said translating means;
photodetector means for detecting said emitted light x-ray image and for producing a corresponding x-ray image signal;
erasing means for erasing said storage phosphor after it is scanned;
a video monitor for displaying said x-ray image signal; and
control means for controlling said laser, said scanning means, said translating means, said storage phosphor loading means, said photodetector means and said erasing means; wherein said control means includes touch screen means on said video monitor for providing a user interface to said control means, and wherein said control means controls said touch screen means to initially display a main menu on said video monitor which includes, (a) a first user actuable button for initiating automatic operation of said laser, said scanning means, said translating means, said loading means, said photodetector means and said erasing means to produce an x-ray image signal from a latent x-ray image stored in a storage phosphor, and (b) a second user actuable button to sequentially display a diagnostic touch screen after said main menu screen, said diagnostic touch screen having user actuable buttons which are selectable to initiate diagnostic routines to selectively, individually control said laser, said scanning means, said translating means, said storage phosphor loading means, said photodetector means and said erasing means.

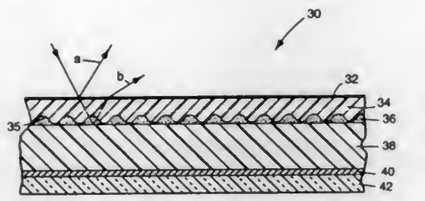
VOL 1162 ISS 2 MY 10 1994 UMI

5,311,033

LAYERED IMAGING STACK FOR MINIMIZING INTERFERENCE FRINGES IN AN IMAGING DEVICE

Bimsara Disanayaka, London, Canada, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 1, 1993, Ser. No. 41,484
Int. Cl.[5] G01T *1/24*; G03G *15/044*
U.S. Cl. 250—591 **17 Claims**



1. A layered imaging stack for minimizing interference fringes in an imaging device, including:

a polymer layer having an index of refraction, n_1, and having a first substantially planar major surface and a second opposed major surface having a surface roughness, R_A; and

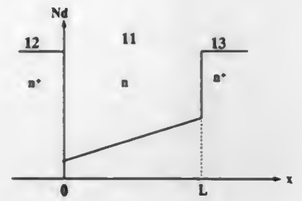
a polymeric coating provided on the second surface of the polymer layer, the coating having an index of refraction, n_2, and a thickness of less than 50 μm, wherein the multiplicative product of R_A and Δn is within the range of from about 0.01 to 0.05, where Δn is defined as the absolute value of n_2-n_1, and R_A is in μm.

5,311,034

INDIUM PHOSPHIDE GUNN DIODE WITH DOPANT GRADIENT

Hiroshi Kurita; Akihito Yokohata; Atsushi Kodama, and Kazuhiko Suga, all of Toda, Japan, assignors to Nippon Mining Co., Ltd., Japan

Filed May 24, 1991, Ser. No. 705,673
Claims priority, applicatioo Japan, May 28, 1990, 2-135455
Int. Cl.[5] H01L *47/02*
U.S. Cl. 257—6 **10 Claims**



1. A Gunn diode, comprising:

an n-type active layer made of an InP semiconductor body;

two n+-type layers sandwiching the n-type active layer, each of which is having a donor concentration greater than the n-type active layer and connected with a metallic electrode;

wherein the donor impurity concentration in the n-type active layer is graded along a direction perpendicular to a contact plane between the n-type active layer and the n+-type layers, and an average concentration gradient G of the donor impurity concentration in the n-type active layer simultaneously satisfies the following two inequalities:

$$G>(A_1N/L)\exp(-NL/S_1)$$

$$G<(A_2N/L)\exp(-NL/S_2)$$

where L is a thickness of the n-type layer, N is an average concentration of the donor impurity in the n-type active layer, $S_1=0.87\times10^{12}$ cm^{-2} is a constant, $S_2=1.32\times10^{12}$ cm^{-2} is a constant, $A_1=2.0$ is a constant, and $A_2=9.0$ is a constant; and

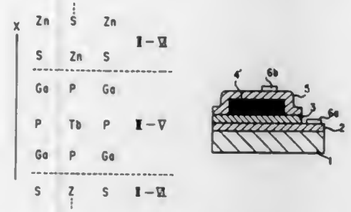
the n-type active layer has a thickness L not greater than 1.5 μm, while the product NL of the thickness L of the n-type active layer and the average concentration N of the donor impurity is not greater than 2.0×10^{12} cm^{-2}.

5,311,035

THIN FILM ELECTROLUMINESCENCE ELEMENT

Takashi Nire, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP89/00909, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/03918, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 4, 1989, Ser. No. 836,328
Int. Cl.[5] H01L *33/00*; H01J *1/62, 63/04*
U.S. Cl. 257—15 **10 Claims**



1. A thin film EL element of dual dielectric structure having a transparent substrate, and a transparent conducting film, a first dielectric layer, a luminescent layer, and a second dielectric layer, which are formed on top of the other on the substrate, the transparent conducting film and the second dielectric layer being provided with respective electrodes, characterized in that the luminescent layer has a superlattice structure represented by (luminescent host material)/(luminescent host material):(luminescent center impurity) wherein the valence number of the luminscent center impurity is equal to a valence number of a cation of the luminscent host material.

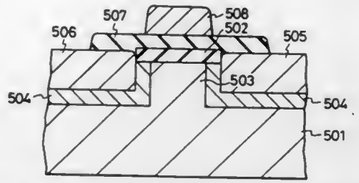
5,311,036

SUPERCONDUCTING DEVICE

Toshikazu Nishino, Kawasaki; Mutsuko Miyake, Urawa; Ushio Kawabe, Nishitama; Yutaka Harada, Kodaira; Masaki Aoki, Minato, and Mikio Hirano, Ome, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Continuation of Ser. No. 412,201, Sep. 25, 1989, Pat. No. 5,126,801, which is a continuation of Ser. No. 73,408, Jul. 13, 1987, Pat. No. 4,884,111, which is a continuation of Ser. No. 795,270, Nov. 5, 1985, abandoned. This application Apr. 29, 1992, Ser. No. 875,431
Claims priority, application Japan, Nov. 5, 1984, 59-231308; Feb. 20, 1985, 60-30366; Feb. 25, 1985, 60-34355; Mar. 11, 1985, 60-46539; May 24, 1985, 60-110371
Int. Cl.[5] H01L *39/22*
U.S. Cl. 257—30 **12 Claims**

1. A superconducting device comprising a pair of superconducting electrodes, having a thickness, so formed as to have a projection of semiconductor material, formed on a semiconductor substrate, interposed therebetween, the projection having lateral surfaces extending from the semiconductor substrate, and a height in a direction of the thickness of the superconducting electrodes, and a control electrode means for controlling current flowing between the superconducting electrodes, which control electrode means is formed so as to cover at least a part of an upper surface of said projection of semiconductor material, and is separated from said projection by an electric insulator film said control electrode means serving to control a superconducting weak coupling state between said superconducting electrodes, and wherein the lateral surfaces have lateral surface regions extending from the lateral surfaces into the projection, the lateral surface regions having an impurity concentration higher than that of the substrate, the lateral



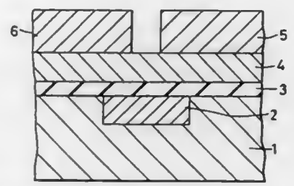
surface regions, having the relatively high impurity concentration, extending the height of the projection from the substrate to a top of the projection, wherein said lateral surface regions having a relatively high impurity concentration region include a first high impurity concentration sub-region, the first high impurity concentration sub-region contacting one of the pair of superconducting electrodes, and the second high impurity concentration sub-region contacting the other of the pair of superconducting electrodes.

5,311,037

SUPERCONDUCTING DEVICE

Yutaka Harada, Kodaira; Shinichiro Yano, Hachioji; Mutsuko Miyake, Urawa; Ushio Kawabe, Nishitama, and Toshikazu Nishino, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 439,809, Nov. 21, 1989, Pat. No. 5,160,983, which is a continuation of Ser. No. 201,332, May 31, 1988, Pat. No. 4,888,629, which is a continuation of Ser. No. 724,764, Apr. 18, 1985, abandoned. This application Aug. 6, 1992, Ser. No. 925,122
Claims priority, application Japan, Apr. 19, 1984, 59-77563; Sep. 21, 1984, 59-196830
The portion of the term of this patent subsequent to Dec. 19, 2007, has been disclaimed.
Int. Cl.[5] H01L *45/00*
U.S. Cl. 257—34 **11 Claims**



1. A superconducting device comprising:

a semiconductor region;

a pair of superconducting electrodes located at a first side of said semiconductor region to be separated from one another, said superconducting electrodes being coupled by a superconducting weak link through said semiconductor region; and

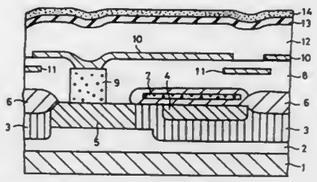
means for controlling superconducting current flowing through said semiconductor region between said superconducting electrodes, wherein said controlling means is located at least at one of said first side and second side of said semiconductor region, and wherein said semiconductor region is comprised of a semiconductor material having a first conductivity type, and said controlling means is comprised of a semiconductor material having a second conductivity type opposite to said first conductivity type to form a junction between said semiconductor region and said controlling means so that said superconducting current is prevented from flowing from said semiconductor region into said controlling means by said junction.

5,311,038

PHOTOELECTRIC CONVERTER WITH ELECTRON INJECTION PREVENTIVE LAYER

Hidekazu Yamamoto, and Yasutaka Nishioka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1993, Ser. No. 63,948
Claims priority, application Japan, Jul. 3, 1992, 4-176842
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—40 **15 Claims**



1. A photoelectric converter comprising:

a substrate;

a first electrode disposed on said substrate;

a semiconductor layer disposed on said substrate covering said first electrode for photoelectric conversion;

a second electrode disposed on said semiconductor layer; and

an electron injection preventive layer inserted between said semiconductor layer and said second electrode for preventing electrons from being injected from said second electrode into said semiconductor layer wherein said electron injection preventive layer is formed of a material satisfying the following inequality:

$$\phi_M-x_2\geq Eg_1$$

where ϕ_M is the work function of said second electrode, x_2 is the electron affinity of said electron injection preventive layer, and Eg_1 is the band gap energy of said semiconductor layer.

5,311,039

PROM AND ROM MEMORY CELLS

Masakazu Kimura, and Toshihiko Kondo, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 689,222
Claims priority, application Japan, Apr. 24, 1990, 2-108015; Apr. 24, 1990, 2-108016; Apr. 24, 1990, 2-108017; Jun. 6, 1990, 2-148068; Jun. 6, 1990, 2-148087; Jun. 8, 1990, 2-150148; Jul. 26, 1990, 2-198819; Aug. 7, 1990, 2-208960; Aug. 7, 1990, 2-208961; Aug. 7, 1990, 2-208962; Aug. 17, 1990, 2-216496
Int. Cl.[5] H01L *29/04*
U.S. Cl. 257—50 **24 Claims**

1. An antifuse PROM memory device formed on a substrate, comprising:

a first insulation layer on the substrate;

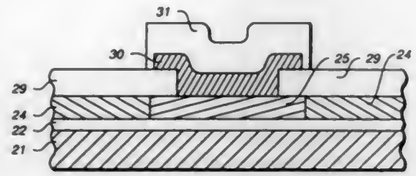
a silicon layer on the first insulation layer, the silicon layer including regions having a first conductivity type and a region having a second conductivity type opposite to the first type so that at least one P-N junction diode is formed substantially in parallel with the first insulation layer;

a second insulation layer on the silicon layer, the second

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insulation layer including a contact hole which exposes a portion of the region having the second conductivity type in the silicon layer;

antifuse means in the contact hole and vertically in contact with the portion of the region exposed in the silicon layer



for allowing programming of the device such that the antifuse means is directly connected to the P-N junction diode in the forward direction of the P-N junction diode; and

a conductive layer on the antifuse means.

5,311,040

THIN FILM TRANSISTOR WITH NITROGEN CONCENTRATION GRADIENT

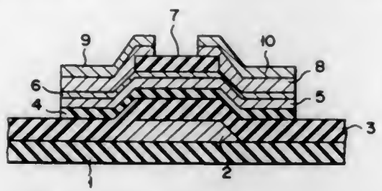
Masato Hiramatsu, Tokyo; Takaaki Kamimura, Kawasaki, and Mitsuo Nakajima, Koshigaya, all of Japan, assignors to Kabushik Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 673,396, Mar. 22, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 70,055

Claims priority, application Japan, Mar. 27, 1990, 2-77385; Aug. 15, 1990, 2-215491

Int. Cl.[5] H01L *29/04, 29/36, 29/76, 29/167*

U.S. Cl. 257—57 **14 Claims**



1. A thin film transistor comprising:

a silicon active layer including source and drain regions and a channel region formed between and connecting the source and drain regions;

an electrically conductive auxiliary film comprising a silicon film doped with nitrogen, and formed on surfaces of the source, channel, and drain regions of the active layer, a nitrogen concentration in the auxiliary film having a distribution in a direction of film thickness such that the nitrogen concentration is gradually reduced toward the active layer;

source and drain ohmic contact layers separated from each other and formed on and contacting separate parts of a surface of the auxiliary film corresponding to the source and drain regions, respectively;

source and drain electrodes contacting the source and drain ohmic contact layers, respectively; and

a gate electrode opposite to the channel region of the active layer with a gate insulating film interposed therebetween.

5,311,041

THIN FILM TRANSISTOR HAVING AN INVERTED STAGGER TYPE STRUCTURE

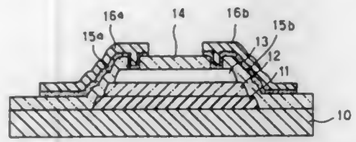
Takayuki Tominaga, Chiryu; Nobuyoshi Sakakibara, Kariya; Yuji Hasebe, Nagoya, and Tadashi Hattori, Okazaki, all of, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 5, 1992, Ser. No. 846,047

Claims priority, application Japan, Mar. 8, 1991, 3-043732

Int. Cl.[5] H01L *27/01, 27/13, 29/78*

U.S. Cl. 257—66 **8 Claims**



1. A thin film transistor with an inverted stagger type structure comprising:

an insulation substrate;

a gate film formed on said substrate, said gate film having a gate electrode portion defining a gate electrode of said thin film transistor, said gate electrode portion having outer edges;

a gate insulating film formed on said gate electrode portion of said gate film such that said gate insulating film is located entirely inside a perimeter defined by said outer edges of said gate electrode portion;

a polycrystalline semiconductor film active layer formed on said gate insulating film such that said polycrystalline semiconductor film is located entirely inside a perimeter defined by outer edges of said gate insulating film; and

source and drain electrode films electrically connecting with said polycrystalline semiconductor film.

5,311,042

LOW VOLTAGE MONOLITHIC PROTECTION DIODE WITH A LOW CAPACITANCE

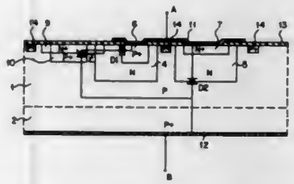
Christine Anceau, Saint Roch, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Nov. 17, 1992, Ser. No. 977,821

Claims priority, application France, Nov. 18, 1991, 91 14446

Int. Cl.[5] H01L *29/74, 29/06, 29/78*

U.S. Cl. 257—173 **52 Claims**



45. A monolithic protection component, comprising:

a low-doped substrate of a first conductivity type having a first surface and a second surface;

a first well of a second conductivity type having a mean doping level formed in the low-doped substrate at the first surface thereof;

a second well of the second conductivity type having the mean doping level formed in the low-doped substrate at the first surface thereof;

a first highly-doped region of the first conductivity type formed in the first well at a surface thereof;

a second highly-doped region of the second conductivity type formed in the second well at a surface thereof;

a third very highly-doped region of the second conductivity

type formed in the low-doped substrate at the first surface thereof and in contact with the first well;

a fourth highly-doped region of the first conductivity type formed in the low-doped substrate below a portion of the third region;

a first terminal including a first metalization in contact with the respective surfaces of the first and second highly-doped regions; and

a second terminal.

5,311,043

BIDIRECTIONAL SEMICONDUCTOR SWITCH WITH HYBRID CONSTRUCTION

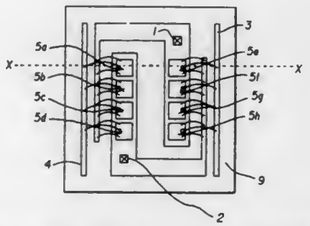
Thomas Stockmeier, Baden-Dättwil, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed May 28, 1993, Ser. No. 68,175

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1992, 4222973

Int. Cl.[5] H01L *29/74, 23/16, 23/28*

U.S. Cl. 257—177 **14 Claims**



1. A bidirectional semiconductor switch comprising:

a baseplate;

a first main terminal formed on the baseplate;

a second main terminal formed on the baseplate;

a first control electrode formed on the baseplate;

a second control electrode formed on the baseplate;

at least two reverse blocking semiconductors which can be switched on and off and which are formed of a plurality of doped silicon layers;

wherein a first of the at least two reverse blocking semiconductors is formed on the first main terminal to be electrically connected to the first main terminal, and has a first connection to the second main terminal and a second connection to the first control electrode;

wherein a second of the at least two reverse blocking semiconductors is formed on the second main terminal to be electrically connected to the second main terminal, and has a third connection to the first main terminal and a fourth connection to the second control electrode.

5,311,044

AVALANCHE PHOTOMULTIPLIER TUBE

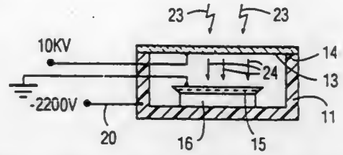
Jan S. Iwanczyk, Los Angeles; Thomas T. Lewis, Beverley Hills, and R. Michael Madden, Newbury Park, all of Calif., assignors to Advanced Photonix, Inc., Camarillo, Calif.

Filed Jun. 2, 1992, Ser. No. 893,992

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—186 **17 Claims**

10. A radiation responsive device as set forth in claim 9 wherein said detector includes a surface exposed to incident electrons and a PN junction spaced with respect to said surface



a distance to enhance a response to electrons and minimizing only response to incident photons.

5,311,045

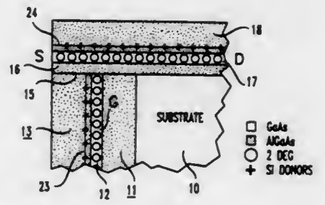
FIELD EFFECT DEVICES WITH ULTRA-SHORT GATES

Kirk W. Baldwin, Springfield; Loren N. Pfeiffer, Morristown; Horst L. Stormer, Summit, and Kenneth W. West, Mendham, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 745,589, Aug. 15, 1991. This application Dec. 29, 1992, Ser. No. 997,816

Int. Cl.[5] H01L *31/072, 31/109, 29/06*

U.S. Cl. 257—192 **4 Claims**



1. A field effect device comprising:

a gate comprising a first quantum well layer containing a two dimensional electron gas, said layer having a thickness of less than about 500 angstroms;

first and second spacer layers of non-conductive material disposed on either side of said gate;

a source and drain comprising a second quantum well layer containing a two dimensional electron gas, said second quantum well layer disposed transverse to said gate so that the gate thickness extends in the direction between the source and the drain, and a third spacer layer of non-conductive material spacing said second quantum well layer from said first quantum well layer.

5,311,046

LONG WAVELENGTH TRANSMITTER OPTO-ELECTRONIC INTEGRATED CIRCUIT

Yutaka Mihashi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,803

Claims priority, application Japan, Nov. 19, 1990, 2-316334

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—195 **7 Claims**

1. A long wavelength transmitter OEIC comprising:

a semi-insulating InP substrate;

an AlGaInAs lower cladding layer, a quantum well active layer, a high resistivity AlGaInAs upper cladding layer, an undoped InGaAs operating layer, an n type AlInAs charge carrier supplying layer, and an n type InGaAs contact layer successively disposed on said semi-insulating InP substrate;

a p type region penetrating through said layers from said

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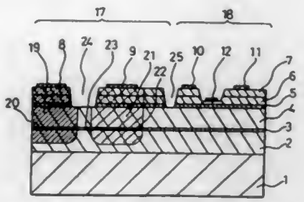
contact layer to said quantum well active layer and reaching into said lower cladding layer;

an n type region spaced a predetermined interval from said p type region, penetrating through said layers from said contact layer to said quantum well active layer, and reaching into said lower cladding layer;

a p side electrode in communication with said p type region;

an n side electrode in communication with said n type region;

a recess groove spaced from said p and n type regions, penetrating through said contact layer, and reaching into said charge carrier supplying layer;



a gate electrode disposed on said charge carrier supplying layer in said recess groove;

source and drain electrodes disposed on said contact layer at opposite sides of the recess groove;

a first separation groove separating said p type region from said n type region, penetrating through said layers from said contact layer to said operating layer, and reaching said high resistivity AlGaInAs upper cladding layer; and

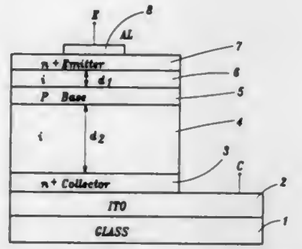
a second separation groove separating said n and p type regions from said source and drain electrodes, penetrating through said layers from said contact layer to said operating layer, and reaching into said bigh resistivity AlGaInAs upper cladding layer.

5,311,047

AMORPHOUS SI/SIC HETEROJUNCTION COLOR-SENSITIVE PHOTOTRANSISTOR

Chun-Yen Chang, Tainan, Taiwan, assignor to National Science Council, Taiwan

Filed Nov. 16, 1988, Ser. No. 272,239
Int. Cl.[5] H01L *29/161, 29/205, 29/225*
U.S. Cl. 257—198 **3 Claims**



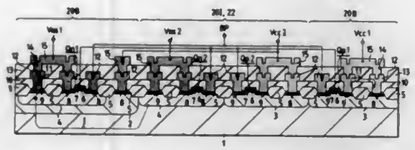
1. An amorphous Si/SiC heterojunction color-sensitive majority carrier bulk barrier phototransistor, comprising in order the following layers: a glass substrate; a collector electrode formed by an ITO coating on the glass substrate; an amorphous silicon n^+ collector layer; an undoped amorphous silicon collector layer; a p^+ amorphous silicon base layer; an amorphous undoped silicon carbide emitter layer; an amorphous n^+ silicon carbide emitter layer; and an emitter electrode.

5,311,048

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Toshiro Takahashi, Ohme, and Kazuo Koide, Iruma, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,133
Claims priority, application Japan, Aug. 21, 1990, 2-220337
Int. Cl.[5] H01L *27/10, 27/15*
U.S. Cl. 257—207 **8 Claims**



1. A semiconductor integrated circuit device, comprising:

a semiconductor substrate having a first conductivity type;

a plurality of first well regions of said first conductivity type and a plurality of second well regions of a second conductivity type, opposite to said first conductivity type, said plurality of first well regions and said plurality of second well regions being formed in said semiconductor substrate;

an output buffer circuit including a first MISFET of a second channel conductivity type formed in one of said plurality of first well regions, and a second MISFET of a complementary first channel conductivity type formed in one of said plurality of second well regions and in series therewith between connections for applying a potential difference thereto,

wherein said one of said plurality of first well regions and a source region of said first MISFET are disposed to be supplied with a first supply voltage and said one of said plurality of second well regions and a source region of said second MISFET are disposed to be supplied with a second supply voltage;

a bonding pad electrically connected to drain regions of said first and second MISFETs; and

an internal circuit having complementary MISFETs including a third MISFET of said second channel conductivity type formed in another of said plurality of first well regions, and a fourth MISFET of said first channel conductivity type formed in another one of said plurality of second well regions and in series therewith between connections for applying a potential difference thereto,

wherein said another one of said plurality of first well regions and a source region of said third MISFET are disposed to be supplied with a third supply voltage which is equal to that of said first supply voltage and is independent of said first supply voltage at least over said semiconductor substrate and said another one of said plurality of second well regions and a source region of said fourth MISFET are disposed to be supplied with a fourth supply voltage which is equal to that of said second supply voltage and is independent of said second supply voltage at least over said semiconductor substrate,

wherein said one of said plurality of first well regions in which said first MISFET is formed is surrounded with a third well region of said second conductivity type, and

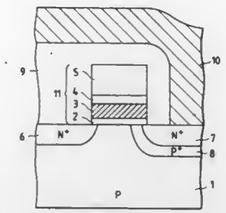
wherein said third well region is disposed to be supplied with said fourth supply voltage.

5,311,049

NON-VOLATILE SEMICONDUCTOR MEMORY WITH OUTER DRAIN DIFFUSION LAYER

Masataka Tsuruta, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 13, 1992, Ser. No. 959,720
Claims priority, application Japan, Oct. 17, 1991, 3-297907
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—324 **1 Claim**



1. A non-volatile semiconductor memory, comprising:

a semiconductor substrate;

a gate structure provided on said substrate and including an insulating film comprising a tunnelling oxide layer having a thickness of 20 to 60 Å on the semiconductor substrate, a nitride layer having a thickness of 60 to 120 Å on the tunnelling oxide layer, and a top oxide layer having a thickness of 40 to 80 Å on the nitride layer, data being written into and read from said memory through charges stored in the nitride layer in said insulating film;

a source diffusion layer and a drain diffusion layer provided in said semiconductor substrate partially underlying opposite sides of said gate structure, both of said source diffusion layer and said drain diffusion layer having an opposite conductivity type impurity to that of said substrate; and

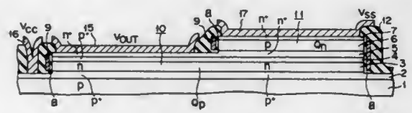
an outer diffusion layer provided between said drain diffusion layer and said substrate so as to produce an asymmetric arrangement of source and drain diffusions with respect to the gate structure, said outer diffusion layer having the same conductivity type impurity as that of said substrate and an impurity concentration higher than that of said substrate.

5,311,050

SEMICONDUCTOR VERTICAL MOSFET INVERTER CIRCUIT

Akihiro Nitayama, Kawasaki, and Koji Sakui, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 22, 1991, Ser. No. 796,602
Claims priority, application Japan, Nov. 30, 1990, 2-340400
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—330 **10 Claims**



1. A semiconductor device comprising: a semiconductor substrate (1);

at least one first column-shaped semiconductor layer (10) of a first channel type formed on said semiconductor substrate (1) in order of first, second and third regions, and having a side surface;

at least one second column-shaped semiconductor layer (11) of a second channel type selectively laminated on said first column-shaped semiconductor layer (10) in order of first, second and third regions, and having a side surface;

a gate insulation film (8) formed on the side surfaces of said first column-shaped semiconductor layer (10) and said second column-shaped semiconductor layer (11);

a gate electrode (9) completely surrounding said first and second column-shaped semiconductor layers (10) and (11), and formed on said insulation film (8) to extend to an external portion of said first column-shaped semiconductor layer (10);

a first source layer (2) and a first drain layer (4) respectively formed in the first and third region of said first column-shaped semiconductor layer (10);

a second drain layer (5) and a second source layer (7) respectively formed in the first and third region of said second column-shaped semiconductor layer (11);

an input terminal (14) connected to said gate electrode (9) lead out to the exterior of said first column-shaped semiconductor layer (10);

an output terminal (15) connected to said second drain layer (5) formed on and in low-resistance contact with said first drain layer (4);

a first power source terminal (16) connected to said first source layer (2) of said first column-shaped semiconductor layer (10); and

a second power source terminal (17) connected to said second source layer (7);

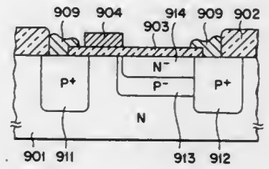
wherein said first source layer (2), first drain layer (4) and gate electrode (9) constitute a first MOS transistor and said second source layer (7), second drain layer (5) and gate electrode (9) constitute a second MOS transistor.

5,311,051

FIELD EFFECT TRANSISTOR WITH OFFSET REGION

Masaru Tukizi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,084
Claims priority, application Japan, Mar. 19, 1991, 3-053039
Int. Cl.[5] H01L *29/76, 29/94*
U.S. Cl. 257—409 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

source and drain regions of a second conductivity type formed in said semiconductor substrate, said first conductivity type being opposite to said second conductivity type, said drain region having a first portion facing said source region and a second portion located on an opposite side to said first portion;

an offset region of said second conductivity type having an impurity concentration lower than the drain region and formed in contact with said first portion of said drain region and extending toward said source region without being in contact with said source region, said second portion of said drain region being free from contact with said offset region;

an impurity region of said first conductivity type selectively formed in said offset region;

a gate insulating film covering a portion of said semiconductor substrate and a portion of said offset region between said source region and said impurity region; and

a gate electrode formed on said gate insulating film.

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5,311,052

PLANAR SEMICONDUCTOR COMPONENT WITH STEPPED CHANNEL STOPPER ELECTRODE

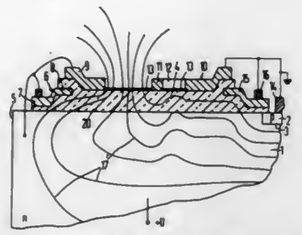
Jens P. Stengl; Helmut Strack, and Jenö Tihanyi, all of München, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,783

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141203

Int. Cl.[5] H01L *29/34*

U.S. Cl. 257—488 **2 Claims**



1. Semiconductor component, comprising a semiconductor body having an edge, a surface, a substrate of a first given conductivity type, at least one zone being embedded in a planar manner in said substrate at said surface and being of a second conductivity type opposite said first given type, an insulating layer disposed on said surface, an electrode being in contact with said at least one zone, at least one channel stopper electrode disposed on said insulating layer outside said at least one zone and in vicinity of said edge of said semiconductor body and having at least one step, said channel stopper electrode being electrically connected to said substrate, and a field plate being disposed on said insulating layer between said at least one zone and said channel stopper electrode and being electrically connected to said at least one zone, said insulating layer having a surface, said field plate overlapping said channel stopper electrode and at least partially covering said surface of said insulating layer, said channel stopper electrode and said field plate defining a space therebetween, wherein said channel stopper electrode has at least two steps, one of said steps being closer to said at least one zone and being further from said surface of said semiconductor body than the step adjacent thereto, and wherein said channel stopper electrode is formed of a plurality of overlapping electrodes being electrically connected to each other.

5,311,053

INTERCONNECTION NETWORK

Hung-Fai S. Law, Los Altos, and Henry T. Verheyen, San Jose, both of Calif., assignors to Aptix Corporation, San Jose, Calif.

Continuation of Ser. No. 714,762, Jun. 12, 1991, abandoned. This application May 24, 1993, Ser. No. 66,601

Int. Cl.[5] H01L *27/02*

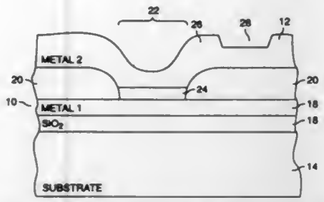
U.S. Cl. 257—529 **9 Claims**

1. An interconnection element for use in a user-configurable interconnection technology comprising:

a normally shorted fuse element; and

a normally open antifuse element;

wherein said fuse element and said antifuse element are connected in series and formed over a non-conductive material in a vertical orientation, said antifuse element is programmable to a shorted state at a selected programming voltage at a first current, said fuse element is programmable to an open state at a second current, and said



second current has a magnitude larger than the magnitude of said first current.

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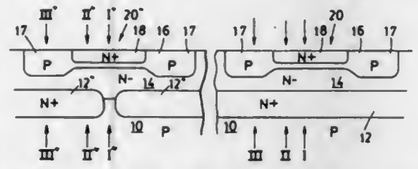
GRADED COLLECTOR FOR INDUCTIVE LOADS

Glenn A. DeJong, Merritt Island, Fla.; Gregory J. Scott, Pocatello, Id., and Akira Ito, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 25, 1991, Ser. No. 674,147

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—565 **7 Claims**



1. A method for controlling current to an inductive load from a bipolar transistor,

wherein the bipolar transistor comprises:

a collector of a first conductivity type;

a base region of a second conductivity type in said collector;

an emitter region of said first conductivity type in said base region for connection to the inductive load; and

a buried collector region of said first conductivity type in said collector for a second connection to the inductive load to provide a complete circuit, said buried collector spaced from said base region, said buried collector region having an impurity concentration laterally graded from a high impurity concentration higher than the impurity concentration of said collector to a low impurity concentration below the center of said emitter region said low impurity concentration being approximately the impurity concentration of the collector; and

the method comprising the step of providing a reduced peak current density under the emitter region during inductive load turn-off relative to a current density that would result with a uniform concentration of impurity along the buried collector region, and which avoids transistor burn-out.

5,311,055

TRENCHED BIPOLAR TRANSISTOR STRUCTURES

Alvin M. Goodman, Arlington, and Max N. Yoder, Falls Church, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1991, Ser. No. 796,553

Int. Cl.[5] H01L *29/72;* **C30B** *23/00*

U.S. Cl. 257—593 **19 Claims**

1. An improved bipolar transistor structure wherein its volume is better utilized to substantially eliminate unwanted parasitic capacitance comprising:

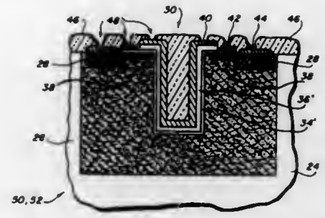
a substrate of a first semiconductor material;

a collector region of a second semiconductor material fashioned upon said substrate;

collector ohmic contacts of a third semiconductor material fashioned upon said collector region;

a trench formed into said collector region between said collector ohmic contacts to provide a trenched growth surface;

a base region of a fourth semiconductor material being grown uniformly within one atomic layer to a first thickness contiguously upon, said collector region, and upon and within said trench onto said trenched growth surface



such that the uniformity of said first thickness of said base region is independent of the crystallographic orientation of said trenched growth surface;

an emitter region of a fifth semiconductor material being grown uniformly within one atomic layer to a second thickness contiguously upon said base region such that the uniformity of said second thickness of said emitter region is independent of the crystallographic orientation of said base region; and

emitter, base and collector metal contacts fashioned upon said emitter region, said base region and said collector ohmic contacts of said collector region, respectively, for providing electrical connections thereto.

5,311,056

SEMICONDUCTOR DEVICE HAVING A BI-LEVEL LEADFRAME

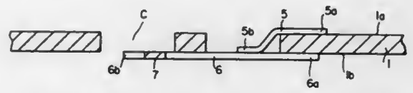
Shinichi Wakabayashi, and Akihiko Murata, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Continuation of Ser. No. 782,735, Oct. 28, 1991, abandoned, which is a continuation of Ser. No. 424,731, Oct. 20, 1989, abandoned. This application Dec. 10, 1992, Ser. No. 989,954

Claims priority, application Japan, Oct. 21, 1988, 63-266774

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—666 **4 Claims**



1. A lead frame for a semiconductor device comprising:

a resin base film having first and second surfaces and an opening therein;

a plurality of inner leads positioned on said first surface of the film in a desired inner lead circuit pattern that includes a plurality of inner end portions arranged for connection to a semiconductor device mounted on the film and a plurality of outer end portions positioned at said opening; and

a plurality of outer leads positioned on the second surface of the film in a desired outer lead circuit pattern that includes a plurality of inner end portions positioned at said opening and a plurality of outer end portions projecting outwardly of said frame, the outer end portions of said inner lead circuit pattern being electrically connected to corresponding inner end portions of said outer lead circuit pattern through said opening.

5,311,057

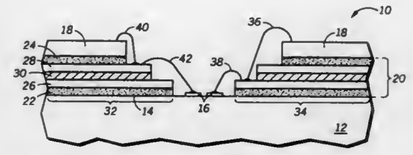
LEAD-ON-CHIP SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

Michael B. McShane, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 27, 1992, Ser. No. 982,549

Int. Cl.[5] H01L *23/02, 23/522, 23/49, 29/44*

U.S. Cl. 257—676 **17 Claims**



11. A semiconductor device comprising:

a semiconductor die having a surface with a periphery and a central region, and having a plurality of bonding pads located within the central region;

an adhesive capacitor tape having a thickness of less than approximately 0.2 millimeters comprising a first and a second adhesive layer, a first and second a capacitor electrode between the first and second adhesive layers, and a dielectric layer between the first and second capacitor electrodes, wherein the first adhesive layer of the capacitor tape is attached to the surface of the die such that the plurality of bonding pads within the central region is exposed;

a plurality of leads attached to the second adhesive layer of the capacitor tape;

means for electrically coupling a first lead of the plurality of leads to the first capacitor electrode and to a first bonding pad of the plurality of bonding pads;

means for electrically coupling a second lead of the plurality of leads to the second capacitor electrode and to a second bonding pad of the plurality of bonding pads; and

wherein the first lead is a ground lead and the second lead is a power lead.

5,311,058

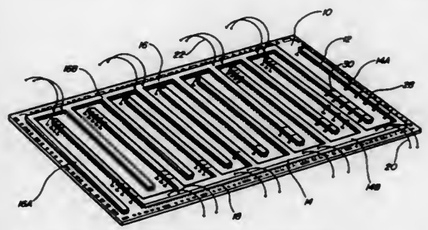
INTEGRATED CIRCUIT POWER DISTRIBUTION SYSTEM

Robert Smolley, Portenguese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 29, 1991, Ser. No. 800,294

Int. Cl.[5] H01L *23/48, 23/44, 23/52, 23/60*

U.S. Cl. 257—691 **13 Claims**

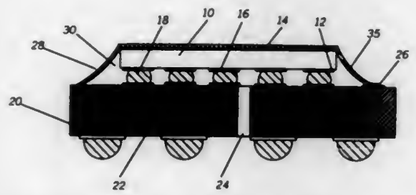


1. A power distribution system for distributing power to an

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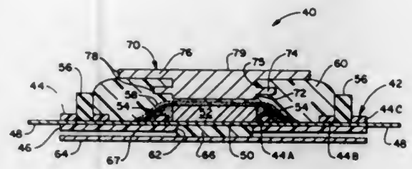
integrated circuit (IC) die where the IC die is incorporated in a package, the power distribution system comprising:
an IC die;
a package picture frame for mounting the IC die and for electrically coupling the IC die to the package picture frame I/O pins to provide the IC die access to signal lines, power and ground;
a grid attached to the top surface of the IC die for providing power and ground to the IC die, the grid having separate power and ground busses in the same plane;
an insulated layer adapted to be positioned between the bottom surface of the grid and the top surface of the IC dies for electrically insulating the grid from the IC die;
first conductors for electrically coupling the top surface of the grid to the power and ground pads of the package; and second conductors for electrically coupling the top surface of the grid to the power and ground terminals of the IC die;
power and ground busses independently and electrically coupled to preselected input/output (I/O) pins on the package, the preselected I/O pins being electrically connected to off-package voltage sources; and
the power and ground busses adapted for being independently electrically coupled from their top surface directly to preselected pads on the IC die's top surface, the geometry of the power and ground busses adapted to skirt the preselected pads.

5,311,059
BACKPLANE GROUNDING FOR FLIP-CHIP INTEGRATED CIRCUIT
Kingshuk Banerji; Fadia Nounou, both of Plantation, and William B. Mullen, III, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 24, 1992, Ser. No. 825,367
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—778 **16 Claims**



1. A semiconductor device package, comprising:
a substrate having a metallization pattern on at least a first surface;
a semiconductor device having an active surface on a first side and a grounded surface on a second opposed side, said semiconductor device electrically attached to the substrate metallization pattern with the active surface facing the substrate first surface;
a polymeric underfill material substantially filling a space between the semiconductor device and the substrate metallization pattern; and
an electrically conductive material coating the grounded surface of the semiconductor device with at least a portion of the metallization pattern, and providing electrical connection between the grounded surface and said portion of the metallization pattern.

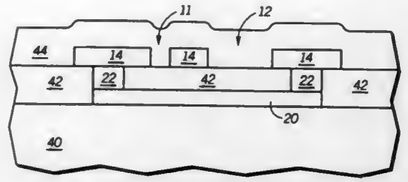
5,311,060
HEAT SINK FOR SEMICONDUCTOR DEVICE ASSEMBLY
Michael D. Rostoker; Mark Schneider, both of San Jose, and Edwin Fulcher, Palo Alto, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.
Continuation-in-part of Ser. No. 865,817, Apr. 1, 1992, Pat. No. 5,175,612, which is a continuation of Ser. No. 671,677, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 454,752, Dec. 19, 1989, abandoned. This application Jul. 28, 1992, Ser. No. 922,713
Int. Cl.[5] H01L *39/02, 23/48, 29/44;* **H02B** *1/00*
U.S. Cl. 257—796 **26 Claims**



1. A semiconductor device assembly comprising:
a die attach pad having a periphery;
a die having a top surface containing circuit elements and a bottom surface, mounted by its bottom surface atop the die attach pad;
a plurality of leads having inner ends and extending generally radially outwardly from adjacent the die attach pad;
a first, segmented plastic film layer disposed atop the leads, a portion of the first plastic film layer bridging a gap between the inner ends of the leads and the die attach pad and leaving a portion of the leads exposed;
a plurality of bond wires connecting the circuit elements of the top surface of the die to the exposed portions of the inner ends of the leads;
a second plastic film layer disposed beneath the leads, and beneath the periphery of the die attach pad;
a ring-like frame disposed atop the leads;
epoxy disposed atop the leads, covering the circuit elements, completely encapsulating the die and extending to the ring-like frame, thereby forming an encapsulated semiconductor device assembly;
a first heat sink structure disposed atop the die, facing the circuit element containing top surface of the die, having a first portion in contact with a passivation layer over the circuit element containing top surface of the die, within the epoxy, and having a second portion extending from within the epoxy at least to an exterior surface of the epoxy, thereby forming a self-contained integral heat sink structure within the semiconductor device.

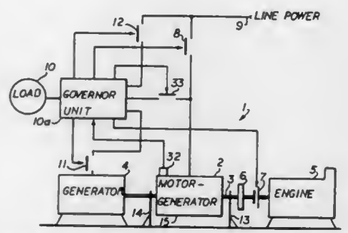
5,311,061
ALIGNMENT KEY FOR A SEMICONDUCTOR DEVICE HAVING A SEAL AGAINST IONIC CONTAMINATION
Stephen G. Sheck, Marble Falls, Tex., assignor to Motorola Inc., Schaumburg, Ill.
Filed May 19, 1993, Ser. No. 63,474
Int. Cl.[5] H01L *23/544*
U.S. Cl. 257—797 **10 Claims**

1. An alignment key for a semiconductor device comprising:
a first metallic region overlying a semiconductor substrate, the first metallic region having a plurality of parallel sides forming a perimeter;
a first dielectric layer overlying the first metallic region;
a filled via in the dielectric layer disposed continuously about the perimeter of the first metallic region; and
a second metallic region overlying the dielectric layer, the second metallic region having an opening positioned within the perimeter of the first metallic region, and



wherein the second metallic region is electrically coupled to the first metallic region through the filled via.

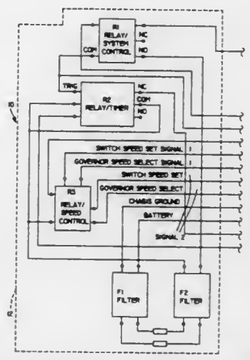
5,311,062
TRANSIENT-FREE SYNCHRONOUS ELECTRICAL POWER MACHINE
Otto Farkas, 1464 Graves Ave. #107, El Cajon, Calif. 92021
Continuation-in-part of Ser. No. 680,543, Apr. 4, 1991, abandoned. This application Jun. 23, 1992, Ser. No. 903,120
Int. Cl.[5] H02J *9/00, 3/28*
U.S. Cl. 290—4 R **8 Claims**



6. A self-adjusting electrical load for regulating and filtering an alternating electrical power source which comprises:
a synchronous motor having a stator winding energized by said power source, an axial shaft and a rotor winding mounted on said shaft;
a mechanical load driven by said shaft; and
means for allowing unrestrained rotational movement of the stator winding around the shaft in response to variations of said power source, over an arc limited to maintain synchronous operation of said motor.

5,311,063
AUTOMATIC LOAD SPEED CONTROLLER FOR ENGINE GOVERNOR
Scott M. Hubler, Allentown, Pa., assignor to Hubler Corporation, Allentown, Pa.
Continuation of Ser. No. 759,227, Sep. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 361,307, Jun. 5, 1989, abandoned. This application May 7, 1993, Ser. No. 58,783
Int. Cl.[5] H02P *9/04;* **F02D** *31/00*
U.S. Cl. 290—40 C **9 Claims**

1. A vehicle engine speed controller means for automatically determining the electrical load demand made of the engine electrical system from portable auxiliary and vehicle mounted electrically operated or controlled equipment, singly or in combination, and dynamically controlling the engine throttle speed setting by increasing or decreasing said setting within predetermined maximum and minimum limits comprising:
an electrical power source;
an inverter means for converting and monitoring electrical power produced by the vehicle engine coupled to the electrical power source;
an engine speed governor, adaptable for coupling to an automatic speed control means on the vehicle engine to control engine revolutions;
a filter means coupled to the electrical power source for substantially reducing electrical noise emanating from the vehicle engine ignition, alternator, or the inverter means, and for generating pre-selected positive and ground signals to be provided to power the engine speed governor;
a first relay means for interrupting the pre-selected positive voltage signal to the engine speed governor, generated by a second relay means, in accordance with the application and removal of a governor on/off signal as a result of the presence of a first signal from the inverter means and a parking break engage signal, said second relay means having a pre-set time delay means for delaying the interruption of the pre-selected positive voltage signal until subsequent to the removal of the governor on/off signal and expiration of the pre-set time period;



a multi-stage selector switch means for setting the desired minimum and maximum electrical load demand values to accommodate the operation and control of the equipment in accordance with generated speed selection signals;
a third relay means coupled with said selector switch means for automatically selecting the required engine speed to satisfy the electrical load demand in accordance with the application and removal of a second signal from the inverter means, said second signal indicating increasing or decreasing electrical demand on the engine system, and the speed selection signals from the switch means and automatically generating governor speed select signals to the engine speed governor, said engine speed governor increasing or decreasing the engine throttle speed in accordance with the governor speed select signals.

5,311,064
EQUIPMENT TO EXTRACT OCEAN WAVE POWER
Bogumil Kumbatovic, 20-79 28th St., Long Island City, N.Y. 11105
Continuation-in-part of Ser. No. 747,278, Aug. 19, 1991, abandoned. This application Aug. 5, 1993, Ser. No. 102,564
Int. Cl.[5] F03B *13/12, 15/14*
U.S. Cl. 290—53 **19 Claims**

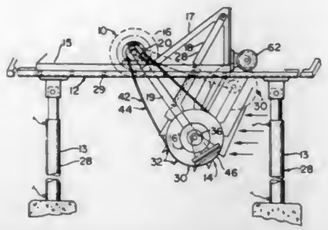
1. An apparatus for extracting ocean wave power comprising:
a support member disposed on a base, said base being fixedly attached to the ocean floor;
a slidable horizontal support means disposed over said support member;
a turbine unit mounted on said slidable horizontal support means and rotatably engaged with water flow;
wherein said turbine unit is attached to a longitudinal supporting lever at one end, an intermediate point of said

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lever being pivotally connected to said slidable horizontal support means, the portion of said lever distal to said turbine unit being attached to said extendable ram by way of a triangular frame structure;

mounting means disposed on said slidable horizontal support means for holding said turbine unit, said mounting means further comprising,

extendable ram coupled to said turbine unit at one end for



lifting and lowering said turbine unit, the other end of said extendable ram coupled to said slidable horizontal support means so that said turbine unit can incline and extend forwardly and backwardly concurrently with said lifting and lowering upon movement of said slidable horizontal support means; and

power generating mechanism disposed at a fixed distance from said turbine unit for receiving the rotational movement of said turbine unit via a transmission mechanism.

5,311,065

ELECTRIC CONTROL CIRCUIT FOR PASSENGER PROTECTION SYSTEM IN AUTOMOTIVE VEHICLES

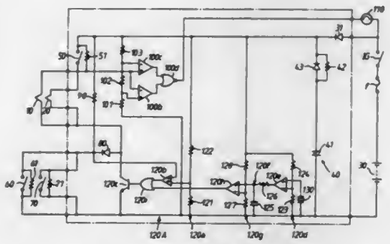
Akira Kondo, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 2, 1992, Ser. No. 862,127

Claims priority, application Japan, Apr. 2, 1991, 3-098280

Int. Cl.[5] B60R *21/32*; B60L *1/00, 3/00*

U.S. Cl. 307—10.1 **12 Claims**



1. An electric control circuit for a passenger protection system in an automotive vehicle, comprising:

an electric power source;

a primary acceleration sensor arranged to produce a first acceleration signal at an occurrence of a first acceleration;

a primer having a first terminal in series with said power source and a second terminal grounded through said primary acceleration sensor; and

means for electrically actuating the primer in response to the first acceleration signal from the primary acceleration sensor, comprising:

first means for detecting the first acceleration signal at a conductor between the primary acceleration sensor and the second terminal of the primer and for producing a first electric signal when the detected voltage becomes lower than a first predetermined value; and

second means for grounding the second terminal of the primer in response to the first electric signal from the first means.

5,311,066

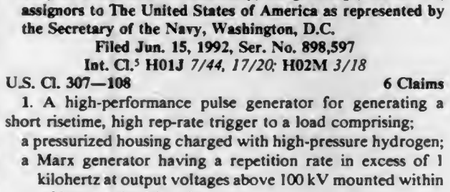
UNIVERSAL PHASE MATCH PATH GENERATOR FOR THREE-PHASE POWER

Stephen J. Mailloy, Manassas, and Kirk J. Treubert, Fairfax, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 876,668, Apr. 3, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,324

Int. Cl.[5] H02J *3/00*

U.S. Cl. 307—87 **3 Claims**



1. A digital phase match discriminator for matching a first multi-phase power source connected to a load to a second multi-phase power source to be connected to the load by choosing the best phase path for the second multi-phase power source, wherein the first power source, second power source and load can be rotating in opposite directions with respect to each other, comprising:

a first control signal indicative of the desired rotation of the load;

a second control signal indicative of a selected timing reference based on the first or second power source or load;

a logic network for monitoring each phase voltage of the first multi-phase source, second multi-phase source and the load and receiving the first and second control signals, for producing an output based on the voltage polarities of the phases of the first multi-phase source, the second multi-phase source and the load;

a storage element for receiving an output from the logic network path solution between the second multi-phase power source and the load; and

said logic network updating the best phase path solution contained in the storage element each time any phase of the load changes polarity.

5,311,067

HIGH PERFORMANCE PULSE GENERATOR

Michael G. Grothaus, Dahlgren; Stuart L. Moran, Fredericksburg, and Leonard W. Hardesty, King George, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1992, Ser. No. 898,597

Int. Cl.[5] H01J *7/44, 17/20*; H02M *3/18*

U.S. Cl. 307—108 **6 Claims**

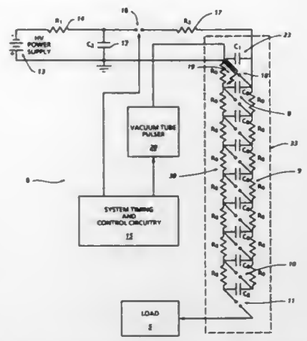
1. A high-performance pulse generator for generating a short risetime, high rep-rate trigger to a load comprising;

a pressurized housing charged with high-pressure hydrogen;

a Marx generator having a repetition rate in excess of 1 kilohertz at output voltages above 100 kV mounted within said pressurized housing;

means for charging said Marx generator at a repetition rate above 1 kilohertz;

means for triggering said Marx generator at rep-rates in excess of 1 kilohertz;



a timing and control circuit for controlling said means for triggering said Marx generator.

5,311,068

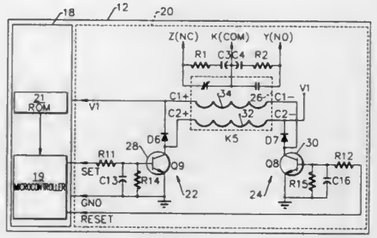
SOLID-STATE ENERGY METER WITH TIME-OF-USE RATE SCHEDULING AND LOAD CONTROL CIRCUIT

David J. Miller, South Berwick, Me., assignor to General Electric Company, Schenectady, N.Y.

Filed May 22, 1991, Ser. No. 704,240

Int. Cl.[5] H04Q *9/02*

U.S. Cl. 307—112 **3 Claims**



1. A meter for measuring electrical energy consumed by a plurality of loads, comprising:

solid-state electronic registering means, for performing time-of-use rate scheduling, based on a plurality of time-of-use rate periods and for generating a first time-of-use control signal during a first time-of-use rate period and a second time-of-use control signal during a second time-of-use rate period;

load controlling means in said meter, operatively connected to said solid-state electronic registering means and at least one of said plurality of loads, for generating a first load signal for electrically energizing said at least one of said plurality of loads upon the generation of said first time-of-use control signal and for generating a second load signal for electrically deenergizing said at least one of said plurality of loads upon the generation of said second time-of-use control signal; and

first means electrically connected to said load controlling means and responsive to remote actuation external to the meter, for overriding said load controlling means by causing said load controlling means to generate said first load signal during said second time-of-use rate period.

5,311,069

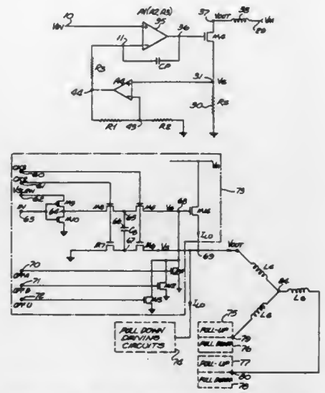
DRIVER CIRCUITRY FOR COMMUTATED INDUCTIVE LOADS

Charles C. Austin, Mission Viejo, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Filed Sep. 6, 1991, Ser. No. 756,057

Int. Cl.[5] G06G *7/12*; H03K *5/153*

U.S. Cl. 307—262 **17 Claims**



1. A transconductance amplifier loop used as a pull-down driver circuit for commutating inductive loads comprising:

an input voltage;

an operational amplifier coupled to said input voltage;

a driving transistor coupled to said operational amplifier for controlling a constant current;

a resistor coupled to said driving transistor;

a variable gain amplifier coupled to said resistor and to said operational amplifier.

5,311,070

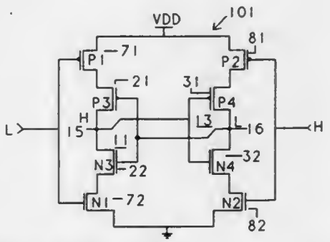
SEU-IMMUNE LATCH FOR GATE ARRAY, STANDARD CELL, AND OTHER ASIC APPLICATIONS

Jerry G. Dooley, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 26, 1992, Ser. No. 905,015

Int. Cl.[5] H03K *3/26, 3/284, 3/42, 17/687*

U.S. Cl. 307—279 **19 Claims**



1. A latch circuit comprising:

first and second complementary channel transistor inverters having respective input and output thereof cross-coupled to one another; and

first and second pairs of decoupling transistors respectively coupled in circuit paths containing the output nodes of said first and second complementary channel transistor

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inverters and first and second voltage supply terminals; and

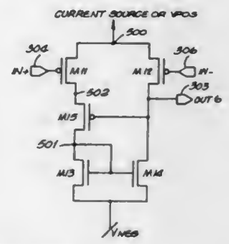
wherein decoupling transistors of said first pair of decoupling transistors have control electrodes thereof, connected to a first common control node, and decoupling transistors of said second pair of decoupling transistors have control electrodes thereof connected to a second common control node.

5,311,071

HIGH SPEED THRESHOLD CROSSING DETECTOR WITH RESET

Shunsaku Ueda, Carlsbad, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Filed Oct. 21, 1991, Ser. No. 779,963
Int. Cl.[5] H03K *5/24, 17/04*
U.S. Cl. 307—355 **29 Claims**



1. A circuit comprising:

first input means receiving a first voltage input signal, said first input means coupled to a first node;

second input means receiving a second voltage input, said second input means coupled to said first node and to an output node;

current mirror means coupled to a first voltage supply and to said second input means at said output node, said current mirror means receiving a first current and generating a second current equivalent to said first current;

positive feedback means coupled to said first input means and said current mirror means, said positive feedback means controlled by an output voltage at said output node.

5,311,072

APPARATUS FOR SAMPLING AND HOLDING ANALOG DATA FOR A LIQUID CRYSTAL DISPLAY

Kiyohisa Matsui, Tenri; Junji Tanaka, Sakurai, and Yoshiki Sano, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

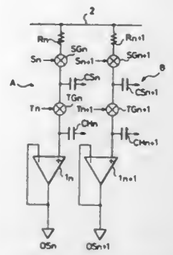
Filed Sep. 11, 1992, Ser. No. 944,088
Claims priority, application Japan, Sep. 12, 1991, 3-262891
Int. Cl.[5] H03K *5/159*
U.S. Cl. 307—353 **27 Claims**

1. A sample/hold apparatus including at least one sample/hold circuit, said at least one sample/hold circuit comprising:

a resistor connected to an input bus at one end thereof;

a sampling gate connected to the other end of said resistor at one end thereof for opening and closing in response to a sampling signal supplied thereto; and

a first capacitor connected to the other end of said sampling gate at one end thereof for holding analog data supplied



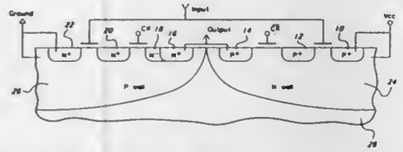
from said input bus through said resistor and said sampling gate.

5,311,073

HIGH VOLTAGE CMOS CIRCUIT WITH NAND CONFIGURED LOGIC GATES AND A REDUCED NUMBER OF N-MOS TRANSISTORS REQUIRING DRAIN EXTENSION

Carlo Dallavalle, Vimercate, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Milan, Italy

Filed Feb. 25, 1992, Ser. No. 841,621
Claims priority, application Italy, Feb. 25, 1991, VA 91 A/0006
Int. Cl.[5] H03K *17/10*
U.S. Cl. 307—443 **22 Claims**



1. An N-MOS circuit comprising:

a first voltage of a selected potential;

a first N-MOS transistor having a source, a channel and a drain with its drain coupled to said first selected voltage potential;

a second N-MOS transistor having a source, a channel and a drain, the drain of the second transistor being formed in common with the source of the first N-MOS transistor having a uniform doping concentration from the channel of the first transistor to the channel of the second transistor, and the source of the second transistor coupled to a second selected voltage potential;

a graded drain diffusion formed as part of the drain of said first N-MOS transistor with the region adjacent a channel of the first transistor being more lightly doped than the drain region which is spaced from the channel of the first N-MOS transistor; and

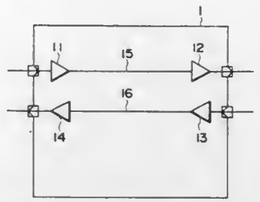
the channel region of the first N-MOS transistor being at a different voltage potential than the source of the second N-MOS transistor, whereby the drain region of the second N-MOS transistor is not a graded diffusion which is more lightly doped towards the channel region of the second N-MOS transistor.

5,311,074

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH CROSSTALK PREVENTION

Toshiaki Mori, and Takashi Yoshimori, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 3, 1992, Ser. No. 829,373
Claims priority, application Japan, Feb. 4, 1991, 3-013514
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—443 **3 Claims**



1. A semiconductor integrated circuit device, comprising:

a large scale cell array;

a wiring which is formed in a first region within which the large scale cell array is formed, in which the wiring transfers a first signal which has a level needed for an operation of the large scale cell array and is used in the large scale cell array;

a through wiring which passes through the first region, in which the through wiring transmits a second signal which is smaller in level than the first signal;

an input buffer circuit which is connected to one end of the through wiring at a boundary between the first region and a second region within which the large scale cell array is not formed, the first signal transmitted from the second region being inputted into the input buffer, wherein said input buffer converts the level of the first signal to a smaller level, and outputs and transmits the second signal to the first region; and

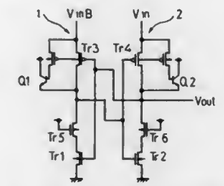
an output buffer circuit which is connected to the other end of the through wiring at the boundary, in which the second signal is directly input to said output buffer circuit without being used in the large scale cell array, wherein said output buffer circuit converts a level of the second signal to a large level, and outputs an transmits a third signal to the second region.

5,311,075

LEVEL SHIFTING CMOS INTEGRATED CIRCUITS

Hideki Usuki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 930,247
Claims priority, application Japan, Aug. 22, 1991, 3-237216
Int. Cl.[5] H03K *19/094, 17/16*
U.S. Cl. 307—443 **2 Claims**



1. A voltage level shifter circuit, comprising:

a first IGFET of a first conductivity type connected between a first output node and a reference power source;

a second IGFET of the first conductivity type connected between a second output node and a reference power source;

a third IGFET of a second conductivity type opposite to the first conductivity type connected between said first output node and a first input node;

a fourth IGFET of the second conductivity type connected between said second output node and a second input node;

a fifth IGFET of which the source is connected to said first input node and the gate electrode of said third IGFET;

a first bipolar transistor of which the base is connected to the drain of said fifth IGFET, the emitter is connected to said first output node and the collector is connected to a second power source;

a sixth IGFET of which the source is connected to said second input node and the gate electrode is connected to the gate electrode of said fourth IGFET;

a second bipolar transistor of which the base is connected to the drain of said sixth IGFET, the emitter is connected to said second output node, and the collector is connected to said second power source;

said first output node being cross connected to the gate electrode of said first and third IGFETs while said second output node is cross connected to the gate electrode of said second and fourth IGFETs;

complementary outputs being taken out from said first and second output nodes; and

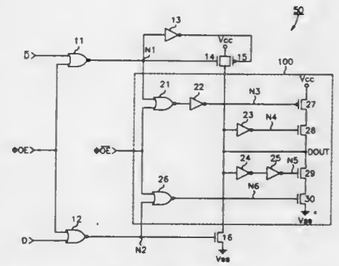
complementary inputs being applied to said first and second input nodes.

5,311,076

TRISTATE DATA OUTPUT BUFFER HAVING REDUCED SWITCHING NOISE AND INTERMEDIATE-LEVEL SETTING

Yong-Bo Park; Hee-Choul Park, and Hyung-Kyu Lim, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 23, 1992, Ser. No. 964,622
Claims priority, application Rep. of Korea, Oct. 25, 1991, 18835/1991
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—443 **20 Claims**



1. A data output buffer, comprising:

a data output node;

a first input circuit having a first input coupled to a first input signal, and a second input coupled to a first control signal;

a second input circuit having a first input coupled to a second input signal, and a second input coupled to said first control signal;

a pull-up circuit responsive to the output of said first input circuit for selectively raising said output node to a high voltage level;

a pull-down circuit responsive to the output of said second input circuit for selectively lowering said data output node to a low voltage level;

a first preset control circuit responsive to said output of said first input circuit and a second control signal for selec-

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tively raising said data output node from said low voltage level to an intermediate voltage level; and,

a second preset control circuit responsive to said output of said second input circuit and said second control signal for selectively lowering said data output node from said high voltage level to said intermediate voltage level.

5,311,077

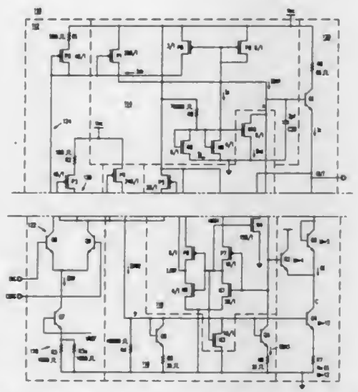
POWER SUPPLY, TEMPERATURE, AND LOAD CAPACITANCE COMPENSATING, CONTROLLED SLEW RATE OUTPUT BUFFER

Michael A. Brown, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 914,294, Jul. 15, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 49,793

Int. Cl.[5] H03K *19/003, 19/08, 19/0175*

U.S. Cl. 307—443 **28 Claims**



2. A controlled slew rate output buffer for providing an input signal to an output node, the input signal having a rising edge and a falling edge, the controlled slew rate output buffer comprising:

input means for generating a charging current in response to the rising edge of the input signal and for generating a discharging current in response to the falling edge of the input signal, the charging current and the discharging current being substantially constant over a temperature range and a power supply voltage range;

intermediate charging means for charging an intermediate node from a first low voltage to a first high voltage at a first slew rate in response to the charging current so that the first slew rate is substantially constant over the temperature range and the power supply voltage range;

intermediate discharging means for discharging the intermediate node from the first high voltage to the first low voltage at a second slew rate in response to the discharging current so that the second slew rate is substantially constant over the temperature range and the power supply voltage range;

output charging means for charging the output node from a second low voltage to a second high voltage at a third slew rate in response to the intermediate node being charged so that the third slew rate is substantially constant over the temperature range, the power supply voltage range, and an output capacitance range and so that the third slew rate is substantially equivalent to the first slew rate; and

output discharging means for discharging the output node from the second high voltage to the second low voltage at a fourth slew rate in response to the intermediate node being discharged so that the fourth slew rate is substantially constant over the temperature range, the power supply voltage range, and the output capacitance range and so that the fourth slew rate is substantially equivalent to the second slew rate.

5,311,078

LOGIC CIRCUIT AND SEMICONDUCTOR DEVICE

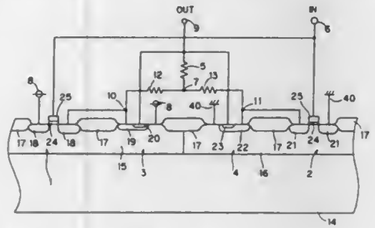
Hiroshi Makino; Yasunobu Nakase, and Kimio Ueda, all of Itami, Japan, assignors to Mitsubishi Denki Kabusbiki Kaisha, Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,615

Claims priority, application Japan, Nov. 12, 1991, 3-294739

Int. Cl.[5] H01L *29/78, 29/02;* **H03K** *19/02, 19/08*

U.S. Cl. 307—446 **22 Claims**



1. A logic circuit comprising:

first power source means;

second power source means;

at least one input terminal;

an output terminal;

a node;

a first bipolar transistor having a first electrode being connected to said first power source means, a second electrode being connected to said output terminal, and a first conductivity type control electrode;

a second bipolar transistor having a first electrode being connected to said second power source means, a second electrode being connected to said output terminal, and a second conductivity type control electrode;

at least one first MOS transistor having a first conductivity type first current electrode being connected to said control electrode of said first bipolar transistor, a first conductivity type second current electrode being connected to said first power source means, and a control electrode being connected to any of at least one of said at least one input terminal;

at least one second MOS transistor having a second conductivity type first current electrode being connected to said control electrode of said second bipolar transistor, a second conductivity type second current electrode being connected to said second power source means, and a control electrode being connected to any of said at least one input terminal;

first resistant means having an end being connected to said node, and another end being connected to said control electrode of said first bipolar transistor;

second resistant means having an end being connected to said node, and another end being connected to said control electrode of said second bipolar transistor; and

third resistant means having an end being connected to said node, and another end being connected to said output terminal.

5,311,079

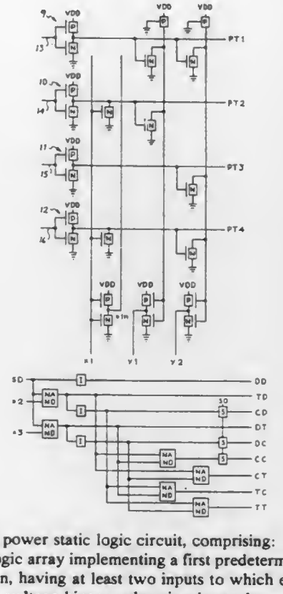
LOW POWER, HIGH PERFORMANCE PLA

Gary S. Ditlow, 53 Moog Rd., Garrison, N.Y. 10524; Steven F. Oakland, 7 Norway Dr., Colchester, Vt. 05446; Dac C. Pham, 17855 Park Valley Dr., Round Rock, Tex. 78681, and Kenneth J. Shaw, 33 Aspen Dr., Essex Junction, Vt. 05452

Filed Dec. 17, 1992, Ser. No. 992,216

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **4 Claims**



1. A low power static logic circuit, comprising:

a static logic array implementing a first predetermined logic function, having at least two inputs to which either high or low voltage binary value signals can be applied, and having at least two output signal lines, said input and said output lines being coupled by way of a plurality of product term lines, a first plurality of pull down devices connecting selected ones of said input devices to selected ones of said product term lines, a second plurality of pull down devices connecting selected ones of said output lines to selected ones of said product term lines, said array output lines having output line pull up means associated therewith for pulling the voltage of said output lines positive if no pull down device connected to an output line is activated;

product term pull up means, associated with each of said product term lines, for pulling the voltage of said product term lines positive if no pull down device connected to its associated product term line is activated;

switch means associated with each of said product term pull up means for selectively activating its associated pull up means, or, alternatively, applying a pull down signal to the associated product term line; and

a decoder implementing a second predetermined logic function, having its inputs connected to a predetermined subset of said at least two input lines, and having each of its outputs connected to one of said switch means, so as to activate the product term pull up means associated with the product terms involved in the logical function operation of said array on the signals on said array input lines, and also activate one or more, but not all, of the other product terms of said array.

5,311,080

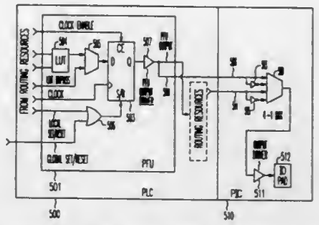
FIELD PROGRAMMABLE GATE ARRAY WITH DIRECT INPUT/OUTPUT CONNECTION

Barry K. Britton, Schnecksville, Pa.; Dwight D. Hill, San Carlos, Calif., and William A. Oswald, Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 37,766

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **19 Claims**



1. An integrated circuit comprising a field programmable gate array having:

a multiplicity of programmable logic cells comprising at least one programmable function unit comprising at least one logic element selected from the group consisting of combinatorial logic and sequential logic, and further comprising the associated routing resources, including routing conductors and configurable interconnect points; and

a multiplicity of programmable input/output cells comprising at least one driver selected from the group consisting of input driver and output driver, and further comprising one or more associated bondpads;

characterized in that said field programmable gate array further comprises a direct path between an input, or alternatively an output, of a given logic element in a given programmable function unit, and the input driver, or alternatively the output driver, respectively, in a given programmable input/output cell.

5,311,081

DATA BUS USING OPEN DRAIN DRIVERS AND DIFFERENTIAL RECEIVERS TOGETHER WITH DISTRIBUTED TERMINATION IMPEDANCES

Darrel D. Donaldson, Lancaster; Roger A. Dame, West Brookfield, both of Mass., and Ronald E. Nikel, Ithaca, N.Y., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 1, 1992, Ser. No. 861,747

Int. Cl.[5] H03K *19/0175*

U.S. Cl. 307—475 **35 Claims**

1. An electronic system including a plurality of circuit board modules, wherein each module is interconnected to the other modules via a data bus consisting of a plurality of conductive paths, the data bus of the type which uses distributed termination impedances, and wherein each module comprises:

operating logic circuits, mounted on the module, which provide a plurality of transmit logic signals to be communicated to the logic circuits located on the other modules, and which also receive a plurality of receive logic signals from the logic circuits located on the other modules;

a direct current (DC) power supply circuit, located on the module, for providing a power supply signal to the logic circuits mounted on the same module;

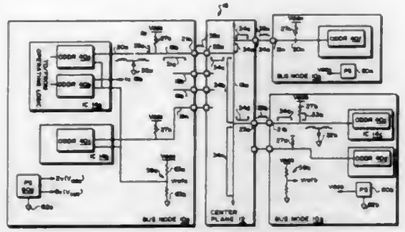
an open drain driver transistor, connected to receive one of the transmit logic signals from the logic circuits, and connected to one of the conductive paths, to thereby forward the logic signal to another module;

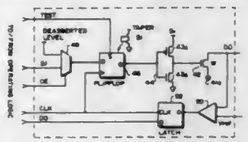
a termination impedance, mounted on the module, and connected between the conductive path and the power supply, such that each conductive path has a single termination impedance connected thereto in each module;

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a reference voltage circuit, connected to receive the power supply signal, and to generate a reference voltage; and

a differential receiver, connected to receive the reference





voltage and connected to one of the conductive paths, for receiving a receive logic signal from one of the other modules, and to thereby forward the receive logic signal to the operating logic circuits.

5,311,082

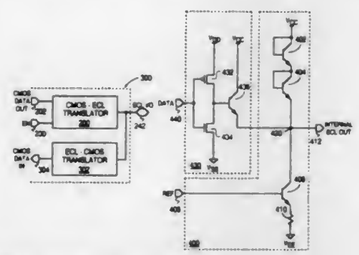
CMOS TO ECL LEVEL TRANSLATOR

NimCho Lam, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 17, 1991, Ser. No. 810,769

Int. Cl.[5] H03K *19/092, 19/094*

U.S. Cl. 307—475 **10 Claims**



1. A level translator comprising:

first and second CMOS power buses;

a CMOS signal input;

a CMOS buffer connected to said CMOS power buses and said CMOS signal input and comprising a PMOS transistor having a gate connected to said CMOS input, a source connected to said first CMOS power bus, and a drain; and an NMOS transistor having a gate connected to said CMOS input, a source connected to said second CMOS power bus, and a drain;

an ECL power bus;

an ECL signal output;

an NPN bipolar transistor having a base connected to the drains of said PMOS and NMOS transistors, a collector connected to said ECL power bus, and an emitter connected to said ECL signal output;

an ECL signal input, said ECL signal output and said ECL signal input being a common ECL I/O terminal; and

an ECL to CMOS level translator having an input connected to said ECL I/O terminal and a CMOS signal output.

5,311,083

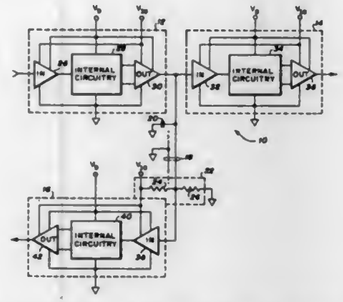
VERY LOW VOLTAGE INTER-CHIP CMOS LOGIC SIGNALING FOR LARGE NUMBERS OF HIGH-SPEED OUTPUT LINES EACH ASSOCIATED WITH LARGE CAPACITIVE LOADS

Frank M. Wanlass, Sunnyvale, Calif., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,669

Int. Cl.[5] H03K *9/0177*

U.S. Cl. 307—475 **20 Claims**



1. A system including a plurality of inter-connected packaged CMOS devices, each device comprising:

input buffer means for receiving logic levels not exceeding 0.5 volts and for interfacing to an internal logic circuit operating with logic levels exceeding 3.3 volts; and

output buffer means for externally transmitting logic levels not exceeding 0.5 volts and responsive to said internal logic circuit wherein system and device power operating levels are thereby limited during high-speed and high load capacitance operation.

5,311,084

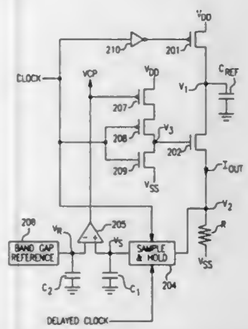
INTEGRATED CIRCUIT BUFFER WITH CONTROLLED RISE/FALL TIME

Thaddeus J. Gabara, Murray Hill, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 23, 1992, Ser. No. 902,614

Int. Cl.[5] H03F *1/30;* **H03K** *17/14*

U.S. Cl. 307—491 **22 Claims**



1. An integrated circuit having a buffer for driving an output load at a switching speed, and means for generating a control signal that maintains said switching speed relatively more constant with respect to at least one of the factors selected from the group consisting of: temperature, power supply voltage, and fabrication process speed;

characterized in that said means for generating a control current comprises:

a reference buffer controlled by a periodic signal for supplying a drive current to a reference load;

means for sampling the magnitude of the drive current to said reference load to obtain a sampled drive signal;

and means for deriving said control signal from said sampled drive signal.

5,311,085

CLOCKED COMPARATOR WITH OFFSET-VOLTAGE COMPENSATION

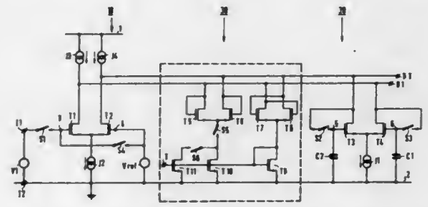
Marcellinus J. M. Pelgrom, and Antonia C. Van Rens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1992, Ser. No. 867,594

Claims priority, application European Pat. Off., Apr. 15, 1991, 91200888.5

Int. Cl.[5] H03K *5/24*

U.S. Cl. 307—494 **17 Claims**



1. A comparator circuit for converting a voltage difference appearing between a first and a second input terminal of the comparator circuit during a first state of a clock signal into a voltage difference appearing between a first and a second output terminal during a second state of the clock signal, the comparator circuit comprising: an input differential amplifier having a non-inverting input and an inverting input and having an inverting output and a non-inverting output coupled respectively to the first and the second output terminal of the comparator circuit, first switching means for coupling a voltage difference appearing between the first and the second input terminal during the first state of the clock signal to the non-inverting input and the inverting input respectively, a sample-and-hold circuit coupled to the inverting output and the non-inverting output of the input differential amplifier and comprising a further differential amplifier having a first input coupled to a first capacitor and a second input coupled to a second capacitor, and means coupling an amplifier-latch circuit to the inverting output and the non-inverting output of the input differential amplifier, the amplifier-latch circuit comprising a first pair of diode-connected transistors coupled between a first common node and the inverting output and the non-inverting output of the input differential amplifier, a second pair of cross-coupled transistors coupled between a second common node and the inverting output and the non-inverting output of the input differential amplifier, a current-mirror with a switchable current transfer having an input terminal coupled to the second common node and an output terminal, and further switching means for coupling the output terminal of the current-mirror to the first common node during the first and a third state of the clock signal and for switching the current transfer of the current mirror from a first transfer value to a second transfer value during at least the third state of the clock signal, wherein the third state of the clock signal occurs between the first and second clock signal states.

5,311,086

MULTIPLYING CIRCUIT WITH IMPROVED LINEARITY AND REDUCED LEAKAGE

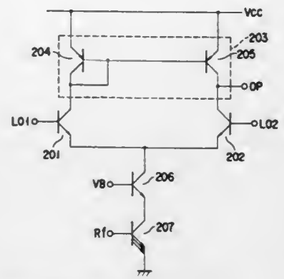
Takafumi Yamaji, Yokohama; Chikau Yakahashi, and Hiroshi Tanimoto, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1992, Ser. No. 843,548

Claims priority, application Japan, Mar. 1, 1991, 3-059573

Int. Cl.[5] H03K *5/22*

U.S. Cl. 307—498 **21 Claims**



14. A multiplying circuit comprising:

a plurality of first differential amplifiers and a plurality of second differential amplifiers for receiving a first input signal, each of said first and second differential amplifiers having a predetermined DC offset and first and second output terminals and a common emitter terminal, the first output terminal of each of said first differential amplifiers being connected to the second output terminal of one of said second differential amplifiers, and the second output terminal of each of said first differential amplifiers being connected to the first output terminal of one of said second differential amplifiers;

load means connected to said first and second output terminals of said first and second differential amplifiers;

a plurality of first common-base transistors having bases tied to a constant potential, collectors each connected only to a respective one of said common emitter terminals of said first differential amplifiers, and emitters;

a plurality of second common-base transistors having bases tied to a constant potential, collectors each connected only to a respective one of said common emitter terminals of said second differential amplifiers, and emitters;

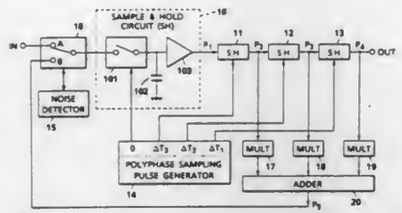
a plurality of third common-base transistors having bases tied to a constant potential, collectors connected to emitters of said first common-base transistors, respectively, and emitters commonly connected to obtain a common emitter terminal, said emitters being set to have a predetermined emitter area ratio;

a plurality of fourth common-base transistors having bases tied to a constant potential, collectors connected to emitters of said second common-base transistors, respectively, and emitters commonly connected to obtain a common emitter terminal, said emitters being set to have the predetermined emitter area ratio; and

a plurality of third differential amplifiers for receiving a second input signal, each of said third differential amplifiers having a pair of output terminals, said common emitter terminals of said third and fourth common-base transistors being connected only to respective output terminals of each of said third differential amplifiers, whereby an output signal proportional to the product of the first and second input signals appears between the first and second output terminals of said first and second differential amplifiers.

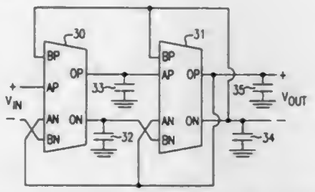
VOL 1162 ISS 2 MY 10 1994 UMI

5,311,087
NOISE REMOVING CIRCUIT
Hisashi Suganuma, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jul. 10, 1992, Ser. No. 911,578
Claims priority, application Japan, Jul. 12, 1991, 3-172707; Jul. 12, 1991, 3-172708
Int. Cl.[5] H03K *5/08*
U.S. Cl. 307—520 **3 Claims**



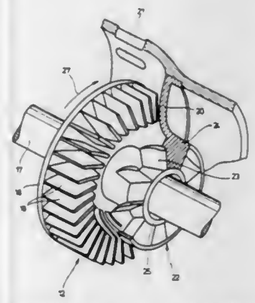
1. A noise removing circuit for removing impulse noise in an analog signal, comprising:
means for detecting impulse noise in an input analog signal;
an input selector switch receiving as inputs said input analog signal and a second signal, said input selector outputting said input analog signal when said detecting means does not detect impulse noise in said input analog signal, and said input selector outputting said second signal when impulse noise is detected by said detecting means in said input analog signal;
a polyphase sampling pulse generator for outputting polyphase pulse trains;
a plurality of sample-and-hold circuits in cascaded connection for sampling and holding an output of said input selector switch, said sample-and-hold circuits being activated by pulses of a corresponding phase of said polyphase pulse trains to sample and hold a signal level being held on said output of said input selector switch and a preceding sample-and-hold circuit, an output of said noise removing circuit being provided at an output of a last one of said sample-and-hold circuits in said cascaded connection;
a plurality of multipliers each having a predetermined multiplication coefficient, each of said multipliers outputting a signal level on a corresponding one of said sample-and-hold circuits multiplied by said predetermined coefficient; and
an adder for adding outputs of said plurality of multipliers to produce said second signal.

5,311,088
TRANSCONDUCTANCE CELL WITH IMPROVED LINEARITY
Dale H. Nelson, Shillington, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 23, 1992, Ser. No. 918,172
Int. Cl.[5] H03B *5/12*
U.S. Cl. 307—520 **6 Claims**



1. A circuit employing first and second input stages and an output stage, each input stage having first and second current paths each comprising a current source connected in series with a signal input transistor coupled to said output stage, and each input stage having a controlled transconductance transistor connected between the first and second current paths,
characterized in that said circuit further comprises means for providing first and second signals that are of approximately equal magnitude and approximately in phase to the control electrodes of signal input transistors of the first input stage, and still further comprising means for providing third and fourth signals that are of approximately equal magnitude and approximately in phase to the control electrodes of signal input transistors of the second input stage, wherein said third and fourth signals are approximately balanced with respect to said first and second signals.

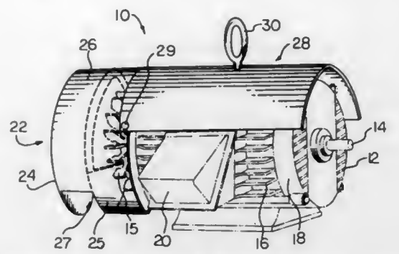
5,311,089
HAND MACHINE TOOL
Eckerhard Stroetgen, Waldenbuch, and Eberhard Prahst, Aichwald, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 22, 1993, Ser. No. 51,462
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4220078
Int. Cl.[5] H02K *7/14, 9/00*
U.S. Cl. 310—50 **13 Claims**



1. A hand machine tool, comprising a machine housing; an electric motor; a radial fan driven by said electric motor and having an aspirating region; and a non-rotatable pre-spin grate located stationarily relative to said machine housing in said aspirating region of said radial fan directly upstream said radial fan as considered in an air flow direction and formed so that a supply air to said radial fan is deviated against a rotary direction of said radial fan.

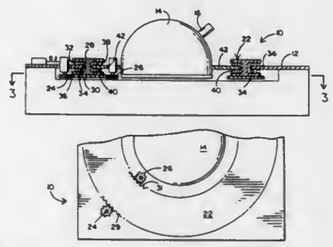
5,311,090
MOTOR PROTECTION DEVICE
André A. Ferlatte, P.O. Box 2500, 402 Renfrew Street, Dalhousie, New Brunswick, E0K 1B0, Canada
Filed Nov. 19, 1992, Ser. No. 978,763
Claims priority, application Canada, Mar. 20, 1992, 2063612
Int. Cl.[5] H02K *5/10, 5/00*
U.S. Cl. 310—88 **12 Claims**

1. A fabricated motor protection device for attachment to a horizontally disposed motor having a casing, a fan external to said casing at one end for circulating cooling air over said casing, and a shaft extending from said casing at the other end, said device comprising:
a fan enclosure attached to an extending from said casing at said one end of said casing and enclosing said fan, said enclosure having an impervious end wall;
an arcuate shield separate from said casing connected to said enclosure and extending longitudinally over said casing and surrounding a portion of said casing, said shield spaced from said casing to define an air passage over said casing; and



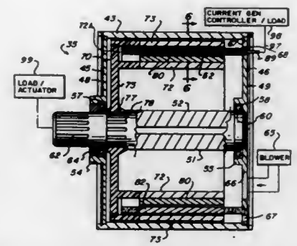
a directionally oriented inlet in said enclosure for entry of air into said enclosure, whereby foreign matter is prevented from contacting said casing and also prevented from direct entry into said enclosure.

5,311,091
LOW STICTION DUAL DRIVE, MOTIVE SYSTEM
Inge Maudal, 604 Lassen La., Costa Mesa, Calif. 92626
Filed Feb. 26, 1990, Ser. No. 485,053
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] H02K *7/075;* **H02P** *5/52*
U.S. Cl. 310—90 **23 Claims**



1. A motive system, comprising:
a first frame member;
a second frame member;
a revolvable member concentric to said first frame member and said second frame member;
a first drive means for providing relative motion between said revolvable member and said first frame member;
a second drive means for providing relative motion between said revolvable member and said second frame member;
a first bearing mounted between said revolvable member and said first frame member for allowing relative motion therebetween; and
a second bearing mounted between said revolvable member and said second frame member for allowing relative motion therebetween.

5,311,092
LIGHTWEIGHT HIGH POWER ELECTROMAGNETIC TRANSDUCER
Gene A. Fisher, Highlands Ranch, Colo., assignor to Unique Mobility, Inc., Englewood, Colo.
Continuation of Ser. No. 125,781, Nov. 27, 1987, Pat. No. 5,004,944. This application Oct. 12, 1990, Ser. No. 596,371
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—266 **5 Claims**



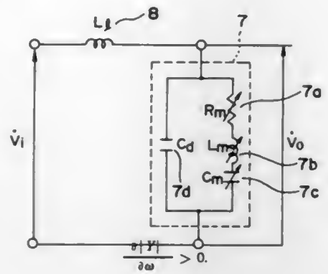
1. An electromagnetic transducer, comprising:
(a) magnetic flux producing means of high energy permanent magnets for producing a magnetic flux;
(b) an armature means for intercepting said magnetic flux, said armature means including conductor means having a plurality of discrete active regions for carrying electrical current and which are spaced apart and have a substantially rectangular cross-section to provide a plurality of discrete elongated open space areas between said active regions,
said active regions comprising a plurality of parallel conductive wires insulated from one another, said conductive wires having a diameter on the order of 0.008",
magnetic flux carrying means comprising a multiplicity of discrete flux carrying members formed of non-sintered highly compressed iron powder particles interposed between said active regions of said conductor means,
said flux carrying members containing a bonding agent to hold together said flux carrying means and a bonding agent to bond said flux carrying means and said conductor means;
(c) a movable member having one of said magnetic flux producing means and said armature means secured thereto; and
(d) means for mounting another of said magnetic flux producing means and said armature means to allow said movable member to move relative thereto, whereby said magnetic flux producing means and said armature means are able to move relative to one another.

5,311,093
DRIVING CIRCUIT FOR VIBRATION DRIVEN MOTOR
Hitoshi Mukohjima, Fuknoka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1992, Ser. No. 845,953
Claims priority, application Japan, Mar. 6, 1991, 3-040114
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—317 **7 Claims**

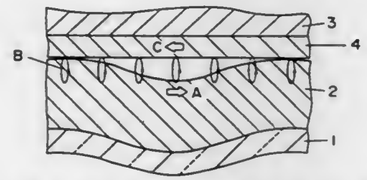
1. A driving circuit for a vibration driven motor or actuator including an electromechanical energy conversion member and having an equivalent circuit including a series connection having an inductor, a resistor, and a capacitor, and a specific electrostatic capacitance connected in parallel with said series connection, said driving circuit comprising:
at least one inductor connected in series or in parallel with, or at lest one each in series and in parallel with, said equivalent circuit, wherein a mechanical resonant frequency of said motor or actuator is set to a frequency such that an admittance Y of the driving circuit from which the series

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connection of said conversion member is eliminated satisfies the relation

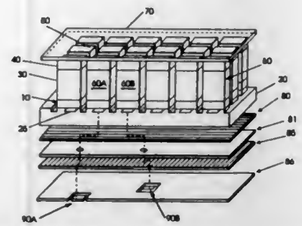


5,311,094
ULTRASONIC MOTOR
Yoshinobu Imasaka, Higashiosaka; Hiroshi Yoneno, Nara, and Masanori Sumihara, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan
Continuation of Ser. No. 477,198, Feb. 6, 1990, Pat. No. 5,150,000, which is a continuation-in-part of Ser. No. 259,703, Oct. 19, 1988, abandoned. This application Feb. 26, 1992, Ser. No. 841,553
Claims priority, application Japan, Oct. 20, 1987, 62-262854; Oct. 21, 1987, 62-266793; Nov. 11, 1987, 62-284533; Feb. 9, 1988, 63-27974; Mar. 29, 1988, 63-75450; Jun. 8, 1988, 63-141097
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **2 Claims**



1. In an ultrasonic motor wherein a moving body is contracted under a pressure on a vibrating body on which a piezoelectric body is disposed, and an ultrasonic traveling wave is produced on said piezoelectric body and said vibrating body by inputting high-frequency electric power of ultrasonic frequency to said piezoelectric body, whereby said moving body is driven by means of a wave-front of said ultrasonic traveling wave through a friction means, the improvement wherein said moving body or the contact surface of said moving body is made of a composite plastic resin material consisting essentially of a fluorocarbon resin in an amount of 100 parts by weight and a whisker-shaped powder in an amount of 2 to 100 parts by weight uniformly distributed therein, said whisker-shaped powder being selected from the group consisting of potassium titanate, silicon nitride, silicon carbide and zinc oxide.

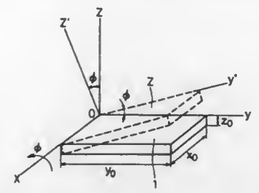
5,311,095
ULTRASONIC TRANSDUCER ARRAY
Stephen W. Smith, Durham; Olaf T. von Ramm, Efland; Paul J. Roeder, Pittsboro, and Thomas R. Poulin, Cary, all of N.C., assignors to Duke University, Durham, N.C.
Filed May 14, 1992, Ser. No. 883,006
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 **15 Claims**



1. A two-dimensional array ultrasonic transducer for ultrasonic imaging comprising:
a ceramic connector having an upper surface, a lower surface and an array of connector pads formed in said ceramic connector for electrically connecting said upper surface to said lower surface;
a mismatching layer of electrically conducting material connected to said upper surface of said ceramic connector;
a piezoelectric transducer chip connected to said mismatching layer;
a matching layer of electrically conducting material having an upper surface and a lower surface wherein said lower surface of said matching layer connected to said piezoelectric chip;
slot means extending downward from said upper surface of said matching layer into said ceramic connector for dividing said matching layer, piezoelectric chip, mismatching layer and ceramic connector into a plurality of transducer elements of from about 0.1 mm to about 1 mm in width, from about 0.1 mm to about 20 mm in length and from about 0.1 mm to about 1 mm in height, said transducer elements being positioned in a two-dimensional array wherein each one of said plurality of transducer elements is electrically connected to a corresponding one of said connector pads;
an uppermost layer of electrically conducting foil connected to said upper surface of said matching layer;
redistribution means for redistributing the position of electrical connections for said array of transducer elements to increase the distance between electrical connections to a distance greater than that between individual connector pads of said array of connector pads; and
voltage source means connected to said redistribution means for electrically exciting said array of transducer elements to produce an ultrasonic pulse of from about 1 to about 10 MHz.

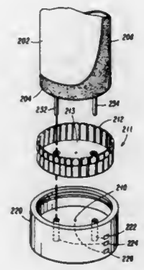
5,311,096
KT CUT WIDTH-EXTENSIONAL MODE QUARTZ CRYSTAL RESONATOR
Hirofumi Kawashima, Sendai, Japan, assignor to Seiko Electronic Components Ltd., Japan
Filed Jan. 17, 1992, Ser. No. 822,532
Claims priority, application Japan, Jan. 25, 1991, 3-007854; Aug. 6, 1991, 3-196864; Aug. 29, 1991, 3-219025; Sep. 2, 1991, 3-221725; Sep. 27, 1991, 3-249840; Nov. 8, 1991, 3-293424
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—361 **12 Claims**

1. A width-extensional mode quartz crystal resonator comprising: a quartz crystal piece capable of undergoing a width-extensional mode vibration and formed from a quartz crystal plate cut along a plane defined by rotating a Z plane perpendicular to a z axis representative of an optical axis of quartz crystal around an x axis representative of an electrical axis of quartz



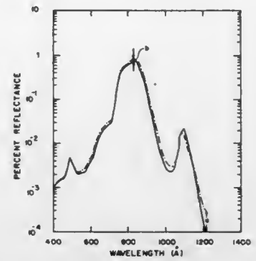
crystal by a given rotation angle in the range of 23°–28°, wherein the quartz crystal piece has a thickness z_0 and a width x_0 and a thickness-to-width ratio $R_{zx}=z_0/x_0$ in the range of 0.45–0.65.

5,311,097
FLUORESCENT LAMP APPARATUS FOR AVIONICS LIQUID CRYSTAL DISPLAYS
Thomas A. Mepham, Hiawatha, and Roger D. Eller, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Mar. 4, 1992, Ser. No. 846,190
Int. Cl.[5] H01J *61/35, 61/42, 61/52*
U.S. Cl. 313—51 **3 Claims**



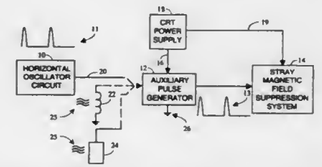
1. An avionics fluorescent lamp comprising:
a fluorescent tube having therein a filament having coupled thereto a plurality of filament pins and said tube having an ITO resistive element disposed thereon;
a terminal block, detachably coupled with and for receiving said fluorescent tube, said terminal block having disposed therein a semi-rigid contact ring having a plurality of semi-rigid fingers coupled thereto, so that, said ITO resistive element touches said semi-rigid fingers when said tube is inserted in said terminal block; and,
said terminal block having a plurality of block electrical contacts disposed therein for providing electrical connections to an external source and means for providing quick electrical connection between said filament pins and said block electrical contacts.

5,311,098
INTERFERENCE PHOTOCATHODE
John F. Seely, Lorton, and William R. Hunter, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 26, 1992, Ser. No. 888,083
Int. Cl.[5] H01J *1/34, 43/08*
U.S. Cl. 313—542 **28 Claims**



1. An interference photocathode comprising:
a reflective substrate; and
interference means disposed on said reflective substrate for selectively enhancing a first photoelectric yield of said photocathode when irradiated by radiation having a first wavelength relative to a second photoelectric yield of said photocathode when irradiated by radiation having a second wavelength; and
wherein said interference means comprises a coating having a thickness and an active surface opposite to a surface in contact with said reflective substrate such that said interference means enhances a first wave amplitude at said active surface by constructive interference of radiation having the first wavelength and suppresses a second wave amplitude at said active surface by destructive interference of radiation having the second wavelength.

5,311,099
PULSE DRIVER FOR CRT STRAY MAGNETIC FIELD CANCELLING CIRCUIT
Wayne D. Grocki, Libertyville, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Dec. 28, 1992, Ser. No. 998,092
Int. Cl.[5] H01J *29/06*
U.S. Cl. 315—8 **14 Claims**



1. A drop-in auxiliary pulse generator for use in conjunction with a CRT imaging system that manifests an undesired stray magnetic field, the auxiliary pulse generator providing for producing collateral pulses that supplement the electron-beam-sweeping pulses of the CRT horizontal oscillator, and comprising:
a) means for directly receiving or detecting the sweep pulses;
b) means for generating collateral pulses having a frequency and phase approximating that of the electron-beam-sweeping pulses;
c) means for exactly conforming the frequency and phase of

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the collateral pulses to the frequency and phase of the electron-beam-sweeping pulses;

d) means for coupling the collateral pulses to a stray magnetic field suppression system;

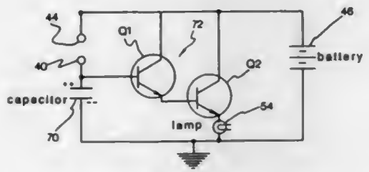
whereby the auxiliary pulse generator relieves the CRT horizontal oscillator of the burden of energizing a system for suppressing the stray magnetic field.

5,311,100

WATER-ACTIVATED SURVIVAL LAMP UNIT AND AN IMPROVED WATER-RESPONSIVE SWITCH THEREFOR

John E. Brain, Quebec, Canada, assignor to Errington John Enterprises Ltd., Quebec, Canada

Filed Nov. 1, 1991, Ser. No. 786,451
Claims priority, application Canada, Nov. 2, 1990, 2029235
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—129 **15 Claims**



1. A survival lamp unit for mounting to a flotation device above and in proximity to the water line, said survival lamp unit comprising:

a hermetically sealed light transmissive housing;

a light source mounted in said housing;

a battery mounted in said housing, said battery being electrically connected to said light source for supplying electrical energy thereto; and

a water-responsive actuator in an electrical path that connects said battery and said light source for controlling an operation of said light source, said actuator including a sensing element extending outside said housing, said actuator being responsive to a momentary contact between said sensing element and a coherent body of water to actuate said light source during an operative cycle continuing over a predetermined time period that largely exceeds a duration of said momentary contact, upon expiration of said predetermined time period said actuator terminating said operative cycle, whereby periodic water splashing of said housing allows to re-establish at intervals said momentary contact, each momentary contact occurrence triggering said actuator to actuate said light source during an additional operative cycle.

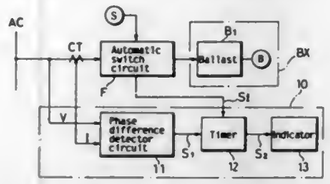
5,311,101

LIGHTING FAILURE DETECTOR FOR A LUMINAIRE

Toshitaka Noriki; Kaoru Tanaka, and Hiroki Shinzaki, all of Ishikawa, Japan, assignors to Kagatsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,425
Claims priority, application Japan, Jun. 5, 1992, 4-146014
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—129 **2 Claims**

1. A lighting failure detector for a luminaire, comprising a phase difference detector circuit for ascertaining the lighting of a lamp through voltage and current applied to the lamp, a timer operating in response to an output signal from the phase



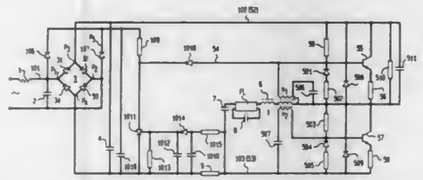
difference detector circuit, and an indicator operated in response to a time-up signal from by the timer.

5,311,102

POWER SUPPLY UNIT FOR DISCHARGE LAMPS

Rong Jiu Du, Weihai, China, assignor to Wei Hai Bei Yang Electric Group Corp., Wanchai, Hong Kong

Filed May 12, 1992, Ser. No. 881,937
Claims priority, application China, Sep. 18, 1991, 91108951
Int. Cl.[5] H05B *41/29, 41/36*
U.S. Cl. 315—205 **3 Claims**



1. A power supply unit for discharging lamps comprising:

a rectifier (3) comprising four rectifying diodes (31, 32, 33, 34);

an oscillator output portion (5) connected between positive and negative dc output terminals (P3 and P4) of said rectifier (3),

said output portion (5) having a positive power supply terminal (52) connected to the positive dc output terminal (P3) of said rectifier (3), a negative power supply terminal (53) connected to the negative dc output terminal (P4) of said rectifier (3), and an output terminal (51) connected via a first inductor (6) to a first pole of a filament at a first end of a fluorescent lamp (FL);

a first capacitor (8) parallel-connected between a second pole of the filament at the first end of said fluorescent lamp (FL) and a second pole of the filament at a second end of said fluorescent lamp;

a second inductor (1) of a value greater than 0.2 mH series-connected to one of two ac input terminals (P1, P2) of said rectifier (3);

a second capacitor (2) of a value ranging between 0.1 and 0.3 μf parallel-connected between said two ac input terminals (P1, P2) of said rectifier (3);

a third capacitor (4) of a value less than 0.68 μf parallel-connected between said positive and negative dc output terminals (P3 and P4) of said rectifier (3); and

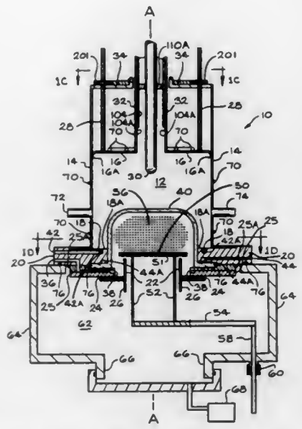
a fourth capacitor (7) of a value greater than 0.68 μf, having one of its ends connected to said negative power supply terminal (53) of said oscillator output portion (5), the other end connected to a first pole of the filament at the second end of said fluorescent lamp (FL).

5,311,103

APPARATUS FOR THE COATING OF MATERIAL ON A SUBSTRATE USING A MICROWAVE OR UHF PLASMA

Jes Asmussen, Okemos, and Jie Zhang, East Lansing, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Jun. 1, 1992, Ser. No. 890,877
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.81 **21 Claims**



1. In a plasma generating apparatus for coating a substrate with a material from a plasma including a plasma source employing a radiofrequency, including UHF or microwave, wave coupler means which is metallic and in the shape of a hollow cavity and which is excited in a TM mode of resonance and optionally including a static magnetic field around the plasma which aids in coupling radiofrequency energy at electron cyclotron resonance and aids in confining ions in the plasma in an electrically insulated chamber means in the coupler means, and wherein the chamber means has a central longitudinal axis in common with the coupler means and is mounted in closely spaced and sealed relationship to an area of the coupler means with an opening from the chamber means at one end; gas supply means for providing a gas which is ionized to form the plasma in the chamber means, wherein the radiofrequency wave applied to the coupler means creates and maintains the plasma around the central longitudinal axis in the chamber means; movable metal plate means in the cavity mounted in the coupler means perpendicular to the central longitudinal axis and movable along the central longitudinal axis towards and away from the chamber means; and a movable probe means connected to and extending inside the coupler means for coupling the radiofrequency waves to the coupler means, the improvement which comprises:

(a) the probe means which is elongate and is mounted in the coupler means along the central longitudinal axis of the chamber means and coupler means with an end of the probe in spaced relationship to the chamber means; and

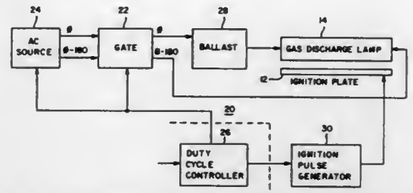
(b) stage means which forms part of the cavity and provides for mounting a substrate to be coated with the material, the stage means having a support surface which is in a plane around the longitudinal axis and which is movable towards and away from the plasma in the chamber means so that the substrate can be coated with the material from the plasma.

5,311,104

WIDE DIMMING RANGE GAS DISCHARGE LAMP DRIVE SYSTEM

Woodrow L. Antle, Plantation, Fla., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 621,703, Dec. 3, 1990, abandoned. This application Mar. 22, 1993, Ser. No. 37,492
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—307 **11 Claims**



1. A wide dimming range drive system for driving a gas discharge lamp from an AC potential source comprising:

a conductor mounted external but in proximity to the gas discharge lamp;

igniter means connected to said conductor for applying a short duration, high voltage pulse to said conductor causing ionization of the gases in the gas discharge lamp;

drive means for applying the AC potential to the gas discharge lamp causing light output; and,

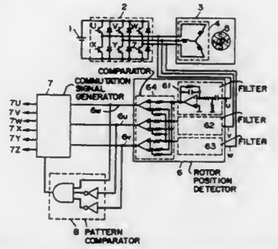
control means for controlling times during which said drive means applies the AC potential to the gas discharge lamp for controlling average light output of the lamp.

5,311,105

BRUSHLESS MOTOR OPERATING METHOD AND APPARATUS

Mitsuhisa Nakai; Shiro Maeda, and Toshiaki Yagi, all of Kusatsu, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 768,547, Sep. 30, 1991, abandoned. This application May 10, 1993, Ser. No. 60,693
Claims priority, application Japan, Feb. 14, 1990, 2-034323
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—254 **6 Claims**



1. A method of operating a brushless motor which includes a rotor position detection means and which is operable in a rotor position detection operation mode and a synchronized operation mode,

said rotor position detection operation mode comprising:

detecting a voltage signal induced in an armature of a brushless motor having a magnet rotor; and

operating said brushless motor in accordance with a commutation signal generated on the basis of a rotor position detection signal obtained through conversion of said voltage signal by said rotor position detection means;

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said synchronized operation mode comprising:

forcibly operating said brushless motor by generating a rotating magnetic field in accordance with a commutation signal generated form an external signal source until said rotor position detection signal is settled, wherein said synchronized operation mode includes n kinds of driving waveform patterns and the first to n-th patterns are sequentially outputted with the outputting of the n-th pattern being following by cyclically outputting the patterns again in an identical sequence, thereby generating a rotating magnetic field in an armature winding of said brushless motor, said method comprising:

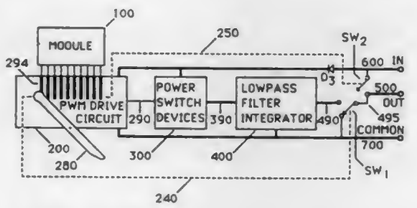
changing over, upon transition from the synchronized operation mode to the rotor position detection mode, a signal source for generation of said commutation signal from said external signal source to said rotor position detection signal after the (n−1)th pattern has been outputted and at a timing when the n-th pattern is to be subsequently outputted.

5,311,106

PULSE WIDTH MODULATED ELECTRONIC SLOT CAR CONTROLLER

Mark E. Hazen, 1391 Ashboard Cir. SE., Palm Bay, Fla. 32909

Filed Nov. 23, 1992, Ser. No. 980,287
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—269 **1 Claim**



1. A device comprising;

a programmable pulse width modulating means with a first output for varying the duty cycle of said first output,

power switching means with an input for producing a second output voltage and current of same said duty cycle with said input taken from said first output,

filtering means associated with a third output for smoothing to DC power said second output of said power switching means, and for sending said DC power to said third output,

full power means for circumventing said pulse width modulating means, said power switching means, and filtering means,

means for regenerative braking having means for shorting the third output with all said DC power simultaneously removed from said third output,

plug-in module means with an array of resistors for programming of said device to have a variable level of power to said third output to accommodate any slot car motor, and

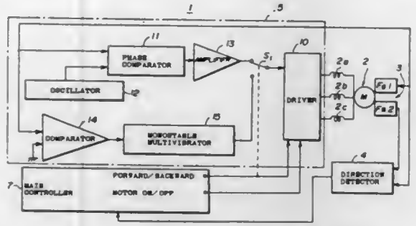
whereby said programming for variability of control of power of the third output of said device may be quickly modified by exchange of said plug-in module means.

5,311,107

METHOD AND APPARATUS FOR STOPPING DC MOTOR BY BRAKE POWER CORRESPONDING TO ROTATION FREQUENCY OF MOTOR AND DISK STORAGE UNIT HAVING SUCH APPARATUS

Hiroo Shimegi, Amagasaki; Akira Mashimo, Musashino; Hiroyuki Onda, Musashino; Katsuya Enami, Musashino, and Hiroshi Takahashi, Musashino, all of Japan, assignors to Mitsubishi Electric Corporation and Teac Corporation, Japan

Continuation of Ser. No. 740,008, Aug. 2, 1991, abandoned. This application May 14, 1993, Ser. No. 63,124
Claims priority, application Japan, Aug. 6, 1990, 2-207864; Aug. 6, 1990, 2-207865
Int. Cl.[5] H02P *3/00*
U.S. Cl. 318—369 **11 Claims**



1. A motor stopping method comprising the steps of:

(a) detecting a rotation frequency of a motor to which a load is attached; and

(b) applying braking power to the motor in accordance with the rotation frequency until the motor is approximately stopped;

wherein said method further comprises the following steps, performed before said step (b):

(c) rotating the motor with the load at a first rotation frequency;

(d) applying an initial braking power to the motor;

(e) measuring a period during which the rotation frequency of the motor is changed from the first rotation frequency to a second rotation frequency lower than the first rotation frequency; and

(f) comparing the measured period with a predetermined reference period, the amount of braking power applied in step (b) being determined in accordance with the comparison.

5,311,108

CONTROL SYSTEM FOR UNIDIRECTIONAL MOTOR HAVING IMPROVED DYNAMIC BRAKING

Frank G. Willard, Oakmont, Pa., assignor to Cleaveland/Price, Inc., Trafford, Pa.

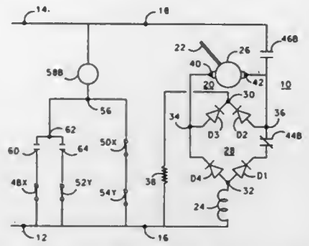
Filed Jun. 11, 1993, Ser. No. 76,439
Int. Cl.[5] H02P *3/12*
U.S. Cl. 318—381 **6 Claims**

1. A motor control system for a unidirectional series DC electric motor, said motor having an output shaft, and said system when energized operable to rotate said output shaft and to smoothly and rapidly stop rotation of said output shaft when energization is removed, said control system comprising:

a DC source having output terminals of predetermined polarities;

a motor field winding forming an integral part of said series DC motor, a bridge circuit conformed as a full-wave rectifier and having DC terminals of different polarities and AC terminals, said motor field winding electrically connecting between one output terminal of said DC source and the ne DC terminal of said full-wave rectifier bridge which has a polarity different from the polarity of said one output terminal of said DC source, and the other DC terminal of said full-wave rectifier bridge connecting to said one output terminal of said DC source;

a rotatable motor armature having two electric terminals and forming an integral part of said series DC motor, said motor armature connecting to and operable to rotate said output shaft, one electric terminal of said motor armature adapted to be connected via one AC terminal of said bridge to said one DC terminal of said bridge, the other electric terminal of said motor armature adapted to be connected via the other AC terminal of said bridge to said one DC terminal of said bridge, a first controllable open or closed operating switch positioned in circuit between one of said motor armature terminals and said one DC terminal of said bridge, a second controllable open or closed



operating switch positioned in circuit between one of said motor armature terminals and said other terminal of said DC source, and said first operating switch and said second operating switch both connecting to the same electrical terminal of said motor armature; and

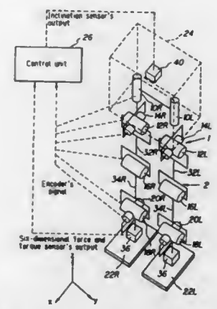
means for controlling the open and closed positions of said operating switches to achieve the following system functions: when said first operating switch is opened and said second operating switch is closed, said armature and output shaft rotate in a predetermined direction, and when said first operating switch is closed and said second operating switch is opened with said armature and output shaft turning, the rotation of said armature and output shaft are smoothly and rapidly dynamically braked.

5,311,109

LOCOMOTION CONTROL SYSTEM FOR LEGGED MOBILE ROBOT

Nobuaki Ozawa, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,531
Claims priority, application Japan, Mar. 31, 1992, 4-105315
Int. Cl.[5] B25J *11/00, 9/00*
U.S. Cl. 318—568.11 **8 Claims**



1. A system for controlling locomotion of a legged walking robot made up of at least one linkage connecting a joint by links, comprising:

first means for predesigning a model of the robot to determine a target angle of the joint;

second means for determining a control value in response to the determined target angle of the joint;

third means for detecting moment or force acting on the joint or the linkage to estimate deformation thereof;

control mans for correcting the control value to compensate the deformation;

servo motor means for driving the joint in response to the corrected control value;

fourth means for determining an amount of rigidity of the joint or linkage to obtain a first value having a relationship with the reciprocal number of the amount of rigidity;

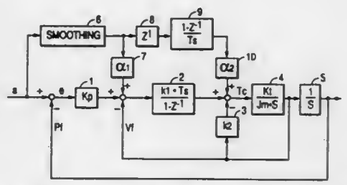
and said control means corrects the control value by a second value obtained by multiplying the detected moment or force by the first value to compensate the deformation.

5,311,110

FEEDFORWARD CONTROL METHOD FOR SERVOMOTORS

Yasusuke Iwashita, Oshino, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP91/01537, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/09022, PCT Pub. Date May 29, 1992
PCT Filed Nov. 8, 1991, Ser. No. 877,183
Claims priority, application Japan, Nov. 8, 1990, 2-301154
Int. Cl.[5] G05B *19/407*
U.S. Cl. 318—568.15 **5 Claims**



1. A feedforward control method for a servo system in which a position and speed loop process is periodically carried out a plural number of times within one distribution period in accordance with a move command periodically distributed from an upperlevel control device, comprisin,, the steps of:

(a) executing a position loop process in each position and speed loop processing period in accordance with a corresponding move command to calculate a provisional speed command;

(b) calculating a mean value of each said move command from a move command corresponding to one of said each position and speed loop processing period and move commands corresponding to position and speed loop processing periods preceding and subsequent to said one position and speed loop processing period;

(c) calculating a feedforward controlled variable in accordance with said mean value of the move commands; and

(d) correcting said provisional speed command using said calculated feedforward controlled variable to obtain a speed command.

5,311,111

METHOD OF CALIBRATING A STEP MOTOR

Avner Karpol, Tel-Aviv, and Amnon Ganot, Petach Tikva, both of Israel, assignors to Orbotech Ltd., Nes Ziona, Israel

Filed May 29, 1991, Ser. No. 706,767
Int. Cl.[5] G05B *19/40*
U.S. Cl. 318—685 **23 Claims**

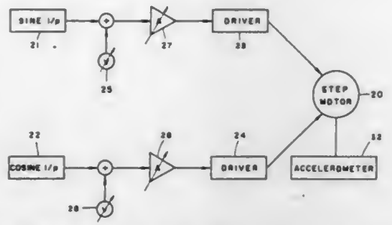
1. A method for calibrating adjustment means of a microstep

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motor including a step motor having a plurality of stator coils, said adjustment means, and a pair of drivers for applying respective driving voltages to said stator coils, wherein at least one of said adjustment means is coupled to at least one of the drivers for adjusting the respective driving voltage;

the method comprising the steps of:

(a) measuring an imbalance of the motor by an accelerometer,



(b) adjusting said at least one adjustment means as required in order to reduce the imbalance measured in (a), and

(c) iteratively repeating steps (a) and (b) as required until no further reduction in the measured imbalance is possible to calibrate said adjustment means so as to compensate for non-linearities associated with said stator coils.

5,311,112

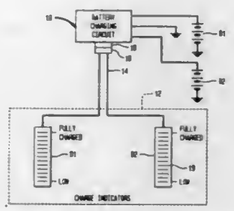
AUTOMATIC BATTERY CHARGING SYSTEM

Anthony F. Creaco, College Point, and Ernest A. Kussmaul, Sayville, both of N.Y., assignors to Kussmaul Electronics Company Inc., Sayville, N.Y.

Filed Feb. 26, 1993, Ser. No. 22,939

Int. Cl.[5] H01M *10/44*

U.S. Cl. 320—15 **5 Claims**



1. An automatic dual battery charging system, comprising:

a battery charging circuit having first and second independent channels for charging a respective first and second battery;

said first channel having a first charging terminal to which said first battery to be charged is connected;

said second channel having a second charging terminal to which said second battery to be charged is connected;

circuit control means is said battery charging circuit connoted to said first and second channels for sensing the state of charge of said first and second battery and for enabling the same to provide said first and second batteries with a charging current is proportion to the state of charge in said batteries, so that the weaker one of said batteries receives a large charging current, while a stronger one of said batteries receives a less charging current; and

wherein said circuit control means further comprises a computer means for subtracting a current correction from each of said batteries to compute the charge level of each of said batteries.

5,311,113

METHOD OF SETTING PEAK-TIMER OF ELECTRIC CHARGER

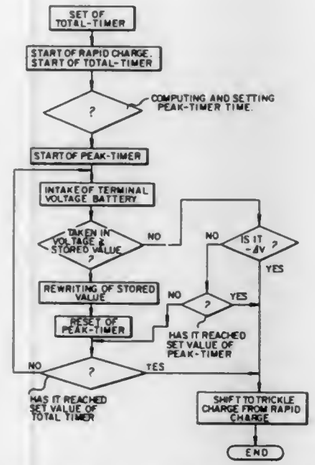
Makio Kojima, Yokohama, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Jun. 11, 1992, Ser. No. 897,049

Claims priority, application Japan, Jun. 15, 1991, 3-240166

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—20 **2 Claims**



1. A method for charging a storage battery using an electric charger, comprising the steps of:

providing an electric charger having a total-timer, a peak-timer, a voltage detecting means for detecting storage battery voltage during charging, a rapid charge voltage level, and a trickle charge voltage level; said electric charger having an arithmetic circuit;

setting a first predetermined set time as a predetermined total time for operation at a rapid charge voltage level;

using said arithmetic circuit to produce a second set time as a function of said first predetermined set time, said second set time being a predetermined time limit for operation of the electric charger at said rapid charge voltage level after a peak voltage is reached;

starting a charging operation using said electric charger at a rapid charging rate;

using said total-timer for measuring a first elapsed time which is a total time which has elapsed since initiation of said charging operation;

using said voltage detecting means to detect said storage battery voltage and providing the detected storage battery voltage to said arithmetic circuit;

using said arithmetic circuit to compare a previous highest value of said storage battery voltage with a current value of said storage battery voltage, to determine occurrence of a peak detected voltage;

using said peak-timer for measuring a second elapsed time which is an amount of time which has elapsed since occurrence of said peak detected voltage reached during said rapid charging of the storage battery; and

changing said rapid charge voltage level during said charging operation to said trickle charge voltage level after either elapse of said first predetermined set time for initiation of said charging operation, or elapse of said second set time after occurrence of said peak detected voltage.

5,311,114

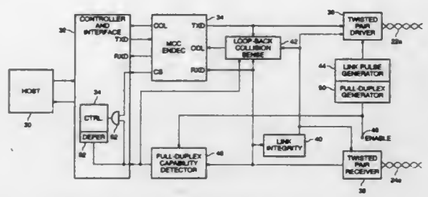
APPARATUS AND METHOD FOR FULL-DUPLEX ETHERNET COMMUNICATIONS

Namakkal S. Sambamurthy; Woo-Ping Lai, both of San Jose, and John P. VanGilder, Sunnyvale, all of Calif., assignors to Seeq Technology, Incorporated, Fremont, Calif.

Filed Oct. 27, 1992, Ser. No. 966,978

Int. Cl.[5] H04B *1/38*

U.S. Cl. 370—31 **5 Claims**



2. A 10Base-T ethernet communications controller comprising:

data transmission control circuitry for controlling data transmission to a remote ethernet transceiver

data-transmission-deferral circuitry responsive to a collision signal for deferring data transmission during time periods when data is being received;

full-duplex-mode enabling circuit means, responsive to a full-duplex mode signal, for disabling the effect of said collision signal on said data-transmission-deferral circuitry while said full-duplex-mode signal is asserted.

5,311,115

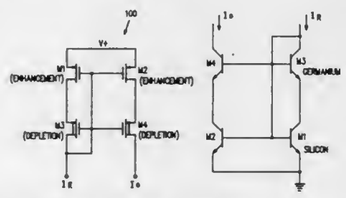
ENHANCEMENT-DEPLETION MODE CASCODE CURRENT MIRROR

Donald M. Archer, Sunnyvale, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Continuation of Ser. No. 853,523, Mar. 18, 1992, abandoned. This application Aug. 11, 1993, Ser. No. 104,827

Int. Cl.[5] G05F *3/16*

U.S. Cl. 323—315 **18 Claims**



1. A current mirror circuit comprising:

a first enhancement mode MOS transistor having a source, a gate, and a drain;

a second enhancement mode MOS transistor having a source, a gate, and a drain;

a third depletion mode MOS transistor having a source, a gate, and a drain;

a fourth depletion mode MOS transistor having a source, a gate, and a drain;

wherein the source of the first transistor and the source of the second transistor are coupled to a common voltage source;

the drain of the first transistor is coupled to the source of the third transistor, and the drain of the second transistor is coupled to the source of the fourth transistor;

the gate of the first transistor is coupled to the gate of the second transistor, the gate of the third transistor, and the gate of the fourth transistor; and

wherein the gate of the third transistor is also coupled to the drain of the third transistor to cause the third transistor to provide a voltage drop between the drain of the first transistor and the gate of the first transistor, maintaining the drain of the first transistor and the drain of the second transistor at a similar voltage to generate an output current through the second and the fourth transistor.

5,311,116

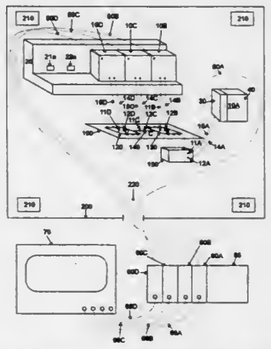
MULTI-CHANNEL ELECTROMAGNETICALLY TRANSPARENT VOLTAGE WAVEFORM MONITOR LINK

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development, Inc., Grosse Pointe Park, Mich.

Filed Apr. 2, 1992, Ser. No. 862,621

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—72.5 **36 Claims**



1. Apparatus for monitoring the effect of a radiation field at a plurality of test points of a device under test comprising:

a plurality of voltage probe transmission links, each link comprising:

a voltage probe for contacting and sensing a first voltage signal at one test point;

a converter circuit for converting the first sensed voltage signal to a corresponding optical signal; and

a common power supply and a plurality of cables for providing power to said plurality of converter circuits, wherein said common power supply and said plurality of converter circuits are radiation hardened and said voltage probe is transparent to the radiation field so that the apparatus does not inject signals in any of the test points of the device.

5,311,117

METER FOR ACCURATELY MEASURING INTEGRATED ELECTRIC POWER

Masatoshi Komatsu; Shigeo Fushimi; Shigenori Wada; Hidetake Nakamura; Tadashi Kobayashi, and Toshio Takagi, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Division of Ser. No. 608,540, Nov. 2, 1990, Pat. No. 5,079,510, which is a division of Ser. No. 454,510, Dec. 21, 1989, Pat. No. 4,992,725. This application Jan. 6, 1992, Ser. No. 817,792

Claims priority, application Japan, Dec. 26, 1988, 63-330489; Dec. 27, 1988, 63-328030; Nov. 16, 1989, 1-296144

Int. Cl.[5] G01R *21/06*

U.S. Cl. 324—142 **5 Claims**

1. An electric power meter comprising:

an adder for producing a sum signal representative of a sum of an additional analog signal and a first input signal representative of a predetermined one of an analog electric current and an analog voltage of an alternating current;

first sample-and-hold means connected to said adder for

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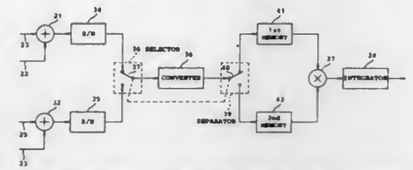
sampling said first sum signal into a first sampled signal and for holding said first sampled signal as a first held signal;

second sample-and-hold means supplied with a second input signal representative of the other of said analog electric current and said analog voltage for sampling said second input signal into a second sampled signal and for holding said second sampled signal as a second held signal;

held signal electing means connected to said first and said second sample-and-hold means for alternatingly selecting one of said first and said second held signals and the other of said first and said second held signals at a preselected period as a selected signal;

converting means connected to said held signal selecting means for converting said selected signal into a digital signal;

separating means connected to said converting means and ganged with said held signal selecting means for separating from said digital signal at said preselected period a first



and a second separated signal so that said first separated signal is separated when said held signal selecting means selects said first held signal and that said second separated signal is separated when said held signal selecting means selects said second held signal;

first memorizing means connected to said separating means for memorizing said first separated signals as a first memorized signal;

second memorizing means connected to said separating means for memorizing said second separated signal as a second memorized signal;

multiplying means connected to said first and said second memorizing means for calculating a product of said first and said second memorized signals to produce a product signal representative of said product; and

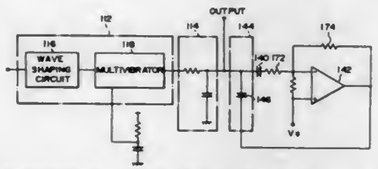
integrating means connected to said multiplying means for integrating said product signal to produce a meter output signal representative of an integrated electric power of said alternating current.

5,311,118

RIPPLE ELIMINATION IN A FREQUENCY-TO-VOLTAGE CONVERTER FOR A CROSS-COIL METER

Kazuyuki Fukuda, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 13, 1991, Ser. No. 760,064
Claims priority, application Japan, Sep. 14, 1990, 2-245000
Int. Cl.[5] G01R *5/14, 3/481, 23/06;* **H03K** *5/19*
U.S. Cl. 324—144 **13 Claims**



1. A frequency-to-voltage converter for driving a cross-coil meter comprising:

(a) a pulse generator for generating a periodic pulse signal which has a predetermined width at a predetermined period as it relates to the frequency of an input signal supplied to the pulse generator;

(b) an integrator for integrating the pulse signal and outputting the integrated signal as a signal voltage;

(c) means for detecting and inverting a ripple component in the output of said integrator and transmitting the inverted output; and

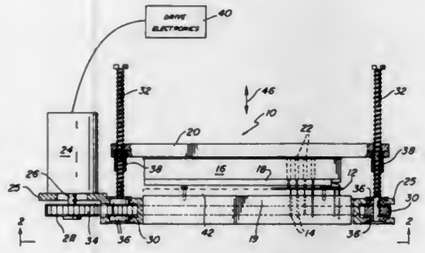
(d) a superimposing circuit for superimposing the output from said detecting and inverting means on the output of said integrator to eliminate the ripple component.

5,311,119

PROBE CONTACT THROUGH SMALL AMPLITUDE VIBRATION FOR BED OF NAILS TESTING

Michael L. Bullock; Ronald K. Kerschner, and Stephen J. Cook, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 12, 1990, Ser. No. 582,263
Int. Cl.[5] G01R *31/02, 1/073*
U.S. Cl. 324—158 F **19 Claims**



1. In an automatic in-circuit tester with fixturing means for interfacing a printed circuit board (PCB) having electronic components mounted thereon to a plurality of test probes for applying electrical signals to and receiving electrical signals from the PCB, apparatus comprising:

a) first means for biasing the PCB into contact with the probes at predetermined locations on the PCB; and,

b) second means for vibrating the fixturing means relative to the probes at a sub-ultrasonic frequency after contact has been established between said predetermined locations and the probes; wherein the subultrasonic frequency is in substantial close proximity to a resonant frequency of at least a portion of the fixturing means.

5,311,120

TEST FIXTURE WITH TEST FUNCTION FEATURE

Mark R. Bartholomew, 2232 S. Hickory Pl., Ontario, Calif. 91761

Filed Jan. 6, 1993, Ser. No. 1,074
Int. Cl.[5] G01R *31/02, 1/073*
U.S. Cl. 324—158 F **6 Claims**

1. An apparatus for testing the electrical circuit tracings on a printed circuit board comprising:

(a) a top plate and a bottom plate disposed in parallel with one other, the plates being movable with respect to one another between a first plate position wherein the top plate is distal to the bottom plate and a second plate position wherein the top plate is proximate to the bottom plate, the top plate having an upper surface and a lower surface;

(b) means for moving the plates between the first plate position and the second plate position;

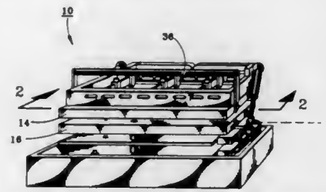
(c) means for urging the plates toward the first plate position;

(d) means for affixing a printed circuit board to the upper surface of the top plate;

(e) a plurality of apertures defined within the top plate and aligned with a loci of points along the circuit tracings of a printed circuit board affixed to the top plate;

(f) a plurality of parallel test probes affixed to the bottom plate so as to be perpendicular to the bottom plate and so as to be positionally disposed between the bottom plate and the top plate when the plates are in the first plate position, each test probe being aligned with a corresponding aperture in the top plate, the plurality of test probes comprising a plurality of short probe members having a first probe height and a plurality of long probe members having a second probe height, each of the long probe members comprising an inner moiety telescopically disposed within an outer moiety, the height of the long probe members being telescopically alterable between the second probe height and the first probe height and the long probe members each comprising means for urging the long probe member to the second probe height;

(g) means for electrically connecting each of the test probes to electrical signal diagnostic equipment;



(h) at least one slide bar slidably affixed in abutment to the upper surface of the top plate, the slide bar having at least one key hole shaped aperture, the key hole shaped aperture having a wide portion and a narrow portion;

(i) at least one holding pin affixed to the bottom plate so as to be perpendicular to the bottom plate and so as to be positionally disposed between the bottom and top plates when the plates are in the first plate position, the holding pin comprising a shaft dimensioned to pass through both the narrow portion and the wide portion of the key hole shaped aperture in the slide bar and a head dimensioned to pass through the wide portion but not the narrow portion of the key hole shaped aperture in the slide bar; and

(j) means for sliding the slide bar between a first slide bar position wherein the wide portion of the key hole shaped aperture is aligned with the holding pin and a second slide bar position wherein the narrow portion of the key hole shaped aperture is aligned with the holding pin;

wherein the top plate is perforated directly below the key hole shaped aperture in the slide bar to allow passage of the holding pin therethrough.

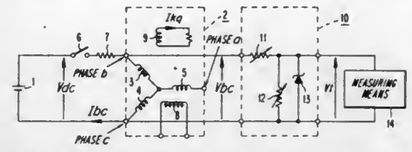
5,311,121

APPARATUS FOR MEASURING THE ELECTRICAL TIME CONSTANT OF THE QUADRATURE-AXIS DAMPER OF A SYNCHRONOUS MACHINE

Mitsuhiro Kawamura, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 775,586, Oct. 15, 1991, abandoned.
This application Jul. 1, 1993, Ser. No. 84,447
Claims priority, application Japan, Apr. 12, 1991, 3-106506
Int. Cl.[5] G01R *31/34*
U.S. Cl. 324—158 MG **20 Claims**

1. An apparatus for measuring the electrical time constant of the quadrature-axis damper of a synchronous machine comprising: a synchronous machine which is placed to have its rotor made stationary at a position where a quadrature-axis magnetomotive force is generated when a current flows between armature windings of two phases, with a winding of remaining phase being opened; a d.c. power source which supplies a current having an approximate step waveform to said armature windings of two phases; and measuring means for measuring the electrical time constant as a time length



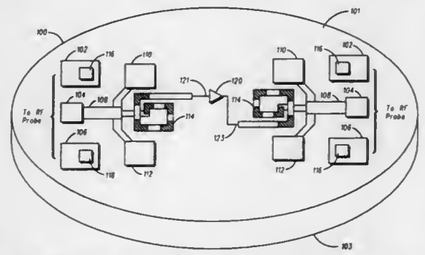
beginning when said current has reached a prescribed value and ending when a voltage waveform which decreases to a value of resistance drop of the armature windings falls to a prescribed level.

5,311,122

RF TEST EQUIPMENT AND WIRE BOND INTERFACE CIRCUIT

Craig Fullerton, Chandler, and Douglas J. Mathews, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1991, Ser. No. 801,142
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **17 Claims**



1. An RF test equipment and wire bond interface circuit, disposed on a dielectric wafer, for facilitating the on-wafer testing of integrated circuits (IC) formed on said dielectric wafer, prior to the IC's separation from the wafer, said interface circuit comprising:

electrical interface means, disposed on the dielectric wafer, for providing electrical coupling between external test equipment and an IC under test; and

a low pass filter structure, disposed on the dielectric wafer, between the electrical interface means and the IC under test, said low pass filter structure having a reactance which simulates a wire bond reactance, thereby providing similar on-wafer and off-wafer performance of the IC.

5,311,123

METHOD OF MEASURING THE INSTANTANEOUS SHAFT VELOCITY OF A ROTARY MACHINE

Gary D. Webster, Ottawa; Stuart Neill, Orleans; Rick Wintjes, Kanata; L. Phillip Carr, Ottawa; Jagdish Patel, Ottawa, and Jim Ehrismann, Ottawa, all of Canada, assignors to National Research Council of Canada/Conseil National de Recherches du Canada, Ottawa, Canada

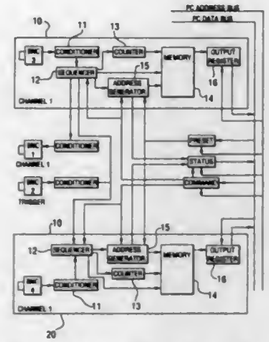
Filed May 1, 1992, Ser. No. 877,417
Claims priority, application Canada, May 2, 1991, 2041731
Int. Cl.[5] G01P *3/56*
U.S. Cl. 324—161 **10 Claims**

1. An apparatus for measuring the instantaneous shaft velocity of a rotary machine having a shaft with plurality means thereon defining circumferentially spaced markers, comprising:

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at least two circumferentially spaced sensors for mounting adjacent the shaft to sense the passage of said markers and generate a stream of pulses in response thereto;

for each of said sensors, means for continually generating a set of timing signals from said pulses, said timing signals representing a set of timing measurements corresponding to the passage of n respective successive markers past said sensors, a memory for storing said set of timing signals, and means for generating signals representing a set of estimated marker spacings for said n successive markers; and



processor means for deriving for each pair of corresponding timing and spacing signals a signal representing the instantaneous angular shaft velocity, said processor means varying the signals representing the estimated spacings of said markers on an iterative basis to attempt to make the angular velocity signals derived from the respective sensors the same; and

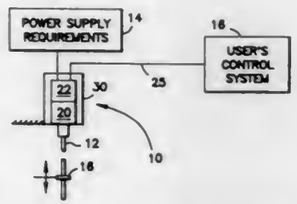
output means for generating a waveform representing the instantaneous shaft angular velocity from said angular velocity signals derived from the respective sensors.

5,311,124

EMULATED ANALOG OUTPUT MAGNETOSTRICTIVE POSITION TRANSDUCER WITH SET POINT SELECTION

Kenneth A. Hubbard, Raleigh, and Michael C. Phillips, Gary, both of N.C., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Mar. 11, 1991, Ser. No. 667,552
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.13 **3 Claims**



1. A magnetostrictive transducer for generating an indication of the position of a magnet along a gauge comprising:

a magnetostrictive delay line, forming a gauge;

pulse generator means electrically coupled to said delay line for generating periodic electrical current interrogation pulses on said delay line in response to an interrogate signal;

said magnet proximate said delay line, for converting each of said interrogation pulses into corresponding acoustics pulses in said delay line, each of said acoustic pulses propagated along said delay line from the location of said magnet;

mode converter means coupled to said delay line for converting each of said acoustic pulses into corresponding electrical echo signals indicating the passage of said acoustic pulses past the location of said mode converter;

time interval measurement means coupled to said mode converter means and coupled to said pulse generator means, for converting the time interval between an interrogation signal and a corresponding echo signal into a position count number indicative of magnet position;

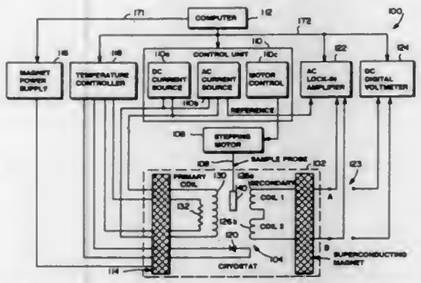
output conversion means coupled to said time interval measurement means for defining a first set point count number corresponding to the position on said delay line corresponding to the location of said position magnet in an arbitrarily selected first location along said delay line, and for defining a second set point count number corresponding to the position on said delay line of said position magnet in an arbitrarily selected second location along said delay line, and for converting said position count number to an output signal indicative of magnet location, when said magnet is located between said first location and second location.

5,311,125

MAGNETIC PROPERTY CHARACTERIZATION SYSTEM EMPLOYING A SINGLE SENSING COIL ARRANGEMENT TO MEASURE AC SUSCEPTIBILITY AND DC MOMENT OF A SAMPLE

John K. Krause; Victor Wang, and Bradley C. Dodrill, all of Westerville, Ohio, assignors to Lake Shore Cryotronics, Inc., Westerville, Ohio

Filed Mar. 18, 1992, Ser. No. 853,400
Int. Cl.[5] G01R *33/16, 33/035;* G01N *27/72*
U.S. Cl. 324—201 **53 Claims**



1. A system for measuring ac and dc magnetic characteristics of a sample, said system including:

a sensing coil arrangement including a pair of sensing coils connected in opposition.

moving means for moving said sample relative to said sensing coil arrangement;

dc magnetic field applying means for applying a dc magnetic field to said sample;

ac magnetic field applying means for applying an ac magnetic field to said sample; and

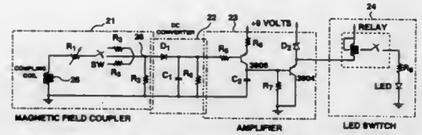
an electronic measuring means coupled to said sensing coil arrangement for successively measuring the ac susceptibility and the dc moment of said sample in response to signals received from said sensing coil arrangement.

5,311,126

MAGNETIC FIELD STRENGTH THRESHOLD INDICATOR FOR USE IN A MAGNETIC PARTICLE INSPECTION DEVICE

John Mittleman, Panama City, Fla.; Robert DeNale, Arnold, and Lawrence M. Brown, Annapolis, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1992, Ser. No. 943,622
Int. Cl.[5] G01R *35/00, 33/02;* G01N *27/84*
U.S. Cl. 324—202 **1 Claim**



1. A magnetic field strength indicator for monitoring a threshold of magnetic field strength of an electromagnet comprising:

a coupling coil arranged to be positioned around a portion of a pole piece of said electromagnet,

a calibration means for adjustably altering the magnitude of a voltage included in said coupling coil by magnetic flux passing through said pole piece said calibration means comprising a voltage divider connected across said coil, said voltage divider including a switch in series with the parallel combination of at least two resistors in series with a third resistor,

a peak rectifier circuit including a time constant circuit connected across said third resistor,

an amplifier for receiving the output of said peak rectifier circuit;

means responsive to an output of said amplifier for providing an indication at a threshold determined by said calibration means,

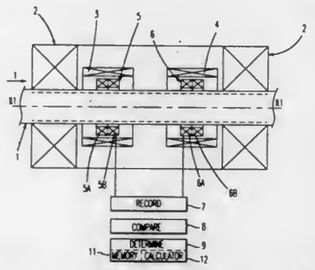
said means responsive including a relay and a light emitting diode and relay activating said diode wherever the said threshold is exceeded.

5,311,127

METHOD AND APPARATUS FOR INSPECTING METAL TUBES EMPLOYING MAGNETICALLY INDUCED EDDY CURRENTS

Bernard Bisiaux, Valenciennes, France, assignor to Vallourec Industries, Boulogne Billancourt, France

Filed Mar. 21, 1991, Ser. No. 673,075
Claims priority, application France, Mar. 26, 1990, 90 04053
Int. Cl.[5] G01R *33/12;* G01N *27/72*
U.S. Cl. 324—232 **14 Claims**



5. An apparatus for using eddy currents to detect the depth of faults existing in the walls of a passing stream of metal tubes, said faults being either internal faults or faults opening on the outside surface of the tube, comprising:

means for passing a metal tube at a constant speed through a passage which conforms to the tube diameter;

means for generating alternating magnetic fields at a lower and a higher frequency, in the vicinity of the tube;

detecting means comprising first and second detection solenoids for detecting signals S1 and S2 resulting from the interaction between each fault and the eddy currents corresponding to each of the two frequencies of the magnetic fields, memory means for storing in a memory, detected amplitudes of the signals from the first and second detection solenoids, means for comparing the stored amplitude S2 of the second detection solenoid with the stored amplitude S1 signal from the first detection solenoid which is received earlier than the signal from the second detection solenoid by a time equal to a transit time for a point on a tube to move from the first detection solenoid to the second detection solenoid and means for calculating a difference D= S2−S1 of the amplitudes of the signals S2 and S1 obtained for a defect respectively at the higher and lower frequencies;

means for determining whether D is less than a value Do which constitutes a rejection threshold; and

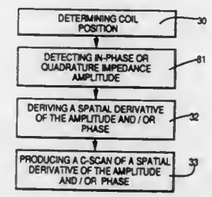
signalling means for displaying a tube rejection signal when D is less than Do.

5,311,128

EDDY CURRENT IMAGING SYSTEM USING SPATIAL DERIVATIVES FOR FLOW DETECTION

John P. Lareau, Granby, Conn., and David S. Leonard, Springfield, Mass., assignors to Abb Amdata Inc., Windsor, Conn.

Continuation of Ser. No. 545,487, Jun. 29, 1990, abandoned. This application Jun. 26, 1992, Ser. No. 905,202
Int. Cl.[5] G01N *27/72;* G01R *33/12*
U.S. Cl. 324—233 **26 Claims**



1. A method for contrast imaging a workpiece with eddy current imaging means including an eddy current sensing coil positioned proximate said workpiece by traversing said workpiece in an arbitrary pattern independently of velocity or direction, thus to scan said workpiece and produce a signal indicative of the impedance of said workpiece proximate said eddy current sensing coil and the location of said sensing coil, said method including:

providing a signal from said impedance indicative signal representative of the amplitude of said signal for selected scan positions;

calculating a spatial derivative in one or more dimensions of said amplitude indicative signal;

providing an image of said spatial derivative for said selected scan positions; and

recording true sensor position for said selected scan positions.

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5,311,129

LOCAL MAGNETIC FIELD MEASUREMENT APPARATUS HAVING GRADIOMETERS ARRANGED ON NON-PARALLEL, NON-ORTHOGONAL SURFACES

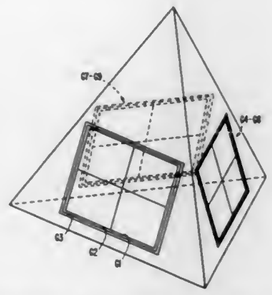
Wolfgang Ludwig, Tägerwilen, and Wolfgang Eschner, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Dornier GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 656,416, Feb. 15, 1991. This application Aug. 3, 1992, Ser. No. 923,422

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003115; Jan. 31, 1991, 4125733

Int. Cl.[5] **G01R** *33/022, 33/035*

U.S. Cl. 324—247 **20 Claims**



1. An arrangement for determining all linearly independent components of an Nth order gradient tensor of a magnetic field, with N≧1, comprising:

at least planar gradiometers of the Nth order arranged on at least 3 non-parallel and non-orthogonal surfaces, said surfaces being arranged in close proximity to each other.

5,311,130

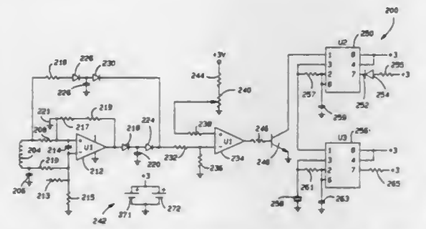
ELECTROMAGNETIC FIELD RADIATION DETECTOR HAVING AUDIBLE AND VISUAL INDICATORS FOR DETECTING FREQUENCIES WITHIN THE RANGE OF FIVE HERTZ TO FOUR HUNDRED KILOHERTZ

Richard Bill, Allegan, and Enrique Rodriguez, Kentwood, both of Mich., assignors to Rad Devices, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 869,464, Apr. 15, 1992. This application Mar. 8, 1993, Ser. No. 27,621

Int. Cl.[5] **G01R** *33/02, 33/06, 35/00;* **G08B** *21/00*

U.S. Cl. 324—258 **3 Claims**



1. A radiation detector adapted to detect and provide a warning of a presence of radiation having a frequency of about 5 hertz to about 400,000 hertz, said radiation detector comprising:

coil means for sensing said radiation and for producing an alternating electrical current signal when said radiation is sensed;

amplifier means, coupled to said coil means, for amplifying said alternating electrical current signal only when said frequency of the sensed radiation is less than about 2,000 hertz, thereby producing an amplified signal;

first rectification means, coupled to said coil means, for rectifying said alternating electrical current signal only when said frequency of the sensed radiation is greater than about 2,000 hertz, thereby for producing a first direct current signal;

second rectification means, coupled to said amplifier means, for rectifying said amplified signal, thereby producing a second direct current signal;

summing means, coupled to said first and second rectification measure, for summing said first and second direct current signals, thereby producing a summed signal;

comparator means, coupled to said summing means, for comparing said summed signal to predetermined value and for producing a comparison output signal only when said summed signal exceeds said predetermined value;

first multi-vibrator means, coupled to said comparator means, for selectively producing a visual alarm signal only when said comparison output signal is produced by said comparator means; and

second multi-vibrator means, coupled to said first multi-vibrator means, for selectively producing an audible alarm signal a predetermined time after said visual alarm signal is produced, thereby cooperating with said first multi-vibrator means to provide a warning of said presence of said radiation.

5,311,131

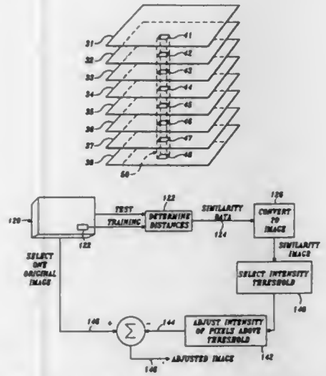
MAGNETIC RESONANCE IMAGING USING PATTERN RECOGNITION

Justin P. Smith, Kirkland, Wash., assignor to Board of Regents of the University of Washington, Seattle, Wash.

Filed May 15, 1992, Ser. No. 883,565

Int. Cl.[5] **G01V** *3/00*

U.S. Cl. 324—309 **18 Claims**



1. A method of using magnetic resonance imaging (MRI) to produce an image of a body, the method comprising the steps of:

using an MRI apparatus to produce a training set comprising one or more training samples, the training set being formed from a plurality of congruent first images of a training region of the body, each first image being produced using an MRI pulse sequence different from the pulse sequences used to produce the other first images, each first image comprising an array of pixels, each training sample comprising a spatially aligned set of pixels from each first image;

using an MRI apparatus to produce a test set comprising a plurality of test samples, the test set being formed from a plurality of congruent second images of a test region of the same body, the second images being produced using the same MRI pulse sequences as the first images, each second image comprising an array of pixels, each test sample comprising a spatially aligned set of pixels from each second image;

producing similarty data indicating, for each test sample, the degree of similarity between the test sample and the training samples; and

producing a display based upon the similarity data.

5,311,132

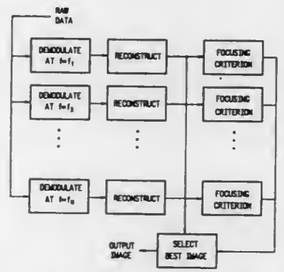
METHOD OF ENHANCING THE FOCUS OF MAGNETIC RESONANCE IMAGES

Douglas C. Noll, Pittsburgh, Pa.; John M. Pauly, and Albert Macovski, both of Menlo Park, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 28, 1992, Ser. No. 920,959

Int. Cl.[5] **G01R** *33/20*

U.S. Cl. 324—309 **19 Claims**



1. A method of enhancing the focus of a magnetic resonance image (MRI) of a body comprising:

(a) placing a body in a magnetic field (B_0),

(b) applying a RF excitation pulse (B_1) to said body,

(c) detecting resultant signals from said body,

(d) demodulating said resultant signals at a plurality of frequencies to obtain MRI signals $I_i(x,y)$,

(e) applying a focusing criterion to said MRI signals to obtain focusing measures $S_i(x,y)$,

(f) comparing said focusing measures for said MRI signals at said plurality of frequencies, and

(g) selecting an MRI signal based on said focusing measures.

5,311,133

CONCURRENT GENERATION OF MULTIPLE IMAGES IN FAST (TR<T2) SCANNING SEQUENCES

Wayne R. Dannels, Richmond Heights, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Filed Oct. 5, 1992, Ser. No. 957,616

Int. Cl.[5] **G01V** *3/00*

U.S. Cl. 324—309 **22 Claims**

1. A method of generating at least one image representation from first and prior generation magnetic resonance data, the method comprising:

a) in the presence of a phase encoded, prior generation magnetic resonance component from a preceding repetition, exciting a first generation magnetic resonance component;

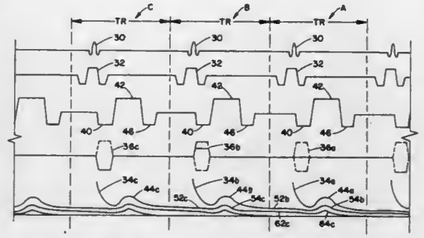
b) applying a phase encoding gradient to phase encode the first generation magnetic resonance component and modify the phase encoding of the prior generation magnetic resonance component;

c) sampling a composite magnetic resonance signal which is a superimposition of at least the first and prior generation magnetic resonance components;

d) allowing at least the phase encoded first generation component to persist into a subsequent repetition as a phase encoded prior generation magnetic resonance component;

e) repeating steps (a)–(d) with each of a plurality of phase encode gradients;

f) assembling the sampled composite data lines into a first generation data set in which the composite data lines are organized in accordance with the phase encoding of the first generation magnetic resonance component;



g) assembling the sampled composite data lines into a prior generation magnetic resonance data set in which the composite data lines are organized in accordance with the phase encoding of the prior generation magnetic resonance component;

h) from the prior generation magnetic resonance data set, estimating a contribution of the prior generation magnetic resonance components to the first generation data set and correcting the first generation data set with the estimated contribution;

i) reconstructing a first generation image representation from the corrected first generation data set.

5,311,134

MAGNETIC RESONANCE IMAGING SYSTEM

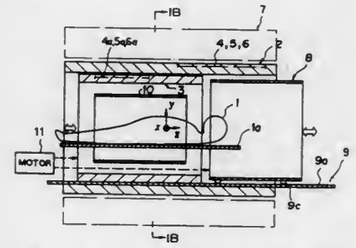
Hitoshi Yamagata; Masafumi Kondo, both of Otawara, and Fumikazu Takahashi, Nasu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 18, 1992, Ser. No. 931,692

Claims priority, application Japan, Feb. 21, 1992, 4-35247

Int. Cl.[5] **G01V** *3/00*

U.S. Cl. 324—318 **19 Claims**



1. An MR imaging system for forming image of sample using a nuclear magnetic resonance, comprising:

a magnet for applying a static magnetic field to the sample;

a first gradient coil means for providing magnetic gradients in a readout direction, a phase-encoding direction and a slice-selecting direction which are superimposed on the static magnetic field, said first gradient coil means being provided between the sample and said magnet and com-

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prises three gradient coils for providing the magnetic gradients;

a first RF coil means for transmitting an RF pulse to the sample and receiving a nuclear resonace from the sample, said first RF coil means being provided between the sample and said first gradient coil means;

a second gradient coil means for providing at least a magnetic gradient in a readout direction which is superimposed on the static magnetic field, said second gradient coil means being located between the sample and said first gradient coil means and comprises at least one gradient coil for providing the magnetic gradient;

a second RF coil means for transmitting an RF pulse to the sample and receiving a nuclear resonace from the sample, said second RF coil means being provided between the sample and said second gradient coil means; and

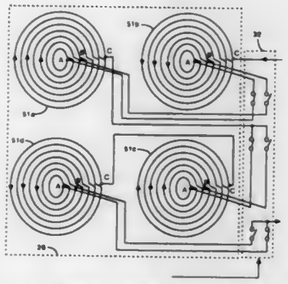
a selection means for alternatively selecting one of a first operating mode in which at least said first gradient coil means and said first RF coil means are operated and a second operating mode in which at least said second gradient coil means and said second RF coil means are operated.

5,311,135

MULTIPLE TAP GRADIENT FIELD COIL FOR MAGNETIC RESONANCE IMAGING

Robert M. Vavrek, Waukesha, and Christopher C. Myers, Milwaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 11, 1992, Ser. No. 988,986
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **11 Claims**



1. In an NMR imaging system, an apparatus for producing a magnetic field gradient comprising:

a source of a gradient signal;

a coil located to establish a magnetic field gradient within an imaging volume, said coil having three termination points; and

a switch mechanism for connecting said coil to the source of a gradient signal, so that voltage from the gradient signal can be applied between different pair combinations of the three termination points.

5,311,136

GRADIENT POWER SOURCE APPARATUS FOR MAGNETIC RESONANCE IMAGING SYSTEM

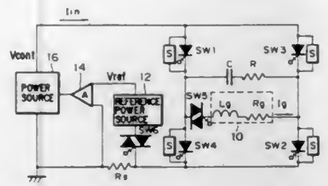
Fumikazu Takahashi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 25, 1992, Ser. No. 981,597
Claims priority, application Japan, Nov. 28, 1991, 3-314833
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—322 **18 Claims**

1. A gradient power source apparatus for use with gradient coil means used in magnetic resonance imaging apparatus to cause said gradient coil means to produce a gradient magnetic field, comprising:

capacitor means, connected in parallel with said gradient coil means, for forming a resonance circuit with said gradient coil means;

switching devices connected together to form a bridge circuit which is connected between a power supply terminal and said gradient coil means, said bridge circuit having



two nodes, said capacitor means and said gradient coil means connected between the same two nodes of said bridge circuit; and

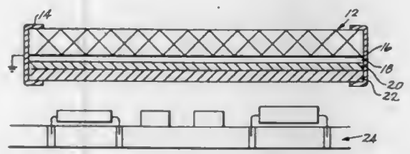
control means for controlling said switching devices to thereby control a current supplied to said gradient coil means, said control means including means for bringing said resonance circuit to resonance to thereby reverse a current flowing through said gradient coil means.

5,311,137

LIQUID CRYSTAL ELECTRIC FIELD TESTER FOR CIRCUIT BOARDS

David B. Chang, Tustin; Slava A. Pollack, Palos Verdes Estate; James Drummond, Oceanside, and Michael F. Berg, Indio Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 833,564, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 427,395, Oct. 27, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 8,230
Int. Cl.[5] G01R *31/00, 31/302;* G02F *1/13*
U.S. Cl. 324—501 **16 Claims**



1. A device for detecting faults in a printed circuit board, comprising;

a transparent cover plate;

a liquid crystal film for attenuating incident light in a pattern indicative of the faults during operation of the printed circuit board;

a sheet of high permittivity dielectric material underlying the liquid crystal film for separating the liquid crystal film from the circuit board, the high permittivity dielectric material being of such thickness and having such permittivity that it permits the electric fields created by the operation of the printed circuit board to reach the liquid crystal film without signficant attenuation of field strength; and

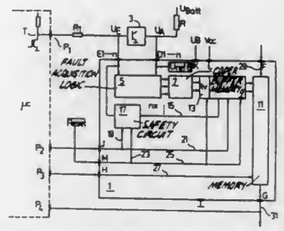
means for holding the transparent cover plate, sheet of high permittivity dielectric material and the liquid crystal film in stacked relation to each other.

5,311,138

DEVICE FOR MONITORING THE FUNCTON OF AN ELECTRIC LOAD, ITS DRIVE AND THE ASSOCIATED CONNECTIONS

Karl Ott, Markgröningen; Rudi Mayer, Vaibingen/Enz; Helmut Denz; Hans-Peter Ströbele, both of Stuttgart; Reinhard Palesch, Eberdingen-Hochdorf, and Jürgen Eckhardt, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00255, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO91/16637, PCT Pub. Date Oct. 31, 1991
PCT Filed Mar. 22, 1991, Ser. No. 778,172
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1990, 4012109
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—503 **11 Claims**



1. Circuitry for monitoring the function of an electric/electronic circuit, the electric/electronic circuit including an electric load, at least one output stage, a connecting line that connects the output stage to the electric load, and a control circuit that connects to the output stage, comprising:

(A) at least one fault acquisition logic circuit that is connected in parallel with the output stage, the fault acquisition logic circuit being for detecting the occurrence of fault conditions including a short circuiting of the load, a short circuiting of the output stage, and an interruption in the connecting line, the fault acquisition logic circuit further comprising,

(1) a first terminal connected to an input potential of the output stage,

(2) a second terminal connected to an output potential of the output stage,

(3) means for applying a reference potential at a predetermined level to at least one of the first and second terminals for distinguishing between a short circuiting of the output stage and an interruption in the connecting line, and

(4) comparator means for comparing at least one preselected threshold potential and potentials associated with the output stage; and

(B) storage means for storing signals indicative of detected fault conditions.

5,311,139

FUSE CHECKER FOR TESTING INTEGRITY OF A MINIATURE, PLUG-IN FUSE WHILE THE FUSE IS INSTALLED IN AN ELECTRICAL CIRCUIT

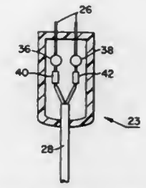
William J. Fogal, 233 Bobby Jones Expry., Martinez, Ga. 30907

Filed Jun. 11, 1992, Ser. No. 897,068
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—550 **7 Claims**

1. A fuse checker for testing the integrity of a miniature, plug-in fuse while the fuse is in operative position in a direct current electrical circuit, said checker comprising:

(a) a fuse checker housing including a pair of outwardly extending fuse terminal contacts that are each receivable in a respective one of a pair of spaced recesses formed in a fuse housing of a miniature, plug-in fuse for making electrical contact with respective end portions of a fuse-forming link extending between and connected with a pair of fuse terminals extending from the fuse housing, wherein the fuse terminal contacts are spaced from each other a distance corresponding with the spacing between the recesses in the fuse housing and wherein the fuse terminal contacts each are of a size to permit each terminal contact to be received in a respective one of the recesses in the fuse housing and to be electrically connected with the respective end portions of the fuse-forming link;

(b) a pair of light sources carried by the fuse checker housing, and a current limiting resistor connected in series with each of the light sources, wherein each light source is a light emitting diode that includes a pair of terminals, a first terminal of each light emitting diode electrically connected with a respective one of said fuse terminal contacts; and



(c) a ground contact extending form the fuse checker housing and electrically connected with a second terminal of each of the light emitting diode light sources through its associated resistor for completing a unidirectional electrical flow path through the respective light sources from the respective fuse terminal contacts to a ground connection of a circuit including the fuse-forming link to be integrity tested for indicating the operative condition of a fuse, wherein upon energizing the circuit that includes the fuse-forming link to be integrity tested both light emitting diode light sources emit light when the fuse-forming link is intact, and wherein only one of the light emitting diode light sources emits light when the fuse-forming link has been severed, to visually indicate the operative condition of the fuse while the fuse is in an operative position in the circuit.

5,311,140

CIRCUIT FOR MEASURING VARIATIONS IN THE CAPACITANCE OF A VARIABLE CAPACITOR USING A CONTINUOUSLY REBALANCED DETECTION BRIDGE

Alfred Permuy, Paris, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, France

PCT No. PCT/FR90/00961, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO91/09812, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 28, 1990, Ser. No. 924,049
Claims priority, application France, Dec. 29, 1989, 89 17551
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—680 **14 Claims**

1. A circuit for measuring variations in the capacitance of a variable capacitor, wherein the circuit comprises:

an oscillator generating an alternating signal;

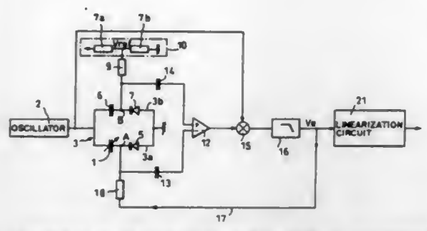
a detection bridge comprising first and second branches connected to the oscillator, the first branch including the variable capacitor connected in series with a variable capacitance diode, while the second branch comprises a capacitor connected in series with a variable capacitance diode;

a differential stage having its inputs connected to respective ones of the branches at their common points between their capacitors and their variable capacitance diodes;

a DC bias circuit for biasing the common point of the second branch;

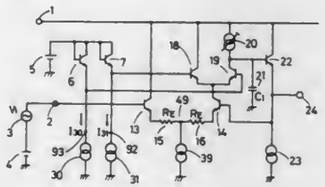
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synchronous demodulation means following the differential stage and connected to the oscillator for delivering a DC unbalance signal; and



a feedback line injecting the unbalance signal to the common point of the first branch to continuously rebalance the detection bridge.

5,311,141
ACTIVE FILTER CIRCUIT
Takehiko Umeyama, and Yasunori Sakaguchi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 26, 1992, Ser. No. 903,965
Claims priority, application Japan, Nov. 29, 1991, 3-316034
Int. Cl.[5] H03F *1/32*; H03K *5/00*
U.S. Cl. 328—167 **30 Claims**

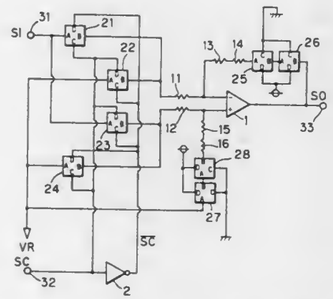


1. An active filter circuit comprising:
a voltage-current converting circuit having a variable gain and having a positive input end, a negative input end and an output end;
a first input terminal connected to said positive input end;
a buffer circuit having an input end connected to said output end of said voltage-current converting circuit, and an output end;
a first capacitor having a first end connected to said input end of said buffer circuit and a second end, and having a first capacity;
a second input terminal connected to said second end of said first capacitor;
an output terminal connected in common to said output end of said buffer circuit and said negative input end of said voltage-current converting circuit;
said voltage-current converting circuit including a first current source with two output ends leading first and second currents, a second current source producing a third current, and a pair of first internal resistors having a first resistance value;
said first current source including a first compensating current source circuit and a second compensating current source circuit;
said first compensating current source circuit including a second capacitor with a second capacity to produce a first compensating current in proportion to said second capacity;
said second compensating current source circuit including a second internal resistor with a second resistance value to produce a second compensating current in inverse proportion to said second resistance value;
said first current being in proportion to said first compensating current;
said second current being in proportion to a difference between a current in proportion to said first compensating current and a current in proportion to said second compensating current;
said second current source including a third internal resistor with a third resistance value to produce a third current which is in proportion to an inverse number of said third resistance value and in proportion to said ambient temperature converted into an absolute temperature;
an active load;
a differential amplifier connected to said active load; and
first and second current drive transistors;
said active load including first and second transistors and a third current source;
said first transistor having a control electrode connected to a first one of said output ends to lead said first current in said first current source, a first current electrode connected to said first potential point and a second current electrode;
said second transistor having a control electrode connect to a second one of said output ends to lead said second current in said first current source, a first current electrode connected through said fourth current source to said first potential point and connected to said output end of said voltage-current converting circuit, and a second current electrode;
said third current source producing a dc component of the current lead by said second current electrode in said second transistor;
said differential amplifier including third and fourth transistors;
said third transistor having a control electrode connected to said positive input end, a first current electrode connected to said first potential point, and a second current electrode connected through a first one of said first internal resistors to a first end of said second current source;
said fourth transistor having a control electrode connected to said negative input end, a first current electrode connected in common to said second current electrodes of said first and second transistors, and a second current electrode connected through a second one of said first internal resistors to said first end of said second current source;
said first current drive transistor having a control electrode and a first current electrode connected with each other, and a second current electrode connected to said first output end of said first current source to lead said first current;
said second current drive transistor having a control electrode and a first current electrode connected with each other, and a second current electrode connected to said second output end of said first current source to lead said first current; and
said second current source having a second end connected to said second potential point.

5,311,142
AMPLIFIER CIRCUIT WITH GAIN THAT DOES NOT VARY WITH POWER SUPPLY FLUCTUATIONS
Hideyuki Terane, and Hiroyuki Sugino, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 994,911
Claims priority, application Japan, Jan. 6, 1992, 4-000218
Int. Cl.[5] H03F *3/38*; H03K *7/02*
U.S. Cl. 330—10 **9 Claims**

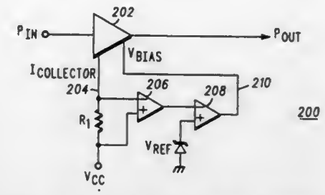
1. An amplifier circuit comprising:
a signal input terminal receiving an input signal,
a control signal input terminal receiving a control signal,

a reference voltage source for providing a reference voltage of a predetermined level,
a signal output terminal,
an operational amplifier having positive and negative inputs and an output connected to said signal output terminal,
a first resistor portion connected to said negative input of said operational amplifier,
a second resistor portion connected to said positive input of said operational amplifier,
a first switch provided between said signal input terminal and said first resistor portion for turning itself on and off as a function of said control signal,
a second switch provided between said reference voltage source and said first resistor portion for turning itself on and off as a function of said control signal,
a third switch provided between said signal input terminal and said second resistor portion for turning itself on and off as a function of said control signal,
a fourth switch provided between said reference voltage source and said second resistor portion for turning itself on and off as a function of said control signal, said first to fourth switches having the same internal construction, said control signal being applied to said first to fourth switches such that the ON/OFF state of said first and fourth switches is constantly opposite to that of said second and third switches,



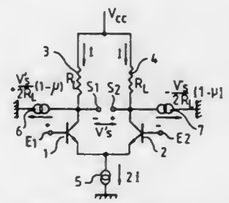
a third resistor portion provided in a feedback path from said output of said operational amplifier to said negative input thereof, the resistance ratio of said third resistor portion to said first resistor portion being N where N is a natural number;
a first corrective switch portion including corrective switches connected in said N-number in series and connected in series with said third resistor portion in said feedback path, said N-number of corrective switches having the same internal construction as said first to fourth switches and being constantly set to an ON-state under the same conditions as said first to fourth switches in the ON-state,
a fourth resistor portion provided in a reference voltage positive input path from said positive input of said operational amplifier to said reference voltage source, the resistance ratio of said fourth resistor portion to said second resistor portion being M where M is a natural number, and
a second corrective switch portion including corrective switches connected in said M-number in series and connected in series with said fourth resistor portion in said reference voltage positive input path, said M-number of corrective switches having the same internal construction as said first to fourth switches and being constantly set to the ON-state under the same conditions as said first to fourth switches in the ON-state.

5,311,143
RF AMPLIFIER BIAS CONTROL METHOD AND APPARATUS
John L. Soliday, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 2, 1992, Ser. No. 908,144
Int. Cl.[5] H03G *3/20*
U.S. Cl. 330—127 **9 Claims**



1. A bias control circuit for use with an RF amplifier having an input, an output, a supply voltage and a plurality of operating performance characteristics responsive to a quiescent operating point established by the RF amplifier bias current, said circuit comprising:
means, coupled to the RF amplifier, for detecting a DC current drawn by the RF amplifier from the supply voltage; and
means, coupled to the detecting means, and the RF amplifier, for adjusting the RF amplifier bias current as a function of the detected DC current, to control the RF amplifier's quiescent operating point and thereby optimize the RF amplifier's operation for selected operating performance characteristics.

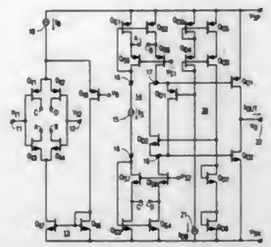
5,311,144
ULTRA-FAST DIFFERENTIAL AMPLIFIER
Jean-Charles Grasset, Fontaine, France, assignor to Thomson Composants Militaires et Spatiaux, Courbevoie, France
Filed Nov. 20, 1992, Ser. No. 979,267
Claims priority, application France, Nov. 22, 1991, 91 14406
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **8 Claims**



1. A high-gain differential amplifier comprising: two parallel channels, each parallel channel comprising:
at least one semiconductor device;
a load resistor connected to the at least one semiconductor device;
a current generator for drawing current through the load resistor of each channel, the current generator being connected between a voltage source and a point common to the at least one semiconductor device and load resistor;
wherein said current generators of the two parallel channels constitute a transconductance amplifier controlled by a differential voltage flowing through the load resistors of the two parallel channels.

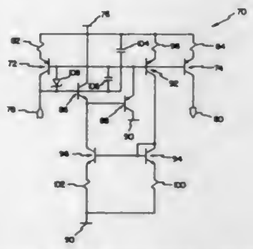
VOL 1162 ISS 2 MY 10 1994 UMI

5,311,145
COMBINATION DRIVER-SUMMING CIRCUIT FOR RAIL-TO-RAIL DIFFERENTIAL AMPLIFIER
Johan H. Huijsing, Schipluiden, Netherlands, and John P. Tero, Saratoga, Calif., assignors to North American Philips Corporation, New York, N.Y.
Filed Mar. 25, 1993, Ser. No. 36,774
Int. Cl.[5] H03F *3/45, 3/18*
U.S. Cl. 330—255 **17 Claims**



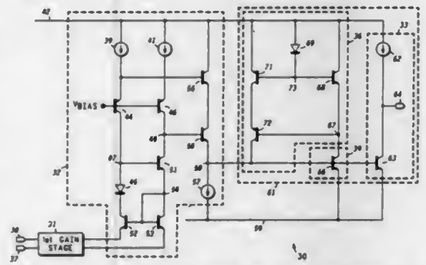
1. A differential amplifier with rail-to-rail common-mode range comprising:
a positive supply voltage rail,
a negative supply voltage rail,
first and second amplifier input terminals for receiving a signal to be amplified,
differential amplifier means comprising input means coupled to said first and second amplifier input terminals, output means, a first pair of transistors connected as a first differential amplifier to said positive supply voltage rail via a first current source, and a second pair of transistors connected as a second differential amplifier to said negative supply voltage rail via a second current source,
a current summing circuit coupled to the output means of the differential amplifier means,
a driver/output stage including first and second output transistors coupled to signal output terminal and having input means coupled to the current summing circuit, and
a floating current source coupled to said summing circuit in a manner so as to control and to maintain a constant quiescent bias current in the output transistors.

5,311,146
CURRENT MIRROR FOR LOW SUPPLY VOLTAGE OPERATION
Craig M. Brannon, St. Louis Park; Tuan V. Ngo, Eden Prairie, and John J. Price, Jr., Edina, all of Minn., assignors to VTC Inc., Bloomington, Minn.
Filed Jan. 26, 1993, Ser. No. 9,287
Int. Cl.[5] H03F *3/04*
U.S. Cl. 330—288 **25 Claims**



1. An improved current mirror circuit comprising:
an input terminal having an input current and an input voltage associated therewith;
an output terminal having an output current associated therewith;
first and second supply terminals;
first and second transistors of the same conductivity type having bases connected together with the first transistor being connected between the first supply terminal and the input terminals, and with the second transistor being connected between the first supply terminal and the output terminal;
feedback means including third and fourth transistors of different conductivity types connected between the input terminals and the bases of the first and second transistors for providing feedback therebetween; and
bias current means responsive to the input current for providing bias current to the feedback means based on the input current.

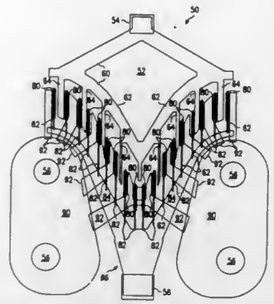
5,311,147
HIGH IMPEDANCE OUTPUT DRIVER STAGE AND METHOD THEREFOR
Thomas D. Petty, and Robert L. Vyne, both of Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed Oct. 26, 1992, Ser. No. 966,486
Int. Cl.[5] H03F *1/34*
U.S. Cl. 330—290 **19 Claims**



1. An output driver stage having an input responsive to an input signal and an output for providing an output current, comprising:
an output stage having an input coupled to the input of the output driver stage and an output for providing the output current;
a sense circuit having an input coupled to the input of the output driver stage and an output for providing a current proportional to the output current; and
a current source having an input coupled to said output of said sense circuit and an output for providing a current to the input of the output driver stage.

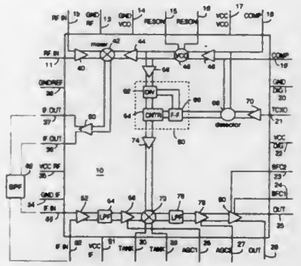
5,311,148
THERMALLY OPTIMIZED INTERDIGITATED TRANSISTOR
Samuel D. Pritchett, Flower Mound, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 608,119, Nov. 1, 1990, Pat. No. 5,210,596, which is a continuation of Ser. No. 374,422, Jun. 30, 1989, abandoned. This application Jan. 14, 1993, Ser. No. 4,373
Int. Cl.[5] H03F *3/14*
U.S. Cl. 330—295 **20 Claims**

1. A method of transmitting a high frequency signal comprising the steps of:
(a) providing an active semiconductor device having a plurality of active semiconductor element sections, each of said element sections having a heat producing region, a small input region and an output region, adjacent ones of said element sections being spaced apart in a first direction and offset in a second direction substantially perpendicular to said first direction, the magnitude of the offset being preselected as a function of said spacing;
(b) coupling a single high frequency signal to said input regions of each of said active semiconductor element sections;



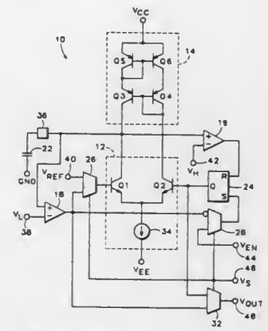
(c) altering said high frequency signal in each of said active semiconductor element sections; and
(d) coupling together said output regions of each of said active semiconductor element sections such that the active semiconductor element sections operate as a plurality of parallel components and sum the output of each of said active semiconductor element regions in-phase at said coupled together output regions.

5,311,149
INTEGRATED PHASE LOCKED LOOP LOCAL OSCILLATOR
Gary L. Wagner, Menlo Park; Chung Y. Lau, Sunnyvale, and Reed A. Parker, Saratoga, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.
Filed Mar. 12, 1993, Ser. No. 30,678
Int. Cl.[5] H03B *5/12*; H03L *7/08*; H04B *1/28*
U.S. Cl. 331—1 A **9 Claims**



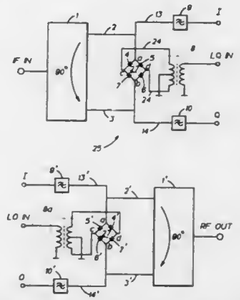
1. A dual-conversion super heterodyne receiver integrated circuit device, comprising:
a radio frequency (RF) amplifier with selection means for receiving a first frequency (F1) carrier signal and a second frequency (F2) carrier signal;
a voltage controlled oscillator (VCO) for providing a first local oscillator (LO1) signal having a frequency of approximately (F1+F2) divided by two;
a first mixer having inputs connected to respective outputs of the RF amplifier and the VCO and an output for a first intermediate frequency signal;
frequency division means connected to an output of the VCO in a phase locked loop configuration and connected to derive a second local oscillator (LO2) signal from LO1 such that LO1 divided by LO2 equals "N.5", where "N" is a positive integer; and
a second mixer having inputs derived from respective outputs of the first mixer and the frequency division means and an output for a second intermediate frequency signal.

5,311,150
CONVERTIBLE OSCILLATOR CIRCUIT
Michael R. Engbretson, and Garry N. Link, both of Aloha, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Sep. 18, 1992, Ser. No. 947,200
Int. Cl.[5] H03K *3/26*; H03B *5/24*
U.S. Cl. 331—59 **23 Claims**



1. A circuit (10) comprising.
a capacitor (22); and
current means (12, 14, 16, 18, 24, 26, 28) having a current output node coupled to the capacitor for linearly charging and discharging the capacitor once in a first operational mode, and for continually charging and discharging the capacitor in a second operational mode,
wherein the charging current is redirected within the current means to provide the discharging current.

5,311,151
I/Q MODULATOR AND DEMODULATOR HAVING A SINGLE BRIDGE
Risto Väisänen, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Nov. 25, 1992, Ser. No. 982,375
Claims priority, application Finland, Dec. 13, 1991, 915892
Int. Cl.[5] H03C *3/00*; H03D *3/00*
U.S. Cl. 332—105 **18 Claims**



1. Modulator circuitry comprising mixing means, said mix-

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ing means comprising bridge means for mixing an inphase (I) signal and a quadrature (Q) signal respectively with a local oscillator signal to produce a first mixed signal and a second mixed signal, means for inducing a substantially 90° phase shift in the first mixed signal, means for combining the first mixed signal after phase shifting with the second mixed signal to produce an output signal,

characterized in that the in-phase (I) signal and the quadrature (Q) signal are applied to different terminals of a single bridge, and the local oscillator signal is applied to other of the terminals of said single bridge.

5,311,152

PHASE LOCKED LOOP WITH D.C. MODULATION

Lloyd L. Lautzenhiser, Nobel, Canada, assignor to Embiser Research Limited, Ontario, Canada

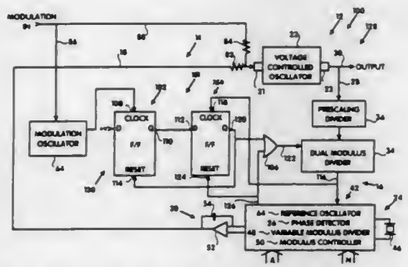
PCT No. PCT/US91/03602, § 371 Date Aug. 31, 1992, § 102(e) Date Aug. 31, 1992, PCT Pub. No. WO91/18444, PCT Pub. Date Nov. 28, 1991

PCT Filed May 22, 1991, Ser. No. 916,999

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] H03C *3/09;* **H03L** *7/197*

U.S. Cl. 332—127 **36 Claims**



18. A method for producing a phase locked output that is D.C. modulated, which method comprises providing an input frequency, using said input frequency to generate an output frequency, using said output frequency to provide a feedback frequency, comparing said feedback frequency with said input frequency, and using said comparison to phase lock said output frequency to said input frequency, the improvement which is characterized by:

a) accessing a modulation frequency;

b) using said modulation frequency to D.C. modulate said feedback frequency; and

c) changing said output frequency as an exact mathematical function of said modulation frequency.

5,311,153

INTEGRATED WAVEGUIDE/STRIPLINE TRANSITION

James C. Lau, Torrance; Richard P. Malmgren, Rancho Dominguez, and Kenneth Lui, Fountain Valley, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jul. 17, 1992, Ser. No. 917,633

Int. Cl.[5] H03H *5/00*

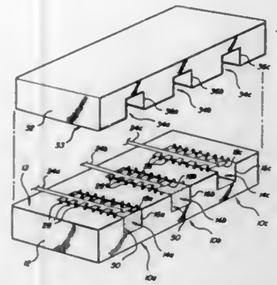
U.S. Cl. 333—26 **20 Claims**

1. A high frequency signal transition structure comprising:

a waveguide having a conductive cavity with conductive inner walls for guiding electromagnetic waves therethrough;

a first conductive signal layer suspended within said conductive cavity and electrically connected thereto; and

a second conductive signal layer extending into said conductive cavity and isolated from the conductive inner walls of the conductive cavity and said first conductive layer so as



to form a coupling between said first conductive signal layer and said waveguide.

5,311,154

WAVEGUIDE CONVERTER FOR TRANSMITTING INPUT RADIO WAVE WITH PROCEEDING DIRECTION THEREOF CHANGED TO WAVEGUIDE PATH

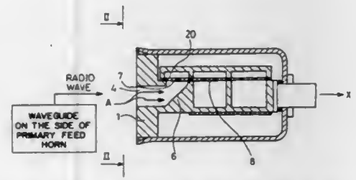
Makoto Hirota, Kobe, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1992, Ser. No. 950,704

Claims priority, application Japan, Sep. 27, 1991, 3-276983

Int. Cl.[5] H01P *5/107*

U.S. Cl. 333—26 **11 Claims**



1. A waveguide converter for transmitting a radio wave input through a waveguide of a primary feed horn to a microstrip line, comprising changing means for changing a proceeding direction of the input radio wave and coupling the input radio wave with its proceeding direction changed to said microstrip line,

said changing means changing the direction of the input radio wave so that the direction of the electric field of the input radio wave is parallel with the direction of said microstrip line.

5,311,155

METHOD AND APPARATUS FOR IMPARTING A LINEAR FREQUENCY RESPONSE TO A SIGNAL

James R. Blodgett, Derry, N.H., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 10, 1993, Ser. No. 59,798

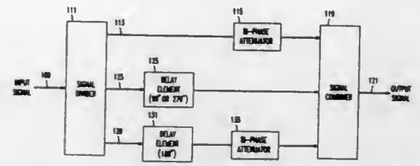
Int. Cl.[5] H03H *7/03, 7/18*

U.S. Cl. 333—28 R **8 Claims**

1. An apparatus for processing an input signal comprising a sinusoidal component at ω_0 radians per second, said apparatus comprising:

a signal divider (**111**) for creating a first signal based on said input signal, for putting said first signal onto a first signal path (**113**), for creating a second signal based on said input signal, for putting said second signal onto a second signal path (**123**), for creating a third signal based on said input signal, and for putting said third signal onto a third signal path (**129**);

a signal combiner (**119**) for receiving said first signal from said first signal path (**113**), said second signal from said second signal path (**123**), and said third signal from said



third signal path (**129**), and for creating an output signal based on the sum of said first signal, said second signal, and said third signal;

a first delay element (**125**) in said second signal path (**123**) for making said second signal path (**123**) substantially close to

$$\frac{2N+1}{8\pi\omega_0}$$

seconds longer than said first signal path (**113**), where N is an integer; and

a second delay element (**131**) in said third signal path (**129**) for making said third signal path (**129**) substantially close to

$$\frac{2N+1}{4\pi\omega_0}$$

seconds longer than said first signal path (**113**).

5,311,156

HIGH FREQUENCY DOUBLE POLE DOUBLE THROW SWITCH

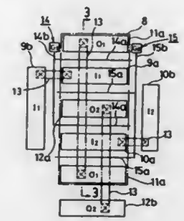
Naoto Andoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,172

Claims priority, application Japan, Apr. 22, 1992, 4-130235

Int. Cl.[5] H01P *1/10, 5/12*

U.S. Cl. 333—103 **16 Claims**



1. A high frequency double pole double throw switch for receiving two different input signals at first and second input signal lines, respectively, and for switchingly outputting the two input signals from first and second output signal lines or from second and first output signal lines, respectively, comprising:

a semiconductor substrate including an active region;

first and second output signal electrodes disposed opposite each other in said active region and connected respectively to first and second output signal lines;

a third output signal electrode disposed opposite the second output signal electrode so that the second output signal electrode is disposed between the first and third output signal electrodes in the active region and connected to at least one of the first output signal line and the first output signal electrode;

first and second input signal electrodes disposed respectively between the first output signal electrode and the second output signal electrode and between the second output signal electrode and the third output signal electrode and connected respectively to first and second input signal lines;

a first control signal electrode disposed between the first input signal electrode and the first output signal electrode and between the second input signal electrode and the second output signal electrode for switching input signals from the first and second input signal electrodes to the first and second output signal electrodes; and

a second control signal electrode disposed between the first input signal electrode and the second output signal electrode and between the second input signal electrode and the third output signal electrode for switching input signals from the first and second input signal electrodes to the second and third output signal electrodes.

5,311,157

SYSTEM FOR FILTERING SIGNALS OF HIGH AND LOW FREQUENCY BANDS, AND RELEVANT IMPLEMENTATION DEVICE

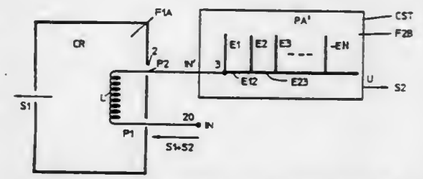
Enzo C. D'Oro, Monza, and Mario Bandera, Carnate, both of Italy, assignors to Forem S.p.A., Brianza, Italy

Filed Dec. 20, 1991, Ser. No. 811,713

Claims priority, application Italy, Dec. 28, 1990, 22558 A/90

Int. Cl.[5] H01P *1/213*

U.S. Cl. 333—132 **10 Claims**



1. A filtering system for separating two signals in difference frequency bands contained in a composite signal, a first one of the two signals to be separated being a low frequency signal in a frequency band extending from dc to 300 MHz, a second one of the two signals being a high frequency signal in a frequency band extending from 600 MHz to 15 GHz, said system comprising:

a high frequency filter for receiving the composite signal to be separated, the high frequency filter being non-capacitive and including an inductive element through which both the high frequency signal and the low frequency signal pass, the high frequency signal being coupled from said inductive element to a resonant element of the high frequency filter by mutual induction therebetween, such that only the low frequency signal is transmitted to a low-pass filter, thereby avoiding undesirable effects caused by the passage of the high frequency signal into said low-pass filter.

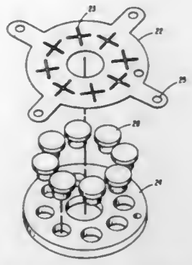
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5,311,158

HIGH POWER TUNING DEVICE USING LAYERED VARACTORS

Peter M. Asbeck, San Diego, Calif.; Richard C. Edwards, Cedar Rapids, Iowa; Garth D. Hammond, Cleveland, Wis., and Dale W. Penner, Cedar Rapids, Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 9, 1992, Ser. No. 911,551
Int. Cl.[5] H03H *7/00*
U.S. Cl. 333—174 **14 Claims**



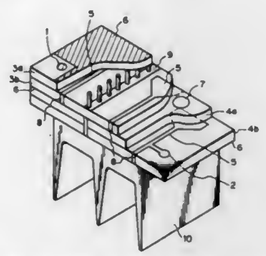
1. A varactor capacitor filter comprising:
a plurality of continuous layered varactor diode materials;
a plurality of choke devices; and
a packaging means;
wherein said packaging means serves to electrically couple said layered varactor diode materials and said choke devices to allow said varactor capacitor filter to operate at an RF voltage which is increased in proportionally to the number of varactor diode layers utilized.

5,311,159

BANDPASS TYPE FILTER HAVING TRI-PLATE LINE RESONATORS

Taro Miura, Tokyo; Tadao Fujii, and Shinya Nakai, both of Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

PCT No. PCT/JP91/01198, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/04741, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 9, 1991, Ser. No. 847,012
Claims priority, application Japan, Sep. 10, 1990, 2-237041; Apr. 12, 1991, 3-106355; Jun. 17, 1991, 3-170363
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—204 **34 Claims**



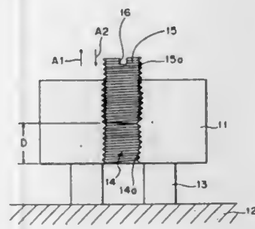
1. A bandpass type filter having a plurality of unit lamination structures in a piled structure, each of the plurality of unit lamination structures incorporates a first dielectric substrate provided with a bottom face to which a first ground conductor is attached, a circuit pattern face formed on a first top face of the first dielectric substrate, and a second dielectric substrate contacted to the first dielectric substrate via said circuit pattern face and provided with a second top face on which a second ground conductor is attached on,
said circuit pattern face having at least one resonance element formed therein with one end of the resonance element grounded to said first and second ground conductors, said filter comprising:
a coupling means for electromagnetically coupling between two resonance elements disposed in different unit lamination structures, said means being formed in corresponding dielectric substrates between said two resonance elements;
each of the unit lamination structures having a separator for electromagnetically separating said at least one resonance element therein and
first and second input/output terminals coupled with the circuit pattern face, said terminals being formed to couple with an external circuit.

5,311,160

MECHANISM FOR ADJUSTING RESONANCE FREQUENCY OF DIELECTRIC RESONATOR

Yukio Higuchi; Hirotsugu Abe, and Shigeyuki Mikami, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Oct. 29, 1992, Ser. No. 968,528
Claims priority, application Japan, Nov. 1, 1991, 3-090177[U]
Int. Cl.[5] H01P *7/10*
U.S. Cl. 333—219.1 **8 Claims**



1. A mechanism for adjusting the resonance frequency of a dielectric resonator comprising:
a dielectric resonator body having an axis wherein said dielectric resonator body having a TE_{01} mode as its operation mode under the presence of an electromagnetic field
a hole extending along said axis of said dielectric resonator, said hole being bounded by an internal wall of said dielectric resonator body;
a tuning bar having a peripheral surface, said tuning bar being composed entirely of dielectric material of a low loss, having a male screw thread formed on said peripheral surface; and
a female screw thread, to engage the male screw thread, formed on said internal wall bounding said hole,
wherein said tuning bar is movably supported for axial movement within said hole by engagement of said male screw thread with said female screw thread.

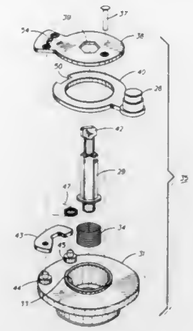
5,311,161

MOLDED CASE CIRCUIT BREAKER MOTOR OPERATOR INTERFACE ASSEMBLY

William H. Calder, Plainville, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Apr. 30, 1993, Ser. No. 54,628
Int. Cl.[5] H01H *3/60*
U.S. Cl. 335—68 **14 Claims**

1. A motor-controlled molded case circuit breaker comprising:
a circuit breaker having an operating mechanism arranged for turning the circuit breaker between ON and OFF conditions;
an externally accessible operating handle on said circuit breaker for interacting with said operating mechanism to reset said circuit breaker operating mechanism;
a motor operator having an electric motor and an interface unit for interacting with said operating mechanism to turn said circuit breaker between ON and OFF conditions, said interface unit comprising means releasably connecting said electric motor with said operating mechanism to allow translation of said operating handle independently from said electric motor and a shaft extending from said operating handle at one end to within a hub at an opposite end, said hub being adapted for connection with said operating mechanism;
a handle drive plate attached to said hub, said handle drive plate receiving said shaft and being shaped for rotating in unison with said shaft; and
a motor drive plate intermediate said handle drive plate and said hub, said motor drive plate including an actuator pin arranged for connection with a motor connector link.

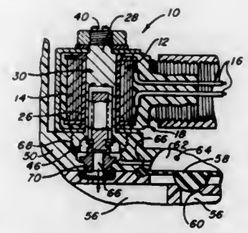


5,311,162

SOLENOID DEVICE

Dennis R. Sjoquist, Yorba Linda, and John A. Borger, Glendora, both of Calif., assignors to Evolutionary Concepts, Inc., Pomona, Calif.

Filed May 14, 1993, Ser. No. 61,438
Int. Cl.[5] H01F *7/08;* **F16K** *31/06*
U.S. Cl. 335—260 **15 Claims**



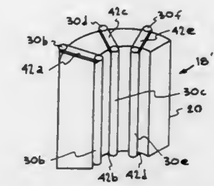
1. A solenoid device comprising:
a solenoid including a coil and a pair of electrical leads connected to said coil and having free ends,
a unitary homogeneous body of solidified plastic material including a first body portion of said plastic material encapsulating and sealed to said coil and a second body portion of said plastic material integral with said first body portion and encapsulating and sealed to said leads between said first body portion and a position spaced from said free ends of the leads, and wherein
said second body portion comprises an externally threaded mounting stem having an outer end, and
said leads extend axially through and beyond said outer end of said stem and have free end portions extending beyond said outer end of the stem for connection to an electrical energy source for energizing said coil.

5,311,163

ELECTRICALLY OPERATED MAGNETIC SWITCH DESIGNED TO DISPLAY REDUCED LEAKAGE INDUCTANCE

Edward G. Cook, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 22, 1986, Ser. No. 911,190
Int. Cl.[5] H02M *7/06*
U.S. Cl. 336—222 **7 Claims**



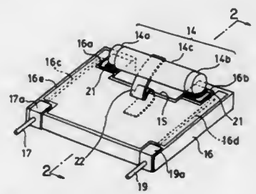
1. Am electrically operated magnetic switch, comprising a ferrite core of particular configuration and means defining at least one current flow path of particular configuration making at least one turn around said core, said switch providing alternatively opened and closed circuits between cooperating first and second terminals depending upon the voltage across said terminals, said current flow path defining means including at least one electrically conductive rigid rod on each of opposite sides of said core and means for electrically connecting said rods together so as to form said path, said core being in the shape of a toroid having opposite inner and outer sides serving as said opposite sides and said current flow path defining means including a greater number of said conductive rods on the outer side of said toroidal shaped core than on the inner side thereof.

5,311,164

SURGE ABSORBER

Fujio Ikeda, and Kazuyuki Arai, both of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 959,033
Claims priority, application Japan, Oct. 17, 1991, 3-298265
Int. Cl.[5] H01H *83/00;* **H02H** *9/04*
U.S. Cl. 337—28 **6 Claims**



1. A surge absorber comprising
a MELF surge absorbing element connectable across a pair of input lines of an electronic device and having a pair of electrodes for respective electrical connection to each of the input lines;

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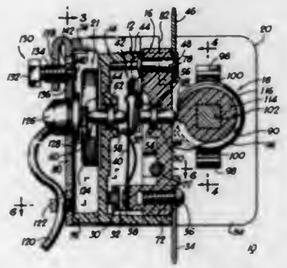
conductive, heat-releasable adhering means for securing the surge absorbing element in electrical contact with the input lines, which, upon warming of the surge absorbing element to a predetermined temperature, becomes non-adhering and releases the securement of the surge absorbing element;

spring means biased against the surge absorbing element for moving the surge absorbing element out of electrical contact with the input lines when the adhering means becomes non-adhering and releases the securement of the surge absorbing element; and a base having a flat surface and a slot in the surface for engaging a portion of the spring means, a pair of electrode connectors adapted for contacting each of the electrodes, respectively, the connectors being positioned on the surface and opposing each other across the slot, each of the electrodes being secured to a respective connector by the adhering means, the surge absorbing element being positioned so as to traverse the slot, the base having leads for electrically connecting each of the connectors to one of the respective input lines, and the spring means being positioned to engage the slot and the surge absorbing element and bias the element away from the base.

5,311,165
MODULAR ELECTRIC/GAS OVEN THERMOSTAT AND ASSEMBLY METHOD

Joseph C. Kadlubowski, Willowbrook, Ill., assignor to Harper-Wyman Company, Aurora, Ill.

Filed Apr. 21, 1993, Ser. No. 50,843
Int. Cl.[5] H01H *37/12*
U.S. Cl. 337—323 **9 Claims**



1. A thermostat for use with an oven of an electric or gas range comprising:

an enclosure;

a first electrical contact;

a second electrical contact; said first and second contacts disposed within said enclosure, and said first and second contacts having terminal blade portions extending outside said enclosure for electrical connections;

a switch spring arm disposed within said enclosure and having a fixed end coupled to said first electrical contact and a free end moved from a contacting position and a noncontacting position with said second electrical contact;

a pair of actuators disposed on opposite sides of said spring arm and being axially aligned for coupling forces to said switch spring arm;

said enclosure having axially aligned channels extending through opposed walls for slidably receiving said actuators;

a frame supporting said enclosure;

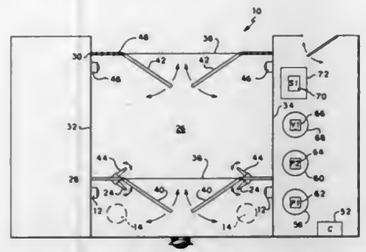
a temperature responsive subassembly supported by said frame including means for movement responsive to changes in oven temperature; said temperature responsive movement means being supported in operative position with respect to a first one of said pair of actuators; and

a spindle subassembly supported by said frame including means for movement responsive to manual rotation of a spindle; said spindle movement means being supported in operative position with respect to a second one of said pair of actuators.

5,311,166
SECURITY VESTIBULE

Filmore O. Frye, 42 W. Blaine St., McAdoo, Pa. 18237

Filed Aug. 18, 1992, Ser. No. 934,333
Int. Cl.[5] C08B *13/18, 15/00*
U.S. Cl. 340—541 **14 Claims**



1. A security system for a vestibule providing sequentially increasing deterrence to the unauthorized entry thereof and encouraging the exit thereof, the vestibule having an interior door, an exterior door, two side walls, and an interior defined by the interior door, the exterior door, and the side walls, said security system comprising:

first sensing means disposed externally relative to the exterior door and providing for the detection of a person approaching the exterior door;

at least one primary deterrent means disposed externally relative to the exterior door and providing a change in an environmental condition proximate the exterior door and deterring the presence of a person thereby;

second sensing means disposed within the interior of the vestibule and providing for the detection of a person within the interior of the vestibule;

at least one final deterrent means disposed within the interior of the vestibule and providing a change in an environmental condition within the interior of the vestibule and encouraging the departure of a person therefrom through the exterior door; and

control means communicating with said first sensing means, said at least one primary deterrent means, said second sensing means, and said at least one final deterrent means and providing for the sequential operation of said first sensing means, said at least one primary deterrent means, said second sensing means, and said at least one final deterrent means in that order, whereby;

actuation of said first sensing means by the presence of a person outside of the vestibule causes said control means to activate said at least one primary deterrent means, and actuation of said second sensing means by the presence of a person within the vestibule causes said control means to activate said at least one final deterrent means.

5,311,167
UV/IR FIRE DETECTOR WITH DUAL WAVELENGTH SENSING IR CHANNEL

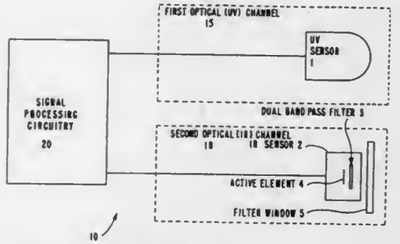
Jonathan C. Plimpton, Northfield, and George L. Minott, Wilton, both of N.H., assignors to Armtec Industries Inc., Manchester, N.H.

Filed Aug. 14, 1991, Ser. No. 745,017
Int. Cl.[5] G08B *17/12*
U.S. Cl. 340—578 **47 Claims**

1. A means for automatically detecting fires fueled by hydrocarbons and by certain non-organics, where the certain non-organics includes hydrogen, hydrazine, magnesium, aluminum, potassium, ammonia and silane, the means having a low incidence of false alarms from incident ultraviolet (UV) and infrared (IR) radiation emitted by non-fire radiation sources, comprising:

ultraviolet (UV) sensing means both for sensing UV wavelength radiation in a predetermined UV spectral region and for generating a first signal corresponding to the sensed UV radiation, said UV spectral region having a predetermined bandwidth selected such that said UV sensing means is both responsive to the incident UV radiation emitted by the fires fueled by the hydrocarbons and responsive to the incident UV radiation emitted by the fires fueled by the certain non-organics but non-responsive to both the incident UV radiation emitted by the sun and to the incident UV radiation emitted by the non-fire radiation sources having wavelength emissions greater than 275 nanometers;

infrared (IR) sensing means both for sensing IR radiation simultaneously in a first IR spectral region and a second IR spectral region and for generating a second signal



corresponding to the IR radiation sensed in at least one of said IR spectral regions, said first and second IR spectral regions each being defined by predetermined bandwidths that are separate and distinct from each other;

wherein the predetermined bandwidth for said first IR spectral region is selected such that said IR sensing means is both responsive to the incident IR radiation emitted from the fires fueled by the certain non-organics and responsive to the incident IR radiation emitted from the fires fueled by the hydrocarbons;

wherein the predetermined bandwidth for said second IR spectral region is selected such that said IR sensing means senses the incident IR radiation emitted from the fires fueled by the hydrocarbons;

wherein the predetermined bandwidths of said first and second spectral regions are also established such that said IR sensing means is essentially non-responsive to the incident IR radiation emitted by the sun; and

signal processing means both for processing the first signal from said UV sensing means and the second signal from said IR sensing means and for generating a fire signal when the processed first and second signals are indicative of a fire.

5,311,168
LOCK SET WITH SELF-CONTAINED DOOR ALARM AND ANNUNCIATOR SYSTEM

David H. Pease, Jr., Cincinnati, Ohio, and William W. Kling, Florence, Ky., assignors to Pease Industries, Inc., Fairfield, Ohio

Filed Sep. 10, 1992, Ser. No. 942,987
Int. Cl.[5] G08B *13/06, 13/08*
U.S. Cl. 340—542 **19 Claims**

1. A self-contained alarm/annunciator system for a door comprising, within a housing:

a dead-bolt mechanism with a dead-bolt adapted to be extended and retracted to lock and unlock the door;

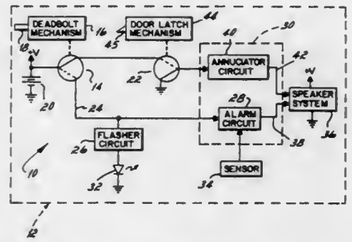
a door latch mechanism with a latch for opening the door when retracted;

means associated with the dead-bolt mechanism for providing an alarm enable signal when the dead-bolt is extended such as to lock the door;

means associated with the door latch mechanism for providing a door opening signal when the door latch is retracted such as to open the door;

sensor means for providing an alarm state signal in response to motion of the housing whereby to sense attempted entry through the door;

electric circuit means being in an alarm mode in response to the alarm enable signal and being in an annunciator mode



in the absence of the alarm enable signal, the electric circuit means operable in the alarm mode for providing an alarm-on signal in response to the alarm state signal and operable in the annunciator mode for providing an annunciator-on signal in response to the door opening signal;

means for providing a source of power to the electric circuit means;

speaker means responsive to the electric circuit means for providing an audible alarm sound in response to the alarm-on signal and an audible annunciator sound in response to the annunciator-on signal whereby to provide an alarm sound in response to motion of the locked door such as from attempted entry therethrough and an annunciator sound in response to attempted opening of the unlocked door.

5,311,169
METHOD AND APPARATUS FOR DRIVING CAPACITIVE DISPLAY DEVICE

Shuji Inada; Ikuo Ogawa; Toshihiro Ohba; Hiroshi Kishishita, all of Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 282,049, Dec. 9, 1988, abandoned. This application Jul. 26, 1991, Ser. No. 735,763
Claims priority, application Japan, Jun. 7, 1988, 63-139638; Jul. 2, 1988, 63-165561; Jul. 18, 1988, 63-179997; Jul. 18, 1988, 63-179998
Int. Cl.[5] C09G *3/30*
U.S. Cl. 340—781 **15 Claims**

1. A method for driving a capacitive display device, which includes a capacitive display layer sandwiched between a plurality of scanning electrodes and a plurality of data electrodes arranged in mutually intersecting perpendicular directions, said method comprising the steps of:

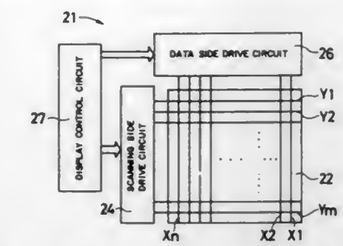
applying data pulses, pulse width modulated corresponding to gradation display data, to the data electrodes via a data electrode driver, the data pulses gradually increasing in voltage level during the pulse width modulated period;

applying substantially rectangular writing pulses to the scanning electrodes, sequentially, a voltage value of pulse signals of each of the writing pulses being selected to be a value above a predetermined minimum limit capable of emitting light for the display device;

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detecting positional location of each of the scanning electrodes, sequentially, relative to the data electrode driver; and

delaying each pulse width modulated data pulse by an



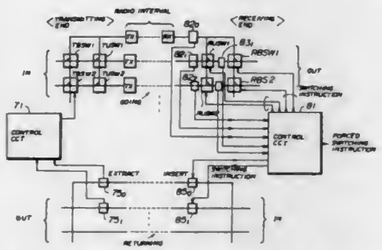
amount based upon the detected positional location of each corresponding scanning electrode, sequentially, so as to vary each modulated pulse width by a delay amount based upon each sequential activation of the plurality of scanning electrodes.

5,311,170

METHOD AND SYSTEM FOR MAKING BIPOLAR SWITCHING TO PROTECTION CHANNEL

Hiroyuki Wachi, and Yoshihiro Ito, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 13, 1991, Ser. No. 808,017
Claims priority, application Japan, Dec. 20, 1990, 2-411928
Int. Cl.[5] H04L *1/00*
U.S. Cl. 340—825.01 **13 Claims**



1. A method of switching a channel which is used for communication between a transmitting end and a receiving end from a main channel to a protection channel, said transmitting end including N first bipolar switches respectively having an input port for receiving a baseband signal input, a main port for outputting the baseband signal input to a corresponding one of N main channels and a protection port for outputting the baseband signal input to the protection channel, said protection ports of the N first bipolar switches being connected in series to the protection channel, said input port of the first bipolar switch being normally connected to the main port and connected to the protection port when switching to the protection channel, said receiving end including N second bipolar switches respectively having a main port for receiving the baseband signal input received from the transmitting end via a corresponding one of the N main channels, a protection port for receiving the baseband signal input received from the transmitting end via the protection channel and an output port for outputting the received baseband signal input as a baseband signal output, said protection ports of the N second bipolar switchers being connected in series to the protection channel, wherein a loss of the received baseband signal input when the protection channel is used is dependent on an arbitrary number of second bipolar switches through which the received baseband signal input passes before the baseband signal output is obtained, said output port of the second bipolar switch being normally connected to the main port and connected to the protection port when switching to the protection channel, said method comprising the steps of:

(a) recognizing at the receiving end the main channel from which the channel is switched to the protection channel;

(b) generating at the receiving end control information related to an amplification of the baseband signal input received via the protection channel based on the main channel recognized in said step (a); and

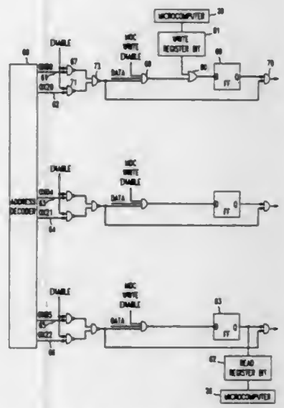
(c) amplifying at the receiving end the baseband signal input received via the protection channel by the amplification determined by the control information generated by said step (b).

5,311,171

QUAD CHANNEL UNIT REGISTERS FOR CHANNEL PAIRS

Mark E. Hauschild, Parsippany Twp., Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1991, Ser. No. 814,949
Int. Cl.[5] H04M *3/22*
U.S. Cl. 340—825.03 **10 Claims**



1. A channel unit for a digital loop carrier transmission system comprising:

a first register adapted to store bits of information related to a first pair of communications channels and having a certain address;

a second register adapted to store information related to a second pair of communications channels and selected bits of information which are also stored in the first register and having a different address; and

means for addressing both registers so that said selected bits of information related to the first pair of channels are accessed at the address of both registers.

5,311,172

COMMUNICATION CONTROL SYSTEM

Yuuichi Sadamori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 234,930, Aug. 22, 1988, abandoned. This application Dec. 18, 1990, Ser. No. 629,027
Claims priority, application Japan, Nov. 30, 1987, 62-300178
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.5 **3 Claims**

1. A communication system, comprising:

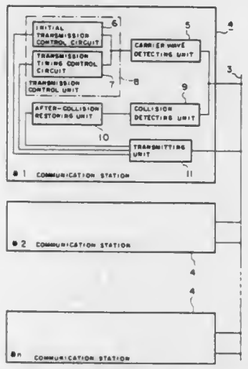
a communication channel; and

a plurality of communication stations, said communication stations communicating with each other over said communication channel, each communication station in said system being identified by a station number and including

a transmitting unit for transmitting a data signal including a transmitting station source number identifying the station from which said data signal has been transmitted,

carrier wave detection means for detecting the presence of a carrier wave on said communication channel indicative of the transmission of a data signal by another communication station and outputting a carrier wave detection signal in response thereto, and

a transmission control unit including means for instructing said transmitting unit to transmit data upon expiration of an initial time period consisting of a predetermined period of time during which no carrier wave has been detected beginning after initialization of the station in which the transmission control unit is provided, means responsive to said carrier wave detection signal for reading a station source number from said data signal transmitted by another communication station as indicated by said carrier wave detection signal and determining a waiting period which varies as a function of the read station source number, and means for instructing said transmitting unit to transmit data upon expira-



tion of said determined waiting period during which no carrier wave has been detected, the expiration of said determined waiting period being determined by said transmission control unit, wherein said initial time period is an amount of time sufficient to allow all stations in the system to complete transmission of data, n represents the number of communication stations in said system, and T_1 represents said initial time period, such that

$T_1 > (\text{transmitting time of \#1 station}) + (\text{transmitting time of \#2 station}) + (\text{transmitting time of \#3 station}) + \ldots (\text{transmitting time of \#n station}) + (T_t \times n)$

wherein T_t is a predetermined time interval required between transmissions of different stations, and the transmitting time of each station is a known amount of time required for completion of data transmission, and wherein said waiting period is an amount of time sufficient to allow all stations having a station number between said read station source number and the station number of the reading station to complete transmission of data, and T_N represents said waiting period, such that

$T_N = (M-N) \times T_2, \; M > N$

$T_N = (n+M-N) \times T_2, \; M < N$

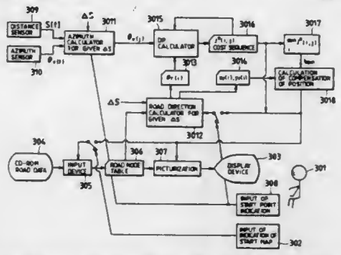
wherein T_2 is a time interval such that $T_2 > T_t$, N is the value of the station source number read by said transmission control unit, and M is the value of the station source number of the reading station in which said transmission control unit is contained.

5,311,173

NAVIGATION SYSTEM AND METHOD USING MAP DATA

Fuminobu Komura, Yokohama; Yoshikazu Hirayama, Katsuta; Koichi Homma, Yokohama; Makoto Kato, Kawasaki; Takanori Shibata, Hitachi; Yoji Matsuoka, Mito; Akira Kagami, Kawasaki, and Michitaka Kosaka, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 407,359, Sep. 14, 1989. This application Aug. 28, 1991, Ser. No. 758,302
Claims priority, application Japan, Sep. 16, 1988, 63-229965
Int. Cl.[5] G08G *1/123*
U.S. Cl. 340—995 **35 Claims**



1. A navigation method using map data in a system which has at least one of first detection means for detecting a running distance of a vehicle and a second detection means for detecting an azimuth of the vehicle, a first memory for storing the map data, a data processor, and a second memory, comprising the steps of:

continuously detecting data, at periodic intervals, of at least one of the running distance and the azimuth by the corresponding detection means;

deciding a quantization unit in any area in said map, corresponding to a current position of the vehicle calculated on the basis of the data detected in said detecting step, wherein said map includes roads and off-road locations, and quantization units each having a conditional probability of location of the vehicle;

calculating a probability density of the decided quantization unit, for each quantization unit decided in said deciding step, using said data processor on the basis of the corresponding map data and the detected data which has been obtained by said detecting step; and

correcting said current position corresponding to the decided quantization unit, based upon the calculated probability density, for each calculated probability density of the calculating step.

5,311,174

Patent Not Issued For This Number

5,311,175

METHOD AND APPARATUS FOR PRE-IDENTIFICATION OF KEYS AND SWITCHES

Herbert Waldman, 1739 52nd St., Brooklyn, N.Y. 11204

Filed Nov. 1, 1990, Ser. No. 607,715
Int. Cl.[5] H03M *11/10*
U.S. Cl. 341—34 **18 Claims**

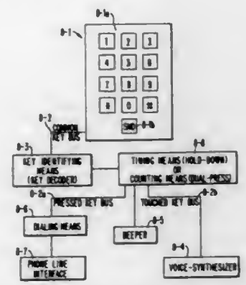
1. A system operable from at least one inputted signal, comprising

at least one switching means having first and second states,

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said first state being the default state while said second state being a partial requirement for producing a predetermined signal, said at least one switching means responsive to manual contact for changing its state from said first state to said second state for producing said predetermined signal regardless of the duration of the period of time in said second state after being in said second state continuously for at least a predetermined period of time,

pre-identification means coupled to said at least one switching means and operable for producing a pre-identification signal when the state of said at least one switching means has been changed from said first state to said second state, said pre-identification signal identifying said predetermined signal to an operator,



signal generating means operatively coupled to said at least one switching means for generating said predetermined signal after said at least one switching means has been maintained in said second state for said predetermined period of time, and

timing means operatively coupled to said at least one switching means for generating a timing signal for measuring a time period from when said at least one switching means is changed from its first state to its second state,

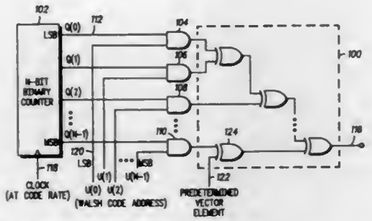
whereby, said at least one switching means initially informs an operator as to the predetermined signal and thereafter, produces its predetermined signal if it is maintained in its second state throughout the predetermined time period as measured by said timing means regardless of any additional time said second state is maintained.

5,311,176

METHOD AND APPARATUS FOR GENERATING WALSH CODES

David P. Gurney, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1992, Ser. No. 860,871
Int. Cl.[5] H03M *7/00*; G06F *7/36*
U.S. Cl. 341—50 **16 Claims**



1. A Walsh code generator, comprising:

(a) counter means for generating a first group of address signals;

(b) address means, operatively coupled to the counter means, for generating inversion control signals by logically gating the first group of address signals with a second group of address signals; and

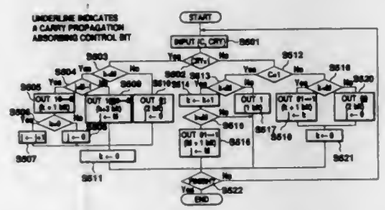
(c) code inversion means, operatively coupled to the address means, for producing a Walsh code by inverting elements of a predetermined non-null vector through an Exclusive-OR logical gating with the generated inversion control signals.

5,311,177

CODE TRANSMITTING APPARATUS WITH LIMITED CARRY PROPAGATION

Tomohiro Kimura; Fumitaka Ono; Masayuki Yoshida, and Shigenori Kino, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,762
Claims priority, application Japan, Nov. 15, 1991, 3-300486
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—51 **18 Claims**



1. A code transmitting apparatus comprising:

a) an arithmetic encoding means for dividing an effective region width A on a probability number line into the region width A(0) of a more probable symbol (MPS) and the region width A(1) of a less probable symbol (LPS) in accordance with an occurrence probability ratio whenever a symbol of a symbol stream which is supplied from an information source is encoded, for updating a current lower boundary value CR of said effective region width A to a value obtained by adding A(1) thereto and said A to said A(0) when said symbol is a more probable symbol (MPS), while maintaining said CR as is and updating said A to said A(1) when said symbol is a less probable symbol (LPS), and for repeating the dividing and updating processes until the final bit of said symbol stream to serially supply an encoded signal and a carry signal;

b) an arithmetic decoding means for dividing A into A(0) and A(1) in the same process as by said arithmetic encoding means whenever the encoded symbol stream is decoded into the corresponding symbol, for decoding a code into a more probable symbol (MPS), and for updating a predetermined first plurality of digits DR at the left of the decoding bit of said code to the value with said A(1) subtracted therefrom and said A to said A(0) when said DR is not smaller than said A(1), while decoding said code into a less probable symbol (LPS), maintaining said DR at the current value and also updating said A to said A(1) when said Dr is smaller than said A(1), and repeating the dividing and updating processes until the final bit of said encoded symbol stream to serially generate a decoded symbol stream and to control the propagation of a carry by a control bit detection signal;

c) a carry transmission control means of one-time 2-bits insertion system for monitoring said encoded signal and said carry signal supplied from said arithmetic encoding means, for inserting two carry propagation absorbing control bits including of a first bit "0" which indicates the end of the continuation of code bits 1's and a second bit "1" or "0" which indicates the presence or absence of a carry from the adjacent digit immediately after the end of the continuation of at least a predetermined number of code bits 1's, and for supplying a code bit stream obtained by the insertion to a transmission path; and

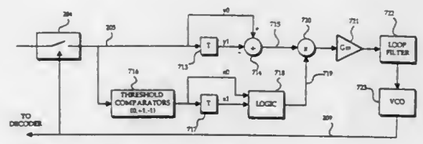
d) a carry reception control means for a one-time 2-bits insertion system for monitoring said code bit stream supplied from said transmission path, for detecting said carry propagation absorbing control bits "00" or "01" immediately after the end of the continuation of at least a predetermined number of code bits 1's, and for supplying a decoded signal and said control bit detection signal in accordance with said carry propagation absorbing control bits.

5,311,178

METHOD FOR PROCESSING SAMPLE VALUES IN AN RLL CHANNEL

Tzu-Wang Pan, Irvine, and Richard G. Yamasaki, Torrance, both of Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Aug. 14, 1992, Ser. No. 930,718
Int. Cl.[5] G11B *5/09*
U.S. Cl. 341—59 **7 Claims**



1. A signal channel comprising:

sampling means for sampling an analog input signal at discrete moments in time according to a clock signal, said analog input signal carrying encoded binary data;

decoding means for generating a sequence of digital outputs based upon samples from said sampling means;

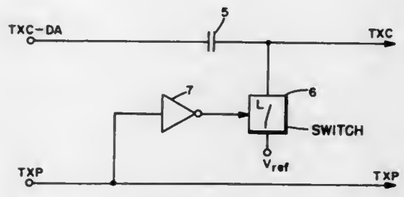
clock recovery means coupled to said sampling means and said decoding means to provide said clock signal, said clock recovery means generating said clock signal based upon said samples, said clock recovery means comprising means for determining a difference between signal levels of consecutive samples.

5,311,179

METHOD FOR AMENDING THE EFFECT OF OFFSET VOLTAGE VARIATIONS FROM THE OUTPUT VOLTAGE IN A D/A CONVERTER

Risto Vaisanen, and Jukka Sarasmo, both of Salo, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 30, 1992, Ser. No. 970,281
Claims priority, application Finland, Nov. 8, 1991, 915288
Int. Cl.[5] H03M *1/06*
U.S. Cl. 341—118 **6 Claims**



1. A circuit for eliminating effects of offset voltage variations in pulsatile outputs appearing at an output of a digital to analogue (D/A) converter means, said circuit comprising:

an input terminal and an output terminal, said input terminal coupled to said output of said D/A converter means;

a capacitor connected in series between said input terminal and said output terminal;

a reference potential source;

switch means connected between said reference potential source and said output terminal; and

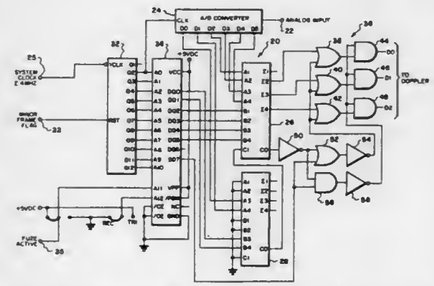
control means connected to said switch means for causing said switch means to connect said reference potential source to said output terminal when no pulsatile output is present at said input terminal.

5,311,180

DIGITAL CIRCUIT FOR THE INTRODUCTION AND LATER REMOVAL OF DITHER FROM AN ANALOG SIGNAL

Gary S. Borgen, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 15, 1993, Ser. No. 4,004
Int. Cl.[5] H03M *1/20*
U.S. Cl. 341—131 **10 Claims**



1. A circuit for faithfully converting an analog audio or like data signal into an equivalent digital signal, said circuit having a first clock signal of a first predetermined frequency provided thereto, said circuit comprising:

means for receiving said analog audio or like data signal and then converting said analog audio or like data signal into said equivalent digital signal;

said equivalent digital signal having a plurality of digital data samples, each of said digital data samples having a plurality of data bits;

first counting means responsive to said first clock signal providing a second clock signal having a second predetermined frequency, and a plurality of digital addresses;

said second clock signal being supplied to said converting means so as to effect the frequency at which said converting means samples said analog audio or like data signal;

first random number generating means responsive to each of said digital addresses provided by said first counting means generating a random binary number, each of said random binary numbers generated by said first random number generating means being the dither component to be added to one digital data sample of said digital equivalent signal, said first random number generating means providing for each random binary number generated thereby a sign bit indicative of whether said random binary number is positive or negative;

first adding means for adding said dither components to said digital data samples of said equivalent digital signal and for eliminating at least one bit from each digital data sample with dither added thereto, said first adding means providing a carry bit indicative of when the magnitude of any of said digital data samples with dither added thereto exceeds the maximum value of the binary number which

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may be provided by said first adding means after said first adding means adds said dither component to said digital data sample;

first clipping circuit means for receiving each digital data sample of said equivalent data signal from said first adding means, said first clipping circuit means responsive to said carry bit provided by said first adding means and said sign bit provided by said first random number generating means allowing said digital data sample to pass therethrough or setting each data bit of said digital data sample to a predetermined logic state;

second counting means responsive to said first clock signal providing a plurality of digital addresses, said plurality of digital addresses provided by said second counting means being synchronized with said plurality of digital addresses provided by said first counting means;

second random number generating means responsive to each of said digital addresses provided by said second counting means generating a random binary number, each of said random binary numbers generated by said second random number generating means being the twos complement of one of the dither components added to said equivalent digital signal by said first adding means, said second random number generating means providing for each random binary number generated thereby a sign bit indicative of whether said random binary number is positive or negative;

second adding means for adding said binary numbers generated by said second random number generating means to said digital data samples of said equivalent digital signal thereby eliminating the dither component from each digital data sample of said equivalent digital signal, said second adding means providing a carry bit indicative of when the magnitude of any of said digital data samples with dither removed therefrom exceeds the maximum value of the binary number which may be provided by said second adding means after said second adding means removes said dither component from said digital data sample; and

second clipping circuit means for receiving each digital data sample of said equivalent data signal from said second adding means, said second clipping circuit means responsive to said carry bit provided by said second adding means and said sign bit provided by said second random number generating means allowing said digital data sample to pass therethrough or setting each data bit of said digital data sample to a predetermined logic state.

5,311,181

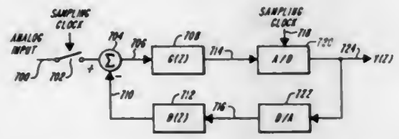
SIGMA DELTA MODULATOR

Paul F. Ferguson, Jr., Tewksbury, Mass.; Apparajan Ganesan, Salem, N.H., and Robert W. Adams, Acton, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 498,941, Mar. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,706, Jan. 31, 1990, Pat. No. 5,055,843. This application May 12, 1993, Ser. No. 60,890

Int. Cl.[5] H03M *3/02*

U.S. Cl. 341—143 **8 Claims**



1. A digital noise shaper circuit for generating an output digital data stream having predefined noise characteristics and a predefined frequency bandwidth from a multi-bit input digital data stream, said noise shaper comprising;

a greater than two-pole digital noise-shaping filter network for receiving and processing an error signal to generate said output data stream;

means responsive to said output stream for generating a feedback signal;

means responsive to said feedback signal for frequency-shaping said feedback signal; and

means for digitally adding said multi-bit input digital data stream and said frequency-shaped feedback signal to generate said error signal, so that the combination of said digital filter and said feedback signal shapes quantization noise generated when said noise shaper circuit converts said input digital data stream into said output data stream in order to shift most of said quantization noise to frequencies outside of said predefined frequency bandwith wherein the number of bits in the output digital data stream is less than the number of bits in the input digital data stream.

5,311,182

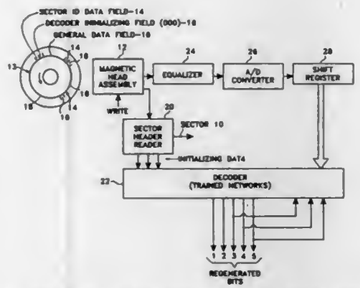
METHOD AND APPARATUS FOR REGENERATING A DISTORTED BINARY SIGNAL STREAM

Charles S. Weaver, Palo Alto, Calif., assignor to Neural Systems Corporation, Los Altos Hills, Calif.

Filed Nov. 16, 1992, Ser. No. 976,481

Int. Cl.[5] H03M *1/12*

U.S. Cl. 341—155 **17 Claims**



1. Apparatus for regenerating an input signal stream of binary digits which has been distorted by intersymbol interference during passage through a channel having a channel output comprising a stream of distorted binary digits, said apparatus comprising:

analog-to-digital converter means having a sample rate greater than the bit rate of the stream of distorted binary digits from the channel output for digitizing the stream of distorted binary digits from the channel output and producing an output comprising a stream of digitized binary digits,

decoder means comprising a plurality of train non-arithmetic pattern-recognizing binary tree networks that implement binary logic for decoding successive groups of digitized binary digits from the analog-to-digital converter means and producing a decoder output of successive groups of binary digits corresponding to successive groups of binary digits in said input signal stream, said groups of binary digits produced by said decoder means including a first group and subsequent groups, each of which subsequent groups is preceded by an immediately preceding group from said decoder means,

means for supplying successive groups of digitized binary digits from said analog-to-digital converter means to the trained binary tree networks for decoding, and

means for supplying a plurality of end bits from an immediately preceding group of binary digits produced by said decoder means to said decoder means for use by said decoder means in decoding said groups of digitized binary digits supplied to said trained binary tree networks.

5,311,183

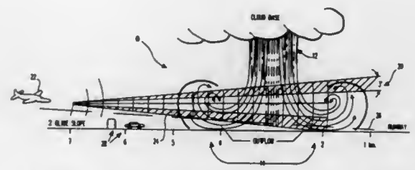
WINDSHEAR RADAR SYSTEM WITH UPPER AND LOWER ELEVATION RADAR SCANS

Bruce D. Mathews, Catonsville; Paul D. Mountcastle, Columbia, and Walter W. Patterson, Edgewater, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 13, 1991, Ser. No. 714,133

Int. Cl.[5] G01S *13/95*

U.S. Cl. 342—26 **18 Claims**



1. A method of detecting hazardous windshear, comprising:

(a) scanning the atmosphere in an upper radar scan;

(b) determining first hazard candidates in the upper scan;

(c) scanning the atmosphere in a lower radar scan;

(d) determining second hazard candidates in the downward scan responsive to the first hazard candidates; and

(e) characterizing the total hazard responsive to the second hazard candidates.

5,311,184

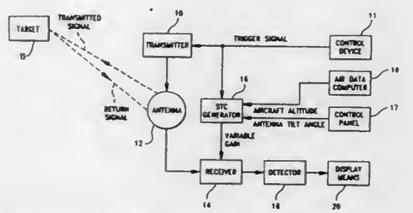
AIRBORNE WEATHER RADAR SYSTEM WITH AIRCRAFT ALTITUDE AND ANTENNA TILT ANGLE DEPENDENT SENSITIVITY TIME CONTROL

Daryal Kuntman, Highland Beach, Fla., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Feb. 26, 1993, Ser. No. 23,516

Int. Cl.[5] G01S *13/95, 7/34*

U.S. Cl. 342—26 **10 Claims**



1. An airborne weather radar system, comprising:

control means for providing a trigger signal for initiating radar transmission;

transmitter means connected to the control means and responsive to the trigger signal therefrom for providing a transmitter signal;

antenna means connected to the transmitter means and responsive to the transmitter signal for transmitting a radar signal which is intercepted by a target, with said antenna means receiving a return signal from the target and thereupon providing an output signal;

receiver means connected to the antenna means for receiving the output signal therefrom and for providing a receiver signal;

means for providing a signal corresponding to the altitude of an aircraft on which the radar system is mounted;

means for providing a signal corresponding to the tilt angle of the radar system antenna;

sensitivity time control (STC) generator means connected to the aircraft altitude and antenna tilt angle signal means, and connected to the control means, and responsive to the aircraft altitude signal, the antenna tilt angle signal and the trigger signal for providing an STC signal as a function of time from transmission of the radar signal, aircraft altitude and antenna tilt angle; and

utilization means connected to the STC generator means and to the output of the antenna means and responsive to the STC signal and the antenna output signal for providing a signal which is indicative of a normalized return signal from the target at high as well as low aircraft altitudes.

5,311,185

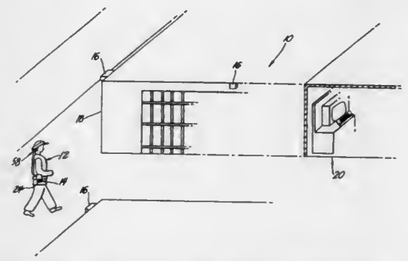
SUPERVISED PERSONNEL MONITORING SYSTEM

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098; Jeffrey Tenenbaum, 6162 Wynford, West Bloomfield, Mich. 48322, and Thomas G. Xydis, 1141 Chestnut, Ann Arbor, Mich. 48104

Filed Aug. 31, 1992, Ser. No. 938,423

Int. Cl.[5] G01S *13/78*

U.S. Cl. 342—44 **28 Claims**



1. A monitoring assembly, said assembly comprising:

a plurality of transponder means (**14**) for transmitting a data signal and receiving a command signal;

transceiver means (**16**) for receiving said data signal and identifying which of said plurality of transponder means (**14**) is transmitting;

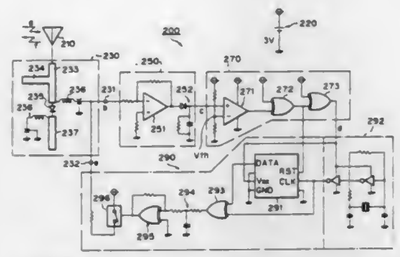
each of said transponder means (**14**) including timing means (**40**) for establishing cycles of sequential time ranges wherein each time range is associated with each of said transponder means (**14**) and occurs at least once during each cycle and for dividing each of said time ranges into at least two time windows for allowing reception of said command signal during one of said time windows by said transponder means (**14**) associated with said time range and for allowing automatic transmission of said data signal during the other of said time windows by said transponder means (**14**) only associated with said time range and during each cycle independent of receiving said command signal.

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5,311,186
TRANSPONDER FOR VEHICLE IDENTIFICATION DEVICE

Jyunshi Utsu, Nishio; Masao Kodera, Okazaki, and Kunihiko Sasaki, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 588,994, Sep. 26, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 71,619
Claims priority, application Japan, Sep. 27, 1989, 1-251626
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—51 **10 Claims**



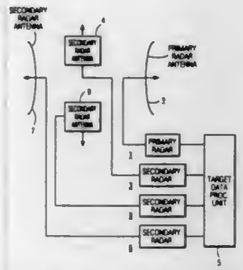
1. A transponder used in a mobile body identification system in which an interrogator generates a query radio wave to a mobile body and receives a radio wave including mobile body information returned from a transponder provided on said mobile body, said transponder comprising:
an antenna for receiving a query radio wave transmitted from said interrogator to activate a code signal generating means and to modulate a signal, and for transmitting a modulated radio wave to said interrogator;
a detection device for detecting said query radio wave received by said antenna and for generating a detection signal;
coded signal generating means for generating a coded signal train output previously stored in response to said detection signal, and
bias controlling means for varying an amount of bias of said detection device in accordance with said coded signal train output and for varying a reflection coefficient of said detection device in accordance with said coded signal train output so that said coded signal train output is returned to said interrogator as a responding radio wave generated by modulating said reflected wave of said query radio wave;
an electric power source controlling means for supplying the electric power to said coded signal generating means when a detection output having a level exceeding a predetermined set level is detected; and
a circuit for eliminating a modulated component modulated by said bias controlling means and which is superimposed on said detection output generated from said detection device to preclude transmitting the modulated wave, such as a second harmonic wave.

5,311,187
SEARCH RADAR SYSTEM

Peter F. Garside, Blaricum, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Continuation of Ser. No. 289,651, Dec. 22, 1988, abandoned. This application Apr. 26, 1991, Ser. No. 693,767
Claims priority, application Netherlands, Dec. 23, 1987, 8703113
Int. Cl.[5] G01S *13/72*
U.S. Cl. 342—59 **8 Claims**

1. A search radar system including at least first and second radar devices coupled to respective first and second radar antennas, target data processing means for processing target data produced by said radar devices, and radar display means, characterized in that:
a. the antennas are arranged for rotation together but with mutually different orientations in azimuth;
b. each of the antennas is arranged to perform a two-dimensional scan with the same elevation angle,
c. the radar devices individually produce target data representative of successive detections by the respective antennas of indentical targets;
d. the target data processing means is adapted to correlate the target data for identical targets which is produced by the radar devices and comprises means for predicting from the target data of the first radar device the position

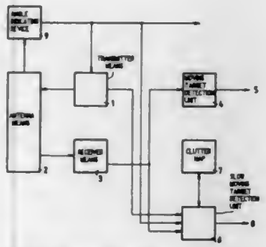


of each target for a subsequent revolution of the first antenna as well as the position of each target at the moment when the at least one second antenna will detect said target, and to predict, from the target data of the at least one second radar device, the position of each target for subsequent revolutions of the at least one second antenna, said predictions being correlated with said detections to establish which target data obtained from the different radar devices originate from identical targets, and
e. the radar display mens receives and displays the target data from the first and second radar devices so as to effectively double the rate at which target data is displayed for a given antenna rotation speed.

5,311,188
RADAR APPARATUS PROVIDED WITH A COHERENT CLUTTER MAP

Wietze J. H. Meijer, Enschede, and Petrus N. C. Nooy, Hengelo, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Dec. 16, 1992, Ser. No. 991,588
Claims priority, application Netherlands, Dec. 19, 1991, 9102125
Int. Cl.[5] G01S *13/50*
U.S. Cl. 342—90 **12 Claims**



1. A radar apparatus comprising:
rotating antenna means;

transmitter means connected to said rotating antenna means for generating and transmitting radar pulses;
receiver means connected to said rotating antenna means for receiving, per transmitted pulse, a complex radar echo signal;
a video processor connected to said receiver means, said video processor comprising a slow moving target detection unit provided with a clutter map divided into range-azimuth cells, means for measuring and storing complex clutter strengths corresponding to each range-azimuth cell of said clutter map, and comparison circuits for comparing a received complex radar echo signal for each range-azimuth cell with the measured complex clutter strength stored in the corresponding range-azimuth cell of said clutter map.

5,311,189
METHOD FOR DISTINGUISHING BETWEEN AT LEAST TWO TARGETS

Dieter Nagel, Ulm-Wiblingen, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG, Munich, Fed. Rep. of Germany

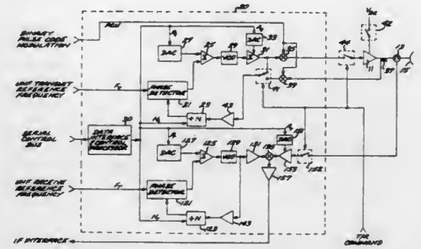
Filed Sep. 18, 1992, Ser. No. 946,571
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131141
Int. Cl.[5] G01S *13/534, 13/53*
U.S. Cl. 342—95 **8 Claims**

1. A method for distinguishing between at least two targets with the aid of a pulse Doppler radar, wherein radar signals reflected from at least one target are evaluated with respect to at least one of their distance direction and their velocity direction, whereupon a conclusion is drawn as to the existence of one or a plurality of targets, comprising:
evaluating the phase position of a radar signal reflected from at least one target;
determining from the evaluated phase position an average phase position for one of an adjacent filter and an adjacent range gate, respectively;
determining deviations of the phase position of the adjacent filter or the adjacent range gate, respectively, from the previously determined average phase position; and
comparing the deviations of the phase position with an associated threshold value and determining a multiple target situation if the deviations of the phase position exceed the associated threshold value.

5,311,190
TRANSMIT AND RECEIVE ANTENNA ELEMENT WITH FEEDBACK

Don C. Devendorf, Carlsbad; Edwin A. Kelley, Los Angeles, and Roy S. Komori, Rancho Palos Verdes, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,845
Int. Cl.[5] G01S *7/03*
U.S. Cl. 342—157 **3 Claims**



1. A radar transmit circuit for producing a transmit output during transmit time intervals that are interleaved with receive time intervals, comprising:
voltage controlled oscillating means for providing a transmit signal;
transmit mixing means for modulating said transmit signal pursuant to a modulating signal to provide a modulated transmit signal;
power amplifier means responsive to said modulated transmit signal for providing an amplified modulated transmit signal during transmit intervals;
a directional coupler responsive to said power amplifier means for providing a power amplifier feedback output that comprises a portion of said amplified modulated transmit signal;
feedback mixing means for modulating said power amplifier feedback output pursuant to said modulating signal to provide a demodulated power amplifier feedback signal;
divide-by-N means responsive to a feedback signal for dividing the feedback signal by a division ratio N to provide a divide-by-N signal;
phase detection means responsive to a transmit reference signal having a frequency F_t and said divide-by-N signal for providing a phase detection output;
summing means responsive to said phase detection output and a phase control signal for providing a control voltage to said voltage controlled oscillating means;
feedback switching means for providing said feedback signal which comprises (a) said demodulated power amplifier feedback signal during transmit intervals, and (b) the output of said voltage controlled oscillating means during receive intervals, such that said voltage controlled oscillator is controlled by feedback at all times, and whereby the output of said voltage controlled oscillating means has a frequency substantially equal to $N*F_t$ and a phase that is controlled in accordance with the phase control signal.

5,311,191
AUTOMATIC ANECHOIC CHAMBER CALIBRATOR

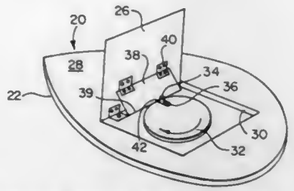
Gerald P. Scannapieco, Bellmore, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,033
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—165 **7 Claims**

1. A selectively positionable antenna reference target fixture comprising:

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a teardrop shaped body having a recess formed in an upper surface thereof;
at least a portion of the surface of the body being covered by an energy absorbent material;
a rotatable member located within the recess;
camming means mounted to the rotatable member and rotatable therewith;
a hinge mounted plate having a first position covering the recess in substantially flush relation with the upper surface of the body;

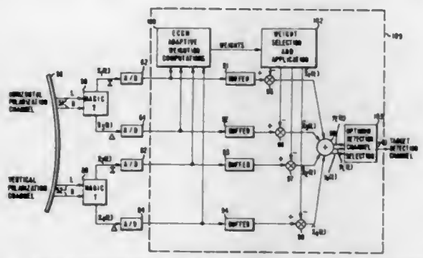


a cam following member hinge mounted at a first edge thereof to a surface of the plate which faces the recess, a second edge thereof resting on the rotatable member and forced upwardly when the rotatable member rotates the camming means into pushing contact with the second edge thereby raising the plate to a second position for reflecting antenna energy;
the cam following member swinging into the recess when the rotatable member rotates the camming member out of contact with the second edge whereby the plate assumes the first position.

5,311,192
POLARIZATION ECCM TECHNIQUE FOR RADAR SYSTEMS

Ben B. Varga, and Douglas G. DeWolf, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 3, 1989, Ser. No. 293,032
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—188 **4 Claims**

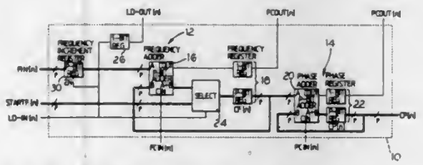


1. In a radar system having a dual-polarization monopulse atenna, a computer processor, and target detection channels, the process for cancelling the effects of noise jamming produced by a hostile electronic countermeasure on a target to detect the target with optimum detection channel signal consisting the steps of:
obtaining signals from dual-polarization monopulse subaperture combinations of said atenna;
sampling said signals from said atenna;
digitizing said sampled signals;
dividing said samples of said digitized signals into early sample values and late sample values for polarization agile jammers;
calculating combination values based upon said samples of said digitized signals;
computing several potential target detection channel signals based upon said combination values and said samples of said digitized signals;
applying said detection channel signals to said computer processor; and
selecting the optimum detection channel signal for detection of said target using said computer processing whereby said signal is then applied to said target detection channels.

5,311,193
DIGITAL CHIRP GENERATOR

Stephen M. Parkes, Bristol, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Sep. 16, 1991, Ser. No. 760,199
Claims priority, application United Kingdom, Sep. 26, 1990, 9020953
Int. Cl.[5] G01S *7/282*
U.S. Cl. 342—201 **19 Claims**



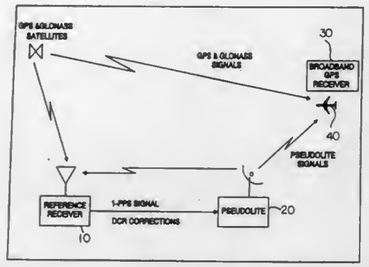
1. A digital chirp generator comprising:
a plurality of successively adjacent frequency/phase accumulators,
each of said frequency/phase accumulators including a frequency accumulator means and a respective phase accumulator means driven by the respective frequency accumulator means,
said plurality of frequency/phase accumulators being pipelined together including:
each frequency accumulator means being pipelined to the frequency accumulator means in the next adjacent frequency/phase accumulator and
each phase accumulator means being pipelined to the phase accumulator means in the next adjacent frequency/phase accumulator.

5,311,194
GPS PRECISION APPROACH AND LANDING SYSTEM FOR AIRCRAFT

Alison K. Brown, Monument, Colo., assignor to NAVSYS Corporation, Colorado Springs, Colo.

Filed Sep. 15, 1992, Ser. No. 945,300
Int. Cl.[5] H04B *7/185*; G01S *5/02*
U.S. Cl. 342—357 **13 Claims**

1. A GPS precision approach and landing system for aircraft, the system comprising:
a pseudolite positioned at a fixed location on the ground, the pseudolite being operative for transmitting a pseudolite signal, the pseudolite signal including an assigned PRN code modulated on an L-band carrier signal having a frequency that is removed from an L1 GPS satellite frequency, the pseudolite signal being synchronized with GPS time by means of a GPS timing signal;
a GPS reference receiver positioned at a fixed location on the ground and coupled to the pseudolite, the GPS reference receiver being operative for tracking GPS satellite and pseudolite signals and for computing differential GPS correction information comprising both pseudo-range and carrier-range correction information from reference information defining the position of the GPS reference receiver;
the pseudolite being further operative for transmitting the computed differential GPS correction information computed by the GPS reference receiver to an aircraft performing a precision approach and landing procedure;
the GPS precision approach and landing system further comprising a single receiver positioned on the aircraft,

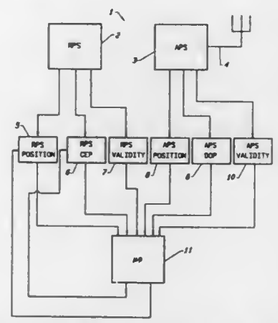


said single receiver comprising a broadband GPS receiver operative for receiving the computed differential GPS correction information transmitted by the pseudolite and for performing phase coherent measurements of L1 GPS satellite signals and L-band pseudolite signals to determine the three-dimensional position of the aircraft with respect to an approach path associated with the precision approach and landing procedure.

5,311,195
COMBINED RELATIVE AND ABSOLUTE POSITIONING METHOD AND APPARATUS

Darrell L. Mathis, San Francisco; Richard F. Poppen, San Jose, and Kenneth A. Milnes, Fremont, all of Calif., assignors to Etak, Inc., Menlo Park, Calif.

Filed Aug. 30, 1991, Ser. No. 753,190
Int. Cl.[5] H04B *7/185*; G01S *5/02*
U.S. Cl. 342—357 **57 Claims**

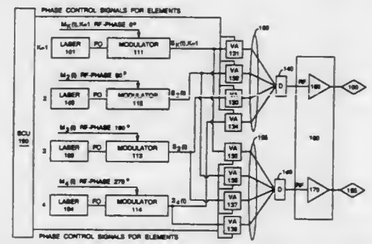


1. A method of operating a navigation system comprising a relative positioning system (RPS), said RPS including means for dead reckoning with map matching, and an absolute positioning system (APS) comprising the steps of:
a. acquiring current RPS position information, including information on the validity of the RPS position information, from the RPS;
b. acquiring current APS position information, including information on the validity of the APS position information, from the APS;
c. evaluating the RPS and the APS position information acquired in said steps (a) and (b);
d. updating the RPS position information such that the updated RPS position information is based on the then current APS position information without regard to the then current RPS position information if required by the results of said step (c); and
e. repeating said steps (a) through (d).

5,311,196
OPTICAL SYSTEM FOR MICROWAVE BEAMFORMING USING INTENSITY SUMMING

Donald W. Hanson, Rome, N.Y., and David L. Fried, Monterey, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 16, 1993, Ser. No. 95,024
Int. Cl.[5] H01Q *3/22, 3/24*
U.S. Cl. 342—368 **25 Claims**



1. An optical microwave beamforming network comprising;
a means for producing a plurality of modulated light beams which all have the same modulation frequency but are separated from each other by a first difference in phase of the modulation signal;
a plurality of banks of variable attenuators in which each variable attenuator produces an optical output signal by receiving and attenuating one of the modulated coherent light beams from producing means;
a plurality of detectors, each of which outputs an RF electrical signal with adjusted phase by processing the optical output signals of all the variable attenuators in one of the banks of variable attenuators;
a means for amplifying the RF electrical signals produced by the plurality of detectors, said amplifying means producing thereby a plurality of amplified RF electrical signals with adjusted phase; and
a plurality of radiating antenna elements, each of which are electrically connected to said amplifying means to receive therefrom one of said plurality of amplified RF electrical signals, said plurality of radiating RF antenna elements thereby radiating an RF waveform which is steered by the adjusted phase between the different amplified RF electrical signals.

5,311,197
EVENT-ACTIVATED REPORTING OF VEHICLE LOCATION

James L. Sorden, Saratoga; Terry J. Smith, Campbell, and Eric Klein, Mountain View, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

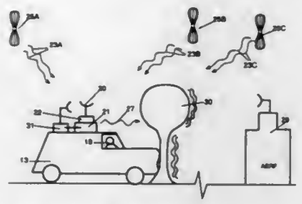
Filed Feb. 1, 1993, Ser. No. 11,989
Int. Cl.[5] G01S *3/02*
U.S. Cl. 342—457 **32 Claims**

1. Apparatus for notifying others that a vehicle accident or other abnormal situation has occurred and of the location of the vehicle, the apparatus comprising:
a distance measuring system (DMS) signal antenna and receiver/processor and an activatable transmitter, at-

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tached to a vehicle to be monitored, that receives and processes DMS signals from one or more DMS signal broadcasters to determine the location of the antenna and, when the transmitter is activated, to communicate this information to another person or facility that is spaced apart from the receiver/processor;

vehicle condition sensing means, attached to the vehicle, for sensing the occurrence of at least one of a selected group of abnormal situations at the vehicle, the sensing means being electronically connected to the transmitter so that, when one or more of the selected group of abnormal events or conditions occurs at the vehicle, the sensing



means activates the transmitter and communicates the location of the vehicle, at approximately the time the abnormal situation occurs;

an operations sensor for sensing the value of a vehicle operating parameter at a sequence of times; and

a temporary information storage memory, connected to the vehicle condition sensing means, that receives and holds the vehicle operating parameter values sensed by the operations sensor, for a time interval of selected length Δt_s after each such value is received, and that holds these values for a time interval of length greater than Δt_s as soon as a vehicle abnormal situation occurs.

5,311,198

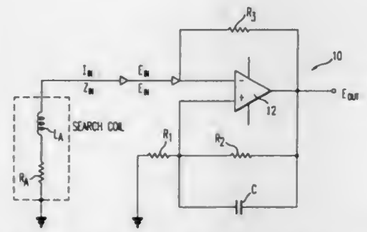
ACTIVE ANTENNA

John F. Sutton, Dayton, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 23, 1990, Ser. No. 571,060

Int. Cl.[5] H01Q *1/24*

U.S. Cl. 343—701 **1 Claim**



1. An active antenna including an antenna and circuit means:

said antenna having positive inductance and positive resistance, including any impedances coupled into said antenna from its environment;

said circuit means, including a signal common and an operational amplifier, coupled to, and driven by, said antenna, for providing a negative inductance and a negative resistance, the magnitude of said negative inductance being approximately equal to the magnitude of said antenna positive inductance but somewhat less, and the magnitude of said negative resistance being approximately equal to the magnitude of said antenna positive resistance but somewhat less;

said antenna being connected to the inverting input of said operational amplifier, a resistor being connected from said inverting input to the output of said operational amplifier, a resistor-capacitor parallel network being connected from said output to the noninverting input of said operational amplifier, and a resistor being connected from said noninverting input to the signal common; and

said antenna and said circuit means being connected in a configuration which provides an algebraic addition of said positive and negative inductances and resistances, with the total active antenna impedance being a very small, but positive, series inductance and resistance, sufficient in magnitude to maintain the stability of said active antenna in its operation environment.

5,311,199

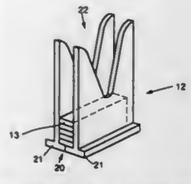
HONEYCOMB CROSS-POLARIZED LOAD

John Fraschilla, 125 S. Helberta #A, Redondo Beach, Calif. 90277, and David A. Whelan, 10121 Laramie Ave., Chatsworth, Calif. 91311

Filed Oct. 28, 1991, Ser. No. 783,290

Int. Cl.[5] H01Q *13/10*

U.S. Cl. 343—767 **19 Claims**



1. A cross-polarization load for use in a tapered notch phased array antenna having a plurality of substantially parallel tapered notch radiating elements, said load comprising:

a resistively tapering resistive element that is disposed between the radiating elements of the tapered notch phased array antenna that provides an absorbing transition to shorted TEM parallel plate modes present in a trough region between the radiating elements.

5,311,200

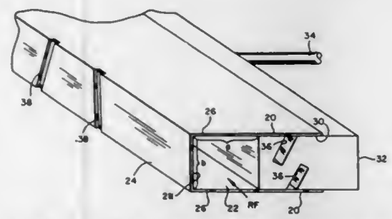
MILLIMETER WAVE VARIABLE WIDTH WAVEGUIDE SCANNER

Joel F. Walker, Malibu; Daniel G. Gonzalez, Topanga, and Gerald E. Pollon, Calabasas, all of Calif., assignors to Malibu Research Associates, Inc., Calabasas, Calif.

Continuation of Ser. No. 716,677, Jun. 18, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 88,410

Int. Cl.[5] H01Q *13/10*

U.S. Cl. 343—771 **16 Claims**



1. A variable width waveguide scanner, which comprises:

means defining at least one signal propagation waveguide having an end wall, a first broad wall and a second broad wall opposite the first broad wall defining a waveguide cavity, the waveguide cavity being rectangular in cross-section and defined by an a-dimension in a direction parallel with the first and second broad walls and a b-dimension in a direction perpendicular to the a-dimension and in a direction parallel with the end wall;

means for varying the a-dimension of the waveguide cavity, the a-dimension varying means being operatively coupled to the waveguide, the a-dimension varying means altering the a-dimension of the waveguide cavity in a substantially similar manner along substantially the entire b-dimension of the cavity and along a length of the waveguide; and

a plurality of radiating elements, the radiating elements being in the form of spaced apart slots formed through the thickness of the end wall of the waveguide and communicating with the cavity.

5,311,201

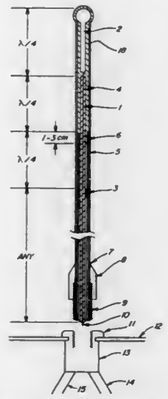
MULTI-BAND ANTENNA

Michael R. Lillie, and Valdis V. Liepa, both of Ann Arbor, Mich., assignors to Tri-Band Technologies, Inc., Oxford, Mich.

Filed Sep. 27, 1991, Ser. No. 767,288

Int. Cl.[5] H01Q *5/02, 9/18*

U.S. Cl. 343—791 **8 Claims**



1. A multi-band antenna for operation on a first long wavelength band and a second wavelength band shorter than said first wavelength band comprising:

a conductive tubular member having first and second ends;

a coaxial cable having an outer conductive shield, a dielectric core and a central conductor, said coaxial cable having a first section disposed within said tubular member, said coaxial cable having an extension section with a first end of said extension section extending a first predetermined length beyond said first end of said tubular member;

a solid conductor having a first end electrically connected to said central conductor of said coaxial cable at said first end thereof, said solid conductor extending said first predetermined length beyond said first end of said extension section;

an electrical short disposed within said tubular member at said first predetermined length from said first end of said tubular member for electrically connecting said tubular member and said outer conductive shield of said coaxial cable with the remainder of said outer conductive shield being electrically insulated from the remainder of said tubular member; and

a rigid dielectric cylinder including (1) a first section of twice said first predetermined length having said first predetermined length of said coaxial cable extending beyond said first end of said tubular member and said solid conductor disposed therein and (2) a second section disposed a second predetermined length into said first end of said tubular member, wherein said dielectric cylinder provides mechanical support for said extension section of said coaxial cable.

5,311,202

FREQUENCY-SELECTIVE SURFACE STRUCTURE HAVING H-SHAPED SLOTS

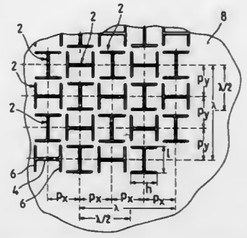
Reinhard Popp, Bad Aibling, and Lother Heichele, Otterfing, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 892,318

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121245

Int. Cl.[5] H01Q *15/00*

U.S. Cl. 343—909 **19 Claims**



1. A frequency-selective surface structure for the narrow-band filtering of electromagnetic waves, comprising a fully wave-reflective surface perforated by H-shaped slot elements, each H-shaped slot element being defined by parallel end limiting slots and a connecting slot extending transversely to and connected with the limiting slots, wherein each of the end limit slots of the slot elements has a length substantially equal to a length of the corresponding connecting slot, each said length being approximately one fourth of a wave length of a desired operating frequency.

5,311,203

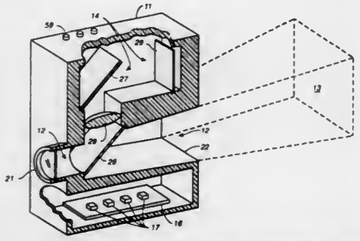
VIEWING AND DISPLAY APPARATUS

M. Kent Norton, 18700 Blythswood Dr., Los Gatos, Calif. 95030

Filed Jan. 29, 1993, Ser. No. 11,272

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—7 **16 Claims**

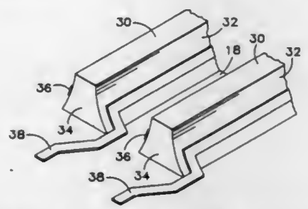


1. A portable, hand-holdable viewing apparatus for use in viewing a predetermined subject, said apparatus having a field of view of a predetermined size and presenting information to the user about features of the subject visible in the field of view, comprising:

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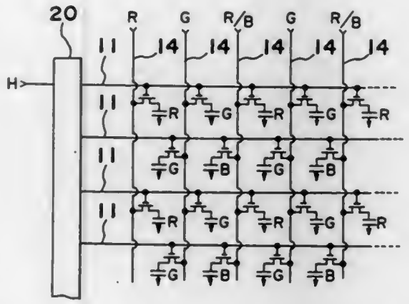
a hand-holdable housing, said housing containing:
viewing means defining said field of view of predetermined size;
a direction sensing mechanism for sensing a characteristic three-dimensional direction of said field of view;
an electronic database containing data about the predetermined subject, the data being arranged in said database to be correlated with three-dimensional direction;
output means for providing data from said database to a user; and
microprocessor means responsive to said direction sensing mechanism and coupled to said database and to said output means to provide data about the subject to the user in real-time, the provided data being correlated with three-dimensional directions falling within said field of view of predetermined size;
whereby the provided data is automatically and simultaneously presented to the user as the user observes the field of view in a selected three-dimensional direction.

5,311,204
OFFSET ELECTRODES
Daryl L. Nishida, Aloha, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Aug. 27, 1992, Ser. No. 936,957
Claims priority, application Japan, Aug. 28, 1991, 3-076300[U]
Int. Cl.[5] G09G *3/28*
U.S. Cl. 345—60 **9 Claims**



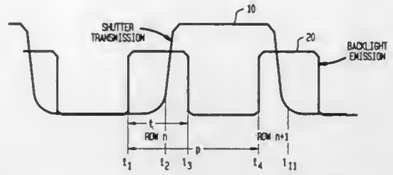
1. Apparatus for digitally addressing an electronic array, comprising:
a first substrate that has plural first electrodes formed on a first major surface, the first electrodes formed substantially parallel to one another;
a second substrate that has plural channels formed on a second major surface facing the first major surface of said first substrate, the channels formed by projections extending substantially parallel to one another and in a direction transverse to the first electrodes, each projection having a sidewall and an end wall, with each channel having a pair of second electrodes each formed longitudinally on the sidewalls and extending along and out of the channels, and with the channels containing between the second electrodes a material whose electronic properties change in response to applied electrical signals, the second electrodes routed on the sidewalls and, adjacent the end walls, routed from the sidewalls with a change of direction and from inside the channels to outside the channels so as to avoid large discontinuities in slope and so as to avoid contact with the end walls.

5,311,205
COLOR LIQUID-CRYSTAL DISPLAY APPARATUS WITH RECTILINEAR ARRANGEMENT
Hiroshi Hamada; Toshiaki Takamatsu, both of Yamatokoriyama, and Naofumi Kimura, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 629,040, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 442,391, Nov. 27, 1989, Pat. No. 5,006,840, which is a continuation of Ser. No. 722,619, Apr. 12, 1985, abandoned. This application Feb. 3, 1992, Ser. No. 829,595
Claims priority, application Japan, Apr. 13, 1984, 59-75302
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—88 **12 Claims**



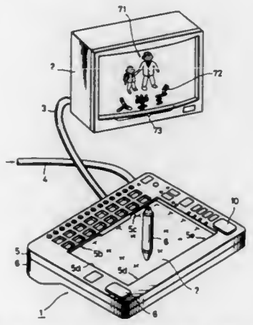
1. An apparatus for driving a color liquid crystal display device including a plurality of scanning electrodes linearly arranged in a first direction, a plurality of signal electrodes linearly arranged in a second direction perpendicular to the first direction, and a plurality of picture elements, one corresponding to scanning and signal electrode intersections, the picture elements being of a red, blue, or green color, wherein the plurality of picture elements comprise a plurality of picture element groups, each of said plurality of picture element groups arranged in a pixel mosaic matrix, the matrix including a plurality of orthogonally disposed rows and columns of picture elements, the number of columns being two and the number of rows being three, the apparatus comprising:
gate driving means for sequentially applying voltage to each of the plurality of scanning electrodes; and
line memory means for applying voltage to each of the plurality of signal electrodes based upon input red, green and blue data signals, to thereby drive corresponding red, green and blue color picture elements, arranged in one pixel element pitch, in said first direction, the line memory means including,
a plurality of sample and hold means, each corresponding to one of said plurality of signal electrodes and one of said red, green, or blue colors,
each for sampling and holding one of said red, green, and blue input data signal, and
shift register means for sequentially activating each of said plurality of sample and hold means to sequentially allow application of voltage to each of said plurality of signal electrodes, based upon said data input signals, and sequentially driving of red, green and blue picture elements,
said pixel mosaic matrix permitting each of said plurality of signal electrodes, which are connected to picture elements on each side, to be connected to a plurality of same color picture elements alternately arranged on each side of each of said plurality of signal electrodes.

5,311,206
ACTIVE ROW BACKLIGHT, COLUMN SHUTTER LCD WITH ONE SHUTTER TRANSITION PER ROW
Terence J. Nelson, New Providence, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.
Filed Apr. 16, 1993, Ser. No. 49,038
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—89 **13 Claims**



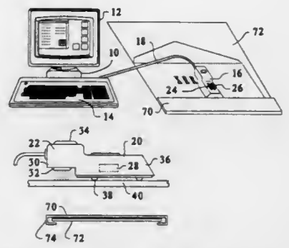
1. A flat-panel display device for displaying images formed from a sequence of frames comprising:
a linear array of longitudinal active backlights disposed in a first plane, each backlight successively emitting light once per frame for a fixed duration time interval t in successive time periods of duration p, where $t \leqq p$,
a linear array of longitudinal liquid-crystal shutters disposed in a second plane parallel to said first plane and oriented perpendicularly to said backlights, each of said shutters having first and second states, and
a shutter driver for causing each shutter to make at most one transition between its states during each time period, the time of the shutter transition within a time period being dependent on a desired intensity of a pixel defined by the intersection of the shutter and the particular backlight illuminated in the time interval.

5,311,207
IMAGE DRAWING APPARATUS FOR DISPLAYING INPUT IMAGE ON DISPLAY MEANS
Hiroki Kusumoto, and Hiroshi Yasuhara, both of Tokyo, Japan, assignors to Sony Corporation, Japan
Continuation of Ser. No. 683,556, Apr. 10, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,238
Claims priority, application Japan, Apr. 19, 1990, 2-103766
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—150 **11 Claims**



1. An image drawing apparatus for sue with a video titler, comprising:
memory means for storing a plurality of predetermined color data;
processing means for outputting colors corresponding to said color data upon command at predetermined display positions on a display screen of a display which is operatively connectable with said video titler, said processing means including means for mixing said color data with video signals to produce a composite video signal for display at said display screen;
coordinate data input means including a pressure sensitive tablet and a pen for drawing images on a pressure sensitive surface of the tablet, for inputting coordinate data which designate coordinates at which color is to be displayed on said display screen; and
control means responsive to a manually generated vortex mode signal for sequentially moving an array of said plurality of predetermined color data from said memory means, for inducing the plurality of color data to be recursively moved and superimposed upon a shape designated by the coordinate data inputted by said coordinates data input means, and for causing the shape to have a number of colored stripes which recursively change color in a streaming manner.

5,311,208
MOUSE THAT PRINTS
William R. Burger; Bruce J. Parks, both of Fairport, and Edward C. Hanzlik, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 3, 1991, Ser. No. 770,273
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—163 **15 Claims**



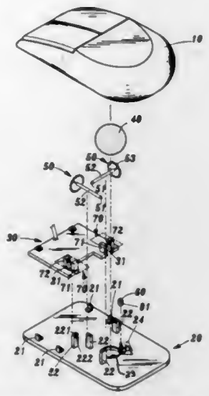
1. An electronic input/output apparatus for a computer system which includes a computer and a computer screen, said electronic input/output apparatus comprising:
a mouse, attached to the computer through an electrical interconnection means, said mouse being represented by a cursor on said computer screen based on movement signals generated by a tracking mechanism within said mouse, said mouse being capable of scanning data from the computer screen in a scanning mode by passing over the data with said cursor;
a printhead, attached to said mouse, for printing data displayed on said computer screen which has been passed over by said cursor onto a surface, said electrical interconnection means providing data signals between said computer and said electronic input/output apparatus; and
control means for controlling said printhead to print information directly corresponding to a current portion of the computer screen being scanned by said mouse of said input/output apparatus as said cursor is traversed around the screen, said control means receiving the movement signals of said input/output apparatus from said mouse tracking mechanism.

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5,311,209
ASSEMBLED PHOTOCMECHANICAL MOUSE STRUCTURE

Chia H. Lin, Taipei, Taiwan, assignor to Sysgration Ltd., Taipei, Taiwan

Filed Mar. 24, 1993, Ser. No. 36,167
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—165 **3 Claims**



1. An assembled photomechanical mouse structure comprising:
a bottom casing;
an upper cover associated with said bottom casing;
a circuit board enclosed by said bottom casing and upper cover;
a ball member;
two slotted discs;
an idle roller; and
a photoelectrical set composed of an LED and a double-chip phototransistor, said mouse structure being characterized in that said bottom casing is integrally formed with stepped supports for fitting said circuit board thereon, two shaft posts and a roller support, wherein said circuit board is located on a front section of said bottom casing, extending from front end thereof only to the position of said slotted discs and on one side of said circuit board adjacent to said slotted discs is formed with an X direction and a Y direction rectangular slots whereby said LED and phototransistor are disposed on two opposite sides of each of said slots, said slotted disc being composed of a disc section formed with slotted wall and a shaft section formed with two end protuberances, said shaft post being formed with a shaft hole and a slant slide channel located thereabove, whereby said slotted disc can be pushed through the slant guide channels of two opposite shaft posts until said protuberances of said shaft section are inserted into said shaft holes so as to permit said slotted disc to freely rotate about the axis of said shaft section, said roller support being S-shaped leaf spring having two upper uprights and a rectangular recess formed therebetween, an engaging boss being formed on inner side of each of said uprights for fitting into said shaft holes said idle roller so as to freely rotatably mount said idle roller on said roller support, whereby when said ball member rolls, said idle roller abuts against said ball member, making the same closely contact with said shaft sections of said slotted discs so as to drive the disc section thereof to rotate between said LED and phototransistor for creating intermittent signals and producing encoding effect.

5,311,210
ERGONOMIC KEYBOARD AND OPERATOR'S CHAIR

Cathy M. O'Brien, Houlton, Wis., and J. Craig Paulson, St. Mary's Point, Minn., assignors to Workplace Designs, Inc., Stillwater, Minn.

Filed Oct. 15, 1992, Ser. No. 961,298
Int. Cl.[5] G09G *5/04*
U.S. Cl. 345—168 **20 Claims**

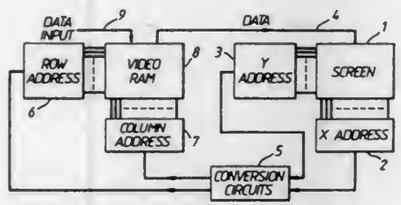


1. A combination chair and data entry keyboard assembly, comprising:
a chair having a seat, a backrest attached to said seat, and a pedestal attached to and supporting said seat;
a first and second support arm each coupled to said chair and extending upwardly;
a pair of armrests, one coupled to each of said first and second support arms; and
a data entry keyboard bifurcated into first and second keyboard units, each of said first and second keyboard units being spatially separated from the other and being adjustably connected to and supported by one of said arm rests for adjustably positioning each of said first and second keyboard units include means for supporting a palm of an operator.

5,311,211
APPARATUS AND METHOD FOR PROVIDING A RASTER-SCANNED DISPLAY WITH CONVERTED ADDRESS SIGNALS FOR VRAM

Richard D. Simpson, Bedminster, N.J., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 25, 1991, Ser. No. 765,623
Claims priority, application United Kingdom, Oct. 9, 1990, 9021920.5
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—189 **9 Claims**

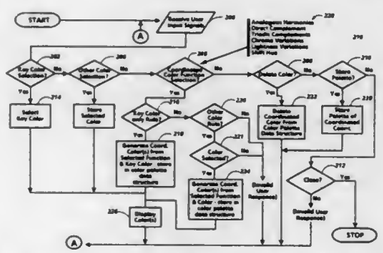


1. Display apparatus including
a display device having a screen,
scanning circuits for producing a scanning raster on the screen of the display device,
video random access memory means having an output channel connected to supply data to the display device, and an input channel for data to be stored in the memory means,
addressing means for addressing the memory means, and
conversion circuits responsive to signals from the scanning circuits representing the picture elements being scanned to produce address signals for application to the addressing means to cause the memory means to supply the data for the picture element being scanned,
the conversion circuits being such that sequential addresses of the memory means correspond to sections of the scanning lines of the raster containing an integral power of two of picture elements, the sections forming identical rectangular areas of the screen having a width equal to an integral submultiple of the screen width and a height of an integral power of two of consecutive scanning lines, wherein the width of the identical rectangular areas of the screen is equal to the width of the screen divided by a number other than an integral power of two.

5,311,212
FUNCTIONAL COLOR SELECTION SYSTEM

Giordano B. Beretta, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 677,682, Mar. 29, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 102,129
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—150 **31 Claims**

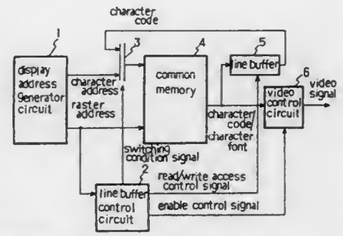


1. A system for producing a color palette data structure including a plurality of generated colors; the system comprising
input means for receiving request signals from a user; the request signals including a key color request, a color function request and a save palette request;
key color selection means, responsive to the key color request received from the user, for selecting a key color from a key color source; the key color and each generated color being defined by a set of colorimetric coordinates defining a color location in a uniform color space;
color function selection means, responsive to the color function request received from the user for selecting a color function;
the color function defining a predetermined color relationship relating the color location of the key color in the uniform color space to the color locations of at least two generated colors in the uniform color space; the color function computing the set of colorimetric coordinates of the at least two generated colors using the set of colorimetric coordinates of the key color;
color generation means, responsive to the color function selection means, for generating the set of colorimetric coordinates for the at least two generated colors using the set of colorimetric coordinates of the key color according to the predetermined color relationship defined by the selected color function, and for storing in the color palette data structure the set of colorimetric coordinates for of the at least two generated colors;
display means, cooperatively associated with and responsive to the key color selection means and to the color generation means, and including a display device having a display screen, for converting the set of colorimetric coordinates of the key color and of each generated color stored in the color palette data structure to color output signals representing colors producible on the display device; the display means further displaying concurrently on the display screen the key color and each of the generated colors stored in the color palette data structure using the color output signals; and
memory means for storing the color palette data structure in response to the save palette request received from the user.

5,311,213
DISPLAY CONTROL DEVICE

Satoshi Kosugi, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 591,039, Oct. 1, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 946,801
Claims priority, application Japan, Sep. 29, 1989, 1-254761
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—194 **9 Claims**



1. A display control device comprising:
a) a common memory having functions of a refresh memory for outputting a character code and a character generator for generating a character font;
b) a display address generator circuit for generating a character address signal for designating the character code stored in said common memory and a raster address signal for designating the character font;
c) a line buffer, responsive to a read/write access control signal, for storing therein the character code outputted from said common memory, wherein said line buffer comprises a register having a storage capacity corresponding to the number of display characters in one horizontal line;
d) an address selector, responsive to a switching condition signal, for switching the character address signal from said display address generator circuit and the character code from said line buffer to output a switched signal to said common memory;
e) a video control circuit, responsive to an enable control signal, for outputting a video signal based upon the character font from said common memory; and
f) a controller, responsive to the raster address signal, for outputting the read/write access control signal for instructing said line buffer to effect read/write operation based upon the raster address signal from said display address generator circuit, for outputting the enable control signal to said video control circuit based upon the raster address signal and for outputting the switching condition signal to said address selector based upon the raster address signal, wherein said controller comprises decoding means, receiving the raster address signal from said display address generator circuit, for decoding the raster address signal to determine whether it is indicative of a head raster, wherein said controller comprises control means, responsive to decoding of the raster address signal, for, if a head raster is present, generating the switching condition signal for providing by said address selector of the character address signal from said display address generator circuit to said common memory, and for generating, in response to decoding of a head raster, the read/-write access control signal to said line buffer and said enable control signal to said video control circuit for

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writing a character code from said common memory into said line buffer and for disabling said video control circuit to mask its output, said decoding means otherwise for producing the switching condition signal for providing the character code from said line buffer to said common memory as an address, for producing the read/write access control signal such for outputting the character code stored in said line buffer, and for producing the enable control signal for outputting from said video control circuit a character font from said common memory.

5,311,214

INK JET RECORDING APPARATUS HAVING MEANS FOR REMOVING FOREIGN MATERIAL FROM AN INK SUPPLY PATH BY FIRST INTRODUCING AN INTO THE INK SUPPLY PATH

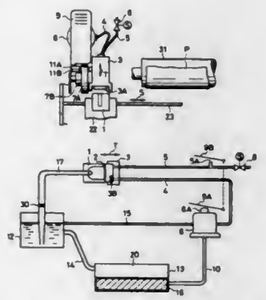
Shinichi Hirasawa; Kolchi Sato, both of Hiratsuka; Koji Terasawa; Akira Miyakawa, both of Tokyo; Tsutomu Abe, Isehara, and Yoshifumi Hattori, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 559,977, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 364,548, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 196,820, May 19, 1988, abandoned, which is a continuation of Ser. No. 926,543, Nov. 4, 1986, abandoned. This application Oct. 29, 1991, Ser. No. 783,820

Claims priority, application Japan, Nov. 8, 1985, 60-249002; Nov. 8, 1985, 60-249003; Nov. 8, 1985, 60-249003; Nov. 8, 1985, 60-249004; Nov. 8, 1985, 60-249005; Nov. 8, 1985, 60-249006; Nov. 8, 1985, 60-249007; Nov. 8, 1985, 60-249008; Nov. 8, 1985, 60-249009; Nov. 8, 1985, 60-249010

Int. Cl.[5] B41J *2/165*

U.S. Cl. 346—1.1 **22 Claims**



1. A recovery process for an ink jet recording apparatus, said apparatus having a recording head with a plurality of discharge ports and a liquid chamber common to the discharge ports, the liquid chamber being supplied with ink through an ink supply path from an ink tank, and cap unit for covering the discharge ports, the process comprising the steps of:

introducing air through the discharge ports into the liquid chamber of the recording head;

covering the discharge ports with the cap unit; and

applying suction to the cap unit to suck the introduced air and ink through the discharge ports.

5,311,215

APPARATUS AND METHOD FOR FORMING DIGITAL IMAGE

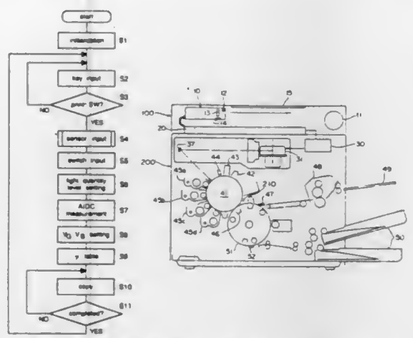
Yoshihiro Hattori; Suguru Hamamichi, both of Toyokawa, and Hideaki Kodama, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1993, Ser. No. 13,437

Claims priority, application Japan, Feb. 5, 1992, 4-019900

Int. Cl.[5] G01D *15/00*

U.S. Cl. 346—160 **19 Claims**



1. An apparatus for forming a digital image, comprising:

a photoconductor;

an exposure means for emitting a beam to said photoconductor to form a latent image;

a development means for developing the latent image;

a drive means for driving said exposure means so as to modulate the intensity of the beam according to multi-level image data;

a beam size detection means for detecting the size of the beam;

a toner density detection means for making said exposure means and said development means to form a standard toner image in the prescribed conditions and for detecting the toner density of the standard toner image;

a memory means for storing a plurality of types of gradation correction data;

a selection means for selecting one of the plurality of gradation correction data stored in the memory means according to the beam size detected by said beam size detection means and the toner density detected by said toner density detection means; and

a correction means for correcting the multi-level image data by using the gradation correction data selected by said selection means.

5,311,216

EXPOSURE DEVICE HAVING MEANS FOR CORRECTING INTENSITY OF LASER BEAM DEPENDENT ON VARIATION IN ROTATIONAL SPEED OF PHOTOSENSITIVE MEMBER

Shinichi Hirahata, Kakamigahara, and Tsuyoshi Ohashi, Hashima, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 8, 1991, Ser. No. 772,788

Claims priority, application Japan, Oct. 8, 1990, 2-271522; Feb. 19, 1991, 3-024515

Int. Cl.[5] H04N *1/21*

U.S. Cl. 346—108 **15 Claims**

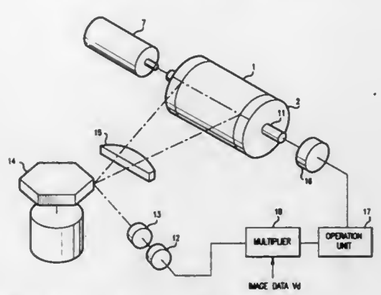
1. An exposure device for forming a latent image on a photosensitive recording member, comprising:

image data generating means for generating image data having a level;

moving means for moving the recording member at a regular speed which is subject to variation;

speed variation detecting means for detecting a variation of the speed at which the recording member is moved, and for producing speed variation data having a level indicative of the variation in the speed of the recording member;

a semiconductor laser, having an input to which a signal having a level is applied, for emitting a laser beam onto the recording member, an intensity of the laser beam being variable dependent on the level of the signal applied to the input of said semiconductor laser; and



correction means for correcting the intensity of the laser beam in accordance with the speed variation data, said correction means comprising storage means for storing groups of data, wherein said correction means:

1) applies the image data to one of the groups of data and applies the speed variation data to another of the groups of data to produce corrected image data; and

2) outputs the corrected image data for application to the input of said semiconductor laser.

5,311,217

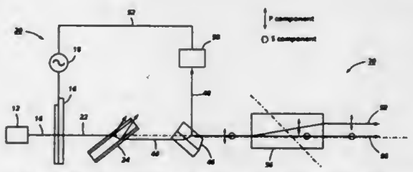
VARIABLE ATTENUATOR FOR DUAL BEAMS

Jean M. Guerin, Glendale, and Abd-El-Fattah A. Ibrahim, Palos Verdes Estates, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,294

Int. Cl.[5] H04M *1/21*

U.S. Cl. 346—108 **7 Claims**



1. A variable attenuator for electronically controlling dual beam intensity comprising

a laser source for emitting a light beam,

a liquid crystal for exposure control of said light beam from said laser source,

polarization means for decreasing the s-polarization component of said light beam from said liquid crystal, and

beam splitting means for separating said light beam from said polarization means into two beams of equal intensity.

5,311,218

INK JET PRINT HEAD AND METHOD OF FABRICATING THE SAME

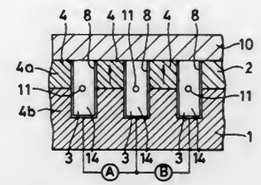
Kuniaki Ochiai, and Shigeo Komakine, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,267

Claims priority, application Japan, Mar. 19, 1991, 3-54296; Oct. 2, 1991, 3-255563

Int. Cl.[5] B41J *2/045*

U.S. Cl. 346—140 R **1 Claim**



1. An ink jet print head comprising:

a piezoelectric plate formed of a piezoelectric material, polarized in a direction of thickness thereof and provided with a plurality of parallel slots separated from each other by upper side walls;

a base plate formed of a nonconductive, nonelectrostrictive material having a rigidity lower than a rigidity of the piezoelectric material forming a piezoelectric plate, provided with a plurality of parallel grooves separated from each other by lower side walls and joined to the piezoelectric plate so that the grooves are aligned respectively with the slots of the piezoelectric plate to form pressure chambers and the lower side walls are connected respectively to the upper side walls so as to form side walls for said pressure chambers;

a plurality of electrodes formed over entire bottom surfaces of the grooves and entire side surfaces of the side walls;

a top plate joined to an upper surface of the piezoelectric plate so as to seal the pressure chambers; and

a nozzle plate provided with a plurality of ink jets and joined to one end of the joined base plate, piezoelectric plate and top plate so that the ink jets correspond respectively to the pressure chambers.

5,311,219

INK JET PRINT HEAD

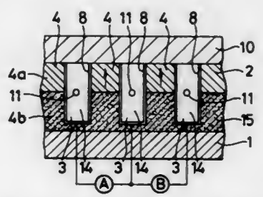
Kuniaki Ochiai, and Shigeo Komakine, both of Mishima, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,352

Claims priority, application Japan, Oct. 4, 1991, 3-257531

Int. Cl.[5] B41J *2/045;* **H01L** *41/04*

U.S. Cl. 346—140 R **3 Claims**



1. An ink jet print head comprising: a flat base plate having a relatively high rigidity and resistant to thermal deformation; an adhesive layer formed by spreading an adhesive over a surface of the base plate; a piezoelectric plate polarized in a direction of thickness thereof and joined to the adhesive layer; a top plate attached to an upper surface of the piezoelectric

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plate; and a nozzle plate provided with a plurality of ink jets and joined to one end of the base plate, the adhesive layer, the piezoelectric plate and the top plate;

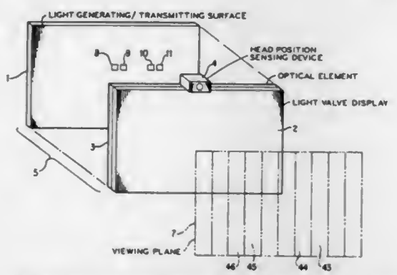
wherein a plurality of parallel grooves are formed at predetermined intervals through the piezoelectric plate into the adhesive layer such that said plurality of parallel grooves include side surfaces extending through said piezoelectric plate and said adhesive layer with said plurality of parallel grooves each having a bottom surface located in said adhesive layer, wherein the grooves are closed by the top plate and the nozzle plate so as to form a plurality of pressure chambers connected to an ink supply unit, the ink jets correspond respectively to the pressure chambers, and electrodes are formed over the side and each bottom surface of the grooves, and wherein deformation of said side surfaces is enhanced upon application of a voltage to said electrodes as a result of said grooves extending into said adhesive layer.

5,311,220

AUTOSTEREOSCOPIC DISPLAY

Jesse B. Eichenlaub, Rochester, N.Y., assignor to Dimension Technologies, Inc., Rochester, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,211
Int. Cl.[5] H04N *13/04, 15/00*
U.S. Cl. 348—55 **25 Claims**



1. An autostereoscopic display having (a) a surface which can generate or transmit regions of emitted light, (b) a transmissive display or reflective light valve display spaced apart from said surface, (c) an optical element located near said transmissive or reflective light valve display and being generally of the same dimensions as said display which focuses light from the light emitting regions on the first surface onto a plane spaced apart from said display, (d) means to cause the regions which emit light to blink on, then off, one after the other, and to continuously repeat the process, and (e) means to cause the image on said transmissive or reflective light valve display to change rapidly so that a different image can be shown each time a different light emitting region is turned on, the improvement being that of additionally providing:

an optical element located near said transmissive display and being generally of the same dimensions as said transmissive or reflective light valve display, which focuses light from the light emitting regions on the first surface onto a plane spaced apart from said display,

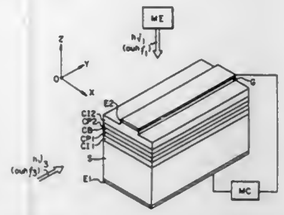
whereby improved brightness of the display is obtained.

5,311,221

ELECTROMAGNETIC WAVE MODULATOR EQUIPPED WITH COUPLED QUANTAL WELLS, AND APPLICATION TO AN ELECTROMAGNETIC WAVE DETECTOR

Nakita Vodjdani; Claude Weisbuch; Borge Vinter; Julien Nagle, all of Paris; Michel Papuchon, Massy; Jean-Paul Pocholle, Arpajon, and Dominique Delacourt, Paris, all of France, assignors to Thomson CSF, Puteaux, France

Filed May 11, 1989, Ser. No. 364,680
Claims priority, application France, May 11, 1988, 88 06346
Int. Cl.[5] G02B *6/10, 5/14;* **H01L** *33/00*
U.S. Cl. 359—130 **17 Claims**



1. An electromagnetic wave modulator, comprising:

a semi-conducting structure containing a first alternating arrangement of layers making up a first quantal well;

means for populating the first discrete energy level of the first quantal well with electrons; and

means for controlling the absorption of a wave to be modulated by the quantal well,

wherein said semi-conducting structure incorporates another alternating arrangement of layers in proximity to the first set of alternating layers and delimiting a second quantal well, which is coupled to the first quantal well across a barrier layer, and wherein said means of control contain means for applying upon command to said structure an electric field perpendicular to said barrier, thereby permitting an increase in the life-span of the electron-hole pairs thus created, and wherein the compositions of the quantal wells are such that the first well allows a single discrete level of energy, while the second well allows two levels of energy whose differential corresponds to the frequency to be modulated multiplied by Planck's constant.

5,311,222

PRISM ASSEMBLY

Galen L. Buckley, Dana Point; Kenneth G. Selesky, San Juan Capistrano, and Daniel M. Houston, Costa Mesa, all of Calif., assignors to Pyramid Optical, Irvine, Calif.

Filed Sep. 14, 1988, Ser. No. 244,711
The portion of the term of this patent subsequent to Jun. 10, 2007, has been disclaimed.
Int. Cl.[5] G02B *5/122*
U.S. Cl. 359—529 **11 Claims**

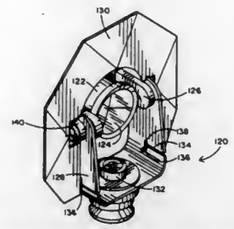
1. A retro-reflective prism assembly for use in conjunction with distance measurement instruments, the assembly of the type having a retro-reflective prism and a housing for retaining the prism; the assembly comprising:

a housing bracket for retaining said housing;

a yoke; said housing bracket being rotatably connected to said yoke for elevational tilting of said housing; and

a generally planar target defining perpendicular center lines intersecting the center of said prism; said target being removeably affixed to said yoke and remaining stationary relative to said housing during tilting of said housing;

said yoke having means for stringing a plumb line for ascertaining the vertical position of said housing relative to a predetermined point below the assembly, said plumb line



defining a mathematical line intersecting said housing, but being strung around the periphery of said yoke.

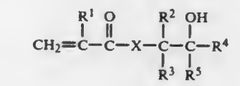
5,311,223

OPHTHALMIC LENS POLYMER INCORPORATING ACYCLIC MONOMER

Douglas G. Vanderlaan, Jacksonville, Fla., assignor to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 14,903, Feb. 8, 1993, Pat. No. 5,256,751. This application Jun. 7, 1993, Ser. No. 72,616
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—160 H **16 Claims**

1. An ophthalmic lens that comprises a polymer comprising the reaction product of a hydrophilic monomer and an acyclic monomer represented by the following formula:



wherein:

R^1 is hydrogen or methyl;

each of R^2, R^3, R^4 and R^5 independently is hydrogen or an acyclic monovalent alkyl radical, provided the total number of carbon atoms of $R^2+R^3+R^4+R^5$ is between 4–20, inclusive;

X is O, NH or NR^6; and

R^6 is a straight or branched alkyl radical.

5,311,224

OPTICAL OPHTHALMIC TREATMENT APPARATUS

Masanori Enomoto, Nishio, Japan, assignor to Nidek Co., Ltd., Aichi, Japan

Filed Sep. 25, 1992, Ser. No. 951,127
Claims priority, application Japan, Oct. 4, 1991, 3-285586
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—214 **15 Claims**

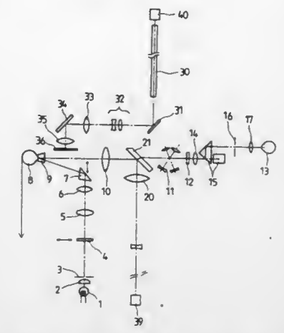
1. An optical ophthalmic treatment apparatus comprising:

a slit beam projection optical system for projecting a narrow illuminating light beam, having a reflecting member for reflecting the narrow illuminating light beam toward a patient's eye to illuminate the patient's eye said reflecting member having at least a side of an operator and a side of the patient's eye;

a stereomicroscopic observation optical system for observing the patient's eye;

a first therapeutic light projecting optical system for projecting a first therapeutic light beam so that the first therapeutic light beam is introduced into the stereomicroscopic observation optical system though a position on the side of an operator with respect to the reflecting member;

a light path deflecting optical element capable of being inserted in and retracted from a plane including light paths of the stereomicroscopic observation optical system through a position on the side of the patient's eye with respect to the reflecting member, capable of transmitting at least part of the light beam projected by the slit beam projection optical system and capable of reflecting a second therapeutic light beam; and



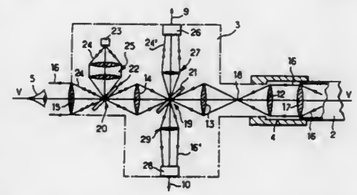
a second therapeutic light projecting optical system for projecting the second therapeutic light beam so that the second therapeutic light beam is reflected by the light path deflecting optical element inserted in the light path of the stereomicroscopic observation optical system toward the patient's eye.

5,311,225

DEVICE FOR DETERMINING THE PORTION OF A FIELD SEEN BY THE EYE OF AN OBSERVER

Bruno Acier, Chartres; Jean-Pierre Merle, Orsay, and Jacques R. Des Ordons, Savigny Sur Orge, all of France, assignors to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 30, 1992, Ser. No. 983,504
Claims priority, application France, Dec. 13, 1991, 91 15509
Int. Cl.[5] G02C *5/14*
U.S. Cl. 351—221 **13 Claims**



1. A device (**1**) intended to determine the portion (**7***i*) of a field (**6**) seen by the eye (**5**) of an observer and comprising:

a light source (**23**; **123**) sending a light beam (**24**; **124**) on to said eye (**5**) in order to form at least one reflection;

a first image detector (**26**; **126**) observing said reflection and generating first electrical signals representative of the orientation of the optic axis of said eye (**5**);

a second image detector (**28**; **128**) observing said field (**6**) and generating second electrical signals representative of said field (**6**); and

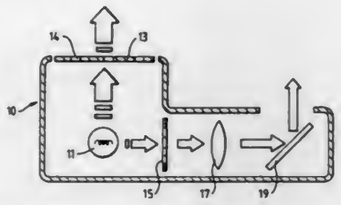
computing means (**8**) receiving said first and second electrical signals and delivering third electrical signals representative of the portion (**7***i*) of said field (**6**) seen by said eye (**5**);

an optical sighting system (**2**, **3**; **102**) through which said eye (**5**) looks at said field (**6**), said optical system comprising an exit eyepiece (**15**; **117**) behind which said eye (**5**) is placed; and

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a first optical component (**22**; **122**) placed on the side of the object focal plane of said exit eyepiece (**15**, **117**), said first optical component letting through the light rays (**16**, **116**) which come from said field (**6**) and which pass through said optical sighting system and sending to said eye (**5**) said light beam (**24**; **124**) emitted by said light source (**23**; **123**).

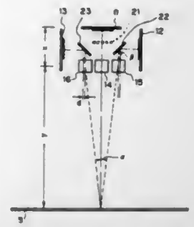
5,311,226
TOY PROJECTOR
Hideyasu Karasawa, Nagareyama, Japan, assignor to Sente Creations Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1992, Ser. No. 939,120
Claims priority, application Japan, Sep. 4, 1991, 3-70865[U]
Int. Cl.[5] G03B *21/26*
U.S. Cl. 353—30 **9 Claims**



8. A toy projector comprising:
a light source;
a first light-transmitting member having a first light-transmitting design through which light from said light source passes along a first path so as to form a first projection on a projection surface,
a second light-transmitting member having a plurality of light-transmitting designs, said light from said light source passing through a selected one of said designs along a second path;
a movable mirror onto which light passing along said second path impinges, said light reflecting off said mirror so as to form a second projection on said projection surface;
focussing means arranged between said second light-transmitting member and said mirror for focusing light passing through said second light-transmitting member onto said mirror; and
drive means for causing step-wise movement of said second light transmitting member wherein a different one of said plurality of designs is moved into said second light path at each step, said drive means further being operative for causing reciprocating movement of said mirror along a predetermined path so that said second projection is moved relative to said first projection on said projection surface.

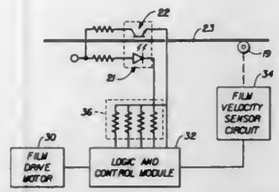
5,311,227
LIQUID CRYSTAL PROJECTION DISPLAY DEVICE WITH MIRROR
Akio Takayasu; Toshihiro Suzuki; Takeshi Goto; Tetsuya Kobayashi; Tetsuya Hamada; Yoshinori Tanaka; Takashi Kanno; Masaru Ishiwa; Makoto Goshima; Noriyuki Ohashi, and Hisashi Yamaguchi, all of Kawasaki, Japan, assignors to Fujitsu, Limited, Kanagawa, Japan
Filed Jan. 6, 1993, Ser. No. 1,293
Claims priority, application Japan, Jan. 8, 1992, 4-1619
Int. Cl.[5] G03B *21/28*
U.S. Cl. 353—37 **18 Claims**

1. A projection display device comprising:
a source of light;
a plurality of display elements receiving light from the source and capable of forming images, respectively;
a plurality of projection lenses arranged in a row in a side by side relationship and having respective optical axes extending parallel to each other, the display elements and the projection lenses being arranged to form sets individually; and
a mirror arranged between the display element and the projection lens of at least one of the sets so that the display element in said at least one set faces in a first direction and the display element in the adjacent set faces in a second direction different from the first direction;



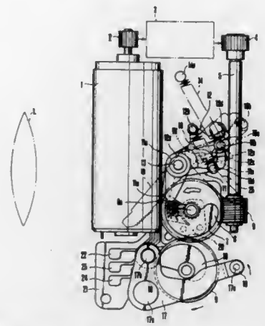
wherein the display element in said at least one set and the display element in the adjacent set are arranged such that a distance between the projection lenses of the adjacent sets is smaller than would otherwise be possible when a mirror is not arranged between the display element in an arrangement in which the projection lens of any adjacent sets and display elements face in the same direction.

5,311,228
CAMERA WITH OPTICAL FILM METERING AND IMAGE FRAME DATA ENCODEMENT
Jeffrey R. Stoneham, Spencerport, and John H. Minnick, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 9, 1993, Ser. No. 15,713
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 **9 Claims**



1. Film encodement apparatus for a photographic camera adapted to receive film having perforations along a side thereof which are spaced apart by an amount sufficient to define successive image frame areas along the length of the film, said apparatus comprising:
sensing means including a light emitter operative in the visible light spectrum for sensing said film perforations to meter positioning of said film in the camera; and
control means operative during first intervals to activate said light emitter for sensing of said perforations and operative during second intervals distinct from said first intervals for controlling activation of said light emitter to expose said film with predetermined film encodement data in a path aligned with said perforations.

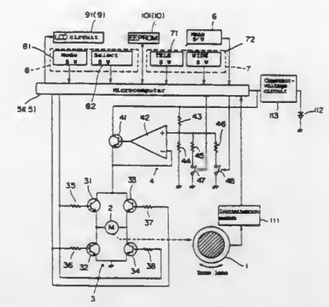
5,311,229
CAMERA WITH CAMOPERATED MIRROR DRIVING MECHANISM
Shousuke Haraguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 650,866, Feb. 5, 1991, abandoned. This application May 22, 1992, Ser. No. 886,318
Claims priority, application Japan, Feb. 7, 1990, 2-27723; Feb. 7, 1990, 2-27724; Feb. 7, 1990, 2-27725
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—152 **2 Claims**



1. A camera comprising:
(a) a movable mirror arranged to be movable between a finder-viewing position and an exposure-retracted position;
(b) a motor; and
(c) a mirror moving mechanism for causing said movable mirror to move between said finder-viewing position and said exposure-retracted position by using said motor as a drive source, said mirror moving mechanism including a cam member for controlling the movement of said movable mirror and the movement of said cam member, said phase detecting means provided with a plurality of energization stop phases stopping the energization of said motor before said cam member reaches a phase for stopping said movable mirror, which has moved from said exposure-retracted position, at said finder-viewing position.

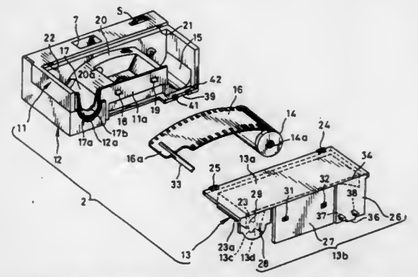
5,311,230
ZOOM LENS CAMERA
Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 533,785, Jun. 6, 1990, abandoned. This application Dec. 6, 1991, Ser. No. 802,713
Claims priority, application Japan, Jun. 9, 1989, 1-148102
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.12 **26 Claims**

1. A zoom lens camera, including a zoom lens comprising:
means for selecting one zooming speed from a plurality of zooming speeds within a zooming mode that are programmed into a semiconductor memory device; and



means for controlling a zooming operation in accordance with said selected zooming speed so as to zoom said lens to a desired focal length at said selected zooming speed.

5,311,231
LENS-FITTED PHOTOGRAPHIC FILM UNIT AND METHOD FOR ASSEMBLING THE SAME
Chiaki Suzuki, Kanagawa; Junichi Takagi, and Seiji Asano, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 30, 1992, Ser. No. 953,830
Claims priority, application Japan, Oct. 3, 1991, 3-283586
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—288 **14 Claims**



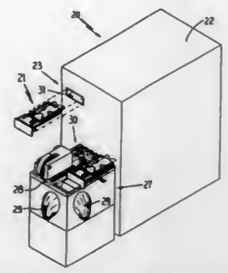
1. A lens-fitted photographic film unit having a main body which includes a film take-up chamber for containing a photographic film cassette and a film supply chamber for containing a film roll formed after drawing a photographic film from said photographic film cassette, there being an exposure frame between said chambers, said lens-fitted photographic film unit comprising:
a bottom opening formed in a bottom of said film supply chamber;
a rear cover including a rear section covering the rear of said main body;
a first cap for closing said bottom opening of said film supply chamber; and
side edge limiting means integral with said film unit and permitting a film winding shaft to be inserted into said film supply chamber to wind said film roll thereon but preventing a side edge of said film roll from protruding in a spiral from within said film supply chamber toward the outside thereof when said winding shaft is subsequently pulled out of said film supply chamber.

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5,311,232
FILM MAGAZINE FOR FEEDING FILM DEVELOPING MACHINES AND DEVICE FOR PREPARING SAID MAGAZINE

Rudolf Dech, Oberweningen, Switzerland, and William Da Ros, Pordenone, Italy, assignors to Gretag San Marco S.r.l., Pordenone, Italy

Filed Dec. 28, 1990, Ser. No. 635,704
Claims priority, application Italy, Dec. 28, 1989, 45803 A/89
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—298 **18 Claims**

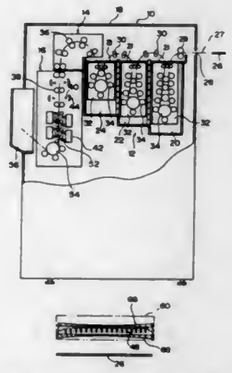


1. Apparatus for preparing film for insertion thereof into a film developing machine, said apparatus comprising: a preparation station including a table having a plurality of seats; a plurality of film contains capable of receiving films of different sizes a plurality of film leaders, film splicing material capable of joining film to the leaders, film identification, and a magazine all received in the seats of said table; and said magazine defining a film insertion space therein of dimensions corresponding to those of said film containers such that said film containers are individually insertable into said magazine within said film insertion space.

5,311,233
PHOTOSENSITIVE MATERIAL DRYING DEVICE

Shigeru Saotome, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 953,257
Claims priority, application Japan, Oct. 1, 1991, 3-253666
Int. Cl.[5] G03D *7/00, 13/00*
U.S. Cl. 354—300 **2 Claims**



1. A photosensitive material drying device for drying an exposed photosensitive material, said photosensitive material drying device comprising:

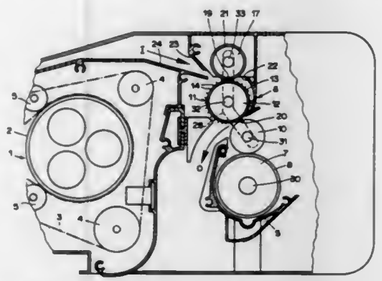
far infrared radiation heater means disposed in facing relationship to said photosensitive material so as to be perpendicular to a conveyance direction of said photosensitive material and having substantially a same longitudinal dimension as a transverse dimension of said photosensitive material;

said far infrared radiation heater means including a heat source inserted into a ceramic tube, said ceramic tube having first and second ends and said ceramic tube being formed such that a longitudinally-extending central portion thereof has a thickness less than that of portions extending from said central portion of said ceramic tube to said first and second ends thereof, wherein said thickness varies in a direction transverse to said conveyance direction of said photosensitive material.

5,311,234
DEVELOPING APPARATUS

Paul A. Heinzer, Pully, Switzerland, assignor to Multitec AG, Berne, Switzerland

Filed Sep. 18, 1992, Ser. No. 946,621
Claims priority, application Switzerland, Sep. 20, 1991, 2795/91-1
Int. Cl.[5] G03D *5/00*
U.S. Cl. 354—317 **19 Claims**



1. In an apparatus for developing one face of photosensitive sheet or strip stock, of the type having an applicator roller, a metering roller for metered supply of developer liquid to said applicator roller, a profiled roller for pressing the stock against said applicator roller, and guide means for feeding and guiding the stock, the improvement comprising:

a cylindrical core forming part of said profiled roller and extending over an entire width of said apparatus,

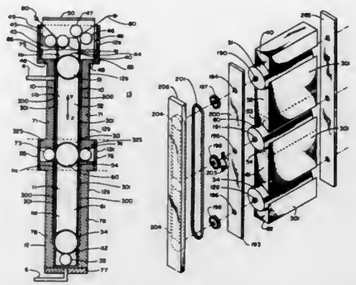
a coating of permanently elastic material completely covering said core, and

a plurality of mutually staggered deformable nubs of said permanently elastic material protruding radially from the surface of said coating remote from said core, wherein said coating is formed by a plurality of sheaths of said permanently elastic material, ranged side by side and slipped onto said core.

5,311,235
DRIVING MECHANISM FOR A PHOTOGRAPHIC PROCESSING APPARATUS

Ralph L. Piccinino, Jr., Rush; David L. Patton, Webster; Roger E. Bartell, Rochester, all of N.Y.; Anthony Earle, London, England, and John H. Rosenburgh, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,820
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—320 **12 Claims**



1. An apparatus for processing photosensitive materials, which comprises:

a tank through which a processing solution is pumped;

a rack having integral means to facilitate its insertion and removal from said tank, said rack and said tank are relatively dimensioned so that a small volume for holding processing solution and photosensitive material is formed between said rack and said tank;

means for circulating the processing solution through the small volume;

a first plurality of rollers for moving the photosensitive material into or out of the small volume;

a second plurality of rollers connected to said rack;

a third plurality of rollers connected to said tank, wherein said second and third plurality of rollers move the photosensitive material through the small volume;

a plurality of sprockets which are each individually linked to one of said second plurality of rollers;

a chain linked to each of said sprockets to drive each of said second plurality of rollers; and

means for preventing processing solution from flowing between said sprockets, said chain and said second plurality of rollers to reduce the space that would otherwise be filled by the processing solution.

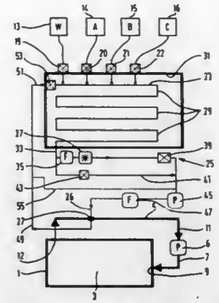
5,311,236
PROCESS AND DEVICE FOR THE FEEDING OF FLUID ADDITIVES, AND IN PARTICULAR THE FEEDING OF REPLENISHERS TO A PHOTOGRAPHIC PROCESSING FLUID

Gerhard Ueffinger, Weinstadt, Fed. Rep. of Germany, and Andrew Green, Harrow, United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 889,883
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **16 Claims**

1. A process for the feeding of fluid additives to a photographic processing system fluid contained in a photographic fluid processing system, wherein the fluid additive is supplied at a first end of a feeding duct connected with the fluid processing system and discharged to said system fluid from a second end of said feeding duct, comprising the steps of:

a) supplying different fluid additives successively into the feeding duct, and

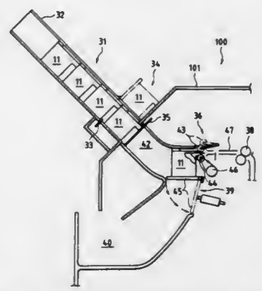


b) prior to the feeding of a fluid additive which differs from the preceding fluid additive, at least the first end of the feeding duct is filled with system fluid.

5,311,237
FILM CONTAINER AND AUTOMATIC DEVELOPING APPARATUS

Ken Kawada, and Tadashi Tanaka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 28, 1992, Ser. No. 889,433
Claims priority, application Japan, May 28, 1991, 3-150896; Mar. 12, 1992, 4-87552
Int. Cl.[5] G03D *13/14*
U.S. Cl. 354—341 **8 Claims**



1. An automatic developing apparatus for developing film wound within a cartridge which is stored in a container, comprising:

a holder for holding a plurality of containers therein;

feed-out control means for retaining said containers in said holder and for individually and successively feeding said containers from said holder to a film draw-out position;

a shutter disposed between said feed-out control means and said film draw-out position for preventing light from entering said film draw-out position, said shutter being openable to allow said containers to be fed to said film draw-out position;

draw-out means for withdrawing the film out of said container positioned in said film draw-out position; and

ejecting means for ejecting said container from said draw-out position.

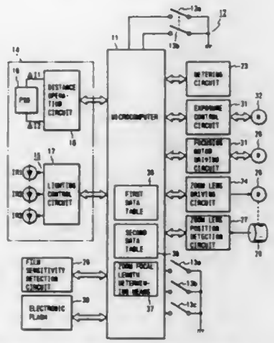
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5,311,238

ZOOM LENS BEARING CAMERA

Takayuki Karasawa, and Hiroshi Ikeda, both of Nagano, Japan, assignors to Chinon Kabushiki Kaisha, Nagano, Japan

Continuation of Ser. No. 749,338, Aug. 23, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,933
Claims priority, application Japan, Aug. 24, 1990, 2-224059
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 **2 Claims**



1. A zoom lens bearing camera comprising:

a zoom lens having a full-aperture F number which changes as a zoom focal length is changed, wherein said zoom focal length is variable;

ranging means for measuring a distance to a subject;

metering means for measuring brightness of a scene containing said subject;

electronic flash means for supplying an auxiliary light source to said subject;

sensitivity detecting means for detecting a film exposure sensitivity;

a first data table including optimum zoom focal lengths corresponding to various subject distances;

a second data table including optimum zoom focal lengths corresponding to said various subject distances according to a range of said electronic flash means; and

zoom focal length determining means for determining said zoom focal length corresponding to said distance to said subject from said first data table when a quantity of exposure obtained, based upon said brightness of said scene measured by said metering means, said film exposure sensitivity detected by said sensitivity detecting means, and a full-aperture F number in a selected zoom focal length, is not less than a predetermined exposure value, and form said second data table when said quantity of exposure is less than said predetermined exposure value.

5,311,239

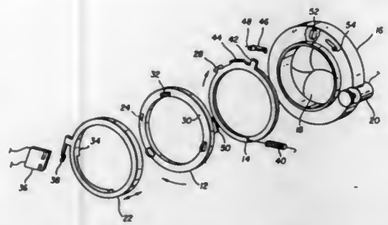
CAMERA MECHANISM FOR SETTING FOCUS AND APERTURE

Jude A. SanGregory, Spencerport; James R. Kavanaugh, Henrietta, and Leonard Richiuso, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1993, Ser. No. 102,456
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—400 **10 Claims**

1. A camera mechanism including an actuating member moveable in a one direction for focusing an optical element and an opposite direction for controlling a shutter aperture according to a desired exposure value; characterized in that:

said actuating member sets a stop for limiting shutter movement to a maximum aperture; and,



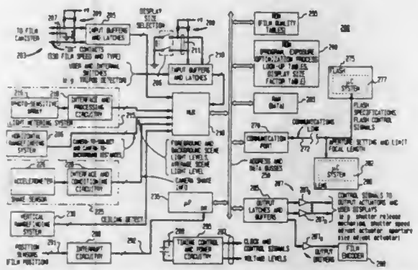
said shutter is driven to open to said maximum aperture determined by said stop.

5,311,240

TECHNIQUE SUITED FOR USE IN MULTI-ZONE AUTOFOCUSING CAMERAS FOR IMPROVING IMAGE QUALITY FOR NON-STANDARD DISPLAY SIZES AND/OR DIFFERENT FOCAL LENGTH PHOTOGRAPHING MODES

Richard B. Wheeler, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1992, Ser. No. 971,012
Int. Cl.[5] G03B *13/36, 7/08*
U.S. Cl. 354—402 **26 Claims**



1. A method for use in an image capturing device for capturing an image of a scene on a frame of photographic film wherein the image as captured on the frame will be subsequently enlarged, in a manner defined by a pre-defined display characteristic, into an output image, said device having autofocusing capability with a number of autofocusing zones and further having a shutter speed and a lens with respectively a variable shutter speed and a variable lens aperture associated therewith, said method comprising the steps of:

first determining an initial lens aperture value suitable for use with said number of autofocusing zones and associated with a standard display characteristic;

first ascertaining an initial shutter speed value which, in combination the initial lens aperture value, will produce a baseline exposure of said scene;

second determining, in response to said pre-defined display characteristic, a new lens aperture value such that a corresponding hyperfocal distance for one of said autofocusing zones remains substantially constant between said predefined and standard display characteristics such that an amount of depth-of-field overlap between adjacent ones of said zones will be substantially maintained between said pre-defined and standard display sizes and said captured image, when enlarged in said manner, will possess an amount of image blur that does not exceed a pre-defined amount of image blur associated with said standard display characteristic;

second ascertaining a new shutter speed value which, in combination with said new lens aperture value, will produce a baseline exposure of the scene;

capturing an image of said scene using said new lens aperture and shutter speed values; and

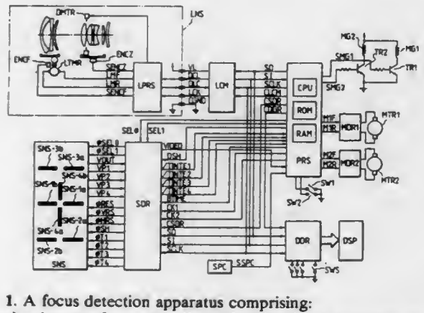
printing, on said film and in a vicinity of said frame, data indicative of the pre-defined display characteristic.

5,311,241

FOCUS DETECTING APPARATUS DETECTING FOCUS TO A PLURALITY OF AREAS

Akira Akashi, and Masaki Higashihara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 641,508, Jan. 15, 1991, Pat. No. 5,189,465. This application Dec. 21, 1992, Ser. No. 994,370
Claims priority, application Japan, Jan. 16, 1990, 2-7770
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **6 Claims**



1. A focus detection apparatus comprising:

a) a detector for repeatedly performing focus detection and outputting a defocus signal upon every focus detection;

b) a processing circuit for invalidating the defocus signal when the defocus signal from said detector falls within a predetermined range; and

c) a control circuit for disabling said processing circuit when a value falling outside the predetermined range is output as a defocus signal from said detector after invalidation is determined by said processing circuit.

5,311,242

AUTOFOCUS CAMERA AND METHOD OF FOCUS CONTROL THEREFOR

Keiji Kunishge, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 867,769, Apr. 13, 1992, abandoned. This application Feb. 5, 1993, Ser. No. 14,098
Claims priority, application Japan, May 16, 1991, 3-111888
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **18 Claims**

1. An autofocus camera comprising:

a photographing lens which is electrically driven;

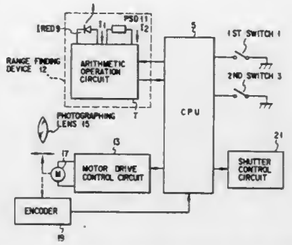
range finding means for emitting a pulse beam to an object and receiving a reflection beam from the object, and for outputting a signal representing the distance to the object;

first range finding operation control means, responding to half-depression of a release button, and for activating the range finding means to obtain a first range output;

first drive control means for responding to full-depression of the release button, and for driving the photographing lens on the basis of the first range output from the first range finding operation control means, thus performing a first lens driving operation;

second range finding operation control means for activating the range finding means to obtain a second range output either before or after the first lens driving operation by the first drive control means is completed;

timer means for measuring a time interval between a time point of the first range finding operation by the range finding means and a time point of the second range finding operation by the range finding means, thereby outputting count time data; and



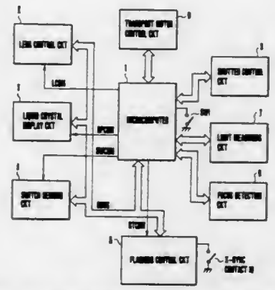
second drive control means for estimating the distance to the object at the time of operating a shutter, on the basis of the first range output and second range output from the range finding means and the count time data from the timer means, and for re-driving the photographing lens.

5,311,243

FLASH PHOTOGRAPHING SYSTEM

Tatsuyuki Tokunaga, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 715,916, Jun. 14, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,176
Claims priority, application Japan, Jun. 19, 1990, 2-160378
Int. Cl.[5] G03B *15/03, 7/08, 3/00*
U.S. Cl. 354—413 **14 Claims**



1. A flash photographing system for photographing with flash light emitted from a flash device, comprising:

a) a light measuring circuit arranged to measure light obtained in each of different areas of a scene, said light measuring circuit being arranged to measure, in a flash photography mode, a reflected light obtained from an object to be photographed as a result of flashing by the flash device;

b) a light quantity control circuit arranged to adjust a quantity of flash light emitted from the flash device on the basis of light measurement outputs of said light measuring circuit obtained by measuring light in each of the different areas;

c) mode selection means for selecting a first focusing mode or a second focusing mode different from said first focusing mode;

d) a condition setting circuit operably responsive to said

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mode selection means and arranged to vary an adjustment condition for adjustment of the quantity of flash light by said light quantity control circuit according to the selected focusing mode; and

e) a focus detecting circuit arranged to detect a focusing state of each of the different areas and to form focusing state signals which correspond respectively to the different areas;

wherein said condition setting circuit is arranged to set the adjustment condition at a predetermined condition according to a focusing state of each of the different areas of a scene when the selected focusing mode is said first focusing mode and to set the adjustment condition at a condition different from the predetermined condition when the focusing mode is said second focusing mode.

5,311,244

EXPOSURE CONTROL DEVICE FOR A CAMERA

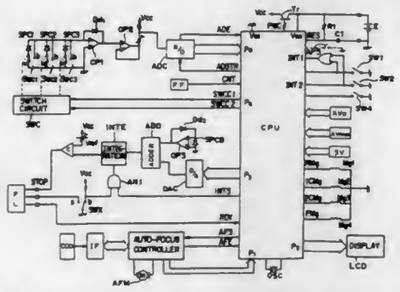
Masaaki Nakai, Kawachinagano; Shuji Izumi; Akihiko Fujino, both of Sakai; Nobuyuki Taniguchi, Nishinomiya; Toshio Yamaki, Osaka, and Hiromu Mukai, Kawachinagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 684,259, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 524,909, May 18, 1990, Pat. No. 5,017,957, which is a continuation of Ser. No. 298,128, Jan. 17, 1989, Pat. No. 4,937,610, which is a continuation of Ser. No. 905,267, Sep. 9, 1986, Pat. No. 4,821,074. This application Sep. 14, 1993, Ser. No. 120,227

Claims priority, application Japan, Sep. 9, 1985, 60-200277; Sep. 9, 1985, 60-200278; Sep. 9, 1985, 60-200279; Sep. 9, 1985, 60-200280; Sep. 10, 1985, 60-201126

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—414 **8 Claims**



1. An exposure control device for a camera operable in a flash photography mode, comprising:

first means for measuring ambient light from a central area of an object field;

second means for measuring ambient light from another area of the object field which is outside of the central area;

means responsive to said first and second measuring means for detecting a back light condition;

means for controlling an exposure amount on the basis of the measured ambient light of said other area, as measured by said second measuring means, when said detecting means detects the back light condition; and

means for controlling a flash light emission independently of said second measuring means.

5,311,245

CAMERA SYSTEM OPERABLE BY CARRYING DATA FROM A CAMERA ACCESSORY TO A CAMERA BODY

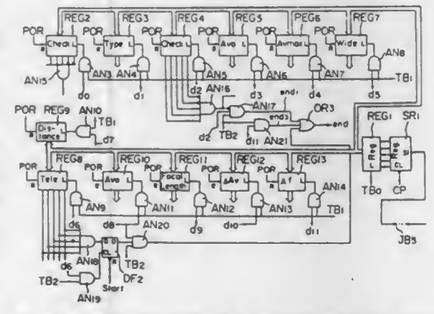
Masaaki Nakai, Nara; Masayoshi Sahara, Sennan, and Nobuyuki Taniguchi, Tondabayashi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 575,551, Aug. 29, 1990, abandoned, which is a division of Ser. No. 038,328, Apr. 13, 1987, abandoned, which is a division of Ser. No. 000,578, Jan. 5, 1987, abandoned, which is a division of Ser. No. 790,511, Oct. 23, 1985, Pat. No. 4,673,275, which is a continuation of Ser. No. 478,910, Mar. 25, 1983, Pat. No. 4,560,267. This application Dec. 20, 1991, Ser. No. 814,215

Claims priority, application Japan, Mar. 26, 1982, 57-49768; Mar. 30, 1982, 57-52740; Apr. 1, 1982, 57-55187; Nov. 5, 1982, 57-194968; Feb. 2, 1983, 58-14929

Int. Cl.[5] G03B *7/091*

U.S. Cl. 354—442 **2 Claims**



1. A camera system including a camera body and an interchangeable lens mountable on the camera body, said camera system comprising:

(a) means, provided in the interchangeable lens, for serially producing a plurality of kinds of data peculiar to the interchangeable lens, towards a predetermined single terminal provided in a camera body, when said interchangeable lens is mounted on said camera body;

(b) means, provided in the camera body, for reading the plurality of kinds of data transmitted to the predetermined single terminal;

(c) means for discriminating whether or not said reading means has correctly read the plurality of kinds of data transmitted to the predetermined single terminal on the basis of a particular one of the plurality of kinds of data;

(d) first means for controlling an exposure time of the camera in accordance with a manual setting;

(e) second means for controlling the exposure time of the camera in accordance with an actually stopped-down aperture through the lens (TTL) light measurement and a film sensitivity;

(f) means for selecting either of a manual exposure control mode and a programmed automatic exposure control mode; and

(g) means, operated when said discriminating means discriminates that said reading means fails to correctly read the plurality of kinds of data, for selectively operating said first and second controlling means, said selectively operating means enabling said first controlling means when said manual exposure control mode is selected, and enabling said second controlling means when said programmed automatic exposure control mode is selected.

5,311,246

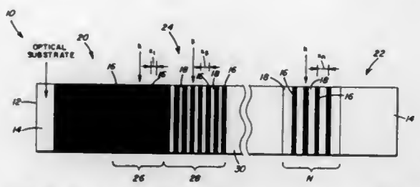
FREQUENCY MODULATED ACUTANCE GUIDE AND METHOD OF USE

Richard D. Warner, Clinton, and Anthony P. Stanton, Glenshaw, both of Pa., assignors to Graphic Arts Technical Foundation, Pittsburgh, Pa.

Filed Aug. 26, 1992, Ser. No. 935,869

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—40 **20 Claims**



1. A device for quantitatively measuring the sharpness of an image printed on a substrate comprising,

a control area positioned on the substrate for indicating the sharpness of an image printed thereon,

said control area including a light transmitting image,

said image including a sharp-edged line element of a preselected dimension,

said line element repeated in a preselected pattern to form a plurality of sharp-edged line elements where each element is separated a preselected distance apart by a space,

said line element and said space forming a cycle pair, said cycle pair repeated in said control area at a preselected frequency, and

a range of said frequencies provided on said control area by varying the number of said cycles from one frequency to the next to quantitatively determine changes in image sharpness on the substrate.

5,311,247

PLATE MAKING MACHINE

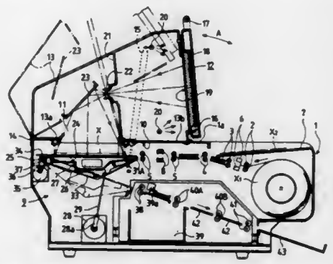
Nobuyoshi Hatori, and Toshio Koike, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,393

Claims priority, application Japan, Sep. 18, 1991, 3-267320

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—43 **9 Claims**



1. A plate making machine comprising:

a plate making machine body;

an original image exposure stage in the machine body, the original image exposure stage including means for exposing an original image on a master paper in the original image exposure stage;

a supply transfer system for feeding the master paper to said exposure stage, and extending in a generally horizontal direction at an upper portion of the machine body;

a lamp housing for projecting the original image and provided above said exposure stage;

an exposure plate provided at said exposure stage, said exposure plate being tiltable about an axis provided at a side of the exposure plate opposite to said supply transfer system;

an endless feed belt for feeding and discharging the master paper relative to said exposure plate and provided in surrounding relation to said exposure plate; and

a discharge transfer system extending in a slanting manner below said supply transfer system, said discharge transfer system having means for taking up the exposed master paper from the tilted exposure plate and means for developing and fixing a latent image on the exposed master paper.

5,311,248

COPYING AREA DISPLAY DEVICE FOR A COPIER

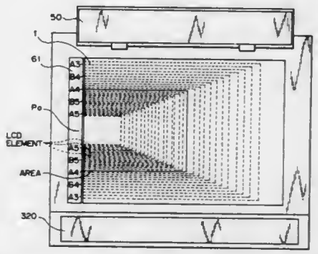
Atsuki Iwata, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 83,162

Claims priority, application Japan, Jun. 29, 1992, 4-192822; Oct. 27, 1992, 4-288318; May 6, 1993, 5-105616

Int. Cl.[5] G03B *27/62*

U.S. Cl. 355—61 **12 Claims**



10. A copying area display device for a copier having a transparent glass platen on which a document is to be laid, an openable cover plate for covering a rear of a document laid on said glass platen when closed, copying means for reproducing an image of a document, and an operating section accessible for entering at least a desired magnification, said device comprising:

liquid crystal display means built in or superposed on said glass platen;

sensing means for sensing an open/closed position of the cover plate; and

control means for determining, when said sensing means senses an open position of the cover plate, a position of an effective image reading area on the basis of a size of a recording medium to be used and causing said liquid crystal display means to display said position of said effective image reading area.

5,311,249

PROJECTION EXPOSURE APPARATUS

Kazuya Kamon, Itami, and Teruo Miyamoto, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1993, Ser. No. 14,855

Claims priority, application Japan, Feb. 13, 1992, 4-026467

Int. Cl.[5] G03B *27/72, 27/42*

U.S. Cl. 355—71 **5 Claims**

1. A projection exposure apparatus comprising:

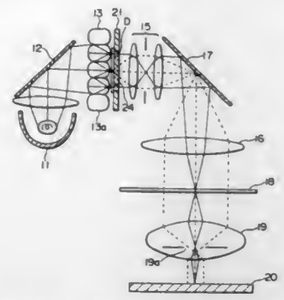
a light source for producing illumination light;

a condenser lens for condensing the illumination light emanating from said light source onto a mask including a circuit pattern;

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a projection lens having a pupil with a diameter, said projection lens for condensing the illumination light that has passed through the mask onto a surface of a wafer; and

an aperture member disposed between said light source and said condenser lens and having a transmission area with an outer diameter for shaping the light emanating from said



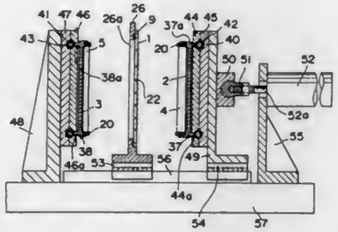
light source and a light blocking area at a central portion of said transmission area, the outer diameter of said transmission area of said aperture member being set such that a ratio σ of an outer diameter of an effective light source to the diameter of the pupil of said projection lens is 0.6 ± 0.3 while a ratio of said light blocking area to the transmission area is $60 \pm 35\%$.

5,311,250

PELLICLE MOUNTING APPARATUS

Masaki Suzuki, Hirakata, and Kentaro Shingo, Ikeda, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1992, Ser. No. 950,946
Claims priority, application Japan, Sep. 27, 1991, 3-248790
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—76 **18 Claims**



8. A pellicle mount apparatus for adhering a pellicle frame to a surface of a reticle glass under pressure, said pellicle mount apparatus comprising:

a reticle glass support for supporting a reticle glass;

a first pellicle frame support for supporting a second pellicle frame;

a second pellicle frame support for supporting a second pellicle frame;

an elastic pressure member provided on one of said pellicle frame supports for contacting a pellicle frame along the periphery of the pellicle frame; and

a pressurizing means for uniformly applying fluid pressure to the periphery of the pellicle frame through said elastic pressure member wherein said pressurizing means comprises:

a fluid pressure transfer portion disposed on said pellicle frame support adjacent to and along the periphery of said elastic pressure member, said fluid pressure transfer portion comprising an incompressible fluid; and

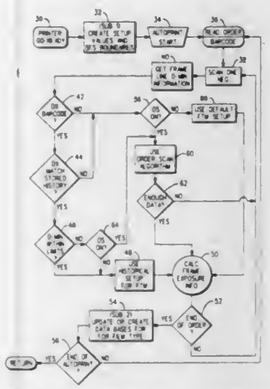
a pressurizing device for applying pressure to said elastic pressure member through said fluid transfer portion.

5,311,251

AUTOMATIC SETUP OF PHOTOGRAPHIC PRINTER

Thomas R. Roule, Mendon; Richard Olliver, Rochester; Dennis N. Beaulieu, Churchville, and William G. Irwin, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,752
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—77 **7 Claims**



1. A method of operating a photographic printer having means for scanning film strips to generate density information from image frames on each film strip; memory means for storing film term data for one or more film types, said film term data including central tendency density information based on a population of image frames of each film type; and having means for exposure of individual image frames from a current film strip onto an image recording medium; the method comprising the steps of:

generating central tendency density information for each film strip scanned by said scanner; and

automatically periodically modifying said stored film term data, using said generated central tendency density information, for each type of film strip scanned since a previous updating of said film term data so as to use an historical database of film term data based on film types actually encountered by said printer to use in the determination of exposures for individual frames.

5,311,252

METHOD OF PROXIMITY IMAGING PHOTOLITHOGRAPHIC STRUCTURES FOR INK JET PRINTERS

Richard W. Sexton, and James E. Harrison, Jr., both of Dayton, Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 891,343
Int. Cl.[5] G03B *27/28*; G01D *15/16, 15/18*
U.S. Cl. 355—125 **19 Claims**

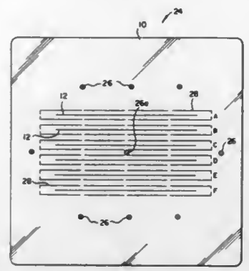
1. A method of proximity imaging photolithographic structures for the fabrication of high resolution ink jet orifice plates comprising the steps of:

a. providing a positive-acting photoresist coating onto an electrically conducting plating substrate;

b. bringing a clear glass photomask into planar proximity;

c. establishing a planar gap by means of screen shims permanently bonded to the glass photomask;

d. uniformly distributing the screen shims about the mask;



e. applying an atmospheric pressure sufficient to ensure that the shims are settled against the resist-coated substrate to create a structure; and

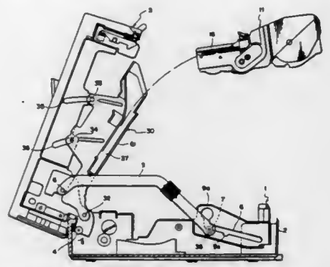
f. exposing a surface of the structure and developing the exposed surface to produce an imaged array.

5,311,253

IMAGE-FORMING APPARATUS WITH DETACHABLE IMAGING UNIT

Naoto Ohmori, and Takashi Gonda, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1990, Ser. No. 477,454
Claims priority, application Japan, Feb. 10, 1989, 1-31828
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **12 Claims**



1. An image-forming apparatus comprising:

a main body divided into a first part and a second part, the first part being pivotably provided to the second part to open the apparatus;

an imaging unit detachably mounted in a predetermined station of the first part;

actuator means provided to the first part and movable between a first position with the presence of said imaging unit in the predetermined station and a second position with the absence of said imaging unit in the predetermined station; and

switch means provided to the second part and actuated with said actuator means positioned at the first position,

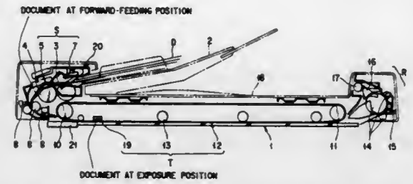
wherein said switch means is actuated by said actuator means only when the first part is closed to the second part with the presence of said imaging unit in the predetermined station of the first part.

5,311,254

IMAGE FORMING APPARATUS HAVING A PAPER JAM DETECTING SYSTEM FOR THE AUTOMATIC DOCUMENT HANDLER

Hiroshi Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 14, 1992, Ser. No. 929,522
Claims priority, application Japan, Sep. 30, 1991, 3-252165
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—206 **11 Claims**



1. An image forming apparatus for producing a plurality of copies from a single original, the apparatus having an image reading position where images of the original are read and an upstream position located upstream of the image reading position, said apparatus comprising:

means for carrying originals in succession, said carrying means carrying a first original to the image reading position and, at the same time, carrying a second original to the upstream position;

means for detecting a carrying malfunction regarding the second original which is carried to the upstream position by the carrying means;

means for forming images in succession, said forming means forming an image of the first original on image forming media, and forming an image of the second original on image forming media after completion of the image forming operation of the first original; and

means, operating when the detecting means detects the malfunction, for preventing the forming means from starting the image forming operation of the second original after completion of the image forming operation of the first original.

5,311,255

REAL-TIME DIAGNOSTIC SYSTEM FOR DETECTING NON-LINEAR MOVEMENT OF AN IMAGING MEMBER USING OPTICAL FIBERS

Donad M. Josephson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1993, Ser. No. 58,198
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—206 **4 Claims**

1. A diagnostic apparatus for use in an electronic printer or reproduction machine having a movable imaging member capable of receiving an image and means for writing an image on said imaging member, said apparatus comprising:

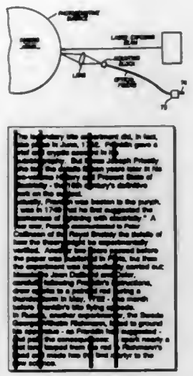
a plurality of light sources adjacent said imaging member;

means for illuminating a light source in response to the activation of at least one machine component; and

said light source making a plurality of lines on the image with the length of each line representing the time that the

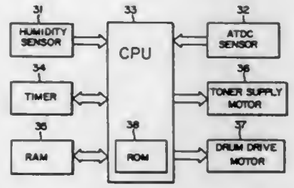
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activation of said machine component whereby defects in the image can be compared with the elapsed time associ-



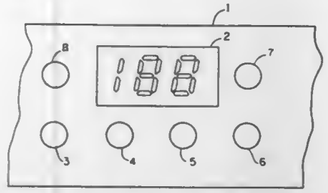
ated with the activation of said machine component as a potential cause of said defect.

5,311,256
IMAGE FORMING APPARATUS MAINTAINING IMAGE DENSITY STABILITY AGAINST HUMIDITY
Suguru Hamamichi; Yoshihiro Hattori, and Yoshinobu Hada, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 31, 1991, Ser. No. 708,737
Claims priority, application Japan, Jun. 4, 1990, 2-146456
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **23 Claims**



20. An electrophotographic image forming apparatus comprising:
an image forming means for forming toner images on a photosensitive medium, said image forming means including a developing means for developing electrostatic latent images on the photosensitive medium by a developer which comprises toner and carrier;
toner density detecting means for detecting toner density of the developer;
humidity detecting means, provided near the developing means, for detecting humidity adjacent the developing means;
means for storing a past record of humidity detected within a set predetermined time period; and
means for controlling the image forming means by referring to the detected toner density, the stored past record of humidity, and a currently detected humidity so as to maintain image density stability.

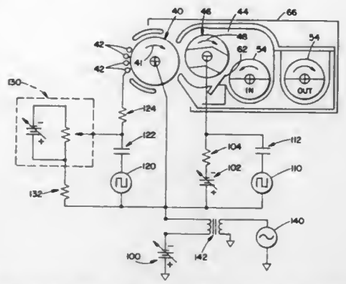
5,311,257
IMAGE FORMING APPARATUS
Yoshifumi Ishii, Daito, and Yuichi Masui, Isehara, both of Japan, assignors to Mita Industrial Co., Ltd., Japan
Filed Oct. 1, 1991, Ser. No. 769,395
Claims priority, application Japan, Oct. 13, 1990, 2-274054
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—209 **6 Claims**



1. An image forming apparatus comprising:
copy number setting means for setting a number of copies for a copy operation;
magnification setting means for setting a magnification for said copy operation;
first storing means for storing the number of copies set by said copy number setting means;
second storing means for storing the magnification set by said magnification setting means;
a single display for selectively displaying the set number of copies and the set magnification;
a display mode switching key for providing key input for setting a display mode of said display to one of a copy number display mode or a magnification display mode;
display mode control means for setting the display mode on the basis of input by said display mode switching key; and
a clear key for providing key input for causing clearing of the set number in said setting means which corresponds to the display mode in which said display has been set by said display control means; and
clear control means for clearing only the contents of the storing means corresponding to the display mode in which said display has been set when clear key input is provided by said clear key.

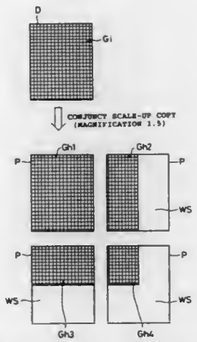
5,311,258
ON-THE-FLY ELECTROSTATIC CLEANING OF SCAVENGELESS DEVELOPMENT ELECTRODE WIRES WITH D.C. BIAS
Grace T. Brewington, Fairport; John Buranicz, Cohoes, and Richard P. Germain, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 23, 1993, Ser. No. 110,460
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—215 **21 Claims**

1. An apparatus for forming images on an image receiving surface with developer, said apparatus comprising:
a supply of marking particles;
transport means for transporting marking particles from said supply to an area adjacent said image receiving surface;
forming means for forming transported marking particles into a cloud of marking particles, the forming means including a wire electrode structure disposed between said transport means and said image receiving surface, the wire electrode structure being connected to a first voltage source for applying an alternating voltage potential to said wire electrode structure with respect to said transport means; and,
offset means for creating an average electrostatic voltage potential on said wire electrode structure with respect to said transport means by applying an offsetting voltage



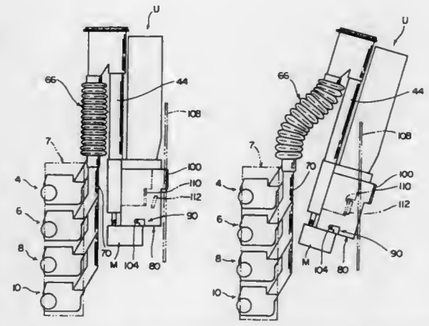
signal to at least one of said wire electrode structure and said first voltage source.

5,311,259
IMAGE FORMING APPARATUS
Shigeru Moriya, Toyokawa, and Takashi Noda, Okazaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jun. 17, 1993, Ser. No. 79,107
Claims priority, application Japan, Jun. 19, 1992, 4-161278; Jun. 19, 1992, 4-161279
Int. Cl.[5] G03G *15/04, 15/00*
U.S. Cl. 355—243 **25 Claims**



1. An image forming apparatus comprising:
first setting means for setting an arbitrary magnification of copy;
second setting means for setting the conjunct scale up copy mode in which an original is divided into multiple areas depending on the magnification which has been set and an enlarged copy of each divided area is produced on a sheet of copy paper;
paper storage means including a plurality of paper storage devices for storing copy paper of different sizes;
paper transportation means for feeding a sheet of paper from one of said paper storage devices selectively; and
control means for controlling the paper feed operation in the conjunct scale-up copy mode for each divided area in such a manner that a paper storage device which stores copy paper of a smallest possible size necessary to copy the entirety of the divided area is selected.

5,311,260
DEVELOPING DEVICE
Akira Nakakuma, Takaishi, and Yasuyuki Fukunaga, Hirakata, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka
Filed Mar. 3, 1992, Ser. No. 845,319
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **9 Claims**



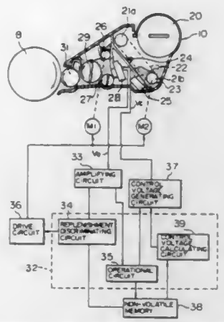
1. A multi-color developing device comprising: a stationary frame, a movable frame mounted on said stationary frame so as to be reciprocatingly moved by a moving means in a vertical direction, a plurality of developing mechanisms mounted on said movable frame, wherein by moving said movable frame by said moving means, said developing mechanisms are each selectively located at a developing position and the developing operation is carried out in a different color; and wherein:
a toner container unit is rotatably supported by said stationary frame wherein said toner container unit is adapted to be selectively rotated on an axis through a lower portion of said toner container unit between a retracted position and a fixed position;
said toner container unit includes toner containers of a number equal to that of said developing mechanisms, and toner feeding means that are provided between each toner container and each developing mechanism that corresponds to said toner container in order to feed toner from said toner container to said developing mechanism;
each of said toner feeding means including a vertical toner fall passage means which feeds toner to said corresponding developing mechanism wherein the toner is sent by a vertical toner conveying means from said corresponding toner container to an upper portion of said toner fall passage means, and said toner fall passage means includes an extensible and contractible means having an upper end and a lower end, wherein said upper end is coupled to said upper portion of said fall passage means and said lower end is coupled to said corresponding developing mechanism by detachable connection means; and
said extensible and contractible means is positioned so as to extend and contract substantially in a direction in which said developing mechanism moves, said extensible and contractible means being further adapted to permit said toner unit to rotate between said fixed and said retracted positions.

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5,311,261
TONER DENSITY CONTROL METHOD FOR IMAGE RECORDING APPARATUS AND APPARATUS FOR THE SAME

Kiyohari Nakagama; Satoshi Watanabe, and Mitsugu Nemoto, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 962,487
Claims priority, application Japan, Oct. 15, 1991, 3-295122; Dec. 20, 1991, 3-355925
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **6 Claims**



1. A toner density control method for an image recording apparatus which uses a toner density sensor for generating a magnetic field, causing the magnetic field to act on a two-component developing agent consisting of a toner and a carrier, and detecting a change in magnetic permeability of the developing agent, thereby detecting a toner density of the developing agent, and controls a toner density on the basis of an output voltage of said toner density sensor, comprising the steps of:

obtaining, as a sensitivity of said toner density sensor, a change amount in output voltage of said toner density sensor with respect to a change amount in control voltage for controlling a strength of the magnetic field generated by said toner density sensor mounted in said image recording apparatus;

calculating a ratio of the sensitivity of said toner density sensor to a sensitivity of a standard toner density sensor, thus obtaining a correction value;

discriminating which one of a plurality of ranges bounded in accordance with operational results of a value of the output voltage of said standard toner density sensor and the correction value the value of the output voltage of said toner density sensor mounted in said image recording apparatus belongs to; and

changing a replenishing amount of the toner on the basis of a discrimination result.

5,311,262
DEVELOPING DEVICE FOR USE IN AN IMAGE FORMING APPARATUS

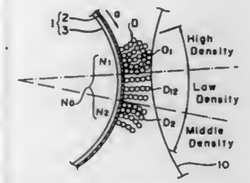
Tamotsu Shimizu, Settsu; Hiroshi Murasaki, Ibaragi; Masahiko Matsuura, Amagasaki, and Susumu Mikawa, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 8, 1991, Ser. No. 772,942
Claims priority, application Japan, Oct. 9, 1990, 2-271605; Aug. 29, 1991, 3-218423
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—251 **18 Claims**

1. A developing device for developing an electrostatic latent image formed on a rotating photosensitive member by bringing developer into contact with said photosensitive member, comprising:

a magnet member which is nonrotatably fixed in a sleeve, and said sleeve being rotated around said magnet member and retaining the developer on its outer periphery;

said magnet member being provided with four sequential magnetic poles, said four poles including an upstream magnetic pole arranged upstream of a magnet portion confronting said photosensitive member, first and second magnetic poles of an identical polarity, said first magnetic pole being disposed adjacent to and upstream of said second magnetic pole in a rotational direction of said sleeve, said first and second magnetic poles provided at the portion confronting said photosensitive member, and a downstream magnetic pole arranged downstream of the confronting portion, said upstream and downstream magnetic poles having a polarity opposite to the polarity of the first and second magnetic poles;



the developer being successively retained between said first and second magnetic poles and on an outer peripheral surface of said sleeve so as to include an upstream part retained by said first magnetic pole, an intermediate part retained by an intermediate portion between said first and second magnetic poles and a downstream part retained by said second magnetic pole;

wherein the upstream part and the intermediate part of the developer are brought into contact with said photosensitive member, while the downstream of the developer is held out of contact with said photosensitive member; and

wherein a spacing between the second magnetic pole and the downstream magnetic pole is such that the downstream part of the developer is magnetically drawn to the downstream magnetic pole, and the four poles are arranged such that the development of the electrostatic latent image is completed by the intermediate portion of the developer which is between the first and second magnetic poles.

5,311,263
DEVELOPING APPARATUS FOR IMAGE FORMING EQUIPMENT USING DEVELOPER CARRIER FOR FORMING MICROFIELDS

Koji Suzuki, Yokohama; Naoki Iwata, Tokyo; Yuichi Ueno; Shigekazu Enoki, both of Kawasaki, and Junko Tomita, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,172
Claims priority, application Japan, Nov. 14, 1991, 3-326341
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—251 **2 Claims**



1. A developing apparatus facing an image carrier, the image carrier carrying an electrostatic latent image, and having a developer carrier facing said image carrier, the developer carrier carrying a magnetic developer and generating numerous microfields on a surface thereof, and voltage applying means for applying an alternating electric field to a developing position to apply a bias for development, said apparatus comprising:

charging means for charging a magnetic developer to a predetermined polarity;

a developer regulating member made of a magnetic material and facing a surface of the developer carrier;

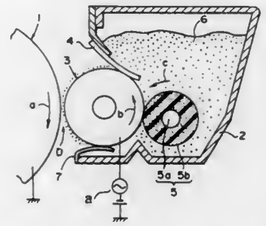
magnetic field generating means provided in the developer carrier for generating a magnetic field at least at a position where said developer regulating member and the surface of the developer carrier face each other; and

wherein the developer carrier comprises a conductive base and conductive portions constituted by said conductive base and dielectric portions affixed to said conductive base are formed together on a surface of said conductive base in a regular or irregular distribution, said charging means charging said dielectric portions to a predetermined polarity to generate the numerous microfields on said surface of said conductive base.

5,311,264
DEVELOPING APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE USING ONE COMPONENT DEVELOPER

Masahide Kinoshita, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,269
Claims priority, application Japan, Mar. 24, 1992, 4-096027
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **5 Claims**



1. A developing apparatus for developing an electrostatic latent image, comprising:

a container for containing a one component developer;

a rotatable developer carrying member for carrying the one component developer and for supplying the developer to an electrostatic latent image bearing member; and

a rotatable elastic roller, rotatable in contact with said developer carrying member, for applying the one component developer contained in said container to said developer carrying member;

wherein an elastic layer of said elastic roller in contact with said developer carrying member is composed of a closed-cell foamed rubber, and has a density of 0.18 g/cm^3–0.28 g/cm^3.

5,311,265
TONER LOADING SYSTEM AND METHOD

Timothy J. Miller, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

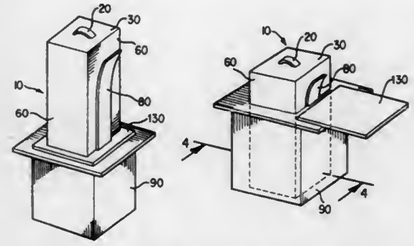
Filed Dec. 23, 1992, Ser. No. 996,291
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **15 Claims**

1. A toner refill system for a reprographic device comprising:

a cartridge body having a top wall, a bottom wall and side walls that enclose an interior storage area for retaining toner powder, said side walls extending about a longitudinal axis, said body defining a longitudinal periphery, said bottom wall having an aperture in communication with said storage area;

a flange attached to said cartridge, said flange being movable between a closed position in which said cartridge body is fixedly retained and restricted from longitudinal movement relative to said flange and an open position in which said flange defines an opening sized to permit longitudinal movement of said cartridge body through said flange aperture while restraining said cartridge body from motion in substantially all other axes;

a toner housing affixed to the reprographic device, said toner housing including a toner housing storage cavity



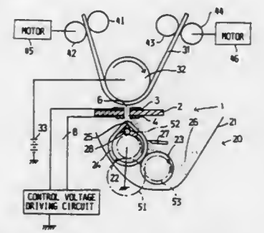
having a bottom wall defining a depth and having an upper surface which releasably mates with said cartridge flange and includes an opening sized equal to or greater than the longitudinal periphery of said cartridge body, said opening communicating with said toner housing storage cavity; and

a removable seal that extends across and seals the cartridge body aperture to retain dry powder within said storage area of said cartridge body, said removable seal including an integral pull tab extending longitudinally along one said side walls a distance greater than said depth of said toner housing storage cavity, said bottom wall of said cartridge body being completely extendable within the depth of said toner housing storage cavity.

5,311,266
IMAGE FORMING APPARATUS HAVING PARTICLE MODULATOR

Masataka Madea, Konan, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 21, 1992, Ser. No. 994,327
Claims priority, application Japan, Feb. 20, 1992, 4-007151[U]
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—261 **21 Claims**



1. An image forming apparatus comprising:

toner supply means for supplying toner to a support member to form an image thereon; and

a particle modulator means disposed adjacent to said toner

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supply means for controlling the supply to toner particles from said toner supply means to the support member,

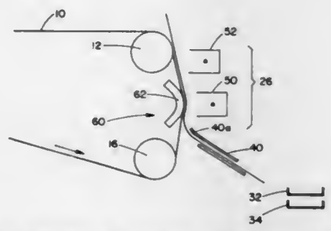
wherein said toner supply means comprises a toner supply for supplying charged toner particles, a toner carrying member for carrying the toner particles supplied from said toner supply and vibration means for vibrating said toner carrying member to release the toner particles carried thereon, said vibration means including a support in contact with said toner carrying member and a vibrator coupled to said support.

5,311,267

METHOD AND APPARATUS FOR SUPPORTING PHOTORECEPTIVE BELT AND COPY PAPER TO REDUCE TRANSFER DELETIONS

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1992, Ser. No. 993,755
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—271 **25 Claims**



20. An apparatus for reducing image deletion problems associated with paper damage, the apparatus comprising:

a photoreceptor belt that travels through a predetermined work path;

a copy sheet baffle having an outlet disposed adjacent the work path;

a transfer zone defined along the work path at a region downstream of the baffle outlet; and

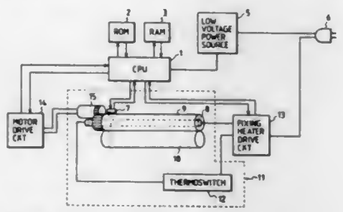
means for imparting a curvilinear shape to the copy sheet through at least a portion of the transfer zone, wherein the curvilinear imparting means includes a stationary guide shoe over which the belt passes.

5,311,268

FIXING DEVICE USING FUZZY INFERENCE

Yukihiro Ohzeki, and Katsuhiro Sakaizawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 63,079
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—285 **9 Claims**



1. A fixing device comprising:

a heating member for thermally fixing an image on a recording medium;

condition variable detection means for detecting a condition variable, wherein said condition variable is a power source voltage value;

inference means for fuzzy-inferring a control variable associated with energization to said heating member from the condition variable detected by said condition variable detection means; and

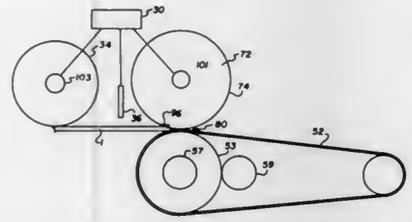
control means for executing control associated with energization to said heating member using the control variable inferred by said inference means.

5,311,269

TONER IMAGE FINISHING APPARATUS

Muhammad Aslam; Thomas J. Farnand, Webster, and Thomas W. Mort, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 5, 1993, Ser. No. 42,432
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **7 Claims**



1. Apparatus for finishing a toner image carried on a heat softenable layer on a receiving sheet, said apparatus comprising:

a pair of pressure members forming a pressure nip and including a fusing member and a pressure roller,

means for heating at least one of the pressure members,

means for driving at least one of the pressure members to move the receiving sheet through the pressure nip,

means for feeding the receiving sheet into the pressure nip with the heat softenable layer facing the fusing member,

wherein the pressure roller has a cylindrical outer surface with a recess for receiving a leading edge of the receiving sheet as it is fed into the nip to reduce the pressure on a leading portion of the receiving sheet compared to the pressure on the rest of the sheet as the sheet moves through the nip.

5,311,270

PAPER CASSETTE HAVING A PLURALITY OF SWITCHES FOR SELECTING AN INPUT DATA PORT

Toshio Urakawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 9, 1993, Ser. No. 71,758
Claims priority, applicatioo Japan, Jun. 10, 1992, 4-150939
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—308 **5 Claims**

1. A printer having a plurality of data input ports for printing out information input through each data input port on paper fed by a paper feeding device, comprising:

a main body;

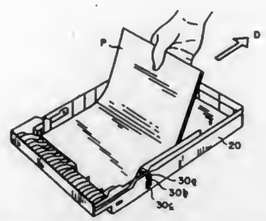
paper cassettes for storing the paper therein, each of the paper cassettes being made detachable from the main body;

a plurality of setting portions to be set to direct whether or not each of the paper cassettes is to be used for printing out information input through a predetermined data input port, the plurality of setting portions being provided for each of the paper cassettes;

sensor means for detecting the content of the setting portions

when each of the paper cassettes is installed in the main body; and

means for, when printing out information input through



each of the plurality of data input ports, controlling the paper feeding device to feed the paper within each of the paper cassettes which is assigned for each data input port, based on results of the detection by the sensor means.

5,311,271

GOLF COURSE RANGE FINDER

David B. Hurt, Mountain View, and Gregory R. Neal, Cupertino, both of Calif., assignors to DME/Golf, Inc., Newport Beach, Calif.

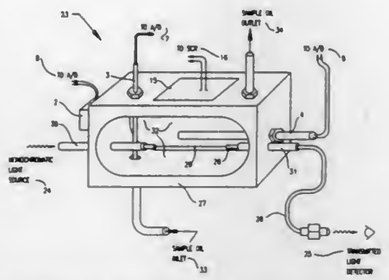
Continuation of Ser. No. 823,122, Jan. 21, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 99,052
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—5 **8 Claims**



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and the four different radiator temperatures (T_R) coincide in the order of magnitude of the measuring inaccuracy of the spectrometer.

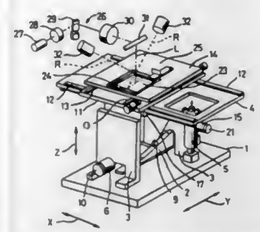
5,311,274
FIBER OPTIC REFRACTOMETER
Charles F. Cole, Jr., 332 N. Ridge Rd., Little Rock, Ark. 72207
Filed May 11, 1992, Ser. No. 881,059
Int. Cl.[5] G01N *21/41, 33/38*
U.S. Cl. 356—133 **18 Claims**



1. A method for measuring the refractive index of a fluid, comprising the steps of:
a) radiating light at a known wavelength λ_R into an optical waveguide having a refractive index n_{co} and measuring the optical power transmitted therethrough, wherein the value of n_{co} is known at wavelength λ_R as a function of temperature, and further wherein at least part of the wave guide is in contact with a fluid whose refractive index is to be measured;
b) varying the temperature of the fluid and fluid contacted waveguide section until the transmitted optical power through the waveguide reaches a minimum, at which point the refractive indices of the waveguide and fluid are deemed to be equal;
c) measuring the temperature T_{min} at which the transmitted optical power minimum occurs; and,
d) determining the refractive index of the fluid at wavelength λ_R and temperature T_{min} from the known value of n_{co} at T_{min}.

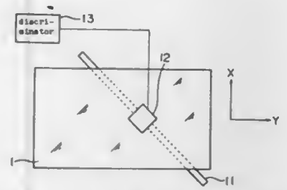
5,311,275
APPARATUS AND METHOD FOR DETECTING PARTICLES ON A SUBSTRATE
Minoru Taniguchi; Masaaki Ishihara, and Takashi Hagiwara, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan
Filed Jul. 29, 1992, Ser. No. 922,057
Claims priority, application Japan, Jul. 30, 1991, 3-067258[U]
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—237 **7 Claims**

1. An apparatus for observing the location of minute particles on a substrate, comprising:
means for moving a substrate;
means for determining any inclination of a substrate surface relative to a predetermined plane and providing data defining coordinates of inclination;
means for determining a location of any particles on a substrate and providing data defining the coordinates of such particles;
means for magnifying the particles to permit observation including means for defining a focal plane in which the particles are in focus, and
means for activating the moving means in accordance with the data of the coordinates of a particle and the data of the coordinates of inclination to position the substrate within the focal plane of the magnifying means to enable an



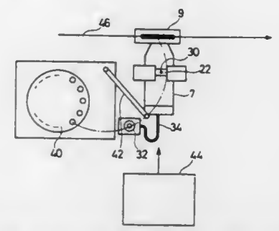
observer to view an enlargement of a particle in an in-focus position.

5,311,276
APPARATUS FOR DETECTING CUT-EDGE FLAWS IN GLASS PLATES
Igisu Masao; Yoshiomi Toyota; Shoichi Kondo, all of Osaka; Masakazu Fujita, Tokyo; Hideo Kizuka, Tokyo, and Kenkichi Sato, Tokyo, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
PCT No. PCT/JP88/01293, § 371 Date Aug. 11, 1989, § 102(e) Date Aug. 11, 1989, PCT Pub. No. WO89/06356, PCT Pub. Date Jul. 13, 1989
PCT Filed Dec. 22, 1988, Ser. No. 397,424
Claims priority, application Japan, Dec. 25, 1987, 62-326697
Int. Cl.[5] G01N *21/89*
U.S. Cl. 356—239 **17 Claims**



1. An apparatus for detecting cut-edge flaws in a travelling transparent plate comprising:
a first linear light source disposed on one side of the travelling glass plate, arranged substantially parallel with the transparent plate and obliquely aligned with respect to the travelling direction of the transparent plate;
first one-dimensional imaging means disposed on a second side of the transparent plate and having imaging elements parallel with said first linear light source for detecting light emitted from said first linear light source and transmitted through the transparent plate;
a first discriminator means for identifying flaws and discriminating between flaws in dependance on flaw size in edges of the glass plate based on change in volume of said transmitted light detected by said first one-dimensional imaging means;
a second linear light source disposed on said first side of the travelling glass plate, arranged substantially parallel with the transparent plate and obliquely aligned with respect to the travelling direction of the transparent plate;
a second one-dimensional imaging means disposed on said first side of the transparent plate having imaging elements parallel with said linear light source for detecting light emitted from said linear light source and reflected by the surface of the transparent plate; and
a second discriminator means for identifying flaws and discriminating between flaws in dependance on flaw size in the edges of the transparent plate and detecting the size of the flaw based on reflected light detected by said second one-dimensional imaging device.

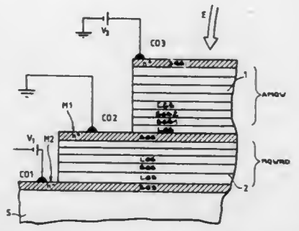
5,311,277
ATOMIC ABSORPTION SPECTROSCOPIC ANALYTIC APPARATUS
Kikuo Sasaki, Uji, and Hidehisa Nishigaki, Joyo, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Mar. 24, 1992, Ser. No. 857,066
Claims priority, application Japan, Mar. 30, 1991, 3-093515
Int. Cl.[5] G01J *3/30*; G01N *21/72, 21/74*
U.S. Cl. 356—312 **8 Claims**



1. An atomic absorption spectroscopic analytical apparatus, comprising:
a flame type atomizing means provided with a burner head, said flame type atomizing means having an optical axis of a flame thereof set transversely relative to a direction of movement of said flame type atomizing means;
a flameless type atomizing means placed ahead of said burner head and linked together with said flame type atomizing means, said flameless type atomizing means having an optical axis of an electric furnace thereof set parallel to said optical axis of said flame type atomizing means;
a support bed for supporting said atomizing means linked together so as to be moveable together;
a position adjusting mechanism for adjusting the position of said atomizing means linked together in both vertical and horizontal directions;
a sample injector with a sample receiving hole opening upwardly connected to said flame type atomizing means; and
an auto sample injecting mechanism capable of injecting a sample into said sample injector and a sample injecting hole of said flameless type atomizing means, said auto sample injecting mechanism including a pivoting arm moving through an arc and having a nozzle at its forward end for suction and discharge of the sample, said auto sampling injecting mechanism having a sample container fixed on a locus of said nozzle, and said sample receiving hole of said sample injector and said sample injecting hole of said flameless type atomizing means being positionable on said locus for receiving the sample.

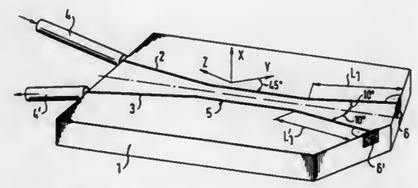
5,311,278
SPECTROMETER
Emmanuel Rosencher, Bagneux, France, assignor to Thomson-CSF, Puteaux, France
Filed Oct. 8, 1992, Ser. No. 957,777
Claims priority, application France, Oct. 11, 1991, 91 12565
Int. Cl.[5] G01J *3/443*
U.S. Cl. 356—326 **6 Claims**

1. A spectrometer comprising:
a substrate;
a first layer of small-gap semiconductor material formed on the substrate;
a first stack of layers comprising a plurality of large-gap semiconductor layers and small-gap semiconductor layers formed on the first layer of small-gap semiconductor material;
a second layer of small-gap semiconductor material formed on the first stack of layers, wherein the first layer of small-gap semiconductor material, the first stack of layers and the second layer of small-gap semiconductor material form a luminous intensity detector for outputting an electrical signal as a function of an input light signal;
a second stack of layers comprising a plurality of large-gap semiconductor layers and small-gap semiconductor layers formed on the second layer of small-gap semiconductor material, wherein the second stack of layers comprises



first and second layers of small-gap semiconductor materials with respective first and second small-gaps of different values; and
a third layer of small-gap semiconductor material formed on the second stack of layers, wherein the second layer of small-gap semiconductor material, the second stack of layers and the third layer of small-gap semiconductor material form a luminous intensity modulator having a range of modulation wavelength adjusted by a control signal, and for receiving a light signal and retransmitting a modulated light signal to the luminous intensity detector as the input light signal.

5,311,279
INTEGRATED OPTICAL APPARATUS FOR THE INTERFEROMETRIC MEASUREMENT OF LIGHT WAVES
Martin Wendler, Freiburg, Fed. Rep. of Germany, assignor to Litef GmbH, Freiburg im Breisgau, Fed. Rep. of Germany
Continuation of Ser. No. 710,702, Jun. 5, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 976,643
Claims priority, application European Pat. Off., Jun. 7, 1990, 90110835
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **9 Claims**



1. An interferometer with temperature invariant optical path length difference formed in integrated optics on an anisotropic substrate comprising, in combination:
a) a pair of monomode waveguides for receiving an input light beam, said waveguides being of differing optical path lengths;
b) the directions of said waveguides being selected with respect to the crystal axes of said substrate, their path

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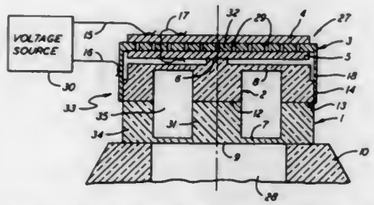
lengths and the direction of polarization of said input light beam so that the optical length difference is unaffected by temperature changes; and

c) the geometric positions of said light paths and their lengths are chosen with regard to the anisotropic material effect of different coefficients of thermal expansion in different spatial directions of said substrate.

5,311,280
LASER LIGHT LENGTH CONTROL ASSEMBLY FOR RING LASER GYRO

James G. Koper; Bo H. G. Ljung, both of Wayne, and Walter J. Krupick, Succasunna, all of N.J., assignors to Kearfott Guidance & Navigation Corporation, Wayne, N.Y.

Filed Jul. 21, 1983, Ser. No. 515,756
Int. Cl.[5] H01L *41/10*; G01B *9/02*; G01C *19/64*
U.S. Cl. 356—350 **2 Claims**



1. A device for translationally shifting a mirror surface of a mirror of a ring laser gyro for controlling its path length, comprising:

a diaphragm assembly carrying the mirror surface and having a centrally disposed solid portion, an outer wall substantially surrounding said solid portion and coaxial therewith, and a chamber between said solid portion and said outer wall, said solid portion extending axially from said mirror surface and having a transverse surface coextensive therewith, said diaphragm assembly also including, on opposite sides, a pair of thin diaphragm sections connecting said solid portion to said outer wall and, in an unactuated state of said diaphragm assembly, lying in respective transverse planes parallel to said mirror surface; and

actuator means engaging said diaphragm assembly at an end thereof opposite said mirror surface and in an area of contact substantially centered with respect to said solid portion for transmitting a translational force thereto shift said mirror surface, wherein

said diaphragm assembly comprises of pair of diaphragm members substantially identical structurally, each of said diaphragm members including one of said diaphragm sections, a solid case and a peripheral wall substantially surrounding said core and coaxial therewith, said diaphragm members being attached to one another at a joint disposed substantially midway between said diaphragm sections to minimize bending stress on said joint, and wherein

said joint lies in a plane extending parallel to said mirror surface, and wherein

said solid portion is cylindrical and said diaphragm sections are annular, and wherein

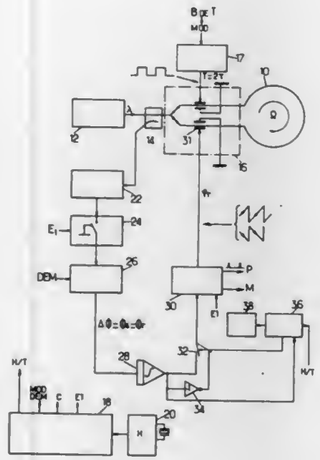
said actuator means includes a support structure attached to said outer wall, said support structure having a carrier member disposed in a plane parallel to said mirror surface, said actuator means further including a pair of piezoelectric discs attached to said carrier member on opposite sides thereof, and wherein

said carrier member is in the form of a disc with perforations therein and has, for deflection in a direction perpendicular to said mirror surface, a spring constant with a magnitude predetermined by said perforations.

5,311,281
INTERFEROMETER GYROSCOPE WITH ELECTRO-OPTICAL MODULATION AND REDUCED RESET FREQUENCY

Jacques Rochereau, Argenteuil, and Claude Leclerco, Nesles La Vallee, both of France, assignors to Societe D'Applications Generales D'Electricite, Paris, France

Filed Jul. 27, 1992, Ser. No. 918,856
Claims priority, application France, Jul. 25, 1991, 9109447
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **5 Claims**



1. A gyroscope comprising:

a coiled dielectric waveguide constituting a ring and having two ends;

a source of electromagnetic waves provided with a splitter connected to said ends of the dielectric waveguide for sending two contra-rotating waves from said source into said ring;

an interference detector connected to receive said contra-rotating wave after they have circulated in said ring;

first electro-optical means optically coupled with said dielectric waveguide and controlled to impart a periodic alternating and symmetrical phase modulation to said electromagnetic waves at a period which is substantially twice the travel time of said electromagnetic waves in said ring, said first electrooptical means being located upstream from the ring for one of said contrarotating waves and downstream of said ring for the other contra-rotating waves;

second electro-optical means located upstream from the ring for one of said contra-rotating waves and downstream of the ring of the other;

a phase shift sawtooth generator connected to deliver voltage ramps of controllable slope and controllable polarity to said second electro-optical means;

electronic means connected to said interference detector and constructed to be responsive to a phase difference between said contra-rotating waves received by said interference detector;

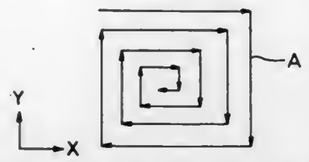
means for reversing said polarity of said ramps whenever said phase difference exceeds $+\pi/2$ or is beyond $-\pi/2$; and

means for algebrically summing said changes of polarity of said ramps.

5,311,282
HIGH PRECISION STEPPING ALIGNER HAVING A SPIRAL STEPPING PATTERN

Atsushi Someya, and Tohru Ogawa, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Mar. 19, 1992, Ser. No. 853,834
Claims priority, application Japan, Mar. 28, 1991, 3-089582
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—358 **6 Claims**

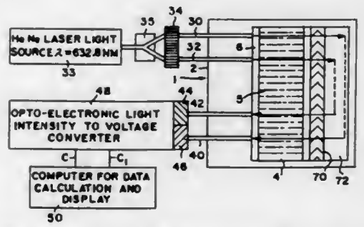


1. A stepping aligner having a stage for carrying thereon an object and for moving the object stepwise relative to an exposing position so as to align a plurality of portions of the object in succession with the exposing position where each of the portions is exposed to exposure light, wherein said stage is first moved stepwise in an X-direction to expose a group of the portions of the object, then moved stepwise in a Y-direction to expose another group of the portions of the object, and thereafter repeats the stepping movement in the X-direction and the stepping movement in the Y-direction one after another so that said stage traces a substantially spiral stepping pattern.

5,311,283
FIBER OPTIC PROBE AND METHOD FOR DETECTING OPTICALLY ACTIVE MATERIALS

William A. Heeschen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1991, Ser. No. 755,268
Int. Cl.[5] G01J *4/00*; G01N *21/00*
U.S. Cl. 356—364 **33 Claims**



1. An optical probe for use in determining the presence of an optically active constituent in a fluid medium comprising:

a) a housing having a chamber for accommodating said medium,

b) incident light input means for transmitting plane polarized light to said chamber for a first pass through said medium to induce a first optical rotation to the incident light attributable to an optically active constituent of said medium,

c) means for reflecting the incident light passed through said chamber back to said chamber for a second pass through said medium,

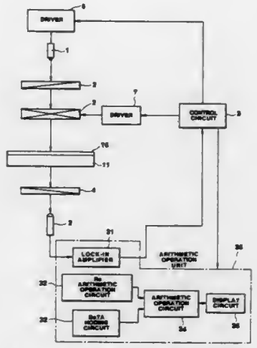
d) a quarter-wave plate interposed between the reflecting means and the chamber in the path of the incident light and the reflected light for altering the first optical rotation before said second pass through said medium to achieve a second optical rotation during said second pass that is attributable to said optically active constituent and, when combined with the first optical rotation, yields a detectable optical effect, and

e) light output means for collecting the reflected light.

5,311,284
METHOD OF MEASURING OPTICAL CHARACTERISTICS OF THIN FILM AND APPARATUS THEREFOR

Toshiharu Nishino, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,630
Claims priority, application Japan, Jul. 12, 1991, 3-172610
Int. Cl.[5] G01J *4/00*; G01B *11/06*
U.S. Cl. 356—364 **17 Claims**



1. A method of measuring optical characteristics of a thin film formed on a transparent substrate, comprising:

a first preparing step of preparing a transparent substrate;

a second preparing step of preparing a thin film whose optical characteristics are to be measured and forming it on the transparent substrate;

a first generating step of generating light and radiating the light on the thin film formed on the transparent substrate prepared in the second preparing step;

a first detecting step of detecting a polarized state of light which is generated in the first generating step and has passed through the thin film and the transparent substrate;

a synthetic retardation measuring step of measuring a value of a synthetic retardation and a direction of a synthetic optical axis of the transparent substrate and the thin film on the basis of the polarized state detected in the first detecting step;

a second generating step of generating light and radiating the light on the transparent substrate prepared in the first preparing step;

a second detecting step of detecting a polarized state of light which is generated in the second generating step and has passed through the transparent substrate;

a substrate retardation measuring step of measuring a value of a synthetic retardation and a direction of a synthetic optical axis of only said transparent substrate on the basis of the polarized state detected in the second detecting step; and

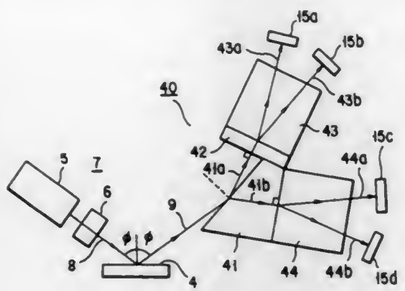
a retardation arithmetic operation step for calculating a value of a retardation and a direction of an optical axis of only said thin film on the basis of the value of the synthetic retardation and the direction of the synthetic optical axis which are measured in the synthetic retardation measuring step and the value of the retardation and the direction of the optical axis of only said transparent substrate, which are measured in the substrate retardation measuring step.

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5,311,285
MEASURING METHOD FOR ELLIPSOMETRIC PARAMETER AND ELLIPSOMETER

Takahiko Oshige; Takeo Yamada, and Akira Kazama, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Dec. 31, 1991, Ser. No. 816,594
Claims priority, application Japan, Aug. 29, 1991, 3-217656; Oct. 11, 1991, 3-263690
Int. Cl.[5] G01B *11/06*
U.S. Cl. 356—369 **7 Claims**

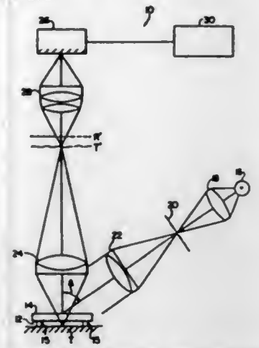


1. An ellipsometer comprising:
a light source section for radiating a polarized beam onto a measurement target at a predetermined angle;
a composite beam splitter for splitting a reflected beam from the measurement target into four different polarized light components;
four light-receiving elements for detecting light intensities of the polarized light components into which the reflected beam is split by said composite beam splitter; and
arithmetic means for calculating ellipsometric parameters of elliptically polarized light components of said reflected beam on the basis of four light optical intensities detected by said four light-receiving elements;
said composite beam splitter comprising:
a non-polarizing beam splitter for splitting the reflected light beam from the measurement target into two split beams respectively having two different directions;
two optical members, each for dividing a corresponding one of said two split beams emerging from said non-polarized beam splitter into two beams, said two beams having polarization directions which differ from each other;
a wave plate, arranged in an optical path of at least one of said two split beams from said non-polarizing beam splitter which are incident on said two optical members, for changing a phase of one split beam traveling said optical path relative to a phase of the other of said two split beams
one of said optical members comprising a first polarizing beam splitter, having one end fixed to said non-polarizing beam splitter, for splitting a reflected beam from said non-polarizing beam splitter into light components polarized in directions which differ from each other by 90°; and
the other of said optical members comprising a second polarizing beam splitter, bonded to an exit surface of said non-polarizing beam splitter, from which a transmitted beam emerges, for splitting the transmitted beam from said non-polarizing beam splitter into light components polarized in directions which differ from each other by 90°.

5,311,286
APPARATUS AND METHOD FOR OPTICALLY MEASURING A SURFACE

John N. Pike, Pleasantville, N.Y., assignor to Materials Technologies Corporation, Monroe, Conn.

Filed Apr. 1, 1992, Ser. No. 861,605
Int. Cl.[5] G01B *11/30*
U.S. Cl. 356—371 **30 Claims**

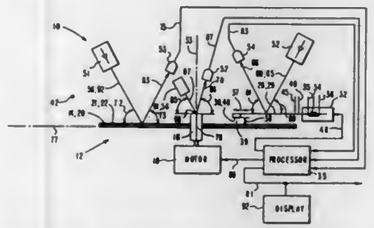


1. An apparatus for measuring the roughness of a surface, comprising:
a grating member including a plurality of parallel substantially opaque portions and adjacent substantially transparent portions;
a light source for transmitting a beam of light through the grating member at an angle of incidence relative to the grating member, the beam of light forming a multiple line shadow pattern on the surface adjacent to the grating member comprising the shadows of the opaque portions of the grating member;
means for separating an image of the grating member from an image of the multiple line shadow pattern; and
means for recording the separated image of the multiple line shadow pattern exclusive of the image of the grating member for measuring a plurality of distances between the adjacent lines of the pattern and determining the roughness of the surface based on the measured distances.

5,311,287
DIRECT ACCESS STORAGE DEVICE WITH HEAD-DISC DYNAMICS MONITOR

Nabil M. Amer, Armonk, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1992, Ser. No. 841,344
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—373 **31 Claims**

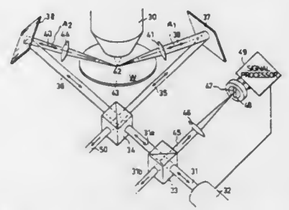


1. An apparatus for measurement of head/disk dynamics in a head/disc assembly comprising:
first means for reflecting a first light beam from a first surface of said disc towards a first detector,
second means for reflecting a second light beam from a second surface towards a second detector, said second surface having a fixed relationship with respect to said head,
third means for generating a first signal indicative of the displacement of said disc,
fourth means for generating a second signal indicative of the displacement of said head whereby the displacement of said head and disc are measured,
a memory for storing displacement signals indicative of normal and abnormal operation selected from the group consisting of spin-up, spin-down, sit-down, lift-off, ding, crash, catastrophic crash, time and distance for take-off, and an estimate of head height, and
fifth means for correlating said stored signals with said first and second signals to identify the normal and abnormal operation of said head/disc assembly.

5,311,288
METHOD AND APPARATUS FOR DETECTING SURFACE DEVIATIONS FROM A REFERENCE PLANE

Arie Shahar, Moshav Magshimim, Israel, assignor to Opal Technologies Ltd., Nes Ziona, Israel

Filed Jul. 6, 1992, Ser. No. 909,340
Int. Cl.[5] G01B *11/00, 11/14;* G01C *3/08, 5/00*
U.S. Cl. 356—375 **20 Claims**



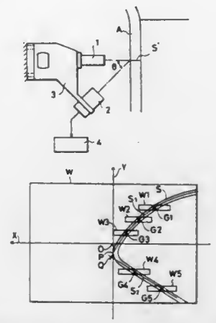
1. A method of detecting deviation of an examined surface from a reference plane, comprising:
generating first and second beams of radiation;
directing said first beam along a first fixed path and focussing the first beam to a first spot on a surface to be examined;
directing said second beam along a second fixed path intersecting said first path at a point in said reference plane and focussing said second beam to a second spot on said examined surface;
and detecting the deviation of the centers of said first and second spots with respect to said intersection point in the reference plane to provide an indication of the deviation of said examined surface from said reference plane.

5,311,289
PICTURE PROCESSING METHOD IN OPTICAL MEASURING APPARATUS

Naoji Yamaoka; Manabu Tuchida, and Yukihiro Yaguchi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,301
Claims priority, application Japan, Sep. 9, 1991, 229214; Sep. 9, 1991, 229215
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—375 **5 Claims**

1. A picture processing method in an optical measuring apparatus which comprises a projector for radiating a slit light on a workpiece, and an image sensing device for picturing an optical cross-sectional image drawn by said slit light radiated on the workpiece, an optical axis of said slit light and an optical axis of said image sensing device being disposed in such a positional relationship as to cross each other at an oblique angle,
said method comprising the steps of:
setting windows at predetermined positions of the optical cross-sectional image on a screen of said image sensing device; and
measuring a position of center of gravity of each optical cross-sectional image in each of said windows;
wherein an amount of displacement in an X-axis direction of said optical cross-sectional image on said screen is measured, said X-axis being defined to be such a coordinate axis of said screen as to correspond to said optical axis of said slit light;

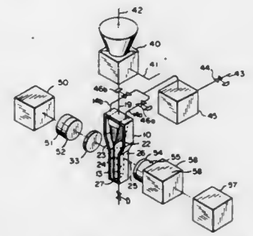


a rate of magnification of said optical cross-sectional image in a Y-axis direction is calculated from said amount of displacement, said Y-axis being defined to be perpendicular to said X-axis; and
at lest setting positions of said windows in the Y-axis direction and sizes thereof in the y-axis direction are changed depending on said rate of magnification.

5,311,290
IMAGING APPARATUS AND METHOD OF FIBER ANALYSIS

James Olson; Andrew G. Robertson, and Timothy D. Finnigan, all of Vancouver, Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire and University of British Columbia, Vancouver, both of Canada

Filed Sep. 30, 1992, Ser. No. 953,623
Int. Cl.[5] G01B *11/04*
U.S. Cl. 356—383 **25 Claims**



1. A fiber analyzer for determining fiber lengths of fibers in a fiber suspension, comprising:
a flow cell having a first flow passage for a fiber suspension stream with a sheath flow passage about the first flow passage, the first flow passage tapering to an exit aperture connecting with the sheath flow passage to form a combined passage, the combined passage having a reduction in area downstream of the exit aperture to align and position fibers in an elongated stream;
an imaging area in the cell downstream of the reduction in

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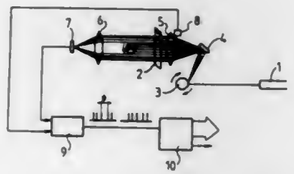
area in the combined passage, wherein the elongated stream is surrounded by sheath fluid;
light source to apply light to one side of the imaging area in the cell;
imaging detector on opposite side of the imaging area to the light source, the imaging detector providing signals representing fiber present in the imaging area, and
means to process the signals to determine fiber length.

5,311,291

MEASURING METHOD AND DEVICE, IN PARTICULAR FOR MEASURING CIGARETTES, USING A LASER BEAM

Georges Cholet, Orleans, France, assignor to Societe Nationale d'Exploitation Industrielle des Tabacs et des Allumettes, France

Filed Jul. 6, 1992, Ser. No. 909,473
Claims priority, application France, Jul. 4, 1991, 91 08357
Int. Cl.[5] G01B *11/08, 11/10*
U.S. Cl. 356—386 **4 Claims**



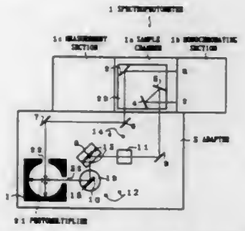
1. Method of measuring at least one dimension of a transverse cross-section of an object in a predetermined direction by scanning said cross-section at constant speed with a laser beam which is moved in a plane of said cross-section but remains directed perpendicular to said direction towards a photodetector, said method comprising the steps of:
generating an electrical pulse each time the laser beam seen from said photodetector disappears and reappears,
measuring time intervals between two successive of said electrical pulses corresponding to an interception of the laser beam by the object by counting clock pulses occurring between said two electrical pulses, and
comparing each of the counts obtained with a predetermined digital threshold, and validating a measurement when the corresponding count exceeds said digital threshold.

5,311,292

TRANSMISSIVITY MEASURING APPARATUS FOR A COLOR SEPARATION PRISM

Tatsumi Sato, Oyamazakicho, and Osamu Ando, Kyoto, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 21, 1992, Ser. No. 915,599
Claims priority, application Japan, Aug. 29, 1991, 3-212836
Int. Cl.[5] G01N *21/25;* **G01J** *3/46*
U.S. Cl. 356—406 **13 Claims**



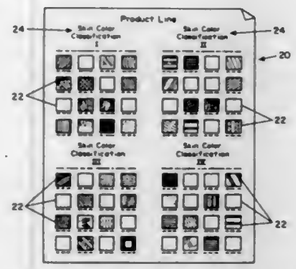
1. An apparatus for measuring color transmissivities of a color separation prism which receives a measurement light on an incident path, the incident path defining an incident axis, the prism emitting one of three color lights on a corresponding one of three exit axes, each exit axis defining a line in a different direction, the apparatus comprising:
photomeasuring means for measuring an intensity of light entering the photomeasuring means on an entrance path, the entrance path being displaced laterally from the incident axis;
a first movable mirror movable to one of four first positions, each first position located along one of the incident axis and the three exit axes, the first movable mirror reflecting the light on the respective axis to a second movable mirror; and
the second movable mirror placed on the entrance path of the photomeasuring means and movable to one of four second positions to reflect the light from the first movable mirror to the photomeasuring means.

5,311,293

METHOD AND INSTRUMENT FOR SELECTING PERSONAL COMPATIBLE COLORS

Darby S. MacFarlane; David K. MacFarlane, both of Hastings On Hudson, and Fred W. Billmeyer, Schenectady, all of N.Y., assignors to Chromatics Color Sciences International, Inc., New York, N.Y.

Continuation of Ser. No. 816,033, Dec. 30, 1991, abandoned, which is a division of Ser. No. 402,815, Aug. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 306,786, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 204,938, Jun. 6, 1988, abandoned, which is a continuation of Ser. No. 904,369, Sep. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 833,661, Feb. 21, 1986, abandoned, which is a continuation of Ser. No. 514,618, Jul. 18, 1983, abandoned. This application Jan. 29, 1993, Ser. No. 13,200
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] G01J *3/52*
U.S. Cl. 356—421 **1 Claim**



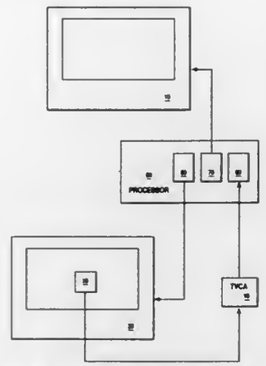
1. A color chart bearing representations of product colors, the chart having regions thereon identified solely by skin coloration categories, a plurality of product color representations in each of the categories, each color representation in each category having at least one blue or yellow content adjusting characteristic predetermined to determine compatibility with skin color of the associated skin coloration category in the identified color family of that color representation.

5,311,294

METHOD AND APPARATUS FOR SETTING THE COLOR BALANCE OF A COLOR DISPLAY DEVICE

Campbell Cromer, Gourock, and Richard I. Knox, Bridge of Weir, both of Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 17, 1992, Ser. No. 916,242
Claims priority, application United Kingdom, Jul. 20, 1991, 0-9115723
Int. Cl.[5] H04N *9/73, 17/02*
U.S. Cl. 348—180 **2 Claims**



1. Apparatus for setting the color point of a color display device, the apparatus comprising a video signal generator for generating an image on the color display device and a color analyzer for measuring the chromaticity of the image to produce digital coordinates corresponding to the color point of the image on a chromaticity reference chart, characterized in that the apparatus further comprises a computer system connected to the color analyzer, the computer system comprising:
interface means for reading the digital coordinates from the color analyzer;
means for generating a graphical representation of said chromaticity reference chart;
color point target means for specifying a point on said reference chart representing a color point target;
display means for displaying said graphical representation of said chromaticity reference chart, a cursor at a point corresponding to the coordinates within said graphical representation of the chromaticity reference chart and said color point target; and
processor means responsive to said interface means for moving the cursor within the graphical representation in response to a change in the coordinates read from the color analyzer.

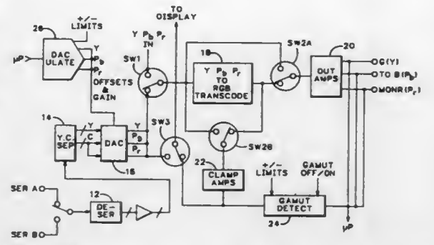
5,311,295

RGB DISPLAY OF A TRANSCODED SERIAL DIGITAL SIGNAL

James L. Tallman, Beaverton, and Gerald Sargeant, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Apr. 12, 1993, Ser. No. 44,789
Int. Cl.[5] H04N *17/02*
U.S. Cl. 348—180 **4 Claims**

1. A method of determining color gamut errors in a serial digital video signal comprising the steps of:
converting the serial digital video signal into an analog RGB component signal;
routing the analog RGB component signal to a waveform display device for display as individual RGB waveform components; and
measuring for each RGB waveform component the amount of deviation of the maximum and minimum values from predetermined maximum and minimum values that define a color gamut, the amount of deviation for each RGB



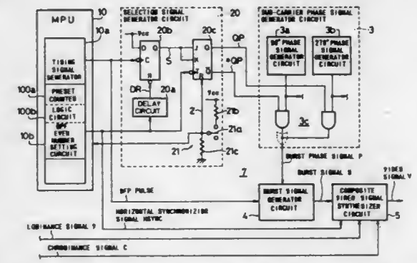
waveform component being a measure of the color gamut errors.

5,311,296

VIDEO SIGNAL GENERATOR CIRCUIT AND VIDEO IMAGE PROCESSING DEVICE USING THE SAME

Yoshihiro Ikefuji, and Sadakazu Murakami, both of Ukyo, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 12, 1992, Ser. No. 974,885
Claims priority, application Japan, Nov. 12, 1991, 3-323701; Nov. 12, 1991, 3-323702
Int. Cl.[5] H04N *11/20, 7/01*
U.S. Cl. 348—505 **12 Claims**



1. A video signal generator circuit for generating a color video signal suitable to a first or a second television system selected externally, said video signal generator circuit comprising:
a sub-carrier signal generator circuit for generating a first color sub-carrier signal of a first phase and a second color sub-carrier signal of a second phase different from said first phase by 180° and for outputting either said first color sub-carrier signal or said second color sub-carrier signal according to a first selection signal;
a burst signal generator circuit responsive to a burst flag pulse and an output of said sub-carrier signal generator circuit for outputting said output as a burst signal during a period of said burst flag pulse;
a state memory circuit responsive to a second selection signal indicative of either the first television system or the second television system selected according to an external setting operation and adapted to be set to a logical "1" or "0" state when said second selection signal indicates that the first television system is selected, the state of said state memory circuit being alternated between "1" and "0" according to said burst flag pulse when said second selection signal selects said second television system; and
a timing circuit for outputting said state of said state memory

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circuit at a timing before a leading edge of said burst flag pulse or after a trailing edge of said burst flag pulse;

whereby said video signal generator circuit responds to an even number of burst signals in one frame and generates a color video signal suitable to the first or the second television system according to said second selection signal.

5,311,297

HDTV TO CONVENTIONAL TV SIGNAL CONVERTING APPARATUS WITH NON-LINEAR LEVEL CORRECTION

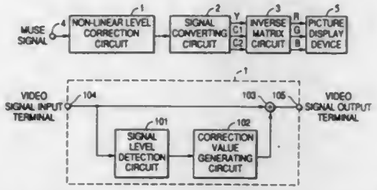
Yoshio Seki, Osaka; Atsushi Ishizu, Takatsuki, and Masaki Tokoi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1991, Ser. No. 709,234

Claims priority, application Japan, Jun. 7, 1990, 2-148994

Int. Cl.[5] H04N *9/69*

U.S. Cl. 348—675 **6 Claims**



1. A television signal converting apparatus for converting a high-definition television signal having a larger number of scanning lines than that of a conventional television signal into the conventional television signal, said high definition television signal having been bandwidth compressed and processed so as to have a non-linear level expansion characteristic at a transmission side and transmitted from the transmission side in the form of a band-compressed television signal, said apparatus comprising:

a non-linear correction means for correcting a signal level of the transmitted band-compressed television signal based on a predetermined non-linear characteristic;

a signal converting means for converting an output signal of said non-linear correction means to the conventional television signal, said signal converting means comprising an interpolation means coupled to said non-linear correction means for interpolating the band-compressed television signal to restore the high-definition television signal, and a scanning line density converting means for changing the number of scanning lines of the high-definition television signal restored by said interpolation means to the number of scanning lines of the conventional television signal;

an inverse matrix means coupled to said signal converting means for producing three primary color signals from an output signal of said scanning line density converting means; and

a picture display means coupled to said inverse matrix means for displaying the three primary signals;

wherein said non-linear level correction means corrects for a difference between said non-linear level expansion characteristic and a non-linear electro-optic conversion characteristic of said picture display means.

5,311,298

CHROMA ADJUSTMENT CIRCUIT

James A. Karlock, 3311 NE. 35th Ave., Portland, Oreg. 97212

Filed Jan. 15, 1992, Ser. No. 822,038

Int. Cl.[5] H04N *9/68*

U.S. Cl. 348—710 **16 Claims**

9. An apparatus for alternatively directing a chroma signal including a color burst from an input to one of two outputs in response to a control signal, applied to a control terminal, comprising:

an NPN transistor with its current carrying terminals connected between said input and a second of said two outputs;

a PNP transistor with its current carrying terminals connected between said input and a first of said two outputs;

a resistor connected between said control terminal and the base of said NPN transistor; and

a second resistor connected between said control terminal and the base of said PNP transistor,

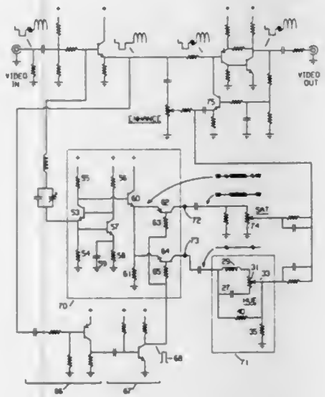
so as to cause said transistors to alternately conduct, splitting said signal into two time divided outputs containing said chroma without said color burst at said first output and said color burst at said second output.

10. An apparatus for processing the chroma and color burst portions of a video signal, comprising:

an input terminal connected to receive said chroma portion of said video signal;

a first transmitter with its current carrying terminals connected between said input terminal and an amplitude setting potentiometer;

a second transistor with its current carrying terminals connected between said input terminal and a phase shifting network which includes an amplitude compensation resistor;



a source of a control signal, for application to the control terminals of said first and said second transistors that causes said first transistor and said second transistor to alternately conduct;

a combining means to combine the outputs of said potentiometer and said phase shift network, so as to allow control of the phase of said color burst with less unwanted amplitude variation of said burst and control of the amplitude of the chroma subcarrier.

12. An apparatus for shifting the phase of a signal received at an input terminal, comprising:

a potentiometer with a variable arm;

an inductor connected between a source of said signal and one end of said potentiometer;

a capacitor connected between said source of signal and the other end of said potentiometer;

a load resistor connected to the variable arm of said potentiometer; and

a second resistor connected between said source of signal and said variable arm, so as to preserve the amplitude of the outputted signal at said variable arm when the potentiometer is set such that the signal at the adjustable arm is substantially in phase with the input signal.

5,311,299

RECURSIVE COMB FILTER

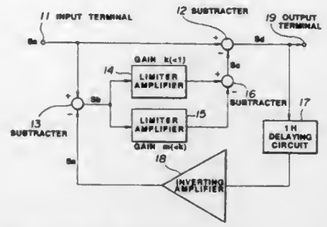
Mitsumo Kawano, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 4, 1992, Ser. No. 985,914

Claims priority, application Japan, Dec. 10, 1991, 3-326023

Int. Cl.[5] H04N *05/213*

U.S. Cl. 348—622 **5 Claims**



1. A recursive comb filter comprising:

first subtracting means, having first and second inputs, for inputting a periodic signal of a fixed period at the first input and outputting a first subtracted signal;

means for delaying the first subtracted signal by the period of said periodic signal and outputting a delayed signal;

second subtracting means for subtracting the delayed signal from the periodic signal and outputting a second subtracted signal;

first means for amplifying, by an amplification factor smaller than 1, the second subtracted signal to provide an amplified signal and limiting the amplitude of the amplified signal to provide a limited amplified signal;

second means for amplifying the second subtracted signal by an amplification factor smaller than that of the first amplifying means and outputting a second amplified signal;

third subtracting means for subtracting the second amplified signal from the first amplified signal to provide a third subtracted signal to the second input of the first subtracting means, the first subtracting means first subtracting the third subtracted signal from the periodic signal to produce the first subtracted signal; and

means for outputting the subtracted signal as a filter output signal.

5,311,300

CIRCUIT ARRANGEMENT FOR ACCURATELY ADJUSTING EACH COLOR CHANNEL OF A PICTURE SIGNAL GENERATOR USING DIGITAL CONTROL SIGNALS

Jaap E. Blankevoort, Eindhoven; Johannes H. J. M. Van Rooy, Den Bosch, and Lucien Schenk, Breda, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

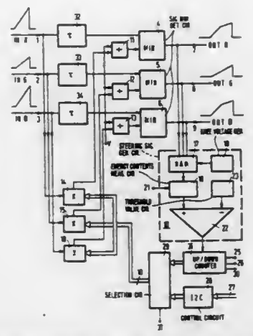
Filed Jan. 27, 1993, Ser. No. 9,702

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203717

Int. Cl.[5] H04N *9/64, 5/14*

U.S. Cl. 348—690 **8 Claims**

1. A circuit arrangement for adaptive white-compression of video signals of a color picture signal generator, having a color signal channel for processing each of three color signals (R, G, B), each of said color channels including a signal minimum detector circuit having a first input for receiving a respective one of said color signals (R, G, B), and a second input for receiving respective compressed color signals, and an output for furnishing a respective color output signal (R', G', B') which is the smaller of the signals applied to the first and second inputs, each of said color channels further comprising a multiplier circuit having a signal input for receiving a respective one of the color signals (R, G, B), a control input for receiving a digital control signal derived from the color output signals (R', G', B') of the minimum detector circuits, and an output for supplying a respective one of said compressed color signals coupled to the second input of the respective minimum detector circuit, characterized in that said circuit arrangement further comprises means for generating a digitized steering signal from the color output signals (R', G', B') by line-sequential measurement of the energy contents of the largest of said color output signals over a period of one line, and comparison of said energy contents with a threshold value reference signal;



and an up/down counter for furnishing said digital control signal, said up/down counter having a control input for receiving said digitized steering signal, and an output coupled to the control inputs of the multiplier circuits, whereby the color signals (R, G, B) respectively applied to the multiplier circuits are multiplied by a factor between 0 and 1 in response to the digital control signal thereby forming the compressed color signals.

5,311,301

APPARATUS FOR AUTOMATICALLY DISCRIMINATING BETWEEN AT LEAST THREE DIFFERENT BROADCASTING SYSTEMS

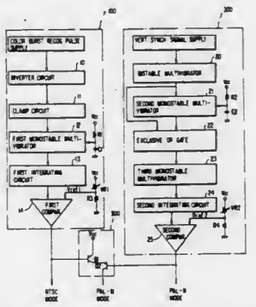
Hong Jae-Gyun, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi, Rep. of Korea

Filed Feb. 26, 1993, Ser. No. 23,677

Claims priority, application Rep. of Korea, Feb. 28, 1992, 92-3247

Int. Cl.[5] H04N *11/20*

U.S. Cl. 348—453 **3 Claims**



2. An apparatus for automatically discriminating from among a plurality of broadcasting systems, comprising:

a first status detecting circuit for discriminating a broadcasting system based on color burst signals, including an in-

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verter circuit for inverting the phase of color burst recognizing pulses; a clamping circuit for removing predetermined level signals from the output signals of said inverter circuit; a first mono-stable multi-vibrator for outputting rectangular signals having a predetermined duty ratio in accordance with output signals of said clamping circuit; a first integrating circuit for integrating said rectangular signals outputted from said first mono-stable multi-vibrator; and a first comparator for comparing the output signals of said first integrating circuit with a predetermined reference voltage to output broadcasting system discriminating signals;

a second status detecting circuit for discriminating a broadcasting system based on synchronizing signals; and

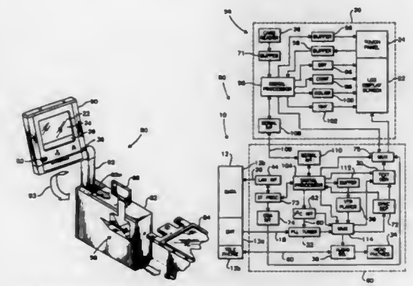
a third status detecting circuit for discriminating a broadcasting system based on outputs of said first and second status detecting circuits.

5,311,302

ENTERTAINMENT AND DATA MANAGEMENT SYSTEM FOR PASSENGER VEHICLE INCLUDING INDIVIDUAL SEAT INTERACTIVE VIDEO TERMINALS

Dickey J. Berry, La Verne, and Richard A. Bertagna, San Dimas, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 2, 1992, Ser. No. 908,095
Int. Cl.[5] H04N *7/14*; H04M *11/00*
U.S. Cl. 348—14 **17 Claims**



1. An interactive video terminal, comprising:

a video display screen;

a transparent touch panel overlying the screen and having a plurality of pressure sensitive areas for generating discrete electrical selection signals respectively when touched;

computing mean for generating visual prompts corresponding to predetermined selectable operations of the terminal for display on the screen underlying predetermined pressure sensitive areas of the panel respectively; and

a movable housing for retaining the screen and panel;

a fixed housing;

a pivotable swing arm extending from the fixed housing for supporting the movable housing; and

control means responsive to said selection signals from the panel for controlling the terminal to perform said operations corresponding thereto respectively, said control means comprising:

first processor means disposed in the movable housing for sensing said selection signals generated by the panel;

second processor means disposed in the fixed housing for controlling the terminal to perform said operations in response to said selection signals sensed by the first processor means; and

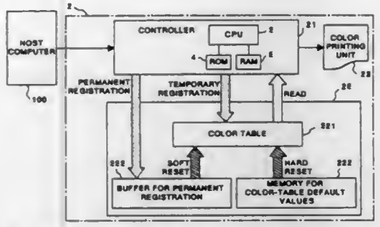
electrical connector means extending through the swing arm and interconnecting the first and second processor means.

5,311,303

IMAGE PROCESSING APPARATUS HAVING A MEMORY FOR STORING INFORMATION RELATING TO COLOR

Shunya Mitsuhashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 773,422
Claims priority, application Japan, Oct. 12, 1990, 2-272162
Int. Cl.[5] G06F *3/153*
U.S. Cl. 348—32 **38 Claims**



1. An image processing apparatus comprising:

receiving means for receiving a plurality of color component data represented by a plurality of color codes and a command relating to storing the data; and

memory means for storing the data in accordance with said command,

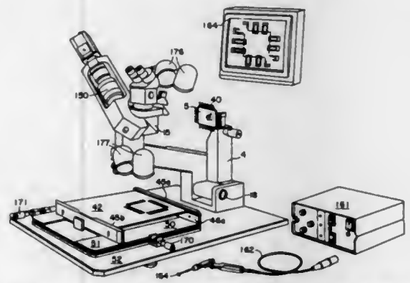
wherein said memory means is capable of storing data represented by a plurality of the color codes, and said command relates to storing a part of the plurality of color codes.

5,311,304

APPARATUS FOR THE POSITIONING OF COMPONENTS ON A PRINTED CIRCUIT BOARD OR THE LIKE

Bernd Monno, Teterower Ring 22, D-7744 Berlin, Fed. Rep. of Germany

Filed Jun. 8, 1992, Ser. No. 905,542
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1991, 4119401
Int. Cl.[5] H04N *7/18*; H05K *3/39*
U.S. Cl. 348—87 **26 Claims**



1. A component placement system for positioning a component in a desired placement location on a component board or the like comprising

holding means for receiving said component including positioning means for positioning said component in a placement location on said component board, said placement location and said holding means being in a predetermined relationship;

said holding means including tilt means for moving said component from a positioning location to said placement location; means for illuminating said component and said placement location on said component board;

means for optically relating said component held in said holding means with said placement location on said component board, including means for providing an overlapped bottom view image of said component and said placement location,

said overlapped image having a central axis;

means for moving said desired placement location on said component board to said placement location;

a video camera having an optical axis;

means for reflecting said overlapped image into said video camera for display on a video display;

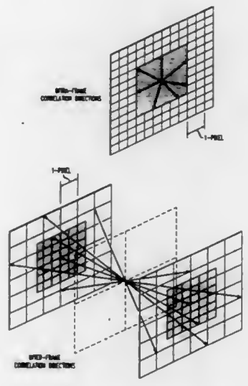
means for displaying said overlapped image in an upright position on said video display.

5,311,305

TECHNIQUE FOR EDGE/CORNER DETECTION/TRACKING IN IMAGE FRAMES

Ramaswamy Mahadevan, Long Branch, and Vishvjit S. Nalwa, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1992, Ser. No. 906,916
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—169 **5 Claims**



1. A method for detecting and tracking edges/corners in an image captured by a camera comprising the steps of,

periodically sampling the image at regular time intervals;

processing each sampled image to establish an intensity for each of a plurality of individual picture elements (pixels) collectively comprising said sampled image;

computing an intraframe bidirectional correlation of the intensity of each pixel in each said sampled image with each of the pixels within a predetermined neighborhood in said image to detect line and surface singularities in spatiotemporal space;

computing an interframe bidirectional correlation of the intensity of each pixel in said each sampled image with each of the pixels in a predetermined neighborhood in each of other sampled images to detect line and surface singularities in spatiotemporal space and the movement of said line and surface singularities; and

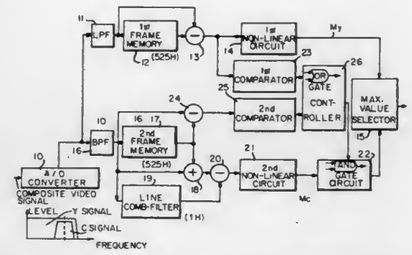
determining, from said interframe and intraframe bidirectional correlations, the presence of an edge/corner in each sampled image and its motion over time.

5,311,306

MOTION DETECTING CIRCUIT FOR VIDEO SIGNAL PROCESSOR

Seiichi Tanaka; Takashi Koga, and Kouichi Kurihara, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 17, 1992, Ser. No. 914,385
Claims priority, application Japan, Jul. 19, 1991, 3-179856
Int. Cl.[5] H04N *9/77, 9/78, 9/79*
U.S. Cl. 348—105 **13 Claims**



1. A motion detecting circuit for a video signal processor, comprising:

means for receiving a composite video signal having a low frequency band containing only a low frequency component of a luminance signal and a high frequency band containing both a high frequency component of the luminance signal and a chrominance signal superposed on the high frequency component of the luminance signal;

filter means coupled tot he receiving means for separating the video signal into the low and high frequency components;

first detecting means coupled to the filter means for detecting a low frequency luminance motion component based on an inter-frame correlation of two successive frames of the low frequency component of the video signal;

second detecting means coupled to the filter means for detecting a high frequency luminance motion component based on an inter-frame difference of two successive frames of the high frequency component of the video signal;

third detecting means coupled to the filter means for detecting a chrominance motion signal based on an inter-frame correlation of two successive frames of the high frequency component of the video signal;

first threshold means coupled to the first detecting means for generating a low band luminance motion digit signal when the low frequency luminance moving signal exceeds a first predetermined level;

second threshold means coupled tot eh second detecting means for generating a low band luminance motion digit signal when the high frequency luminance moving signal exceeds a second predetermined level;

control means coupled to the first and second threshold means for generating a control signal in response to the low and high band luminance motion digit signals;

gate means coupled to the third detecting means and the control means for selectively transmitting therethrough the chrominance moving signal in response to the control signal; and

selection means coupled tot he first detecting means and the gate means for selectively outputting the one of the low frequency luminance moving signal and the chrominance moving signal having the high signal intensity.

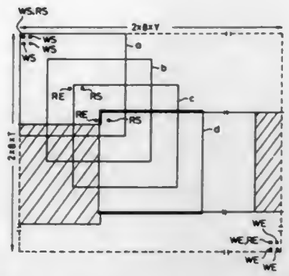
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5,311,307

IMAGE PROCESSING METHOD

Masakazu Yoshimoto, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Dec. 13, 1991, Ser. No. 808,167
Claims priority, application Japan, Dec. 25, 1990, 2-413787
Int. Cl.[5] H04N 7/133
U.S. Cl. 348—384 2 Claims



1. An image processing method in which an image signal of frames of pixel data is divided to provide a plurality of blocks for image signal processing on a block by block basis, wherein the step of dividing the image signal into blocks comprises the steps of:

dividing each frame of the image signal into at least first and second fields;

dividing each of the first and second fields into at least first and second groups alternately for each pixel so that four groups are formed;

forming separate blocks from each of the four groups; and

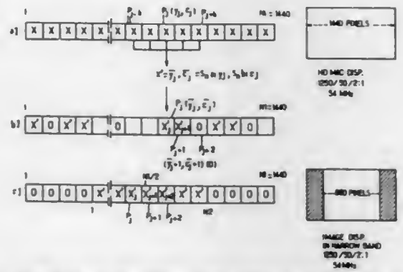
arranging the positions of the divided groups such that boundaries of the blocks do not coincide between the groups.

5,311,308

METHOD AND DEVICE FOR ENCODING-DECODING A NARROW BAND HIGH DEFINITION DIGITAL TELEVISION SIGNAL

Philippe Bernard, Cesson Sevigne, France, assignor to French State, represented by the Minister of Post, Telecommunications and Space (Centre National D'Etudes des Telecommunications) and Telediffusion de France, both of France

Filed Mar. 19, 1991, Ser. No. 672,167
Claims priority, application France, Mar. 20, 1990, 9003550
Int. Cl.[5] H04N 7/12
U.S. Cl. 348—426 8 Claims



1. A method of encoding a high definition digital television signal into a narrow band encoded signal so as to enable broadcasting of said high definition digital television signal over an HD-MAC type channel said high definition digital televison signal having N1 useful pixels per image line and being representative of high definition images samples at a sampling frequency f1 and said encoded signal corresponding to a narrow band signal sampled at a sampling frequency f2 so as to enable broadcasting of said encoded signal in HD-MAC NB narrow band, wherein f2 is less than f1, and wherein said method further comprises providing horizontal compression of said high definition images by substituted of one pixel of a subset of pixels of the image lines of said high definition images with a dummy pixel of arbitrary value so that the subset contains non-dummy and dummy pixels and repeating said substitution for all subsets of the image lines, so as to bring the number N1 of useful pixels per line of the high definition image to a number N2 of non-dummy pixels, wherein $N2=\alpha N1$, after said horizontal compression, to thereby produce a narrow band encoded signal representative of an image line and reduced format high definition images, wherein α is the ration of the sampling frequencies f2/f1, the horizontal compression step comprising:

(a) computing for each said subset of n consecutive pixels of each line of said high definition image the mean weighted value of luminance and chrominance components of the pixels of that subset,

(b) attributing said means weighted values to the luminance and chrominance values of the non-dummy pixels of said subset of pixels,

(c) repeating the preceding steps (a) and (b) for all the subsets of pixels of said image lines,

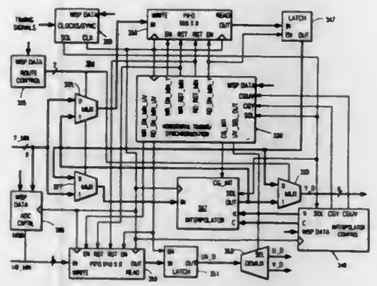
(d) rearranging said dummy pixels and non-dummy pixels which have been attributed said mean weighted values such that said dummy pixels of arbitrary value are arranged at the beginning and the end of the corresponding line so as to form a reduced format image and thereby reduce bandwidth of said encoded high definition digital television signal to a narrow band encoded signal.

5,311,309

LUMINANCE PROCESSING SYSTEM FOR COMPRESSING AND EXPANDING VIDEO DATA

Nathaniel H. Ersoz, Brownsburg; Karl F. Horlander, and Timothy W. Saeger, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US91/03817, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/19394, PCT Pub. Date Dec. 12, 1991
PCT Filed May 30, 1991, Ser. No. 938,232
Claims priority, application United Kingdom, Jun. 1, 1990, 9012326
Int. Cl.[5] H04N 7/12
U.S. Cl. 348—409 3 Claims



1. A signal processing circuit, comprising:

a line memory;

means for generating control signals for writing data into said line memory and for reading data from said line memory to compress and expand said data;

an interpolator for smoothing data expanded or to be compressed in said line memory; and,

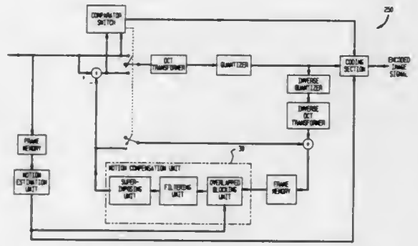
a switching network for selectively establishing a first signal path in which said line memory precedes said interpolator for implementing said data expansion and a second signal path in which said interpolator precedes said line memory for implementing said data compression.

5,311,310

HIGH EFFICIENCY CODER AND METHOD EMPLOYING OVERLAPPED MOTION COMPENSATION AND PERFECT RECONSTRUCTION FILTER BANKS

Hirohisa Jozawa, Kanagawa, Japan; Sharad Singhal, Mendham, N.J., and Hiroshi Watanabe, Kanagawa, Japan, assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 1, 1992, Ser. No. 984,041
Claims priority, application Japan, Dec. 6, 1991, 3-323240
Int. Cl.[5] H04N 7/133, 7/137
U.S. Cl. 348—416 17 Claims



1. An apparatus for use in a motion-compensating coder for generating a predicted image signal for an input image signal based upon a motion vector and a previous image signal held in storage, each input image signal and each previous image being segmented into blocks of N×N data points and N being an integer, comprising:

means for retrieving the blocks of the previous image signal from storage shifted according to the motion vector;

means, connected to said retrieving means, for generating a representation for each said shifted block, said representations of said shifted blocks having (N+M)×(N+L) data points and said representations overlapping one another, wherein M and L are integers;

means, connected to said generating means, for filtering said representation of each said shifted block to produce a second representation for each said shifted block, (N+M)×(N+L) data points of said second representation being different from said (N+M)×(N+L) data points of said representation; and

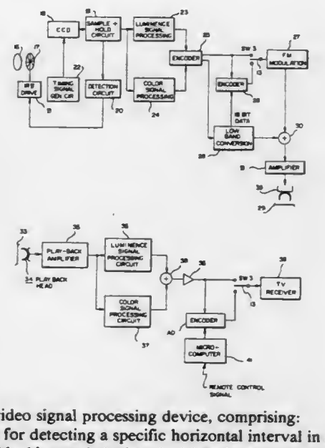
means, connected to said filtering means, for superimposing said (N+M)×(N+L) data points of said second representations and adding said (N+M)×(N+L) data points which overlap to produce the predicted signal for the input image signal block having blocks of N×N data points.

5,311,311

ENCODER FOR SUPERIMPOSING ENCODED CHARACTER DATA OR COMMAND DATA IN THE VERTICAL BLANKING INTERVAL FOR REGULATING VIDEO RECEIVER FUNCTIONS

Masami Harigai, Oizumi, and Hiroyasu Shindou, Ashikaga, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 24, 1992, Ser. No. 856,685
Claims priority, application Japan, Mar. 27, 1991, 3-063270
Int. Cl.[5] H04N 7/08, 7/087
U.S. Cl. 348—476 8 Claims



1. A video signal processing device, comprising:

means for detecting a specific horizontal interval in a vertical blanking period of a television signal;

means for encoding a data signal within said specific horizontal interval, said data signal being of a type detectable by a means for decoding;

said data signal including a control data portion, being effective to control a function of a video receiver;

means for superimposing said data signal within said specific horizontal interval phase locked to said specific horizontal interval; and

said means for detecting, means for encoding, and means for superimposing being operative during a record mode and a play mode of said device.

5,311,312

GHOST CANCELLING METHOD AND APPARATUS WHICH PERFORM A CORRELATIVE OPERATION TO SPEED PROCESSING

Jin S. Oh, Kwangmyung, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 3, 1992, Ser. No. 985,102
Claims priority, application Rep. of Korea, Dec. 6, 1991, 91-22255
Int. Cl.[5] H04N 5/21
U.S. Cl. 348—614 3 Claims

1. A ghost cancelling method comprising the steps of:

performing a correlative operation between an output video signal y(n) and a ghost cancelling reference signal r(n) to provide a correlative operation result C_{ry};

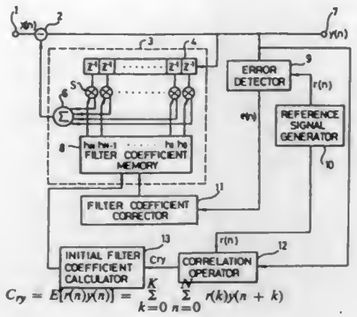
determining an initial filter coefficient h(0) of a transversal filter using the correlative operation result C_{ry};

supplying the output video signal y(n) to the transversal filter to generate a ghost correction signal; and

mixing the ghost correction signal with an input video signal x(n);

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wherein said performing step and said determining step are performed in accordance with the following equations:



$$C_{ry} = E[r(n)y(n)] = \sum_{k=0}^{K} \sum_{n=0}^{N} r(k)y(n+k)$$

and

$$h(0) = 1 - \frac{C_{ry}}{R} = 1 - \frac{C_{ry}}{C_{ry}(0)},$$

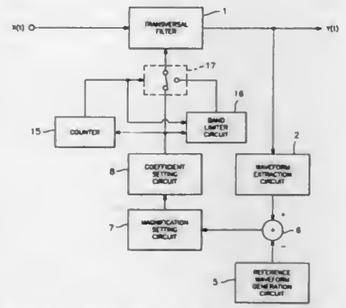
where C_{ry} is a correlative function between the reference signal r(n) and the output signal y(n), K is a length of the reference signal r(n), N is a number of video samples, and R is a correlative function of the output signal y(n); and wherein the input video signal x(n) is initially equal to the output signal y(n).

5,311,313

APPARATUS FOR REMOVING GHOST FROM TELEVISION SIGNALS INCLUDING A TRANSVERSAL FILTER USING COEFFICIENT DATA WITH UNNECESSARY HIGH FREQUENCY COMPONENTS REMOVED THEREFROM

Kazuyuki Ebihara; Shigehiro Ito, both of Toride; Yuji Nishi, and Tatsushi Koguchi, both of Iwai, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Division of Ser. No. 700,700, May 16, 1991, Pat. No. 5,206,727.
This application Dec. 28, 1992, Ser. No. 997,575
Claims priority, application Japan, May 18, 1990, 2-128346; May 18, 1990, 2-128347
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—614 **1 Claim**



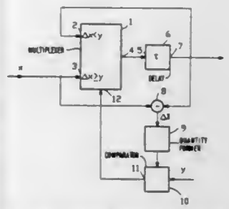
1. A television ghost removal apparatus comprising:
transversal filter means which receives input television signals, for compensating waveform distortion included in said input television signals and removing ghost components;
waveform extraction means for extracting signal waveforms of predetermined periods which include reference signals for ghost detection from said television signals;
coefficient setting means for comparing a reference waveform signal and the extracted signal waveform extracted by said waveform extraction means to obtain error signals, setting coefficient data corresponding to the obtained error signals, and in accordance with the coefficient data, changing filter coefficients of said transversal filter means;
band limiter means for removing unnecessary high-region components included in said coefficient data, and supplying the coefficient data from which the unnecessary high-region components have been removed to said transversal filter means, the unnecessary high-region components being outside a frequency band of said reference signal; and
counter means for counting the number of times that said coefficient data have been generated by said coefficient setting means until said television signals return to a status where ghost has been removed, and for activating said band limiter means when said number of times reaches a predetermined number.

5,311,314

METHOD OF AND ARRANGEMENT FOR SUPPRESSING NOISE IN A DIGITAL SIGNAL

Dieter Gutsmann, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 535,805, Jun. 11, 1990, abandoned.
This application Feb. 18, 1993, Ser. No. 20,024
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920004
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—607 **5 Claims**



1. A method for suppressing noise in a digital signal obtained by sampling an analog signal, said method comprising the steps:
determining a difference between a first sample value and second sample value, said first sample value being delayed by one sample clock with respect to said second sample value;
comparing the determined difference to a predetermined difference value; and
replacing said second sample value with said first sample value if said determined difference is less than said predetermined difference value.

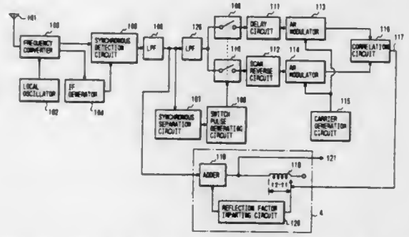
5,311,315

GHOST DETECTOR WITH TIME REVERSAL PROCESSING

Haruo Sakata, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 86,860
Claims priority, application Japan, Jul. 9, 1992, 4-205972; Aug. 7, 1992, 4-233030
Int. Cl.[5] H04N *5/213*
U.S. Cl. 346—614 **16 Claims**

1. A ghost detector comprising:
wave detecting and band limiting means for performing synchronous detection on a received video signal to provide a detected signal which is converted to a band-limited signal having a predetermined bandwidth;
switching control signal output means for extracting a scanning synchronous component signal from the detected signal to provide a switching control signal for a ghost component detecting period on the basis of the synchronous component signal;
switching means, supplied with the band-limited signal, for switching on the band-limited signal in response to the switching control signal so as to provide a switching signal;
memory means for broadening the bandwidth of the switching signal while providing a time-compressed processing signal by a write/read operation for the switching signal on the basis of a predetermined control signal;



time reversing means for performing time reversal on the processing signal in an order reverse to the order of writing/reading the processing signal to provide a time-reversed signal;
delay means for providing a delay signal that is obtained by delaying the processing signal by the period of the time reversal;
amplitude modulation means for amplitude modulating the time-reversed signal and the delay signal by a predetermined carrier component signal to produce associated amplitude modulated signals; and
correlation signal output means, supplied with the respective amplitude modulated signals, for providing a correlation signal that contains a significant waveform representing a ghost component of the received video signal.

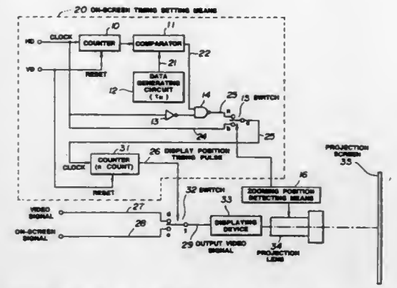
5,311,316

ON-SCREEN DISPLAYING APPARATUS HAVING ZOOM FUNCTION

Masayori Sato, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 10, 1992, Ser. No. 942,608
Claims priority, application Japan, Sep. 18, 1991, 3-238366
Int. Cl.[5] H04N *5/262, 5/272, 5/460*
U.S. Cl. 348—584 **4 Claims**

1. An on-screen displaying system capable of superimposing a secondary video picture, represented by an on-screen signal, onto a main video picture, represented by a video signal, comprising:
means for receiving said video signal and said on-screen signal;
means for selectively outputting said on-screen signal in a predetermined period within a period of said video signal;
means for displaying an output signal from said outputting means;
a projection lens projecting light of an image from said displaying means;
means for moving said projection lens in order to change a size of said image projected;
means for detecting a position of said projection lens and generating a detecting signal related thereto; and
on-screen timing setting means, responsive to said detecting signal, for controlling a timing at which said outputting means outputs said on-screen signal within said video signal so as to shift a position of a display of said on-screen



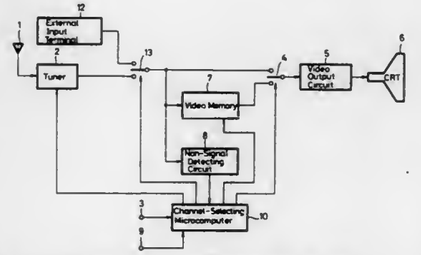
signal relative to a display of said video signal so as to maintain the display of said on-screen signal within said image on said screen during enlarging.

5,311,317

VIDEO SIGNAL PROCESSING APPARATUS FOR DISPLAYING STORED VIDEO SIGNAL DURING CHANNEL SELECTION

Toshiyuki Ogura, Tokyo, and Osamu Sugiyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,241
Claims priority, application Japan, Apr. 19, 1991, 3-088754
Int. Cl.[5] H04N *5/44, 7/01, 5/50*
U.S. Cl. 340—725 **3 Claims**



1. A video signal processing apparatus comprising:
receiving means for receiving a video signal;
a memory for storing a video signal having a horizontal synchronizing signal and a vertical synchronizing signal from said receiving means;
switching means for selectively transmitting said video signal form said receiving means or said video signal stored in said memory;
a non-signal detecting circuit connected to an output of said receiving means and producing an output signal indicating whether a video signal is received;
control means responsive to user input of channel selection information for supplying a control signal to said receiving means, said memory, and said switching means so that said receiving means tunes a desired channel and said switching means transmits said video signal stored in said memory during a prescribed period, such that after said period expires said switching means again transmits said video signal from said receiving means, said control means being further responsive to said output signal from said non-signal detecting circuit to control said switching means to transmit said video signal stored in said memory

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when a non-signal condition is detected by said non-signal detecting circuit; and

means for supplying said video signal from said receiving means or said video signal from said memory to a display.

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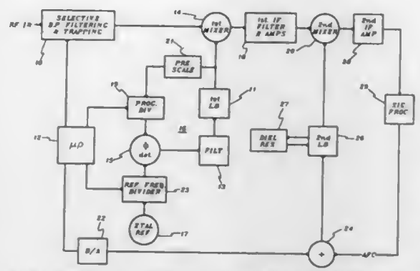
DOUBLE CONVERSION DIGITAL TUNING SYSTEM USING SEPARATE DIGITAL NUMBERS FOR CONTROLLING THE LOCAL OSCILLATORS

Pierre Dobrovolny, North Riverside, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 17, 1992, Ser. No. 931,172

Int. Cl.[5] H04N *5/50*

U.S. Cl. 348—731 **7 Claims**



1. A method of double converting a digital RF signal to a fixed second IF signal frequency based upon the RF signal channel number comprising:

generating a first digital number;

supplying said first digital number to a low noise phase locked loop for controlling the frequency of a first local oscillator signal;

supplying a first mixer with said digital RF signal and said first local oscillator signal for generating a first IF signal frequency; and

generating a second digital number;

using said second digital number to control the frequency of a second local oscillator signal, said second digital number compensating the frequency of said second local oscillator signal for any deviation of said first IF signal frequency from a predetermined value.

5,311,319

SOLID STATE IMAGE PICKUP DEVICE HAVING FEEDBACK VOLTAGE TO AMPLIFIER

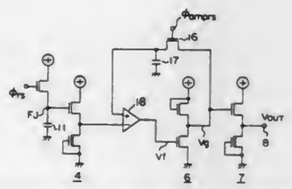
Makoto Moooi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1992, Ser. No. 858,844

Claims priority, application Japan, Mar. 27, 1991, 3-63244

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—300 **4 Claims**



1. A solid state image pickup device comprising:

photoelectric conversion means for converting incident light to electric signals;

a different circuit, one input terminal thereof being supplied with output signals from said photoelectric conversion means;

an inverter circuit having at least one stage thereof serially connected to an output terminal of said differential circuit;

negative feedback loop means for interconnecting an output terminal of a last stage of said inverter circuit and the other input terminal of said differential circuit through a switch means which is ON/OFF controlled at a predetermined timing, and for feeding back a signal at the output terminal of the last stage inverter circuit; and

a grounding capacitor connected between a junction between said switch means and said other input terminal of said differential circuit and a grounding point the grounding capacitor holding an operating point voltage of a first stage of the inverter circuit at a voltage determined by said grounding capacitor by closing said switch means during a period prior to application of said output signal of said photoelectric conversion means.

5,311,320

SOLID STATE IMAGE PICKUP APPARATUS

Seiji Hashimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

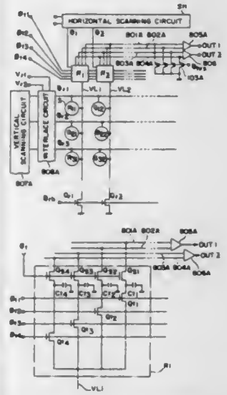
Continuation of Ser. No. 547,996, Jun. 13, 1990, which is a continuation-in-part of Ser. No. 314,275, Feb. 23, 1989, abandoned, and a continuation-in-part of Ser. No. 460,012, Jan. 2, 1990, said Ser. No. 314,275, is a continuation of Ser. No. 929,892, Nov. 13, 1986, abandoned, said Ser. No. 460,012, is a continuation of Ser. No. 96,534, Sep. 14, 1987, Pat. No. 4,914,519. This application Mar. 16, 1993, Ser. No. 39,581

Claims priority, application Japan, Sep. 30, 1986, 61-229625

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 348—243 **3 Claims**



1. A solid state image sensor comprising:

light receiving means including a plurality of light receiving cells arranged in a matrix, each light receiving cell converting light input into electrical signals;

reading and storing means including a first memory for reading bright signals out of light receiving cells arranged in a row and storing the bright signals for a horizontal scanning period; a second memory for reading dark signals out of said light receiving cells arranged in a row and storing the dark signals for a horizontal scanning period; a readout circuit for reading the bright and dark signals stored in said first and second memories simultaneously; a third memory for reading bright signals out of light receiving cells arranged in a row and storing the bright signal for the horizontal scanning period; a fourth memory for reading dark signals out of light receiving cells arranged in a row and storing the dark signal for the horizontal scanning period; and switching means for deriving the bright and dark signals alternately from said first and second memories and said third and fourth memories in the rhythm of the horizontal scanning period, wherein said bright signals are read out of light receiving cells arranged in a row simultaneously during a horizontal blanking period; and

means for removing fixed pattern noises by processing the simultaneously read out bright and dark signals.

5,311,321

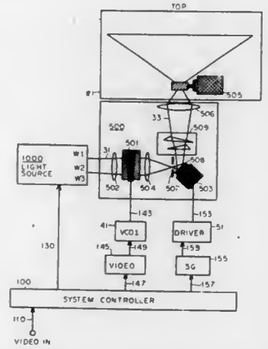
LASER VIDEO IMAGING SYSTEM WITH PULSE BACKTRACK AND METHOD

Ronald P. Crowley, Salem, Mass., assignor to Corporation for Laser Optics Research, Wellesley, Mass.

Filed Apr. 22, 1993, Ser. No. 51,721

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—760 **19 Claims**



1. In a video imaging system to provide a video image on a projection surface, which system comprises:

a) a light source means which comprises a pulsed laser to provide a monochromatic light input beam in the visible radiation region;

b) an acoustic-optical cell means having an inlet face to receive the input beam and out outlet face;

c) an electrical signal-to-sound wave transducer means mounted on a face of the acoustic-optical cell means other than the inlet face and the outlet face to provide a sound modulated light outlet face;

d) signal means coupled to above transducer means to produce sound waves within said cell means modulated to correspond to the electrical signals for a line of the video image;

e) a projection surface means to display on a projection surface a video image; and

f) plane projection means to provide for the projection of the sound modulated outlet beam onto the said projection surface with each line of the video image produced at a different location on the projection surface, the improvement which comprises:

i) a solid state actuator means responsive to a ramp signal means and adapted to move a displacement distance in a direction 45° to the outlet beam to backtrack the line of the image of the outlet beam in a direction opposite to the direction of the outlet beam from the acoustic-optical cell means; and

ii) said ramp signal means to produce a ramp signal that is proportional in time to the pulse duration of the input beam when the pulse duration is longer than the pixel propagation time for a line of image and which ramp signal drives the actuator means to minimize blurring of the line of the video image.

5,311,322

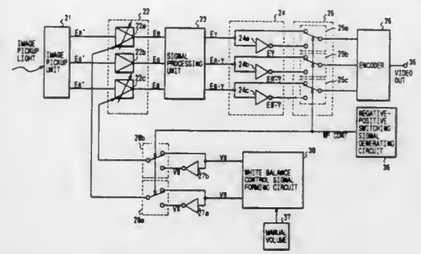
VIDEO CAMERA WITH NEGATIVE-POSITIVE REVERSAL FUNCTION

Tadashi Okino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1991, Ser. No. 738,890

Int. Cl.[5] H04N *9/04, 9/64, 5/238*

U.S. Cl. 348—223 **33 Claims**



1. A video camera comprising:

(a) image pickup means for generating an image signal;

(b) level changing means for changing the level of said image signal;

(c) negative-positive switching means for receiving said image signal outputted from said level changing means, said negative-positive switching means outputting said image signal outputted from said level changing means after inverting the polarity of said image signal in a negative mode, and outputting said image signal outputted from said level changing means without inverting the polarity of said image signal in a positive mode; and

(d) control means for controlling said level changing means such that when in said positive mode, said level changing means increases at least one component of said image signal when said level changing means is adjusted in a first direction and decreases said component of said image signal when said level changing means is adjusted in a second direction and, when in said negative mode, said level changing means decreases said component of said image signal when said level changing means is adjusted in said first direction and increases said component of said image signal when said level changing means is adjusted in said second direction.

5,311,323

VIDEO SIGNAL RECORDING SYSTEM

Hideo Honda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1992, Ser. No. 924,456

Claims priority, application Japan, Aug. 21, 1991, 3-209018

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **5 Claims**

1. A video recording system comprising:

video recording means including a recording circuit and a video record head for normally recording a video signal in a normal recording mode;

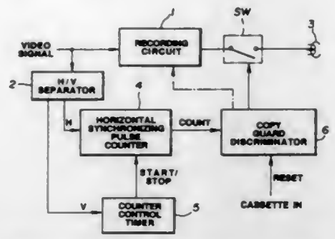
separating means for separating horizontal synchronizing pulses of said video signal from vertical synchronizing pulses of said video signal;

counting means for counting said horizontal synchronizing pulses fed from said separating means and producing a signal representing a count which is a total number of said

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horizontal synchronizing pulses received in a counting interval within a vertical blanking interval of said video signal;

timer means connected to said counting means and receiving said vertical synchronizing pulses from said separating means and producing a counter control signal fed to said counting means to start and stop a counting operation of said counting means and define said counting interval;



discriminating means for determining whether said count is within a predetermined range, and producing an inhibit signal to prevent a normal recording operation of said recording means when said count is within said predetermined range; and

switch means interposed between said recording circuit and said video record head for disconnecting said video record head when said inhibit signal is produced by said discriminating means.

5,311,324

APPARATUS WITH FRAME CHECK CAPABILITY FOR REPRODUCING IMAGES BY COMBINING OUTPUTS OF CONCURRENTLY OPERATING DISK PLAYERS STORING PORTIONS OF THE IMAGES

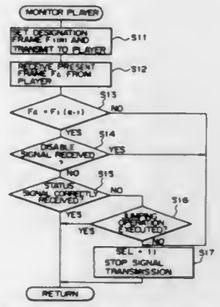
Tetsuya Temma; Yasuharu Nakajima; Hiroyasu Matsuura; Takeo Tobe; Jun Kono; Takuo Fujimura; Isao Kikuchi, and Atsushi Takada, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 705,803, May 28, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,586

Claims priority, application Japan, Jun. 1, 1990, 2-143591

Int. Cl.[5] H04N *5/781, 5/76*

U.S. Cl. 358—342 **12 Claims**



1. An apparatus for reproducing images by concurrent operations of disk players, the apparatus comprising:

means for generating a frame designation signal indicative of a frame to be reproduced;

a plurality of disk players responsive to the frame designation signal to retrieve the frames to be produced and generate disk player output signals corresponding thereto and a present frame number for each frame read, said frame designation signal being common to all of said disk players;

a synthesizing circuit to synthesize video format signals;

relaying circuits for relaying the disk player output signals to the synthesizing circuit,

means for comparing for coincidence the present frame number output by each of the disk players with the frame number to be reproduced as indicated by the frame designation signal and means for supplying a disable signal to a relaying circuit corresponding to a disk player for which the comparing means fails to indicate coincidence,

the relaying circuit stopping relaying of an output signal of the disk player failing to indicate coincidence, in response to said disable signal.

5,311,325

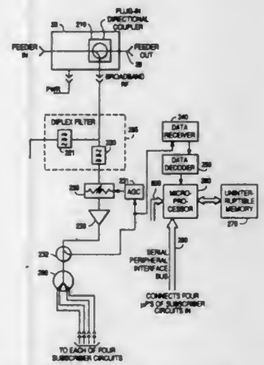
METHOD AND APPARATUS FOR PROVIDING PERIODIC SUBSCRIPTION TELEVISION SERVICES

Robert J. Edwards, Lawrenceville; Gregory S. Durden, Jonesboro; Himanshu Parikh, Lawrenceville; Paul Borsetti, Jr., and Vibha Rustagi, both of Duluth, all of Ga., assignors to Scientific Atlanta, Inc., Atlanta, Ga.

Filed Jun. 10, 1992, Ser. No. 896,582

Int. Cl.[5] H04N *7/167*

U.S. Cl. 348—5.5 **39 Claims**



1. Service denial apparatus for periodically permitting and denying service to subscribers of a subscription system, the service denial apparatus comprising

communications receiving means for receiving communications from a service provider,

communications decoding means, responsive to the communications receiving means, for decoding communications received from the service provider,

memory means for storing instructions and data for periodically permitting and denying service to a particular subscriber,

selective service denial means for selectively permitting and denying service to the particular subscriber, and

controller means, responsive to the communications decoding means and the memory means, for selectively actuating the memory means and the selective service denial means, the controller responsive to a first communication actuating storage in the memory means of a data code representing a periodic service offering, the data code further indicating a predetermined plurality of channels allocated to the periodic service offering and responsive to a second communication at a first predetermined time actuating the selective service denial means to permit reception of service by the particular subscriber on the

predetermined plurality of channels and, responsive to a third communication at a second predetermined time actuating the service denial means to deny reception of service by the particular subscriber.

5,311,326

IMAGE-INFORMATION TRANSMISSION METHOD AND ITS CONTROL CIRCUIT

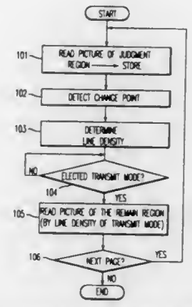
Shigeru Katsuragi, Chigasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,283

Claims priority, application Japan, Mar. 20, 1991, 3-80461

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—434 **20 Claims**



1. An image-information transmission method comprising:

a step for scanning one portion of a transmission original at a predetermined line-density to obtain one portion of image-information;

a step for judging an optimum scanning line-density using said one portion of image-information that has been scanned;

a step for connecting with an object party which transmits descriptive information thereof;

a step for determining a transmission line-density of transmission image information, using said judged optimum scan line-density and said descriptive information transmitted from said object party; and

a step for transmission, at said determined transmission line-density, of image-information scanned and read from said transmission original.

5,311,327

FACSIMILE MACHINE INCLUDING IMAGE MEMORY CAPABLE OF EFFICIENT TRANSMISSION/RECEPTION

Shigenobu Fukushima, Yao, and Hiroaki Hamano, Hirakata, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 5, 1991, Ser. No. 787,886

Claims priority, application Japan, Nov. 10, 1990, 2-305096; Nov. 10, 1990, 2-305097

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—444 **32 Claims**

1. A facsimile machine comprising:

reading means for reading out image information of an original image to be transmitted:

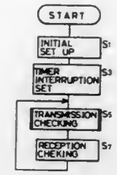
transmission means for transmitting the image information read by said reading means to an external device;

storage means for storing said read image information in parallel with a transmission operation by said transmission means;

operation means for instructing retransmission of the image information stored in said storage means;

control means for controlling said transmission means to transmit once again the image information stored in said storage means in response to operation of said operation means;

timer means for detecting an elapse of a prescribed time



period from completion of the transmission operation of said transmission means; and

erasure means responsive to a detection output of said timer means for erasing the image information stored in said storage means.

5,311,328

IMAGE PROCESSING APPARATUS FOR PERFORMING AN EDGE CORRECTION PROCESS AND DIGITAL COPYING MACHINE COMPRISING SAID IMAGE PROCESSING APPARATUS THEREFOR

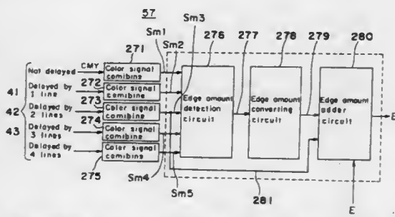
Kazuyuki Murata, Tsuzuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 636,918, Dec. 31, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 21,529

Claims priority, application Japan, Dec. 29, 1989, 1-340666; May 24, 1990, 2-135045; Jun. 5, 1990, 2-148228

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—447 **18 Claims**



1. An image processing apparatus for performing an edge correction process for image signals of respective pixels sequentially inputted, said apparatus comprising:

an image sensor;

means for causing said image sensor to scan an original document so as to generate image signals denoting a density level of the original document at respective image pixels of said image sensor;

edge amount detecting means for calculating an edge amount of a change amount in density level between a specified pixel and peripheral pixels of said specified pixel based on said image signals of said specified pixel and said peripheral pixels, and outputting a detection signal having said edge amount;

edge amount converting means for converting said edge amount of said detection signal outputted from said edge amount detecting means into a converted edge amount, so that said converted edge amount becomes zero when the absolute value of said edge amount of said detection signal is smaller than a predetermined first threshold value, said converted edge amount becomes a product of a predetermined positive coefficient and said edge amount of said detection signal when the absolute value of said edge amount of said detection signal is larger than a predeter-

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mined second threshold value which is larger than said first threshold value, and said converted edge amount increases depending on said edge amount of said detection signal when the absolute value of said edge amount of said detection signal is a value obtained between said first and second threshold values, said converted edge amount continuously changing when the absolute value of said edge amount of said detection signal is said first threshold value and when the absolute value of said edge amount of said detection signal is said second threshold value, said edge amount converting means outputting a conversion signal having level of said converted edge amount; and

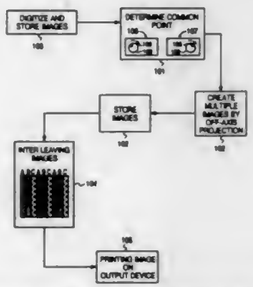
adder means for adding said converted edge amount of said conversion signal outputted from said edge amount converting means to the density level of said image signal of said specified pixel, and outputting an image signal of said specified pixel having a level of the addition result, for which said edge correction process has been performed.

5,311,329

DIGITAL FILTERING FOR LENTICULAR PRINTING

Paul E. Haeberli, Menlo Park, and Leonard J. Flory, Sacramento, both of Calif., assignors to Silicon Graphics, Inc., Calif.

Filed Aug. 28, 1991, Ser. No. 751,033
Int. Cl.[5] H04N *1/40, 1/387*
U.S. Cl. 358—448 **16 Claims**



1. A method of producing a high resolution hardcopy image comprising:

interleaving a plurality of images to form a composite; and

performing an unsharp masking technique on said composite, wherein said step of performing an unsharp masking technique includes:

determining an intensity value "i" on a first waveform representing an original image;

blurring said original image to provide a second waveform;

determining a second intensity value "b" on said second waveform corresponding to said "i";

determining a blending factor "a"; and

determining a resulting intensity value "h" on a third waveform representing said image having sharpened edges, said "h" corresponding to said "i" and said "b".

5,311,330

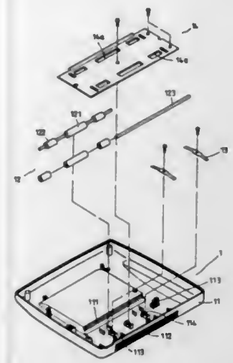
DOCUMENT GUIDE ROLLER ASSEMBLY IN A SCANNER

Chen-Chi Yeh, Taiwan, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Dec. 8, 1992, Ser. No. 987,882
Int. Cl.[5] H04M *1/04*
U.S. Cl. 358—498 **2 Claims**

1. A scanner comprising:

an upper unit consisting of a cover shell made through a molding process, a document guide roller assembly, two spring pressers, and a lid, said cover shell having a document feed port, a document outlet port, a plurality of locating elements to hold said document guide roller assembly, and a plurality of internally threaded posts to hold said spring pressers and said lid by screws, said document guide roller assembly comprising two axles retained to said locating elements by said spring pressers and covered by said lid, and rollers protruded through openings on said lid, each spring presser having two opposite ends respectively pressed on either axle at either end said ends formed into two opposite sloping strips respectively pressed on either axle of said document guide roller assembly to hold down said document guide roller assembly and prevent the inserted document from being biased; and



a bottom unit comprised of a casing, a motor drive, a transmission gear set, a transmission roller assembly, a spring switch, a LED lightsource, a reflector, a focus lens assembly, a cover board, and a control circuit board, said casing having mounting boards to which said motor drive and transmission gear set and transmission roller assembly are respectively fastened, said spring switch, said LED light source, said reflector, said focus lens assembly and said control circuit being incorporated into a scanning control circuit system for scanning control, said cover board having screw holes at two opposite ends respectively fastened to internally threaded posts on said casing by screws, and openings through which rollers on said transmission roller assembly protrude.

5,311,331

IMAGE SCANNING AND VIDEO PRINTING APPARATUS AND METHOD OF CONTROLLING THE SAME

Dong-Ill Cha, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 3, 1991, Ser. No. 770,235
Claims priority, application Rep. of Korea, Oct. 20, 1990, 1990-16792
Int. Cl.[5] H01N *1/21, 1/23, 1/32*
U.S. Cl. 358—501 **17 Claims**

1. An image scanning and video printing apparatus, comprising:

a first video signal input terminal for receiving a video signal from a video system as a first video signal;

a video decoder for decoding said first video signal to produce first red, green and blue video signals and separating a vertical synchronizing signal and a horizontal synchronizing signal from said first video signal;

a memory control circuit for receiving said vertical synchronizing signal and said horizontal synchronizing signal to generate analog/digital conversion sampling pulses, a write address signal and a write signal, and for receiving a

printing signal to generate a read address signal and a read control signal, said memory control circuit being controlled by a video synchronization signal and a memory control signal;

an analog/digital converter for selectively converting one of said first red, green and blue video signals and second red, green and blue signals in response to said analog/digital conversion sampling pulses so as to generate red, green and blue video data;

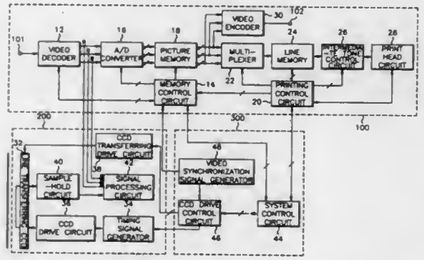
a picture memory for storing said red, green and blue video data in response to said write address signal and said write signal and for providing the stored red, green and blue video data in response to said read address signal and said read control signal when one frame has been stored;

a printing control circuit for producing said printing signal, a video data selection signal, a line memory control signal, an intermediate tone control signal and a printing drive signal in response to a printing control signal;

a multiplexer for sequentially converting said stored red, green and blue video data in a parallel format to blue, green and red video data in a serial format in response to said video data selection signal;

a line memory for transforming said blue, green and red video data into vertical video data in response to said line memory control signal;

an intermediate tone control circuit for transforming said vertical video data into yellow, magenta and cyan printing data in response to said intermediate tone control signal;



a print head circuit for printing a frame on a printing paper according to said printing drive signal and said yellow, magenta and cyan printing data;

a video encoder for encoding the red, green and blue video data from said picture memory into a monitoring video signal;

an image scanning unit for scanning with an image sensing charge coupled device in response to a charge coupled drive control signal and a charge coupled transfer control signal so as to produce said second red, green and blue video signals supplied to said analog/digital converter; and

a system control unit for controlling said image scanning apparatus and said video printing apparatus by providing said charge coupled drive control signal, said charge coupled transfer control signal, said video synchronization signal, said memory control signal and said printing control signal.

7. An image scanning and video printing apparatus, comprising:

image scanning means for generating scanned video signals by scanning a given material;

video printing means coupled to receive external video signals via an external video signal input terminal and respective to said scanned video signals, for printing an image represented by one of said scanned video signals and said external video signals, said video printing means comprising; video decoder means for generating external red, green and blue video signals by decoding said external video signals;

converter means for converting one of said external red, green and blue video signals and said scanned video signals into selected red, green and blue video signals, said scanned video signals being received as scanned red, green and blue video signals from said image scanning means;

memory means for storing said selected red, green and blue video data to be read out as stored red, green and blue video data;

printing means for printing an image represented by said stored red, green and blue video data;

multiplexer means for multiplexing said stored red, green, and blue video data by alternately providing blue, green, and red components to generate multiplexed blue, green, and red video data; and

line memory means for receiving and temporarily storing said multiplexed blue, green, and red video data, and for providing the temporarily stored multiplexed blue, green, and red video data to said printing means to compensate for a different processing speed of said printing means; and

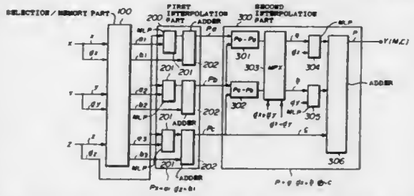
system control for controlling and synchronizing said image scanning means and said video printing means.

5,311,332

INTERPOLATION METHOD AND COLOR CORRECTION METHOD USING INTERPOLATION

Kaoru Imao, Yokohama, and Satoshi Ohuchi, Hachioji, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,119
Claims priority, application Japan, Dec. 20, 1990, 2-418963; Mar. 29, 1991, 3-093378; Mar. 29, 1991, 3-093379; Apr. 2, 1991, 3-096221; Oct. 21, 1991, 3-301052
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—518 **10 Claims**



10. An apparatus for converting three-dimensional color separated input signals into three-dimensional color correction signals, comprising:

a converting means for converting information obtained by said image scanner into said input signals;

a memory means for storing a plurality of triangular prisms into which XYZ space is divided;

a selection means for selecting a triangular prism, based on x, y and z coordinates of said input signals from said plurality of triangular prisms stored in said memory means;

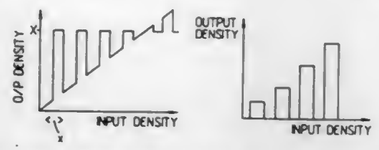
first interpolation means for generating first interpolated values within said triangular prism selected by said selection means;

second interpolation means for generating second interpolated values within a triangular section of said triangular prism selected by said selection means; and

calculating means for calculating said correction signals in accordance with said first and second interpolated values.

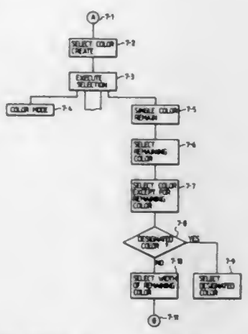
VOL 1162 ISS 2 MY 10 1994 UMI

5,311,333
IMAGE PROCESSING APPARATUS
Julian F. Veasy, Bucks., and Stephen Freeman, Bedfordshire, both of, assignors to Crosfield Electronics Limited, Hertfordshire, United Kingdom
Continuation of Ser. No. 690,181, Apr. 19, 1991, abandoned.
This application Apr. 30, 1993, Ser. No. 54,840
Claims priority, application United Kingdom, Apr. 20, 1990, 9008947
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—518 5 Claims



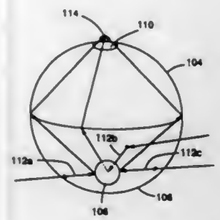
1. Image processing apparatus for processing input signals defining the values of colour components of pixels of an image comprising colour conversion means for converting each of said input signals to an output signal defining the value of a colour component of pixels of an image, wherein said colour conversion means is adapted to convert said input signals defining values in a plurality of spaced input ranges to said output signals which, for each respective spaced input range, have the same, respective output values and wherein input values between said spaced input ranges have an output value different from each adjacent range.

5,311,334
METHOD AND APPARATUS FOR COLOR CONVERSION OF AN ORIGINAL IMAGE
Takashi Sugiura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1989, Ser. No. 381,847
Claims priority, application Japan, Jul. 20, 1988, 63-182556
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—537 19 Claims



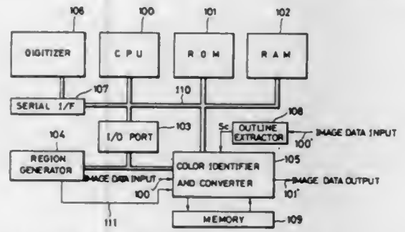
1. A full color image processing apparatus comprising:
designating means for designating a target color;
discriminating means for discriminating said target color in an original color image; and
converting means for converting a color in the original color image, other than said target color, which was discriminated by said discriminating means, into a desired color without color converting said target color, said desired color being different from said target color, wherein said desired color is colorless whereby the color other than the target color in the original color image is converted into a blank image.

5,311,335
METHOD FOR GENERATING HOLOGRAPHIC IMAGES
Allen F. Crabtree, 359A RR 10, Concord, N.H. 03301
Division of Ser. No. 562,271, Aug. 3, 1990, Pat. No. 5,090,789.
This application Feb. 24, 1992, Ser. No. 840,316
Int. Cl.[5] G03H *1/22, 1/26*
U.S. Cl. 359—22 2 Claims



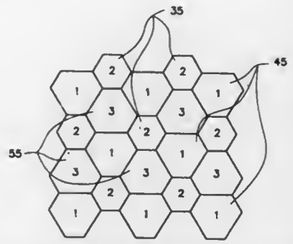
1. A method for generating holographic images, comprising the steps of:
modulating a plurality of laser light beams with image information;
projecting said modulated laser light beams substantially equiangularly about the equator of and onto a substantially spherical image reflector;
reflecting images from said image reflector off of a first concave reflector having an apex disposed substantially opposite a first pole of said image reflector; and
converging said image reflections at a point substantially opposite a second pole of said image reflector.

5,311,336
COLOR-CONVERTING AN OUTLINE OR OTHER PORTION, WITH OR WITHOUT SPREADING OF THE PORTION
Mitsuru Kurita; Yoshinori Ikeda; Yasumichi Suzuki, all of Tokyo; Kolchi Katoh, Yokohama, and Hiroyuki Ichikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 20, 1992, Ser. No. 363,590
Claims priority, application Japan, Jun. 8, 1988, 63-139500; Jun. 8, 1988, 63-139502; Nov. 14, 1988, 63-287094
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—80 41 Claims



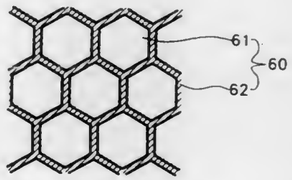
1. An image processing apparatus comprising:
outline extracting means for extracting an outline of an input image;
color designating means for manually designating a converting-color to be applied to the outline extracted by said outline extracting means; and
color converting means for converting a color of an outline portion along the extracted outline of the input image to the converting-color designated by said color designating means.

5,311,337
COLOR MOSAIC MATRIX DISPLAY HAVING EXPANDED OR REDUCED HEXAGONAL DOT PATTERN
Richard I. McCartney, Jr., Scottsdale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sep. 23, 1992, Ser. No. 949,618
Int. Cl.[5] G02F *1/133;* G09G *3/34*
U.S. Cl. 359—61 3 Claims



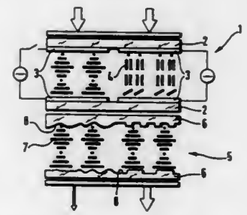
1. A display comprising a plurality of adjacent pixels wherein each pixel comprises;
first, second and third subpixels arranged in a triangular configuration wherein each subpixel has a hexagonal shape and the boundaries of adjacent subpixels are substantially contiguous within each pixel and between adjacent pixels and wherein said second subpixel is an equilateral hexagon having a smaller surface area than that of said first and third subpixels and the shape of said first and third subpixels is a non-equilateral hexagon.

5,311,338
LIQUID CRYSTAL LIGHT VALVE WITH ANODIZED ALUMINUM LIGHT BLOCKING/REFLECTING LAYER
Dae-won Kim, and Seok-bum Ma, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Apr. 6, 1992, Ser. No. 864,231
Claims priority, application Rep. of Korea, Apr. 30, 1991, 91-7150
Int. Cl.[5] G02F *1/135, 1/1335*
U.S. Cl. 359—70 21 Claims



1. A liquid crystal light valve, comprising:
a photoconductor having an impedance varying upon impinging light representing an image signal;
double-refracting layer means having a liquid crystal which double-refracts incident projection light by a predetermined potential, and orientation layers positioned on both sides of said liquid crystal;
a light-intercepting/reflecting light interposed between said double-refracting layer means and photoconductor, said light intercepting/reflecting layer being in contact with said photoconductor and one of said orientation layers, wherein said light-intercepting/reflecting layer is made of an aluminum layer and is anode oxidized in a pattern to form nonconductive black matrices and unoxidized conductive reflecting portions; and
electrodes for providing a driving voltage to said double-refracting layer means.

5,311,339
LIQUID CRYSTAL DISPLAY HAVING A DOUBLE-REFRACTING COMPENSATION LAYER
Werner Fertig, Rossdorf; Jürgen Wahl, Bad Soden, and Thomas Ott, Obertshausen, all of Fed. Rep. of Germany, assignors to Optrex Europe GmbH, Eschborn, Fed. Rep. of Germany
Filed Aug. 12, 1992, Ser. No. 929,696
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132902
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—73 19 Claims



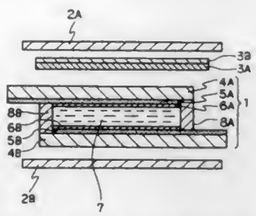
1. A liquid-crystal display comprising
a controllable liquid crystal cell;
wherein the controllable liquid-crystal cell comprises two substrates arranged spaced apart from each other and being filled with a liquid-crystal substance;
the cell further comprises electrode layers which can be acted on by voltage and are arranged on the substrates within the cell;
the liquid crystal display further comprises a compensation layer arranged outside the cell and extending over a surface of the cell, the compensation layer being a double-refracting compensation layer;
the display further comprises a polarization filter assembly having at least one filter, the filter assembly providing a filter in front of the liquid crystal cell and the compensation layer or behind the liquid crystal cell and the compensation layer or on opposite sides of the liquid-crystal cell and the compensation layer; and
the compensation layer comprises a plurality of adjacent regions providing double refraction to light rays passing therethrough, the amount of the double refraction of neighboring regions differing by a small amount from each other.

5,311,340
LIQUID CRYSTAL DISPLAY DEVICE HAVING COMPENSATOR AND THIN FILM WITH MAXIMUM REFRACTIVE INDEX PARALLEL AND PERPENDICULAR TO COMPENSATOR, RESPECTIVELY
Makoto Murata, Kobe; Eiichi Yoshida, Akashi, and Akihiko Nakajima, Himeji, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Apr. 22, 1993, Ser. No. 51,200
Claims priority, application Japan, Apr. 27, 1992, 4-107804; Apr. 28, 1992, 4-110089; Jun. 26, 1992, 4-169032
Int. Cl.[5] G02F *1/1333, 1/1335*
U.S. Cl. 359—73 5 Claims

1. A liquid crystal display device comprising a liquid crystal

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cell including a twisted nematic liquid crystal material sandwiched between a pair of transparent electrodes disposed opposite to each other, a pair of polarizers disposed respectively on both sides of the liquid crystal cell, an optically compensating element having a maximum refractive index in a



direction in the plane thereof, and a thin film having a maximum refractive index in the direction of the thickness thereof, the optically compensating element and the thin film being interposed between the liquid crystal cell and at least one of the polarizers and substantially satisfying the formula (I):

$$\frac{\Delta n}{n^2} \times d = \frac{2 \times \Delta N}{N^2} \times D - \frac{3 \times (\Delta N)^2}{N^2 \times (N_Z)^2} \times D \quad (I)$$

$$N_X \simeq N_Y,\ n_y \simeq n_z$$

where n represents the average refractive index of the optically compensating element; n_x, n_y and n_z represent the refractive indexes of the optically compensating element on respective coordinate axes thereof, respectively; d represents the thickness of the optically compensating element; $\Delta n = n_x - n_y$; N represents the average refractive index of the thin film; N_X, N_Y and N_Z represent the refractive indexes of the thin film on respective coordinate axes thereof, respectively; D represents the thickness of the thin film; $\Delta N = N_Z - N_X$; subscripts x, y and z for n respectively represent an axis along which the optically compensating element has the maximum refractive index, an axis crossing the axis x at right angles in the plane of the optically compensating element, and an axis which extends in the direction of the thickness of the optically compensating element; subscripts X, Y and Z for N respectively represent an axis in the plane of the thin film, an axis crossing the axis X at right angles in the plane of the thin film, and an axis which extends in the direction of the thickness of the thin film and along which the thin film has the maximum refractive index; and the axes X, Y and Z respectively extend in the same directions as the axes x, y and z do.

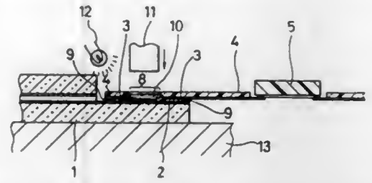
5,311,341

CONNECTION STRUCTURE BETWEEN A TAB FILM AND A LIQUID CRYSTAL PANEL

Minoru Hirai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 27, 1992, Ser. No. 858,512
Claims priority, application Japan, Mar. 29, 1991, 3-092851
Int. Cl.[5] G02F *1/133*; G09F *9/00*
U.S. Cl. 359—88 **29 Claims**

7. In a liquid-crystal display device comprising a liquid-crystal display panel having a plurality of electrodes arranged in an end portion of the panel and a circuit board made of a flexible resin that has a liquid-crystal drive IC mounted thereon, a plurality of output terminals being provided on the surface of said circuit board and connected respectively to said electrodes, the improvement wherein a through slit is formed in said circuit board to expose at least part of said output terminals in the area where said circuit board is to be connected to said liquid-crystal display panel, said liquid-crystal display panel being connected to said circuit board by means of a thermoplastic anisotropic conductive first adhesive between said electrodes and said output terminals and by either a uv



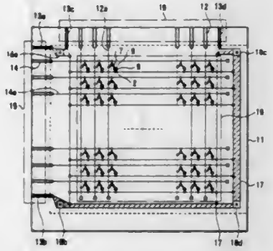
curable or a thermosetting second adhesive that is coated in said slit and separate from said first adhesive.

5,311,342

LIQUID CRYSTAL DISPLAY DEVICE WITH PARTICULAR COMMON ELECTRODE CONNECTOR

Takahiko Watanabe, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Oct. 26, 1992, Ser. No. 966,692
Claims priority, application Japan, Nov. 6, 1991, 3-289569
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—88 **6 Claims**



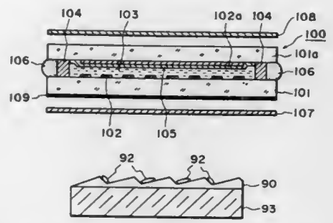
1. A liquid crystal display substrate comprising:
a first and square substrate having a large number of pixel electrodes arranged in a matrix, a plurality of row terminals and common electrode terminals arranged on one side of two adjacent sides of said first substrate, a plurality of column terminals and common electrode terminals arranged on the other side of the two adjacent sides,
a second substrate arranged to be opposite to said first substrate and to interpose a liquid crystal with said first substrate and having a counter electrode for performing a liquid crystal display in response to a voltage applied across said pixel electrodes and said counter electrode;
a conductive region continuously formed along a peripheral portion of two remaining sides of said first substrate, said conductive region being connected to at least one of said common electrode terminals to apply a common potential to said counter electrode.

5,311,343

LIQUID CRYSTAL DEVICE WITH AT LEAST TWO LIQUID CRYSTAL COMPOUNDS, ONE HAVING AND ONE NOT HAVING A CHIRAL SMECTIC PHASE

Kazuharu Katagiri, Tama; Kazuo Yoshinaga, Machida; Shinjiro Okada, Isehara, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 863,781, Apr. 6, 1992, which is a continuation-in-part of Ser. No. 251,028, Sep. 26, 1988, Pat. No. 5,120,466, which is a continuation of Ser. No. 750,295, Jul. 1, 1985, abandoned. This application Mar. 18, 1993, Ser. No. 34,827
Claims priority, application Japan, Jul. 13, 1984, 59-146211; Jul. 14, 1984, 59-146498; Sep. 12, 1984, 59-190789; Sep. 12, 1984, 59-190790; Sep. 14, 1984, 59-192920
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] G02F *1/137, 1/13*; C09K *19/52*
U.S. Cl. 359—90 **2 Claims**



1. A liquid crystal device, comprising: (a) a pair of base plates each having an orientation control film thereon, and (b) a liquid crystal composition interposed between the base plates; said liquid crystal composition comprising a mixture including at least one liquid crystal compound which has a temperature range in which it shows chiral smectic phase and at least one optically active substance which does not have a temperature range in which it shows chiral smectic phase; said liquid crystal composition having a temperature range in which it shows cholesteric phase and being placed in chiral smectic phase which has been formed through cholesteric phase on temperature decrease; said liquid crystal composition comprising liquid crystal molecules having long axes forming a pre-tilt in the chiral smectic phase.

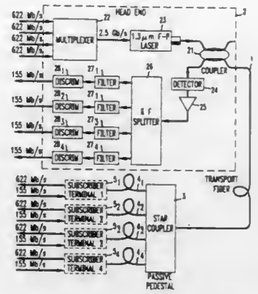
5,311,344

BIDIRECTIONAL LIGHTWAVE TRANSMISSION SYSTEM

Peter P. Bohn, Budd Lake, and Thomas H. Wood, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 2, 1992, Ser. No. 939,269
Int. Cl.[5] H04J *14/02*
U.S. Cl. 359—125 **19 Claims**

1. A lightwave transmission system having a first end transceiver coupled to a lightwave transmission medium wherein the transmission medium connects the first end transceiver to at least a first second end transceiver coupled to a remote end of the lightwave transmission medium, the transmission medium including at least one optical fiber, the first end transceiver including outbound apparatus and inbound apparatus,
the outbound apparatus operating substantially at a first optical wavelength for transmitting a first optical signal on the transmission medium via baseband signalling,
the inbound apparatus operating substantially at a second optical wavelength different from the first optical wavelength for receiving a second optical signal from the transmission medium via at least a first subcarrier multiplexed signal at a first assigned subcarrier frequency,
the transceiver further comprising means for coupling optically and wavelength selectively an input port of the inbound apparatus and an output port of the outbound



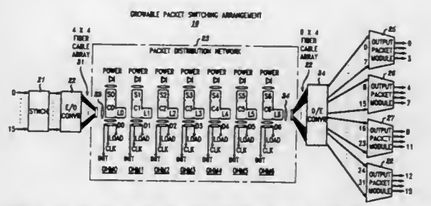
apparatus to one optical fiber of the lightwave transmission medium.

5,311,345

FREE SPACE OPTICAL, GROWABLE PACKET SWITCHING ARRANGEMENT

Thomas J. Cloonan, Downers Grove, and Gaylord W. Richards, Lisle, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1992, Ser. No. 954,103
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—139 **29 Claims**

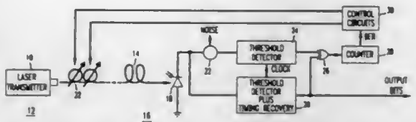


24. A packet switching arrangement having L input ports, M intermediate ports and N output ports, where L, M and N are positive integers greater than two, said arrangement comprising
a distribution network for switching packets from said L input ports to said M intermediate ports without storing full received packets, and
N/n output packet switching modules, where n and N/n are positive integers with $N > n > 1$, each of said modules comprising
means for switching packets from a distinct group of m of said intermediate ports to a distinct group of n of said output ports, where m is a positive integer with $m > n$, and
means for storing full received packets,
said distribution network comprising
S stages of opto-electronic nodes, with each node of at least the first (S−1) of said node stages comprising an X×Y switching means, where S, X and Y are positive integers with $S > 3$, $X > 1$, and $Y > 1$, and
(S−1) free-space optical link stages interconnecting successive ones of said S node stages,
wherein at least one of said (S−1) link stages comprises
binary phase grating means optically interposed between a first one and a second one of two successive ones of said S node stages, said grating means being responsive to each

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optical beam transmitted from said first node stage for transmitting a plurality of optical beams to said second node stage and wherein said second node stage is responsive to less than all of said plurality of beams.

5,311,346
FIBER-OPTIC TRANSMISSION POLARIZATION-DEPENDENT DISTORTION COMPENSATION
Zygmunt Haas, Holmdel; Craig D. Poole, Ocean; Mario A. Santoro, Shrewsbury, and Jack H. Winters, Middletown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 17, 1992, Ser. No. 899,971
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—156 **14 Claims**



1. Apparatus for use in a system in which at least one information bearing optical signal is transmitted over an optical fiber having transmission properties that are polarization-dependent, said apparatus comprising

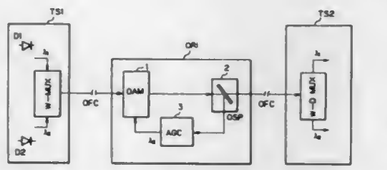
detecting means for receiving and converting the information bearing optical signal from the optical fiber into electrical signals,

means, coupled to said detecting means, for receiving said electrical signals and determining and generating a signal that corresponds to polarization-dependent distortion in the optical signal from said optical fiber,

means, for receiving said distortion signal to generate a control signal, and

means, controlled by said control signal, for adjusting the polarization of the optical signal in the optical fiber to minimize the polarization-dependent distortion of the received optical signal.

5,311,347
OPTICAL COMMUNICATION SYSTEM WITH AUTOMATIC GAIN CONTROL
Susumu Kubo; Katsuo Suzuki, and Atsuhiko Utsumi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan
Filed Jun. 30, 1992, Ser. No. 906,583
Claims priority, application Japan, Jul. 1, 1991, 3-186910
Int. Cl.[5] H04B *10/02, 10/00*
U.S. Cl. 359—176 **6 Claims**



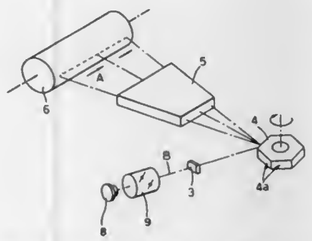
1. An optical communication system formed by terminal stations, at least one optical repeater provided between terminal stations, and optical fiber cables connecting the terminal stations through said at least one optical repeater, said system comprising:

an optical wavelength multiplexer provided in a first selected terminal station to multiplex a first optical signal having a wavelength (λ1) with a second optical signal having a wavelength (λ2);

an optical wavelength demultiplexer provided in a second selected terminal station to demultiplex the first optical signal from the second optical signal; and

wherein said at least one optical repeater has means for amplifying the first and second optical signals in accordance with a level of the second optical signal separated from the first optical signal.

5,311,348
CYLINDRICAL LENS SYSTEM FOR USE IN LASER BEAM SCANNING APPARATUS AND SCANNING APPARATUS INCLUDING SAME
Kazuo Yamakawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 28, 1992, Ser. No. 967,822
Claims priority, application Japan, Oct. 31, 1991, 3-313411
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—216 **27 Claims**



16. A laser beam scanning apparatus comprising: a laser beam source;

a deflector including a reflecting surface for deflecting a laser beam emitted by the laser beam source;

a cylindrical lens system provided between the laser beam source and the deflector for converging a laser beam emitted by the laser beam source on the reflecting surface of the deflector, comprising:

a first element including a first cylindrical lens having a convex surface and a second cylindrical lens having a concave surface, the convex surface and the concave surface being arranged to be opposite to each other; and

a second element including a third cylindrical lens; and

a scanning optical system for directing a laser beam deflected by the deflector onto a scanned object.

5,311,349
UNFOLDED OPTICS FOR MULTIPLE ROW SPATIAL LIGHT MODULATORS
Charles H. Anderson, and William E. Nelson, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 18, 1991, Ser. No. 809,771
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] G02B *26/08, 5/04*
U.S. Cl. 359—223 **4 Claims**

1. An optical system for combining and projecting at least two spatial light modulator row images onto an exposure plane, said system comprising:

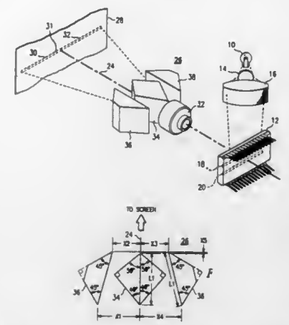
a spatial light modulator row operable for modulating an impinging light source into a first image;

a second spatial light modulator row operable for modulating an impinging light source into a second image, said second spatial light modulator aligned generally parallel to said first SLM; and

an optical guide for guiding images from said first and second spatial light modulator such that said images are projected immediately adjacent to and in a continuous line with one another onto an exposure plane, said optical guide comprising:

an imaging lens forming an axis of projection between said spatial light modulator rows and said exposure plane;

a first pair of reflecting surfaces to separate said spatial light modulator images into left and right images projecting along left and right optical paths;



a second pair of mutually orthogonal reflecting surfaces disposed along said left path for elevating said left image to said axis and reflecting said left image towards said axis;

a third pair of mutually orthogonal reflecting surfaces disposed adjacent said right path for lowering said right image to said axis and reflecting said right image towards said axis; and

a fourth pair of reflecting surfaces for directing said reflected left and right images towards said exposure plane.

5,311,350
OPTICAL DEVICE AND APPARATUS USING THE OPTICAL DEVICE
Mitsuo Hiramatsu; Isuke Hirano, and Tatsuo Fujinami, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan
Filed Jan. 16, 1992, Ser. No. 822,017
Claims priority, application Japan, Jan. 16, 1991, 3-003387; Jun. 21, 1991, 3-150445
Int. Cl.[5] G02F *1/03, 1/153, 1/00*
U.S. Cl. 359—263 **10 Claims**



1. An optical device comprising:

an ion conductor consisting essentially of one of:

a solid consisting essentially of at least one of the following:
polybutylmethacrylate;
polyacrylonitrile;
tetrabutylammonium chloride;
tetrabutylphosphorium bromide;
tributylstannane bromide;
tributylstannane iodide; and
polymethacrylate (2-bromotrimethylammonium) ethyl; and

a solution consisting essentially of the following:

a solvent consisting essentially of at least one of the following:
dimethyl formanide;
dimethyl sulfoxide;
propylene carbonate;
ethylene carbonate; and
acetonitrile; and

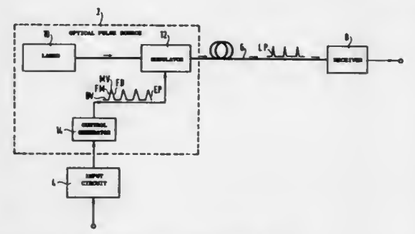
a compound in said solvent consisting essentially of at least one of the following:
tetrabutylammonium bromide;
tetraphenylammonium;
tetrabutylphosphonium;
tetraphenylphosphonium; and
tributyl, triphenyl, diphenyl, monobutyl and monophenyl derivatives thereof,

said ion conductor comprising mobile ions and having a refractive index reversibly varying according to an electric field applied thereto; and

at least one pair of electrodes facing each other through said ion conductor and directly contacting said ion conductor;

wherein when said electric field is applied to said ion conductor through said electrodes, the refractive index in at least one area of said ion conductor changes according to said applied electric field.

5,311,351
OPTICAL PULSE SOURCE, AND A SOLITON OPTICAL TRANSMISSION SYSTEM INCLUDING THE SOURCE
José Chesnoy, Paris, France, assignor to Alcatel Cit, Paris, France
Filed Apr. 13, 1993, Ser. No. 46,488
Claims priority, application France, Apr. 15, 1992, 90 04652
Int. Cl.[5] H04B *9/00*
U.S. Cl. 359—264 **7 Claims**



1. An optical pulse source comprising:

an optical emitter for supplying a light wave;

an electrically-controlled optical modulator receiving said light wave and having a threshold characteristic curve so as to transmit an optical pulse having a duration less than the duration of an electrical pulse applied to the modulator; and

a control generator for supplying an electrical-type control signal for controlling the modulator, the generator supplying the signal in the form of a control pulse having firstly a leading edge from a base value to a maximum signal value and secondly a trailing edge returning to the base value, the modulator stopping said light wave when the signal has the base value, whereby the modulator transmits said light wave in the form of an optical pulse whose duration is defined by the control pulse;

wherein said modulator is a modulator having a threshold and whose optical transmittance reaches a perceptible value only when said control signal exceeds a threshold lying between said base value and said maximum signal value;

said control pulse having a leading edge and/or a trailing edge that is/are progressively sloping, whereby said optical pulse is shorter than the control pulse.

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5,311,352

INCREASING THE BIREFRINGENCE OF KTP AND ITS ISOMORPHS FOR TYPE II PHASE MATCHING

John D. Bierlein, Wilmington; Lap K. Cheng, Bear, and Lap-Tak A. Cheng, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1992, Ser. No. 995,439
Int. Cl.[5] G02F *1/35*
U.S. Cl. 359—326 12 Claims



8. A nonlinear optical device comprising a nonlinear optical crystal and input means for directing electromagnetic radiation into said crystal to generate output waves from said crystal having a selected wavelength different from the wavelength of input waves to said crystal using type II phase matching, characterized by:

said crystal consisting essentially of doped $MTiOXO_4$ wherein M is selected from the group consisting of K, Rb, Tl and mixtures thereof and X is selected from the group consisting of P, As and mixtures thereof, said crystal containing at least one dopant selected from the group consisting of Fe, Nb, and Ta in an amount, totalling at least about 100 ppm, effective to increase the n_y-n_z optical birefringence of the doped crystal at least about 0.001 compared to a crystal without said dopant; and

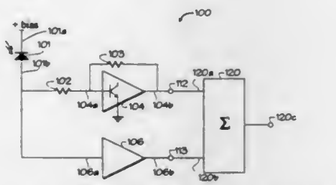
said input means being adapted to provide input waves suitable for generating said output waves at an optical birefringence higher than the highest corresponding optical birefringence of a crystal without said dopant.

5,311,353

WIDE DYNAMIC RANGE OPTICAL RECEIVERS

Ian D. Crawford, Longwood, Fla., assignor to Analog Modules, Longwood, Fla.

Filed Mar. 5, 1993, Ser. No. 27,276
Int. Cl.[5] H01J *40/14*
U.S. Cl. 359—333 42 Claims



1. An optical receiver amplifier consisting essentially of:

means for providing a light-induced signal on a signal input line;

a first amplifier including a first amplifier input having a low impedance value (R1), and including a first amplifier output providing a first output signal;

an input resistor connected between the signal input line and the first amplifier input and providing the light-induced signal to the first amplifier input, said input resistor having a resistance value (R2); and

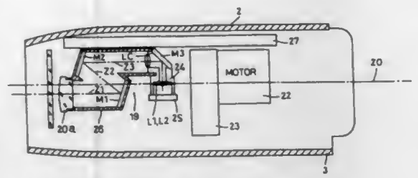
a second amplifier including a second amplifier input having a high impedance value (R3) greater than the resistance value (R2) of the input resistor, the second amplifier input connected to the signal input line, and including a second amplifier output providing a second output signal.

5,311,354

TELESCOPE

Makoto Kamiya; Haruyuki Nagano; Katsuhito Akagi; Masatoshi Yoneyama, and Yoshiharu Ohta, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1991, Ser. No. 737,399
Claims priority, application Japan, Jul. 30, 1990, 2-202754; Jul. 30, 1990, 2-202755; Jul. 30, 1990, 2-202756; Sep. 3, 1990, 2-234096; Sep. 5, 1990, 2-236484; Sep. 10, 1990, 2-240431; Sep. 11, 1990, 2-241829
Int. Cl.[5] G02B *23/00*; G01J *1/20*
U.S. Cl. 359—426 31 Claims



1. A telescope comprising:

an optical system constituting the telescope;

calculation means for calculating an amount of deviation of the optical system from an in-focus position where an object image can be observed under the in-focus condition;

discriminating means for discriminating whether or not the deviation amount is within a predetermined range obtained from a focus accommodation range of a human eye; and

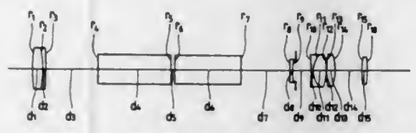
optical system driving means for driving the optical system to the in-focus position when the deviation amount exceeds the range as a result of the discrimination by the discriminating means.

5,311,355

AFOCAL ZOOMING OPTICAL SYSTEM

Hiroyuki Kato, Nagano, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,121
Claims priority, application Japan, Nov. 30, 1990, 2-335937
Int. Cl.[5] G03B *13/10*; G02B *25/00*
U.S. Cl. 359—432 4 Claims



1. An afocal zooming optical system comprising, in order from the object side, an objective optical unit comprising a positive first lens component, an erecting prism component and a negative second lens component, and an eyepiece optical unit comprising a three-element positive third lens component and a single-element positive fourth lens component, which system performs zooming by moving said second and third lens components in different directions along the optical axis and satisfies the following conditions:

$$few/fet \leq 1.30$$

$$1.70 < fG4/fG3 < 4.50$$

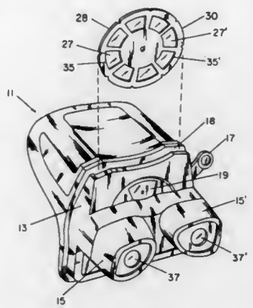
where few is the focal length of the eyepiece optical unit at low magnification, fet is the focal length of the eyepiece optical unit at high magnification, fG3 is the focal length of the third lens component, and fG4 is the focal length of the fourth lens component.

5,311,356

APPARATUS FOR SIMULATING EFFECTS OF OPTICAL LENSES AND METHODS FOR PRODUCTION AND USE

Joshua Freilich, Tano Point La., Santa Fe, N. Mex. 87501

Filed Feb. 5, 1992, Ser. No. 831,463
Int. Cl.[5] G02B *27/22, 27/02*; G02C *7/02*
U.S. Cl. 359—467 58 Claims



1. An apparatus for simulating the visual effects of wearing specialized eyeglasses comprising:

at least one transparency of an appropriate subject photographed with at least one non-refractive specialized eyeglass lens, wherein said specialized eyeglass lens is selected from the group consisting of polarized lenses, color-tinted lenses, partially tinted lenses, neutral lenses, and photoreactive lenses;

lighting means for illuminating said transparency for visual inspection by a user; and

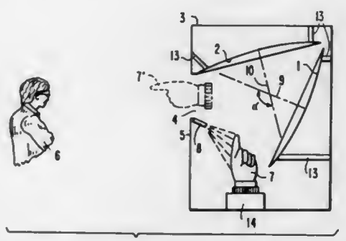
means for displaying said transparency for visual inspection by a user.

5,311,357

DEVICE FOR THE CREATION OF THREE-DIMENSIONAL IMAGES

Susan K. Summer, Warren, Conn., and Burkhard Katz, Overatz, Fed. Rep. of Germany, assignors to Image Technology Associates, New York, N.Y.

Filed Dec. 3, 1992, Ser. No. 985,592
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202303; Feb. 18, 1992, 4204821; Aug. 26, 1992, 4228451
Int. Cl.[5] G02B *27/22, 5/10*
U.S. Cl. 359—479 7 Claims



1. A device for producing three-dimensional optical images of an object comprising:

an outer housing having front and rear walls and a viewing hole through said front wall;

support means for said object located within said housing;

illuminating means within said housing, said illumination means providing rays of light to reflect off the object; and

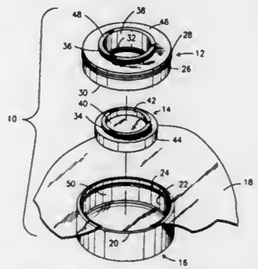
first and second concave mirrors positioned within said outer housing, said second concave mirror positioned to focus said rays of light to a virtual image formed by reflection from said second concave mirror, said first concave mirror positioned to reflect said rays reflected from said second concave mirror and to focus to a real image of said object said rays reflected from said second concave mirror, said concave mirrors being arranged to form an acute angle with respect to one another, and further being arranged such that the optical axes of each of said concave mirrors intersects a vertical plane passing through the center of said viewing hole, wherein said real image extends at least in part outside said housing and is magnified with respect to said object.

5,311,358

UNIVERSAL MICROSCOPE DRAPE

Jane M. Pederson, and William R. Johnson, both of Largo, Fla., assignors to Time Surgical, Inc., Largo, Fla.

Filed Oct. 8, 1992, Ser. No. 958,497
Int. Cl.[5] G03B *11/04*; B65D *85/38*
U.S. Cl. 359—510 7 Claims



1. In a disposable thin polymer microscope drape assembly for maintaining a sterile envelope around an operating room microscope having a mounting ring housing integral with a drape for engagement with an objective lens housing of a microscope, the improvement comprising:

an inner diameter of the mounting ring housing corresponding to an outside diameter of an adapter ring housing;

a means for attaching the mounting ring housing to the adapter ring housing;

a first end of the adapter ring housing having a means for engaging a microscope body;

a second end of the adapter ring housing having a means for engaging a microscope objective lens housing; and

the mounting ring housing having a depth to enclose a lower end of the microscope objective lens housing and retain a clear plastic lens.

5,311,359

REFLECTIVE OPTICAL CORRELATOR WITH A FOLDED ASYMMETRICAL OPTICAL AXIS

John R. Lucas, Glendale; Andrew M. Pollack, Simi Valley, and Stuart A. Mills, West Hills, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 24, 1992, Ser. No. 996,584
Int. Cl.[5] G02B *27/46*; G06K *9/64*
U.S. Cl. 359—561 10 Claims

1. An optical correlator system for the detection and identification of an unknown object where the object is represented at an input station of the system, imaged at a subsequent filter

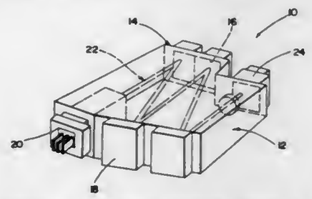
VOL 1162 ISS 2 MY 10 1994 UMI

station in a Fourier transform plane, then detected and identified at a subsequent detector station CHARACTERIZED IN THAT the optical correlator system comprises:

a) system support means having an asymmetrical perimeter region that defines a number (n) of system stations non-uniformally spaced apart along said asymmetrical perimeter,

b) respective ones of a plurality of reflective optical component means positioned at selected and associated ones of a number (n-2) of said system stations, and a plurality of transmissive optical component means positioned between selected ones of said (n) system stations, all to affect a beam of electromagnetic radiation impinging thereon and passing therethrough respectively,

c) said reflective optical component means include an input means positioned at the input station of the system and a filter means positioned at the filter station of the system where said input means is responsive to an input signal representing an unknown object, and said filter means is



responsive to the Fourier transform output of said input means, and both said input means and said filter means impart selected information to said beam of electromagnetic radiation,

d) electromagnetic radiation source means positioned at a first or alpha one of said non-selected system stations generating said beam of electromagnetic radiation, and

e) electromagnetic radiation detector means positioned at a last or omega remaining one of said non-selected system stations and being responsive to said resulting beam of electromagnetic radiation subsequent to all of said reflective and transmissive optical component means effect on said beam of electromagnetic radiation,

f) said source means, reflective optical component means, and said detector means define the boundaries of a folded optical path developed wholly within said support means and traversed by said beam of electromagnetic radiation SO THAT the unknown object is optically detected and identified.

5,311,360

METHOD AND APPARATUS FOR MODULATING A LIGHT BEAM

David M. Bloom, Portolla Valley; Francisco S. A. Sandejas, Menlo Park, and Olav Solgaard, Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford, Junior University, Stanford, Calif.

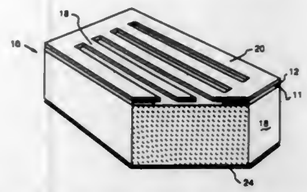
Filed Apr. 28, 1992, Ser. No. 876,078
Int. Cl.[5] G02B *5/18, 26/08;* H04N *9/12*
U.S. Cl. 359—572 **42 Claims**

1. A modulator for modulating an incident beam of light, comprising:

a plurality of elongated elements, each including a light reflective planar surface, the elements being arranged parallel to each other and with the light reflective surfaces of the elements lying in one or more parallel planes;

means for supporting the elements in relation to one another; and

means for moving a first set of the elements in a direction normal to said planes and relative to a second set of the elements, and between a first modulator configuration wherein said first and second sets act to reflect the incident beam of light as a plane mirror, and a second modulator configuration wherein said first and second sets diffract the incident beam of light as it is reflected from the surfaces of the elements.

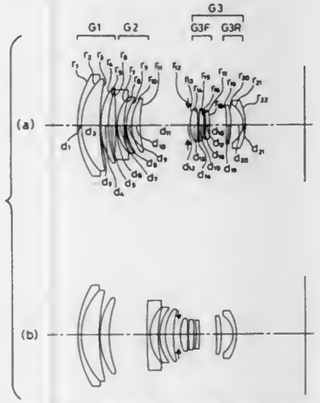


5,311,361

SMALL THREE-UNIT ZOOM LENS

Toshihide Nozawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,170
Claims priority, application Japan, Sep. 2, 1991, 3-221700
Int. Cl.[5] G02B *9/14*
U.S. Cl. 359—690 **18 Claims**



1. A three-unit zoom lens system which comprises, in order from the object side, only the following three lens units:

a first lens unit having a positive refractive power;

a second lens unit having a negative refractive power, with a separation between said first and second lens units, said second lens unit being disposed on the image side of said first lens unit; and

a third lens unit having a positive refractive power as a whole, with a separation between said second and third lens units, said third lens unit being disposed on the image side of said second lens unit, said third lens unit consisting of a front sub-unit having a positive refractive power and a rear sub-unit having a negative refracting power, with a separation between said front and rear sub-units, said rear sub-unit including a negative meniscus lens convex on the image side and having a negative refractive power, said third lens unit having a positive refractive power as a whole,

said first lens unit remaining fixed, and

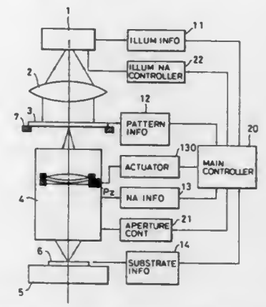
said second and third lens units being moved along the optical axis such that a maximum amount of movement of said second lens unit is larger than a maximum amount of movement of said third lens unit, whereby zooming is carried out.

5,311,362

PROJECTION EXPOSURE APPARATUS

Koichi Matsumoto; Kazuo Ushida; Masaomi Kameyama, all of Tokyo, and Hiroyuki Tsuchiya, Konosu, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 778,744, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 510,584, Apr. 19, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,051
Claims priority, application Japan, Apr. 20, 1989, 1-100632
Int. Cl.[5] G02B *9/08;* G03B *27/68*
U.S. Cl. 359—738 **9 Claims**



1. A projection exposure apparatus comprising:

a reticle stage;

an illumination optical system for illuminating a reticle having a predetermined pattern on said reticle stage;

a stage on which a substrate is positioned; and

a projection optical system for projecting said pattern of said reticle illuminated by said illumination optical system onto said substrate;

said projection optical system being arranged to satisfy the following conditions:

$$0<\Delta S_7<2.5\lambda/NA^2 \ldots \quad (1)$$

$$-0.5\Delta S_7<\Delta S_{10}<1.5\Delta S_7 \ldots \quad (2)$$

where NA represents the numerical aperture of said projection optical system, λ represents the wavelength of exposure light which illuminates said reticle, ΔS_{10} represents the amount of spherical aberration corresponding to 100% of an open aperture, and ΔS_7 represents the amount of spherical aberration corresponding to 70%.of said open aperture, said spherical aberration being the vertical spherical aberration of said projection optical system, which affects the focusing of said pattern of said reticle onto a surface of said substrate.

5,311,363

FIXED-FOCAL-LENGTH LENS SYSTEM

Kuniaki Ono, and Masao Mori, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jun. 15, 1993, Ser. No. 76,640
Claims priority, application Japan, Jun. 30, 1992, 4-172195
Int. Cl.[5] G02B *9/04*
U.S. Cl. 359—753 **4 Claims**

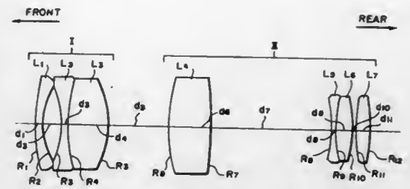
1. A fixed-focal-length lens system comprising first and second lens groups arranged in order from front to rear, the first lens group consisting of a plurality of lenses and having a negative refracting power and the second lens group consisting of a plurality of lenses and having a positive refracting power, wherein the fixed-focal-length lens system satisfies the following conditions

$$0.58<|f_1/f|<0.95 \quad (1)$$

$$0.50<|f_1/f_2|<1.0 \quad (2)$$

$$1.6<Bf/f<2.9 \quad (3)$$

$$1.1<f_2/f<1.45 \quad (4)$$



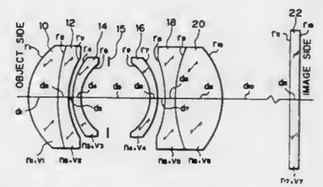
wherein f represents the focal length of the fixed-focal-length lens system, f_1 represents the focal length of the first lens group, f_2 represents the focal length of the second lens group and Bf represents the back focus of the lens system.

5,311,364

READING LENS FOR SCANNER

Yuichiro Kanoshima, Tokyo; Taira Kouchiwa, Kamakura; Kiichiro Nishina, Tokyo; Kohji Ichimiya, Yokohama; Yoshitsugu Kohno, Miyamori, and Naomi Harada, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 574,100, Aug. 29, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 903,484
Claims priority, application Japan, Aug. 30, 1989, 1-223664; Aug. 31, 1989, 1-225086; Nov. 14, 1989, 1-295797; Dec. 20, 1989, 1-330097; Dec. 27, 1989, 1-341976
Int. Cl.[5] G02B *9/62, 9/52, 9/54*
U.S. Cl. 359—756 **9 Claims**



1. A reading lens for a scanner to read an original in a reduced magnification, said lens comprising:

a first lens disposed on an optical axis and composed of a positive lens having a first lens-surface on an object side thereof and a second lens-surface on an image side thereof;

a second lens disposed on said optical axis in contact with said second lens-surface of said first lens and composed of a negative lens having said second lens-surface in common with said first lens on an object side thereof and a third lens-surface on an image side thereof;

a third lens disposed on said optical axis in an image side of said second lens and composed of a meniscus lens having a fourth lens-surface on an object side thereof and a fifth lens-surface on an image side thereof;

a fourth lens disposed on said optical axis in an image side of said third lens and composed of a meniscus lens having a sixth lens-surface on an object side thereof and a seventh lens-surface on an image side thereof;

a fifth lens disposed on said optical axis in an image side of said fourth lens and composed of a negative lens having an eighth lens-surface on an object side thereof and a ninth lens-surface on an image side thereof; and

a sixth lens disposed on said optical axis in contact with said ninth lens-surface of said fifth lens and composed of a positive lens having said ninth lens-surface in common

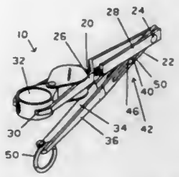
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with said fifth lens on an object side thereof and a tenth lens-surface on an image side thereof,

said first lens-surface being an aspherical surface which has a conic constant K_1 satisfying a condition of

$$-0.035 < K_1 < 0.$$

5,311,365
COMBINATION TOOL
Hayley M. Klearman, 12529H Lighthouse Way Dr., Creve Coeur, Mo. 63141, and Richard Agnew, 1630 Stewart St., Santa Monica, Calif. 90404
Filed Sep. 29, 1992, Ser. No. 953,997
Int. Cl.[5] G02B *27/02*
U.S. Cl. 359—804 **23 Claims**



1. A tool combining the features of holding an object while inspecting the object, comprising:

a first member;

means for inspecting an object carried by the first member, the first member includes a pair of opposing members the opposing members biased relative to each other, the opposing members normally biased toward each other, whereby the inspecting means is removable from the first member;

a second member;

means for holding the object relative to the inspecting means; the holding means associated with the second member; and

means for moving the holding means relative to the inspecting means by pivoting the first member relative to the second member.

5,311,366
MIRROR ADAPTED FOR USE IN SELF-CATHETERIZING PROCEDURES
Joseph A. Gerace, Nokomis, Fla., assignor to Paul A. Hostetler, Sarasota, Fla.
Filed Jan. 21, 1993, Ser. No. 6,539
Int. Cl.[5] G02B *7/182*
U.S. Cl. 359—879 **16 Claims**



1. A personal hygiene mirror assembly comprising:

a base;

a mirror mounted on said base; and

a pair of leg grips connected to said base for mounting said assembly to the legs of a sitting person with said mirror centered between the person's legs, said leg grips being movable inwardly and outwardly relative to said base and including mounting means for mounting said leg grips to the person's legs such that the person's legs pull said leg grips outwardly relative to said base when the person's legs are spread apart, and push the leg grips inwardly relative to said base when the person's legs are brought together.

5,311,367
OPTICAL DEVICE INCLUDING A TRANSPARENT MATERIAL BETWEEN TWO RELATIVELY ADJUSTABLE TRANSPARENT MEMBERS
Kazuhiro Ohki; Shoichi Shimura, both of Yokohama, and Naoki Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 683,886, Apr. 11, 1991, abandoned.
This application Jul. 26, 1993, Ser. No. 96,840
Claims priority, application Japan, Apr. 12, 1990, 2-97271
Int. Cl.[5] G02B *5/06, 27/64*
U.S. Cl. 359—832 **15 Claims**



1. An optical device comprising:

a transparent and soft material;

a pair of transparent plates for supporting said material;

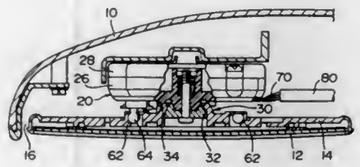
a frame that surrounds a periphery of each plate;

a flexible connecting member for connecting said frames to define a space in which said transparent and soft material is filled;

a reinforcement member formed in each of said frames that is harder than said frames; and

means for applying a driving force to at least one of said frame directly through said reinforcement member.

5,311,368
MIRROR DRIVE UNIT
Osamu Tsuyama, Hiratsuka, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan
Filed Nov. 30, 1992, Ser. No. 983,230
Claims priority, application Japan, Nov. 28, 1991, 3-314490
Int. Cl.[5] G02B *7/182*
U.S. Cl. 359—874 **3 Claims**



1. A mirror drive unit, comprising:

a plurality of motors, each with a plurality of lead terminals, for tilting a mirror supported pivotably inside a mirror housing about the horizontal and vertical axes thereof;

a synthetic resin-made casing having upper and lower surfaces and housing the motors;

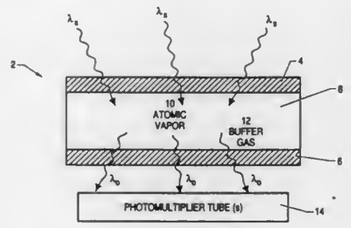
a harness including a plurality of wires, connected to the casing, to supply electric power to the plurality of motors in the casing;

said casing having formed therein a plurality of small through-holes through which the lead terminals of said plurality of motors directly extend from inside to outside thereof in a direction substantially perpendicular to one of the upper or lower surfaces of the casing and also having a plurality of small concavities formed on an outer surface thereof, said plurality of small concavities adjoining said through-holes;

one end of each of said lead terminals of the plurality of motors, respectively, being exposed outside a through-hole and bent at an outside end of the through-hole at a substantially right angle so as to be received in an adjoining concavity; and

a plurality of connecting terminals each having a plurality of gripping pieces to mechanically connect exposed ends of the plurality of lead terminals and the plurality of wires in said harness, said connecting terminals being forcibly fitted on side walls of said concavities.

5,311,369
METHOD FOR SUPPRESSING SOLAR BACKGROUND IN A RECEIVER OF LASER LIGHT
Jerry A. Gelbwachs, Hermosa Beach, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.
Filed Jun. 28, 1991, Ser. No. 723,285
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—886 **3 Claims**



1. An improved method for suppressing solar background in a receiver of laser light comprising the steps of:

a. providing a first optical filter having an optical transmission wavelength less than a first cutoff wavelength λ_{c1};

b. providing a second optical filter spaced apart from the first optical filter and having an optical transmission greater than a second cutoff wavelength λ_{c2}, where λ_{c2} is greater than λ_{c1};

c. providing a metal vapor, positioned between and adjacent to the first and second optical filters;

d. providing a buffer gas, positioned between and adjacent to the first and second optical filters;

e. transmitting light as λ_s centered at a Fraunhofer line, where λ_s is less than λ_{c1}, thereby exciting the metal vapor to a first excited state;

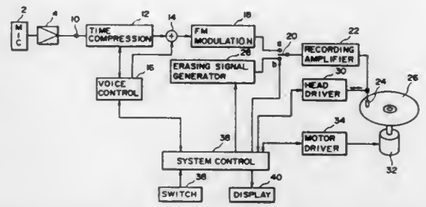
f. colliding the excited metal vapor with the buffer gas, thereby exciting the vapor to a second excited state;

g. relaxing the metal vapor to the ground level, thereby emitting output light at a wavelength λ_o;

h. passing light as wavelength λ_o through the second optical filter, where λ_o is greater than λ_{c2};

i. detecting light at wavelength λ_o at the laser light receiver.

5,311,370
RECORDING APPARATUS HAVING CONTINUAL AND SINGLE-MEMORY-PORTION RECORDING MODES
Makoto Takayama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1989, Ser. No. 396,969
Claims priority, application Japan, Aug. 23, 1988, 63-207256
Int. Cl.[5] H04N *5/76*
U.S. Cl. 360—9.1 **10 Claims**



1. A recording and reproducing apparatus for use with a memory medium on which a video signal is recorded, comprising:

reproducing means for reproducing the video signal from the memory medium to produce an image;

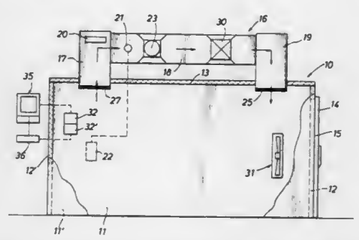
recording means for recording an audio signal into the memory medium in a plurality of memory portions;

controlling means for controlling said recording means, said controlling means selecting between (1) continual recording of the audio signal, and (2) recording of the audio signal into a single portion of the memory medium followed by setting a stand-by mode; and

changing means for causing said reproducing means to change an image reproduced by said reproducing means,

wherein, when the continual recording is selected, said controlling means controls said recording means to divide the audio signal recorded by said recording means in response to a change of the image reproduced by said changing means.

5,311,371
MAGNETIC TAPE DATA RECOVERY METHOD
Harold W. Clark, 1751 Stebbins Dr., Houston, Tex. 77043
Filed Jan. 4, 1993, Ser. No. 279
Int. Cl.[5] G11B *5/86*
U.S. Cl. 360—16 **7 Claims**



1. A method of processing a magnetic tape having stiction to enable the recovery of data thereon, comprising the steps of: placing said tape in a controlled environment under a selected range of elevated temperatures and reduced relative humidity for a selected time period; removing said tape from said environment and allowing it to cool down in the presence of ambient temperature and relative humidity; and then copying the data on said tape onto new media.

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5,311,372

METHOD OF RECORDING DIGITAL SIGNALS IN AN INTERLEAVING ARRAY FORM WITH ENHANCED ERROR INTERPOLATION

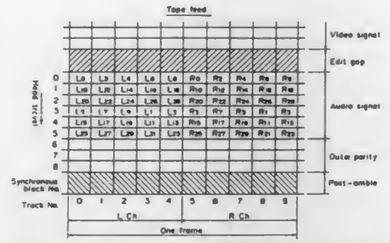
Chiyoko Matsumi, Suita; Susumu Yamaguchi, Moriguchi; Akira Iketani, Higashiosaka, and Tatsuro Juri, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 28, 1991, Ser. No. 722,674

Claims priority, application Japan, Jun. 29, 1990, 2-173430; Aug. 8, 1990, 2-211049

Int. Cl.[5] G11B *20/12, 5/02*

U.S. Cl. 360—19.1 **19 Claims**



1. In a method of recording digital signals, in which all audio signals, which are comprised of audio samples, of N channels (N=integer>1) are recorded on M tracks (M=integer>N) where video signals of I fields (I=integer) are recorded, the improvement comprising:

the M tracks being divided into N track groups each having S tracks (S=integer=M/N) arranged successively such that the audio signals of a j-th channel (j=integer) in the N channels are recorded on the tracks of an i-th track group (i=integer) in the N track groups.

5,311,373

VIDEO TAPE RECORDER

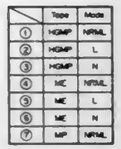
Noboru Murabayashi, and Akihiro Tsubaki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 710,133, Jun. 4, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 129,571

Claims priority, application Japan, Jun. 12, 1990, 2-153224

Int. Cl.[5] G11B *5/02*

U.S. Cl. 360—27 **8 Claims**





1. An apparatus for selectively recording a digital information signal representing picture and sound information on a first magnetic tape cassette having a tape with an optimum recording current that decreases with increasing recording frequency or a second magnetic tape cassette having a tape with an optimum recording current that increases with increasing recording frequency, said digital information signal selectively having a recording mode of a first standard or a recording mode of a second standard, said apparatus comprising:

first sensor means for detecting the kind of said magnetic tape cassette and producing an output in accordance therewith;

second sensor means for detecting the kind of said recording mode and producing an output in accordance therewith; and

control means responsive to the outputs of said first sensor means and said second sensor means for controlling a value of recording current for said digital information signal to optimize the recording current of said picture and sound information.

5,311,374

RECORDING/REPRODUCING SYSTEM USING MEMORY FUNCTIONS OF DIGITAL AUDIO TAPE RECORDER (DAT) AND METHOD THEREOF

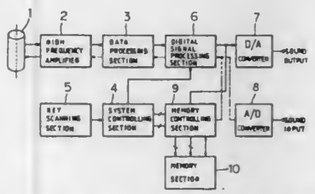
Yong K. Oh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 560,735, Jul. 31, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 997,663

Claims priority, application Rep. of Korea, Jul. 31, 1989, 10928/1989

Int. Cl.[5] G11B *5/09, 5/86*

U.S. Cl. 360—32 **6 Claims**



1. A recording and reproducing system for a digital audio tape recording comprising:

a head drum for reproducing and recording first aural signals;

a high frequency amplifier operatively communicative with said head drum for amplifying said first aural signals;

data processing means operatively communicative with said high frequency amplifier for converting said first aural signals to parallel signals;

digital signal processing means operatively communicative with said data processing means for digitally filtering said first aural signals;

a digital-to-analog converter operatively communicative with said digital signal processing means for converting said first aural signals digitally filtered by said digital signal processing means to second aural output analog signals;

an analog-to-digital converter operatively communicative with said digital signal processing means for converting third external aural analog signals input to the recording and reproducing system to fourth digital aural signals;

system controlling means for controlling said digital signal processing means;

a memory section for storing said first aural signals digitally filtered by said digital signal processing means that are also input to said digital-to-analog converter; and

memory controlling means operatively communicative with said system controlling means, said memory section, said digital signal processing means and said analog-to-digital converter for controlling the storing of said first aural signals that are input to said memory section in response to said system controlling means, and for reading from said memory section said first aural signals stored in said memory section and applying said first aural signals stored in said memory section to said digital signal processing means.

5,311,375

RECORDING HEAD ARRANGEMENT FOR VIDEO SIGNAL RECORDING AND/OR REPRODUCING DEVICE

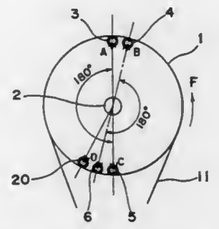
Yoshiyuki Ikushima, Yaita; Taizo Sasada, Hirakata, and Toshiaki Tabuchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 359,681, May 31, 1989, abandoned. This application Mar. 4, 1992, Ser. No. 844,912

Claims priority, application Japan, May 31, 1988, 63-134800

Int. Cl.[5] H04N *5/78;* **G11B** *15/14*

U.S. Cl. 360—33.1 **24 Claims**



1. A recording head arrangement employed in a video signal recording and/or reproducing device in which a video tape is helically wound on a drum carrying recording heads for recording and/or reproducing a video signal which is so divided for representing first and second half images on a screen, said recording head arrangement comprising:

a first head mounted on said drum, said first head having an azimuth angle inclined in a first direction with respect to a direction perpendicular to a head advancing direction;

a second head mounted on said drum closely adjacent said first head, said second head having an azimuth angle inclined in said first direction;

a third head mounted on said drum 180 degrees spaced from said first head, said third head having an azimuth angle inclined in a second direction, opposite to said first direction, with respect to the direction perpendicular to the head advancing direction; and

a fourth head mounted on said drum closely adjacent said third head and 180 degrees spaced from said second head, said fourth head having an azimuth angle inclined in said second direction;

whereby said first and second heads are scanned to form first and second tracks spaced by approximately one track width for recording and/or reproducing said first half image, and said third and fourth heads are scanned to form third and fourth tracks spaced by approximately one track width and in an interlaced manner with said first and second tracks for recording and/or reproducing said second half image;

said first, second, and fourth heads having a width, along a direction perpendicular to the head advancing direction, which is larger than a width of said third head, wherein the width of said third head is equal to the width of each of said tracks.

5,311,376

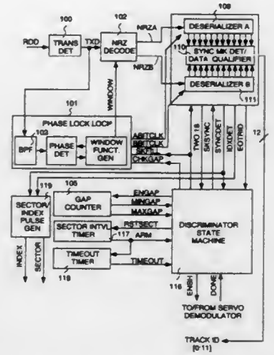
INFORMATION DETECTING SYSTEM

David B. Joan, Trabuco Canyon; Michael R. Spaur, Irvine; Richard W. Hull, Laguna Hills; Takashi Asami, Huntington Beach; Marshall D. Lee, Newport Beach; Robert P. Mento, El Toro, and Min-Hui Wang, Diamond Bar, all of Calif., assignors to Western Digital (Singapore) PTE, Singapore, Singapore

Filed Jun. 11, 1991, Ser. No. 714,102

Int. Cl.[5] H03K *17/00;* **G11B** *5/09*

U.S. Cl. 360—51 **12 Claims**



1. A system for detecting information in a train of signals, said signals in said train having pairs of associated transitions therein; said system comprising:

means for detecting said transitions in said signals in said train;

means, connected to said detecting means for generating a first window signal associated with the first transition of a pair of associated transitions and for generating a second window signal,

associated with the second transition of said pair of associated transitions;

decoding means responsive to said transitions in said signal train and to said window signals;

first storage means receiving signals from said decoding means corresponding to a first one of said transitions;

second storage means receiving signals from said decoding means corresponding to a second one of said transitions; and

means for comparing said transition signals in said first storage means with said transition signals in said second storage means to determine associated transitions in said pairs of transitions.

5,311,377

DRIVER DEVICE OF MAGNETIC HEADS FOR MAGNETIC RECORD AND REPRODUCTION

Yasuo Mitsuhashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1991, Ser. No. 733,843

Claims priority, application Japan, Jul. 23, 1990, 2-197484

Int. Cl.[5] G11B *15/12, 5/03, 5/02*

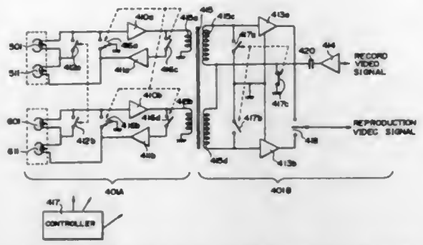
U.S. Cl. 360—61 **6 Claims**

1. A driver device of a recording/reproducing apparatus for at least one magnetic combined head mounted on a peripheral surface of a rotary drum, the combined head having an effective gap width, plural head members and at least two winding coils for enabling the plural head members for recording and reproducing, the driver device comprising:

switch means, connected to the winding coils, for changing the effective gap width by selectively short-circuiting at least one of the winding coils, the effective gap width of

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the combined head having a first effective gap width for recording and reproducing in an n time speed mode when said switch means is closed and a second effective gap width for recording and reproducing in a standard speed mode when said switch means is open, n being an integer greater than 1; and



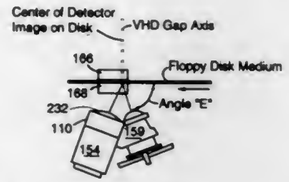
controller means, operatively coupled to said switch means, for closing said switch means during n time speed mode recording and reproducing and for opening said switch means during standard speed mode recording and reproducing.

5,311,378

DUAL VERY-HIGH DENSITY MAGNETIC HEAD ASSEMBLY WITH OPTICAL SERVO POSITIONING FOR VERY HIGH DENSITY FLOPPY DISK RECORDING AND HIGH DENSITY FORMAT COMPATABILITY

Roger O. Williams, Fremont; Stephen P. Williams, Morgan Hill, and Duane G. Wallace, Jr., San Jose, all of Calif., assignors to Insite Peripherals, Inc., San Jose, Calif.

Filed May 5, 1992, Ser. No. 878,551
Int. Cl.[5] G11B *13/00, 5/596*
U.S. Cl. 360—77.03 **4 Claims**



2. A disk drive system, comprising:

slider means for stabilizing an area of a spinning floppy disk proximate to a magnetic core;

infrared light means for illuminating a spot of light on said stabilized area;

optical means for focusing an image of said illuminated spot on an infrared detector and comprises a lens and a channel for establishing an optical image plane at said infrared detector that magnifies said illuminated spot; and

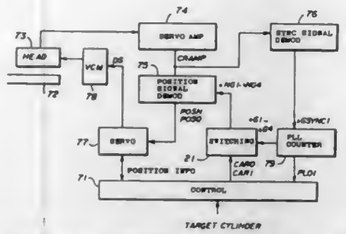
a threaded surface within said channel that inhibits light that would otherwise bounce off the inside walls of said channel that reach said infrared detector.

5,311,379

METHOD AND SYSTEM FOR POSITIONING HEAD ON TARGET CYLINDER OF DISK

Tohru Shinohara, and Shuichi Hashimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,399
Claims priority, application Japan, Dec. 25, 1990, 2-414430
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.02 **9 Claims**



1. A method of positioning a magnetic head on a target cylinder of a magnetic disk using a position signal derived from a servo signal which is read from a magnetic disk using a magnetic head; said servo signal including at least first and second servo signal components on even cylinders of the magnetic disk and including at least third and fourth servo signal components on odd cylinders of the magnetic disk, said position signal being used for moving the magnetic head to a desired cylinder, said method comprising the steps of:

(a) obtaining a first position signal for positioning the magnetic head to an odd cylinder on the magnetic disk based on a difference between peak values of the first and second servo signal components and a second position signal for positioning the magnetic head to an even cylinder on the magnetic disk based on a difference between peak values of the third and fourth servo signal components; and

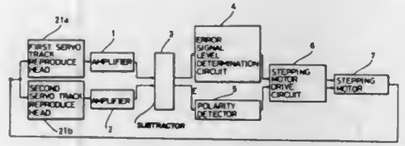
(b) using only one of the first and second position signals to position the magnetic head to the target cylinder depending on a cylinder address of the target cylinder.

5,311,380

MAGNETIC HEAD POSITIONING DEVICE AND METHOD

Kazuki Murata; Shigeaki Kakiwaki, and Tohru Okuda, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1992, Ser. No. 866,369
Claims priority, application Japan, Apr. 12, 1991, 3-079813
Int. Cl.[5] G11B *5/584*
U.S. Cl. 360—77.12 **17 Claims**



1. A magnetic head positioning device for adjusting the position of a magnetic head with respect to a magnetic tape according to a servo signal reproduced from a servo track recorded on said magnetic tape, comprising:

a pair of servo track reproduce heads for reproducing a signal from said servo track, said pair of servo track reproduce heads being arranged to trace different portions widthwise of said magnetic tape;

magnetic head moving means for moving said magnetic head along said widthwise direction of said magnetic tape,

said magnetic head moving means including a stepping motor responsive to an input pulse for providing rotation, the rotation amount of said stepping motor determining the moving distance of said magnetic head;

subtracting means for obtaining the difference between output signals of said pair of servo track reproduce heads; and

driving means, responsive to an output signal of said subtracting means, for driving said stepping motor, said driving means including

polarity detecting means for obtaining the polarity of the output signal of said subtracting means,

determination means for making determination whether the absolute value of an output signal of said subtracting means is not less than a predetermined reference value, and

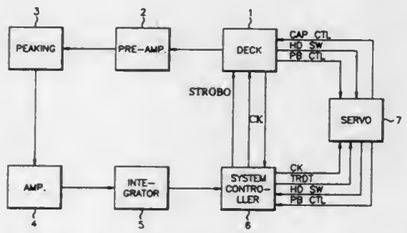
motor rotating means, responsive to the outputs of said polarity detecting means and said determination means, for applying a pulse signal to said stepping motor for driving said stepping motor for rotation.

5,311,381

METHOD AND APPARATUS OF AUTOMATICALLY TRACKING A RECORDING MEDIUM

Taek-Ho Lee, Ahnyang, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Nov. 22, 1991, Ser. No. 796,607
Claims priority, application Rep. of Korea, Feb. 13, 1991, 1991-2399
Int. Cl.[5] G11B *5/584, 5/596*
U.S. Cl. 360—77.13 **13 Claims**



1. A tracking control device for a video tape recorder, comprising:

a system controller for generating tracking data of an initial one of a plurality of tracking data sets and for sequentially generating tracking data of tracking data sets succeeding said initial one until an instant digital tracking level value corresponding to said tracking data corresponds to a first predetermined one of said plurality of tracking data sets;

a servo for generating a capstan control signal in response to said tracking data for controlling capstan rotation;

a pick-up head for reading signals from a tape running in said video tape recorder and controlled by said capstan rotation;

means for amplifying said signals read by said pick-up head and for selecting a desired tracking control signal from the amplified signals;

means for integrating the desired tracking control signal selected to generate an instant tracking level;

an analog-to-digital converter for converting said instant tracking level to said instant digital tracking level value corresponding to said tracking data;

said system controller for sequentially storing in memory, every first time period after each said tracking data is generated, each said instant digital tracking level value corresponding to each said tracking data and determining whether each said instant digital tracking level value corresponds to said first predetermined one of said plurality of tracking data sets;

said system controller determining whether each sequentially stored instant digital tracking level value is greater than each preceding stored instant digital tracking level value when one of said stored instant digital tracking level values does correspond to said first predetermined one of said plurality of tracking data sets;

said system controller sequentially generating tracking data, for controlling said servo, of tracking data sets following said first predetermined one of said plurality of tracking data sets, if each said sequentially stored instant digital tracking level value is greater than each preceding stored instant digital tracking level value, and storing, after each second time period, each corresponding instant digital tracking level value as a result thereof; and

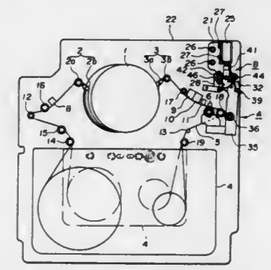
said system controller controlling said servo with the tracking data of the tracking data set having the highest corresponding instant digital tracking level value, said highest corresponding instant digital tracking level value corresponding to one of said tracking data of said first predetermined one of said tracking data sets and said tracking data of one of said tracking data sets succeeding said first predetermined one of said tracking data sets.

5,311,382

PINCH ROLLER URGING DEVICE FOR VIDEO INFORMATION RECORDING/READING APPARATUS

Hisayoshi Chino, and Osamu Shimizu, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jul. 23, 1992, Ser. No. 917,337
Claims priority, application Japan, Jul. 29, 1991, 3-188455
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **4 Claims**



3. A device for applying force to a pinch roller urging device adapted for use in a magnetic recording and reading apparatus, comprising:

a base;

a primary link mechanism and an auxiliary link mechanism for applying a force to said pinch roller;

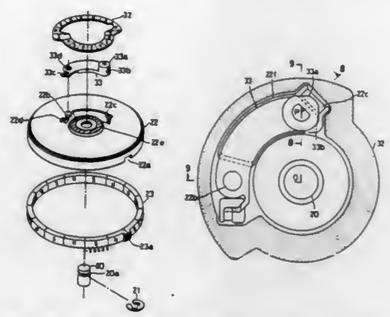
a main drive means for operating said primary link mechanism, and a subsidiary drive means for operating said auxiliary link mechanism, said main and subsidiary drive means being secured to said base and connected to said primary and auxiliary link mechanisms, respectively; said primary and auxiliary link mechanisms being operatively coupled to each other so that said primary link mechanism is operated either by both or by one of said main and subsidiary drive means; wherein said primary link mechanism comprises a reciprocally movable main link, a transmission link pivotally mounted on said main link, and an oscillating arm pivotally mounted on the transmission link, and wherein said auxiliary link mechanism comprises a reciprocally movable subsidiary link, a transmission arm pivotally mounted on the subsidiary link, and a guide arm pivotally connected to the transmission arm through a biasing means.

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5,311,383
DISK DRIVING MOTOR AND CHUCKING MECHANISM FOR DISK DRIVE APPARATUS

Hideya Yokouchi, Suwa, Japan, assignor to Seiko Epson Corporation, Nagano, Japan

Filed Jun. 8, 1992, Ser. No. 894,839
Claims priority, application Japan, Jun. 24, 1991, 3-151524; Jun. 24, 1991, 3-151525; Apr. 24, 1992, 3-131553
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—99.08 **30 Claims**



1. In a disk driving motor having a rotatable spindle for insertion through a central hole of a disk hub of a disk which is to be rotated by the disk driving motor, the disk hub having a drive hole offset from the central hole, said disk driving motor comprising:

a rotary member attached to the spindle for rotation with the spindle; and

a chucking mechanism including: a chucking lever having a first end and a second end, said chucking lever pivotally attached to said rotary member between said first and second ends for limited movement parallel a plane containing a portion of a surface of said rotary member that contacts the disk hub, but no movement perpendicular to said plane; a drive pin located at said first end of said chucking lever and extending perpendicular to said plane beyond said portion of the surface of said rotary member that contacts the disk hub; and a first disengagement preventative member located at said second end of said chucking lever;

said rotary member including a second disengagement preventative member engaged with said first disengagement preventative member so as to prevent said chucking lever from disengaging from said rotary member.

19. The motor of claim **1**, wherein said drive pin includes a groove, slideably engaged with a guide portion of said rotary member, for permitting said pin to move parallel to, but not perpendicular to, said plane containing said portion of said surface of said rotary member which contacts the disk hub.

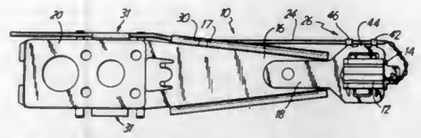
5,311,384
WIRE TUBING CATCHING MEMBER IS INTEGRAL WITH THE GIMBAL

Lyle G. Johnson, Minneapolis, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 9, 1992, Ser. No. 973,260
Int. Cl.[5] G11B *5/60, 5/.48*
U.S. Cl. 360—104 **23 Claims**

1. A sleeve capture apparatus suitable for use with a gimbal as part of a head-gimbal assembly, the sleeve capture apparatus for supporting and restraining a conductor sleeve running from the gimbal to a support arm along a load beam, the gimbal, the load beam, and the support arm each having a generally planar surface and a plurality of edges defining the generally planar surface, the sleeve capture apparatus comprising:

a first gimbal tubing capture member attached to a first of

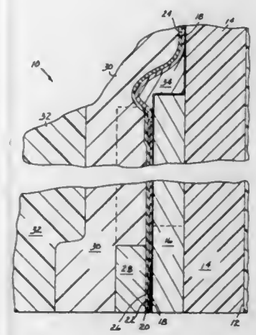


the plurality of edges of the gimbal, such that the conductor sleeve passes through the first gimbal tubing capture member, and the conductor sleeve is supported proximate the first of the plurality of edges of the gimbal.

5,311,385
MAGNETORESISTIVE HEAD WITH INTEGRATED BIAS AND MAGNETIC SHIELD LAYER

Theodore A. Schwarz, Woodbury, Minn.; Peter G. Bischoff, Cupertino, Calif.; Chak M. Leung, San Jose, Calif.; Johnny C. Chen, San Jose, Calif., and Pradeep Thayamballi, Fremont, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1991, Ser. No. 809,678
Int. Cl.[5] G11B *5/39*
U.S. Cl. 360—113 **13 Claims**



1. A thin film magnetic head for interacting with information recorded at magnetized areas spaced along a recording medium, comprising

a substrate having a non-conductive, non-magnetic surface, an edge defining a first plane adapted to be positioned adjacent to a said recording medium, and having deposited thereon;

a magnetoresistive transducing element including at least a single layer of material exhibiting the magnetoresistive effects and having an edge lying in said first plane,

a pair of magnetically permeable shield layers each of which is disposed adjacent to an opposite side of said magnetoresistive element and having opposing faces spaced apart a fixed distance on the order of and less than the shortest wavelength of said recorded information, an edge of each of the two permeable layers also lying in said first plane, at least one of said magnetically permeable layers being formed of an electrically conductive material,

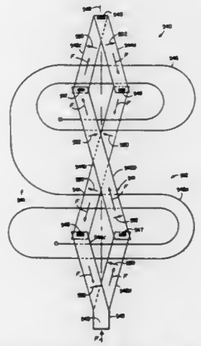
an insulating layer interposed between the at least one magnetoresistive element and the electrically conductive, magnetically permeable layer, thereby allowing current passing through said conductive material to create an associated magnetic bias field for the magnetoresistive element, while also magnetically shielding said magnetoresistive element to enable reproduction of short wavelength recordings, the thickness of said magnetically permeable layers being not less than three times said fixed distance between the permeable members, and

means contacting said electrically conductive, magnetically permeable layer for enabling current flow therethrough, the resulting magnetic field biasing said magnetoresistive element.

5,311,386
TRANSDUCER WITH IMPROVED INDUCTIVE COUPLING

Michael I. Mallary, Berlin, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 603,162, Oct. 25, 1990, Pat. No. 5,184,267, which is a continuation-in-part of Ser. No. 360,334, Jun. 2, 1989, abandoned. This application Jun. 26, 1991, Ser. No. 721,233
Int. Cl.[5] G11B *5/147, 5/17*
U.S. Cl. 360—126 **31 Claims**



1. A thin film magnetic transducer formed in a plurality of layers and comprising

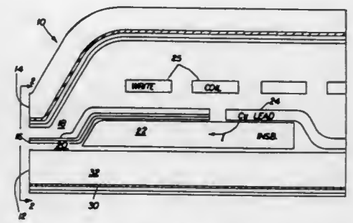
a yoke that includes at least one arm having segments respectively lying in separate said layers and connected through a transition layer, at least one of said segments being disposed generally along a longitudinal axis of said transducer and having an easy axis of magnetization oriented transverse to a direction of flux conduction through said segment and at an oblique angle to said longitudinal axis, and

a coil having at least one turn, said yoke and said coil being intertwined to provide more than two flux interactions between said yoke and said at least one turn.

5,311,387
THREE-POLE MAGNETIC RECORDING HEAD WITH HIGH READBACK RESOLUTION

Michael Mallary, Berlin, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 660,211, Feb. 20, 1991, Pat. No. 5,103,553, which is a continuation of Ser. No. 443,514, Nov. 28, 1989, abandoned, which is a division of Ser. No. 79,117, Jul. 29, 1987, Pat. No. 4,907,113. This application Apr. 8, 1992, Ser. No. 865,285
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] G11B *5/31*
U.S. Cl. 360—126 **9 Claims**



1. A magnetic recording head for writing to and reading from a storage medium, said head comprising

a pair of longitudinally-oriented write poles each of which has a tip adapted to be disposed adjacent to said storage medium, said tips being spaced from each other to define a gap therebetween,

a read pole disposed in said gap between said tips of said write pole,

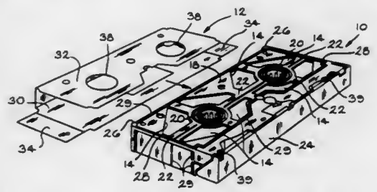
a coil disposed between a first one of said write poles and said read pole for use in during writing,

a magnetic flux sensor longitudinally spaced from said gap and disposed to allow said read pole conduct flux to the flux sensor during reading, said flux sensor comprising a solenoidal coil that surrounds said read pole.

5,311,388
COMPOSITE TAPE CASSETTE

Edwin C. McLaren, 9868 Ford Rd., Perrysburg, Ohio 43551

Filed Jun. 11, 1992, Ser. No. 897,233
Int. Cl.[5] G11B *23/02*
U.S. Cl. 360—132 **17 Claims**



1. A composite tape cassette for use with tape playback and record device comprising, in combination:

a rigid frame member defining the shape of such tape cassette for supporting the reels and tape, such tape and reels being retained between a pair of opposed support members, said support members being engaged together to define opposed side panels and a back panel, said side panels further defining a top edge along one support member and a bottom edge along said second support member and corner portions at the junctures between said side panels and said back panel, and tape gate in opposition to said back panel and extending between said two side

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panels, wherein said support members and back panel define a first thickness of rigid material and said corners, side members, top edge, bottom edge and tape gate define a second thickness of rigid material, said second thickness being greater than said first thickness; and

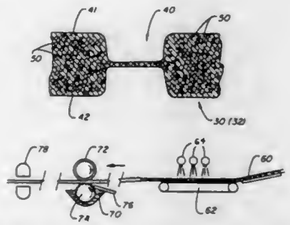
a flexible sheath member bonded to said frame member to encompass said support members and back panel and abut said top and bottom edges, tape gate and corners and provide surfaces for the application of graphics directly onto such tape cassette.

5,311,389

HYDROENTANGLED FABRIC DISKETTE LINER

Jon A. Howey, Mansfield, Mass., assignor to International Paper Company, Purchase, N.Y.

Continuation-in-part of Ser. No. 509,533, Apr. 16, 1990, Pat. No. 5,060,105. This application Oct. 15, 1991, Ser. No. 776,537
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] G11B *23/03, 23/50;* **D04H** *1/58;* **B32B** *5/06*
U.S. Cl. 360—133 **20 Claims**



1. A diskette liner, for use in cleaning the surface of a disk recording medium, comprising a nonwoven fabric made of fibers which are hydroentangled together and impregnated with a small amount of binder that is applied as a solution to the fabric and has its fluid content removed by drying such that the binder is collected at junction points of the fibers and is substantially uniformly distributed throughout the fibers of the fabric in at least a minimum amount, and no more than 5% by weight of the fabric, which is sufficient to achieve said uniform distribution of the binder at the junction points of the fibers.

5,311,390

APPARATUS FOR PRECISE POSITIONING OF A TAPE HEAD AND PROGRAMMING THEREOF

Ashok B. Nayak, LaVerne, and Jagmohan S. Kukreja, Claremont, both of Calif., assignors to Conner Peripherals, Inc., San Jose, Calif.

Division of Ser. No. 546,025, Jun. 29, 1990, Pat. No. 5,198,947. This application Nov. 15, 1991, Ser. No. 794,999
Int. Cl.[5] G11B *5/56, 5/584, 5/55, 9/02*
U.S. Cl. 360—137 **13 Claims**

1. Apparatus for precise positioning of a tape head at a track on magnetic tape adapted to be received in a tape drive assembly having a memory and a motor, the apparatus comprising:

a laser source for emitting a laser beam;

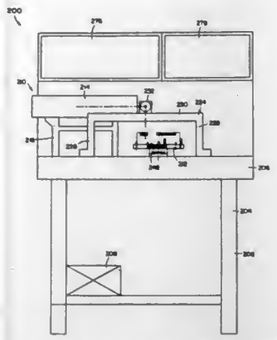
a mounting tray for receiving the tape drive assembly;

a reflector member for mounting on the tape head for movement therewith;

means for directing the laser beam from the laser source to the reflector member;

means associated with the laser source for accurately measuring a distance traveled by the tape head from a predetermined point to a position adjacent the track on the magnetic tape;

means for determining an extent of movement of the motor for the distance traveled by the tape head; and



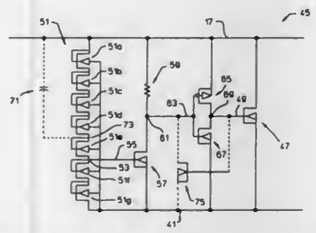
programming means for programming the tape drive assembly with the extent of movement.

5,311,391

ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT WITH DYNAMIC TRIGGERING

Thomas Dungan, Half Moon Bay, and Eugene Coussens, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 4, 1993, Ser. No. 57,277
Int. Cl.[5] H02H *9/00*
U.S. Cl. 361—56 **9 Claims**



1. An electrostatic discharge (ESD) protection circuit comprising

a bus diode-connected to at least one signal pad of an integrated circuit with an anode of a diode connected to the signal pad and a cathode of the diode connected to said bus, said bus also coupled to a positive-voltage power supply,

a shunt element capable, when active, of delivering current from said bus to a ground plane of said integrated circuit, said shunt element activated by a trigger voltage applied thereto,

triggering means responsive to a pad-to-ground voltage between said signal pad and said ground plane for providing said trigger voltage whenever said pad-to-ground voltage exceeds a threshold characteristic of an ESD event, said triggering means including

a string of diode-connected field effect transistors (FETs) coupled between said signal pad and said ground plane with a node between two of said diode-connected FETs,

a resistive-load inverter with a load resistor and an n-channel trigger FET connected in series between said bus and said ground plane, a gate of said trigger FET connected to said node of said string of diode-connected FETs, an output

node of said resistive-load inverter being between said load resistor and said trigger FET, and

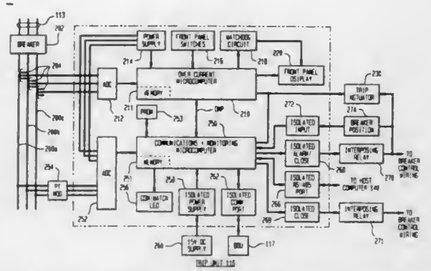
a CMOS inverter with an input connected to said output node of said resistive-load inverter and with an output connected to said shunt element.

5,311,392

DUAL PROCESSOR ELECTRIC POWER TRIP UNIT

Michael A. Kinney, and Stephen F. Gillette, both of Raleigh, N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Aug. 30, 1991, Ser. No. 753,286
Int. Cl.[5] H02H *3/08*
U.S. Cl. 361—93 **18 Claims**



1. A circuit breaker system for use with electric power lines which transmit an electric power signal including a current component and a voltage component to a load circuit, comprising:

a circuit breaker which may be tripped to disconnect the electric power lines from the load circuit;

first digital controller means, coupled to the electric power lines, for tripping the circuit breaker when the current component of the electric power signal has a magnitude that exceeds a first predetermined value; and

second digital controller means, coupled to said electric power lines in parallel with said first digital controller means, for tripping the circuit breaker in accordance with electronically reconfigurable parameters when the magnitude of the current component of the power signal exceeds a second predetermined value, greater than the first predetermined value.

5,311,393

TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH I^2R/I^2T OVERCURRENT PROTECTION SWITCH

Anthony O. Bird, Melbourne, Fla., assignor to Atlantic Sientific Corporation, Melbourne, Fla.

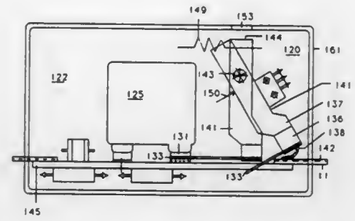
Filed Apr. 8, 1992, Ser. No. 865,307
Int. Cl.[5] H02H *5/04*
U.S. Cl. 361—104 **17 Claims**

1. An overcurrent protection device comprising:

first and second terminals to which a voltage is applied;

a voltage surface protection circuit arranged to be coupled in circuit with first and second terminals; and

a moveable conductor element, normally providing, at a first position thereof, an electrical and physical connection between one of said first and second terminals and said voltage surge protection circuit, said moveable conductor element having a first conductive portion which changes state in response to thermal energy imparted thereto as a result of current flow therethrough, and a second conductor portion which changes state in response to a transient current surge therethrough of at least a prescribed magnitude, said moveable conductor element being normally physically biased in a direction away from said first position toward a second position spaced apart from said first position, and wherein, at said first position of said moveable conductor element, a current flow path is normally provided from said one of said first and second terminals through said first and second conductor portions of said moveable conductor element to said voltage surge protection circuit, and wherein, in response to either said thermal energy imparted to said first conductor portion of said moveable conductor element as a result of current flow through said first conductor portion of said moveable



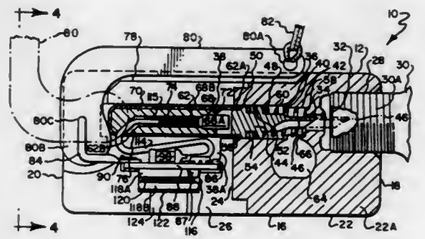
conductor element, causing said first conductor portion of said moveable conductor element to change state, or said transient current surge through said second conductor portion of said moveable conductor element, causing said second conductor portion of said moveable conductor element to change state, said movable conductor element is moved from said first position to said second position, thereby interrupting said electrical and physical connection between one of said first and second terminals and said voltage surge protection circuit.

5,311,394

WATER-ACTUATED PRESSURIZED GAS RELEASE DEVICE

Carlton W. Naab, and Francis M. Miller, both of Clearwater, Fla., assignors to Conax Florida Corporation, St. Petersburg, Fla.

Filed Oct. 7, 1992, Ser. No. 957,950
Int. Cl.[5] B63C *9/08*
U.S. Cl. 361—248 **23 Claims**



1. A pressurized gas release device, which comprises:

(a) a housing means including an electrically conductive member and having a receiving bore in coaxial communication with a longitudinally extending piercing pin bore, a transverse opening through the housing means in communication with the piercing pin bore and adjacent the receiving bore, and a first cavity in communication with a second cavity which is in communication with a third cavity;

(b) a container means holding a volume of pressurized gas and having a gas outlet closed by a puncturable member, wherein the container means is removably mounted in the

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receiving bore with the puncturable member in communication with the piercing pin bore;

(c) a piercing pin means mounted inside the piercing pin bore and longitudinally movable between a rest position and a puncture position in puncturable contact with the puncturable member;

(d) a primer means mounted in the first cavity in longitudinal alignment along the axis with the piercing pin bore and insulated from the electrically conductive member, wherein the primer means is capable of being ignited to move the piercing pin means housed inside the piercing pin bore from the rest position to the puncture position;

(e) an electrical circuit means mounted inside the second cavity in the housing means and operatively associated with the primer means, wherein the electrical circuit means is in electrical contact with the electrically conductive member so that the circuit means is capable of igniting the primer means when the device is immersed into an electrically conductive fluid, the electrical circuit means further having a battery contact; and

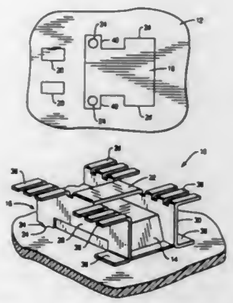
(f) a battery means mounted inside the third cavity of the housing means with one terminal in electrical contact with the battery contact and an other terminal electrically insulated from the electrically conductive member, wherein the device is immersable in the electrically conductive fluid to establish an electrical path between the other contact of the battery means and the electrically conductive member to actuate the electrical circuit means and thereby fire the primer means to release the pressurized gas from the container means.

5,311,395

SURFACE MOUNT HEAT SINK

Jerry A. McGaha, Gainsville, and Andrew C. Zeik, Duluth, both of Ga., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 29, 1992, Ser. No. 968,923
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—720 **10 Claims**



1. A heat sink for use in dissipating heat from a surface mount electronic device mounted on a printed circuit board, comprising:

a pair of side members;

a bridge connected to each side member at one edge thereof;

a mounting foot connected to each side member at an opposite edge to the edge to which the bridge is connected and extending at right angles to each said side member for conductive engagement with a mounting pad on said printed circuit board; and

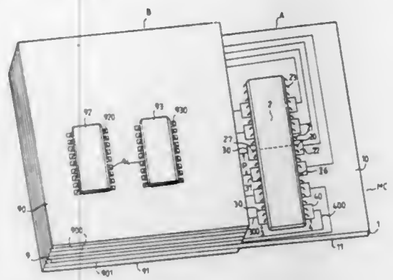
a locating stake integral with and extending from each of said side members for engagement with an aperture in said printed circuit board.

5,311,396

SMART CARD CHIP-BASED ELECTRONIC CIRCUIT

Francis Steffen, St Maximin, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Continuation of Ser. No. 598,063, Oct. 16, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 937,438
Claims priority, application France, Oct. 20, 1989, 8913755
Int. Cl.[5] H05K *1/14*
U.S. Cl. 361—736 **34 Claims**



1. A smart card comprising:

an insulative support member for supporting an electronic circuit and for rigidifying said card;

at least one standard semiconductor package supported on a first side of said support member and having a plurality of leads connected thereto, some of said leads being electrically connected to a semiconductor circuit in said semiconductor package, others of said leads providing support for said package but not being electrically connected to said semiconductor circuit;

first contact areas on a first surface of said insulative member connected to said leads which are electrically connected to a semiconductor circuit and not connected to said other leads providing support; and,

second contact areas on an opposite side of said insulative member in alignment with said first contact areas, said second contact areas being electrically connected to said first contact areas, and being exposed on said second side in a predetermined configuration for contacting electrical contact areas of a card reader;

at least one of said contact areas being contacted by multiple adjacent ones of said leads.

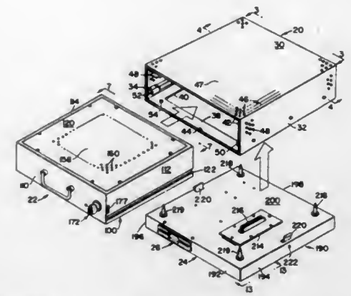
5,311,397

COMPUTER WITH MODULES READILY REPLACEABLE BY UNSKILLED PERSONNEL

Martin J. Harshberger, Collierville; Arthur R. Reader, Bartlett, both of Tenn., and Michael S. Giambrone, Schaumburg, Ill., assignors to Logistics Management Inc., Memphis, Tenn.

Filed Aug. 6, 1992, Ser. No. 925,616
Int. Cl.[5] H05K *7/10, 7/14, 7/20*; G06F *1/16*
U.S. Cl. 361—683 **23 Claims**

1. A computer assembly comprising a docking bay module including a first housing having a rear wall and a front opening, a plurality of connectors mounted on said rear wall and adapted to be connected to functional components which are separate from and external of the docking bay module, a circuit panel board mounted within said first housing adjacent said rear wall and having first pluggable connector means mounted thereon, said plurality of connectors being connected to said circuit panel board and said first pluggable connector means, a CPU module including a second housing and logic means mounted within said second housing, said second housing having a rear wall, second pluggable connector means mounted on said rear wall of said second housing and connected to said logic means, power supply connector means mounted on said rear wall of said first housing, said CPU module including a power supply unit mounted in said second housing and connected to said logic means, third pluggable connector means connected to said power supply unit, means



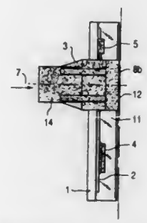
for removably mounting said second housing through said front opening into said first housing so that said first and second pluggable connector means are coupled together and said third pluggable connector means is coupled with said power supply connector means.

5,311,398

HOUSING FOR MOTOR VEHICLE ELECTRONIC SYSTEM

Klaus Schirmer, Ingoldstadt; Jochen Burgdorf, Offenbach-Rumpenheim, and Heinz Loreck, Idstein, all of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn and Alfred Teves GmbH, Frankfurt am Main, both of Fed. Rep. of Germany

PCT No. PCT/EP92/00027, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO92/12875, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 9, 1992, Ser. No. 941,093
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102265
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—704 **17 Claims**



1. A housing for installation in motor vehicles to accommodate electronic components, comprising:

a multi-layer circuit board or a multi-layer film which, on one side, is equipped with SMD electronic components;

a metal plate as the carrier for the multi-layer circuit board or the multi-layer film, with the planar expanse of said metal plate being greater than the planar expanse of said multi-layer circuit board or said multi-layer film, wherein the multi-layer circuit board or the multi-layer film is disposed on, attached to and insulated from the metal plate;

power components, disposed on the surface of the metal plate in a region not covered by the multi-layer circuit board or multi-layer film, with said metal plate serving as a heat sink for said power components;

a connector mounted on the metal plate in a further region covered by the multi-layer circuit board or the multi-layer film, such that connection pins of the connector are brought into the multi-layer circuit board or multi-layer film, and the coupling side of the connector lies on the planar side of the metal plate which is opposite the side carrying the multi-layer circuit board or multi-layer film; and

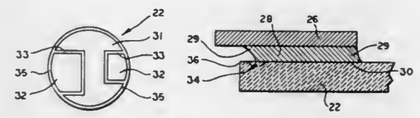
mechanical cover means attached to the metal plate to form a flat housing, said mechanical cover means covering only the side of the metal plate carrying the multi-layer circuit board or multi-layer film.

5,311,399

HIGH POWER CERAMIC MICROELECTRONIC PACKAGE

Felician A. Zell, Litchfield Park, and Gerald R. Miller, Scottsdale, both of Ariz., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,422
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—707 **18 Claims**



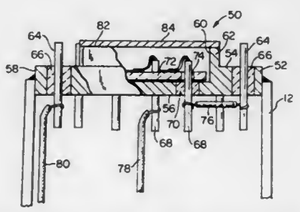
1. A microelectronic package comprising a ceramic substrate having an edge, a first surface bonded to a metal heat sink and a second surface opposite said first surface and having at least one metallized island bonded to a lead frame, wherein said island has a controlled length uniform pullback of metallization from the edge of said substrate, wherein the metallization pullback length is within the range sufficient to reduce residual tensile stress in said substrate compared to a substrate having no controlled length metallization pullback at the substrate surface bonded to a lead frame.

5,311,400

LOW PROFILE HEADER ASSEMBLY FOR AN ENCAPSULATED INSTRUMENT

Charles R. Fuchs, Wayne; Gerald J. Gorman, Pompton Lakes, and Peter Lindsay, Hardyston Township, Sussex County, all of N.J., assignors to GEC-Marconi Electronic Systems Corp., Wayne, N.J.

Filed Jun. 16, 1993, Ser. No. 78,554
Int. Cl.[5] H05K *1/14*
U.S. Cl. 361—736 **6 Claims**

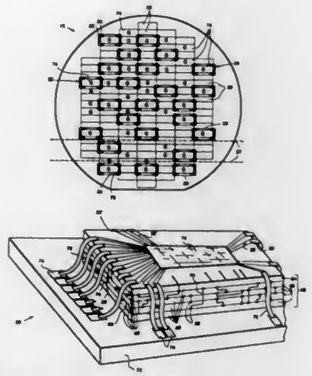


1. In combination with an encapsulated instrument including a shell and components internal to said shell which require electrical connections external to said shell, a header assembly for capping said shell comprising:

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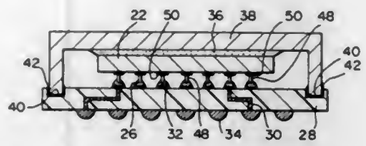
a plate member having first and second sides and a circumferential edge, said circumferential edge adapted for sealing to said shell with said first side external to said shell, said plate member being formed with a cavity open to said first side of said plate member, said second side of said plate member being generally planar;
a plurality of first terminal members extending through said plate member from said first side to said second side and outside said cavity;
a plurality of second terminal members extending through said plate member within said cavity;
circuitry disposed within said cavity and electrically connected to said plurality of second terminal members within said cavity;
sealing for sealing said cavity; and
connecting means for providing electrical connections between said internal components of said instrument and said pluralities of first and second terminal members at said second side of said plate member.

5,311,401
STACKED CHIP ASSEMBLY AND MANUFACTURING METHOD THEREFOR
Louis E. Gates, Jr., Westlake Village, and Richard K. Cochran, Ingelwood, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 9, 1991, Ser. No. 727,500
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **5 Claims**



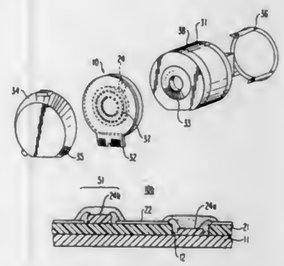
1. An assembly of chips comprising:
at least two integrated circuit chips stacked one atop the other, assembled parallelly on a base, and electrically interconnected to said base; and
means for forming each of said chips from a wafer having a plurality of circuits thereon in which wafer portions are selected by individual chip sizes which are respectively larger than individual ones of said circuits and in which individual ones of said chips are positioned on selected operable ones of said circuits, thus overlapping said chips onto ones of said circuits adjacent said selected circuits.

5,311,402
SEMICONDUCTOR DEVICE PACKAGE HAVING LOCATING MECHANISM FOR PROPERLY POSITIONING SEMICONDUCTOR DEVICE WITHIN PACKAGE
Kenzi Kobayashi; Hajime Mori, and Yukio Yamaguti, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Feb. 12, 1993, Ser. No. 16,938
Claims priority, application Japan, Feb. 14, 1992, 4-059246; Mar. 17, 1992, 4-090166; Apr. 6, 1992, 4-112398
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **8 Claims**



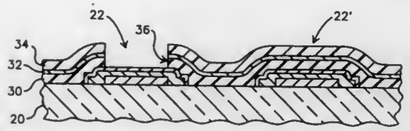
1. A semiconductor device comprising:
a circuit board; an IC (Integrated Circuit) chip packaged on said circuit board face down;
a cap bonded to said circuit board at edges of an open end thereof and bonded to a top of said IC chip at a bottom thereof for hermetically sealing said IC chip; and
positioning means for positioning said IC chip on said circuit board, wherein said positioning means comprises a continuous groove provided in part of said circuit board facing said edges of said open end of said cap for receiving said edges, and a bonding material filled in said continuous groove for bonding said edges to said circuit board.

5,311,403
PRINTED SUBSTRATE FOR MOUNTING HIGH-POWER SEMICONDUCTOR CHIP THEREON AND DRIVER COMPONENT MAKING USE OF THE PRINTED SUBSTRATE
Jiro Tanuma; Naoji Akutsu; Chibiro Komori, and Hideaki Ishimizu, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd.
Filed Nov. 6, 1991, Ser. Nn. 788,537
Claims priority, application Japan, Nov. 6, 1990, 2-299076
Int. Cl.[5] H05K *1/18*
U.S. Cl. 361—761 **5 Claims**



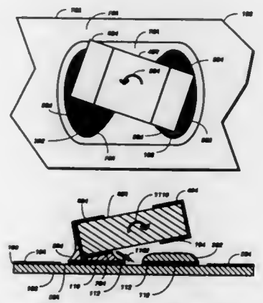
1. A printed substrate comprising:
a printed interconnected substrate constructed of an insulating substrate and an interconnected layer formed on at least one principal surface thereof, and
a metal plate bonded by an adhesive on another principal surface of the printed interconnected substrate;
said printed interconnected substrate defining a first mounting area having an opening where a first semiconductor chip of relatively high power consumption is to be mounted, said opening reaching said metal plate, and defining a second mounting area being devoid of an opening where a second semiconductor chip of relatively low power consumption is to be mounted, and
said metal plate covering said opening and having a thickness capable of providing rigidity sufficient to support at least the first semiconductor chip to be mounted thereon.

5,311,404
ELECTRICAL INTERCONNECTION SUBSTRATE WITH BOTH WIRE BOND AND SOLDER CONTACTS
Philip A. Trask, Laguna Hills; Vincent A. Pillai, Irvine, and Thomas J. Gierhart, Fountain Valley, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 30, 1992, Ser. No. 906,637
Int. Cl.[5] H05K *1/18*
U.S. Cl. 361—762 **5 Claims**



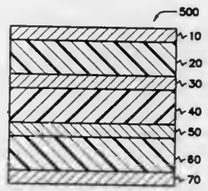
1. An electrical interconnection substrate capable of receiving electrical circuit elements by both wire bonding and soldering, comprising:
a substrate having a plurality of electrical contact pads and an electrical interconnection network establishing connections with said contact pads,
a solder mask over said substrate capable of withstanding a molten solder alloy,
openings in said solder mask exposing said contact pads,
some of said contact pads having respective layers of conductive wire bonding material exposed through their respective solder mask openings, and
others of said contact pads having respective layers of solder alloy exposed through their respective solder mask openings.

5,311,405
METHOD AND APPARATUS FOR ALIGNING AND ATTACHING A SURFACE MOUNT COMPONENT
David A. Tribbey, Boynton Beach; Henry F. Liebman, Tamarac; Allen D. Hertz, Boca Raton, and Peter E. Albertson, Cooper City, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 2, 1993, Ser. No. 100,834
Int. Cl.[5] H05K *7/10*
U.S. Cl. 361—767 **12 Claims**



10. A pad arrangement for aligning and attaching a leadless surface mount component comprising a termination at each end of the component, the termination having bottom and end portions, the pad arrangement for interconnecting the surface mount component with other circuitry, the pad arrangement comprising:
a substrate for supporting and interconnecting the surface mount component with the other circuitry; and
two opposite pads formed on the substrate and interconnected with the other circuitry, each pad occupying a tri-oval-shaped area comprising:
an elliptical area substantially centered under the bottom portion of the corresponding termination of the component when the component is aligned with the pad arrangement; and
an arcuate area contiguous with the elliptical area and extending towards the opposite pad in a central lengthwise direction; and
a conductive material applied to the elliptical area and thereafter reflowed onto the arcuate area, thereby facilitating alignment of the component with the pad arrangement.

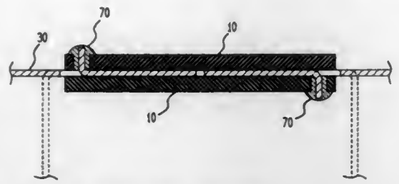
5,311,406
MICROSTRIP PRINTED WIRING BOARD AND A METHOD FOR MAKING SAME
Kenneth L. Snodgrass, Peoria; Robert S. Doyle, Glendale; James R. Troxel, Glendale; Thomas M. Europa, Glendale, and Glenn B. Oborn, Glendale, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 30, 1991, Ser. No. 785,132
Int. Cl.[5] H05K *7/14*; B22F *7/02*
U.S. Cl. 361—792 **5 Claims**



1. A multi-layered printed wiring board comprising:
a) a first board having an inner layer, and a first and second outer layer, the inner layer being a polytetrafluoroethylene (PTFE) material having a predetermined dielectric constant, the first outer layer having high frequency circuity of a metallic material bonded to a first side of said inner layer, and the second outer layer being a sheet of a metallic material bonded to a second side of said inner layer;
b) a second board having an inner layer, and a first and second outer layer, the inner layer being a fiberglass material of a predetermined thickness, the first outer layer of said second board having strips of a metallic material bonded to a first side of said inner layer of the second board, and the second outer layer of said second board being a sheet of a metallic material bonded to a second side of said inner layer of the second board; and
c) a third board, being a fiberglass material of a predetermined thickness, such that the thickness of the third board is the same thickness as that of the inner layer of said second board, wherein the strips of said second board form signal lines and transmission lines, the strips being bonded onto the first side of the inner layer of the second board in predetermined locations such that the strips are connected to predetermined high frequency circuity by vias, vias electrically interconnecting predetermined metallic layers, the second outer layer of the first board being laminating to a first side of the third board, and the first outer layer of said second board being laminated to a second side of said third board, thereby forming the multilayered printed wiring board.

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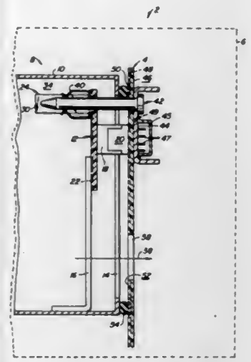
5,311,407
PRINTED CIRCUIT BASED FOR MOUNTED SEMICONDUCTORS AND OTHER ELECTRONIC COMPONENTS
Marvin Lumbard, Los Gatos, Calif., assignor to Siemens Components, Inc., Iselin, N.J.
Filed Apr. 30, 1992, Ser. No. 876,640
Int. Cl.[5] H01L *23/02*
U.S. Cl. 361—813 **14 Claims**



1. A printed circuit board, comprising:
a first substrate having inside and outside surfaces, a plurality of plated through holes defined therein, a first metalization layer formed a first electrical interconnection on said outside surface, at least one electronic component including a plurality of electrical contacts for establishing electrical connection therewith, and first electrical interconnection means for connecting said contacts with said first electrical interconnection;
a second substrate having inside and outside surfaces, a plurality of plated through holes defined therein, a second metalization layer forming a second electrical interconnection for said components on said outside surface, and at least one electronic component mounted on said outside surface and including a plurality of electrical contacts for establishing electrical communication therewith, and second electrical interconnection means for connecting said contacts with said second electrical interconnection;
a lead frame including a plurality of leads each having a proximal end and a distal end, proximal ends of said leads being arranged in generally opposed pairs, each including a generally planar interior portion disposed between and engaged by said inside surfaces of said substrates and a solder tab which protrudes from and is electrically connected to one of said plurality of plated through holes, whereby said leads are fixedly positioned relative to said substrates, distal ends of said leads being disposed outside of said substrate arrangement for establishing external electrical connections to said leads; and
bonding means for securing said substrates on either side of said interior portions of said proximal ends.

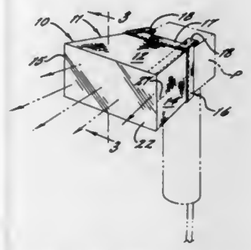
5,311,408
ELECTRONIC ASSEMBLY WITH IMPROVED GROUNDING AND EMI SHIELDING
Joerg U. Ferchau; Kenneth A. Kotyuk, both of Morgan Hill, and Randall J. Diaz, Gilroy, all of Calif., assignors to Tandem Computers, Incorporated, Cupertino, Calif.
Continuation of Ser. No. 742,994, Aug. 9, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 55,405
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—818 **6 Claims**

1. An improved electronic assembly with EMI shielding of the type including a backplane, an electronic module including a chassis, and module and backplane interface connectors electrically coupling the electronic module and the backplane when the electronic module is at an engaged position relative to the backplane, the improvement comprising:
the backplane including a backplane ground plane and an exposed, elongated ground pad substantially circumscribing the interface connectors and facing the electronic module, the ground pad and the backplane ground plane electrically connected to one another, the elongated ground pad having a length;
conductive means for electrically coupling substantially the entire length of the elongated ground pad to the chassis so to create a coupled EMI shield including the chassis, the conductive coupling means, the ground pad and the backplane ground plane;
a conductive alignment pin extending form the backplane and electrically connected to the backplane ground plane;



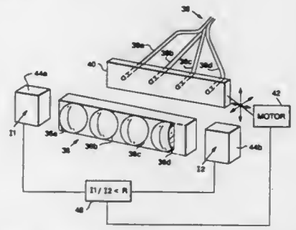
a chassis board mounted within the chassis;
a grounding clip mounted to the chassis board for electrical engagement with the alignment pin when the electronic module is at the engaged position; and
the grounding clip including a resilient arm extending laterally relative to the alignment pin and sized to engage the chassis to provide electrical connection from the alignment pin to the chassis.

5,311,409
COLLAPSIBLE PHOTOGRAPHIC LIGHT DIFFUSER
Jack N. King, Davidson, N.C., assignor to Camera World, Inc., Charlotte, N.C.
Filed Jun. 14, 1993, Ser. No. 76,536
Int. Cl.[5] G03B *15/02*
U.S. Cl. 362—17 **25 Claims**



1. A photographic light diffuser characterized by being readily collapsible into a compact, very portable form and by being readily extendible into a self-supporting, operative form for connection to and use with a suitable light source, said diffuser comprising
a tubular body open at its opposite ends and comprising opposed pairs of interconnected panels formed of opaque material having a light-reflective surface on the inner surface thereof, said panels being sufficiently stiff to maintain said body in open tubular form when said diffuser is connected to a light source, at least one of said opposing pairs of panels having fold lines therein defining hinge areas along which said panels may be folded to collapse said tubular body into a compact, flattened form for easy portability,
means at one end of said tubular body for mounting said light diffuser on a light source, and
a light diffusing panel mounted on said tubular body adjacent the other end of said body and spanning the opening through said tubular body.

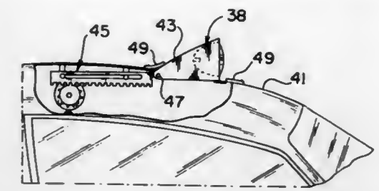
5,311,410
DISTRIBUTED LIGHTING SYSTEM WITH FIBER OPTIC CONTROLS
Tsung-Yuan Hsu, and Huan-Wun Yen, both of Westlake Village, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Oct. 29, 1992, Ser. No. 968,637
Int. Cl.[5] F21V *19/04*
U.S. Cl. 362—20 **37 Claims**



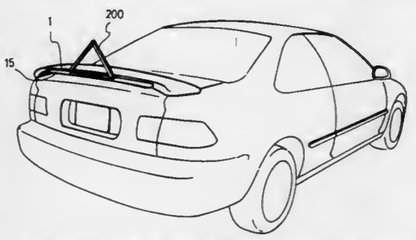
1. A lighting system for a vehicle that includes a plurality of headlight assemblies, comprising:
a light source,
a plurality of optical loads,
an optical fiber network extending from said light source to provide illumination for said optical loads, and
at least one optical switch within said optical fiber network, each of said switches including a respective input fiber from said light source and a respective output fiber to a respective optical load, said switches operating by selectively enabling or disabling an optical connection between their respective input and output fibers,
each of said headlight assemblies including:
at least one headlight lens for transmitting a headlight beam,
a respective optical fiber of said optical fiber network aligned with each lens to illuminate the lens for transmitting a headlight beam, and
means for adjusting the positions of said fibers relative to their respective lenses to adjust the nature of the headlight beam.

5,311,411
FOG LIGHTING SYSTEM FOR A MOTOR VEHICLE
Gianni Garolfi, via Settevenepalo Km.6,400, 00069 Trevignano (Roma), Italy
Continuation-in-part of Ser. No. 827,027, Jan. 27, 1992, Pat. No. 5,215,369. This application May 11, 1993, Ser. No. 59,332
Claims priority, application Italy, Jun. 13, 1991, RM.91-U/000125
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—80 **23 Claims**

1. A fog light system for mounting on a roof of a vehicle, comprising:
a first fog light;
mounting means for mounting said first fog light to the roof of the vehicle, and said first fog light being dimensioned and arranged such that, when mounted on the roof of the vehicle, light beams emanating from the first fog light are directed along a horizontal plane extending through the fog light and upwardly off of the horizontal plane for an angle from about 0 to 90 degrees in a manner which avoids directly illuminating a central corridor positioned in front of the vehicle and below said horizontal plane.



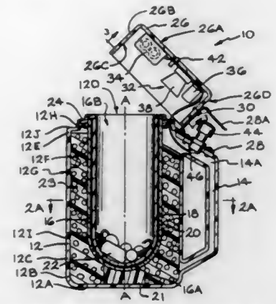
5,311,412
STRUCTURE OF A VARIABLE TRIANGULAR WARNING LIGHT ON THE THIRD BRAKING LIGHT IN THE REAR TURBULENCE PLATE OF AN AUTOMOBILE
Chang-An Yang, No. 9, Alley 100, Lane 21, Wei-Hu Road, Nei-Hu, Taipei, Taiwan
Filed Jul. 6, 1993, Ser. No. 86,061
Int. Cl.[5] B60Q *1/44, 1/52*
U.S. Cl. 362—83.3 **5 Claims**



1. A structure of a variable triangular warning light for a third braking light in a rear turbulence plate of an automobile, basically utilizing a third braking light which is hidden within the rear turbulence plate, and can be pushed outward and folded into a triangular failure warning light, characterized by:
a three-section type third braking light of an elongate strip shape, which is partially movable by hinge means and
is mounted on a lower groove in a lower portion of the rear turbulence plate of the automobile by means of a supporting plate and lock means, when in use, said third braking light can be pushed outward and be folded by means of said hinge means into a triangular failure warning light, wherein a middle section of said three-section type third braking light is fixed on a middle of said supporting plate which can be pulled outward or pushed inward; outer ends of the left and right sections of said three-section type third braking light are respectively provided with magnetic blocks to be able to attract the plate or attract each other; the lock means is provided under said supporting plate to be engaged with or disengaged from a base plate in said lower groove of said rear turbulence plate; said supporting plate is connected with a plurality of sliding members, which can be slid within tubular holes provided in said rear turbulence plate.

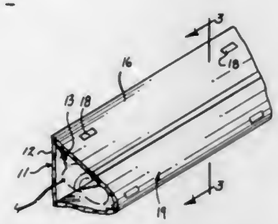
VOL 1162 ISS 2 MY 10 1994 UMI

5,311,413
DEVICE FOR INSTANTANEOUSLY ENERGIZING GLOW BAIT USED FOR FISHING
Franklin D. Farmer, 408 S. Francis, Lansing, Mich. 48912; Gordon J. Alspaugh, 416 S. Division St., Carson City, Mich. 48811, and Victor O. Castle, Jr., 105 Mill St., Box 121, Maple Rapids, Mich. 48853
Filed Aug. 26, 1993, Ser. No. 111,940
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—154 **27 Claims**



1. A device for instantaneously energizing a glow bait for use in fishing which comprises:
(a) a container means having a bottom wall and a sidewall extending upward from the bottom wall to form a top opening; the container means having an interior surface and an exterior surface;
(b) a reflective means mounted inside the container means;
(c) a lid means for completely covering the top opening of the container means; and
(d) a flash means mounted inside the device to instantaneously energize the glow bait within the container means upon production of a flash of light by the flash means.

5,311,414
CHRISTMAS LIGHT MOUNTING APPARATUS
Henry J. Branham, Sr., 117 Buccaneer Dr., San Diego, Calif. 92114
Filed Jan. 26, 1993, Ser. No. 9,052
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—249 **2 Claims**



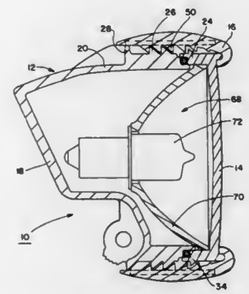
1. A Christmas light mounting apparatus, comprising,
a base plate arranged for securement to a support surface, the base plate having a rear wall and a front wall, with the rear wall coextensive with the front wall in a spaced relationship, and
a plurality of spaced bulb sockets mounted to the front wall, with each bulb socket including a bulb member, and
the base plate having an uppermost edge and a lowermost edge, with the uppermost edge fixedly mounting a first cover plate extending from the uppermost edge extending over the front wall at a first acute angle, and
a second V-shaped cover plate pivotally mounted to the first cover plate about a hinge, with the second V-shaped cover plate including a first web and a second web integrally joined together at an acute second angle, with the first web mounted to the hinge and the second web arranged for selective abutment with the front wall of the base plate adjacent the lowermost edge of the base plate, and
the first cover plate has secured thereto a plurality of spaced ferrous metallic first plates, and the first web has secured thereto a plurality of first magnets arranged for selective engagement with the first plates, and
the second web includes a second web first end mounted to the first web, and a second web second end having a sealing strip and a second magnet, and the base plate includes a ferrous metallic second plate arranged for engagement with the second magnet to secure the second V-shaped cover plate to the front wall in a first position, with the first plates engaged with the first magnets in a second position when the second V-shaped cover plate is pivoted about the hinge, and
the base plate includes a plurality of projecting bosses projecting beyond the base plate and the rear wall, wherein each of the bosses includes a first bore of a first diameter extending from the front wall intermediate the base plate, and each of the projecting bosses includes a second bore having a second diameter less than the first diameter projecting from the first bore through the boss, and the first bore intersecting the second bore at an abutment wall, with the abutment wall having a torroidal frangible ring mounted thereon, and the torroidal frangible ring including a fluid adhesive contained therewithin, wherein a fastener directed through the first bore and the second bore effects rupture of the ring for projection of the fluid adhesive throughout the first bore, the second bore, and the fastener.

5,311,415
UNIVERSAL FOLDABLE LAMP SHADE COVER
Barbara B. Hyland, 1391 Siesta Bayside Dr., Sarasota, Fla. 34242
Filed Sep. 8, 1993, Ser. No. 118,454
Int. Cl.[5] F21V *1/06*
U.S. Cl. 362—352 **9 Claims**



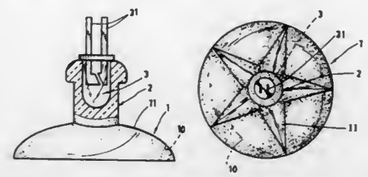
1. A universal foldable lamp shade cover comprising:
a uniformly pleated rectangular sheet of thin, bendable material;
said pleated sheet defined by a plurality of side-by-side slender elongated rectangular panels integrally connected one to another in accordion fashion along a fold line between each said pleated panel ending in an end panel at each end of said pleated sheet;
means for connecting said end panels together to form a generally tubular member;
said tubular member having a relaxed circumference sized to fit around a lamp shade;
an aperture formed through each of a selected number of said panels evenly spaced around and positioned immediately adjacent an upper margin of said pleated sheet;
means engageable through each said aperture for releasibly interconnecting said tubular member to the lamp shade to provide an only means for hanging support of said tubular member in position over the lamp shade whereby said tubular member will rest over and substantially cover the lamp shade.

5,311,416
CASING WITH FLEXIBLE FIXING RING
Alain Maurice, Gieres, France, assignor to Zedel, Crolles, France
Filed Dec. 31, 1992, Ser. No. 999,402
Claims priority, application France, Jan. 14, 1992, 92 00382
Int. Cl.[5] F21M *1/00*
U.S. Cl. 362—362 **9 Claims**



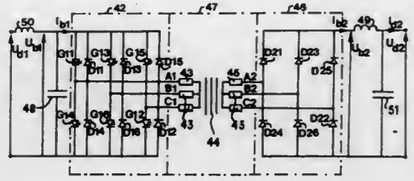
1. A casing made of molded plastic material comprising:
a rigid hollow body having a back panel and a side wall with a surface of revolution equipped with an end part located opposite said back panel, said side wall having an external surface and an inner surface,
a closing cover coming into engagement against said end part,
said side wall defining a male thread arranged along said external surface of said side wall,
a flexible fixing ring having an internal female thread designed to be screwed onto said male thread to ensure that said closing cover is held stably against said end part, said female thread having a last notch close to a front part of said flexible fixing ring,
said end part, having a non-circular sectional configuration,
said closing cover having a base part with a sectional configuration appreciably the same as that of said end part,
said base part having fixing means for inserting said base part into said last notch of said female thread,
said flexible fixing ring having serration means arranged internally of said flexible fixing ring so as to define a series of hinges allowing elastic deformation of said flexible fixing ring to make the shape of said female thread fit that of said male thread of said rigid hollow body.

5,311,417
ILLUMINATIVE SUCKER & DECORATIVE STRING THEREOF
Mao-Lin Heh, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan
Filed Aug. 23, 1993, Ser. No. 109,910
Int. Cl.[5] F21V *21/08*
U.S. Cl. 362—397 **7 Claims**



1. An illuminative sucker means comprising:
a sucker made of transparent or translucent materials having a sucker cup portion to be sucked to a flat surface by vacuum and a decorative back portion formed on a back portion of the cup portion;
a lamp socket made of transparent or translucent materials secured to the back portion of said sucker; and
a lamp inserted in the lamp socket and electrically connected to a power source, whereby upon a powering of said lamp, said lamp will illuminate to project lights towards the decorative back portion and the sucker cup portion of said sucker for illuminative decorative purpose.

5,311,418
HVDC DC TO DC CONVERTER WITH COMMUTATING TRANSFORMER
Magnus Lalander, Kyndelstigen 9, Ludvika, S-771 43, Sweden
PCT No. PCT/SE90/00710, § 371 Date Apr. 22, 1992, § 102(e) Date Apr. 22, 1992, PCT Pub. No. WO91/07807, PCT Pub. Date May 30, 1991
PCT Filed Nov. 2, 1990, Ser. No. 849,069
Claims priority, application Sweden, Nov. 20, 1989, 8903883
Int. Cl.[5] H02M *3/315*
U.S. Cl. 363—27 **3 Claims**

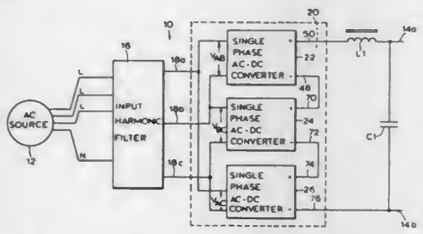


1. An arrangement for transformation of high electric power from one DC voltage level to another DC voltage level, comprising a transformer with a core, a first valve bridge having valves, said first valve bridge comprising at least one six-pulse inverter bridge which includes a plurality of said self-commutated thyristors and further comprising a plurality of diodes, each diode of said plurality of diodes being connected antiparallel to a self-commutated thyristor, and a second valve bridge having valves, said second valve bridge comprising a six-pulse rectifier bridge which includes a plurality of diode valves, one of said first valve bridge and said second valve bridge being a rectifier bridge and the other of said first valve bridge and said second valve bridge being an inverter bridge, first valve windings being wound around said core and connected to said valves of said first valve bridge and second valve windings being wound around said core and connected to valves of said second valve bridge, said first valve windings and said second

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valve windings being galvanically isolated, and means for cyclically firing said valves in said first valve bridge and said valves in said second valve bridge so that variating electromagnetic fields of opposing polarity are generated in said core by said first valve windings and said second valve windings, said valves of said first valve bridge comprising self-commutated thyristor valves connected to a DC voltage source which supplies DC voltage at said one DC voltage level, and further wherein a capacitor is provided external of said first valve bridge and connected between said DC voltage source and said self-commutated thyristor valves, whereby said variating electromagnetic field generated by said first valve bridge is provided by sequentially firing and extinguishing said self-commutated thyristor valves, electromagnetic energy stored by said core being commutated from said first valve windings to said second valve windings by said capacitor, and voltages and currents induced in said second valve windings being rectified so that electric energy is transformed to said another DC voltage level.

5,311,419
POLYPHASE AC/DC CONVERTER
Edwin J. Shires, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Aug. 17, 1992, Ser. No. 931,169
Int. Cl.[5] H02M *7/12*
U.S. Cl. 363—65 **13 Claims**



1. A power converter for converting input AC power comprising N phase-to-phase input AC waveforms at a first frequency into overall output DC power, where N is an integer greater than two, comprising:

N phase-to-phase AC/DC converters each receiving a phase-to-phase waveform and having outputs connected in series including

first means for rectifying the phase-to-phase waveform to obtain intermediate DC power,

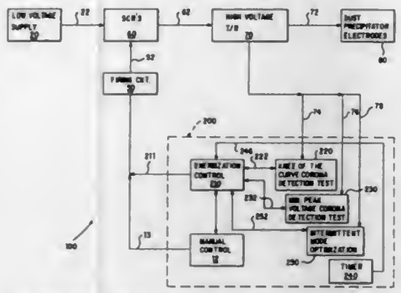
means coupled to the first rectifying means for converting the intermediate DC power into intermediate AC power at a second frequency greater than the first frequency and

second means for rectifying the intermediate AC power to obtain converter output DC power;

wherein the converter output DC powers are combined to develop the overall output DC power; and

means for operating the N phase-to-phase AC/DC converters whereby a parameter of the input AC power and a parameter of the overall output DC power are controlled.

5,311,420
AUTOMATIC BACK CORONA DETECTION AND PROTECTION SYSTEM
James R. Zarfoss, Timonium, Md., and Richard A. Hoch, New Freedom, Pa., assignors to Environmental Elements Corp., Baltimore, Md.
Filed Jul. 17, 1992, Ser. No. 913,920
Int. Cl.[5] G05B *13/02*; B03C *3/68*
U.S. Cl. 364—148 **17 Claims**
MICROFICHE APPENDIX INCLUDED
(91 Microfiche, 1 Pages)



1. An automatic back corona detection and protection system for controlling an electrostatic dust precipitator, comprising:

a. means for monitoring voltage and current parameters of a high voltage transformer/rectifier of said electrostatic dust precipitator;

b. first means for detecting a back corona condition coupled to said monitoring means;

c. second means for detecting a back corona condition coupled to said monitoring means; and,

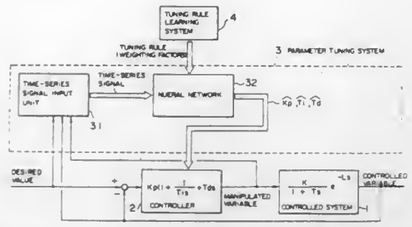
d. control means coupled to both said first and second back corona detecting means for controlling input power to said high voltage transformer/rectifier responsive to detection of a back corona condition by either said first or second detecting means.

5,311,421
PROCESS CONTROL METHOD AND SYSTEM FOR PERFORMING CONTROL OF A CONTROLLED SYSTEM BY USE OF A NEURAL NETWORK
Masahide Nomura; Tadayoshi Saito, both of Hitachi; Hiroshi Matsumoto, Ibaraka; Makoto Shimoda, Katsuta; Masakazu Kondoh, Hitachi; Hisanori Miyagaki, Ohta; Akira Sugano, Katsuta, and Nobuyuki Yokokawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 10, 1990, Ser. No. 625,096
Claims priority, application Japan, Dec. 8, 1989, 1-317496; Feb. 9, 1990, 2-30938; Feb. 13, 1990, 2-29606
Int. Cl.[5] G06F *15/18*; G05B *13/02*
U.S. Cl. 364—157 **23 Claims**

1. A method for controlling a controlled system by a controller so as to bring a controlled variable into conformity with a desired value, said method comprising the steps of:

receiving information which contains characteristics of at least one of input/output variables for a combined controlling-controlled system, said combined controlling-controlled system comprising in combination a controller and a controlled system, and input/output variables for the controlled system;

inputting the information with the characteristics contained therein to a neural network for learning in advance a correlation between the information containing the characteristics and a control parameter and determining a control parameter for the controller;



tuning the control parameter based on said input/output variables for the controlled system; and

outputting a tuned control parameter to the controller.

5,311,422
GENERAL PURPOSE ARCHITECTURE FOR INTELLIGENT COMPUTER-AIDED TRAINING
R. Bowen Loftin, Houston; Lui Wang, Friendswood; Paul T. Baffes, Houston, and Grace C. Hua, Webster, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jun. 28, 1990, Ser. No. 545,235
Int. Cl.[5] G06F *15/52*
U.S. Cl. 364—401 **29 Claims**

1. A computerized intelligent training system adaptable for use in the training of a trainee having a current skill level in the performance of at least one of a plurality of training tasks within a specific task environment, where the performance of each task comprises performance of certain procedural steps called actions such that each task has at least one desired action called a correct action and training is accomplished using the system by having the trainee perform simulated task by performing simulated actions on a computer, the computer system comprising:

(a) user interface means for simulating the task environment for which the trainee is being trained and for enabling interaction between the trainee and the system;

(b) domain expert means for performing a simulated task and achieving the correct actions for the task;

(c) training session manager means comprising,

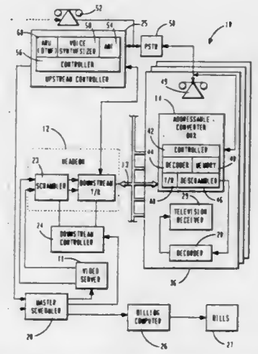
(1) error detection means for error detection, an error being a failure of match between an action taken by a trainee, called a trainee action, with a correct action, whereby error detection is made in a hierarchical manner with relatively higher level errors, including a highest level error, distinguished from relatively lower level errors, and p2 (2) error handling means for providing information concerning actions and errors, said information concerning errors being based on the highest level error detected;

(d) training scenario generator means for designing increasingly complex training tasks based on the current skill level of the trainee and on any weaknesses or deficiencies that the trainee has exhibited in previous trainee actions, where such weaknesses or deficiencies are based on comparing the trainee actions with the correct actions from said domain expert;

(e) trainee model means for accepting from said training session manager information concerning correct actions and errors made as a result of trainee actions and compiling a complete record of the correct actions taken and errors by the trainee and, at the conclusion of each training session, creating a training summary of such correct actions and errors as well as the time taken to complete the session and the type of assistance provided by the system to the trainee; and

(f) blackboard means providing an intermodule interface for communicating between said user interface means, said domain expert means, said training session manager means, said training scenario generator means, and said trainee model means; said blackboard means also providing an intermodule interface for transferring control of the training system from one to another of said domain expert means, said training scenario generator means, said error detection means and said error handling means by use of rules contained within each of said domain expert means, said training scenario generator means, said error detection means and said error handling means.

5,311,423
SCHEDULE MANAGEMENT METHOD
P. Deborah Clark, Anaheim, Calif., assignor to GTE Service Corporation, Stamford, Conn.
Filed Jan. 7, 1991, Ser. No. 637,854
Int. Cl.[5] G06F *15/22, 15/24*; G06G *7/52*
U.S. Cl. 364—401 **21 Claims**



1. A method of efficiently and accurately managing the exhibition of predetermined performances throughout an interval of time, said method comprising the steps of:

entering data describing said predetermined performances into a computer, each of said performances having a unique data record associated therewith, said entering step further comprising the steps of:

including data describing run times for said predetermined performances in said data records; and

automatically calculating repeat factors for said predeter-

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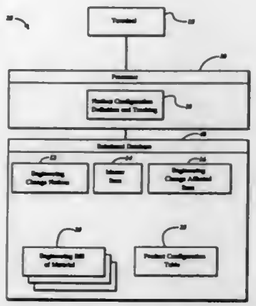
mined performances, said repeat factors defining minimum intervals between beginning times for two back-to-back performances and said repeat factors being greater than said run times.

5,311,424

METHOD AND SYSTEM FOR PRODUCT CONFIGURATION DEFINITION AND TRACKING

Sujan K. Mukherjee, Roswell; James L. Ryan, Smyrna, both of Ga., and James R. Wason, Tuxedo, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,286
Int. Cl.[5] G06F *15/22, 15/46*
U.S. Cl. 364—401 **10 Claims**



1. In a data processing system having a plurality of communicating nodes, at least one of said communicating nodes capable of communicating engineering change requests reflecting changes to previously stored plurality of product configurations and at least one of said nodes capable of receiving information on at least one of said product configurations, and at least one central node capable of receiving from and sending to said plurality of communicating nodes, a method for enabling storing said information with previously stored product configurations in a manner enabling defining and tracking said changed stored product configurations, said method comprising:

constructing a base product view at said central node, said base product view having a plurality of standard component features and a plurality of optional component features, each of said base product views defining one of a plurality of product configurations, and storing said base product view in a bill of material;

assigning a first product configuration identifier to said base product view and tagging each of said plurality of standard and optional component features stored in said bill of material with said first product configuration identifier;

receiving at said central node an engineering change request from a first communication node, said engineering change request associated with a specific customer product configuration, and generating an engineering change notice associated with said engineering change request, that modifies said base product view, and assigning a second product configuration identifier to said specific customer product configuration;

constructing a customer product view wherein new components are added and replaced components are removed from said base product view in accordance with said engineering change notice and tagging said new and replaced components with said second product configuration identifier;

tracking said customer product view by means of said second product configuration identifier and said first product configuration identifier; and

generating a tailored bill of material based on said tracked customer product view;

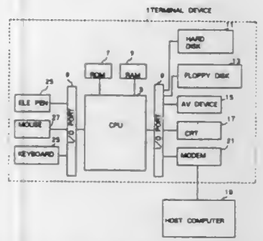
transmitting to a second communicating node said tailored bill of materials.

5,311,425

RESERVATION SYSTEM TERMINAL

Takaya Inada, Tokyo, Japan, assignor to Japan Airlines, Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01547, § 371 Date Sep. 17, 1991, § 102(e) Date Sep. 17, 1991, PCT Pub. No. WO91/08540, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 28, 1990, Ser. No. 730,859
Claims priority, application Japan, Nov. 28, 1989, 1-308028
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—407 **27 Claims**



1. A reservation system terminal associated with a host computer for processing reservation status, which comprises:

(A) reserving means (**35, 41, 43, 45, 47**) for forming a reservation image, said reservation image including a firs part for inputting data related to predetermined reservation items, a second part for inquiring of the host computer a reservation status related to the inputted data concerning the predetermined reservation items, a third part for selecting a reservation option from one or more reservation options provided by the host computer, and a fourth part for requesting of the host computer a reservation acquisition related to the selected reservation option;

(B) displaying means (**119, 121, 17**) for receiving the reservation images formed by said reserving means, and forming and displaying a display image including the formed reservation image;

(C) pointing device means (**30**) for operating the parts arranged in the image displayed by said displaying means;

(D) part operation detecting means (**31, 33**) for detecting the part operated by said pointing device means; and

(E) host-to-terminal communicating means (**125**) for transmitting various messages to said host computer and receiving response data from said host computer. .

5,311,426

APPARATUS AND METHOD FOR PROVIDING ASSAY CALIBRATION DATA

Joseph P. Donohue, Waukegan; Mark W. Bailey, Highland Park, and Christopher N. Mattimiro, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

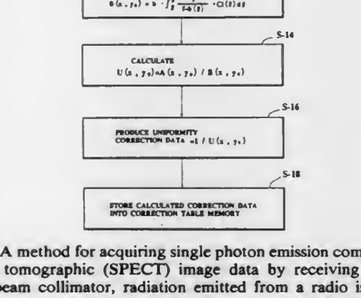
Continuation of Ser. No. 227,586, Aug. 2, 1988, abandoned. This application Oct. 27, 1992, Ser. No. 967,946
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.09 **12 Claims**

8. A method for providing assay calibration data to an instrument capable of simultaneously assaying a single aliquot of a biological sample with a panel of assays of preselected test sample binding, components comprising the steps of:

providing predetermined assay calibration data for calibrating or normalizing the results of said panel of assays with respect to at least one predetermined standard value for each said binding component and first code means for identifying said calibration data;

entering said calibration data into a location in a data storage means of said instrument;

providing assay means for carrying out said panel of assays



with said instrument, wherein said assay means comprises an array of isolated test sites wherein each assay reagent is bound to its own discrete test site, and second code means for identifying said panel of assays; and

accessing said calibration data in said data storage means using said first code means and said second code means.

5,311,427

METHOD FOR REMOVING ARTIFACT AND FOR CORRECTING SENSITIVITY OF SINGLE PHOTON EMISSION COMPUTERIZED TOMOGRAPHY AND APPARATUS THEREOF

Takashi Ichihara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 3, 1991, Ser. No. 637,268
Claims priority, application Japan, Jan. 31, 1990, 2-20793
Int. Cl.[5] G01T *1/164;* **G06F** *15/42*
U.S. Cl. 364—413.23 **22 Claims**

1. A method for acquiring single photon emission computerized tomographic (SPECT) image data by receiving via a fan-beam collimator, radiation emitted from a radio isotope (RI) supplied into a biological body under medical examination with employment of a gamma camera, comprising the steps of:

acquiring first projection image data by receiving via the fan-beam collimator, radiation emitted from reference RI source means;

processing said first projection image data to obtain first correction data;

acquiring second projection image data by receiving via said fan-beam collimator said radiation emitted from said radio isotope injected into the biological body;

correcting said second projection image data with said first correction data so as to obtain third projection image data from which an artifact component has been eliminated; and

reconstructing a SPECT image of the biological body under medical examination based upon said third projection image data and free from the artifact component, including

calculating a plurality of fourth projection image data by receiving via the fan-beam collimator radiation emitted from radio isotopes uniformly distributed within an effective field of said gamma camera so as to obtain SPECT image data of the radio isotopes uniformly distributed within the effective field,

processing said SPECT image data of the radio isotopes to obtain second correction data; and

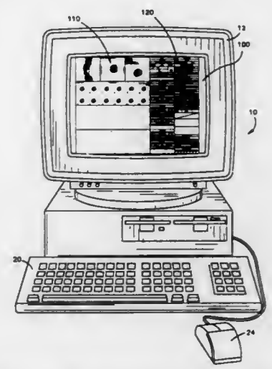
correcting said reconstructed SPECT image of the biological body based upon said second correction data, whereby a sensitivity of at least said fan-beam collimator is corrected on said reconstructed SPECT image of the biological body under medical examination.

5,311,428

REAL TIME FILTER FOR DATA PROCESSING

John M. Hayes, Macedonia, and Matthew P. Grabnic, Maple Heights, both of Ohio, assignors to Summit World Trade Corporation, Hudson, Ohio

Filed Jun. 5, 1992, Ser. No. 893,778
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.13 **12 Claims**



1. A method for programmable processing reconstructive imaging of a cross-section region of interest within a subject comprising the steps of:

a) obtaining a time-domain intensity data set from an internal region of interest within the subject;

b) converting the time-domain intensity data set to an unfiltered frequency-domain data set;

c) selecting one filter type from a set of filter types and assigning a set of filter parameters;

d) generating a first filter using the selected filter type and the set of filter parameters;

e) displaying a visual depiction of the first filter, the visual depiction generated using the set of filter parameters and concurrently;

i) using the first filter to filter the unfiltered frequency-domain data set to obtain a first filtered frequency-domain data set;

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ii) reconverting the first filtered frequency-domain data set to a first filtered time-domain data set; and

iii) backprojecting the first filtered time-domain data set to display an image representing the region of interest;

f) revising the set of filter parameters by altering at least one of the filter parameters based on the displayed image of the region of interest;

g) generating an altered filter using the selected filter type and the revised set of filter parameters;

h) displaying a visual depiction of the altered filter, the visual depiction generated using the revised set of filter parameters and concurrently;

i) using the altered filter to filter the unfiltered frequency-domain data set to obtain a revised filtered frequency-domain data set;

ii) reconverting the revised frequency-domain data set to a revised time-domain data set; and

iii) backprojecting the revised set of filtered time-domain data to display an image representing the region of interest.

5,311,429

MAINTENANCE SUPPORT METHOD AND APPARATUS FOR NATURAL LANGUAGE PROCESSING SYSTEM

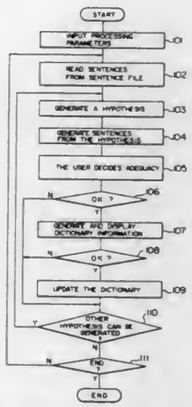
Masasuke Tominaga, Kawasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1990, Ser. No. 523,355

Claims priority, application Japan, May 17, 1989, 1-123846

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.01 **12 Claims**



1. A maintenance support method for use in a maintenance support apparatus for a natural language processing system, the apparatus including:

a sentence file for storing sentences and parsing data associated with the sentences;

a dictionary for storing dictionary information;

a thesaurus for storing semantic information; and

a grammar rule file for storing

analysis rules for parsing sentences in natural language based on the dictionary information in the dictionary, and

sentence generation rules for transforming and synthesizing sentences in the sentence file to generate new sentences in natural language based on at least one of the dictionary information in the dictionary and the semantic information in the thesaurus;

the method comprising the steps of:

(a) extracting from the sentence file sentences having at least one word in common and the parsing data associated therewith;

(b) generating a hypothesis of co-occurrence relation information from the sentences extracted from the sentence file and the parsing data extracted from the sentence file;

(c) generating sentences from the hypothesis for verifying the hypothesis based on the sentence generation rules in the grammar rule file and at least one of the dictionary information in the dictionary and the semantic information in the thesaurus;

(d) determining if each of the sentences generated from the hypothesis is adequate; and

(e) generating dictionary information, including co-occurrence relation information, from the hypothesis and the sentences generated from the hypothesis which are determined to be adequate.

5,311,430

VEHICLE OPERATION DATA RECORDING APPARATUS

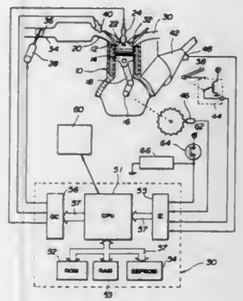
Kazuhiro Ishigami, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 9, 1992, Ser. No. 958,834

Claims priority, application Japan, Oct. 11, 1991, 3-263862

Int. Cl.[5] G06F *13/00*

U.S. Cl. 364—424.04 **20 Claims**



7. An apparatus for use with an automotive vehicle having an ignition switch and an internal combustion engine to record vehicle operation data, the apparatus comprising:

first memory means having a memory area having a predetermined capacity for storing values of at least one vehicle operating condition;

second memory means; and

a control unit for reading existing values of the vehicle operating condition into said memory area of said first memory means at uniform intervals of time to produce engine operation data stored in said first memory means, said control unit including first means for producing a command signal when said vehicle stops before said engine stops, second means for transferring the vehicle operation data from said first memory means to said second memory means a predetermined time after the command signal is produced so that the transferred vehicle operation data include the vehicle operating condition values read for the predetermined time before the command signal is produced and the vehicle operating condition values read for the predetermined time after the command signal is produced.

5,311,431

METHOD OF OBTAINING THE YAWING VELOCITY AND/OR TRANSVERSE VELOCITY OF A VEHICLE

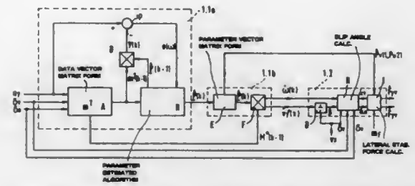
Chi-Thuan Cao, Korntal-Münchingen, and Thorsten Bertram, Düsseldorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 906,292

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 4121954

Int. Cl.[5] B62D *6/00*

U.S. Cl. 364—424.05 **9 Claims**



1. In a method of controlling a motor driven wheeled vehicle having front and rear axles and including the steps of obtaining values for at least one of the yawing velocity ω and the transverse velocity v_y of the vehicle, and using the obtained values for at least one of the yawing velocity ω and the transverse velocity v_y to control a driving dynamic of the vehicle; the improvement wherein said step of obtaining comprises:

measuring and providing signals corresponding to the transverse acceleration a_y, the front wheel drive angle δ_v, and any rear-wheel drive angle δ_h of the vehicle;

forming a data vector

$$m^r(k-1)=[a_y(k-2)a_y(k-3)|\delta_v(k-1)\delta_v(k-2)\delta_v(k-3)|\delta_h(k-1)\delta_h(k-2)\delta_h(k-3)]^r$$

from the three measured values a_y, δ_v and δ_h, with k, $(k-1)$, $(k-2)$, and $(k-3)$ representing times of measurements;

multiplying the data vector $m^r(k-1)$ with the estimated value of a parameter vector $p(k-1)$ to determine an estimated value for the transverse acceleration $a_y(k)$;

recursively calculating the estimated value of a parameter vector p(k) using an estimation algorithm from the previously determined estimated value $p(k-1)$ and an error value $e(k)=a_y(k)-a_y(k)$;

multiplying the matrix $M^*(k-1)$ of the data vector $m^r(k-1)$ with the matrix $p^*(k)$ of the parameter vector p(k) to determine a state vector $x(k)=[\omega(k)\ v_y(k)]$; and,

determining at least one of the yawing velocity $\omega(k)$ and the transverse velocity $v_y(k)$ of the vehicle from the state vector.

5,311,432

METHOD AND SYSTEM FOR ESTIMATING THE NEUTRAL POINT OF A STEERING WHEEL

Nobuo Momose, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,703

Claims priority, application Japan, Dec. 10, 1991, 3-325888

Int. Cl.[5] B62D *5/06*

U.S. Cl. 364—424.05 **40 Claims**

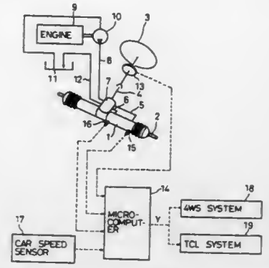
14. A system for estimating a neutral point of a steering wheel of a vehicle, comprising:

straight ahead travel determining means for determining whether the vehicle is in a straight ahead travel condition;

first detecting means for detecting whether said straight ahead travel condition determined by said straight ahead travel determining means has lasted for a specified time;

second detecting means for detecting an output of a wheel angle sensor at intervals of a specific cycle, shorter than said specified time, until an elapse of said specified time is detected;

neutral point estimating means for estimating said neutral point of said steering wheel based on said output of said wheel angle sensor when said straight ahead travel condition of the vehicle is determined by said straight ahead travel determining means;



distribution calculating means for determining a detection frequency distribution corresponding to a series of wheel angles detected by said second detecting means; and

neutral point deciding means for determining said neutral point of said steering wheel from said detection frequency distribution.

5,311,433

ACCELERATION SLIP CONTROL DEVICE FOR A VEHICLE

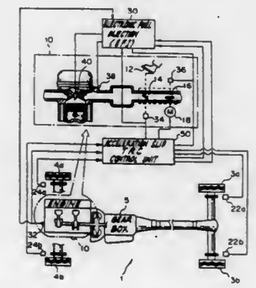
Hiroshi Igata, Okazaki; Takayoshi Nakatomi, Susono; Kiyoyuki Uchida, and Yoshifumi Yagi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 19, 1991, Ser. No. 794,074

Claims priority, application Japan, Nov. 20, 1990, 2-312792

Int. Cl.[5] G06F *7/70*

U.S. Cl. 364—426.01 **6 Claims**



1. An acceleration slip control device for controlling a slippage between driving wheels of the vehicle and a road surface during an acceleration of the vehicle, comprising:

a target speed setting means for determining a target speed according to a running speed of the vehicle;

a deviation detecting means for detecting a deviation which is defined as a difference between a rotating speed of the driving wheels and said target speed;

a friction coefficient detecting means for detecting a friction coefficient between the driving wheels and the road surface;

a control means for controlling a driven torque of the driving wheels on the basis of the magnitude of said deviation and said friction coefficient in such a manner that the

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rotating speed of the driving wheels coincides with said target speed; and

a reliability determining means for determining the reliability of the value of a currently detected friction coefficient by comparing the value of said currently detected friction coefficient with the magnitude of said deviation detected by said deviation detecting means, wherein said reliability determining means determines that said currently detected friction coefficient is unreliable when the magnitude of said deviation is greater than a predetermined value and said currently detected friction coefficient is greater than a previously detected friction coefficient, said reliability determining means prohibiting said control means from using said currently detected friction coefficient for the control when said currently detected friction coefficient is determined to be unreliable.

5,311,434

VEHICLE NAVIGATION SYSTEM

Haruhisa Tamai, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,606
Claims priority, application Japan, Aug. 5, 1991, 3-218054
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **9 Claims**

1. A vehicle navigation system comprising:

first means for inputting initial location data indicating an initial location of the vehicle,

memory means for storing road map information,

second means for inputting destination data indicating a destination,

calculation means responsive to the first means, the memory means ant he second means for calculating an original route from the initial location to the destination,

storage means for storing the result of said calculation by the calculation means,

output means for outputting current location data indicating a current location of the vehicle,

display means responsive to the storage means and the output means for sequentially displaying directions necessary for traveling along the original route at each instant as the vehicle travels,

command means for commanding the calculation means to calculate a new route from the current location to the destination and causing the new route to be stored in the storage means when the vehicle deviates from the original route as determined by comparing the current location data with the original route, and

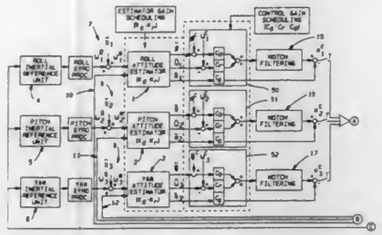
halt/resume means for halting the calculation of the new route and resuming the operation of the calculating means for calculating the original route when the vehicle has temporarily deviated from the original route.

5,311,435

METHOD FOR STATION KEEPING CONTROL OF FLEXIBLE SPACECRAFT USING ONBOARD GAIN SCHEDULING SCHEME

John F. Yocum, and Dan Y. Liu, both of Rancho Palos Verdes, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 27, 1991, Ser. No. 800,660
Int. Cl.[5] G01C *21/00;* **G06G** *7/78*
U.S. Cl. 364—459 **20 Claims**



1. Apparatus for compensating for thrusting disturbances in spacecraft, said spacecraft containing a plurality of thrusters commanded by thruster selection and timing logic means which determines the appropriate thrusters to be fired during a given sample period in a given maneuver and computes the duration of firing for the thrusters, said plurality of thrusters being capable of producing torques about axes of the spacecraft, said apparatus comprising:

rate sensor means for measuring the spacecraft's body rate about its axes,

estimator means, responsive to signal inputs from the rate sensor means for estimating angular acceleration, body rate, and body angle of said spacecraft, said estimator means utilizing time-varying gains which decline exponentially and are determined in an iterative fashion in computing said estimated angular acceleration and body rate; and

controller means for generating acceleration control commands from angular acceleration, body rate, and body angle estimates provided by said estimator means, said controller means utilizing time-varying gains which decline exponentially and are determined in an iterative fashion in computing said acceleration control commands.

5,311,436

AUTOMATIC RAPID ATTACHABLE WARHEAD SECTION

Anthony J. Trennel, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 8, 1991, Ser. No. 652,736
Int. Cl.[5] G06F *15/46, 15/20, 15/14*
U.S. Cl. 364—468 **26 Claims**

1. An apparatus for assembling selected warheads or reentry vehicles with selected weapon carriers, comprising:

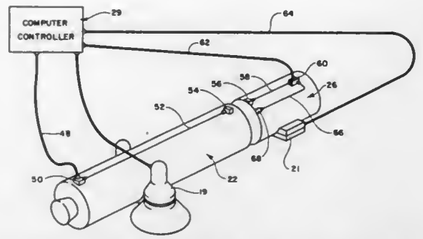
a first storage area containing a plurality of warheads or reentry vehicles,

a second storage area containing a plurality of weapon carriers,

means for selecting a warhead or reentry vehicle from said first storage area,

means for selecting a weapon carrier from said second storage area,

means for transporting said selected warhead or reentry vehicle to said selected weapon carrier,



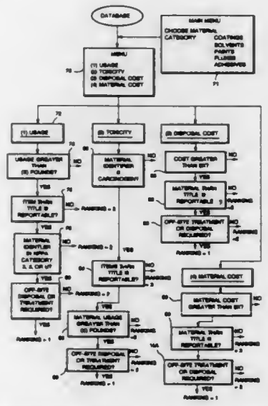
automatic means for coupling said selected warhead or reentry vehicle to said selected weapon carrier.

5,311,437

MATERIALS SELECTOR TOOL

James A. Leal; Norma A. Saenz; Gary L. Janda; Donald R. Martin, and William J. Ward, Jr., all of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 28, 1992, Ser. No. 827,181
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **15 Claims**



1. A computer-implemented preferred materials selector tool, comprising:

a digital processor;

a data storage medium accessible by the digital processor;

a data base stored in the data storage medium, the data base comprising a plurality of entries for materials, at least some of the data base entries including

identification of the physical character of the material,

identification of a procedure in which the material is operable, and

a hazard/environmental assessment; and

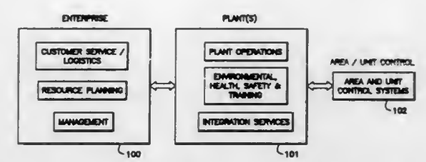
selection means executable by the digital processor for controllably selecting a material from the data base responsive to a comparison with the physical character of the material, the procedure identification, or the hazard/environmental assessment.

5,311,438

INTEGRATED MANUFACTURING SYSTEM

R. Drew Seliers, Chagrin Falls; John C. Hanger, Lakewood; Stephen V. Stair, Columbus, all of Ohio; Ronald A. Ehman; C. Dean Anargyros, both of Chicago, Ill., and Thomas N. Parry, Columbus, Ohio, assignors to Andersen Consulting, Chicago, Ill.

Filed Jan. 31, 1992, Ser. No. 830,201
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **29 Claims**



1. A plant-level manufacturing system for integrating together an enterprise-level system, a process control system, and other sub-systems, the plant-level manufacturing system comprising:

a) database means for storing and managing data in a common database describing material used and created in the manufacturing process, the database means comprising:

i) item means for storing items, each of the items identifying physical properties of the material;

ii) specification means for describing a plurality of sets of performance specifications of the material; and

iii) database linking means for linking one or more of the sets of performance specifications to one of the items;

b) interface means for linking the enterprise-level system and the process control system to the database means, the interface means comprising:

i) means for transferring data between the enterprise-level system and the plant-level manufacturing system;

ii) means for transferring data between the process control system and the plant-level manufacturing system; and

iii) means for transferring data from the process control system to the enterprise system; and

c) integration means for linking other sub-systems within the plant-level system to the items and the performance specifications in the common database and for allowing both the sub-systems and the plant-level system to utilize the same items and the same performance specifications in the common database.

5,311,439

EMBROIDERY DATA PROCESSING SYSTEM AND METHOD

Atsuya Hayakawa, Chita, and Kyoji Komuro, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 27, 1992, Ser. No. 874,081
Claims priority, application Japan, Jul. 16, 1991, 3-201375
Int. Cl.[5] G06F *15/46;* **D05B** *21/00*
U.S. Cl. 364—470 **20 Claims**

1. An embroidery sewing apparatus with a data processing system, comprising:

contour data storage means for storing contour data representing the contour of an embroidering area to be covered with a plurality of stitches formed by a sewing machine;

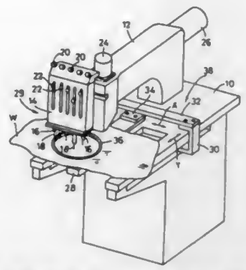
embroidering area display means for displaying the embroidering area on the basis of the contour data;

representative desired stitch setting means for permitting an operator to set the position and direction in the embroidering area of at least one representative desired stitch among a plurality of stitches to be formed by the sewing machine in the embroidering area;

embroidery data producing means for producing embroi-

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dery data necessary for covering the embroidering area with stitches on the basis of representative desired stitch data representing the at least one representative desired stitch and the contour data;



embroidery data storage means for storing the embroidery data; and

sewing means for using the stored embroidery data to sew stitches in the embroidery area.

5,311,440

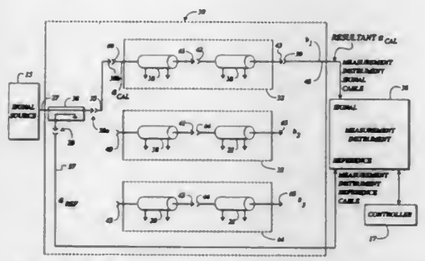
METHODS AND APPARATUS FOR CORRECTION OF CABLE VARIATIONS

Doren W. Hess, Jr., Norcross, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Dec. 3, 1991, Ser. No. 801,052

Int. Cl.[5] H04B *9/00*

U.S. Cl. 364—481 **58 Claims**



1. Apparatus for determining a characteristic associated with a primary confined path signal transmitting device subjected to an influence affecting the transfer characteristics of the primary confined path signal transmitting device, comprising:

a plurality of other confined path signal transmitting devices also subjected to said influence;

means for connecting said primary confined path signal transmitting device and said plurality of other confined path signal transmitting devices to form pairs of said devices; and

means for comparing signals transmitted through said pairs of said devices to determine a characteristic associated exclusively with said primary confined path signal device.

5,311,441

BATTERY POWERED UNIT WITH BATTERY SENSOR AND RESUME PROCESSING CONTROL MEANS

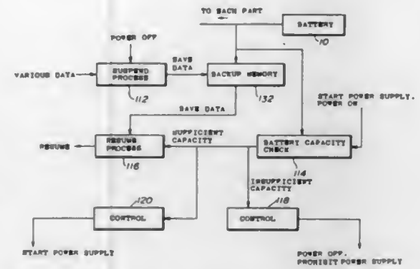
Hideyuki Tayama; Noriaki Yamagishi, and Shinji Yamamoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 846,952

Claims priority, application Japan, Mar. 8, 1991, 3-069190; Oct. 16, 1991, 3-267800

Int. Cl.[5] G06F *11/00*; **G01R** *19/00*

U.S. Cl. 364—483 **17 Claims**



1. A battery powered unit which is driven by an output voltage of a battery when the power is ON, said battery powered unit comprising:

voltage detection means for detecting the output voltage of the battery and for outputting a detection signal indicative of the detected voltage;

judging means, coupled to said voltage detection means, for judging whether or not a remaining capacity of the battery is greater than a predetermined value based on the detection signal output from said voltage detection means; and

control means, coupled to said judging means, for carrying out a resume process only if said judging means judges that the remaining capacity of the battery is greater than the predetermined value when the power is turned ON,

said resume process returning a state of the battery powered unit to a state at a time when the power was previously turned OFF.

5,311,442

TECHNOLOGY MAPPING APPARATUS FOR A COMBINATION CIRCUIT FOR USE IN AUTOMATICALLY SYNTHESIZING AN LSI LOGIC CIRCUIT

Hisayo Fukushima, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 19, 1991, Ser. No. 762,360

Claims priority, application Japan, Sep. 19, 1990, 2-247285

Int. Cl.[5] G06F *15/60*

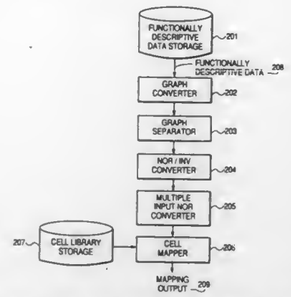
U.S. Cl. 364—488 **16 Claims**

1. A technology mapping apparatus for automatically synthesizing an LSI logic circuit by mapping circuit elements of a combination circuit to cells which form said LSI logic circuit, comprising:

graph converting means for converting functionally descriptive information expressing a combination circuit into a first graph expression having only NOR and inversion circuits;

multiple input NOR converting means for detecting from the first graph expression a circuit element having a NOR circuit and an inversion circuit alternately connected in series and for converting said circuit element to a second graph expression where a multiple input NOR circuit replaces said circuit element; and

cell mapping means for detecting from at least one of the first and second graph expressions a circuit element having NOR circuits connected together in series, for mapping said circuit element to at least one of a plurality of



sets of gate cells, at least some of the sets of the gate cells including a composite cell, and for outputting a mapping result with a minimum number of gates as a mapping output for said circuit element.

5,311,443

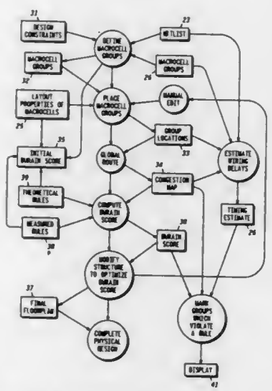
RULE BASED FLOORPLANNER

Steven L. Crain; Joseph J. Burkis, both of Chandler; Andrew H. Cowan, Gilbert, and Martin F. Lutz, Mesa, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Aug. 13, 1992, Ser. No. 928,573

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—491 **11 Claims**



1. A rule based floorplanner, comprising:

a net list defining a plurality of desired connections between the macrocells;

a plurality of macrocell groups defined among the plurality of predetermined macrocells, the macrocell groups being located within the macrocell array so as to satisfy a set of predetermined design constrains which constrain later placement of the macrocells;

a theoretical rule for predicting routability of the macrocell array;

a measured rule for predicting routability of the macrocell array; and

a Burain score for the macrocell array based on the macrocell groups, the theoretical rule, and the measured rule applied to the macrocell groups as placed within the macrocell array.

5,311,444

ABSORBANCE ANALYZER AND DATA PROCESSING METHOD FOR CHROMATOGRAPH

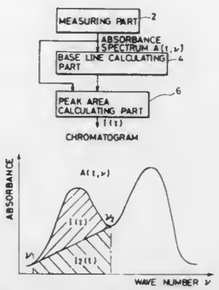
Hiroshi Ohta, Kadoma, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 30, 1992, Ser. No. 906,972

Claims priority, application Japan, Jun. 30, 1991, 3-186792

Int. Cl.[5] G01N *21/72*; **G06K** *9/46*

U.S. Cl. 364—497 **16 Claims**



1. An absorbance analyzer for obtaining a chromatograph from a series of absorbance spectra, comprising:

a measuring part for measuring the absorbance spectra dispersed over a wave number range as components in an effluent fluid sample from a chromatograph in a constant cycle;

a base line calculating part for deciding a base line including absorbance values on both ends of a designated wave number range with respect to each absorbance spectrum data measured by said measuring part; and

a peak area calculating part for calculating the peak area of the absorbance spectra in said wave number range on the basis of decided said base line,

thereby obtaining the chromatogram by time change of said peak area calculated by said peak area calculating part.

5,311,445

DECONVOLUTED BAND REPRESENTATION FOR INFRARED SPECTRUM COMPRESSION

Robert L. White, Norman, Okla., assignor to Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation of Ser. No. 42,853, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 954,601, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 702,438, May 16, 1991, abandoned, which is a continuation of Ser. No. 340,387, Apr. 19, 1989, abandoned. This application Sep. 20, 1993, Ser. No. 124,522

Int. Cl.[5] G06F *15/31, 15/42*

U.S. Cl. 364—498 **3 Claims**

1. A method for spectrum compression, comprising:

producing a digitized spectrum for each of a plurality of known substances with the digitized spectra each having a plurality of absorbance bands on a wavelength axis, each of the digitized spectra comprising a reference digitized spectrum;

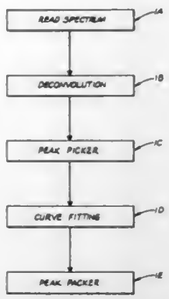
separating the absorbance bands of the reference digitized spectrum, thereby creating separated absorbance bands;

locating the separated absorbance bands on the wavelength axis;

curve-fitting the separated absorbance bands to correspond to the absorbance bands of the reference digitized spectrum, creating thereby a plurality of curve-fitted absorbance bands comprising a restored reference spectrum;

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identifying an intensity, location and width of each curve-fitted absorbance band comprising the restored reference spectrum; and

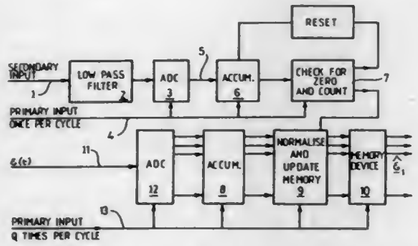


storing the intensity, location and width of the curve fitted absorbance bands, thereby creating a stored compressed reference spectrum corresponding to each of the reference digitized spectra.

5,311,446
SIGNAL PROCESSING SYSTEM FOR SENSING A PERIODIC SIGNAL IN THE PRESENCE OF ANOTHER INTERFERING SIGNAL

Colin F. Ross, Stapleford, United Kingdom, and Graham P. Eatwell, Caldecote, England, assignors to Active Noise and Vibration Technologies, Inc., Phoenix, Ariz.

PCT No. PCT/GB89/00913, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO90/02447, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 10, 1989, Ser. No. 655,381
Claims priority, application United Kingdom, Aug. 17, 1988, 8819581
Int. Cl.[5] G01H *7/00;* **G06G** *7/12*
U.S. Cl. 364—508 **14 Claims**



1. A method of monitoring a first substantially periodic signal component of a compound signal which includes a second substantially periodic signal component, wherein the first and second signal components have separate sources, comprising the steps of:

(a) sensing the first and second signal components respectively;

(b) determining a beat period as a function of the sensed first and second signal components;

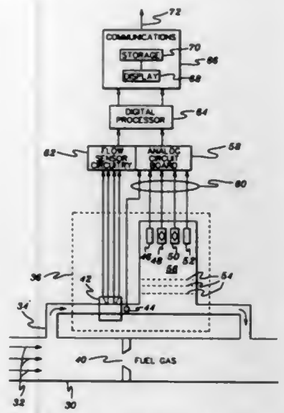
(c) sampling the compound signal in synchronism with the first signal component; and

(d) averaging the compound signal samples over a period determined by said beat period to produce a contribution signal as a function of a contribution made to the compound signal by the first signal.

5,311,447
ON-LINE COMBUSTIONLESS MEASUREMENT OF GASEOUS FUELS FED TO GAS CONSUMPTION DEVICES

Ulrich Bonne, 4936 Shady Oak Rd., Hopkins, Minn. 55343

Continuation of Ser. No. 781,598, Oct. 23, 1991, abandoned. This application Sep. 23, 1993, Ser. No. 126,097
Int. Cl.[5] G01N *11/00, 25/18;* **G06F** *15/20*
U.S. Cl. 364—509 **19 Claims**



1. An electronic apparatus for the combustionless determination of the quality of gaseous fuel fed to gas consumption devices, said apparatus comprising:

a sensor chamber having a plurality of sensors therein;

means for conducting at least a partial stream of a fuel gas through the sensor chamber such that said gas is in contact with said plurality of sensors;

first means for generating a first electrical signal at one of said plurality of sensors, said first electrical signal being representative of a first fuel gas quality, said first fuel gas quality comprising one of thermal conductivity, specific heat, viscosity and optical absorption of said fuel gas;

means for transferring said first electrical signal to a computer;

second means for generating a second electrical signal at one of said plurality of sensors, said second electrical signal being representative of a second fuel gas quality, said second fuel gas quality comprising one of said thermal conductivity, specific heat, viscosity and optical absorption fuel gas qualities, said second gas quality comprising a different one of said fuel gas qualities than said first gas quality;

means for transferring said second electrical signal to said computer; and

means, using said computer, for periodically generating signals using the first and second generated electrical signals as a measure for both the heat content and percent gas inerts of the fuel gas, each according to the formula:

$$\mu = a_o + b_1 x^{m1} + c_1 y^{p1}$$

where:

μ=one of said fuel gas heat content and percent concentration of gas inerts,

a_o, b_1, c_1,=constants,

m1, **p1**,=exponents,

x=signal representative of the first fuel gas quality,

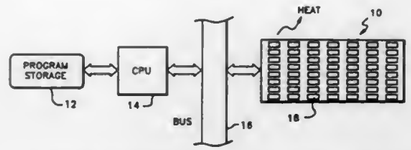
y=signal representative of the second fuel gas quality, and

+ =one of addition, subtraction, multiplication and division.

5,311,448
PROGRAMMABLE LOAD BOARD WITH PROGRAMMABLE SIMULATION OF THERMAL DISSIPATION CHARACTERISTICS

Mark H. Waggoner, Bellville, and Mark L. Hammons, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 19, 1991, Ser. No. 718,347
Int. Cl.[5] G01R *21/10*
U.S. Cl. 364—578 **15 Claims**



1. A system for simulating electrical performance characteristics of electronic components at various locations on a printed circuit board comprising:

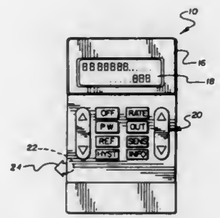
a plurality of electrical loads, said electrical loads being arranged in a plurality of groups at various locations on said printed circuit board, each of said load groups producing a predetermined quantity of electrical load; and

programmable means for selectively activating said load groups to simulate the electrical performance characteristics of electronic components on said printed circuit board.

5,311,449
STERILIZABLE HAND-HELD PROGRAMMER/INTERROGATOR

Theodore P. Adams, Edina, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Mar. 25, 1991, Ser. No. 674,132
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—514 **18 Claims**



1. A sterilizable hand-held programmer/interrogator for communicating with an implanted medical device in a sterile environment comprising:

a sealed housing having dimensions such that the housing is small enough to be hand-held, the sealed housing including:

processor means for controlling the operation of the programmer/interrogator;

transceiver means connected to the processor means for transmitting and receiving data between the programmer/interrogator and the implanted medical device;

memory means connected to the processor means for storing control algorithms for the processor means and data communicated with the implanted device;

display means connected to the processor means for displaying operating information for the programmer/interrogator and data communicated with the implanted device; and

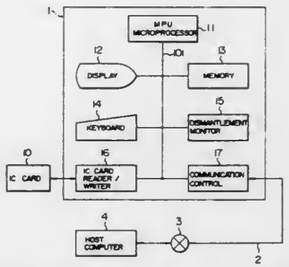
switch pad means connected to the processor means for manually providing control and data information to the programmer/interrogator,

such that the programmer/interrogator is sterilizable prior to use within the sterile environment to allow the programmer/interrogator to be used during the implantation of the implantable device in order to directly communicate with and program the implantable device without physically connecting the programmer/interrogator to another device.

5,311,450
SYSTEM AND METHOD OF DETECTING AUTHORIZED DISMANTLEMENT OF TRANSACTION MACHINES

Touru Ojima, Mitsukaido, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Aug. 23, 1991, Ser. No. 750,034
Claims priority, application Japan, Aug. 24, 1990, 2-221240
Int. Cl.[5] G08B *29/04;* **G06K** *9/00, 5/00*
U.S. Cl. 364—550 **4 Claims**



1. A security system for detecting and preventing the unauthorized dismantlement of a transaction terminal comprising, in combination:

processor means **(11)** for controlling operation of the terminal **(1)**;

data inputting means **(14)** for inputting authorization data to said processor means for identifying a person authorized to dismantle the terminal **(1)**;

dismantlement detection means **(15)** for outputting a detection signal to said processor means **(11)** for making said terminal **(1)** inoperable when the terminal **(1)** is dismantled; and

memory means **(13)** for storing data on persons authorized to dismantle the terminal, wherein when said processor means **(11)** determines that the data received through said data inputting means **(14)** coincides with the data stored in said memory means **(13)** on the authorized person, said processor **(11)** interrupts the detection signal allowing dismantlement of the terminal **(1)** without interrupting normal operations.

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5,311,451

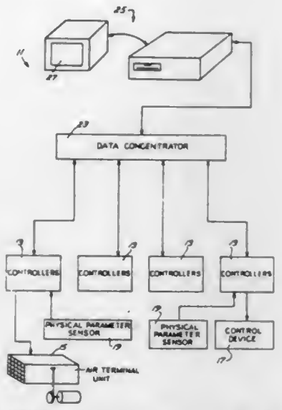
RECONFIGURABLE CONTROLLER FOR MONITORING AND CONTROLLING ENVIRONMENTAL CONDITIONS

Michael R. Barrett, Barrington, Ill., assignor to M. T. McBrian Company, Inc., Barrington, Ill.

Continuation of Ser. No. 546,000, Jun. 28, 1990, abandoned, which is a division of Ser. No. 359,995, May 31, 1989, Pat. No. 5,103,391, which is a continuation-in-part of Ser. No. 105,804, Jan. 6, 1987, abandoned. This application Dec. 6, 1991, Ser. No. 803,793

Int. Cl.[5] G06F *15/46, 15/20*

U.S. Cl. 364—550 **21 Claims**



1. A reconfigurable environmental controller for independently monitoring and controlling a sensed physical parameter for maintaining environmental conditions in accordance with control parameter data, comprising:

i. an environmental condition sensing device for sensing a physical parameter representing an environmental condition and for generating signals indicative of said sensed environmental condition;

ii. a controlled device for generating an output to adjust said sensed physical parameter and said environmental condition represented thereby;

iii. data processing means coupled to said controlled device for controlling said controlled device and coupled to said sensing device to receive said signals and convert said signals into sensed parameter data, said data processing means performing a comparison between said sensed parameter data and said control parameter data for generating output signals controlling said controlled device in response to said comparison for minimizing the difference between said sensed parameter data and said control parameter data;

iv. control software having a plurality of executable portions associated with a plurality of different types of controlled devices, each of said executable portions providing operative instruction to said data processing means for monitoring and controlling a specific type of said plurality of controlled devices; and

v. manually configurable switching means read by said data processing means for identifying at least one executable portion of said control software to be executed by said data processing means, said switching means enabling said data processing means to execute said executable portion of control software associated with the controlled device coupled to said environmental controller and said switching means being manually reconfigurable to identify at least one different executable portion of said control software associated with a different type of controlled device to allow said different type of controlled device to be coupled to and controlled by said environmental controller to replace said coupled controlled device without the need for altering said control software.

5,311,452

PLASMA PROCESSING APPARATUS USING CAPACITANCE MANOMETER AND PRESSURE CONTROL METHOD THEREOF

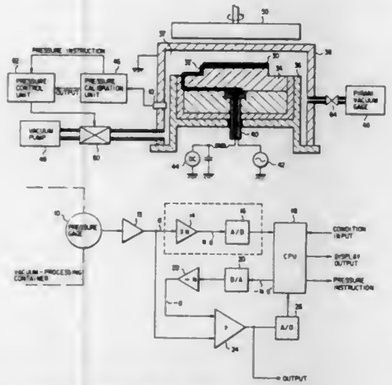
Takashi Yokota, and Osamu Kamikanda, both of Yokohama, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,197

Claims priority, application Japan, Nov. 28, 1990, 2-331319

Int. Cl.[5] G01F *25/00;* **G01L** *27/00;* **C23F** *1/00*

U.S. Cl. 364—571.05 **18 Claims**



1. A plasma processing apparatus comprising:

plasma processing means for processing an object by use of plasma at a predetermined pressure in a plasma processing container;

a capacitance manometer for detecting a pressure in said plasma processing container as a pressure detection signal, which indicates the pressure and includes erroneous components;

vacuum creating means for creating a predetermined pressure in said plasma processing container;

pressure instruction means for, when plasma processing is performed by said plasma processing means, providing a first pressure instruction signal to said vacuum-creating means to set a pressure in said plasma processing container at a predetermined first pressure on the other of several 10 m torr as said predetermined pressure, and when said capacitance manometer is calibrated before plasma processing is performed, providing a second pressure instruction signal to said vacuum-creating means to set the pressure in said plasma processing container at a predetermined second pressure on the order of 10^{-4} Torr at which said capacitance manometer cannot operate correctly;

correction value calculating means for, when the pressure in said plasma processing container is set at said predetermined second pressure in order to calibrate said capacitance manometer in accordance with said second pressure instruction from said pressure instruction means, receiving said pressure detection signal from said capacitance manometer, and calculating a correction value used for canceling said erroneous components previously included in said pressure detection signal;

correcting means for, when the pressure in said plasma-processing container is set at said predetermined first pressure, correcting said pressure detection signal output from said capacitance manometer on the basis of said correction value calculated by said correction value calculating means, thereby to cancel said erroneous components previously included in said pressure detection signal; and

pressure controlling means for maintaining said predetermined first pressure in said plasma processing container so that plasma processing is performed in accordance with said pressure detection signal from which said erroneous components have been canceled, wherein said correction value calculating means comprises:

a multiplier for multiplying a signal, a, output from said capacitance manometer by a predetermined multiplier value N;

a first A/D converting means for converting an output signal N·a into a digital signal;

a signal processing means for receiving the digital signal from said first A/D converting means, and outputting a digital signal $-N\cdot a$ corresponding to the output signal N·a;

D/A converting means for converting a digital signal corresponding to the signal $-N\cdot a$ output from said signal processing means into an analog signal; and

a divider for dividing said analog signal output from said D/A converting means by N, and outputting a signal, $-a'$, as said correction value.

5,311,453

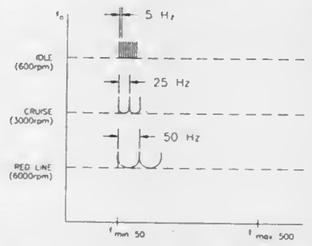
VARIABLE POINT SAMPLING

Jeffrey N. Denenberg, Trumbell, Conn., and Roy H. Scott, Columbia, Md., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.

Filed Sep. 11, 1992, Ser. No. 943,629

Int. Cl.[5] H04B *15/00*

U.S. Cl. 364—574 **4 Claims**



1. In a digital, synchronous, noise cancellation system for canceling the frequency components, the method of maintaining the sampling rate and required processing resources within a small range while the fundamental noise cycle varies over a large range, said method comprising

determining the highest frequency to be processed,

determining the current noise cycle rate,

changing the number of sample points per noise cycle dependent upon the noise cycle rate and the highest frequency to be processed.

5,311,454

DIGITAL MULTIPLIER-ACCUMULATOR

Timothy J. Canales, Albuquerque, N. Mex., assignor to Gulton Industries, Inc., Albuquerque, N. Mex.

Filed Feb. 8, 1993, Ser. No. 14,691

Int. Cl.[5] G06J *1/00*

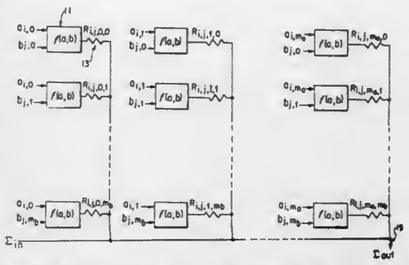
U.S. Cl. 364—606 **13 Claims**

1. A circuit for performing a sum of products operation on a plurality of digitally coded and weighted groups of signals to yield an analog result, each group of signals comprising a plurality of elements, each element comprising a plurality of individual signals, each individual signal having a sign portion and a magnitude portion, the circuit comprising:

a circuit output node;

a digital multiplier having an output and a plurality of inputs, a first one of said plurality of inputs being connected to receive the sign portion of a first individual signal of a first element of a first group of said digitally coded and weighted groups of signals, a second one of said plurality of inputs being connected to receive the sign portion of a first individual signal of a first element of a second group of said digitally coded and weighted groups of signals, said digital multiplier producing a digital product at the output of the digital multiplier;

and an analog multiplier having an output and a plurality of inputs, a first one of said plurality of inputs being connected to receive the digital product from the output of



the digital multiplier, a second one of said plurality of inputs being connected to receive the magnitude portion of the first individual signal of the first element of the first group of said digitally coded and weighted groups of signals, a third one of said plurality of inputs being connected to receive the magnitude portion of the first individual signal of the first element of the second group of said digitally coded and weighted groups of signals, a fourth one of said plurality of inputs being connected to receive a scale factor, said analog multiplier producing an analog signal at the output of the analog multiplier, the output of the analog multiplier being connected to the circuit output node.

5,311,455

PORTABLE COMPUTER HAVING A HARD DISK DRIVE MOUNTED THEREIN

Chib-Hsiang Ho, Taipei, Taiwan, assignor to Elite Computer Co., Ltd., Taipei, Taiwan

Filed Nov. 16, 1992, Ser. No. 977,183

Int. Cl.[5] H05K *5/02;* **G06F** *1/00*

U.S. Cl. 364—708.1 **4 Claims**



1. A portable computer including a central processing unit, a monitor unit laying on said central processing unit and being

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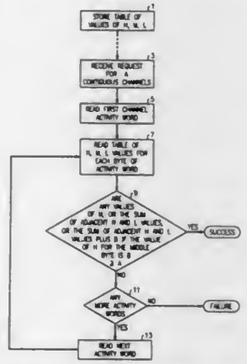
mounted pivotally on said central processing unit, and a hard disk drive unit mounted in said central processing unit, said monitor unit being locked releasably on said central processing unit, the improvement comprising: said central processing unit having a generally rectangular storage chamber formed in an upper surface thereof, said storage chamber having a bottom wall and a side wall assembly which includes four side walls, said side wall assembly having two locking holes formed therein, said hard disk drive unit including a sealed housing, a driving device disposed in said housing, two insertion elements mounted movably in said housing and extending from said housing to engage within said locking holes of said central processing unit so as to retain said hard disk drive unit within said storage chamber, a rotary actuating unit pivoted operatively to said housing and actuatable so as to move said insertion elements to retract into said housing, and a spring unit biasing said insertion elements to extend from said housing to engage within said locking holes of said central processing unit, whereby, in a case where said monitor unit is rotated away from said central processing unit, said rotary actuating unit can be rotated so as to retract said insertion elements into the housing, thereby enabling said hard disk drive unit to be removed from said central processing unit.

5,311,456

ARRANGEMENT FOR FINDING A GROUP OF CONTIGUOUS CHANNELS IN A CHANNEL GROUP

Lily C. Chiang, and Geoffrey E. Margrave, both of Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 28, 1993, Ser. No. 68,869
Int. Cl.[5] G06F *7/00*
U.S. Cl. 364—715.11 **8 Claims**



1. A method of identifying the presence and location of a contiguous string of A repetitions of a prespecified binary value B in a word to be tested of length T, comprising the steps of:

subdividing T into a plurality of segment length c(1), . . . , c(d);

storing a table of data comprising a first quantity H[(C(i)], denoting the number of contiguous high order bits of value B in a segment of length c(i) having value C(i) for each possible value of C(i), M[C(i)] denoting the highest number of contiguous bits of value B surrounded on each side by a value B^1, a binary inverse of a value of B, in a segment having value C(i) for each possible value of C(i), and L[C(i)] denoting the number of contiguous low order bits of value B in a segment of length c(i) having value C(i) for each possible value of C(i), wherein each C(i) can have values from zero to $2^{c(i)}-1$;

accessing an availability word, of length T, to be tested;

subdividing said accessed word into segments of length c(i), i varying from 1 to d;

for each segment, accessing said table to obtain H[C(i)], M[C(i)], and L[C(i)] for that segment wherein C(i) is a value of segment c(i) of said accessed word; and

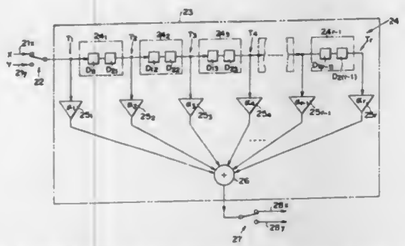
testing for availability of a contiguous string of A or more repetitions of binary value B by testing values of M[C(i)] and values of H[C(i)]+L[C(i+1)], and testing L[C(1)] and H[C(d)], to determine if any of said values equal or exceed A.

5,311,457

DIGITAL FILTER

Hiroshi Shizawa, Tokyo, Japan, assignor to LSI Logic Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,377
Claims priority, application Japan, Apr. 17, 1991, 3-112423
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.13 **7 Claims**



1. A digital filter for processing a plurality "n" of independent input signals having a common sampling frequency f_i to produce a like plurality "n" of independent output signals, comprising:

input switching means for selecting one of a first plurality "n" of input signals to provide a filter input signal;

a second plurality "m" of serially-connected delay stages including at least a first delay stage and a last delay stage, each delay stage having an input and an output, the output of each delay stage except the last delay stage connected to the input of a subsequent delay stage, and the filter input signal providing the input to the first delay stage;

each delay stage further comprising a plurality "n", equal to the first plurality, of delay elements arranged in a serially-connected array and comprising at least a first delay element and a last delay element, each delay element introducing a unit time delay "T"=1/($f_i$xn) in each of said delay elements;

means for multiplying a third plurality "m+1", one greater than the second plurality "m". of tap signals by a like third plurality of respective coefficients to produce a like third plurality of scaled tap signals, each tap signal except a first tap signal being provided by a corresponding delay stage output, and the filter input signal providing the first tap signal;

summing means for adding all of the tap signals to provide a filter output signal;

output switching means for connected to the summing means for directing the filter output signal to any one of a plurality "n", equal to the first plurality, of output lines; and,

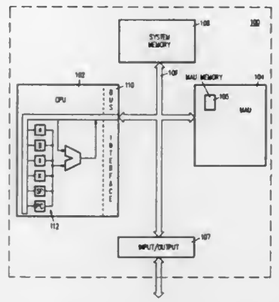
means for synchronizing the input switching means to the output switching means.

5,311,458

CPU WITH INTEGRATED MULTIPLY/ACCUMULATE UNIT

Ralph W. Haines, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 712,208, Jun. 7, 1991, Pat. No. 5,218,564.
This application Nov. 10, 1992, Ser. No. 975,399
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—736 **5 Claims**



1. A data processing system that executes program instructions and processes data retrieved by the data processing system from an external memory, the data processing system comprising:

a system bus connectable to the external memory;

a central processing unit including a plurality of internal registers for storing data therein, and further including bus interface means connected to the system bus for transferring data from the external memory to the system bus; and

math processor means, connected to the system bus, for retrieving data from the system bus and for performing mathematical operations thereon;

wherein the central processing unit is responsive to a specified program instruction such that the internal registers are utilized to manage results of the mathematical operations in parallel with the performance of the mathematical operations by the math processor means.

5,311,459

SELECTIVELY CONFIGURABLE INTEGRATED CIRCUIT DEVICE FOR PERFORMING MULTIPLE DIGITAL SIGNAL PROCESSING FUNCTIONS

Lionel J. D'Luna, Rochester; James R. Milch, and Timothy J. Kenney, both of Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1992, Ser. No. 946,124
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—754 **17 Claims**

1. A selectively configurable integrated circuit device comprising:

at least three data input ports, a coefficient input port, a mode selection input port, and three data output ports;

an input data router unit coupled to the data input ports and the mode selection input port;

at least three rows of multipliers, each row having a plurality of multipliers;

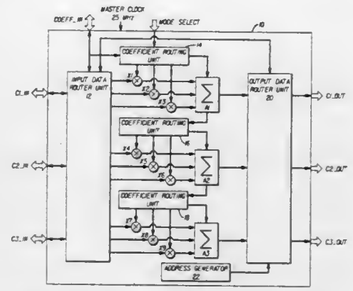
at least three adder units corresponding to each row of multipliers, wherein inputs of each adder unit are coupled to the outputs of the multipliers within the multiplier row corresponding to each adder unit;

an output data router unit coupled to the outputs of the adder units, the three data output ports, and the mode selection input port; and

at least three coefficient routing units corresponding to the three rows of multipliers, wherein outputs of each coefficient routing unit are coupled to each multiplier within the corresponding multiplier row and to the adder unit coupled to the corresponding multiplier row;

wherein the input data router transfers sequential data received from at least one of the data input ports into parallel data in response to a first operational mode control signal received from the mode selection port and supplies the parallel data to at least one row of multipliers, and

wherein the input data router supplies data received from each data input port to all of the mulitplier rows in response to a second operational mode control signal received from the mode selection port.

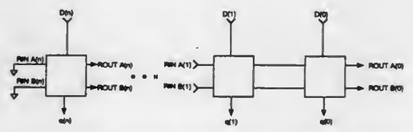


5,311,460

METHOD AND APPARATUS FOR PERFORMING HIGH SPEED DIVIDE OPERATIONS

Michael H. Herschfelt, Ben Lomond, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Dec. 31, 1992, Ser. No. 999,315
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—761 **4 Claims**



1. A plurality of identical stages for performing division for a predetermined divisor and an n+1 bit dividend, each of said stages comprising:

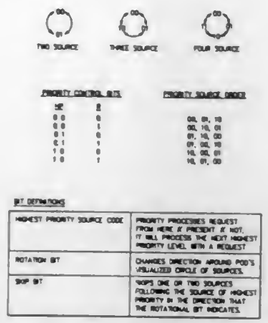
a) means for generating a predetermined plurality of one bit remainder terms;

b) means for generating a one bit quotient;

wherein the number of said plurality of stages is equal to n+1, and each of said stages has as an input said predetermined plurality of one bit remainder terms from an adjacent stage as its most significant bits and a corresponding bit of said dividend as its least significant bit, and has as its output a corresponding bit of said quotient as its most significant bit and said generated predetermined plurality of one bit remainder terms as its least significant bits, and wherein the stage corresponding to the n bit of the dividend has 0 as its predetermined plurality of one bit remainder term inputs.

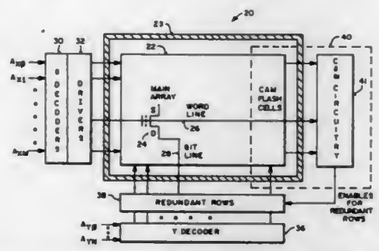
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5,311,461
PROGRAMMABLE PRIORITY AND SELECTIVE BLOCKING IN A COMPUTE SYSTEM
Patrick W. Gallagher, Vestal, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 30, 1988, Ser. No. 292,297
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—650 **2 Claims**



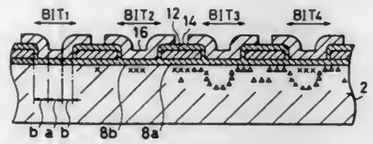
1. A computer-implemented method of determining priority between three or more requests which are directed from three or more respective sources thereof for execution by a common resource, including the steps of:
assigning each source an encoded ID;
identifying the source of each request by the ID of said source;
programming a priority code which identifies the relative priority between requests from the sources, said priority code including at least one of said encoded IDs and a rotation bit for determining the rotation between the requests from those sources other than the sources identified by said at least one of said encoded IDs;
sending the programmed priority code through a priority circuit in order to pre-set the circuit in accordance with the relative priority; and
directing the requests through the priority circuit in order to select the requests for execution in priority order the respective IDs of the requests in accordance with the relative priority identified by the priority code.

5,311,462
PHYSICAL PLACEMENT OF CONTENT ADDRESSABLE MEMORIES
Steven Wells, Citrus Heights, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Dec. 19, 1991, Ser. No. 811,464
Int. Cl.[5] G11C *15/00*
U.S. Cl. 365—49 **7 Claims**



1. A content addressable memory (CAM) bit associated with a flash memory array having a guard ring, the CAM bit comprising:
a flash memory cell located on a column fabricated as part of the flash memory array and within the guard ring.

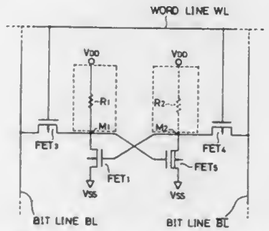
5,311,463
SEMICONDUCTOR MEMORY DEVICE AND MANUFACTURING METHOD THEREOF
Satoru Taji, Sanda, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 12, 1993, Ser. No. 3,499
Claims priority, application Japan, Feb. 24, 1992, 4-073280
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—51 **3 Claims**



1. A semiconductor memory device comprising:
a diffusive region for a source formed in the shape of a band on a substrate to construct a source region of plural memory cells;
a diffusive region for a drain formed in the shape of a band in parallel with said diffusive region for a source and alternated with this diffusive region for a source to construct a drain region of the plural memory cells;
a first word line layer electrically insulated from said diffusive regions for a source and a drain and formed such that the first word line layer crosses the diffusive regions for a source and a drain; and
a second word line layer electrically insulated from said diffusive regions for a source and a drain and said first word line layer and formed in parallel with the first word line layer;
the second word line layer including:
a flat portion arranged between two first word line layers adjacent onto both sides of said second word line layer;
a first side wall portion arranged on a side of one of said two adjacent first word line layers on both sides of said second word line layer and connected to one end of said flat portion and having a thickness substantially increased;
a second side wall portion arranged on a side of the other of said two adjacent first word line layers on both sides of said second word line layer and connected to another end of said flat portion and having a thickness substantially increased;
a first overlapping portion connected to said first side wall portion and extending onto an edge portion of one of said two first word line layers such that the first overlapping portion overlaps this edge portion; and
a second overlapping portion connected to said second side wall portion and extending onto an edge portion of the other of said two first word line layers such that the second overlapping portion overlaps this edge portion;
the semiconductor memory device further comprising a channel region including:
an a-region on a substrate surface located on a lower side of said flat portion within a region prescribed between said diffusive regions for a source and a drain; and
two b-regions on the substrate surface arranged on both sides of the a-region and located on lower sides of said first and second side wall portions;
the channel region being formed to provide four states of electric current values with respect to each of the memory cells; and
the four states being composed of:

a first state in which there is no core implantation in each of said a-region and said two b-regions;
a second state in which there is core implantation only in said a-region;
a third state in which there is core implantation only in said two b-regions; and
a fourth state in which there is core implantation in all of said a-region and said two b-regions.

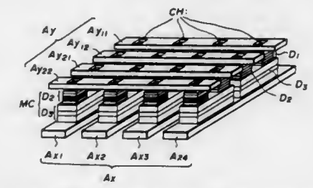
5,311,464
SEMICONDUCTOR MEMORY CELL FARMING A ROM CELL FROM A RAM CELL
Shinsuke Takase, and Yutaka Tanaka, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed May 30, 1991, Ser. No. 707,915
Claims priority, application Japan, Jun. 8, 1990, 2-148543
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—156 **11 Claims**



1. A semi-conductor memory cell having a plurality of memory cells, each comprising:
a word line;
a pair of bit line crossing the word line;
a first resistance having a first side connected to a high power source and a second side connected to a first connecting node;
a second resistance having a first side connected to a high power source and a second side connected to a second connecting node;
a first field effect transistor (FET) connected between the first connecting node and a low power source and having a gate is connected to a second connecting node;
a second FET connected between the second connecting node and the lower power source and having a gate connected to the first connecting node;
a third FET connecting between the first connecting node and one of the pair of bit lines and having a gate connected to the word line to control the operation of the third FET by changing a potential of the word line; and
a fourth FET connected between the second connecting node and the other of the pair of bit lines and having a gate connected to the word line to control the operation of the fourth FET by changing the potential of the word line,
wherein a resistance value of the first resistance is an infinite value, the first FET is a depletion type FET and the second FET is an enhancement type FET.

5,311,465
SEMICONDUCTOR MEMORY DEVICE THAT USES A NEGATIVE DIFFERENTIAL RESISTANCE
Toshihiko Mori, and Naoki Yokoyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 22, 1993, Ser. No. 20,839
Claims priority, application Japan, Feb. 21, 1992, 4-035311
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—179 **11 Claims**

1. A semiconductor memory device, comprising:
a first conductor strip extending in a first direction and acting as a bit line, said first conductor strip having an upper major surface;
a second conductor strip extending in a second direction different from said first direction and acting as a first word line, said second conductor strip having a lower major surface and provided above said first conductor strip with a separation therefrom;
a third conductor strip extending also in said second direction and located adjacent to said second conductor strip, said third conductor strip acting as a second word line, said third conductor strip having a lower major surface and provided above said first conductor strip with a separation therefrom; and
a transistor provided in correspondence to a first intersection which occurs where said first conductor strip and said second conductor strip cross with each other when viewed in a direction perpendicular to said upper major surface of said first conductor strip and further in correspondence to a second intersection which occurs where said first conductor strip and said third conductor strip cross with each other when viewed in a direction perpendicular to said upper major surface of said first conductor strip;
said transistor exhibiting a negative differential resistance an comprising:
a collector layer provided on said upper major surface of said first conductor strip and extending continuously along said first conductor strip from said first intersection to said second intersection, said collector layer comprising a doped semiconductor layer for collecting carriers and a collector barrier layer provided on said doped semiconductor layer for forming a potential barrier in said collector layer;

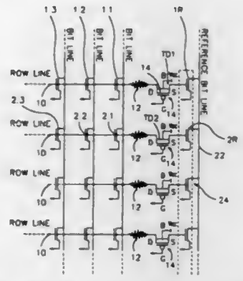


a base layer of a doped semiconductor material provided on an upper major surface of said collector layer and extending continuously form said first intersection to said second intersection, said base layer allowing a transit of carriers therethrough;
a first emitter layer provided on a portion of said base layer corresponding to said first intersection such that said first emitter layer has an upper major surface in contact with said lower major surface of said second conductor strip, said first emitter layer comprising a first resonant structure including a quantum well layer and a pair of tunneling barrier layers sandwiching the quantum well layer therebetween, for realizing a first negative differential resistance characteristic corresponding to said negative differential resistance and a doped semiconductor layer provided on said first resonant structure for injecting carriers into said base layer via said first resonant structure; and
a second emitter layer provided on a portion of said base layer corresponding to said second intersection such that said second emitter layer has an upper major surface in contact with said lower major surface of said third conductor strip, said second emitter layer comprising a second resonant structure including a quantum well layer and a pair of tunneling barrier layers sandwiching the quantum well layer therebetween, for realizing a second negative differential resistance characteristic corresponding to said negative differential resistance and a doped semiconductor material provided on said second resonant structure

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for injecting carriers into said base layer via said second resonant structure.

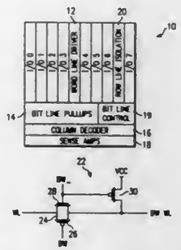
5,311,466
FLASH-EPROM WITH ENHANCED IMMUNITY FROM SOFT-PROGRAMMING OF REFERENCE CELLS
Virginia Natale, Milan; Gianluca Petrosino, Missaglia, and Flavio Scarra, Agrate Brianza, all of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Agrate Brianza, Italy
Filed Oct. 30, 1991, Ser. No. 783,690
Claims priority, application Italy, Oct. 31, 1990, 83644 A/90
Int. Cl.[5] G11C *11/34, 17/00*
U.S. Cl. 365—185 **18 Claims**



1. A FLASH-EPROM memory matrix composed of memory having families of selectable word lines and bit-lines, respectively, and comprising at least a column of individually selectable reference cells, characterized by comprising

at least a field effect transistor of a type of conductivity opposite to the type of conductivity of the memory cells of said memory, functionally connected between a control gate of each of said reference cells and a respective word line, said transistor being capable of limiting the voltage which is applied to the control gate of a reference cell during the programming of memory cells arranged in the same row of cells of said reference cell.

5,311,467
SELECTIVE BULK WRITE OPERATION
Mark A. Lysinger, Carrollton; William C. Slemmer; James Brady, both of Dallas, and David C. McClure, Carrollton, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Apr. 7, 1992, Ser. No. 864,481
Int. Cl.[5] G11B *7/00*
U.S. Cl. 365—189.01 **15 Claims**



13. A memory in an integrated circuit, comprising:

a plurality of memory cells in a memory array arranged in rows and columns, each of the memory cells capable of storing a logic state therein;

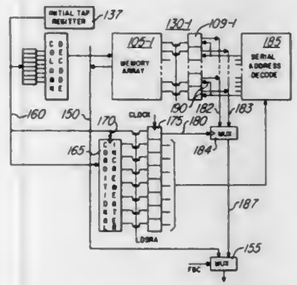
a plurality of pairs of bit lines, each associated with one of the columns;

a column decoder for selecting a plurality of columns in the array responsive to a column address;

means for isolating a selected group of memory cells in each row and the remainder of the row in response to a bulk write signal; and

means for receiving the bulk write signal in each column of the selected memory cells and writing a first logic state into the selected memory cells in response to the bulk write signal, such means including a first pull-up transistor connected to a first bit line of its associated bit line pair and a second pull-up transistor connected to a second bit line of its associated bit line pair, and means, connected to a bit line of the bit line pair, for driving the bit line to a selected value in response to the bulk write signal.

5,311,468
RANDOM ACCESS MEMORY WITH A SERIAL REGISTER ARRANGED FOR QUICK ACCESS OF A SECOND BIT FROM AN ARBITRARY ADDRESS
Daniel F. Anderson, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 21, 1991, Ser. No. 672,806
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.02 **9 Claims**



1. A random access memory comprising:

at least one memory array including a plurality of storage cells arrange din addressable rows and columns;

a row address decoder;

a column address decoder;

a serial register including a plurality of stages having taps;

a serial register address decoder for enabling readout of data bits from sequentially addressed taps of the serial register stages;

a serial address counter for generating and applying a sequence of tap addresses to the serial register address decoder;

an initial bit data line connecting to the memory array;

an odd bit data lead connecting with taps of odd address stages of the serial register;

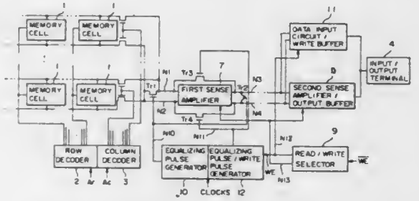
an even bit data lead connecting with taps of even address stages of the serial register;

an odd/even multiplexer responsive to data bits carried from the taps of the serial register on the odd and even bit data leads for producing a sequence of other data bits from the serial register on a serial data line;

a first bit multiplexer having a first input connecting with the initial bit data line of the memory array for reading out a first data bit from a storage cell of an initially addressed column of the memory array and having a second input connecting with the serial data line for reading out the sequence of other data bits from addressed taps of the serial register; and

an increment circuit for either passing the initial tap address to the serial address decoder for accessing a second data bit of the sequence by way of the serial data line from the serial register to the first bit multiplexer or passing an incremented initial tap address to the serial address decoder for accessing the second data bit of the sequence by way of the serial data line from the serial register to the first bit multiplexer.

5,311,469
SEMICONDUCTOR MEMORY DEVICE
Satoru Hoshi, Kawasaki; Masami Masuda, Yokohama, and Kazuhiko Takahashi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 4, 1992, Ser. No. 845,654
Claims priority, application Japan, Mar. 4, 1991, 3-37577
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **13 Claims**



1. A semiconductor memory device comprising:

a memory cell array having at least one cell array unit, said cell array unit including a plurality of memory cells;

selection means for selecting at least one of said memory cells in accordance with an externally supplied address;

an input/output terminal for outputting data read form said selected memory cell and for receiving data supplied externally and sending said data to said selected memory cell;

at least one data line for connecting said input/output terminal to each said cell array unit;

sense amplifiers serially connected to each said data line in a multiple stage configuration for amplifying said read data;

a write buffer connected in parallel with one of said sense amplifiers connected to each said data line;

by-pass switching means connected between input and output terminals of the other sense amplifiers connected to each said data line;

a control circuit for applying an on-signal to at least one said by-pass switching means when writing data, said ion-signal turning on said by-pass switching means; and

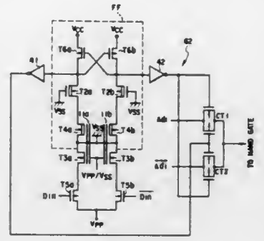
a read/write selector, said control circuit receiving a write mode signal outputted from said read/write selector and outputting said on-signal.

5,311,470
DATA LATCH CIRCUIT HAVING NON-VOLATILE MEMORY CELL
Shigeru Atsumi, Tokyo, and Hironori Banba, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 24, 1992, Ser. No. 917,957
Claims priority, application Japan, Jul. 25, 1991, 3-186443
Int. Cl.[5] G11C *11/40, 17/10*
U.S. Cl. 365—189.05 **6 Claims**

1. A data latch circuit comprising:

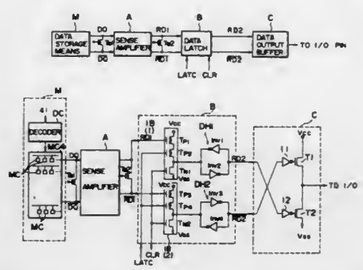
a first non-volatile memory cell having a first writing transistor and a first reading transistor, and disposed to store data, the first writing transistor and reading transistor having at least one first control gate and a first common floating gate, the first reading transistor having a threshold voltage lower than the first writing transistor, the control gate of the first reading transistor being disposed to be supplied, during normal operation, with a constant voltage independent from a power supply voltage;

a second non-volatile memory cell having a second writing transistor and a second reading transistor, and disposed to store complementary data with respect to data to be stored in the first non-volatile memory cell, the second writing and reading transistors having at least one second control gate and a second common floating gate, the second reading transistor having a threshold voltage lower than the second writing transistor, the control gate of the second reading transistor being disposed to be supplied, during normal operation, with the constant voltage; and



latch means for latching potentials corresponding to the on- and off-states of the first non-volatile memory cell and second non-volatile memory cell.

5,311,471
SEMICONDUCTOR MEMORY DEVICE
Naoki Matsumoto, Tokyo; Yuji Wtanabe, Kawasaki, and Shigeo Ohshima, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 865,740, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 618,491, Nov. 27, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,543
Claims priority, application Japan, Nov. 27, 1989, 1-307228
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **9 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells for storing data, each cell being individually addressable for the output of data to a first pair of complementary data lines;

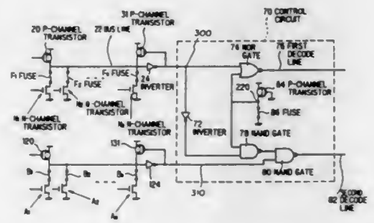
first equalizing means for equalizing said first pair of complementary data lines by short-circuiting said first pair;

sense amplifying means for receiving data over said first pair of complementary data lines, amplifying said received

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data and outputting said amplified data to a second pair of complementary data lines;
second equalizing means for equalizing said second pair of complementary data lines by short-circuiting said second pair;
data latching means for latching said amplified data and outputting said amplified and latched data to a third pair of complementary data lines;
data output buffer means for receiving said data via said third pair of complementary data lines; and
switching means for controlling the outputs of said latching means to said third pair of complementary data lines, wherein,
data transfer to the data output buffer and equalization of the first and second pairs of complementary data lines occur simultaneously.

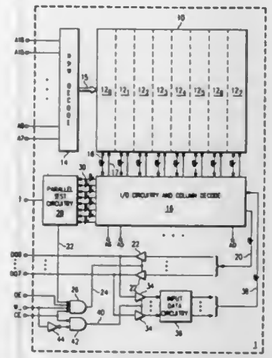
5,311,472
REDUNDANT DECODER CIRCUIT
Ken Ota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 13, 1991, Ser. No. 759,289
Claims priority, application Japan, Sep. 13, 1990, 2-243086
Int. Cl.[5] G11C *17/16*
U.S. Cl. 365—200 **5 Claims**



1. A redundant decoder circuit comprising:
means for storing an address to designate a memory cell of a main memory which is disabled;
means for generating a first decode signal, when an address signal coincides with said address stored in said storing means;
a memory cell of a redundant memory for storing information, when said first decode signal is generated; and
means for restoring said generating means to generate a second decode signal which is an inverted signal of said first decode signal, said restoring means being activated at a time when said memory cell of said redundant memory is disabled.

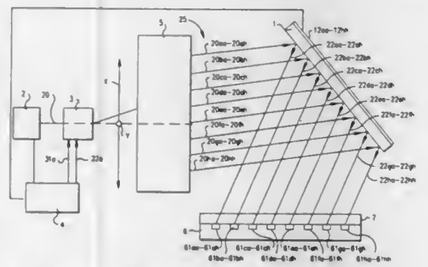
5,311,473
SEMICONDUCTOR MEMORY WITH IMPROVED TEST MODE
David C. McClure, Carrollton, and Thomas A. Coker, Irving, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Division of Ser. No. 552,567, Jul. 13, 1990, Pat. No. 5,265,100.
This application Jun. 2, 1993, Ser. No. 71,448
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—201 **23 Claims**

1. An integrated circuit, comprising:
an array of memory cells arranged in rows and columns;
a row decoder for selecting a row of memory cells responsive to a row address;
a plurality of local data buses;
a column decoder for selecting, in a test mode, a plurality of memory cells in said selected row for communication with said plurality of local data buses;
an output terminal;
an output buffer having a data input, an enable input, and having its output connected to said output terminal, wherein said output buffer presents a high impedance state at said output terminal responsive to receiving a disable signal at its enable input;
a data bus, coupled to one of said plurality of local data buses, for communicating its data state to the data input of said output buffer;



a comparator circuit, having inputs connected to said plurality of local data buses, for comparing the data states on said local data buses to one another, said comparator circuit having an output connected to said enable input of said output buffer and providing said disable signal to said output buffer responsive to the comparison indicating that the data states on said local data buses do not match one another;
wherein said comparator circuit is connected to said local data buses in parallel with said data bus.

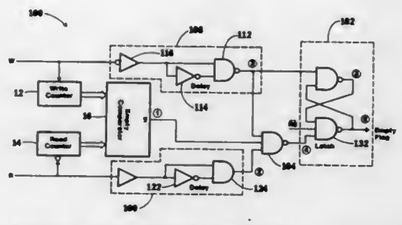
5,311,474
RANDOM ACCESS OPTICAL STORAGE
Norbert Urban, Gäufelden-Nebringen, Fed. Rep. of Germany, assignor to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 15, 1991, Ser. No. 776,147
Claims priority, application European Pat. Off., Oct. 20, 1990, 90120141.8
Int. Cl.[5] G11C *13/04*
U.S. Cl. 365—215 **22 Claims**



17. An optical data storage system comprising:
a radiation generation means for providing a first radiation beam;

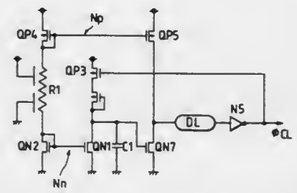
an optical data storage medium having a plurality of storage fields;
a beam multiplexer means located between the radiation generation means and the optical data storage medium for dividing the first radiation beam into a plurality of parallel first and second multiplexed radiation beams which are oriented along a first direction and a second direction, respectively, the beam multiplexer means comprising a plurality of beam multiplexer birefringent crystals arranged in series such that from a first end of the series to a second end of the series a first one of the beam multiplexer birefringent crystals at the first end has a thickness of d, and in a direction toward the second end of the series, each succeeding one of the plurality of beam multiplexer birefringent crystals has a thickness of about one-half of the thickness of the preceding beam multiplexer birefringent crystal, each beam multiplexer birefringent crystal dividing an incoming beam into two outgoing beams, the beam multiplexer means further comprising a plurality of reflecting elements, the plurality of birefringent crystals receiving the first radiation beam and producing a plurality of first multiplexed beams in a first beam plane, the plurality of reflecting elements receiving the first multiplexed beams and rotating the first beam plane substantially 90° and transmitting the first multiplexed beams through the birefringent crystals such that the plurality of first and second multiplexed beams are produced;
a beam direction means located between the radiation generation means and the optical data storage medium for causing the plurality of second multiplexed beams to be directed each to a respective one of the plurality of storage fields;
a plurality of optical detectors for receiving a plurality of reflected radiation beams from the medium and generating a data signal responsive thereto;
a magnetic field means located proximate the optical data storage medium; and
a polarization filter located between the medium and the optical detectors.

5,311,475
HIGH SPEED FULL AND EMPTY FLAG GENERATORS FOR FIRST-IN FIRST-OUT MEMORY
Samson X. Huang, Sunnyvale, Calif., assignor to Quality Semiconductor Inc., Santa Clara, Calif.
Filed Apr. 26, 1991, Ser. No. 692,012
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—221 **13 Claims**



1. An empty flag generator for a first-in first-out memory for generating a flag signal to indicate whether the memory is empty in response to a read signal and a write signal, said generator comprising:
read counter means responsive to the read signal for generating an output to indicate the number of times data has been read from the memory;
write counter means responsive to the write signal for generating an output to indicate the number of times data has been written into the memory;
comparator means for comparing the outputs of the read and write counter means to provide an output indicating the comparison;
reset signal generating means responsive to the write signal for generating a first set signal; and
an R-S latch having a first input, a second input, and an output, wherein said first input receives the reset signal, said second input receives the first set signal, and said output provides the flag signal.

5,311,476
SEMICONDUCTOR MEMORY, COMPONENTS AND LAYOUT ARRANGEMENTS THEREOF, AND METHOD OF TESTING THE MEMORY
Takeshi Kajimoto; Yutaka Shimbo; Katsuyuki Sato; Masahiro Ogata; Kanehide Kenmizaki; Shouji Kubono; Nobuo Kato, all of Tokyo; Kiichi Manita, Kawagoe, and Michitaro Kanamitsu, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan
Division of Ser. No. 496,531, Mar. 20, 1990, Pat. No. 5,161,120.
This application Jun. 18, 1992, Ser. No. 943,341
Claims priority, application Japan, Mar. 20, 1990, 1-65842
Int. Cl.[5] G11C *11/403*
U.S. Cl. 365—222 **42 Claims**



1. An oscillation circuit comprising: a first MOSFET the charging or discharging current of which determines the frequency of oscillation; a second MOSFET coupled in a current-mirror relation with said first MOSFET; resistor means, coupled in series with said second MOSFET between respective connections supplied with first and second supply voltages, substantially for setting the valve of the charging current or the discharging current; a first logic inverter having an input coupled to an output of said first MOSFET thereby effecting a charging/discharging node; and a series arrangement of a delay circuit and a second logic inverter coupled between an output of said first logic inverter and an output node of said oscillation circuit and being included in a feedback circuit for effecting control of said charging or discharging current,
wherein said resistor means includes a polycrystalline silicon layer formed on an insulating layer over a main surface of a semiconductor substrate of a first conductivity type, and
wherein said polycrystalline silicon layer is extended over respective first and second main surface well regions of said semiconductor substrate, said first and second wall regions being of a second conductivity type, opposite that of said first conductivity type, and said first and second well regions being biased by said first and second supply voltages, respectively.

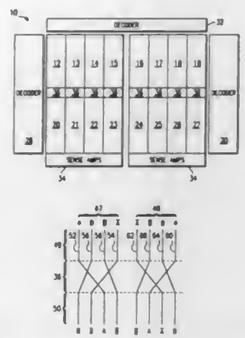
5,311,477
INTEGRATED CIRCUIT MEMORY DEVICE HAVING FLASH CLEAR
Bahador Rastegar, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Jul. 17, 1991, Ser. No. 731,803
Int. Cl.[5] G11C *8/00, 7/02, 5/06*
U.S. Cl. 365—230.05 **18 Claims**

1. A dual port memory device, comprising:

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an array of memory cells, said array divided into a first part and a second part along a line in a first direction;

a plurality of bit lines traversing the array in a second direction perpendicular to the first direction, said bit lines being grouped into a first group corresponding to a first port and a second group corresponding to a second port, with each cell of the array being accessible by bit lines from both the first and second groups, and wherein bit lines in the first group cross over bit lines in the second group in a crossover region between the first and second memory parts;



a first plurality of power supply lines traversing said array in the second direction; and

a second plurality of power supply lines for which the voltage can be changed, said second plurality crossing over selected of said first plurality of power supply lines in the crossover region to lie adjacent a selected side of a column of cells in the second direction, wherein such column of cells can be simultaneously set to a known value by changing the voltage on said second plurality of power supply lines.

5,311,478

INTEGRATED CIRCUIT MEMORY WITH ASYMMETRIC ROW ACCESS TOPOLOGY

Paul S. Zagar, and Loren L. McLaury, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 18, 1992, Ser. No. 931,590
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.06 **24 Claims**

9. An integrated circuit memory comprising:

an array of memory cells arranged in a plurality of rows and at least one column;

a first column line pair connecting memory cells in a column, said first column line pair divided into a first pair of column line halves and a second pair of column line halves; a second column line pair connecting memory cells in a column, said second column line pair divided into a third pair of column line halves and a fourth pair of column line halves;

input/output means for connecting said first and second column lines pairs to a circuit external of said memory array, said input/output means connected to said second pair of column line halves and to said third pair of column line halves;

a plurality of row lines, each row line connecting memory cells in a row;

row access means for providing a row access signal defining a first row access cycle and a second row access cycle;

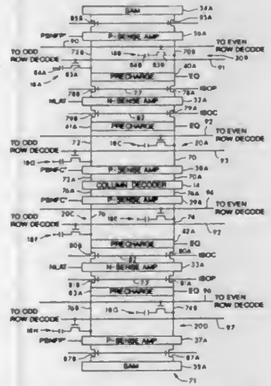
timing signal generator means responsive to said row access signal for providing one or more isolation timing signals, wherein said isolation timing signals are derived from said row access signal;

row decoder means responsive to said row access signal for addressing a row connected to a memory cell connected to said first pair of column line halves during said first row access cycle, for addressing a row connected to a memory cell connected to said second pair of column line halves during said second row access cycle, for addressing a row connected to a memory cell connected to said third pair of column line halves during said first row access cycle, and for addressing a row connected to a memory cell connected to said fourth pair of column line halves during said second row access cycle;

a first N-sense amplifier connected to said first column line pair;

a second N-sense amplifier connected to said second column line;

first isolating means responsive to said one of said isolation timing signals for isolating said first N-sense amplifier from said first pair of column line halves during at least a portion of said second row access cycle, said first N-sense amplifier connected to said first pair of column line halves through said first isolating means;



second isolating means responsive to one of said isolation timing signals for isolating said first N-sense amplifier from said second pair of column line halves during at least a portion of said first row access cycle, said first N-sense amplifier connected to said second pair of column line halves through said second isolating means;

third isolating means responsive one of said isolation timing signals for isolating said second N-sense amplifier from said third pair of column line halves during at least a portion of said second row access cycle, said second N-sense amplifier connected to said third pair of column line halves through said third isolating means; and

fourth isolating means responsive to one of said isolation timing signals for isolating said second N-sense amplifier from said fourth pair of column line halves during at least a portion of said first row access cycle said second N-sense amplifier connected to said fourth pair of column line halves through said fourth isolating means.

5,311,479

SEMICONDUCTOR MEMORY DEVICE HAVING A CMOS DECODING CIRCUIT

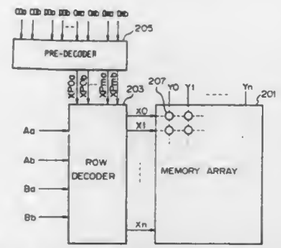
Teruhiro Harada, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 931,975
Claims priority, application Japan, Aug. 20, 1991, 3-208040
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—230.06 **14 Claims**

1. A semiconductor memory device receiving a first and a second pair of input signals, each of said pairs of input signals including a first address signal having a predetermined phase and a second address signal, the first and second address signals of each of said first and second pairs of input signals being complementary and substantially in phase with each other, the semiconductor memory comprising:

a pre-decoder for receiving the first and second pairs of input signals and outputting first and second pre-decode signals, said pre-decoder comprising:

a NAND gate having input terminals for receiving the first address signal of the first pair of input signals and the first address signal of the second pair of input signals, said NAND gate including a first pre-decode output terminal for outputting the first pre-decode signal; and



a NOR gate, electrically isolated from said NAND gate, having input terminals for receiving the second address signal of the first pair of input signals and the second address signal of the second pair of input signals, said NOR gate including a second pre-decode output terminal for outputting the second pre-decode signal, the first and second pre-decode signals being complementary and substantially in phase with each other;

a memory array having a plurality of bit lines, a plurality of word lines and a plurality of memory cells; and

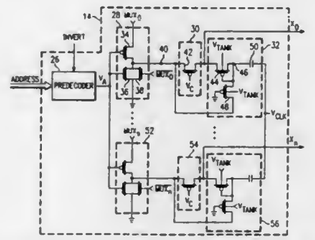
a row decoder, coupled to the pre-decoder and the plurality of word lines of said memory array, for selecting one of the word lines in response to the first and second pre-decode signals.

5,311,480

METHOD AND APPARATUS FOR EEPROM NEGATIVE VOLTAGE WORDLINE DECODING

John F. Schreck, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1992, Ser. No. 991,231
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **2 Claims**



2. A method of decoding wordlines in a flash electrically erasable, programmable read only memory having a plurality of memory cells, comprising the steps of:

generating negative voltages in a plurality of negative charge pumps, each of the negative charge pumps coupled to a different group of wordlines;

generating predecoding signals in a predecoder;

generating non-negative voltages in a plurality of driver circuits in response to the predecoding signals, each of the driver circuits coupled to a different wordline;

coupling to each group of wordlines the negative voltage from the respective negative charge pump in response to the predecoding signals; and

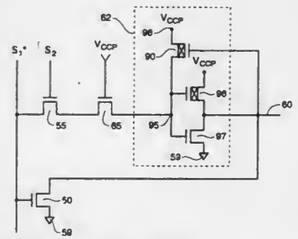
coupling to each wordline the non-negative voltages from the respective driver circuit in response to the predecoding signals.

5,311,481

WORDLINE DRIVER CIRCUIT HAVING A DIRECTLY GATED PULL-DOWN DEVICE

Stephen L. Casper; Adrian Ong, and Paul S. Zagar, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 17, 1992, Ser. No. 993,934
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **2 Claims**



1. A memory device, comprising:

a) an output node;

b) decode circuitry for determining a logic state of said output node, said decode circuitry generating a primary and a secondary predecode signal;

c) a driving circuit for driving the output node to an inactive logic state when actuated, said driving circuit directly actuated by a corresponding primary predecode signal;

d) a latching circuit for monitoring the logic state of the output node and latching the output node to said inactive logic state;

e) an inverter circuit for inverting said primary predecode signal to said output node; and

f) a pass device for transmitting said primary predecode signal to said inverter when actuated by said secondary predecode signal, such that when said driving circuit is deactuated by said primary predecode signal and said pass device is actuated by said secondary predecode signal said wordline is driven to an active logic state.

VOL 1162 ISS 2 MY 10 1994 UMI

5,311,482

SEMICONDUCTOR INTEGRATED CIRCUIT

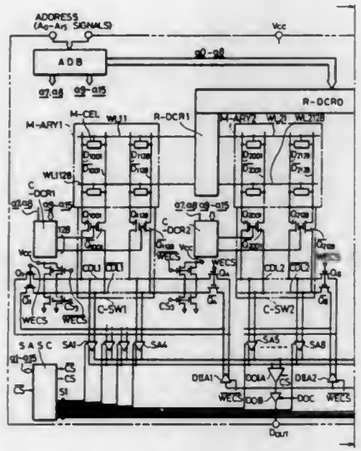
Katsumi Ogiue; Yukio Suzuki, both of Hinode; Ikuro Masuda, Hitachi; Masanori Odaka, Kodaira, and Hideaki Uchida, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 739,424, Aug. 2, 1991, abandoned, which is a continuation of Ser. No. 520,620, May 8, 1990, Pat. No. 5,042,010, which is a continuation of Ser. No. 358,262, May 30, 1989, Pat. No. 4,924,439, which is a continuation of Ser. No. 121,914, Nov. 17, 1987, Pat. No. 4,858,189, which is a continuation of Ser. No. 701,226, Feb. 13, 1985, Pat. No. 4,713,796. This application Jul. 16, 1993, Ser. No. 93,511

Claims priority, application Japan, Feb. 13, 1984, 59-22811

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.06 **30 Claims**



1. A semiconductor integrated circuit device, on a single semiconductor chip, comprising:

a memory array including a plurality of memory cells comprised of MISFETs; and

a decoder circuit coupled to receive address signals and for decoding the address signals to select at least one memory cell in the memory array, the decoder circuit including:

a first decoder circuit serving as a predecoder and coupled to receive the address signals at inputs thereof, and including means for providing decoded signals at outputs thereof, the first decoder circuit being provided on the semiconductor chip so as to be separated from the memory array by a predetermined spacing, the first decoder circuit including an output stage for providing the decoded signals, and

a second decoder circuit coupled by signal lines to the output stage of the first decoder circuit to receive the decoded signals at inputs thereof, and including means for providing output signals to the memory array, the second decoder circuit being provided on the semiconductor chip so as to be closer to the memory array than said first decoder circuit is,

wherein said output stage of said first decoder circuit is comprised of bipolar output transistors to permit rapid charging and discharging of stray capacitance at the output of said first decoder caused by said signal lines between the output stage of the first decoder circuit and the inputs of the second decoder circuit, so that said decoder circuit can operate at high speed.

5,311,483

SYNCHRONOUS TYPE SEMICONDUCTOR MEMORY

Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

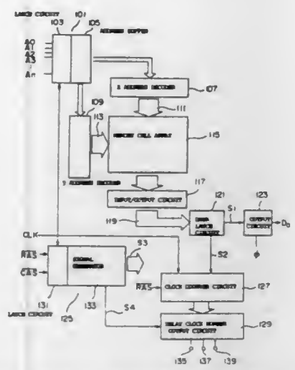
PCT No. PCT/JP91/01584, § 371 Date Apr. 12, 1993, § 102(e) Date Apr. 12, 1993, PCT Pub. No. WO92/09083, PCT Pub. Date May 29, 1992

PCT Filed Nov. 19, 1991, Ser. No. 890,592

Claims priority, application Japan, Nov. 20, 1990, 2-316522

Int. Cl.[5] G11C *11/402, 29/00*

U.S. Cl. 365—233 **11 Claims**



1. A synchronous type semiconductor memory comprising:

a memory cell array having a plurality of memory cells arranged in matrix;

a selecting circuit coupled to the memory cell array for selecting a predetermined memory cell among the memory cells of said memory cell array;

a transfer circuit coupled to said memory cell array for transferring data stored in the selected memory cell;

a data latch circuit coupled to said transfer circuit for receiving data from said transfer circuit and latching the received data therein, said data latch circuit generating a data transfer completion signal;

an output circuit coupled to the data latch circuit for receiving the latched data in said data latch circuit and outputting the received data in response to a control signal;

a clock counter circuit coupled to said data letch circuit for receiving a clock signal, and data transfer completion signal, and an address strobe signal and counting number of clock pulses of the clock signal between the reception of the address strobe signal and the reception of the data transfer completion signal; and

a delay clock number output circuit coupled to said clock counter circuit for generating a signal representing the number of pulses counted by said clock counter circuit.

5,311,484

METHOD AND APPARATUS FOR PETROLEUM AND GAS EXPLORATION

Roger N. Anderson, New York, N.Y., and Wei He, Closter, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 26, 1991, Ser. No. 736,682

Int. Cl.[5] G01V *1/00, 1/28*

U.S. Cl. 367—38 **23 Claims**

MICROFICHE APPENDIX INCLUDED

(38 Microfiche, 1 Pages)

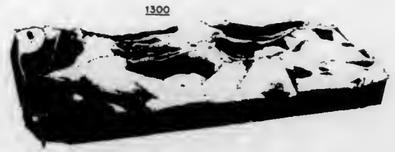
1. A method for determining the top-of-geopressure surface in a region of geological survey comprising the steps of:

obtaining reflection seismic traces for the region of geological survey;

performing complex trace analysis on the seismic traces to derive first reflection strength traces corresponding to the seismic traces;

performing waveform smoothing on the first reflection strength traces to derive smoothed first reflection strength traces corresponding to the seismic traces;

performing complex trace analysis on the smoothed first reflection strength traces to derive second reflection strength traces corresponding to the seismic traces;



analyzing the second reflection strength traces, including locating an uppermost distinct subsurface boundary between high and low amplitude components of the second reflection strength traces; and

identifying the uppermost distinct subsurface boundary between high and low amplitude components of the second reflection strength traces as being the top-of-geopressure surface for the region of geological survey.

5,311,485

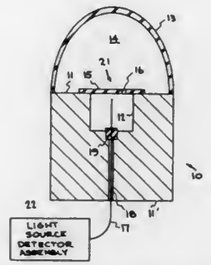
FIBER OPTIC HYDROPHONE

Paul J. Kuzmenko, and Donald T. Davis, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 30, 1992, Ser. No. 968,950

Int. Cl.[5] H04R *23/00*

U.S. Cl. 367—149 **22 Claims**



1. A Fabry-Perot fiber optic hydrophone, comprising:

a housing having a protruding end section;

a flexible membrane secured across said protruding end section and defining a cavity;

an optical fiber extending into said housing and having one end located in said cavity and in spaced relation to said flexible membrane to define an interferometer;

means for directing light through said optical fiber into said cavity and receiving a reflected light signal from said cavity;

whereby inward movement of said flexible membrane caused by an external force produces a change in reflectivity in said interferometer and the reflected light signal is amplitude modulated by the incident force on the flexible membrane.

5,311,486

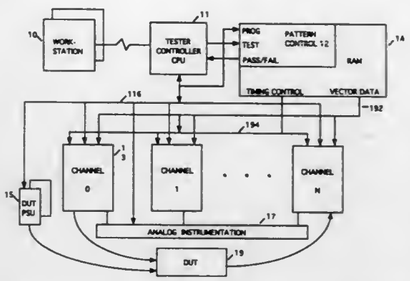
TIMING GENERATION IN AN AUTOMATIC ELECTRICAL TEST SYSTEM

Timothy Alton, San Jose, and R. Warren Necoechea, Fremont, both of Calif., assignors to LTX Corporation, Westwood, Mass.

Filed Sep. 11, 1992, Ser. No. 943,881

Int. Cl.[5] G04B *47/00;* **G04F** *8/00;* **G01R** *31/28*

U.S. Cl. 368—10 **27 Claims**



1. A method for generating timing markers in an automatic electrical test system, comprising the steps of:

receiving a first set of timing parameters corresponding to a first external period start, the first set of timing parameters comprising a first T1 value, a first T2 value, and a first period-minus-T1 value;

generating a first internal period start, the first internal period start offset from the first external period start by the first T1 value;

generating a first T1 marker and a first T2 marker, the first T1 marker offset from the first external period start by the first T1 value, the first T2 marker offset from the first internal period start by the first T2 value.

5,311,487

ELECTROMECHANICAL WRISTWATCH WITH READING BY TOUCH

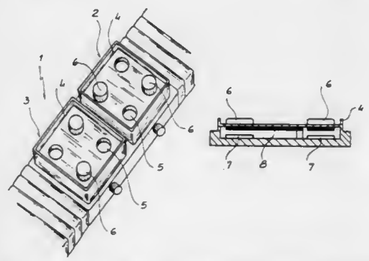
Gianni Mininni, 4, Via P. Paoli, Milan, Italy 20143 , and Eugenio Micbelotti, 49, Corso Garibaldi, Milan, Italy 20121

Filed Jul. 8, 1992, Ser. No. 910,697

Claims priority, application Italy, Jul. 9, 1991, MI91A001894

Int. Cl.[5] G04B *25/02;* **G04G** *9/08*

U.S. Cl. 368—230 **15 Claims**

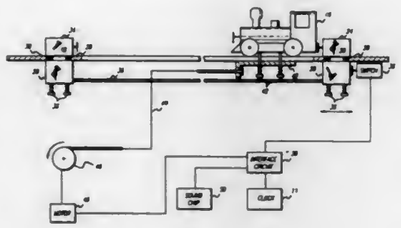


1. A touch sensitive time indicator comprising a housing having at least two sections; at least four indicators in each section operable between an extended position in which said indicator extends outwardly of said housing and a retracted position in which said indicator is positioned within the housing; a plurality of openings in said housing in one-in-one correspondence with said indicators to permit each said indicator to

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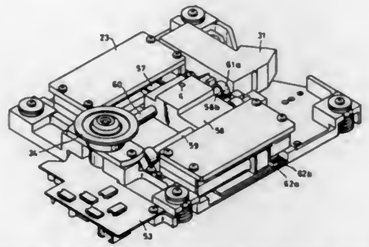
move between said extended and retracted positions; biasing means within said housing for biasing each of said indicators to the extended position; and electromagnetic means associated with each of said indicators for moving selected ones of said indicators to the retracted position in timed sequence.

5,311,488
ACTION ALARM CLOCK
Herbert B. Trantham, Discovery Bay, Hong Kong, assignor to With Design In Mind, Chatsworth, Calif.
Filed Dec. 21, 1992, Ser. No. 994,283
Int. Cl.[5] G04B *47/00*
U.S. Cl. 368—250 **8 Claims**



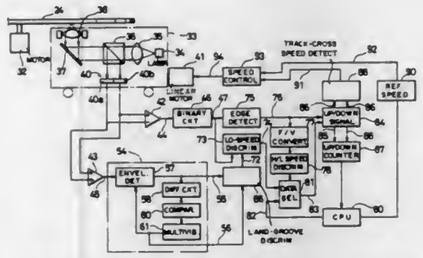
1. An action alarm clock, comprising:
a clock having means to display time;
a clock set to activate at a set alarm time;
means defining an elongated and linear track;
a vehicle adapted to begin movement from a start point toward a set termination point along said track when the set alarm time is reached; and
means for generating an audible sound associated with the moving vehicle as the vehicle moves along the track, and for terminating the audible sound when the vehicle reaches the set termination point wherein said clock further includes an audible clock alarm, and means for activating said clock alarm when said audible sound associated with the moving vehicle is terminated.

5,311,489
OPTICAL HEAD FOR RECORDING, REPRODUCING, OR ERASING INFORMATION HAVING FIXED AND MOVABLE HEAD UNITS
Yasuo Suzuki, Tokyo, and Nobuaki Date, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 596,326, Oct. 12, 1990, abandoned.
This application Jan. 26, 1993, Ser. No. 9,351
Claims priority, application Japan, Oct. 13, 1989, 1-265115; Oct. 13, 1989, 1-265116; Dec. 13, 1989, 1-324349
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.14 **9 Claims**



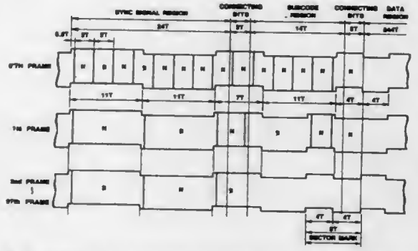
9. An optical information recording/reproducing device for performing at least each of recording, and reproducing information by projecting a light beam onto a disk-like recording medium comprising:
a fixed head unit having at least a light source for generating the light beam and a sensor for receiving light reflected from the disk-like recording medium which was generated by said light source and projected onto the disk-like recording medium; and
a movable head unit movable in the radial direction of the disk-like recording medium toward said fixed head unit and having at least an objective lens for condensing the light beam received from said fixed head unit and generated by said light source and for projecting the light beam onto the disk-like recording medium,
wherein a portion of said fixed head unit and a portion of said movable head unit are adapted to engage each other so as to surround an optical path between said fixed head unit and said movable head unit when said movable head unit is in a predetermined position but do not engage each other when said movable head unit is not in said predetermined position.

5,311,490
ACCESS CONTROLLING DEVICE FOR USE IN AN OPTICAL DISK DRIVE
Hirotsugu Matoba, Sakurai; Masaru Nomura, Tenri; Takeshi Yamaguchi, Osakasayama; Kunio Kojima, Nara, and Shigeo Terashima, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 18, 1991, Ser. No. 809,772
Claims priority, application Japan, Dec. 19, 1990, 2-403788
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 **8 Claims**



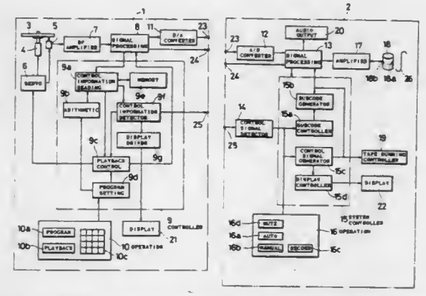
1. An optical disk drive, using an optical disk comprising:
grooves arranged concentrically or spirally;
a pit section whereon information is predeterminedly recorded by uneven pits having a specified depth; and
a level section whereon grooves and pits do not exist, which is level and interrupts sections of the grooves,
the optical disk drive comprising:
rotatively driving means for rotatively driving the optical disk;
an optical head for converging a light beam as a light spot on the optical disk, the optical disk being driven by the rotatively driving means, and for receiving light reflected from the optical disk and converting it into an electric signal;
optical head moving means for moving the optical head along radial directions of the optical disk;
an envelope detecting circuit for detecting an envelope signal, the envelope signal being an envelope of the electric signal, by a time constant circuit which is set to eliminate high-frequency components that appear in the electric signal when the light spot passes the pit section;
level section detecting means for releasing a level section detecting pulse, the level section detecting pulse showing that the light spot is passing the level section, by detecting a pulse that appears in the envelope signal when the light spot passes the level section, the pulse showing that the light spot is passing the level section;
time constant switching means for shortening the time constant for the duration of release of the level section detecting pulse;
a comparator for binarizing the envelope signal and for releasing a binary envelope signal; and
a discrimination circuit for releasing a discrimination signal, the discrimination signal determining whether the light spot is incident on one of the grooves or on an area located between the grooves by using the level section detecting pulse to eliminate a pulse which appears in the binary envelope signal when the light spot passes the level section.

5,311,491
METHOD OF DATA RECORDING FOR OPTICAL DISC HAVING BURST MODULATED TRACK
Tamotsu Yamagami, Kanagawa, and Yoichiro Sako, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 20, 1990, Ser. No. 585,177
Claims priority, application Japan, Sep. 22, 1989, 1-247833; Jan. 30, 1990, 2-020087
Int. Cl.[5] G11B *5/09*
U.S. Cl. 369—47 **8 Claims**



1. A method of recording information comprising the steps of:
pre-forming on an optical recording medium a recording track which is elongate in a length direction and has offsets at intervals in a width direction perpendicular to the length direction;
providing a data clock signal at a predetermined bit rate;
recording a first information signal along the length direction of the recording track, there being successive bit portions of the first information signal corresponding to an integral number of bits of the data clock signal and points of transition between said successive bit portions of the first information signal;
wherein the offsets of the recording track constitute points of transition of a second information signal, the second information signal being recorded on the optical recording medium along said length direction at the time of performing said pre-forming step;
and further comprising the step of arranging the points of transition of the first information signal during recording so that said points of transition of the first information signal are respectively spaced apart from the points of transition of the second information signal by a unit smaller than a bit of the data clock signal.

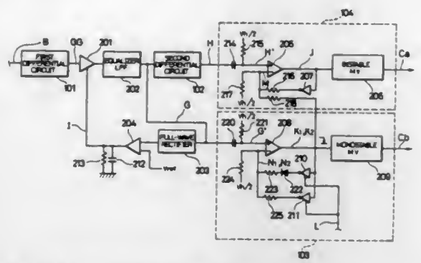
5,311,492
RECORDING/REPRODUCING APPARATUS FOR RECORDING STARTING IDENTIFICATION INFORMATION PRIOR TO A RECORDING START POSITION
Yoichi Tabuchi; Yoshiaki Shinke; Sakae Tachikawa, and Hitoshi Moori, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 21, 1992, Ser. No. 871,764
Claims priority, application Japan, Apr. 30, 1991, 3-098613
Int. Cl.[5] G11B *15/20*
U.S. Cl. 369—47 **10 Claims**



1. A reproducing system for reproducing information from a first recording medium and providing the reproduced information to a recording apparatus for storage on a second recording medium, the first recording medium storing in a first sequence recorded blocks of main program information, each block being preceded by sub-code control information that includes address information designating a block start position, comprising:
means for inputting a second sequence for selectively playing back recorded blocks of main program information from the first recording medium different from the first sequence for recording onto the second recording medium;
means for calculating a playback position corresponding to a selected block of main program information based on the second sequence and the start position of the selected block;
means for determining a destination position a predetermined distance before the playback position;
means for determining a start identification position between the playback position and the destination position;
means for moving a playback device to the destination position on the first recording medium and commencing reproduction of the selected block of main program information;
means for detecting when the playback device reaches the start identification position on the first recording medium and recording a start identification signal corresponding to the selected block on the second recording medium before recording any main program information of the selected block;
means for detecting when the playback device reaches the playback position on the first recording medium and recording the selected block of main program information onto the second recording medium.

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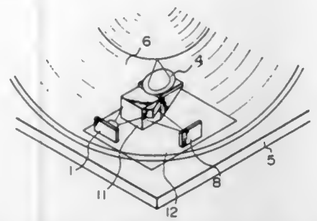
5,311,493
DATA REPRODUCTION CIRCUIT FOR CONVERTING A READ ANALOG SIGNAL
Hiroshi Fuji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 3, 1991, Ser. No. 680,232
Claims priority, application Japan, Apr. 6, 1990, 2-92577
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—59 **14 Claims**



2. A data reproduction circuit comprising:
a first differential circuit for emitting a first order differentiated signal derived from a read analog signal read from a data recording medium;
a second differential circuit for emitting a second order differentiated signal derived from said first order differentiated signal;
an edge detecting circuit for releasing a first comparative voltage, and comparing said second order differentiated signal and said first comparative voltage to release first digital data so that said first digital data can be used in an NRZ method; and
a peak detecting circuit for releasing a second comparative voltage, and comparing said first order differentiated signal and said second digital data,
wherein said peak detecting circuit comprises:
a second comparator for comparing said first order differentiated signal and said second comparative voltage to release a second digital output signal; and
two three-state inverters wherein an output signal released from said second comparator is fed to and that respectively release said second comparative voltage,
wherein only one of said three-state inverters is opened in response to control signal respectively fed into each of said three-state inverters.

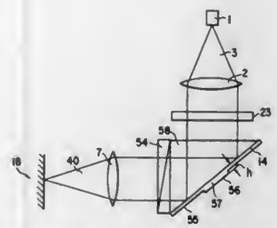
5,311,494
OPTICAL DISK APPARATUS AND OPTICAL HEAD
Tatsuya Sugita; Yoshio Sato, both of Hitachi; Nobuyoshi Tsuboi, Ibaraki; Hiroyuki Minemura, and Hisashi Andoh, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 5, 1991, Ser. No. 788,242
Claims priority, application Japan, Nov. 5, 1990, 2-297315
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—100 **11 Claims**

1. An optical disk apparatus, comprising:
an optical head for converging diffused light emitted from a light source onto an optical disk to thereby perform at least data writing, said optical head including a finite conjugate optical system having an objective lens with a diameter of 1–4 mm for converging the diffused light emitted from the light source;
means for rotating said disk;
means for accommodating said disk holding data at a position bearing a predetermined relation to said head, said means for accommodating including means for suppressing disk displacement of said disk taking place in accompanying said rotation of the disk; and



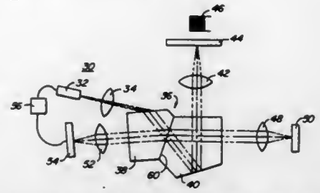
a drive circuit for controlling operations of said optical head and said rotating means.

5,311,495
OPTICAL SYSTEM FOR CONVERGING LIGHT BEAMS TO FORM A SINGLE BEAM SPOT ON AN OPTICAL DISC
Hideo Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 27, 1991, Ser. No. 799,188
Claims priority, application Japan, Nov. 30, 1990, 2-340265
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—112 **14 Claims**



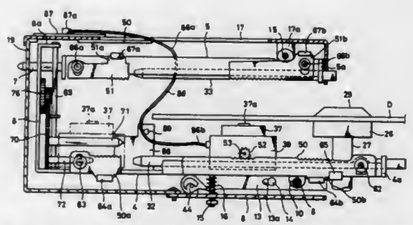
1. An optical system for combining and converging light beams on an information recording medium, comprising:
means for generating a light beam having cophasal wave surfaces and a predetermined amplitude;
means for reflecting a part of the light beam as a first beam component having the cophasal wave surfaces and a first intensity distribution and allowing the other part of the light beam to pass therethrough;
means for deforming the cophasal wave surfaces of the other part of the light beam and reflecting the light beam having the deformed wave surfaces as a second light beam component having a second intensity distribution different from the first intensity distribution; and
means for combining the first and second light beam components into a single light beam and converging the single light beam on the information recording medium, the first light beam component interfering with the second light beam component to form a beam spot having a sharp intensity distribution on the information recording medium.

5,311,496
ACHROMATIC EXPANSION PRISM FOR MAGNETO-OPTICAL DRIVE
Frank R. Whitehead, Orangevale, Calif., assignor to Hyundai Electronics America, San Jose, Calif.
Filed Nov. 13, 1992, Ser. No. 975,918
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—112 **17 Claims**



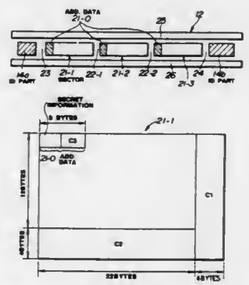
1. An achromatic expansion prism in an optical disk drive wherein a light beam emitted from a light source is directed toward an information-containing surface of an optical disk and reflected therefrom to a detector, the achromatic expansion prism comprising:
a first prism with a first dispersion value, the light beam being incident on an entrance surface of the first prism at a first angle and exiting the first prism through an outlet surface; and
a constant deviation prism fixed to the outlet surface and having a second dispersion value, the constant deviation prism receiving the light beam through the outlet surface, and reflecting the light beam in a first direction to the optical disk, and further reflecting the light beam reflected from the optical disk in a second direction to the detector, the constant deviation prism employing a plurality of surfaces thereof to effect the reflecting, wherein the angle between the first and second directions is constant irrespective of the first angle, and wherein the first and second dispersion values are selected such that the first and second directions are independent of wavelength of the light beam.

5,311,497
PICKUP FEEDING APPARATUS FOR A DOUBLE-SIDED REPRODUCING DISC PLAYER
Kazuyuki Takizawa, Chiba; Hideki Okii, and Minoru Otsuka, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 23, 1992, Ser. No. 949,569
Claims priority, application Japan, Sep. 30, 1991, 3-278733; Sep. 30, 1991, 3-278734; Sep. 30, 1991, 3-278735; Sep. 30, 1991, 3-278736
Int. Cl.[5] G11B 17/30, 21/02
U.S. Cl. 369—219 **19 Claims**



1. A pickup feeding apparatus for a double-sided reproducing disc player in which a single optical pickup is moved so as to oppose both recording surfaces of a disc on which signals are recorded and reproduces both recording surfaces of the disc loaded onto a turntable, comprising:
(a) an upper chassis and a lower chassis facing to said both recording surfaces of said disc and which are disposed in substantially parallel to a disc surface;
(b) a rear chassis for coupling said upper and lower chassis;
(c) a carriage meshed with first and second racks which are disposed on said upper and lower chassis so as to extend over inner and outer peripheries of said disc, said carriage being transported in the diametrical direction of said disc;
(d) an optical pickup supported on said carriage so that it can be inverted about a shaft disposed in the direction perpendicular to the direction in which said carriage is moved, said optical pickup being moved along first and second guide shafts respectively disposed on said upper and lower chassis in parallel to said first and second racks;
(e) tilt means for adjusting a tilt of said upper and lower chassis in a ganged relation so that said optical pickup is skewed;
(f) pickup elevating means for linearly elevating said carriage together with said optical pickup between said upper and lower chassis along said rear chassis, said pickup elevating means including
an elevating member for holding said optical pickup, said elevating member being coupled through the rear chassis to at least one of said upper and lower chassis skewed by said tilt means,
an elevation motor for elevating said elevating member,
an elevating guide shaft whose lower end is supported from said lower chassis along said rear chassis and whose upper end is supported by said rear chassis and wherein the elevating member is supported by said elevating guide shaft and has parallel engagement pins projected therefrom in the same direction as the axial direction of the first and second guide shafts, and
(g) inverting means for inverting said optical pickup while said carriage is being elevated.

5,311,498
RECORDING AND REPRODUCING APPARATUS PROVIDED IN EACH DATA BLOCK WITH A SECRET INFORMATION NUMBER
Toshio Horiguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 26, 1992, Ser. No. 811,466
Claims priority, application Japan, Feb. 28, 1991, 3-034439
Int. Cl.[5] G11B 7/007, 20/12
U.S. Cl. 369—275.1 **19 Claims**



1. An optical card recording and reproducing apparatus comprising:
a card-like recording medium having a plurality of linear tracks on which are formed respectively an ID part in which discriminating information is recorded and a part which is discriminated by said discriminating information and in which user information is recorded/reproduced;

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a recording means for recording protecting information including a secret information data for inhibiting the reproduction of said user information except said protecting information recorded in each of a plurality of data sectors dividing the data part of the linear tracks of said card-like recording medium;

a reproducing means for reproducing said user information recorded in said card-like recording medium and said protecting information;

a secret information data inputting means for inputting said secret information data;

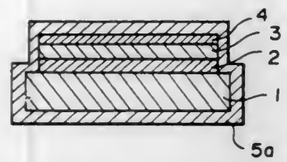
a judging means for judging whether or not the secret information data input by said secret information data inputting means and the secret information data reproduced by said reproducing means coincide with each other; and

an inhibiting means inhibiting the function of either displaying or transferring the reproduced user information reproduced by said reproducing means in case said judging means does not judge that the input secret information data and the reproduced secret information data coincide with each other.

5,311,500
MAGNETO-OPTICAL DISK

Manabu Higuchi; Takashi Yamada; Masaaki Nomura, and Akira Nahara, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 963,017, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 298,958, Jan. 19, 1989, abandoned. This application Apr. 14, 1993, Ser. No. 47,003
Claims priority, application Japan, Jan. 22, 1988, 63-12118
Int. Cl.[5] G11B *7/24*
U.S. Cl. 369—288 **2 Claims**

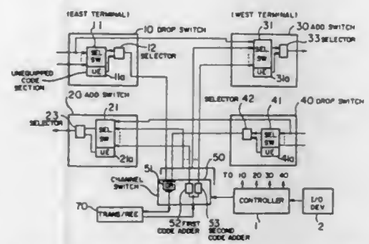


1. A magneto-optical disk comprising a substrate and at least a magneto-optical recording layer provided on said substrate, wherein the improvement comprises the provision of a moisture barrier layer comprising an alkyl fluoride-acrylic copolymer on the surface of said substrate on the side opposite to the substrate surface on which said magneto-optical recording layer is provided.

5,311,501
ROUTING SYSTEM FOR LINEAR ADD-DROP MULTIPLEXER

Kazuo Takatsu, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 21, 1992, Ser. No. 838,679
Claims priority, application Japan, Mar. 15, 1991, 3-049992
Int. Cl.[5] H04J *3/08, 3/14*
U.S. Cl. 370—16 **19 Claims**



1. A routing system for a linear add-drop multiplexer having a first drop switch connected to a first transmission line, a second drop switch connected to a second transmission line, a channel switch for lower levels connected to the first drop switch and the second drop switch and a controller for providing a selection signal, comprising:

a first selection switch, provided in said first drop switch, for selecting one of a first plurality of channels connected to the first transmission line and outputting a first output signal transmitted through the selected channel;

a first selector, provided in said first drop switch and coupled to said first selection switch and the controller, for selectively outputting and inhibiting the first output signal transmitted from said first selection switch to produce a first signal based on the selection signal;

a second selection switch, provided in said second drop switch, for selecting one of a second plurality of channels connected to the second transmission line and outputting a second output signal transmitted through the selected channel;

a second selector, provided in said second drop switch and coupled to said second selection switch and the controller, for inhibiting the second output signal transmitted form said second selection switch when said first selector outputs the first output signal, and for outputting the second output signal when said first selector inhibits the first output signal to produce a second signal based on the selection signal; and

output means, provided in said channel switch, for selectively outputting the first and second signals transmitted from said first and second selectors to a transmitter/-receiver for lower signal levels;

said first selection switch including means for providing, as the first output signal, a third signal transmitted through said selected channel and a fourth signal having all data bits set to 0;

said first selector comprising means for selecting and outputting one of said third and fourth signals as the first signal;

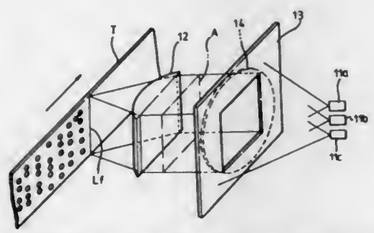
said second selection switch including means for providing, as the second output signal, a fifth signal transmitted through said selected channel and a sixth signal having all data bits set to 0;

said second selector comprising means for outputting, as the second signal, the sixth signal when said first selector outputs the third signal and the fifth signal when said first selector outputs the fourth signal.

5,311,499
METHOD AND APPARATUS FOR ERASING INFORMATION FROM OPTICAL RECORDING TAPE WITH A THERMO-DEFORMING LAYER

Weon-jae Hwang, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 19, 1991, Ser. No. 794,236
Claims priority, application Rep. of Korea, May 20, 1991, 91-8185
Int. Cl.[5] G11B *7/24, 7/00*
U.S. Cl. 369—275.2 **16 Claims**



1. A method for erasing information from optical recording tape having a thermo-deforming layer in which information is recorded by forming bumps with residual stress deformed viscoelastically via heating portions of said thermo-deforming layer, and the information is erased by making said bumps planar by re-heating said bumps to remove residual stress, said method comprising the steps of:

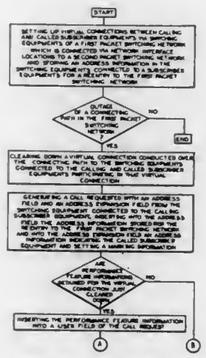
emitting and condensing a light of predetermined energy, produced from at least one optical element, along a focal line on the optical recording tape;

re-heating the thermo-deforming layer including the bumps along the focal line with said light for erasing information along said focal line.

5,311,502
METHOD FOR MAINTAINING CONNECTIONS GIVEN AN AT LEAST PARTIAL OUTAGE OF CONNECTING PATHS

Bernd-Michael Mueller, Ottobrunn, and Wolfgang Sitter, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 936,637
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128939
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—16 **9 Claims**



1. A method for maintaining virtual connections existing between calling subscriber equipment and called subscriber equipment of a first packet switching network given at least a partial outage of connecting paths defined for the virtual connections within the first packet switching network, individual connecting paths proceeding via a plurality of switch equipment of the first packet switching network and at least one network interface location being respectively provided at least between switching equipment connected to the subscriber equipment and a second packet switch network, comprising the steps of:

storing at least one address information indicating a network interface location for a reentry into the first packet switching network in each of the switching equipment connected to the subscriber equipment of the first packet switching network;

only clearing down, given outage of a connecting path within the first packet switching network, the virtual connection respectively conducted over this connecting path associated with the outage to the switching equipment participating in this virtual connection associated with the outage and connected to the calling subscriber equipment and to the called subscriber equipment; request requesting a setup of a virtual connection proceeding from the switching equipment connected to the calling subscriber equipment and transmitting the call request to the second packet switching network via the network interface location connected to the appertaining switching equipment, an address expansion field being provided in the call request in addition to an address field and defined marking information being set;

entering in the address field of the call request at least after the appertaining network interface location for the virtual connection now to be set up to in the address field in the transmitted call request and entering address information indicating the called subscriber equipment participating in the virtual connection just partially cleared down in the address expansion field;

defining based on the address information contained in the addressed field of the call request that indicates the network interface location for the reentry into the first packet switching network, a connecting path to the appertaining network interface location in the second packet switching network and conducting the call request thereto;

interchanging, on the basis of a marking information set in the call request, the address information that is respectively contained in the appertaining address field, and in address expansion field with one another at the appertaining network interface location; and

setting up, based on the address information now contained in the address field of the call request that indicates the called subscriber equipment, the virtual connection requested with the call request to the switching equipment connected to the appertaining, called subscriber equipment.

5,311,503
TERMINAL APPARATUS FOR FULL-DUPLEX DATA TRANSMISSION HAVING AN ECHO CANCELLER

Masaru Kokubo, Hachioji, and Motohiro Kokumai, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,138
Claims priority, application Japan, Jun. 19, 1991, 3-147130
Int. Cl.[5] H04J *1/00*
U.S. Cl. 370—32.1 **12 Claims**

1. A full duplex data transmission terminal apparatus having a hybrid circuit connecting transmitting and receiving lines to a 2-wire transmission line for performing data communication with a remote terminal on a full duplex transmission basis, comprising:

an echo canceler for canceling an echo generated on the receiving line by a first digital signal applied on the transmitting line, said echo canceler including an FIR type filter for receiving the signal from the transmitting line to generate a first component replica of said echo, an IIR type filter for receiving one tap output of said FIR type filter to generate a second component replica of said echo, and coupling means for subtracting the output first and second component replicas of said echo of said FIR type and IIR type filters, respectively, from the signal on the receiving line;

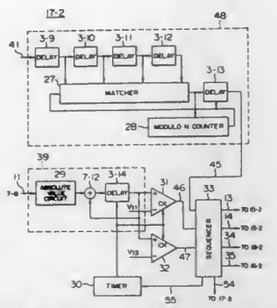
slicer means connected to an output of said coupling means

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for discriminating a second digital signal transmitted from said remote terminal and received at said receiving line;

filter converging means for converging said FIR and IIR type filters on the basis of an error signal obtained from the output of said coupling means;

data communication starting step detection means, having received the outputs of said coupling means and said slicer means, for monitoring whether or not convergence of said echo canceler is attained relative to a threshold value and whether or not a synchronization pattern is present in an output signal train of said slicer means; and



control means for setting a duration from start of transmission of said first digital signal to detection of the convergence, a duration until detection of said synchronization pattern and a duration after the detection of said synchronization pattern to be first, second and third durations respectively, and for further enabling the converging operation of both said FIR and IIR type filters by said filter converging means in said first and third durations and for stopping the converging operation in at least said IIR type filter in said second duration.

5,311,504

BASE STATION FOR A MOBILE DIGITAL SYSTEM WITH THE FREQUENCY HOPPING TECHNIQUE

Armando Colamonico, and Marcello Donati, both of Milan, Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

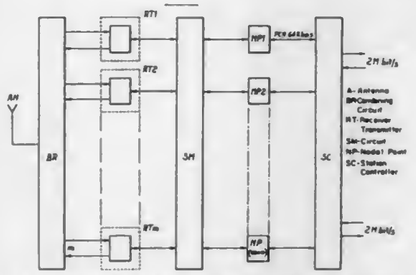
PCT No. PCT/EP90/00159, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO90/16122, PCT Pub. Date Dec. 27, 1990

PCT Filed Jan. 22, 1990, Ser. No. 777,309

Claims priority, application Italy, Jun. 15, 1989, 20890 A/89

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—50 **10 Claims**



1. A communication base station wherein data associated to each user are transmitted and received as a bit burst in a frame including n users, such frame also containing control data, and the frames are subject to frequency hopping in which each frame is transmitted and received at a frequency changing according to an algorithm among those frames assigned to the area served by said station, said station comprising:

a plurality of receiver/transmitters connected to a common antenna through a combining circuit;

a plurality of process nodal points connected to a station controller; and

a distribution circuit for the baseband control of the frequency hopping including at least a common synchronized bus onto which user's data and said control data are entered and read in time succession at a bit rate higher than that of said bit burst;

said receiver/transmitters being connected to said synchronized bus at least through a first set of multiplexing units and a first set of demultiplexing units, said first sets of units being synchronized among themselves with respect to said frequency hopping;

said nodal points being connected to said synchronized bus at least through a second set of multiplexing units and a second set of demultiplexing units, said second sets of units being synchronized among themselves with respect to said frequency hopping.

5,311,505

METHOD AND DEVICE FOR MULTIPLEXING

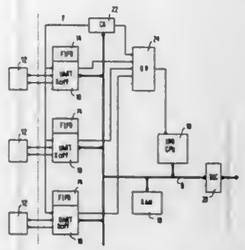
Mathieu Antoine, Brignoid, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 8, 1992, Ser. No. 940,215

Claims priority, application France, Sep. 9, 1991, 91 11396

Int. Cl.[5] H04L *12/20*; **H04J** *3/16, 3/22*

U.S. Cl. 370—56 **9 Claims**



1. Method of transferring data to a receiving channel, the data being provided by a plurality of serial channels each having a respective operating speed and including a buffer memory for storing said data, the operating speed of at least one of the serial channels differing from the operating speed of the others of the serial channels, said method comprising the steps of:

polling each serial channel once every predetermined number of time intervals among a succession of time intervals; and

transferring the data stored in the buffer memory of each polled serial channel to said receiving channel,

said predetermined number of polling time intervals being equal to the ratio of the fastest operating speed of said plurality of serial channels and the operating speed of the serial channel being polled, and

the time lengths of said time intervals being near the time needed for filling a predetermined fraction of the buffer memory of the serial channel having said fastest operating speed.

5,311,506

SWITCHING NETWORK FOR SWITCHING CHANNELS

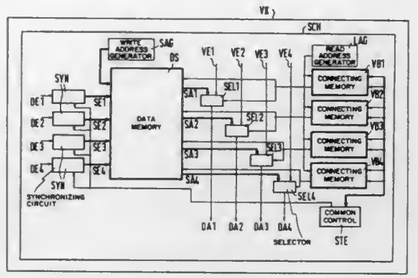
Werner Beisel, Altenstadt, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed May 22, 1992, Ser. No. 887,075

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116939

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—58.1 **12 Claims**



1. A switching network for switching nodes (VK) of a communication system for switching channels which are associated with one or more time slots of a frame of a time-division multiplex signal consisting of component signals,

wherein at least one switch group (SCH) has a plurality of data inputs (DE1 to DE4) and a plurality of data outputs (DA1 to DA4),

wherein channels of an incoming time-division multiplex signal received at one of the plurality of data inputs (DE1 to DE4) can be switched to an outgoing time-division multiplex signal at one of the plurality of data outputs (DA1 to DA4),

wherein said at least one switch group (SCH) includes at least one data memory (DS) which temporarily stores component signals transmitted in individual time slots and has a plurality of memory inputs (SE1 to SE4) and memory outputs (SA1 to SA4) via which data is written and read, respectively, the plurality of memory inputs (SE1 to SE4) being connected to the plurality of data inputs (DE1 to DE4), and the plurality of memory outputs (SA1 to SA4) being respectively connected to the plurality of data outputs (DA1 to DA4), and

wherein the component signals are addressed on a periodically recurring basis in said at least one data memory (DS),

characterized in that

said at least one data memory (DS) has at least two independently readable memory outputs (SA1, SA2; SA3, SA4), and

each memory output (SA1 to SA4) has associated therewith a connect memory (VB1 to VB4) via which an address for reading said at least one data memory (DS) is specified in order to switch selectively the channels in a selected sequence to a respective one of said plurality of selected data outputs (DA1 to DA4).

5,311,507

AUTOMATED INTERACTIVE MASS COMMUNICATIONS SYSTEM

Bedros A. Bedrossian, New York, N.Y., assignor to Interactive Telephonics, Inc., New York, N.Y.

Continuation of Ser. No. 933,854, Nov. 24, 1986, abandoned. This application Sep. 9, 1992, Ser. No. 942,325

Int. Cl.[5] H04M *11/00*

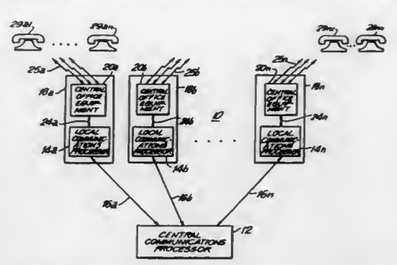
U.S. Cl. 370—58.2 **18 Claims**

1. A mass communication system for establishing two way communication between a central communications processor and a plurality of local subscribers comprising:

said central communications processor for identifying local subscribers with whom two-way communication is to be established and for transmitting a common message to local subscribers;

a plurality of local communications processors for establishing communication with said local subscribers identified by the central communications processor;

wherein said central communications processor and said



local communications processors are communicatively linked;

wherein the common message is transmitted from the central communications processor to the plurality of local subscribers via said local communications processors,

wherein said plurality of local subscribers are enabled to respond to the message by response to said local communications processors and wherein said local communication processor includes means for transiently storing subscriber responses and for transmitting same to said central communications processor.

5,311,508

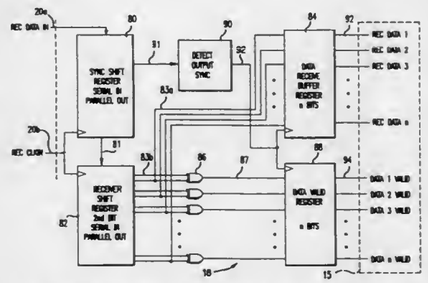
APPARATUS FOR RECEIVING AND DECODING A SERIAL DATA PACKET CONTAINING THE STATUS OF A NETWORK OF SINGLE POINT I/O DEVICES

Paul R. Buda, Raleigh, and Kelvin Peele, Cary, both of N.C., assignors to Square D Company, Palatine, Ill.

Filed Dec. 23, 1991, Ser. No. 811,722

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **10 Claims**



1. A receiver module contained in a microprocessor based device for receiving a serial data packet from a plurality of I/O repeater modules connected in series over a synchronous serial communications network, said receiver module comprising:

(A) a clock pulse input means for synchronizing said receiver module with said synchronous serial communications network;

(B) a buffer register means, coupled to said synchronous

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serial communications network, for storing a part of said received serial data packet from said network;

(C) a first shift register means, coupled to said buffer register means, for storing said received serial data packet coupled from said buffer register means and for converting said serial data packet into separate parallel data bits, wherein said data bits include a true data bit and a complement data bit from each of said plurality of I/O repeater modules, said true data bits for indicating the status of each of said I/O modules and wherein said first shift register means further includes separate parallel outputs of said true data bits and of said complement data outputs;

(D) a detector means, coupled to said buffer register means, for decoding an end byte of said received serial data packet to indicate the end of said received serial data packet;

(E) a second buffer register means having an input coupled to the parallel true data bit outputs of said first shift register means, for coupling said parallel true data bits to a parallel data bus in said microprocessor based device;

(F) a comparator means, coupled to said separate parallel outputs of said true data bits and of said complement data outputs of said first shift register, for comparing each of said true data bits with its said complement data bit, for determining if said data bits are valid, and for generating parallel valid data bits if said data bits are valid;

(G) a third buffer register means, coupled to said comparator means, for receiving said parallel valid data bits, said third buffer register means having parallel outputs coupled to said parallel data bus in said microprocessor based device; and

(H) wherein said second buffer register means transfers said true data bits to said microprocessor based device and said third buffer register means transfers said valid data bits to said microprocessor based device.

5,311,509

CONFIGURABLE GIGABITS SWITCH ADAPTER

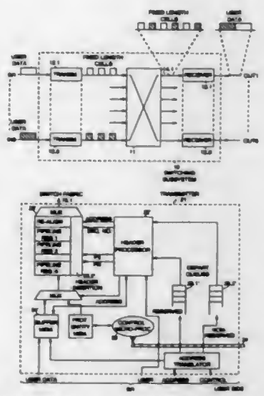
Marco Heddes, Kilchberg, and Ronald Luijten, Oberrieden, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1992, Ser. No. 832,127

Claims priority, application European Pat. Off., Sep. 13, 1991, 91810728.5

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **17 Claims**



14. Apparatus for transforming user frames, each comprising a payload into fixed length cells, each of said fixed length cells being preceded by a fixed size header, the apparatus comprising:

means for buffering the payloads of said user frames in a storage section of a buffer memory (**24'**),

queuing means (**28.1'**, **28.2'**) for keeping the storage address of said storage section in a queue being part of said queuing means,

header processor (**22'**) taking said storage address from the queue of said queuing means (**28.1'**, **28.2'**) and generating a fixed size header,

means for retrieving said payload from said buffer memory (**24'**) using said storage address taken from said queue,

means for forming said fixed length cell by prefixing a part of said retrieved payload with said header, and

means for transmitting said fixed length cell.

5,311,510

DATA STORING SYSTEM FOR A COMMUNICATION CONTROL CIRCUIT

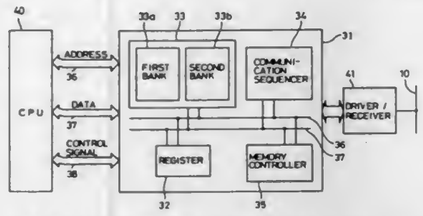
Hiroo Moriue; Yutaka Matsuda; Kiyoshi Inoue, all of Hiratsuka; Yoshikazu Nobutoki, Higashihiroshima; Seiji Hirano, Hiroshima, and Hiroaki Sakamoto, Fuknyama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Mazda Motor Corp., Hiroshima, both of Japan

Filed Jul. 27, 1992, Ser. No. 919,911

Claims priority, application Japan, Jul. 30, 1991, 3-189762; Jul. 30, 1991, 3-189763; Jun. 1, 1992, 4-140215

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—61 **18 Claims**



1. A data storing system for a communication control circuit which is connected to a multiplex transmission line and which, when a message transmitted through said multiplex transmission line is taken in, stores the data contained in said message, the communication control circuit comprising;

registering means for registering a data identifier of a necessary message among messages transmitted through said multiplex transmission line;

storing means which includes a first storage area for storing data, which corresponds to a particular data identifier among said necessary messages, keying the data to said data identifier, and a second storage area for sequentially storing data which corresponds to a plurality of data identifiers other than said particular data identifier; and

communication control means for determining, when a message is taken in, whether its data identifier exists in said registering means and, if it is determined that the identifier is present, for causing the data corresponding to said data identifier to be stored in one of said first and second storage areas of said storing means.

5,311,511

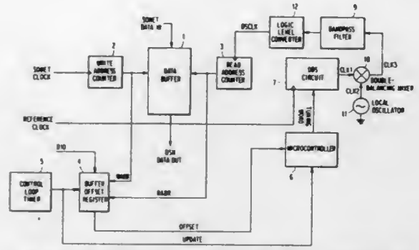
SONET DS-N DESYNCHRONIZER

Brian F. Reilly, Cornelius; Robert S. Broughton, Portland; David Delgadillo, Aloha, and Jeremy Smith, Beaverton, all of Oreg., assignors to NEC America, Inc., Melville, N.Y.

Continuation of Ser. No. 774,423, Oct. 10, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,095

Int. Cl.[5] H04J *14/08*

U.S. Cl. 370—84 **30 Claims**



1. An apparatus for receiving a stream of SONET data including overhead information and a SONET SPE payload for desynchronizing the SONET SPE payload to a DS-N type data, comprising:

first counting means for generating a first count in synchronism with a first clock having a first frequency;

second counting means for generating a second count in synchronism with a desynchronized clock having a second frequency;

buffer means, coupled to said first and second counting means, for storing said SONET SPE payload at a location corresponding to said first count in synchronism with said first clock, and for outputting DS-N type data from a location corresponding to said second count in synchronism with said desynchronized clock;

offset means, coupled to said first and second counting means and responsive to at least a portion of said overhead information, for determining a difference between said first count and said second count in accordance with said portion of overhead information, and for outputting an offset signal representative thereof;

clock generating means, responsive to a control signal, for generating said desynchronized clock; and

control means, coupled to said offset means and responsive to said offset signal, for generating said control signal so as to adjust said second frequency of said desynchronized clock such that said difference between said first and second count is maintained at a predetermined value.

5,311,512

MULTIPLE-MASTER DIGITAL COMMUNICATION TECHNIQUE UTILIZING A DEDICATED CONTENTION BUS

Robert M. Bartis, Neptune; Charles W. K. Gritton, North Brunswick, and Ying T. Tao, Manalapan, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 14, 1992, Ser. No. 989,676

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.2 **12 Claims**

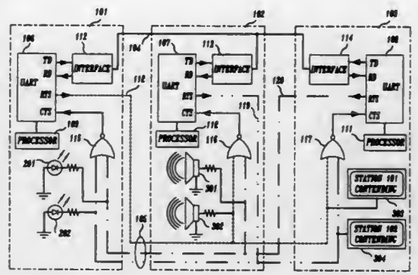
1. A digital communication system comprising:

a communication channel;

a contention bus comprised of a plurality of contention channels, each of said contention channels capable of being placed in either an idle state or a busy state;

a plurality of asynchronous stations, each of said asynchronous stations paired with one of said contention channels, and adapted to transmit data via said communication channel;

a plurality of contention means, each associated with one of said plurality of asynchronous stations and coupled to the contention channel paired with said associated asynchronous station, each of said contention means adapted to place said coupled contention channel in a busy state during the initiation and performance of a data transmission via said communication channel by said associated asynchronous station, and each contention means further



adapted to monitor the state of the contention channels coupled to all other contention means, and permit said associated asynchronous station to initiate a data transmission via said communication channel only after all of said monitored contention channels are found to be in an idle state after a fixed period has elapsed from the time at which said contention channel coupled to said associated asynchronous station was placed in a busy state.

5,311,513

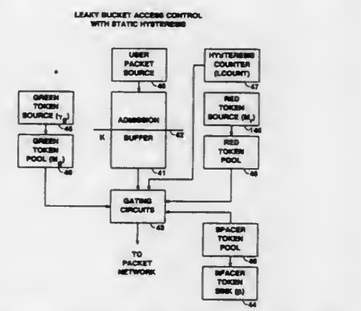
RATE-BASED CONGESTION CONTROL IN PACKET COMMUNICATIONS NETWORKS

Hamid Ahmadi, Somers, N.Y.; Jeffrey, H. Derby, Chapel Hill, N.C.; Roch Guérin, Yorktown Heights, N.Y.; Levent Gün, Durbam; Gerald A. Marin, Chapel Hill, both of N.C.; Mahmoud Naghshineh, Fishkili, and Khosrow Sohraby, Mahopac, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 10, 1992, Ser. No. 943,097

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—85.4 **15 Claims**



1. A system for a source of user data packets to control access to a packet communications network comprising

means for marking each packet launched on said network with a high priority marking when the data packets from said source stay within a predefined range of statistical parameters,

means for marking each packet launched on said network with a lower priority marking when the data packets from

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said source fall outside of said predefined range of statistical parameters, and

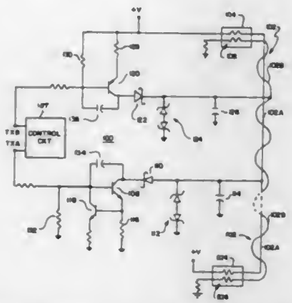
means for prolonging, once started, the marking of packets launched on said network with said lower priority to produce a serial train of packets with said lower priority marking.

5,311,514

DRIVER FOR BUS CIRCUIT OF MOTOR VEHICLE MULTIPLEX COMMUNICATIONS SYSTEM

Roger J. Cook, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1993, Ser. No. 41,367
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.1 **20 Claims**



1. A circuit for driving a two wire bus for a multiplex communication system in a motor vehicle, said bus having a first wire which is terminated to vehicle ground potential through at least one resistor and a second wire which is terminated to bus signal potential through at least one resistor, said circuit comprising:

a first transistor having a control terminal, a current input terminal and a current output terminal;

current limiting means coupled to said first transistor for limiting maximum current flow in said first transistor from said current input terminal to said current output terminal;

first switch time control means coupled to said first transistor for slowing turn-on and turn-off of said first transistor;

first transistor control means coupled to said control terminal of said first transistor for providing turn-on and turn-off signals to said control terminal of said first transistor;

first base drive control means coupled to said control terminal of said first transistor for preventing turn-on of said first transistor in the absence of turn-on signals from said first transistor control means;

first diode means for coupling said current output terminal of said first transistor to said first wire of said bus;

a second transistor having a control terminal, a current input terminal and a current output terminal;

dual control current limiting means coupled to said second transistor for limiting maximum current flow in said second transistor from said current input terminal to said current output terminal;

second switch time control means coupled to said second transistor for slowing turn-on and turn-off of said second transistor;

second transistor control means coupled to said control terminal of said second transistor for providing turn-on and turn-off signals to said control terminal of said second transistor;

second base drive control means coupled to said control terminal of said second transistor for preventing turn-on of said second transistor in the absence of turn-on signals from said second transistor control means;

second diode means for coupling said current input terminal of said second transistor to said second wire of said bus;

high voltage transient suppression means coupled to said first and second wires of said bus for protecting said circuit from high voltage transients; and

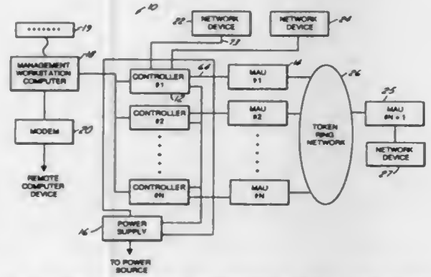
radio frequency suppression means coupled to said first and second wires of said bus for bypassing high frequency noise to ground potential.

5,311,515

METHOD AND APPARATUS FOR THE CONTROL OF LOCAL AREA NETWORK MULTI-STATION ACCESS UNITS

Gordon J. Henderson, Plymouth; Evan L. Carew, Dearborn; Todd A. Theisen, Grosse Lle, and Michael W. Ehn, Dexter, all of Mich., assignors to Sim Ware, Incorporated, Livonia, Mich.

Filed Feb. 7, 1992, Ser. No. 832,819
Int. Cl.[5] H04J *3/02*; H04Q *5/00*
U.S. Cl. 370—85.1 **8 Claims**



1. A controller for use in combination with a multi-station access unit and a plurality of workstations for controlling the connection of said plurality of workstations upon a local area network, said controller comprising:

first computer means, coupled to said access unit and to said plurality of workstations for receiving a first voltage signal from at least one of said plurality of workstations and for selectively transmitting a second voltage signal, to said access unit effective to cause said access unit to connect said at least one of said plurality of workstations to said local area network; and

second computer means, coupled to said first computer means, for selectively preventing said second voltage signal to be transmitted by said first computer means and for selectively causing said access unit to connect said at least one of said plurality of workstations to said local area network in the absence of said first voltage signal.

5,311,516

PAGING SYSTEM USING MESSAGE FRAGMENTATION TO REDISTRIBUTE TRAFFIC

William J. Kuznicki, Coral Springs, and David F. Willard, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 891,503, May 29, 1992. This application Nov. 23, 1992, Ser. No. 980,084
Int. Cl.[5] H04J *3/24*; H04Q *7/00*
U.S. Cl. 370—94.1 **22 Claims**

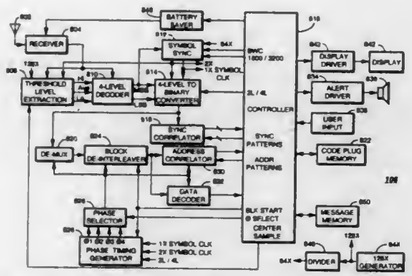
16. A selective call receiver capable of receiving a transmitted fragmented message, the fragmented message comprising one or more message packets, each of the one or more message packets comprising an address and message data, the message data comprising an indication of whether more message packets are to be received for the fragmented message, the selective call receiver comprising:

a code plug memory for storing one or more predetermined addresses;

a message memory for storing the message data of one or more message packets of a fragmented message;

a receiver for receiving transmitted messages including the one or more message packets of the fragmented message;

an address correlator coupled to the receiver and the code plug memory for correlating the address of each of the one or more message packets to the one or more predetermined addresses, and for providing an indication of a successful correlation of the address to one of the one or more predetermined addresses; and



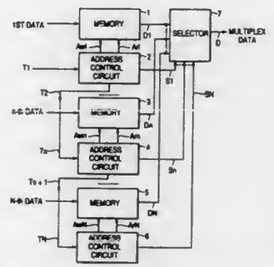
a data decoder coupled to the receiver and the address correlator for decoding the message data of each of the one or more message packets in response to the indication of a successful correlation of the address thereof, and for coupling the message data to the message memory, the message data of each of the one or more message packets being successively stored in the message memory for reconstructing the fragmented message, the fragmented message being completely received after detection in the message data of one of the one or more message packets an indication that no more message packets are to be received for the fragmented message.

5,311,517

HIGHLY-EFFICIENT TIME-DIVISION DATA MULTIPLEXING APPARATUS

Takanori Senoo, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 870,632
Claims priority, application Japan, Apr. 18, 1991, 3-86707
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.1 **2 Claims**



1. A time-division data multiplexing apparatus comprising:

first through Nth memories for temporarily storing first through Nth data blocks, where N is an integer of at least 2;

first through Nth address control circuits for controlling said firs through Nth memories, respectively, any nth address control circuit of said first through Nth address control circuits, where n = 1, 2, . . . , N, comprising means for calculating a time period A_n of an nth time slot to be assigned to a corresponding nth data block from a data size M_n of the nth data block stored in a corresponding nth memory and an available time period T_n indicated by an available time signal as a time period available for transmission of the nth through Nth data blocks, and means for controlling the nth memory so as to read out data of the nth data block stored in the nth memory for the time period A_n and for outputting for the time period A_n a selection signal S_n indicating that the nth data block stored in the nth memory is being read out; and

a selecting means coupled to said first through Nth memories and responsive to the selection signal S_n for selectively outputting the nth data block read out from the nth memory to form a time-division multiplexed data which are composed of the fist through Nth data blocks which are respectively assigned to first through Nth time slots,

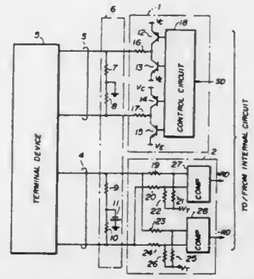
wherein any nth address control circuit of first through (N−1) th address control circuits of said first through Nth address control circuits, where (n=1, 2, . . . , N−1), includes means for calculating a difference between the available time period T_n and the time period A_n of the nth time slot and for supplying an (n+1)th address control circuit with said difference as an available time signal indicative of an available time period T_{n+1} available for transmission of the (n+1)th through Nth data blocks.

5,311,518

ISDN INTERFACE CIRCUIT AND SYSTEM USING THE SAME

Kenji Takato, Kawasaki; Yozo Iketani; Takashi Sato, both of Yokohama; Hiroyuki Ujiie, Hiratsuka, and Seiji Miyoshi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 12, 1991, Ser. No. 684,272
Claims priority, application Japan, Apr. 16, 1990, 2-97495
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **12 Claims**



1. An ISDN interface circuit coupled to a terminal device via a transmission line and a reception line, said transmission line being formed of a pair of first and second wires, and said reception line being formed of a pair of third and fourth wires, said ISDN interface circuit comprising:

transmission/reception means coupled to said transmission line and said reception line, for sending transmission data to said terminal device via said transmission line and for receiving data sent from said terminal device via said reaction line, said first transmission/reception means further comprising:

first driving means for driving said first wire of said transmission line in accordance with transmission data and further comprising a first transistor having a base, a first terminal connectable to receive a first power supply volt-

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age and a second terminal coupled to said first wire of said transmission line, and a second transistor having a base, a first terminal coupled to said first wire of said transmission line and a second terminal connectable to receive a second power supply voltage smaller than said first power supply voltage, and

second driving means for driving said second wire of said transmission line in accordance with said transmission data and further comprising a third transistor having a base, a first terminal connectable to receive said first power supply voltage and a second terminal coupled to said second wire of said transmission line, and a fourth transistor having a base, a first terminal coupled to said second wire of said transmission line and a second terminal connectable to receive said second power supply voltage; a power feed circuit comprising:

a first resistor and a second resistor connected in series at a first node and between said first and second wires of said transmission line,

a third resistor and a fourth resistor connected in series at a second node and between said third and fourth wires of said reception line,

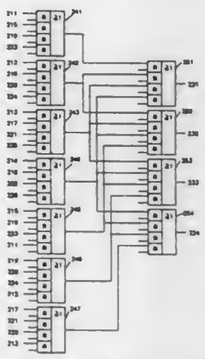
a D.C. power source connected to one of said first node at which said first resistor and said second resistor are mutually connected in series and said second node at which said third resistor and said fourth resistor are mutually connected in series, one of said first node and said second node, other than said one of said first node and said second node connected to said D.C. power source, being grounded; and

control means, coupled to the bases of said first, second, third and fourth transistors, for controlling said first, second, third and fourth transistors in accordance with said transmission data.

5,311,519
MULTIPLEXER

Klaus J. Getzlaff, Schönaich; Thomas Pflueger, Leinfelden, and Hans-Werner Tast, Weil im Schonbuch, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1992, Ser. No. 871,160
Claims priority, application European Pat. Off., Jul. 6, 1991, 91111294
Int. Cl.[5] H04J *3/04*
U.S. Cl. 370—112 **12 Claims**



1. Multiplexer for selecting m contiguous information units stored in m adjacent subsections of a first register containing n subsections and transferring said m information units to a second register containing m subsections, where m is less than n and n is greater than one, said multiplexer comprising:

k logic stages which each contain z(x) submultiplexers compressing in the ratio q(x):1; wherein

x is a variable from 1 to k;

the first logic stage contains between n and $m+(q(k)*q(k-1)* \ldots *q(3)*q(2))-1$ submultiplexers;

the kth logic stage contains m submultiplexers;

the xth logic stage contains between n and $m+(q(k)*q(k-1)* \ldots *q([k-]x+1))-1$ submultiplexers for $k>x>1$;

the outputs of the kth logic stage submultiplexers are connected to the inputs of the second register;

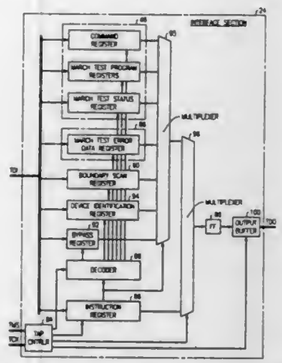
the hth input to the ith submultiplexer in the xth logic stage is connected to the output of the $i+(h-1)*(q(x+1)*q(x+2)* \ldots *q(k))[-1]$ submultiplexer in the previous, $(x-1)$th, logic stage; and

n is less than or equal to the product $q(1)*q(2)* \ldots *q(k-1)*q(k)$.

5,311,520
METHOD AND APPARATUS FOR PROGRAMMABLE MEMORY CONTROL WITH ERROR REGULATION AND TEST FUNCTIONS

Partha Raghavachari, Chicago, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 29, 1991, Ser. No. 752,115
Int. Cl.[5] G11C *29/00*
U.S. Cl. 371—21.6 **15 Claims**



1. A circuit for controlling as well as testing an array of Random Access Memory devices (RAMs) comprising:

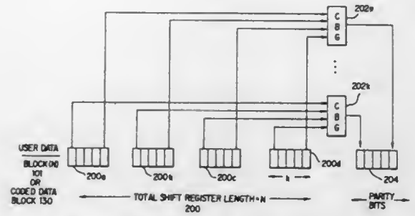
controller section means for: (a) establishing the density of each of the RAMs in the array, (b) storing at least one user-prescribed address indicative of a particular storage location in the array of RAMs, (c) accessing the particular storage location in the RAMs, and (d) initiating testing of the RAMs at selected intervals; and

data path section means for: (a) storing data to be written to and read from the particular storage location in the RAMs, and (b) detecting errors in the RAMs during testing and normal operation.

5,311,521
METHOD AND APPARATUS FOR IMPLEMENTING POST-MODULATION ERROR CORRECTION CODING SCHEME

Boris Fitingof, 1802 E. Helen, Apt. B220, Tucson, Ariz. 85719, and Masud Mansuripur, 4072 E. Via Dela Tangara, Tucson, Ariz. 85718

Filed Jan. 12, 1990, Ser. No. 466,110
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—37.4 **4 Claims**



1. A method of providing burst error correction coding for a block of user data of length N, comprising the steps of:

inputting said block of user data into a first shift register having a plurality of blocks of length k, said shift register having a total length N;

generating a k plurality of parity bits using the user data from each of the plurality of blocks of length k;

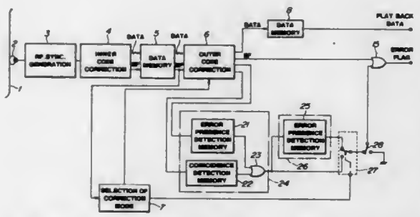
separately modulating and error correction coding each one of said plurality of blocks of length k and said k plurality of parity bits; and

assembling a burst error correction coded block of user data by storing the results from modulation error correction coding said plurality of blocks of length k and said k plurality of parity bits sequentially following each other in a second shift register.

5,311,522
ERROR CORRECTION AND/OR DETECTION DEVICE FOR PRODUCT CODE BLOCK DATA

Yoshihiro Murakami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 521,370, May 10, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 71,932
Claims priority, application Japan, May 17, 1989, 121435; May 17, 1989, 121436
Int. Cl.[5] G11B *20/18*
U.S. Cl. 371—37.4 **1 Claim**



1. An error detection and correction device for product code block data comprising:

reproducing means for reproducing from a recording medium input data composed of a plurality of product code blocks formed on a recording track of said recording medium, with each product code block comprising inner codes and outer codes for error correction annexed to said input data;

inner code correction means for subjecting the reproduced input data to a first error correction by said inner codes for each of a plurality of inner code blocks and for outputting an error flag indicating that the inner code corrected data and error data uncorrected by the inner codes exist together;

correction mode selection means for selecting a correction mode depending upon then umber of error flags output by said inner code correction means;

outer code correction means for subjecting the inner code corrected data to second error correction by said outer codes for each of a plurality of outer code blocks depending upon the selected correction mode for outputting the outer code corrected data;

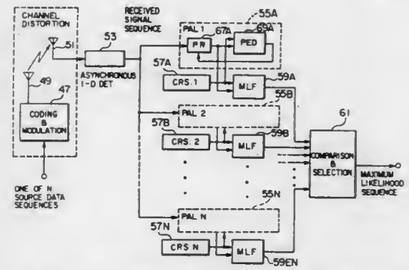
first correlation detection means for checking the correlation between correction points of said outer code corrected data by said second error correction for each of said plurality of outer code blocks belonging to the same product code block and for determining whether the data in said product code block comprises unerased old data; and

second correlation detection means for detecting, when the number of error flags in a given product code block is not less than a predetermined value, whether another product code block determined by said first correlation detection means to comprise unerased old data exists in the same recording track and, if the result of such detection is affirmative, determining that the data in said given product code block also comprises unerased old data.

5,311,523
CARRIER PHASE SYNCHRONOUS TYPE MAXIMUM LIKELIHOOD DECODER

Mutsumu Serizawa, Tokyo, and Junzo Murakami, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 6, 1989, Ser. No. 446,796
Claims priority, application Japan, Dec. 8, 1988, 63-310919
Int. Cl.[5] H03M *13/12*; H03D *3/02*
U.S. Cl. 371—43 **2 Claims**



2. A carrier phase synchronous type maximum likelihood decoder for estimating a maximum likelihood sequence of data, said data being transmitted from a transmit side, by following a transition and synthesizing partial series, states i ($i=1, \ldots, m$) in time k ($k=1, \ldots, n$) providing a basis for indicating a partial series of said sequerce of data; a transition being from a certain state in time k to another state in time $(k+1)$;

said carrier phase synchronous type maximum likelihood decoder comprising for each state i ($i=1, \ldots, m$):

a memory means for memorizing a path metric and carrier phase shift amount in time k,

a carrier phase adjust means for shifting a carrier phase of reference signals by said carrier phase shift amount memorized in said memory means,

a branch metric calculate means for calculating a branch

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metric by evaluating a difference between an input signal in time (k+1) and the output signal of the carrier phase adjusting means,

a carrier phase error calculate means for calculating a carrier phase error which is an angle difference between said input signal in time (k+1) and the output signal of said carrier phase adjust means,

a path metric candidate calculate means for calculating a path metric candidate for a successor state in time (k+1) on the basis of said path metric memorized in said memory means and said branch metric from said branch metric calculate means,

said carrier phase synchronous type maximum likelihood decoder further comprising:

a path metric selecting means for selecting a path metric for a successor state in time (k+1) by comparing two said path metric candidates calculated by said path metric candidate calculate means, one of which corresponds to a transition from state i in time k to a successor state in time (k+1) and the other of which corresponds to a transition from a state other than i in time k to the successor state in time (k+1), and

a carrier phase shift amount select means for selecting a first carrier phase shift amount from two carrier phase shift amounts, said first carrier phase shift amount corresponding to a selected transition which said path metric select means selects.

5,311,524

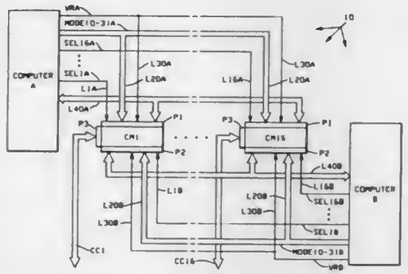
FAULT TOLERANT THREE PORT COMMUNICATIONS MODULE

Lewis R. Carlson, and John J. Carver, II, both of Salt Lake City, Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 27, 1992, Ser. No. 936,812

Int. Cl.[5] H04L *1/08*

U.S. Cl. 371—70 **9 Claims**



1. A communications module, comprising:

two control ports for receiving commands from two computers, and a communication port for transferring data over a communication channel in response to said commands;

each of said control ports including a select line which carries a select signal with true and false states, mode lines which carry codes, and a write line which carries a respective pulse in sync with each of said codes;

each control port having its select line, mode lines, and write line coupled to a separate intra-processor command decoder and a separate inter-processor command decoder for that port;

each intra-processor command decoder having only a single stage which generates an output signal that indicates the receipt of an intra-processor command for said module if, during any one of said pulses, a first multi-bit code occurs on said mode lines and said select line is true;

each inter-processor command decoder having a lead stage which signals when a second multi-bit code occurs on said mode lines and said select signal is false during a first one of said pulses; and, having a trial state coupled to said lead stage, which generates an output signal that indicates the receipt of an inter-processor command if, during a second pulse that immediately follows said lead stage signal, the compliment of said second code occurs on said mode lines and said select line is true.

5,311,525

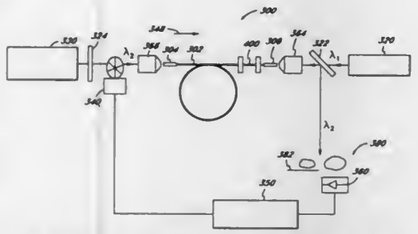
NONLINEAR OPTICAL COUPLER USING A DOPED OPTICAL WAVEGUIDE

Richard H. Pantell, Menlo Park; Robert W. Sadowski, Stanford; Michel J. F. Digonnet, Palo Alto, and Herbert J. Shaw, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Filed Mar. 31, 1992, Ser. No. 861,322

Int. Cl.[5] H01S *3/07*; G02B *6/26*

U.S. Cl. 372—6 **56 Claims**



1. An apparatus for controlling an optical signal, comprising:

a source of light which produces said optical signal;

an optical waveguide comprising an active medium, said optical signal being coupled to said waveguide for propagation therein, said waveguide having first and second spatial propagation modes for said optical signal, said first and second modes having first and second indices of refraction, respectively; and

a pump source coupled to introduce a pump signal into at leas tone of said spatial modes to optically perturb at least one of said first and second indices of refraction, said optical signal having a spatial intensity distribution in said waveguide that varies as a function of the perturbation.

5,311,526

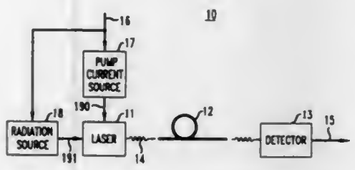
ARTICLE THAT COMPRISES A SEMICONDUCTOR LASER, AND METHOD OF OPERATING THE ARTICLE

Vera B. Gorfinkel, Baunatal-Altenritte, Fed. Rep. of Germany, and Serge Luryi, Bridgewater, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 25, 1993, Ser. No. 22,249

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—26 **14 Claims**



1. Method of operating an article that comprises a semiconductor laser having a radiation output, and that further comprises means for utilizing the radiation output, associated with the laser at least during laser operation being a pumping rate J, an optical gain coefficient g, a photon lifetime τ_{ph}, a confinement factor Γ, a spontaneous emission factor Γ, a carrier density n, an effective carrier temperature T_e, an output power P, and an output frequency Ω; the method comprising pumping the laser such that the laser operates in the lasing regime; CHARACTERIZED IN THAT

the method further comprises modulating the radiation output by coherently varying at least two of parameters J, g, Γ, τ_{ph}, T_e, Ω and β.

5,311,527

METHOD FOR AUTOMATICALLY ADJUSTING THE OPTICAL AXIS OF A LASER RESONATOR

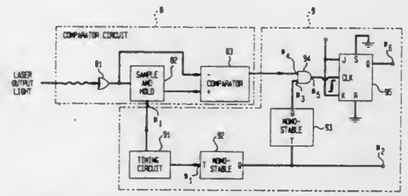
Kyoichi Deki, Kakogawa; Shinji Sugioka, Takasago, and Hiroahige Hata, Himeiji, all of Japan, assignors to Ushio Denki Kabushiki Kaisha, Japan

Filed Apr. 7, 1992, Ser. No. 864,527

Claims priority, application Japan, Apr. 16, 1991, 3-109592; Jun. 11, 1991, 3-165241

Int. Cl.[5] H01S *3/13*

U.S. Cl. 372—33 **3 Claims**



1. A method for automatically adjusting an optical axis of a laser resonator which contains a mirror comprising the steps of:

measuring a first output power level for light from said laser resonator;

changing an angle of said first mirror in said laser resonator with respect to said optical axis for a first incremental stepwise amount and in a first direction;

measuring, after said angle is changed a second output power level for light from said laser resonator;

comparing said first and second laser output power levels to one another to determine which output power level is largest;

changing the angle of the mirror automatically by a second incremental stepwise amount and in the first direction if the second laser output power level is larger than the first laser output power level; and

changing the angle of the mirror automatically by a second incremental amount in a second direction, said second direction being opposite to the first direction, if the second laser output power level is smaller than the first laser output power level.

5,311,528

SOLID-STATE LASER DEVICE CAPABLE OF STABLY PRODUCING AN OUTPUT LASER BEAM AT HIGH POWER

Masashi Fujino, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 937,511

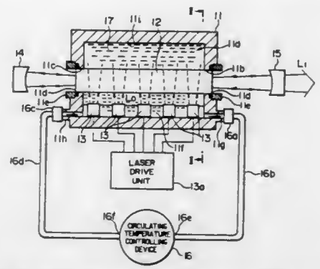
Claims priority, application Japan, Aug. 30, 1991, 3-220092

Int. Cl.[5] H01S *3/045*

U.S. Cl. 372—35 **10 Claims**

1. A solid-state laser device comprising a solid-state laser medium disposed in a laser resonator and a semiconductor laser device for exciting said solid-state laser medium by applying an excitation laser beam emitted from an emitting portion of said semiconductor laser device to an incoming portion of said solid-state laser medium to make said solid-state laser medium produce an output laser beam, said solid-state laser device further comprising:

a vessel for receiving said solid-state laser medium and said semiconductor laser device, said vessel being filled with a refrigerant so that said refrigerant is in direct contact with at least said emitting portion of said semiconductor laser device and at least said incoming portion of said solid-state laser medium, said refrigerant being transparent to said excitation laser beam and having a high electrical insulation property; and



a temperature controlling device connected to said vessel for controlling temperature of said refrigerant to maintain a predetermined desired temperature so that said semiconductor laser device emits said excitation laser beam at a wavelength which equals an absorption wavelength of said solid-state laser medium.

5,311,529

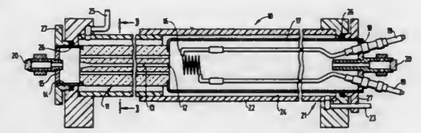
LIQUID STABILIZED INTERNAL MIRROR LASERS

William F. Hug, Pasadena, Calif., assignor to Omnichrome Corporation, Chino, Calif.

Continuation of Ser. No. 795,974, Nov. 22, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 84,084

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—35 **25 Claims**



1. A liquid-filled resonator stabilizing system for use with an internal mirror/internal resonator gas discharge laser tube assembly having a hermetically sealed gas laser tube including a gas, said gas including at least one gas of a group consisting of argon, krypton, neon, a capillary tube, an anode, an anode end assembly, a cathode, a cathode end bell and a cathode end assembly with electrical feed-throughs for the cathode, and having laser mirrors which are sealably mounted to each end of said hermetically sealed gas laser tube, said laser mirrors being maintained in alignment about the central axis by a resonator, said liquid-filled resonator stabilizing system comprising:

a. a cylindrical plastic jacket which has a liquid inlet and a liquid outlet and which surrounds said hermetically sealed gas laser tube, said plastic jacket being sealed to said hermetically sealed laser tube by O-rings which are held in place by plastic retainers whereby an annulus if formed between said hermetically sealed laser tube and said plastic jacket; and

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b. a liquid which has a thermal conductivity greater than 1.0×10^{-3} watts/centimeter/° C. and/or a specific heat capacity greater than 0.50 joule/gram/° C. and which fills said annulus so that said liquid is in intimate contact with all or a larger portion of the surface of said hermetically sealed gas laser tube, the thermal conductivity and the specific heat capacity of said liquid being sufficient to prevent misalignment of said laser mirrors;

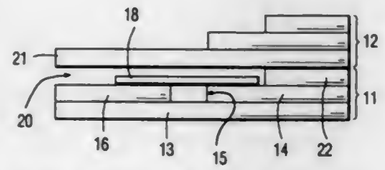
wherein said hermetically sealed gas laser tube comprises a portion of said resonator structure and said liquid cools said hermetically sealed laser tube.

5,311,530

SEMICONDUCTOR LASER ARRAY

David K. Wagner, South Pasadena, and Allen D. Danner, Pasadena, both of Calif., assignors to Advanced Optoelectronics, Inc., City of Industry, Calif.

Continuation-in-part of Ser. No. 583,170, Sep. 14, 1990, Pat. No. 5,107,091. This application Sep. 16, 1991, Ser. No. 760,488
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—36 **13 Claims**



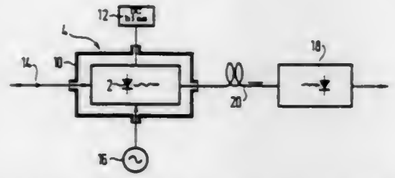
1. A laser bar submount, said submount comprising a rigid base portion having first and second opposed broad area surfaces, said submount also including a mesa on said first surface, said mesa having a first rise and defining a laser bar placement space for a laser bar on said first surface.

5,311,531

LIGHT GENERATOR, IN PARTICULAR FOR CONVEYING A MICROWAVE SIGNAL

Patrick Brindel, Colombes, and Annaïck Trotel, Matignon, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Oct. 30, 1992, Ser. No. 968,822
Claims priority, application France, Oct. 31, 1991, 91 13513
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—38 **8 Claims**



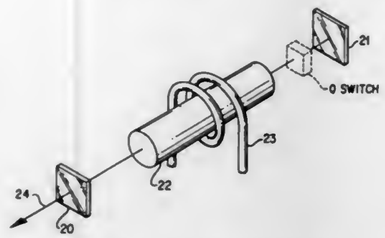
1. A light generator for conveying a microwave signal, the generator comprising a laser inside a package having a predetermined cut-off frequency, the laser being biased by a DC bias current close to a bend in a characteristic curve of the laser, the laser being controlled from outside the package by a plurality of AC control currents having respective individual frequencies which are lower than the predetermined cut-off frequency of the package, a linear combination of said individual frequencies establishing a transposed frequency higher than the cut-off frequency, the AC control currents being combined by the laser so as to modulate a lightwave emitted by the laser at the transposed frequency.

5,311,532

CALCIUM-YTTRIUM SILICATE OXYAPATITE LASERS

Roger F. Belt, Morristown, N.J., and Mark Randles, Monroe, N.C., assignors to Litton Systems, Inc., Morris Plains, N.J.

Filed Apr. 26, 1993, Ser. No. 51,885
Int. Cl.[5] H01S *3/16*
U.S. Cl. 372—41 **10 Claims**



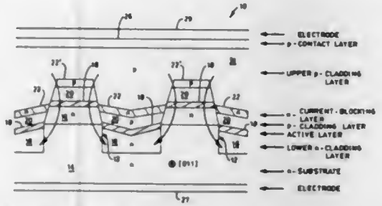
1. A single crystal of calcium yttrium silicate oxyapatite doped with trivalent thulium.

5,311,533

INDEX-GUIDED LASER ARRAY WITH SELECT CURRENT PATHS DEFINED BY MIGRATION-ENHANCED DOPANT INCORPORATION AND DOPANT DIFFUSION

Wolfgang E. Stutius, Weston, and Tien Y. Wang, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 23, 1992, Ser. No. 965,852
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **22 Claims**



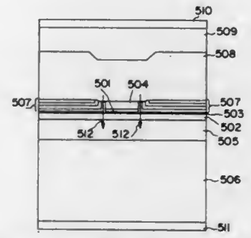
1. A semiconductor laser comprising:
a semiconductor substrate with at least one ridge etched on a first surface thereof;
a first cladding layer of a first select conductivity type disposed in overlying contiguous relation with respect to the first surface of said semiconductor substrate;
an active layer disposed in overlying contiguous relation with respect to said first cladding layer, said active layer being discontinuous from a portion of said active layer overlying said ridge to a portion of said active layer overlying a non-ridge area of said substrate;
a second cladding layer of a second select conductivity type disposed in overlying contiguous relation with respect to said active layer, said second cladding layer having a dopant species therein such that the conductivity type of said second cladding layer is opposite to the conductivity type of said first cladding layer;
at least one current blocking layer disposed in said second cladding layer and generally coextensive therewith, said blocking layer having a conductivity type opposite to the conductivity type of said second cladding layer except in that region overlying said ridge where the dopant species of said second cladding layer is sufficiently migrated therein to change the effective conductivity type to that of said second cladding layer thereby defining a current path through the second cladding layer to said ridge; and
electrodes disposed on the outside surfaces of said substrate and second cladding layer.

5,311,534

SEMICONDUCTOR LASER DEVICES

Yoshihiro Mori, and Nobuyuki Otsuka, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 22, 1993, Ser. No. 81,014
Claims priority, application Japan, Jun. 22, 1992, 4-162476
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **16 Claims**



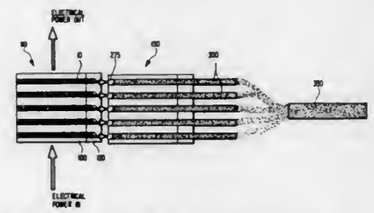
1. A semiconductor laser device, comprising;
an etching-stop layer formed on the surface of a waveguide layer overlying a semiconductor substrate;
a stripe-shaped mesa comprising an active layer and an overlying clad layer formed on the etching-stop layer; and
a current-blocking layer comprising thin layers of different conductivity type which are alternatively stacked and is formed beside said mesa and over said etching-stop layer;
wherein the etching-stop layer has a thickness which does not distort the vertical distribution of optical intensity of a propagating laser light; and the refractive index of said waveguide layer is larger than those of both said semiconductor substrate and said current-blocking layer.

5,311,535

MONOLITHIC LASER DIODE ARRAY PROVIDING EMISSION FROM A MINOR SURFACE THEREOF

Arthur A. Karpinski, Barker Rd., Jordan, N.Y. 13080

Filed Jul. 28, 1992, Ser. No. 920,658
Int. Cl.[5] H01S *3/19, 3/045*
U.S. Cl. 372—50 **20 Claims**



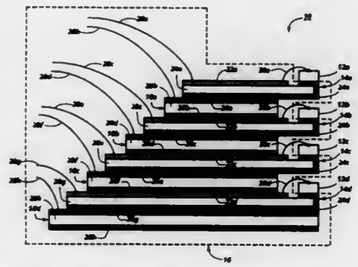
1. A monolithic laser diode array comprising:
a monolithic substrate having upper and lower major surfaces and at least one minor surface extending between said upper and lower major surfaces, at least one groove having substantially vertical side walls being formed in said upper major surface and extending to said at least one minor surface;
a metallized layer disposed along said side walls of said at least one groove to form at least one metallized groove; and
at least one laser diode bar, mounted in said at least one metallized groove such that an emission surface of said at least one laser diode bar is parallel to said at least one minor surface.

5,311,536

VERTICALLY STACKED, ACCURATELY POSITIONED DIODE LASERS

Thomas L. Paoli, Los Altos, Calif., and James J. Appel, Brighton, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 948,530, Sep. 22, 1992. This application Jul. 23, 1993, Ser. No. 96,312
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **3 Claims**



1. A laser array comprising:
a thermally conductive stacked support having at least two protruding members, each with a first and a second conductive layer, and at least one spacer with a third conductive layer disposed between said two protruding members and in contact with said second conductive layer;
at least two lasing elements having two electrical terminals each, each of said lasing elements being mounted on an associated one of said protruding members such that a first of said two electrical terminals is in electrical contact with said second conductive layer of said associated protruding member;
a conductor electrically connecting the second terminal of each said lasing element to said first conductive layer on said associated protruding member; and
a second conductor electrically connected to each first conductive layer on said associated protruding member in order to separately address each of said lasing elements.

5,311,537

ION LASER TUBE

Kazuhisa Nishida, and Takashi Kanamoto, both of Tokyo, Japan, assignors to NEC Corporation, Japan

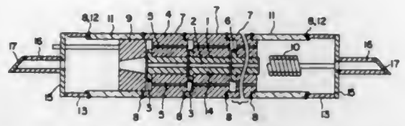
Filed Dec. 2, 1992, Ser. No. 984,352
Claims priority, application Japan, Mar. 19, 1992, 4-062907
Int. Cl.[5] H01S *3/03*
U.S. Cl. 372—61 **5 Claims**

1. An ion laser tube comprising:
a plurality of capillary tubes, each of said capillary tubes having a flange and a through hole for an electric discharge;
a plurality of tubular members made of AlN;
a plurality of capillary composite components, each of said capillary composite components comprising one of said capillary tubes and said tubular members;
an electric discharge section including said capillary composite components arranged along an axis of the ion laser

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tube, hollow pipes having opposite ends made of AlN and hollow pipes having opposite ends made of borosilicate glass;

sealing sections connecting said hollow pipe made of AlN and said hollow pipe made of borosilicate glass, wherein each of said sealing sections of said hollow pipe made of AlN is a high fusing point glass and a low fusing point glass applied thereon to seal said hollow pipe made of AlN and said hollow pipe made up of borosilicate glass;



a metallic end plate means having an anode, connected to one end of said electric discharge section;

another metallic end plate having a cathode, connecting to another end of said electric discharge section; and

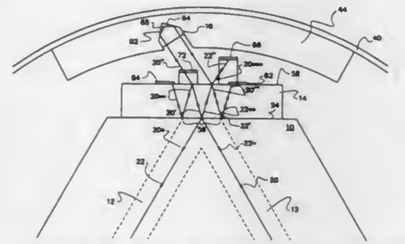
glass valves, wherein each of said glass valves has a Brewster window, each of said glass valve being connected to each end of said metallic end plate.

5,311,538

CASE-MOUNTED RLG READOUT HAVING BLOCK MOUNTED OPTICAL SENSOR

Rodney H. Thorland, Shoreview, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1992, Ser. No. 986,954
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 **19 Claims**



1. An angular rate sensor for sensing rotation, comprising:

a gyro case;

a block attached to the gyro case, the block having a plurality of bores therein which interconnect to form a closed loop cavity, the block for supporting a first counterpropagating optical signal and a second counter propagating optical signal;

an output mirror attached to the block having a first partially reflective surface and a second partially reflective surface, the output mirror attached to the block at a point where the first and second counterpropagating optical signals intersect, the output mirror for transmitting the first optical signal through both the first partially reflective surface and the second partially reflective surface;

a corner cube attached to the gyro case for receiving the first optical signal after it has been transmitted through the output mirror, translating the first optical signal, and reflecting the first optical signal back toward the output mirror; and

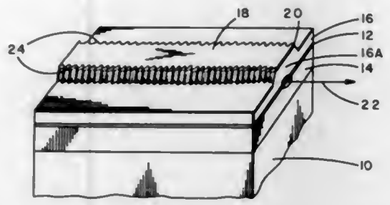
an optical sensor attached to the output mirror for receiving a combination of the first optical signal and the second optical signal and producing an electrical signal indicative of the combined optical signal.

5,311,539

ROUGHENED SIDEWALL RIDGE FOR HIGH POWER FUNDAMENTAL MODE SEMICONDUCTOR RIDGE WAVEGUIDE LASER OPERATION

Abbas Behfar-Rad, Wappingers Falls; Mark E. Jost, Fishkill, both of N.Y., and Christoph S. Harder, Zurich, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,457
Int. Cl.[5] H01S *3/08*; G02B *6/12*
U.S. Cl. 372—96 **6 Claims**



1. A semiconductor ridge waveguide structure comprising:

a semiconductor substrate;

a first cladding layer disposed on said substrate;

an active layer disposed on said first cladding layer

a second cladding layer disposed on said active layer, said second cladding layer including a raised ridge section extending on said second cladding layer, said ridge section having a trapezoidal cross-section with sloping sides 5 micrometers or less distance apart that have a roughened surface to prevent non-fundamental Fabry-Perot modes from occurring;

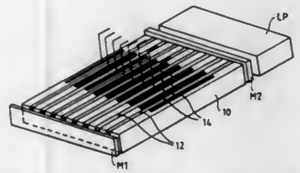
and a contact layer disposed on said ridge section.

5,311,540

LASER WITH COUPLED OPTICAL WAVEGUIDES

Jean-Paul Pocholle, Arpajon/La Norville; Eric Lallier, Levallois, and Michel Papuchon, Villebon, all of France, assignors to Thomson Composants Militaires et Spatiaux, Courbevoie, France

PCT No. PCT/FR91/00715, § 371 Date Apr. 28, 1992, § 102(e) Date Apr. 28, 1992, PCT Pub. No. WO92/04748, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 10, 1991, Ser. No. 849,077
Claims priority, application France, Sep. 11, 1990, 90 11204
Int. Cl.[5] H01S *3/082*
U.S. Cl. 372—97 **13 Claims**



1. A laser device for providing a desired coherent light output, comprising:

a substrate comprising a solid material, wherein said solid material is capable of stimulated emission of light in response to optical excitation;

a plurality of optically coupled juxtaposed optical waveguides, each waveguide having refractive indices, wherein said waveguides are formed in said solid material;

a source of light energy oriented to direct light energy emitted therefrom toward said solid material; and

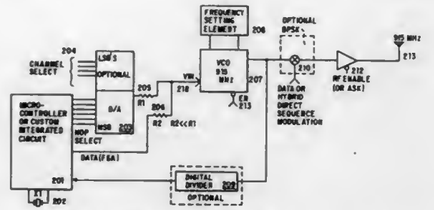
means for individually controlling the refractive indices of different ones of the waveguides so as to control phase relationships of stimulated emission between different ones of the waveguides.

5,311,541

FREQUENCY AGILE RADIO

H. Britton Sanderford, Jr., New Orleans, La., assignor to Axonn Corporation, New Orleans, La.

Filed May 8, 1992, Ser. No. 880,268
Int. Cl.[5] H04B *15/00*; H04L *27/26*; G01S *7/36*
U.S. Cl. 375—1 **18 Claims**



1. A method, using a frequency-agile transmitter in a frequency-agile radio system, for sending message-data, the message-data including at least one of message signals, voice signals, and data signals, the method comprising the steps of:

selecting, pseudo-randomly, a single carrier frequency for use by said frequency-agile transmitter;

generating a preamble-data signal on the single carrier frequency;

transmitting the preamble-data signal for a pre-set preamble time for allowing an appropriate frequency-agile receiver to lock-on the preamble-data signal; and

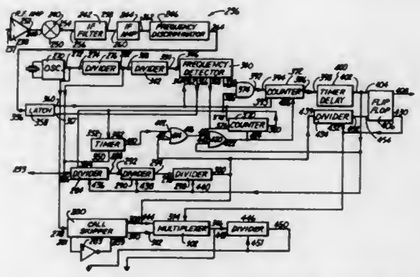
modulating a carrier signal having the single carrier frequency with the message-data to produce a modulated signal.

5,311,542

SPREAD SPECTRUM COMMUNICATION SYSTEM

Kenneth C. Eder, Circle Pines, assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 584,972, Sep. 19, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 960,189
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **22 Claims**



1. A communications system for transmitting to at least one receiving location selected information at selected times from at least one of a plurality of different transmitting location remote from said receiving location, said system comprising:

a plurality of transmitter means each located at a corresponding one of said transmitting locations and each being capable of transmitting electromagnetic radiation in any of a succession large time units (12) initiated by a corresponding initiating event; with that electromagnetic radiation transmitted in each said large time unit in said succession thereof having frequencies of said electromagnetic radiation in a selected bandwidth about a corresponding one of a plurality of available carrier frequencies,

said plurality of transmitter means each being capable of modulating a carrier signal transmitted thereby to result in said electromagnetic radiation being transmitted during those corresponding said large time units in said succession thereof (10) such that:

said succession has a plurality of preamble time durations (12A . . . 20A) provided therein separated from a succeeding one of said preambles by a corresponding information time durations (26A . . . I) in a multiplicity of said pluralities of information time durations (12B) which preamble and separating plurality of information time durations comprise one said large time unit (12);

each of said carrier signals which occur during a corresponding preamble time duration are of a different frequency value in said plurality thereof from those of said carrier signals occurring in each other said preamble time duration in said succession of time durations;

said succession of time durations; and each said carrier signal is modulated by an acquisition signal, such carrier signal occurring during a corresponding said information time duration being modulated by a selected data signal after modulation of said corresponding preamble; and

a receiver means located at said receiving location and being capable of receiving said electromagnetic radiation substantially reaching it which has been transmitted means, said receiver means being;

capable of determining, during each of a succession of scan time durations (1, 2, 3, 4, 5;) shorter in tim than said preamble time duration, whether any received electromagnetic radiation detectable by said receiver means is at least a portion of one of said preamble time duration signals:

capable of recovering, through demodulating that received signal with differing ones of a plurality of demodulating signals each having a frequency based on a corresponding one of said carrier frequencies until electromagnetic radiation transmitted from one of said transmitter means detects an initial acquisition preamble time duration signal:

thereafter continuing to detect electromagnetic radiation from said one of said transmitter means and demodulating said receiving signal with said demodulating signals during such time as remains in said initial acquisition preamble time duration signal and with recovered signals occurring: and

then during that plurality of information time durations immediately following, receiving each recovered information time duration signal having a carrier frequency being demodulated based on a corresponding one of said plurality of carrier frequencies to recover data from said plurality of information time duration signals.

5,311,543

TELEVISION TRANSMISSION SYSTEM USING TWO STAGES OF SPEAD-SPECTRUM PROCESSING

William F. Schreiber, No. 8 Ellery Sq., Cambridge, Mass. 02138

Filed Oct. 23, 1992, Ser. No. 965,227
Int. Cl.[5] H04N *7/167*
U.S. Cl. 375—1 **31 Claims**

1. A spread-spectrum transmission system for transmitting a television signal, said system comprising:

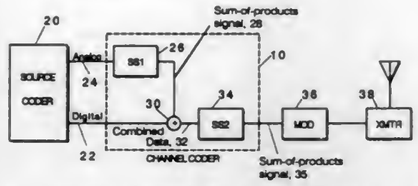
a source coder dividing the television signal into a first stream of data and a second stream of data; and

a channel coder connected to said source coder and producing an output signal, said channel coder comprising:

a first stage processing said first stream of data to produce a first set of spread-spectrum signals therefrom;

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a combiner stage combining said first set of spread-spectrum signals with said second stream of data to produce a set of combined signals; and

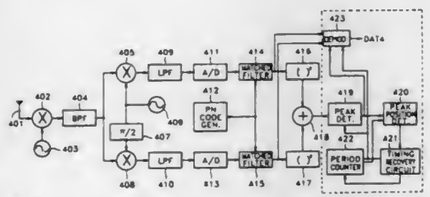


a second stage processing said set of combined signals to produce a second set of spread-spectrum signals therefrom, wherein said output signal is derived from said second set of spread-spectrum signals.

5,311,544
RECEIVER OF A DIRECT SEQUENCE SPREAD SPECTRUM SYSTEM

Jong-hyun Park, Seoul, and Je-woo Kim, Suwon, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 19, 1992, Ser. No. 979,053
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **18 Claims**



9. A receiver of a direct sequence spread spectrum system including mixing means for mixing a received signal with a carrier wave signal; a bandpass filter for bandpass-filtering the signal from said mixing means to generate an intermediate frequency (IF) signal; I-loop means and Q-loop means wherein said IF signal is summed with the output of an IF generator in multipliers, the I-phase of said output from said IF generator is multiplied in said I-loop means and the Q-phase thereof is multiplied in said Q-loop means to generate respective pseudo-noise (PN) signals without IF components, and each PN signal of said I-loop and Q-loop means passes through respective low-pass filters and then is converted into digital signals in analog-to-digital converters, thereby being filtered by digital matched filters; and adding means for summing the output signals from said I-loop means and Q-loop means, wherein said receiver of a direct sequence spread spectrum system comprises:

period counting means for counting a period of a system clock, and outputting a signal for commanding data demodulation approximately every half-PN period;

peak detecting means for detecting a peak in the output from said adding means until reaching a data demodulation point for every data demodulation period;

peak position detecting means for storing a current position of said peak output from said period counting means while said peak is being detected, and outputting said peak position at a data demodulation point after the ending of one period;

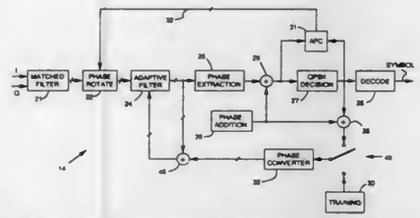
timing recovery means for receiving said current position from said peak position detecting means when beginning every data demodulation operation, and controlling said period counting means to move said peak position to allow the peak position of the following period to be observed in an accurate position; and

demodulating means for storing said outputs from said digital matched filters when said peak was detected, and then reproducing data and a data clock signal by receiving said data demodulation point via said period counting means.

5,311,545
MODEM FOR FADING DIGITAL CHANNELS AFFECTED BY MULTIPATH

David N. Critchlow, San Diego, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 17, 1991, Ser. No. 716,171
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—14 **17 Claims**



1. A receiver for processing a transmitted symbol received by way of at least two transmission paths, the transmission paths having at least some noise, said receiver comprising:

an antenna for receiving the transmitted symbol;

a downconverter for converting the received symbol into corresponding I and Q digital signals;

a matched filter coupled to the downconverter for increasing the signal to noise ratio of the I and Q digital signals;

phase rotation means for rotating the phase of the filtered I and Q digital signals by a computed amount to provide phase rotated signals;

an adaptive matched filter coupled to the phase rotation means for processing the phase rotated signals and for adaptively filtering the signals to produce phase coherent I and Q signals;

a phase extraction circuit coupled to the adaptive matched filter for converting the phase coherent I and Q signals into corresponding adaptively filtered phase signals;

a phase detection circuit coupled to the phase extraction circuit for converting the adaptively filtered phase signals into a corresponding plural bit pattern representative of the symbol; and

phase decoding means for decoding said plural bit pattern, to thereby produce the symbol.

5,311,546
CARRIER PHASE RECOVERY FOR AN ADAPTIVE EQUALIZER

Woo H. Paik, Encinitas; Scott A. Lery, Leucadia, and Adam S. Tom, La Jolla, all of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

Continuation of Ser. No. 733,790, Jul. 26, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,962
Int. Cl.[5] H04B *3/04;* **H04L** *27/06*
U.S. Cl. 375—14 **20 Claims**

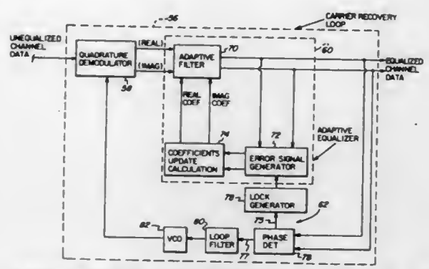
9. An adaptive equalizer for a communications receiver comprising:

means for demodulating an unequalized data signal;

an equalizer loop containing a filter coupled to receive demodulated data from said demodulating means, an error signal generator coupled to receive filtered data from said filter, and means responsive to error signals from said error signal generator for updating coefficients for input to said filter;

a carrier recovery loop comprising a phase detector coupled to receive said filtered data and provide a first phase error signal for controlling said demodulating means; and

means, coupled to receive a second phase error signal from said phase detector, for generating a carrier lock signal when said second phase error signal meets a threshold;

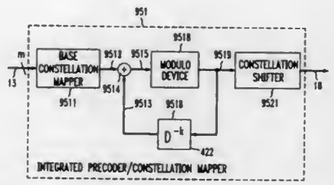


wherein said error signal generator is responsive to said carrier lock signal for generating error signals from a first coefficient update algorithm when said second phase error signal fails to meet said threshold and for generating error signals from a second coefficient update algorithm when said second phase error signal meets said threshold.

5,311,547
PARTIAL-RESPONSE-CHANNEL PRECODING

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 3, 1992, Ser. No. 829,820
Int. Cl.[5] H04L *25/34, 25/49*
U.S. Cl. 375—18 **27 Claims**



1. Apparatus comprising

means for selecting, in response to input data, a sequence of signal points from a predetermined base constellation,

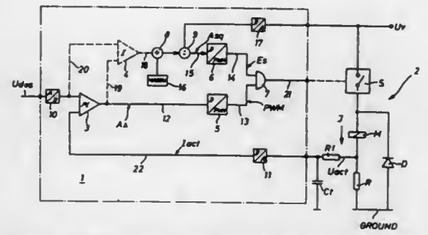
means for combining each selected signal point with a feedback signal to provide a sequence of combined signal points, said feedback signal being a predetermined function of at least one previously provided one of the combined signal points, said base constellation and said function being such that ones of said combined signal points are signal points of said base constellation and the others are signal points of minimally non-overlapping lattice translates of said base constellation, and

means for providing a transmit signal which represents said combined signal points, all of the combined signal points which are minimally non-overlapping lattice translates of one another being represented identically.

5,311,548
DIGITAL CONTROL ELECTRONIC HAVING A PULSE WIDTH MODULATED (PWM)-OUTPUT SIGNAL FOR THE CONTROL OF ELECTRIC CONTROL ELEMENTS OF A HYDRAULIC SYSTEM

Heinrich Nikolaus, Hamburg, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Mar. 20, 1992, Ser. No. 854,823
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109233
Int. Cl.[5] H02M *3/10;* **G05B** *11/28;* **H01F** *7/18*
U.S. Cl. 375—22 **10 Claims**



1. A digital electronic control apparatus for controlling at least one electronic control element comprising:

means for generating a first pulse width modulated signal having a first frequency;

means for generating a second pulse width modulated signal having a second frequency different from said first frequency, said second pulse width modulated signal being a function of a digital value determined by at least one of a characteristic and an operating condition of said at least one electronic control element; and

a combining gate for receiving said first and second pulse width modulated signals and combining them to produce an output signal for controlling said at least one electronic control element.

5,311,549
METHOD AND SYSTEM FOR PROCESSING THE PRE-ECHOES OF AN AUDIO-DIGITAL SIGNAL CODED BY FREQUENCY TRANSFORMATION

Yannick Mahieux, Begard, France, assignor to France Telecom, France

Filed Mar. 23, 1992, Ser. No. 855,535
Claims priority, application France, Mar. 27, 1991, 91 03715
Int. Cl.[5] H04B *14/04*
U.S. Cl. 375—25 **10 Claims**

4. A system for processing the pre-echoes of an audio-digital signal, said audio-digital signal comprising blocks comprising N successive samples, said blocks being transformed by a frequency transform into transform coefficients y(k) over weighting windows formed over said blocks, said system comprising:

a coder including a plurality of modules arranged in cascade, said coder comprising:

a module for reading said samples x(n) of said audio-digital signal,

a module for receiving said read samples, for calculating said frequency transform and for outputting a corresponding transform coefficient y(k) for each current sample block,

a module for receiving said read samples, for detecting a transition in amplitude of said audio-digital signal at the level of at least one sample of rank (N-q) of said current sample block and for outputting a transition indicator and a position of said transition in said current block,

a module for receiving said read samples, and for extracting, from said samples x(n), parameters of energy

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$\sigma^2x(n)$ of each sample or of a group of successive samples of said current sample block of said audio-digital signal,

a module for coding by quantizing said transform coefficients, and

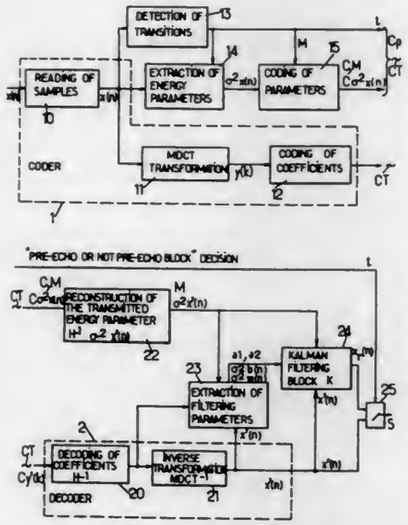
a module for coding said parameters of energy $\sigma^2x(n)$, and said position of said transition;

a digital transmission channel transmitting said transition indicator and coded values of said transform coefficients, said parameters of energy $\sigma^2x(n)$, and said position of said transition; and

a decoder including a plurality of modules arranged in cascade for receiving said coded values and said transition indicator from said transmission channel, said decoder comprising:

a module for decoding said transmitted transform coefficients y(k),

a module for calculating the inverse frequency transform of decoded transform coefficients, and for outputting a noisy decoded signal x'(n),



a module for reconstructing said transmitted coded parameters of energy $\sigma^2x(n)$ and position of said transition,

a module for receiving said noisy decoded signal x'(n) and said reconstructed parameters of energy $\sigma^2x(n)$, for extracting prediction coefficients of said samples x(n) of the block of samples x(n-1) preceding said current sample block and for evaluating the energies of the innovation noise $\sigma^2w(n)$ and of the coding noise $\sigma^2b(n)$ for said sample x(n) of rank n of said current sample block, and

a KALMAN filtering module for receiving as a filtering input said noisy decoded signal x'(n) and as a control input said prediction coefficients and said energies of said coding noise $\sigma^2b(n)$ and said innovation noise $\sigma^2w(n)$, and for outputting a filtered decoded signal x(n), thereby reducing the resulting additive noise when coding the quantization of said transform coefficients.

5,311,550

TRANSMITTER, TRANSMISSION METHOD AND RECEIVER

Yvon Fouche, Chatenay Malabry; Philippe Ellesaume, Antony; Tristan de Couasnon, Betton; Serge Travert, Cesson Sevigne; Raoul Mounier, Rennes, and Stephane Hergault, Cesson Sevigne, all of France, assignors to Thomson-CSF, Puteaux, France

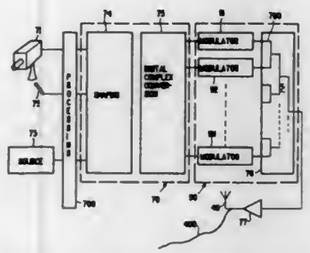
PCT No. PCT/FR89/00546, § 371 Date Apr. 22, 1991, § 102(e) Date Apr. 22, 1991, PCT Pub. No. WO90/04893, PCT Pub. Date May 3, 1990

PCT Filed Oct. 20, 1989, Ser. No. 678,262

Claims priority, application France, Oct. 21, 1988, 88 13832; Oct. 21, 1988, 88 13833

Int. Cl.[5] H04L *27/28*

U.S. Cl. 375—38 **19 Claims**



1. Method for simultaneous transmission of modulated waves using a plurality of orthogonal frequencies, in which symbols are transmitted for a period $T+\Delta T$, two transmission frequencies being separated by $1/T$, T being the useful transmission interval and ΔT being the transition interval, absorbing the non-stationarities due to the arrival of echoes, in which during each transmission interval of period $T+\Delta T$ a (real part, imaginary part) or (amplitude, phase) pair is transmitted on each frequency, the (real part, imaginary part) or (amplitude, phase) pair being in one-to-one equivalence with information to be transmitted, characterised in that the number of pairs possible is greater than 4, in that the symbols transmitted are constituted periodically by reference signals enabling, at a receiving end, equalization of the transmission channel, and in that synchronisation signals are transmitted enabling, at the receiving end, processing of the signal during the useful transmission intervals of period T so as to recover tie orthogonality of the channels corresponding to the orthogonal frequencies.

5,311,551

DIGITAL SIGNAL HARDWARE PROTECTION SWITCHING

Stephen K. Eng, Andover, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 24, 1992, Ser. No. 825,351

Int. Cl.[5] H04K *1/10*; H04L *27/28*

U.S. Cl. 375—38 **16 Claims**

1. A protection switching unit for use in a hardware protection switching arrangement and being adapted for controllably supplying and receiving a digital signal to and from, respectively, a digital transmission line, the protection switching unit comprising:

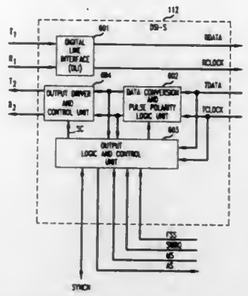
means for multiplexing a digital data signal into a prescribed digital signal having a predetermined framing format;

means responsive to a switch request signal for detecting a next bit having a first predetermined bit condition of a digital signal being supplied as an output from the unit,

means for generating a first control signal in response to said means for detecting indicating that a bit having said first predetermined bit condition has been detected of said digital signal being supplied as an output D from the unit;

means for supplying said first control signal as an output from the unit;

means responsive to a received first control signal for synchronizing to said first predetermined bit condition of a digital signal to be supplied as an output from the unit to the digital transmission line;



means for generating a second control signal based on a second predetermined bit condition of a digital signal being supplied as an input to the unit; and

output circuit means for supplying said digital signal as an output, said output circuit means having an ON state and an OFF state and being responsive to said control signal to select either the ON state or the OFF state.

5,311,552

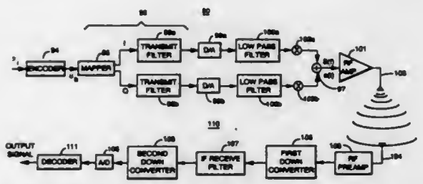
TRELLIS CODING TECHNIQUE TO IMPROVE ADJACENT CHANNEL INTERFERENCE PROTECTION RATIO IN LAND MOBILE RADIO SYSTEMS

Sandeep Chennakeshu, Schenectady; Amer A. Hassan, Clifton Park, and John B. Anderson, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 15, 1992, Ser. No. 898,670

Int. Cl.[5] H04L *5/12, 23/02*

U.S. Cl. 375—39 **4 Claims**



1. A method of configuring a communication system, said system including a transmitter having an encoder with a memory length L and capable of being in a plurality of encoder states coupled to a mapper for mapping the encoder states to a phase angle signal, a pair of parallel branches coupled to an output of the mapper, each branch having a transmit filter coupled to the mapper for filtering the phase angle signal with a transfer function Q(f), a digital-to-analog (D/A) converter coupled to the transmit filter for sampling the filtered signal, a low pass filter and a modulator coupled in series with the D/A converter, a summer coupled to the modulator of each branch, and a transmit antenna coupled to the summer, said system further including a receiver comprising a circuit including a receive antenna, a first down converter, a receive filter having a power spectrum $H_r(f)$, a second down converter, an analog-to-digital converter and a decoder all serially coupled; said method comprising the steps of:

a) choosing a desired minimum acceptable Euclidean distance (DMED) between a set of symbol points for the transmitter;

b) choosing a symbol period, T_s;

c) choosing a number of input bits to be shifted into the encoder at each said symbol period thereby determining an encoder alphabet having M entries;

d) choosing a number of bits to be output by the encoder during each said symbol period to determine length of an encoder output code and a number of constellation points;

e) setting a probability associated with each said encoder alphabet entry uniformly to a single predetermined value thereby fixing a probability matrix X_s;

f) setting a probability associated with each said encoder output code uniformly to a single predetermined value thereby fixing a probability matrix Y_s;

g) permutating all possible encoder states with all encoder alphabet entries to result in a plurality of encoder sets U;

h) choosing an encoder set as a present encoder set;

i) adapting the encoder to provide a plurality of encoder output codes u from the present encoder set U according to the encoder's present state and a presently received encoder alphabet entry;

j) determining a minimum Euclidean distance, d^2_{min}, associated with the present encoder set U;

k) comparing d^2_{min} determined from step "j" with DMED and discarding the present encoder set U if d^2_{min} does not exceed DMED;

l) repeating steps "h"-"k" for all encoder sets;

m) determining a P_{ib}/P_{ab} ratio for each encoder set that has not been discarded according to the following equation:

$$\frac{P_{ib}}{P_{ab}} = \frac{\int_{-W_r}^{W_r} |Q(f)|^2 E(f) H_r(f) df}{\int_{-W_r}^{W_r} |Q(f - f_\Delta)|^2 E(f - f_\Delta) H_r(f) df}$$

$$E(f) = \frac{1}{MN}\, U^H \left[I + \frac{1}{M} \sum_{\nu=0}^{L-1} X_\nu \cos(2\pi f(\nu+1)T_s) + jY_\nu \sin(2\pi f(\nu+1)T_s) \right] U$$

where

and the superscript H indicates Hermitian or conjugate transpose operator, M=number of input alphabet entries, N=number of encoder states, L=memory length of the shift register encoder, and T_s is the symbol duration;

n) choosing from the encoder sets that have not been discarded an encoder set having the greatest P_{ib}/P_{ab} ratio as the optimum coding set;

o) adapting the transmitter to transmit the optimum coding set for all future transmissions;

p) adapting the decoder of the receiver to decode signals it receives according to the optimum coding set.

5,311,553

TRELLIS CODING TECHNIQUE TO INCREASE ADJACENT CHANNEL INTERFERENCE PROTECTION RATIO IN LAND MOBILE RADIO SYSTEMS UNDER PEAK POWER CONSTRAINTS

Sandeep Chennakeshu; Rajaram Ramesh, both of Schenectady; Amer A. Hassan, Clifton Park, and John B. Anderson, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1992, Ser. No. 975,201

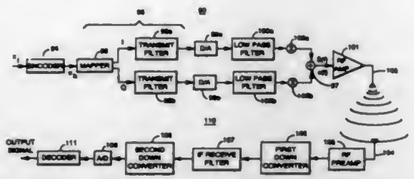
Int. Cl.[5] H04L *5/12*

U.S. Cl. 375—39 **3 Claims**

1. A method of configuring a communication system, said

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system including a transmitter having an encoder with a memory length L and capable of being in a plurality of encoder states coupled to a mapper for mapping the encoder states to a phase angle signal, a pair of parallel branches coupled to an output of the mapper, each branch having a transmit filter coupled to the mapper for filtering the phase angle signal with a transfer function Q(f), a digital-to-analog (D/A) converter coupled to the transmit filter for sampling the filtered signal, a low pass filter and a modulator coupled in series with the D/A



converter, a summer coupled to the modulator of each branch, and a transmit antenna coupled to the output of the summer, said system further including; a receiver having a receive antenna, a first down converter, a receive filter having a power spectrum $H_r(f)$, a second down converter, an analog-to-digital converter and a decoder all serially coupled; said method comprising the steps of:

a) choosing a desired minimum acceptable value, (MPDR), of P_{DR} for the transmitter where P_{DR} is defined as:

$$P_{DR} = \frac{d^2_{min}}{P_r} = d^2_{min}\left(\frac{P_{ave}}{P_{peak}}\right)$$

where P_{ave} is an average power signal transmitted from the transmit antenna, P_{peak} is the peak power of the transmitted signal, and d_{min} is a minimum Euclidean distance associated with an encoder set;

b) choosing a symbol period, T_s;

c) choosing a number of input bits to be shifted into the encoder at each said symbol period thereby determining the encoder alphabet having M entries;

d) choosing a number of bits to be output by the encoder during each said symbol period to determine length of an encoder output code and a number of constellation points;

e) setting a probability associated with each said encoder alphabet entry uniformly to a single predetermined value, thereby fixing a probability matrix X_n;

f) setting a probability associated with each said encoder output code uniformly to a single predetermined value, thereby fixing a probability matrix Y_n;

g) permutating all possible encoder states with all encoder alphabet entries to result in a plurality of encoder sets U;

h) choosing an encoder set as a present encoder set;

i) adapting the encoder to provide a plurality of encoder output codes u from the present encoder set U according to the encoder's present state and a presently received encoder alphabet entry;

j) determining P_{DR} associated with the present encoder set U;

k) comparing P_{DR} determined from step "j" with MPDR, and discarding the present encoder set U if P_{DR} does not exceed MPDR;

l) repeating steps "h"-"k" for all encoder sets U;

m) determining a P_{ib}/P_{ab} ratio for each encoder set that has not been discarded according to the following equation:

$$\frac{P_{ib}}{P_{ab}} =$$

-continued

$$\frac{\int_{-W_r}^{W_r} |Q(f)|^2 E(f) H_r(f) df}{\int_{-W_r}^{W_r} [|Q(f - f_\Delta)|^2 E(f - f_\Delta) + |Q(f + f_\Delta)|^2 E(f + f_\Delta)] H_r(f) df}$$

where

$$E(f) = \frac{1}{MN} U^H \left[I + \frac{1}{M} \sum_{v=0}^{L-1} X_v \cos(2\pi f(v+1)T_s) + jY_v \sin(2\pi f(v+1)T_s) \right] U$$

and the superscript H indicates Hermitian or conjugate transpose operator, M=number of input alphabet entries, N=number of encoder states, L=memory length of the shift register encoder, and T_s is the symbol duration;

n) choosing from the encoder sets that have not been discarded an encoder set having the greatest P_{ib}/P_{ab} ratio as the optimum coding set;

o) adapting the transmitter to transmit the optimum coding set for all future transmissions; and

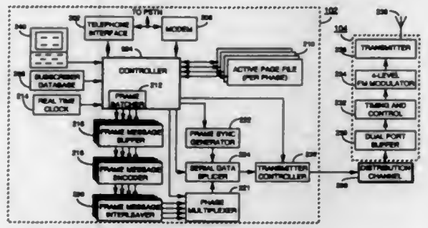
p) adapting the decoder to decode signals it receives according to the optimum coding set.

5,311,554

SYNCHRONIZED OFFSET EXTRACTION IN A DATA RECEIVER

Daniel A. Morera, Boynton Beach, and David R. Petreye, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1992, Ser. No. 907,965
Int. Cl.[5] H03K 9/00; H04L 27/06, 25.06
U.S. Cl. 375—75 **17 Claims**



1. A selective call receiver comprising:

receiving means for receiving and demodulating a radio frequency signal having digital information contained within symbols modulated thereon and for producing a received signal having a substantially constant DC offset voltage with an AC voltage representing the symbols combined therewith;

determining means for determining the DC offset voltage;

digitizing means for comparing the determined DC offset voltage with the received signal and for producing a digital signal indicative of the information contained within the symbols;

synchronizing means for synchronizing to the symbols and for producing a synchronization signal in response thereto;

decoding means for decoding the digital signal in response to the synchronization signal and for storing and alerting the reception of information directed to the selective call receiver; and

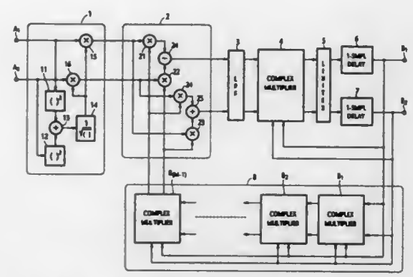
control means responsive to the synchronization signal for enabling said determining means substantially in the center of each symbol.

5,311,555

PHASE DIVIDER FOR COMPLEX SIGNALS

Osamu Ichiyoshi, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Sep. 30, 1992, Ser. No. 954,664
Claims priority, application Japan, Sep. 30, 1991, 3-250757
Int. Cl.[5] H03D 3/22; H04L 27/22
U.S. Cl. 375—86 **4 Claims**



1. A phase divider comprising:

a first complex limiter for receiving a variable amplitude input complex signal formed by a sequence of samples of real and imaginary values for limiting the amplitude of said complex signal to a constant amplitude of unit value;

a first complex multiplier for multiplying the complex signal from said first complex limiter with a first feedback complex signal applied thereto;

loop filter means connected to the output of said first complex multiplier;

a second complex multiplier for multiplying a complex signal from said loop filter means with a second feedback complex signal applied thereto;

a second complex limiter for limiting the amplitude of a complex signal from said second complex multiplier to a constant amplitude of unit value;

one-sample delay means for delaying the complex signal from said second complex limiter for a sample interval and applying the delayed complex signal to said second complex multiplier as said second feedback complex signal; and

a complex multiplier of M-th power for raising the delayed complex signal to an M-th power and applying the M-power raised complexed signal to said first complex multiplier as said first feedback complex signal.

5,311,556

DIGITAL FSK TRANSMITTER RECEIVER AND METHOD OF OPERATING SAME

William E. Baker, Mentor, Ohio, assignor to Elsag International B.V., Amsterdam, Netherlands

Filed Aug. 30, 1991, Ser. No. 752,758
Int. Cl.[5] H04L 27/14
U.S. Cl. 375—88 **5 Claims**

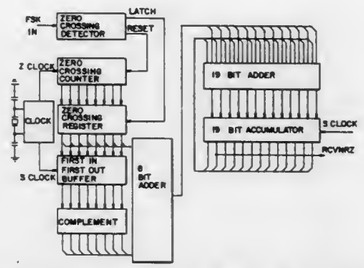
1. A digital FSK receiver for receiving an FSK signal containing at least two different signal frequencies, comprising:

a zero crossing detector for detecting zero crossings of the FSK signal;

interval measuring means connected to the zero crossing detector for measuring the intervals between the zero crossings, the intervals having a first value when the FSK signal is at one of the at least two signal frequencies, a second value when the FSK signal is at the other of the at least two signal frequencies, and a plurality of intermediate values which are between the first and second values when the FSK signal switches between the frequencies;

binary output means connected to the interval measuring means for receiving the interval values and or outputting a binary signal which switches between logical zero and logical one states when the binary output means receives one of the intermediate values;

wherein the interval measuring means comprises a zero crossing counter connected to the zero crossing detector, a clock connected to the zero crossing counter for pulsing



the zero crossing counter a plurality of times between each zero crossing, the zero crossing counter counting the number of clock pulses between intervals, and a zero crossing register connected to the zero crossing counter for storing the number of clock pulses counted during each interval which corresponds to one of the values for the interval; and

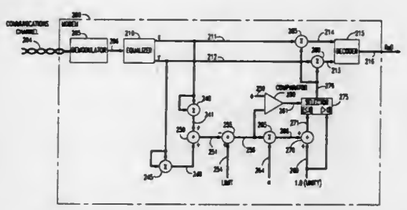
a first in-first out buffer for receiving the contents of the zero crossing register and for applying the contents of the zero crossing register to the binary output means.

5,311,557

CIRCULAR LIMITER FOR USE IN A RECEIVER TO REDUCE THE EFFECTS OF SIGNAL DISTORTION

William L. Betts, St. Petersburg, and Keith A. Souders, Tampa, both of Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 10, 1992, Ser. No. 916,059
Int. Cl.[5] H04L 27/06
U.S. Cl. 375—94 **23 Claims**



1. Apparatus comprising:

means for receiving a signal, the signal comprising a plurality of received signal points, each received signal point having a location in a signal space;

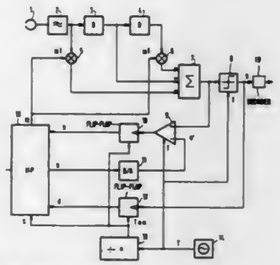
means for limiting the received signal points to a portion of the signal space by changing the locations of those ones of the plurality of received signal points whose locations are outside of said portion of the signal space; and

means for decoding those ones of the plurality of received signal points whose locations have been changed and the

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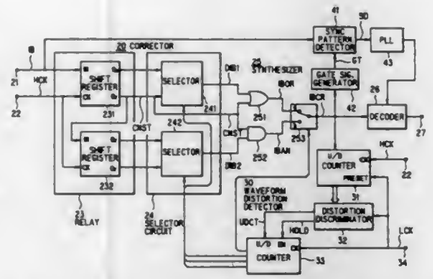
remaining ones of the plurality of received signal points to provide a received data sequence.

5,311,558
DATA RECEIVER COMPRISING A CONTROL LOOP WITH REDUCED SAMPLING FREQUENCY
Johannes W. M. Bergmans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 10, 1992, Ser. No. 848,810
Claims priority, application European Pat. Off., Mar. 15, 1991, 91200563.4
Int. Cl.[5] H04B *1/10*
U.S. Cl. 375—99 **8 Claims**



1. Data receiver comprising:
a) an input coupled to receive a data signal having data symbols occurring at a rate of 1/T symbols/sec., wherein T is a rational fraction (≦1) of an interval between received symbols of the data signal,
b) an adaptive system for estimating at least one measure of a characteristic quantity of the data signal applied to the input of the data receiver, said adaptive system comprising:
i) error determining means for determining an error in the estimate of the measure of the characteristic quantity of the data signal, said error determining means having first and second inputs and an output;
ii) adapting means for adapting at discrete instants the estimate of the measure of the characteristic quantity of the data signal, said adapting means having an input and an output;
iii) means connecting the input of the data receiver to the first input of the error determining means;
iv) means coupling the output of the error determining means to an input of the adapting means for periodically conveying thereto the error with a period nT, where n is an integer;
v) means coupling the output of the adapting means to the second input of the error determining means, the signal at said output of the adapting means forming the measure of the characteristic quantity of the data signal, said adapting means functioning to adapt its output signal at discrete instants in order to minimize the error;
c) said input signal to the data receiver giving rise to a cyclostationary data signal having a cyclostationary period mT, where m is an integer;
d) the integer n being selected such that the greatest common divisor of n and m is equal to 1.

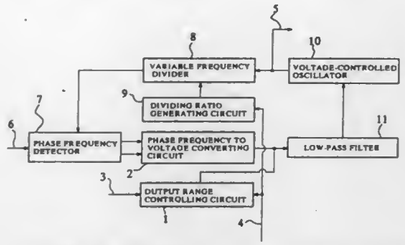
5,311,559
APPARATUS FOR CORRECTING WAVEFORM DISTORTION
Nobuyuki Yasuda, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 3, 1992, Ser. No. 940,102
Claims priority, application Japan, Sep. 3, 1991, 3-250488
Int. Cl.[5] H04L *7/06*
U.S. Cl. 375—113 **8 Claims**



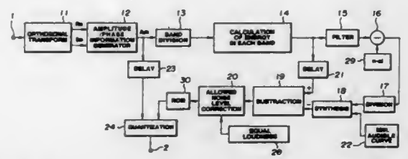
1. An apparatus for correcting wave distortion, comprising:
delay means to which an input signal is supplied;
said input signal being so modulated that an accumulated value of a time interval from its leading edge to its trailing edge equal to another accumulated value of another time interval from a trailing edge to a leading edge, and
said delay means generating plural delayed outputs, each of which has a certain time delay shorter than said time interval;
selecting means for performing a selecting operation in which a plurality of delayed signals among said plural delayed outputs are selected;
synthesizing means for performing a synthesizing operation in which said plurality of delayed signals are synthesized so that a synthesized signal can be obtained by correcting at least one of said time interval and said another time interval through said certain time delay;
detecting means for detecting a difference between a time interval from a leading edge to a trailing edge and another time interval from a trailing edge to a leading edge of said synthesized signal out of said synthesizing means;
means for generating a control signal which controls, based on a detected output by said detecting means, said selecting operation of selecting means and said synthesizing operation of a synthesizing means so as to accumulate a value of a time interval from a leading edge to a trailing edge of said synthesized signal equal to another accumulated value of another time interval from a trailing edge to a leading edge of said synthesized signal.

5,311,560
FREQUENCY SYNTHESIZER
Satoshi Tatsumi, and Sadao Okawa, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Jan. 11, 1993, Ser. No. 2,139
Claims priority, application Japan, Jan. 13, 1992, 4-004224
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 **5 Claims**

1. A frequency synthesizer, comprising:
a voltage controlled oscillator for outputting a signal of a frequency corresponding to a voltage inputted thereto;
a variable frequency dividing circuit for dividing the frequency signal from said voltage controlled oscillator at a variable dividing ratio;
a phase frequency detector for receiving a reference signal and an output of said variable frequency dividing circuit to effect phase frequency detection;
a phase frequency to voltage converting circuit for outputting a voltage in accordance with output signals of said phase frequency detector;
a low-pass filter for passing a low frequency component of the output voltage of said phase frequency to voltage converting circuit therethrough to said voltage controlled oscillator; and
an output range controlling circuit for clipping the output voltage of said phase frequency to voltage converting circuit to maintain it within a voltage range in accordance with said dividing ratio associated with said variable frequency dividing circuit.

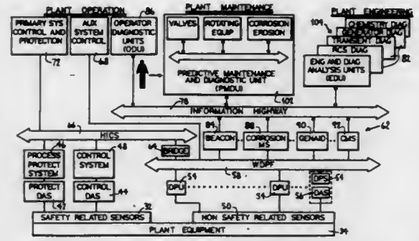


5,311,561
METHOD AND APPARATUS FOR COMPRESSING A DIGITAL INPUT SIGNAL WITH BLOCK FLOCATING APPLIED TO BLOCKS CORRESPONDING TO FRACTIONS OF A CRITICAL BAND OR TO MULTIPLE CRITICAL BANDS
Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 26, 1992, Ser. No. 857,774
Claims priority, application Japan, Mar. 29, 1991, 3-091187; Mar. 29, 1991, 3-091188
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **50 Claims**



33. An apparatus for compressing a digital input signal to provide a compressed signal, the apparatus comprising:
an orthogonal transform circuit whereto the input signal is connected;
means for dividing spectral components from the orthogonal transform circuit into critical bands;
means for dividing the spectral components in a critical band into blocks having a bandwidth narrower than the critical band;
means for applying block floating processing to the blocks to generate a floating coefficient for each block;
means for quantizing the spectral components in each block using a number of bits allocated to the block according to an allowed noise level for the critical band, the number of bits being indicated by a word length; and
means for including in the compressed signal the word length for each block, and, instead of the floating coefficient for each block, the allowed noise level for the critical band.

5,311,562
PLANT MAINTENANCE WITH PREDICTIVE DIAGNOSTICS
Sam S. Palusamy, Murrysville; Douglas A. Bauman, Apollo; Thomas A. Kozlosky, Oakmont; Charles B. Bond, Export; Elwyn L. Cranford, III, Greensburg, and Theodore J. Batt, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 1, 1992, Ser. No. 983,935
Int. Cl.[5] G21C *7/36*
U.S. Cl. 376—215 **7 Claims**



1. An integrated information system for a plant, the plant having a plurality of equipment units operating interactively in functional equipment subsets according to variable operational parameters, said equipment units being controllable for varying the operational parameters, and the operational parameters of at least some of the equipment subsets affecting loading of others of the equipment subsets, the information system comprising:
a plurality of sensors operatively coupled to the equipment units and sensing values of the operational parameters for assessing a condition of the equipment subsets;
sampling means coupled to the sensors, for collecting and generating at least one of sample values of the operational parameters and information including results of numerical operations on the sample values, and a memory means for storage thereof;
an operational control system coupled to at least one of the sampling means and the memory means, the operational control system being attended by an operator for adjusting the operational parameters during plant operation, the operational control system including diagnostic means for assessing plant operation based on the operational parameters and reporting on plant operation to the operator to enable choices for control of the equipment subsets to vary the operational parameters;
a maintenance monitoring system coupled to at least one of the sampling means and the memory means, the maintenance monitoring system being operable for accumulating a usage factor for a plurality of the equipment units and reporting maintenance requirements of the equipment units to maintenance personnel to enable choices for maintenance operations;
data communications means coupling the operational control system and the maintenance monitoring system for bidirectional communications and sharing of data;
wherein the memory means includes a data memory accessible over the data communications means to both said operational control system and said maintenance monitoring system, the data memory including diagnostic specifications for the operational parameters and technical specifications for the equipment subsets;
the diagnostic means assessing said plant operation as a function of the operational parameters and as a function of

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the usage factor, diagnostic specifications and technical specifications; and,

the maintenance monitoring system reporting on the maintenance requirements of the equipment units as a function of the operational parameters and as a function of the usage factor, diagnostic specifications and technical specifications, and wherein data defining the operational parameters, the usage factor, the diagnostic specifications and the technical specifications are shared commonly between the operational control system and the maintenance monitoring system over the data communications means.

5,311,563

STORAGE FRAME FOR NUCLEAR REACTOR FUEL ASSEMBLIES

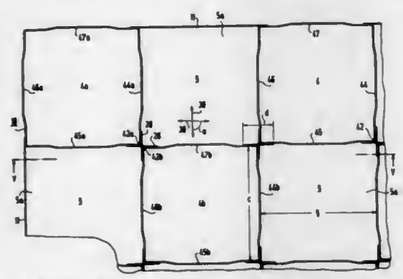
Hans-Peter Schabert; Wilfried Horstmann, both of Erlangen, and Karl Wasinger, Mulheim am Rhein, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 962,464

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1991, 4134246

Int. Cl.[5] G21C *19/40*

U.S. Cl. 376—272 **19 Claims**



1. A storage frame for nuclear reactor fuel assemblies, comprising:

a) a base plate;

b) a plurality of shafts standing erect on and being secured to said base plate, said shafts each having a substantially rectangular cross section and being disposed diagonally opposite one another in a checkerboard-type configuration, and said shafts having mutually parallel side walls and having longitudinal edges adjacent one another with an offset defining a gap therebetween; and

c) at least two connecting elements joining at least some of said diagonally opposite shafts together along said longitudinal edges by spanning said gap;

d) said at least two connecting elements including at least one first connecting element bridging a respective pair of said longitudinal edges of two of said shafts, said first connecting element being a sheet-metal strip and being welded to a first pair of said mutually parallel side walls of said two diagonally opposite shafts; and

e) said at least two connecting elements including at least one second connecting element bridging the respective pair of said longitudinal edges of said two diagonally opposite shafts, said second connecting element being a sheet-metal strip and being welded to a second pair of mutually parallel side walls of said two diagonally opposite shafts;

f) said first connecting element having a relatively higher rigidity in a first direction and a relatively lower rigidity in a second direction, said second connecting element having a relatively higher rigidity in the second direction and a relatively lower rigidity in the first direction, said first direction being defined by a horizontal transverse force acting substantially parallel to flat side of said first connecting element, and said second direction being defined by a horizontal transverse force acting substantially parallel to flat side of said second connecting element.

5,311,564

SPACER FOR FUEL ASSEMBLIES

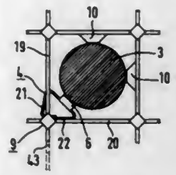
Alexander Steinke, Ebermannstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 925,980

Claims priority, application European Pat. Off., Aug. 15, 1991, 91113145.6

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—441 **24 Claims**



1. In a fuel assembly having rods in a bundle, a gridlike spacer, comprising:

a) polygonal grid meshes having ribs intersecting at corners and extending transversely to the rod bundle between the rods of the rod bundle, said ribs having lateral surfaces facing the rods penetrating said meshes;

b) springs each protruding diagonally into at least one corner of a respective one of at least a majority of said grid meshes, each of said springs having a middle part for laterally supporting a given rod penetrating said respective mesh, said middle part being an approximately cylindrical segment curved convexly about an axis of curvature at right angles to the rod bundle;

c) each of said springs having two spring ends adjoining said middle part in the direction of the rod bundle, said middle part changing over at said spring ends with a convex curvature into two legs being approximately parallel to the rod bundle, and means for supporting said legs on said lateral surfaces of two adjacent ones of said ribs facing toward the given rod; and

d) the majority of said grid meshes having only one spring pointing diagonally inward, and two of said ribs facing said diagonally inwardly pointing spring in each of said meshes having at least one stop knob for a rod.

5,311,565

SOFT X-RAY MICROSCOPE

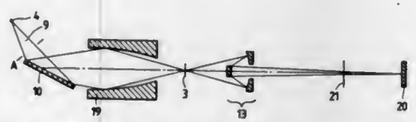
Yoshiaki Horikawa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,150

Claims priority, application Japan, May 31, 1991, 3-129467

Int. Cl.[5] G21K *7/00*

U.S. Cl. 378—43 **9 Claims**



1. A soft X-ray microscope comprising:

a spot, soft X-ray radiation source for generating soft X-rays;

a condenser for directing said soft X-rays generated by said soft X-ray radiation source to a sample;

an objective optical system for receiving said soft X-rays from said sample and forming a magnified image of said sample;

a soft X-ray detector for receiving and detecting the soft X-rays from said objective optical system; and

a grazing incidence mirror for reflecting said soft X-rays generated by said soft X-ray radiation source before the X-rays are directed by said condenser, the grazing incidence mirror having a rough reflecting surface with a sufficient roughness to diffuse the soft X-rays incident thereon wherein said roughness has an RMS value substantially equal to or larger than a wavelength of the soft x rays.

5,311,566

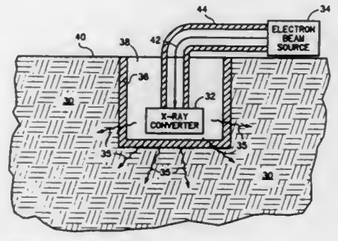
IN-SITU X-RAY TREATMENT OF ORGANICALLY CONTAMINATED MATERIAL

Randy D. Curry, Pleasanton, and John R. Bayless, Malibu, both of Calif., assignors to The Titan Corporation, San Diego, Calif.

Filed Sep. 22, 1992, Ser. No. 949,777

Int. Cl.[5] G21K *5/00*

U.S. Cl. 378—64 **6 Claims**



1. A method of treating organically contaminated material, comprising the steps of:

a) positioning an x-ray converter in a chamber formed in earth-bound material contaminated by organic compounds; and

b) irradiating the contaminated material in-situ adjacent to the chamber with x-radiation from the x-ray converter to decompose said organic compounds;

wherein step b) comprises the step of:

c) directing a high energy electron beam to the x-ray converter to produce said x-radiation by guiding said high energy electron beam to the x-ray converter from an above-ground electron beam source.

5,311,567

IDENTIFICATION FLASHER X-RAY FILM LABELING UNIT

Anthony J. Pellegrino, New Fairfield; Robert H. Brady, Brookfield, and David D. Camarra, Fairfield, all of Conn., assignors to Lorad Corporation, Danbury, Conn.

Continuation of Ser. No. 795,820, Nov. 21, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,577

Int. Cl.[5] H05G *1/28*

U.S. Cl. 378—166 **4 Claims**

1. An identification labeling assembly, for association with an x-ray machine, responsive to an input control signal provided in response to an operator input, for providing identifying labeling data for recordal on a sheet of x-ray film enclosed in a film cassette having a corner window hatchway with a sliding hatchcover, said assembly comprising:

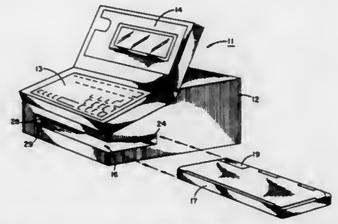
A. a housing incorporating a single cassette insertion slot with hatchcover opening and closing means therein, said housing having otherwise a totally closed outer surface unbroken by card insertion slots,

B. external data input means, responsive to data input by said operator, for providing a first data input control signal,

C. computer means, responsive to said first data input control signal and to a second data input control signal from the x-ray machine for providing first and second display signals for displaying data for recordation,

D. external data display means, responsive to said first and second display signals for displaying said data for recordation, wherein said external data input means, said computer means and said external data display means together form a portable computer unit, mounted on said housing,

E. means forming a self-illuminated internal display screen defining an object plane positioned inside said housing, substantially isolated from external illumination, and responsive to said first and second display signals from said



computer means for displaying said data for recordation on said object plane display screen,

F. an optical system positioned inside said housing and aligned to provide an image solely of said object plane focussed at an image plane within said cassette-insertion slot, avoiding said need for insertion slots to receive data-bearing cards or labels as objects to be imaged for labeling said film, and

G. trigger means connected to energize said internal display screen for automatically providing said data for recordation via said optical system to said image plane when said cassette is inserted in the insertion slot and the window hatchway is opened and when said cassette contacts said trigger means,

whereby the sheet of x-ray film has said data for recordation applied to it photographically without requiring separate typewritten or handwritten data cards or labels.

5,311,568

OPTICAL ALIGNMENT MEANS UTILIZING INVERSE PROJECTION OF A TEST PATTERN/TARGET

William J. McKee, Jr., Palo Alto, and John R. Haire, San Jose, both of Calif., assignors to Picker International, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 877,474, May 1, 1992, Pat. No. 5,218,626. This application Aug. 2, 1993, Ser. No. 72,902

Int. Cl.[5] H05G *1/64*

U.S. Cl. 378—205 **22 Claims**

1. A diagnostic imaging system including:

a source of penetrative radiation;

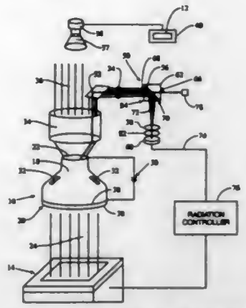
an image intensifier tube having an input screen and an output screen, the input screen disposed to receive radiation from the source, the source and input screen defining a gap therebetween for receiving an object under examination, the output screen producing a visible light image on a face thereof corresponding to radiation received by the input screen;

a viewing means for viewing the visible light image and converting the light image into a video signal for displaying on an image monitor; and

a light sampling means positioned relative to the output

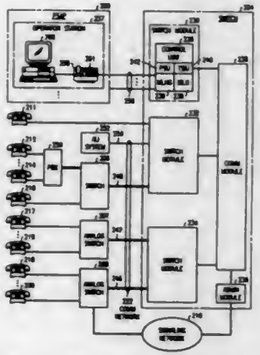
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screen for sampling a portion of the output screen light, said light sampling means comprised of,
a first light directing means;
a light receiving means;
a light source; and



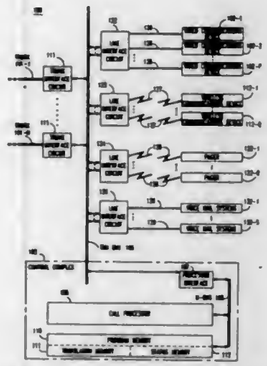
an alignment means for positioning the first light directing means and the light receiving means in alignment with the output screen along a first light path and for positioning the first light directing means and the light source in alignment with the output screen along a second light path, said first and second light paths at least partially coincident.

5,311,569
LINE-BASED PUBLIC SAFETY ANSWERING POINT
Joseph M. Brozovich, Woodridge; Nicholas M. DeVito, Naperville; Douglas C. Kroupa, Lisle; Paul E. Renn, Downers Grove; Paul M. Simek, Lisle; David A. Snyder, Naperville, and James L. Turner, Lemont, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 5, 1992, Ser. No. 893,613
Int. Cl.[5] H04M *11/04, 11/00, 3/42*
U.S. Cl. 379—45 **17 Claims**



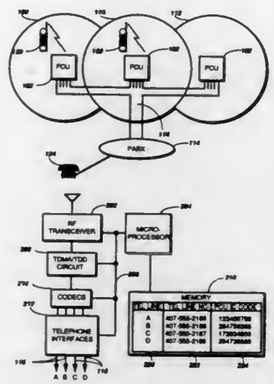
1. A system for delivering emergency information from a telephone to an operator station in a public safety answering point (PSAP) through a public telephone network in response to an emergency number entered at said telephone, said telephone having an automatic number identification (ANI) defining a billing number of said telephone and a calling party number (CPN) defining a directory number of said telephone, said system comprising:
a switch in said public telephone network which terminates a connection to said operator station, said switch including a plurality of termination ports;
a line directly connecting said operator station to one of said plurality of termination ports of said switch, said line providing a voice path and a separate data path between said operator station and said switch, which line is exclusively used by said operator station;
means at said switch for transmitting on said separate data path said CPN of said telephone to said operator station;
means connected to said telephone network for storing location information of said telephone in accordance with its CPN; and
means at said operator station for obtaining and displaying said location information of said telephone.

5,311,570
INTEGRATION OF WIRELESS PAGING IN A COMMUNICATION SYSTEM
Gary J. Grimes, Thornton, and Lawrence J. Haas, Broomfield, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 10, 1991, Ser. No. 699,084
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—57 **19 Claims**



1. Apparatus for use in a communications system wherein an incoming call from a calling party is connected to a called party, said apparatus comprising
means responsive to said incoming call for determining a paging device associated with said called party and at least one other communications device possessing communications capabilities different from that of said paging device and associated with said called party;
means responsive to the determined paging and other communications device for coupling an alerting signal to said paging and other communications device to alert said called party of said incoming call;
means responsive to a first signal transmitted by said paging device for temporarily suspending any further processing of said incoming call and suspending coupling of said alerting signal to said other communications device; and
means responsive to a predetermined signal received from a communications device for reinitiating processing of said incoming call and coupling said incoming call to said communications device where it is received by said called party, said communications device being any in a set of communications devices including said other communications device.

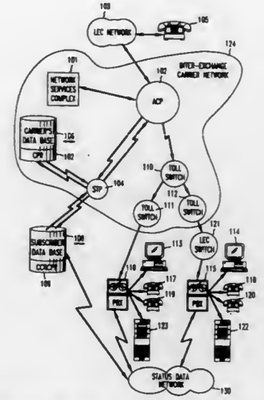
5,311,571
METHOD AND APPARATUS FOR PERFORMING INBOUND CALLING IN A WIRELESS COMMUNICATION SYSTEM HAVING FIXED COMMUNICATION UNITS COUPLED TO A TELEPHONE SYSTEM BY A TELEPHONE LINE SHARED IN COMMON
William F. Pickert, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 14, 1992, Ser. No. 882,994
Int. Cl.[5] H04M *11/00, 1/64;* **H04B** *1/00*
U.S. Cl. 379—58 **4 Claims**



1. In a wireless communication system comprising a portable communication unit (PCU) having a PCU identification code, and a plurality of fixed communication units (FCUs) having associated therewith a plurality of radio coverage areas, wherein the plurality of FCUs are coupled to a telephone system by a telephone line shared in common by the plurality of FCUs for handling calls to and from the PCU, and wherein the PCU is associated with the telephone line for receiving an incoming call, a method of handling the incoming call, the method comprising the steps of:
coupling the plurality of FCUs to the telephone line shared in common by the plurality of FCUs in response to the incoming call;
transmitting signals thereafter from the plurality of FCUs for establishing a wireless communication link with the PCU associated with the telephone line receiving the incoming call;
establishing the wireless communication link between a communicating one of the plurality of FCUs and the PCU in response to the communicating one of the plurality of FCUs receiving a responding transmission from the PCU; and
ending thereafter the signals transmitted from the plurality of FCUs for establishing the wireless communication link from the plurality of FCUs.

5,311,572
COOPERATIVE DATABASES CALL PROCESSING SYSTEM
Albert Friedes, East Brunswick, and Om P. Mahajan, Ocean, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 3, 1991, Ser. No. 770,268
Int. Cl.[5] H04M *1/64, 3/42*
U.S. Cl. 379—67 **46 Claims**

1. A method for processing database-queried calls through a communication switching system which includes:
i) a first database storing call handling and routing information;
ii) a second database which is connected to said first database and which stores subscriber information including callers' related information; and
iii) a source of call origination information,
wherein said method includes the steps of:
generating a first call process information by applying said call origination information to said first database;
transmitting said first call process information to said second database;



retrieving in said second database said stored callers' related information using said first call process information as a retrieval key;
generating in said second database a second call process information as a joint function of said retrieved stored callers' related information and said first call process information;
transmitting said second call process information to said first database; and
formulating in said first database processing instructions comprised of a destination number for routing and handling said call using said second call process information.

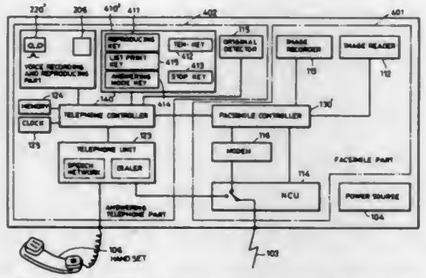
5,311,573
FACSIMILE APPARATUS
Shinichiro Otsuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 742,277, Aug. 8, 1991, abandoned, which is a continuation of Ser. No. 404,961, Sep. 8, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 3,957
Claims priority, application Japan, Sep. 9, 1988, 63-226011; Sep. 28, 1988, 63-245555
Int. Cl.[5] H04M *1/64, 11/06*
U.S. Cl. 379—67 **12 Claims**

9. A communication apparatus comprising:
first communication means for communicating a plurality of voice messages and respective differentially specifying signals from calling stations;
second communication means for communicating image data;
first storing means for storing the plurality of voice messages;
second storing means for storing the plurality of specifying signals;
printing means for printing the image data received by said second communication means;
a keyboard;

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first control means for executing a first control program for controlling said first communication means, first storing means and a storing process of said second storing means; and

second control means for executing a second control program for controlling said second communication means, said printing means and a reading process of said second storing means;



wherein said second control means controls said printing means such that said printing means prints out on a recording paper information relating to the plurality of specifying signals read out from said second storing means when it is demanded by said keyboard, and

said first control means controls said first storing means such that said first storing means outputs a selected one of the plurality of voice messages when it is selected by said keyboard.

5,311,574

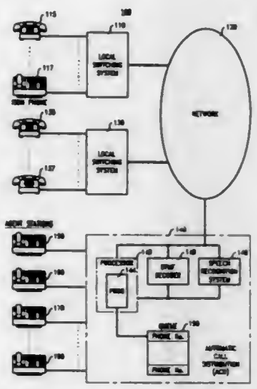
AUTOMATIC CUSTOMER CALL BACK FOR AUTOMATIC CALL DISTRIBUTION SYSTEMS

Konstantin Livanos, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 23, 1991, Ser. No. 780,605

Int. Cl.[5] H04M *1/64, 1/56*

U.S. Cl. 379—88 **5 Claims**



1. A method for completing a call from a calling party at an integrated services digital network (ISDN) telephone station set to one of a plurality of agents at an automatic call distribution (ACD) system through a digital network, said ISDN telephone station set being connected to a terminating switch in said digital network, said ISDN telephone having a telephone number, said method comprising:

sending a call set up message from said ISDN telephone through said digital network to said ACD system;

receiving said telephone number in said ACD system;

determining whether any of said plurality of agents is available;

upon determining that no agent is available, determining an expected delay time before an agent may become available;

sending a disconnect message to said ISDN telephone including said delay time;

said calling party sending a confirmation message through said ISDN telephone back to said automatic call distribution system, including an indication of whether to queue said received telephone number for subsequent callback;

if said indication is positive, queuing said received telephone number of said ISDN telephone; and

when an agent becomes available, said automatic call distribution system determining whether said ISDN telephone is idle by sending a message to said terminating switch, and, responsive to determining that said ISDN telephone is idle, placing a call to said caller using said received telephone number and connecting said caller to said available agent.

5,311,575

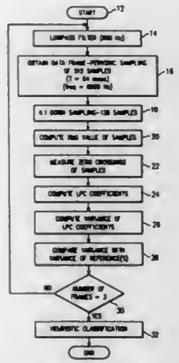
TELEPHONE SIGNAL CLASSIFICATION AND PHONE MESSAGE DELIVERY METHOD AND SYSTEM

Sang G. Oh, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 752,708, Aug. 30, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,481

Int. Cl.[5] H04M *1/64, 3/22;* **G10L** *5/00*

U.S. Cl. 379—88 **43 Claims**



1. A method of processing a received signal having characteristics and received from a telephone line to determine if a true voice signal, comprising:

defining a frame by measuring a plurality of samples from said received signal over a predetermined period;

determining the linear prediction coding coefficients of a selected group of the plurality of samples;

determining the variance of the linear prediction coding coefficients;

comparing the variance to a reference variance; and

applying a heuristic rule based on a ring signal, a click signal, a reorder signal, or a busy signal on a telephone line to a selected characteristic of said received signal to determine if said received signal comprises a voice signal and not a ring signal, a click signal, a reorder signal or a busy signal.

5,311,576

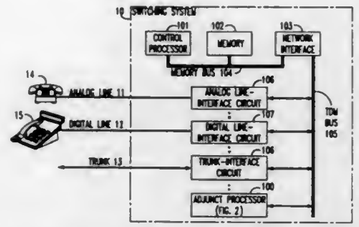
ADJUNCT PROCESSOR EMBEDDED IN A SWITCHING SYSTEM

Gordon R. Brunson, Broomfield, and Robert D. Reeder, Westminster, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 27, 1992, Ser. No. 826,345

Int. Cl.[5] H04M *3/50;* **H04Q** *11/08*

U.S. Cl. 379—89 **10 Claims**



1. A telecommunications switching system comprising:

control processing means for controlling operation of the switching system;

a communications medium connected to the control processing means;

a plurality of port circuits connected to the medium, each for interfacing a telephone to the medium and enabling the telephone to communicate with the control processing means via the medium, the port circuits including a digital port circuit for interfacing a digital display telephone to the medium and enabling the digital display telephone to communicate with the control processing means; and

an adjunct processor connected to the medium directly without intermediacy of a separate port circuit, for providing a telecommunications feature by communicating with the control processing means both exclusively via the medium and in an identical manner as the digital display telephone, the adjunct processor emulating at least one said digital port circuit in its every connection to the medium and emulating the digital display telephone in its communications through each of the emulated digital port circuits with the control processing means to provide the telecommunications feature for each of the emulated digital port circuits.

5,311,577

DATA PROCESSING SYSTEM, METHOD AND PROGRAM FOR CONSTRUCTING HOST ACCESS TABLES FOR INTEGRATION OF TELEPHONY DATA WITH DATA PROCESSING SYSTEMS

Richard J. Madrid, Gaithersburg; Steven K. Miller, Germantown, and Suresh K. Gursahaney, Gaithersburg, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1992, Ser. No. 847,453

Int. Cl.[5] H06M *11/00, 3/42, 3/00*

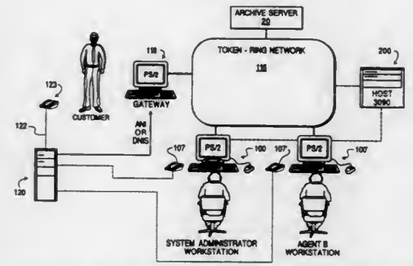
U.S. Cl. 379—93 **16 Claims**

1. In a system including a workstation coupled to a telephone network for receiving telephone data and coupled to a host computer running a panel driven host application program which exchanges panel images with the workstation, the panels containing fields for buffering operands to be processed by the host application program, the operands derived from the telephone data, a method for preparing a host access table (HAT) containing programmable HAT commands to control the workstation to function as a programmable interface between the host based application program and the telephone network to automatically transfer the operands from the telephone network to the host application program, comprising the steps of:

running a terminal emulation program in a memory in the workstation, in a first multi-tasking session, to exchange a first panel image with the host computer and to receive key stroke characters transferred from a keyboard buffer, that control operations of said terminal emulation program;

running a HAT Development Facility program in said workstation memory, in a second multi-tasking session, for monitoring said key stroke characters and generating trial HAT commands;

building a trial HAT in said workstation memory, using said HAT Development Facility program, said trial HAT containing said trial HAT commands;



running a host interface program in said workstation memory, for executing said trial HAT commands in said trial HAT, and in response thereto, automatically outputting simulated key stroke characters to said terminal emulation program to automatically repeat said operations of said terminal emulation program;

said terminal emulation program, in response to said simulated key stroke characters, exchanging said first panel image with the host computer and performing said operations;

whereby a host access table is constructed in the workstation.

5,311,578

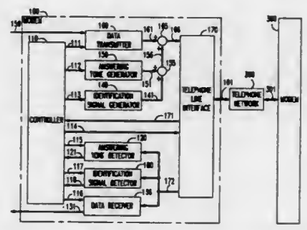
TECHNIQUE FOR AUTOMATIC IDENTIFICATION OF A REMOTE MODEM

Gordon Bremer, Clearwater; Kurt E. Holmquist, Largo; Donald R. Laturell, Tampa, and Kenneth Martinez, both of Tampa, all of Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 7, 1992, Ser. No. 879,492

Int. Cl.[5] H04M *11/00;* **H04B** *1/38*

U.S. Cl. 379—97 **7 Claims**



3. Apparatus in an answering modem for establishing a data connection to an originating modem during a call establishment procedure, the apparatus comprising:

means for receiving a ringing signal from a communications channel; and

means responsive to the ringing signal to concurrently apply

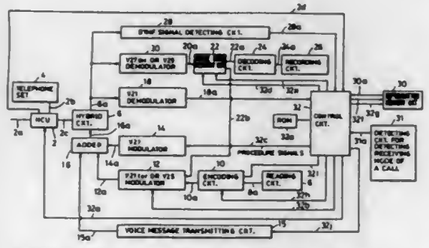
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to the communications channel at least an answer tone and an identification signal for transmission to the originating modem, the answer tone being of finite duration, and the identification signal being of finite duration less than the answer tone where the identification signal represents a characterization of the answering modem.

5,311,579
IMAGE COMMUNICATION APPARATUS WITH INSTRUCTED COMMUNICATION RESULT TRANSMITTAL

Takehiro Yoshida, Tokyo, Japan, assignor to Canoo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 815,619, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 517,196, May 1, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 109,199
Claims priority, application Japan, May 8, 1989, 1-113663
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **14 Claims**



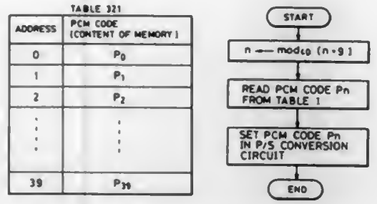
1. An image communicating apparatus comprising:
receiving means for receiving image data;
first memory means for storing received image data, wherein said first memory means stores plural kinds of image data;
recording means for recording the image data stored in said first memory means;
second memory means for storing information regarding a communication result of each image data received by said receiving means, the information including information indicating whether or not the received image data are stored in said first memory means; and
transmission means for transmitting the information stored in said second memory means as image information to a calling station in accordance with a first instruction signal from the calling station, and transmitting image data stored in the first memory means to the calling station in accordance with a second instruction signal from the calling station.

5,311,580
COMMUNICATION APPARATUS FOR PROVIDING A MODULATED ANALOG WAVE

Kuniaki Otsuka, Yokohama, and Isamu Ozawa, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 799,026, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 372,830, Jun. 29, 1989, abandoned. This application Jan. 25, 1993, Ser. No. 8,845
Claims priority, application Japan, Jul. 18, 1988, 63-180026; Apr. 4, 1989, 1-086310
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **49 Claims**

1. A communication apparatus, comprising:
input means for inputting information to be transmitted;
storage means for storing plural data;
read means for reading out plural data sequentially from storage locations in said storage means according to a first rule so that plural data which represent an analog wave are read out, said read means changing a storage location to be read out in accordance with the information inputted by said input means and a second rule which is different from said first rule so that plural data which represent the analog wave as modulated at a predetermined timing are read out; and

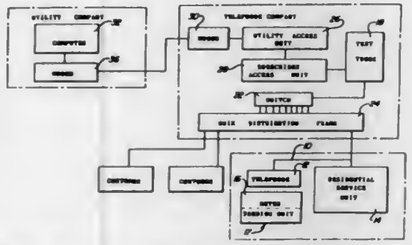


transmitting means for transmitting the information to a digital network, wherein said read means reads out the plural data in synchronism with synchronizing signals of the digital network.

5,311,581
REMOTE METER READING METHOD AND APPARATUS

David P. Merriam; Dale L. Scott, both of Albuquerque, and Bryan F. Scott, Rio Rancho, all of N. Mex., assignors to Sparton Corporation, Jackson, Mich.

Continuation of Ser. No. 686,684, Apr. 17, 1991, Pat. No. 5,161,182, which is a continuation of Ser. No. 333,117, Apr. 4, 1989, Pat. No. 5,010,568. This application Nov. 2, 1992, Ser. No. 970,265
The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—107 **6 Claims**

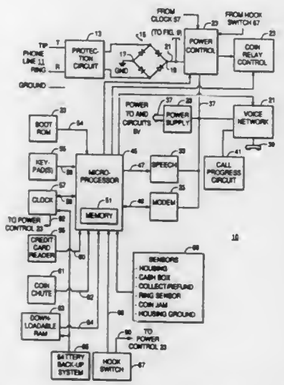


1. For use in a meter reading system using a telephone line for communication of meter data, a transponder comprising:
detecting means for detecting a control signal on the telephone line, said control signal being comprised of a tone frequency,
a microprocessor including a read/write memory,
a meter pulse generating means coupled with said meter for producing an electrical meter pulse corresponding to a predetermined meter event,
first coupling means for coupling the meter pulse generating means to the microprocessor,
means for switching the microprocessor from a quiescent mode to an active mode in response to said meter pulse,
the microprocessor being programmed to count pulses from said meter pulse generating means and for storing the pulse count in said read/write memory, and for switching the microprocessor to the quiescent mode after the pulse count is stored,
a data signal generator coupled with the microprocessor,
second coupling means for coupling said detecting means to said microprocessor,
and means for switching the microprocessor from the quiescent to the active mode in response to said control signal which is comprised of said tone frequency, said microprocessor being programmed to determine whether said tone frequency is equal to a predetermined frequency and, if it is not, to switch said microprocessor to said quiescent mode, and if it is, to cause said data signal generator to transmit encoded data representing the pulse count stored in the read/write memory in response to a command signal and for switching the microprocessor to the quiescent mode after the encoded data signal is transmitted.

5,311,582
INTEGRATED COCOT AND REGULATED PAYSTATION TELEPHONE SYSTEM

Marcus K. Davenport, Cumming; Richard K. Shipman, Woodstock; Thomas Young, Snellville, and Stephen H. Strode, Norcross, all of Ga., assignors to International Teleservice Corporation, Melbourne, Fla.

Continuation of Ser. No. 740,841, Aug. 6, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,417
Int. Cl.[5] H04M *3/42, 11/02, 15/12*
U.S. Cl. 379—143 **28 Claims**

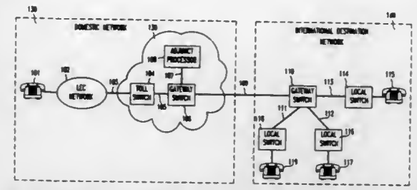


1. In a paystation telephone system, the improvement comprising:
first means for allowing the operation of the paystation telephone system as a customer-owned, coin operated telephone (COCOT) connected to a telephone line ring-/tip pair; and
second means for allowing the operation of the paystation telephone system as a regulated line telephone connected to said telephone line ring/tip pair and a ground line from a central office, said first and second means being integrated together in the paystation telephone system.

5,311,583
INTERNATIONAL PRIORITY CALLING SYSTEM WITH CALLBACK FEATURES

Albert Friedes, East Brunswick; Diane R. Leighton; Paramdeep S. Sahni, both of Marlboro, and Walter P. Zahray, Matawan, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.Y.

Filed Aug. 5, 1992, Ser. No. 925,050
Int. Cl.[5] H04M *1/64, 3/48*
U.S. Cl. 379—209 **12 Claims**

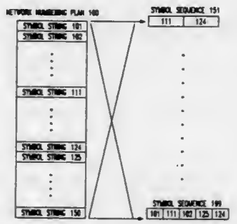


7. A system of completing an outgoing telephone call placed by a caller from an originating network and directed towards a destination connected to a remote network comprising:
means for recognizing unavailability of at least one of telephone network resources comprised of switching capacity and transmission facilities to complete said call at said destination said resources being under the control of said remote network;
means for estimating in said originating network anticipated time range before said network resources can become available;
means for offering said caller an option of being called back when said resources become available, said offering being carried out only when the estimated time meets a predetermined criterion;
when said callback option is exercised by said caller, means for calling back said caller when said network resources are about to be available within a very short time frame
means for initiating in said originating network an interconnection between said caller and said destination when said resources become available.

5,311,584
TELECOMMUNICATIONS CALL-PROCESSING ARRANGEMENT

Frank J. Bogart, Boulder; Bruce D. Butterfield, Denver; David L. Chavez, Jr., Northglenn; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 786,167
Int. Cl.[5] H04M *7/00, 3/42, 3/00;* **G06F** *15/38*
U.S. Cl. 379—220 **40 Claims**



1. A call-processing arrangement comprising:
data storage means for storing contents defining a syntax and a grammar of a network numbering plan;

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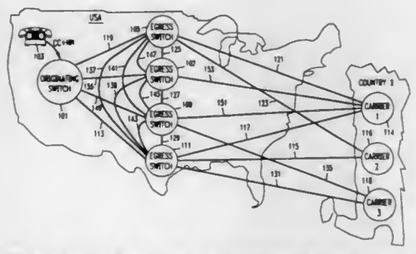
means independent of the network numbering plan, connected to the data storage means and responsive to receipt of a string of symbols associated with a call for parsing the received symbol string by using the syntax-and grammar-defining contents of the data storage means, to determine a meaning of the received symbol string within the network numbering plan; and

means independent of the network numbering plan, connected to the data storage means and to the parsing means and responsive to the determined meaning of the received symbol string for specifying a treatment to be given to the call, by using the determined meaning and the syntax-and grammar-defining contents of the data storage means.

5,311,585
CARRIER PROPORTIONED ROUTING

Robert A. Armstrong, Princeton, and Gail L. McDonald, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 14, 1992, Ser. No. 868,632
Int. Cl.[5] H04M *7/00, 15/00*
U.S. Cl. 379—221 **32 Claims**



22. A method for use in a telecommunications switch at which a call originates, said call being destined for a country having more than one carrier, said switch belonging to a network having a plurality of switches each of which can directly complete a call to at least one of said carriers in said country, said method comprising the steps of:

assigning said call, in said originating switch, to a carrier in said country to which said call was never previously assigned;

identifying a switch of said network other than said originating switch to which said call has not been routed and which can directly complete said call to said assigned carrier;

routing said call from said originating switch to said identified switch with associated call information which includes an indication of said assigned carrier;

receiving said call back at said originating switch when said identified switch was unable to complete said call to said assigned carrier; and

repeating said identifying and routing steps.

5,311,586
DYNAMIC ROUTING-ADMINISTRATION

Frank J. Bogart, Boulder; Bruce D. Butterfield, Denver; David L. Chavez, Jr., Northglenn; Henry C. Ditmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

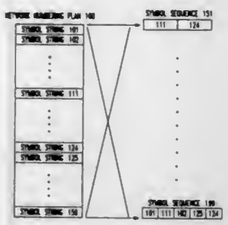
Filed Oct. 31, 1991, Ser. No. 786,168
Int. Cl.[5] H04M *3/42, 7/00*
U.S. Cl. 379—221 **14 Claims**

8. A call-processing method for use in a switching system of a telecommunications network having a network numbering plan and wherein callers supply sequences of symbols to specify treatment that is to be given to calls, each sequence comprising at least one symbol string that is defined for the numbering plan of the network, comprising the steps of:

receiving one of the symbol sequences, each individual symbol string included in the received symbol sequence having a context formed by other symbol strings included in the received symbol sequence;

identifying the individual symbol strings included in the received symbol sequence and their contexts;

applying the identities and the contexts of the individual included symbol strings to a reprogrammable programmed arrangement, which holds information for each defined symbol string specifying each defined symbol string's present individual influence on call treatment within a context of other symbol strings and defining each



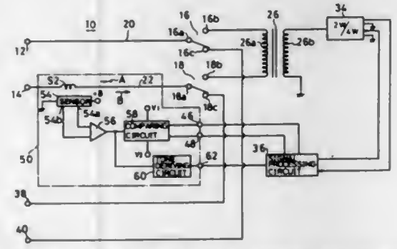
of (a) the symbol string's context-independent influence on call treatment, (b) whether the symbol string's context-independent influence is to be combined with the influence of a preceding symbol string in a call-control symbol-sequence, and (c) whether the symbol string's context-independent influence is to be combined with the influence of a succeeding symbol string in the call-control symbol-sequence, to determine from the information presently held by the reprogrammable programmed arrangement the present influences of the individual included symbol strings on the call treatment of the call; and

selectively combining the context-independent influences of the included strings defined by the presently-held information as dictated for the included strings by the presently-held information to define the call treatment to be given to the call.

5,311,587
SENSOR CIRCUIT FOR TELEPHONE LINE

Hiroyuki Ohta, and Masaaki Sugiyama, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 12, 1992, Ser. No. 898,086
Claims priority, application Japan, Jun. 14, 1991, 3-44897[U]
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—377 **8 Claims**



6. A sensor circuit for magnetically sensing a line current in a telephone line that is connectable to a telephone and a facsimile machine, the sensor circuit comprising:

a) line current detecting means for magnetically detecting a line current which flows in the telephone line and outputting a detection signal corresponding to the line current detected by the line current detecting means;

b) first means for outputting a line current supervisory signal on the basis of the detection signal; and

c) second means for deriving a tone signal from the detection signal, the derived tone signal indicating that the line current is to be sent to the facsimile machine and that the telephone line is to be connected to the facsimile machine, the second means including:

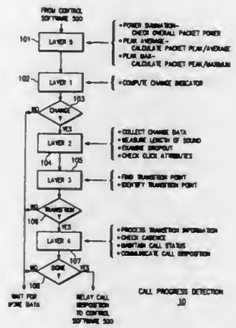
1) direct current component removing means for removing a direct current component from the detection signal output from the line current detecting means; and

2) filter means for filtering an output of the direct current removing means so as to derive a tone signal.

5,311,588
CALL PROGRESS DETECTION CIRCUITRY AND METHOD

Michael J. Polcyn, Allen; Ellis K. Cave, Garland, and Howard S. Barnett, Dallas, all of Tex., assignors to InterVoice, Inc., Dallas, Tex.

Continuation of Ser. Nn. 657,530, Feb. 19, 1991, abandoned.
This application Jul. 13, 1993, Ser. No. 91,467
Int. Cl.[5] H04M *1/00*
U.S. Cl. 370—377 **58 Claims**



1. A method of determining telephone line status comprising the steps of:

monitoring audio signals on the line to determine a transition from one line state to another;

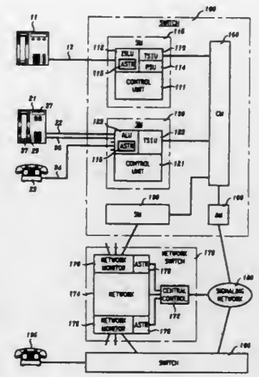
said monitoring step including the step of calculating a first ratio level between a peak instantaneous power level of said audio signals and an average power level of said audio signals, and a second ratio level between said peak instantaneous power level of said audio signals and a maximum power level of said audio signals; and

comparing said first and second ratio levels to a set of criteria to determine said telephone line status.

5,311,589
APPARATUS AND METHOD FOR AUDIBLE SIGNALING TONE RECOGNITION

Raymond W. Bennett, Naperville; Joseph G. Klinger, Sandwich; Brian C. Prorok, Naperville, and Rafid A. Sukkar, Aurora, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1992, Ser. No. 860,937
Int. Cl.[5] H04M *3/00*
U.S. Cl. 379—386 **16 Claims**



1. A method of detecting dual-tone, multi-frequency (DTMF) indicators and single-tone indicators, said indicators being used in a telephone system to represent unique ones of a plurality of possible audible signaling tones, said method comprising the steps of:

monitoring digitally sampled signals on a digital channel of said telephone system, said monitoring including collecting a frame having a predetermined number of said samples;

determining amplitudes for a preselected plurality of frequencies in said digitally sampled signals;

determining which two of said preselected plurality of frequencies have the highest amplitudes during said frame;

determining from said two determined frequencies having the highest amplitudes whether a DTMF indicator or a single tone indicator is likely to be present in said signals;

if it is determined that a DTMF indicator is likely to be present, comparing said two determined frequencies having the highest amplitudes to a plurality of predefined pairs of frequencies, each of said predefined frequency pairs defining one of said DTMF indicators, and selecting as a multi-frequency candidate the DTMF indicator having as its defining frequency pair, the frequency pair matching said two determined frequencies having the highest amplitudes;

if it is determined that a single tone indicator is likely to be present, comparing a selected one of said two determined frequencies having the highest amplitudes to a plurality of predefined frequencies, each of said predefined frequencies defining one of said single tone indicators, and selecting as a single tone candidate the single tone indicator having as its defining frequency the frequency matching the one selected frequency;

comparing the amplitude of said digitally sampled signals in said frame to an amplitude threshold dependent in a predetermined fashion upon the indicator corresponding to said candidate;

determining a cadence of said digitally sampled signals; and

delivering an identification of said indicator corresponding to said candidate if said digitally sampled signals satisfies

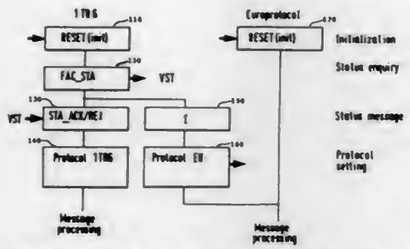
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said amplitude threshold and has a cadence corresponding to a predefined cadence for said indicator.

5,311,590
PROTOCOL ADAPTATION

Wolfgang Arnold, Pforzheim, and Rndolf Hoyler, Leonberg, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 5, 1992, Ser. No. 846,044
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1991, 4107742
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—387 **2 Claims**



1. Method of operating a telecommunications terminal containing two different data communications protocols for controlling data communication with a digital exchange, the digital exchange operating according to a fixed one of the two different protocols, comprising the following steps:

after initializing the telecommunications terminal, activating a first one of the two different data communications protocols;

sending to the digital exchange a status inquiry indicating the activated first one of the two communications protocols, and starting a timer;

operating the telecommunications terminal according to the activated first one of the two communications protocols if a status message is received from the digital exchange signaling agreement between the activated first one of the two protocols and the fixed one of the two different protocols; and

activating the other second one of the two communications protocols and operating the telecommunications terminal according thereto if one of: a status message is received from the digital exchange which signals disagreement between the activated first one of the two protocols and the fixed one of the two different protocols, and if the timer has expired without a status message being received;

wherein, in the status inquiry and the status message, a protocol discriminator forms a first information element indicating the protocol being used, the first information element being evaluated at the digital exchange and at the telecommunications terminal, respectively, to determine agreement or disagreement between protocols.

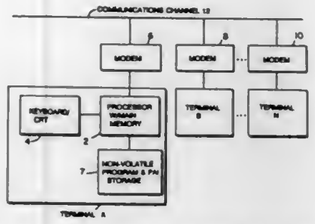
5,311,591
COMPUTER SYSTEM SECURITY METHOD AND APPARATUS FOR CREATING AND USING PROGRAM AUTHORIZATION INFORMATION DATA STRUCTURES

Addison M. Fischer, 60 14th Ave. South, Naples, Fla. 33942

Continuation of Ser. No. 883,868, May 15, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 70,787
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **77 Claims**

1. In a computer system including processing means for executing a plurality of programs and memory means coupled to said processing means for storing data and for storing at least one program, said computer system having a plurality of computer resources and being capable of performing a wide range of information processing related functions under program control, a method for protecting a computer user from operations typically performable by a program while it is executing on behalf of a user, comprising the steps of:

establishing a program authorizing information data structure for storing a plurality of authorization entries each indicating at least one of those computer resources and information processing related functions which may be used by an associated program;



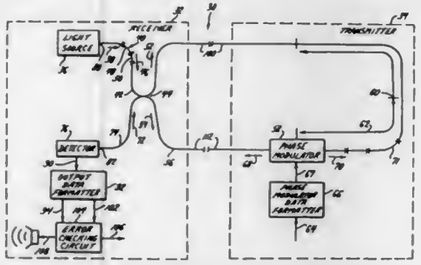
storing said program authorizing information data structure; and

associating the program authorizing information data structure with at least one program to be executed by said computer system to thereby protect the computer user from operations that might be performed by said at least one program, whereby the program authorizing information is available to be monitored when its associated program is executed.

5,311,592
SAGNAC INTERFEROMETER BASED SECURE COMMUNICATION SYSTEM

Eric Udd, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation-in-part of Ser. No. 880,684, Jun. 11, 1986, Pat. No. 5,223,967, and a continuation-in-part of Ser. No. 880,685, Jun. 11, 1986, Pat. No. 5,274,488, and a continuation-in-part of Ser. No. 772,626, Oct. 4, 1991, which is a continuation of Ser. No. 628,950, Dec. 14, 1990, abandoned, which is a continuation of Ser. No. 409,509, Aug. 28, 1989, abandoned. This application Sep. 4, 1992, Ser. No. 940,618
Int. Cl.[5] H04L *9/00*; H04B *10/02*
U.S. Cl. 380—9 **93 Claims**



1. A communication system including:

a first fiber optic beamsplitter having:

a first arm;

a second arm;

a third arm; and

a fourth arm;

a first light source that produces a first beam of light into said first arm, said first fiber optic beamsplitter splitting said first beam of light into second and third beams of light on said third and fourth arms respectively;

a first optical pathway connecting said third arm to said fourth arm, said first optical pathway conducting said second and third beams of light from said third and fourth arms to said fourth and third arms respectively, said first optical pathway having:

a center;

a first optical phase modulator in said first optical pathway spaced from said center thereof said first optical phase modulator having:

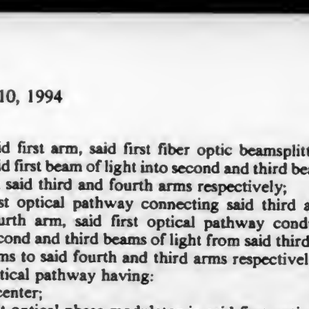
an input for receiving a first information signal that said first optical phase modulator uses to phase modulate said second and third beams of light, whereby upon the return of said second and third beams of light to said first fiber optic beamsplitter, said second and third beams of light combine into an amplitude modulated fourth beam of light conducted on said second arm whose amplitude varies with said first information signal; and

a first detector connected to receive said fourth beam of light from said second arm and to produce therefrom a first output signal representative of said first information signal.

5,311,593
SECURITY SYSTEM FOR A NETWORK CONCENTRATOR

Ilan Carmi, Framingham, Mass., assignor to Chipcom Corporation, Southborough, Mass.

Filed May 13, 1992, Ser. No. 882,517
Int. Cl.[5] H04K *1/00*; H04L *9/02*; H04Q *11/04*
U.S. Cl. 380—23 **15 Claims**



1. A secure communication network comprising:

a plurality of end stations;

a plurality of end station link means for providing a communication path to and from each of said plurality of said end stations;

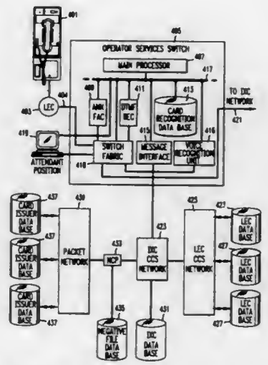
concentrator means for connecting said plurality of end station link means and for transferring data packets between said plurality of end stations, said concentrator means having a plurality of ports, each of said plurality of ports having a unique affiliated port address, each of said plurality of ports being affiliated with a specific one of said plurality of end stations and end station link means said concentrator means receiving a data packet from one end station of said plurality of end stations through an affiliated port of said one end station, and then transmitting the data packet through affiliated ports of other end stations to said other end stations, the data packet having a destination address, a source address and a data portion; and

a plurality of security means for cyphering and decyphering said data packet passing into and out of each of said ports based on a comparison of said destination address and said source address with said affiliated port address of said each port, each of said plurality of said security means being affiliated with a port of said concentrator.

5,311,594
FRAUD PROTECTION FOR CARD TRANSACTIONS

Arno A. Penzias, Highland Park, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 37,787
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **18 Claims**



1. A method for use in authorizing a card transaction for a particular card, comprising the steps of:

prestoring a plurality of pieces of information supplied by a person authorized to charge card transactions for said particular card;

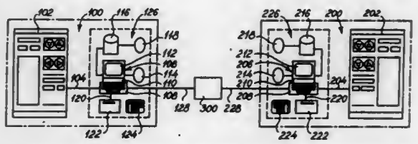
requesting, from a person engaged in a card transaction using said particular card, a piece of information, selected at random from one of said pieces of prestored information, said information being requested being indicated in said request by a description of its nature so that the correct response can not be deduced from the request without knowing the selected prestored piece of information; and

completing said transaction only if said requested information is correctly supplied.

5,311,595
METHOD OF TRANSFERRING DATA, BETWEEN COMPUTER SYSTEMS USING ELECTRONIC CARDS

J rgen Bjerrum, Oure; Steen Ottosen, Odense, and Nielsen Kj r, Albertslund, all of Denmark, assignors to Kommunedata I/S, Copenhagen V, Denmark

PCT No. PCT/DK90/00141, § 371 Date Nov. 5, 1991, § 102(e) Date Nov. 5, 1991, PCT Pub. No. WO90/15490, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 7, 1990, Ser. No. 772,372
Claims priority, application Denmark, Jun. 7, 1989, 2790/89
Int. Cl.[5] H04C *9/12*
U.S. Cl. 380—25 **33 Claims**



1. A method of transferring data from a first computer sys-

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tem to a second computer system via a data transmission line by use of a coherent set of electronic cards, wherein for said transfer

a first station is used for outputting data from and inputting data into a first electronic card, said first station being connected to and communicating with said first computer system and furthermore being connected to said data transmission line via said first computer system and interfacing means, and

a second station is used for outputting data from and inputting data into a second electronic card, said second station being connected to and communicating with said second computer system and furthermore being connected to said data transmission line via this second computer system and interfacing means,

said first and second electronic card each comprising a central data processing unit, an internal storage means, an input/output gate for communication with said corresponding station as well as an encryption/decryption means and together constituting the coherent set of electronic cards comprising coherent encryption and decryption keys input into said internal storages of said cards in such a way that the cards are able to communicate with each other and encrypt and decrypt data transferred from the first card to the second card and vice versa, said method comprising the steps of:

transferring said data to said first electronic card from said first computer system via said first station and said input-/output gate of said first electronic card, and inputting and temporarily storing said data in said internal storage of said first electronic card,

outputting said data from said internal storage of said first electronic card and encrypting said data in said first electronic card by means of said encryption/decryption means of said first electronic card and said encryption key(s) stored in said internal storage of said first electronic card,

outputting said data from said first electronic card in encrypted form via said input/output gate of said first electronic card and transferring said encrypted data via said first station to said first computer system and therefrom via said interfacing means of said first computer system to said data transmission line,

receiving said data by said second computer system in encrypted form via said interfacing means of said second computer system, transferring said encrypted data to said second electronic card via said second station and via said input/output gate of said second electronic card, and inputting and temporarily storing said data in said internal storage of said second electronic card,

outputting said data from said internal storage of said second electronic card in encrypted form and decrypting said data in said second electronic card by means of said encryption/decryption means of said second electronic card and said decryption key(s) stored in said internal storage of said second electronic card, and

outputting said data from said second electronic card in encrypted form via said input/output gate of said second electronic card and via said second station to said second computer system.

5,311,596

CONTINUOUS AUTHENTICATION USING AN IN-BAND OR OUT-OF-BAND SIDE CHANNEL

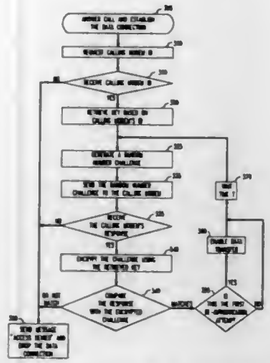
Robert E. Scott, Clearwater, and Richard K. Smith, Seminole, both of Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 31, 1992, Ser. No. 937,009
Int. Cl.[5] H04K *1/10*
U.S. Cl. 380—33 **30 Claims**

1. Apparatus for re-authenticating a user of a data connection, the data connection comprising a primary channel and a side channel, the apparatus comprising:

means for sending and receiving to a) send a request for identification to the user and receive an identifier from the user and b) send a plurality of challenges to and receive a plurality of responses from the user on the side channel, where each one of the plurality of responses corresponds to a respective one of the plurality of challenges; and

means for verifying each one of the plurality of responses as a function of each one of the respective plurality of challenges to provide an output representative of the verification of each one of the plurality of responses;



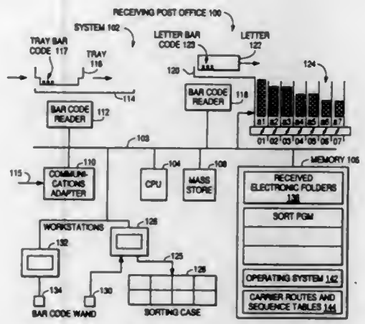
wherein the means for verifying encrypts each one of the plurality of challenges, where the encryption is a function of a data encryption key that is selected as a function of the identifier of the user and wherein the means for verifying compares each one of the plurality of responses with each respective one of the plurality of encrypted challenges to provide the output representative of verification, whereby if there is a mismatch between a respective one of the plurality of encrypted challenges and the one of the plurality of responses the data connection is interrupted.

5,311,597

DEFERRED OPTICAL CHARACTER RECOGNITION ACTIVE PIGEON HOLE SORTING OF MAIL PIECES

Walter S. Rosenbaum, Paris, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1992, Ser. No. 944,559
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **12 Claims**



1. A data processing method for providing active pigeon hole sorting of mail pieces, comprising:

inputting delivery sequence data;

inputting addressee data for postal recipients receiving mail, in a data base;

compiling an ordered list of addressees receiving mail, in delivery sequence;

partitioning a sorting case for first pass sorting of mail pieces using said ordered list of addresses;

picking a mail piece;

reading a code for the mail piece;

accessing an address from the data base;

assigning the mail piece to a pigeon hole in said sorting case in accordance with said partitioning;

displaying a prompt referring to said pigeon hole in accordance with said partitioning;

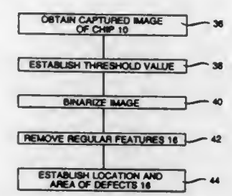
sorting the mail piece to said reference to pigeon hole.

5,311,598

METHOD AND APPARATUS FOR SURFACE INSPECTION

Chinmoy B. Bose, Green Brook, and Rajarshi Ray, Princeton, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 259,640, Oct. 18, 1988, Pat. No. 4,975,972. This application Jun. 13, 1990, Ser. No. 537,846
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **1 Claim**



1. A method for inspecting a patterned surface on an article, having at least one feature therein, to detect defects, if any, which are smaller than the linewidth of a dark-appearing feature on the surface, independently of any other pattern, the method comprising the steps of:

illuminating the surface of the article with light which is directed to strike the surface substantially normal to the plane thereof so that upon illumination of the surface, each defect, if any thereon, appears dark;

capturing the image of the surface of the article with an image-acquisition device whose optical axis is substantially normal to the axis of the surface;

binarizing the captured image to cause these areas within the image, which are associated with features in the patterned surface that have an intensity below a threshold value to appear dark, and those ares which are associated with regularly occurring features that have an intensity above the threshold value to appear bright;

processing the binarized image to produce a first image in which the feature on the surface and any defects larger than the linewidth of the feature, are isolated;

substracting the binarized image from the first image to yield a second image;

inverting the second image to yield a third image; and

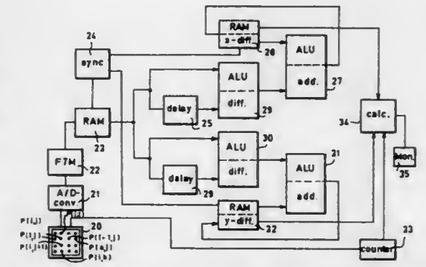
establishing the existence of a defect smaller than the linewidth of the feature on the surface by the presence of a dark area within the third image.

5,311,599

METHOD AND APPARATUS FOR OPTICAL TESTING OF SAMPLES

Klaus Freischlad, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Apr. 26, 1991, Ser. No. 692,127
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 013309
Int. Cl.[5] G06K *9/60*; G06F *15/70*
U.S. Cl. 382—8 **10 Claims**



1. Apparatus for optical testing of a sample in which information pertaining to the sample, in the form of light patterns recorded along a raster of image points, is evaluated as a plurality of phase images, the apparatus comprising:

a light source positioned to direct light at said sample to generate light pattern images that vary in relative brightness in accordance with information pertaining to said sample;

a camera having a raster of image points for separately recording a plurality of said light pattern images;

a computer that determines the phase values of a plurality of phase images in accordance with the relative brightness of said light pattern images as recorded at each image point along said raster of image points;

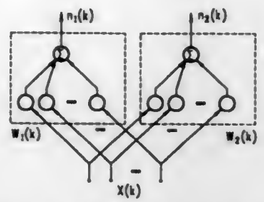
a differentiator that determines variations in the phase values of each said phase image by determining the differences, in modulo 2π, between the computed phase values of adjacent image points, said differentiator having an output;

image storage means for storing said determined variations in the phase values of each said phase image as the differences between phase values determined by said differentiator, said image storage means having an input and an output; and

an adder for generating the sum of (a) the differences between phase values of adjacent image points for a first one of said phase images and (b) the differences between the phase values for said same adjacent image points for a second one of said phase images, said adder having a first and a second input and an output said first input of said adder being connected to the output of said differentiator, said second input of said adder being connected to the output of said image storage means, and said output of said adder being connected to the input of said image storage means.

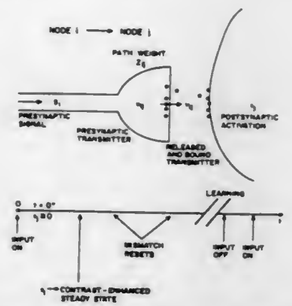
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5,311,600
METHOD OF EDGE DETECTION IN OPTICAL IMAGES USING NEURAL NETWORK CLASSIFIER
Hamid K. Aghajan, and Thomas Kailath, both of Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Sep. 29, 1992, Ser. No. 953,392
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—14 1 Claim



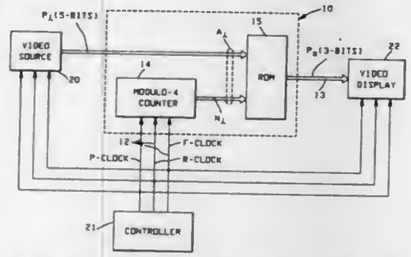
1. A method of measurement of linewidths in integrated circuit fabrication comprising the steps of
a) obtaining a digitized pixel image of a surface of said integrated circuit including conductive lines,
b) training a neural network classifier using a series of random sequences of adjacent pixels until classifier weights are converged to a required tolerance for said measurement,
c) applying said weights to all pixels to obtain a binary image,
d) subtracting a one-pixel shifted version of said binary image from said binary image to obtain an edge map, and
e) determining minimum distance between edges in said edge map as a measure of linewidths of said conductive lines.

5,311,601
HIERARCHICAL PATTERN RECOGNITION SYSTEM WITH VARIABLE SELECTION WEIGHTS
Gail A. Carpenter, and Stephen Grossberg, both of Newton, Mass., assignors to Trustees of Boston University, Boston, Mass.
PCT No. PCT/US91/00261, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991
Continuation-in-part of Ser. No. 464,247, Jan. 12, 1990, abandoned. This PCT application Jan. 11, 1991, Ser. No. 761,759
Int. Cl.[5] G06K 9/62, 9/00
U.S. Cl. 382—15 26 Claims



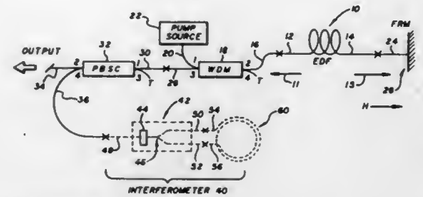
1. A pattern recognition data processing system comprising:
a short term feature representation field of nodes supporting signals derived from input signals defining an input pattern;
a category representation field of a plurality of nodes representing pattern categories;
means for selecting at least one category node of the category representation field based on a pattern from the short term feature representation field; and
means for resetting a category selection to cause continued search for an acceptable category selection;
wherein the means for selecting generates activation signals at nodes of the category representation field which are a function of signals from nodes of the feature representation field weighted by selection weights, the selection weights being initially set for a category selection search by long term memory but being reduced when selecting at least one category after reset of a category selection.

5,311,602
CIRCUIT FOR COMPRESSING DIGITAL IMAGES WHILE RETAINING IMAGE FIDELITY
Donald J. Nieglos, Salt Lake City, Utah, and Daniel A. Neuss, Madison, Ala., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Feb. 25, 1992, Ser. No. 840,890
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 11 Claims



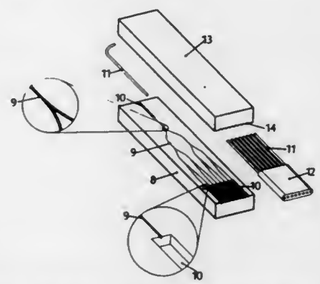
1. An image compressing circuit which is comprised of:
a video input circuit for producing first electrical input signals which represent a digital input image that is made of multiple rows of X-bit pixels;
a number generating circuit, coupled to said video input circuit, which generates second electrical input signals that identify a respective number for each X-bit pixel in said input image such that across each row the numbers occur as a particular number series which cyclically repeats;
a translator circuit, coupled to said video input circuit and number generating circuit, which performs a translation on each individual X-bit pixel together with its respective number to produce an electrical output signal that represents a corresponding Y-bit pixel, where Y is less than X and more than one; and,
said translation, when performed sequentially on consecutive X-bit pixels of a single magnitude in a row for two cycles of said numbers, producing two identical series of said Y-bit pixels with a) all of said Y-bit pixels within a series having only one or two magnitudes and b) said Y-bit pixel series having an average value that increases monotonically as said single magnitude increases.

5,311,603
HIGHLY EFFICIENT SUPERFLUORESCENT FIBER LASER/AMPLIFIER FOR INTERFEROMETRIC SENSORS
Bernard G. Fidric, Woodland Hills, Calif., assignor to Litton Systems Inc., Beverly Hills, Calif.
Filed Oct. 28, 1992, Ser. No. 967,486
Int. Cl.[5] G02F 1/01; G02B 6/16
U.S. Cl. 385—11 24 Claims



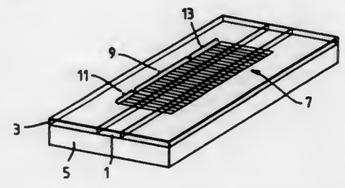
1. Apparatus comprising:
a source of pump light having a pump wavelength;
an optical fiber having one and other ends thereof and being doped with laser material possessing a laser transition at a signal wavelength when the doped fiber is illuminated with said pump light;
means for applying said pump light and a first light signal of the signal wavelength to one end of said doped fiber;
means for rotating by a predetermined amount the polarizations of an amplified first light signal from the other end of said doped fiber;
means for directing the polarization rotated first light signal back into the other end of said doped fiber; and
means for passing the first light signal of the signal wavelength from the one end of the doped fiber as an amplified first light signal output of said apparatus.

5,311,604
METHOD OF MANUFACTURING DEVICES FOR OPTICAL FIBER NETWORKS, AND DEVICES MANUFACTURED THEREBY
Arnd Rogner, Karlsruhe, and Andreas Neyer, Iserlohn, both of Fed. Rep. of Germany, assignors to Microparts Gesellschaft fur Mikrostrukturtechnik mbH, Dortmund, Fed. Rep. of Germany
Filed Mar. 8, 1993, Ser. No. 27,984
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1992, 4207207; May 27, 1992, 4217526
Int. Cl.[5] G02B 6/12
U.S. Cl. 385—14 19 Claims



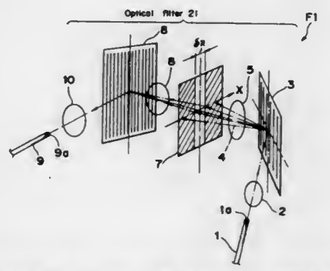
9. Passive integrated optical devices comprises of polymeric materials, including ridges or trenches for the light waveguide, which ridges or trenches have rectangular cross sections wherein the lengths of the edges of the rectangles are 1–1000 micron, further comprised of at least one molded piece with preforms for a plurality of light waveguide structures and optical fiber alignment structures, wherein the light waveguide in the case of the light waveguide structures is produced from the preforms for said structures by subsequent processing of said preforms, and the subject devices are further comprised of at least one coupled optical fiber;
made by a process comprising production of the polymer molded piece which
is provided with a step structure at each transition between a fiber alignment structure and the preform for the light waveguide structure, wherein
both of these structures are produced simultaneously.

5,311,605
OPTICAL DEVICES INCORPORATING SLOW WAVE STRUCTURES
William J. Stewart, Blakesley, England, assignor to Gec-Marconi Limited, England
Filed Dec. 14, 1992, Ser. No. 989,778
Claims priority, application United Kingdom, Dec. 16, 1991, 9126652
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—27 7 Claims



1. An optical device comprising a length of optical waveguide having incorporated therein an extended sequence of coupled single substantially identical resonator structures so as to form an optical slow wave structure.

5,311,606
OPTICAL FILTER AND OPTICAL AMPLIFIER EMPLOYING SAID OPTICAL FILTERS
Hiroyuki Asakura, Osaka; Masanori Iida, Neyagawa, and Tetsuji Miwa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 5, 1993, Ser. No. 14,465
Claims priority, application Japan, Feb. 14, 1992, 4-27777
Int. Cl.[5] G02B 6/32
U.S. Cl. 385—33 16 Claims



1. An optical filter comprising: an input fiber bundle and an output fiber bundle for guiding light, a diffraction grating disposed beside each of the input and output fiber bundles, a

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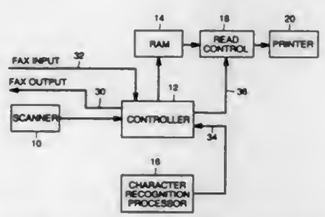
spatial filter provided beside the diffraction grating disposed beside each of the input and output fiber bundles, and a lens disposed in an optical path between said spatial filter and the diffraction grating disposed beside each of the input and output fiber bundles, said diffraction grating disposed beside each of the input and output fiber bundles having reflective surfaces oriented relative to said spatial filter so as to reflect light from said input fiber bundle in a dispersed pattern towards said spatial filter and to reflect light coming from the spatial filter toward said output fiber bundle, respectively, and said spatial filter having a transmittance that varies with respect to the direction in which the light is dispersed by the respective reflective surface towards said spatial filter.

5,311,607

FACSIMILE MACHINE FOR PRINTING DOCUMENTS ALL WITH CORRESPONDING EDGES ALIGNED BUT WITHOUT REQUIRING SCANNING

Peter A. Crosby, 9603 E. Orchard Dr., Greenwood Village, Colo. 80111

Filed Aug. 25, 1993, Ser. No. 111,544
Int. Cl.[5] G06K *9/32*
U.S. Cl. 382—46 **10 Claims**



1. A facsimile machine for printing received documents with their corresponding edges aligned comprising a memory; means for storing in said memory data representative of a received document; control means for identifying at least one line of text as represented by data in said memory, calculating the average densities of scan lines along the top and bottom edges of the text line, and comparing the average densities of the scan lines at the top and bottom edges of the text line to determine whether the document represented by said data had its top or bottom edge transmitted first; printing means; means for reading data out of said memory to control said printing means to print a document; and means for determining whether the data is read out of said memory in the order in which it was stored or the reverse order in accordance with the operation of said control means so that all documents printed have their corresponding edges aligned.

5,311,608

MOLDING OF OPTICAL COMPONENTS USING OPTICAL FIBERS TO FORM A MOLD

Lee L. Blyler, Jr., Basking Ridge, N.J., and Gary J. Grimes, Thornton, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 20, 1993, Ser. No. 110,170
Int. Cl.[5] G02R *6/26*
U.S. Cl. 385—50 **10 Claims**

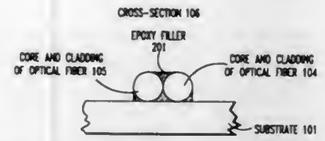
1. An optical component for interconnecting a plurality of optical fibers, manufactured by the process of:

attaching a plurality of optical fibers to an optically finished substrate so that said plurality of said optical fibers are in contact with each other within a predefined area of said substrate so that an optical mixing region will be formed within said optical component;

forming a mold by enclosing said substrate with walls;

casting a part of said optical component by injecting a cladding material into said mold;

removing said part of said optical component from said mold; and



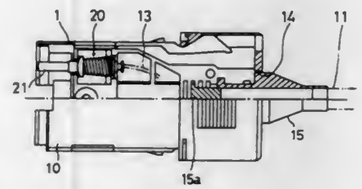
securing a lid onto said part of said optical component to form said optical component and said lid is fabricated from said cladding material and has an optically finished surface.

5,311,609

OPTICAL FIBER CONNECTOR

Kengi Abe, Tokyo, Japan, assignor to Hirose Electric Co., ltd., Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,330
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—60 **2 Claims**



1. An optical fiber connector, comprising:

a connector case having a pair of front and rear transverse ribs to define a receiving cavity between them, each transverse rib having a semi-circular cut therein;

a ferrule extending forwardly through said semi-circular cut in said front transverse rib to be fitted into a mating sleeve;

a ferrule holder placed in said receiving cavity to hold said ferrule for axial movement and having a body portion, a pair of front and rear cylindrical bosses extending outwardly from opposite ends of said body portion, and a pair of flanges extending radially from rear ends of said cylindrical bosses, respectively;

a stopper plate having a central aperture into which said rear cylindrical boss is inserted for sliding motion;

a stop ring secured to a front face of said rear flange for prevent said stopper plate from falling off from said rear cylindrical boss;

a conical spring placed between said front flange and said stopper plate for biasing said ferrule holder forwardly;

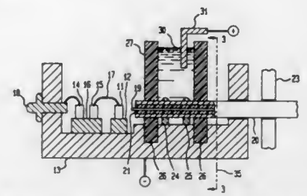
said conical spring being arranged such that its diameter increases toward the rear end and diameters of said semi-circular cut on said front transverse rib and said central aperture of said stopper plate being set so large relative to said cylindrical bosses that a small rearward movement of said ferrule permits a large radial movement thereof, thereby making it easy to fit said ferrule into a mating sleeve.

5,311,610

LOW-STRESS COUPLING OF ELECTROOPTICAL DEVICE TO OPTICAL FIBER

Ivan Ladany, Harborton, Va., and Leslie A. Reith, Berkeley Heights, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 31, 1993, Ser. No. 41,027
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—92 **23 Claims**



1. An electrooptical device and optical fiber package comprising:

an electrooptical device;

an optical fiber;

a common substantially planar metallic base onto which said electrooptical device is mounted;

a metallic tubular fiber support member into the core of which one end of said optical fiber is mounted;

at least one node of flexible electrically conductive gel;

said fiber support member connected to said base through said at least one node of flexible electrically conductive gel and closely positioned with said device so that said fiber end within said member and said device are in light coupling alignment, said fiber support member being connected longitudinally along its exterior metallic sidewall to said base, said support member is on top of and substantially parallel to said base

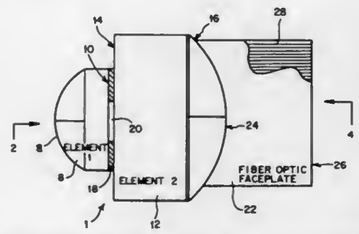
a layer of metal electrolytically deposited onto said fiber support member, said at least one node of electrically conductive gel, and said base to a thickness sufficient to physically maintain said support member, said at least one node, and said base together and said fiber within said member and said electrooptical device in said light coupling alignment.

5,311,611

IMAGING BALL LENS OPTICALLY IMMERSED WITH A FIBER OPTIC FACEPLATE

Richard A. Migliaccio, Centereach, N.Y., assignor to AIL Systems, Inc., Deer Park, N.Y.

Filed May 4, 1993, Ser. No. 58,273
Int. Cl.[5] G02B *6/08*
U.S. Cl. 385—120 **9 Claims**



1. An imaging ball lens for wide field of view applications, the imaging ball lens having an object side and an image side, comprising:

a first plano-convex lens element having a convex surface and a planar surface, the convex surface facing an object side of the lens;

a second plano-convex lens element having a convex surface and a planar surface, the planar surface of the second lens element being optically coupled to the planar surface of the first lens element, the planar surface of the second lens element facing the object side of the lens;

a diaphragm positioned between the first and second lens elements defining an aperture of the lens; and

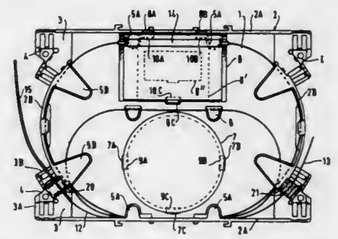
a plano-concave fiber optic faceplate having a concave surface and a planar surface, the concave surface of the fiber optic faceplate being optically coupled to the convex surface of the second lens element, the concave surface facing the object side of the lens such that the second lens element is optically coupled to the fiber optic faceplate, and wherein a curved focal plane formed at the convex surface of the second lens element is mapped into a flat focal plane at the planar surface of the fiber optic faceplate.

5,311,612

CASSETTE FOR OPTICAL FIBERS

Alain Vincent, Juilly, and Michel Milanowski, Anserville, both of France, assignors to Mars Actel, Vrigne Aux Bois, France

Filed Feb. 22, 1993, Ser. No. 21,478
Claims priority, application France, Feb. 21, 1992, 92 02029
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—135 **17 Claims**



1. In a cassette for optical fibers, said cassette including a bottom, two first longitudinally opposite rim segments and two second, laterally opposite rim segments, said rim segments projecting from the same side of the bottom and substantially around a periphery thereof, said rim segments delimiting four corners of the cassette, and at least partially an access channel for the fibers at at least one of the corners, at least one of means on the bottom for coiling said fibers and means for holding connections between coiled fibers, and a slotted access channel element within said at least one access channel for receiving said fibers, said element having slots for individually separating the fibers in parallel and for guiding said fibers, the improvement wherein said cassette includes a block projecting from the bottom and having two side faces facing end portions of corresponding adjacent rim segments at said at least one corner, thereby forming similar double access channels having sides delimited by said two faces of said block and said facing end portions of said adjacent rim segments and constituting sidewalls of two separate access channels at said at least one corner, and wherein said access channel element is sized to fit each of said double access channels for selective positioning within a given one of said double access channels.

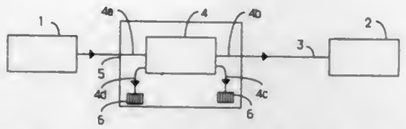
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5,311,613

ATTENUATOR FOR INTEGRATION INTO OPTICAL TRANSMISSION SYSTEMS AND METHODS FOR FABRICATION AND USE THEREOF

Werner Stieb, and Johann Schulte, both of Stadthagen, Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Pforzheim, Fed. Rep. of Germany

Filed May 29, 1992, Ser. No. 891,275
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1991, 4119015
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—140 **12 Claims**



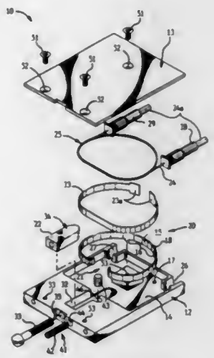
8. A system for transmitting optical signals between an emitter nd a receiver by means of optical fibers, wherein an inlet gate and an outlet gate of a 3-gate or a 4-gate fusion coupler, produced from first and second side-by-side fused glass fibers, wherein ends of the first glass fiber are connected to the optical fibers, and that at least one gate of the second glass fiber is closed off reflection-free.

5,311,614

SINGLE MODE FIBER OPTIC VARIABLE ATTENUATOR WITH SUPPORTED OPTICAL FIBER

Bernard G. Caron, Harrisburg; Warren H. Lewis, Elizabethtown; Gregory B. Powers, Shermansdale, and John C. Hoffer, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 860,939, Mar. 31, 1992, abandoned. This application Dec. 24, 1992, Ser. No. 996,753
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—140 **16 Claims**



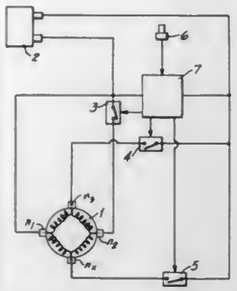
1. A fiber optic attenuator comprising:
an optical fiber;
a support member resiliently supporting a portion of the optical fiber thereupon in tension; and
means for bending at least a portion of said optical fiber while supported by the resilient support member in a controlled manner to attenuate light passing through said optical fiber.

5,311,615

METHOD OF CHANGING SPEEDS IN A MULTI-POLAR ELECRIC MOTOR OF THE CONSTANT FLUX TYPE, AND A MOTORIZED FAN UNIT WITH CHANGE OF SPEED CONTROLLED BY SUCH A METHOD

Hervé Couëtoux, Versailles, France, assignor to Valeo Thermique Moteur, Le Mensil-Saint Denis, France

Filed Sep. 26, 1992, Ser. No. 766,811
Claims priority, application France, Oct. 1, 1990, 90 12068
Int. Cl.[5] H02P *7/285*
U.S. Cl. 388—836 **9 Claims**



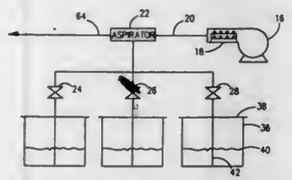
1. A method for commutation control for changing the speed of an electric motor of the constant flux type having an encapsulated inductive winding driven by a direct current supply and having n poles and n brushes, each of said brushes being associated with one of said poles, the speed of said motor being dependent upon the number of said brushes that are connected to said power supply, said speed of the motor being represented by a level i, where i is in the range 1 to n−1 inclusive, said method comprising the steps of:
(a) connecting i+1 of said brushes to the d.c. source to provide a first speed;
(b) sensing a control characteristic;
(c) disconnecting K of said i+1 brushes from said d.c. source in response to said control characteristic, where K is at least equal to 1; and
d) connecting K+1 of said n brushes to said d.c. source, wherein at least one of said i+1 brushes connected in step (a) is not included in the K+1 brushes connected.

5,311,616

BODY FRESHENER

Barbara A. Pratt, P.O. Box 1478, Crystal Beach, Tex. 77650

Filed Dec. 16, 1992, Ser. No. 991,394
Int. Cl.[5] H05B *1/02*; F24H *3/04, 3/02*; A47K *10/48*
U.S. Cl. 392—394 **4 Claims**



1. A body freshener comprising:
(a) an enclosure having an arcuate surface and a plurality of vents located on a front side of said surface;
(b) a means for blowing air, disposed within said enclosure, having an inlet opening, an outlet opening and a heating element;

(c) a plurality of containers for holding a liquid substance, disposed within said enclosure;
(d) an aspirator having an inlet opening, an outlet opening, and a suction opening, the inlet opening of said aspirator in fluid communication with the outlet opening of said means for blowing air and the suction opening of said aspirator in fluid communication with the liquid substance in said containers; and
(e) a vent header disposed within said enclosure having at least one inlet opening and a plurality of outlet openings, each of the outlet openings of said vent header in fluid communication with each of the vents of said enclosure, and at least one inlet opening in fluid communication with the outlet opening of said aspirator.

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DESIGN PATENTS

GRANTED MAY 10, 1994

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For CLASS	See PATENT NO.
006-634	D 346,691
003-265	D 346,815
021-187	D 346,850

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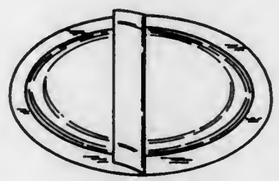
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346,683
BREAD PRODUCT
Lawrence J. Ryan, Paddington, Australia, assignor to Fun Bun Pty. Ltd., Rainworth, Australia
Filed Sep. 4, 1991, Ser. No. 754,695
Term of patent 14 years
U.S. Cl. D1—129



346,684
INFUSION PACKET
Warren R. Smith, White Plains, and Thomas J. Johnston, Mount Kisco, both of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Apr. 13, 1989, Ser. No. 337,450
Term of patent 14 years
U.S. Cl. D1—199



346,685
SHOE UPPER
Kristin N. Cotsidas, Manhattan Beach, Calif., assignor to L.A. Gear, Inc., Santa Monica, Calif.
Filed Jun. 26, 1992, Ser. No. 906,201
The portion of the term of this patent subsequent to Jul. 27, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—970



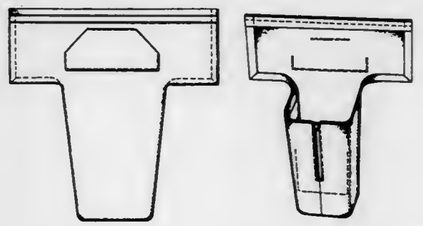
346,686
STRAP SYSTEM FOR A SHOE UPPER
Tinker Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 866,548, Apr. 10, 1992, Pat. No. Des. 337,425. This application Dec. 11, 1992, Ser. No. 2,420
Term of patent 14 years
U.S. Cl. D2—973



346,687
SHOE SOLE
Toshikazu Kayano, and Yoshiaki Hase, both of Kobe, Japan, assignors to Asics Corporation, Kobe, Japan
Filed Jan. 28, 1993, Ser. No. 4,209
Claims priority, application Japan, Aug. 6, 1992, 4-23765
Term of patent 14 years
U.S. Cl. D2—953

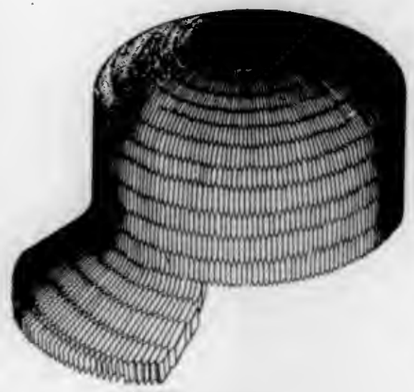


346,688
LAP ROBE
Lucille K. Hill, 1315 Chapel View Dr., Odenton, Md. 21113
Filed Aug. 14, 1992, Ser. No. 929,566
Term of patent 14 years
U.S. Cl. D2—719



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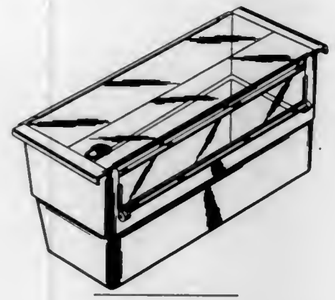
346,689
RALLY CAP
Kevin Dwyer, 1478 Main St., South Weymouth, Mass. 02190
Filed Oct. 29, 1992, Ser. No. 1,052
Term of patent 14 years
U.S. Cl. D2—869



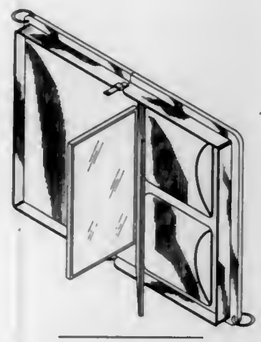
346,690
SHOE UPPER
Kevin J. Crowley, Brentwood, N.H., and Lyuba Giteiman, Hamden, Conn., assignors to FILA U.S.A. INC., Hanter Valley, Md.
Filed Jan. 21, 1993, Ser. No. 3,878
Term of patent 14 years
U.S. Cl. D2—970



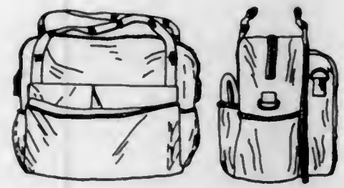
346,691
SUSPENDABLE STORAGE CONTAINER FOR COMPUTER DISKETTES
Michael K. Tse, Kowloon, Hong Kong, assignor to STD Electronic International Limited, Hong Kong, Hong Kong
Filed Aug. 22, 1991, Ser. No. 748,391
Term of patent 14 years
U.S. Cl. D6—634



346,692
COSMETIC BAG
Arnell Bromell, 137-12 225th St., Laurelton, N.Y. 11413
Filed Apr. 13, 1992, Ser. No. 867,915
Term of patent 14 years
U.S. Cl. D3—275



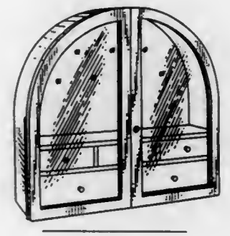
346,693
DIAPER BAG WITH DETACHABLE MOTHER'S BAG
Lita Saltzman, and Alan T. Saltzman, both of 8102 E. Buckness Pl., Denver, Colo. 80231
Filed Nov. 12, 1992, Ser. No. 1,373
Term of patent 14 years
U.S. Cl. D3—283



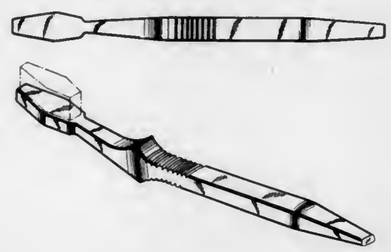
346,694
CARRYING BAG
Jesselyn T. Cyr, and Ryan J. Cyr, both of Tarzana, Calif., assignors to Tamrac, Inc., Chatsworth, Calif.
Filed Jul. 16, 1992, Ser. No. 914,948
Term of patent 14 years
U.S. Cl. D3—287



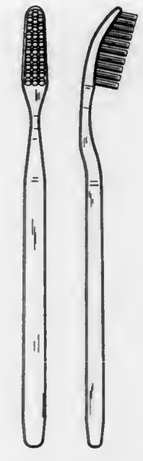
346,695
JEWELRY CASE
Cal R. Williams, 6124 NE. 11th Ave., Portland, Oreg. 97211
Filed Sep. 2, 1986, Ser. No. 903,100
Term of patent 14 years
U.S. Cl. D3—296



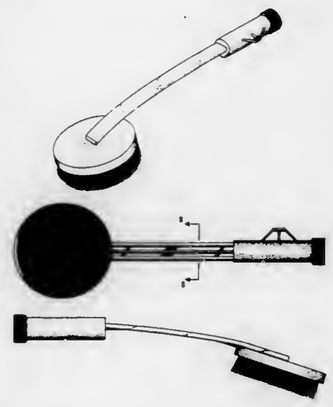
346,696
TOOTHBRUSH HANDLE
John A. Simone, Bayonne, N.J.; Adam Sberman, Brooklyn, N.Y.; James C. McKinney, Cranbury, and Thomas E. Mintel, Rahway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 25, 1990, Ser. No. 603,639
Term of patent 14 years
U.S. Cl. D4—104



346,697
TOOTHBRUSH
James R. O'Conke, 4245 E. 71st St., Cleveland, Ohio 44105
Continuation of Ser. No. 470,521, Jan. 25, 1990. This application Feb. 3, 1992, Ser. No. 830,266
Term of patent 14 years
U.S. Cl. D4—104



346,698
SOAP DISPENSING BRUSH
Wayne Hinnant, 534 S. Conestoga St., Philadelphia, Pa. 19143
Filed Mar. 5, 1991, Ser. No. 664,669
Term of patent 14 years
U.S. Cl. D4—114

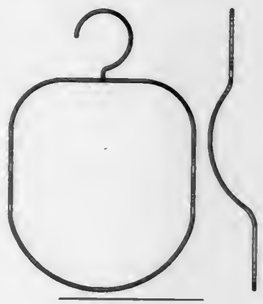


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346,699
SHOWER HEAD MOUNTED FOG FREE MIRROR
Jeff Greger, Lansdowne, Pa., assignor to Zenith Products Corporation, Aston, Pa.
Filed Dec. 18, 1992, Ser. No. 2,731
Term of patent 14 years
U.S. Cl. D6—312



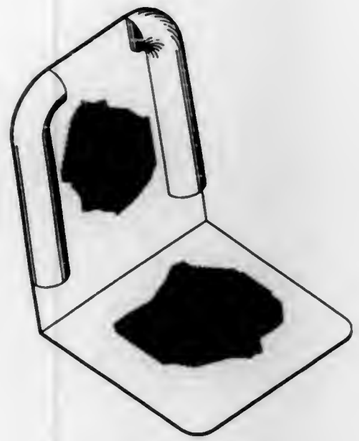
346,700
SPORT CAP HANGER
David H. Weinhold, 26142 Queen Palm Dr., Homeland, Calif. 92548
Filed Jul. 29, 1992, Ser. No. 921,264
Term of patent 14 years
U.S. Cl. D6—317



346,701
PORTABLE KNEELING PEW
William B. Colley, III, 187 Rosewood Dr., Waldorf, Md. 20601
Filed Sep. 24, 1992, Ser. No. 950,046
Term of patent 14 years
U.S. Cl. D6—330



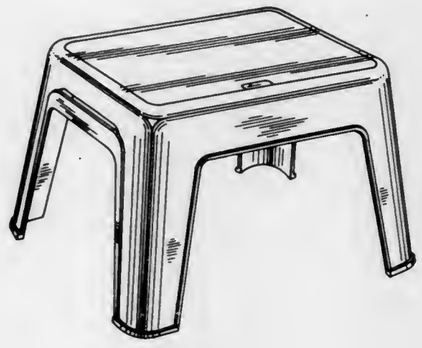
346,702
CUSHION FOR CHILDREN
Patricia J. Jackson, 25 St. Edward La., Florissant, Mo. 63033, assignor to Patricia J. Jackson, Florissant, Mo.
Filed Aug. 19, 1992, Ser. No. 931,523
Term of patent 14 years
U.S. Cl. D6—333



346,703
STOOL
Raymond Grosfillex, Oyonnax, France, assignor to Gosfillex SARL, Oyonnax, France
Filed Nov. 17, 1992, Ser. No. 1,601
Claims priority, application Int'l Pat. Institute, May 22, 1992, DMA/001797
Term of patent 14 years
U.S. Cl. D6—349



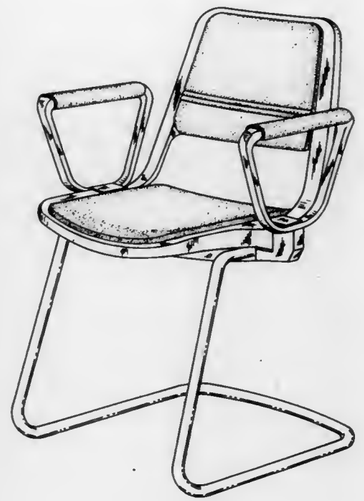
346,704
STOOL
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Nov. 17, 1992, Ser. No. 1,608
Claims priority, application PCT Int'l Appl., May 22, 1992, DMA/001797
Term of patent 14 years
U.S. Cl. D6—349



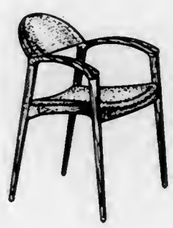
346,705
CHAISE LOUNGE
Ronald C. Noll, Lyndhurst, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Sep. 17, 1992, Ser. No. 948,827
Term of patent 14 years
U.S. Cl. D6—361



346,706
CHAIR
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Sep. 22, 1992, Ser. No. 949,085
Claims priority, application World Int. Prop. O., Mar. 25, 1992, DM/022 384
Term of patent 14 years
U.S. Cl. D6—372

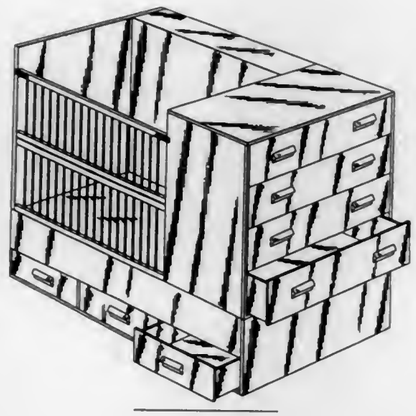


346,707
CHAIR
Vicente Soto Martinez, El Saler, Spain, assignor to Sillerias Alacuas, S.A., Alacuas, Spain
Filed Sep. 25, 1992, Ser. No. 951,533
Term of patent 14 years
U.S. Cl. D6—379



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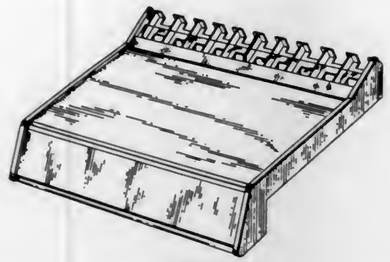
346,708
CONVERTIBLE CHILD'S BED
William R. Baer, 3916 Manzanita Dr., San Diego, Calif. 92105
Filed Jul. 22, 1991, Ser. No. 733,245
Term of patent 14 years
U.S. Cl. D6—384



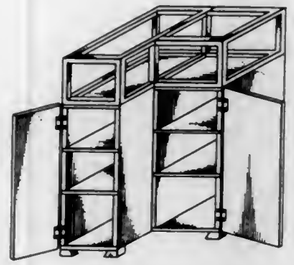
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WORK BENCH
Tokihiko. Nagao, Osakan, Japan, assignor to Vertex Services, Ltd., Hong Kong
Filed Jan. 15, 1992, Ser. No. 820,961
Term of patent 14 years
U.S. Cl. D6—400



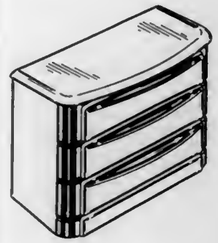
346,710
COUNTER DISPLAY FOR CIGARETTES
Benjamin S. Weshler, Old Westbury, N.Y., assignor to Display Systems, Inc., Maspeth, N.Y.
Filed Apr. 13, 1992, Ser. No. 867,629
Term of patent 14 years
U.S. Cl. D6—408



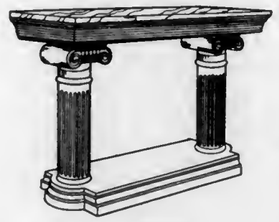
346,711
PHYSIICAL FITNESS CABINET
Joseph J. Vodhanel, Jr., 10937 S. Groveland Ave., Whittier, Calif. 90603
Filed Sep. 12, 1991, Ser. No. 758,809
Term of patent 14 years
U.S. Cl. D6—436



346,712
DRESSER
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Aug. 4, 1992, Ser. No. 925,591
Term of patent 14 years
U.S. Cl. D6—446



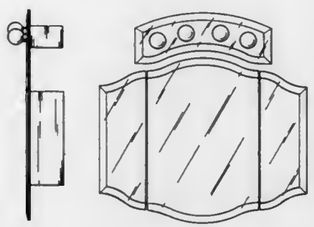
346,713
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 884,551
Term of patent 14 years
U.S. Cl. D6—451



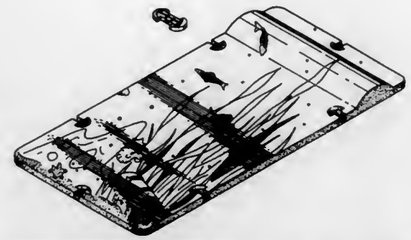
346,714
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 885,387
Term of patent 14 years
U.S. Cl. D6—480

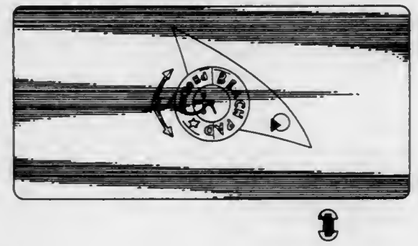


346,715
BATHROOM MIRRORED CABINET AND LIGHT FIXTURE ASSEMBLY
James J. Palka, 22315 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Apr. 29, 1992, Ser. No. 875,703
Term of patent 14 years
U.S. Cl. D6—561

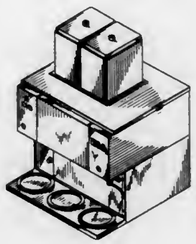


346,716
BEACH PAD WITH INSERT
William Murphy, 10485 La Vita Ct., San Diego, Calif. 92131
Filed Apr. 19, 1990, Ser. No. 511,010
Term of patent 14 years
U.S. Cl. D6—596



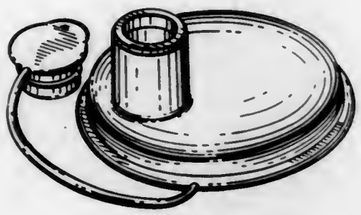


346,717
COFFEE MAKING APPLIANCE
Rudolf Geiger, Lauterstein, Fed. Rep. of Germany, assignor to WMF Wuerttembergische Metallwarenfabrik Aktiengesellschaft, Geislingen, Fed. Rep. of Germany
Filed Jul. 9, 1992, Ser. No. 911,306
Claims priority, application World Int. Prop. O., Mar. 31, 1992, DM/022 470
Term of patent 14 years
U.S. Cl. D7—309

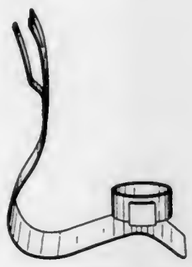


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346,718
COVER WITH A DRINKING SPOUT FOR CANS
G. J. M. Timmermans, Hoogeveen, Netherlands, assignor to Stichting Ultvinderscentrum Noord, Netherlands
Filed Jul. 31, 1991, Ser. No. 738,497
Term of patent 14 years
U.S. Cl. D7—392.1



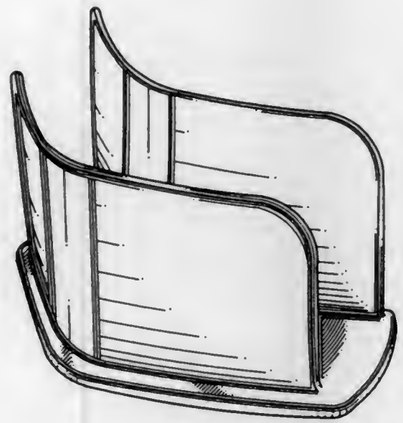
346,719
GLASS HOLDER
Kaj Blaabjerg, Hovedvejen 193 Blakarskov, Egtved, Denmark 6040
Filed Jul. 7, 1992, Ser. No. 909,810
Claims priority, application Denmark, Jan. 9, 1992, DKMA00191992
Term of patent 14 years
U.S. Cl. D7—620



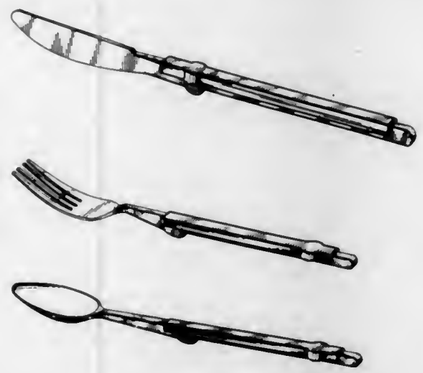
346,720
BISCUIT SERVER
Frederik J. Onneweer, Tervuren, Belgium, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 23, 1992, Ser. No. 2,926
Term of patent 14 years
U.S. Cl. D7—629



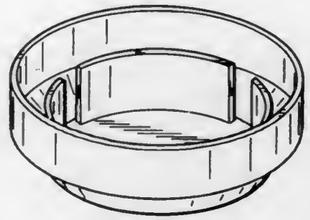
346,721
NAPKIN HOLDER
David L. Feer, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 23, 1992, Ser. No. 2,949
Term of patent 14 years
U.S. Cl. D7—631



346,722
FLATWARE
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Dec. 24, 1992, Ser. No. 3,015
Term of patent 14 years
U.S. Cl. D7—645



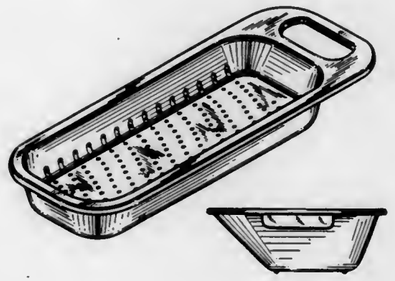
346,723
CANNED FOOD PRESS
Kenneth A. LaVine, 2567 Hendricks Rd., Lakeport, Calif. 95453
Filed Aug. 4, 1992, Ser. No. 924,820
Term of patent 14 years
U.S. Cl. D7—665



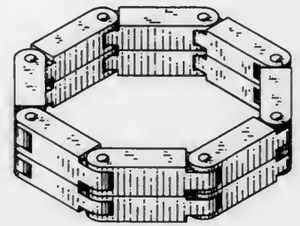
346,724
HAND-OPERATED DOUGH PRESS
Caesar Ayala, 1746 McKinley Ave., San Antonio, Tex. 78210
Filed Jul. 14, 1992, Ser. No. 913,610
Term of patent 14 years
U.S. Cl. D7—672



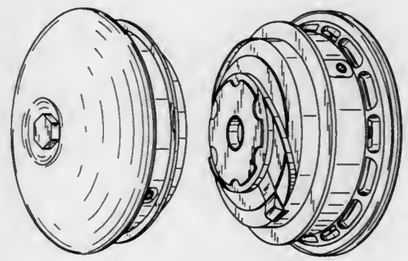
346,725
COLANDER
Paul P. Kolada, Bexley, Ohio, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 687,528, Apr. 19, 1991, Pat. No. Des. 339,720. This application Jul. 15, 1993, Ser. No. 12,619
Term of patent 14 years
U.S. Cl. D7—667



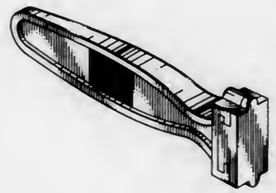
346,726
PLANTER
Harry W. Scott, Jr., Dover; Randall W. Britt, and Kenneth L. Renfroe, both of Russellville, all of Ark., assignors to Thompson Industries, Inc., Russellville, Ark.
Filed May 18, 1992, Ser. No. 884,557
The portion of the term of this patent subsequent to Aug. 17, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—1



346,727
GRASS TRIMMER HEAD
Jan Eriksson, Östersund, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed Dec. 19, 1991, Ser. No. 810,810
Claims priority, application Sweden, Jun. 20, 1991, 911289
Term of patent 14 years
U.S. Cl. D8—8

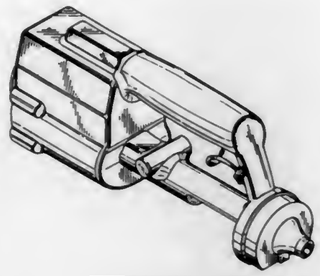


346,728
FILTER SEPARATION TOOL
Brian Lawson, 448 West St., Gardiner, Me. 04345
Filed May 12, 1992, Ser. No. 881,543
Term of patent 14 years
U.S. Cl. D8—14

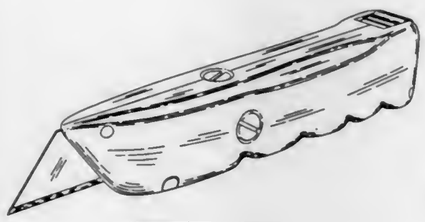


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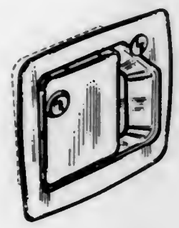
346,729
FOAM GUN
Thomas J. Schaefer, Buffalo; Scott A. Olson, St. Paul; Tera D. McCutcheon, Coon Rapids, and Timothy L. Mullen, Champlin, all of Minn., assignors to Graco Inc., Minneapolis, Minn.
Filed Feb. 24, 1993, Ser. No. 5,149
Term of patent 14 years
U.S. Cl. D8—69



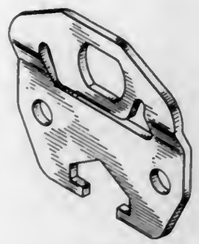
346,730
UTILITY KNIFE
Gilberto A. Quiros, 1515 San Almada Rd., Corona, Calif. 91720
Filed Mar. 19, 1992, Ser. No. 853,991
Term of patent 14 years
U.S. Cl. D8—99



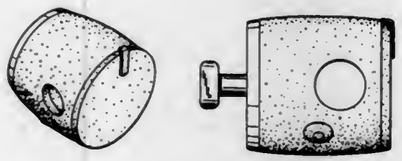
346,731
FLUSH DOOR LATCH ASSEMBLY
Marvin L. Larsen, New Hampton, and Donald R. Miehe, Black Hawk, both of Iowa, assignors to Tri/Mark Corporation, New Hampton, Iowa
Filed Jan. 27, 1992, Ser. No. 825,854
Term of patent 14 years
U.S. Cl. D8—301



346,732
LOCKING WING FOR FASTENERS
Allen Ribiett, Ardentown, Del., and James J. Ford, Schenectady, N.Y., assignors to Southco, Inc., Concordville, Pa.
Continuation-in-part of Ser. No. 869,228, Apr. 14, 1992. This application Dec. 11, 1992, Ser. No. 2,550
Term of patent 14 years
U.S. Cl. D8—306



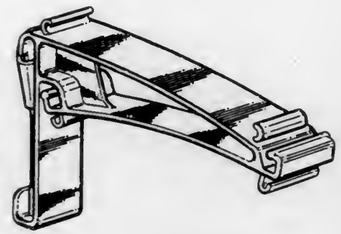
346,733
SECURITY FASTENER
Stewart R. Carl, Palo Alto, and Arthur H. Zarnowitz, Burlingame, both of Calif., assignors to Kensington Microware Limited, San Mateo, Calif.
Division of Ser. No. 825,724, Jan. 24, 1992. This application Oct. 20, 1993, Ser. No. 14,406
Term of patent 14 years
U.S. Cl. D8—343



346,734
SWIVEL
Kurt A. Rohr, 1327 W. 84th Ave., #1711, Denver, Colo. 80221
Filed Nov. 23, 1992, Ser. No. 1,760
Term of patent 14 years
U.S. Cl. D8—349



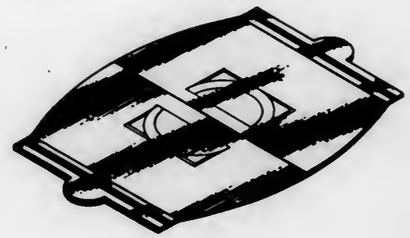
346,735
EAVESTROUGH HOOK
Miro Glisch, Scarborough, and Jerry Moscovitch, Toronto, both of Canada, assignors to GSW Inc., Toronto, Canada
Filed Nov. 30, 1992, Ser. No. 2,014
Claims priority, application Canada, Aug. 28, 1992, 28089213
Term of patent 14 years
U.S. Cl. D8—367



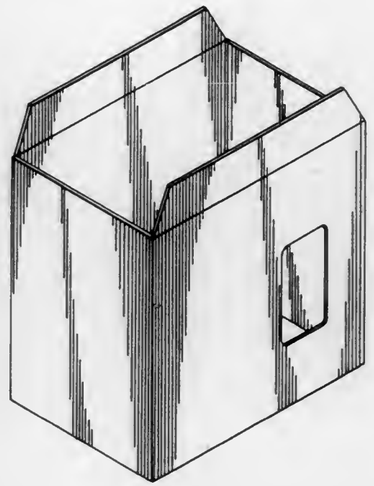
346,736
DISPLAY HOOK
Gunter Rosenthal, St-Benoit, Canada, assignor to G. Rosenthal Import Ltd., Lachine, Canada
Division of Ser. No. 828,731, Feb. 7, 1992. This application Sep. 28, 1993, Ser. No. 13,605
Claims priority, application Canada, Dec. 2, 1991, 02129114
Term of patent 14 years
U.S. Cl. D8—373



346,737
COMPARTMENTED BAG
Louis A. Dufresne, 2138 Camino Laurel, San Clemente, Calif. 92672
Filed Dec. 4, 1992, Ser. No. 2,236
Term of patent 14 years
U.S. Cl. D9—305



346,738
CARTONING SLEEVE
Panagiotis Kinigakis, West Windsor, N.J., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed Apr. 2, 1993, Ser. No. 170
Term of patent 14 years
U.S. Cl. D9—306

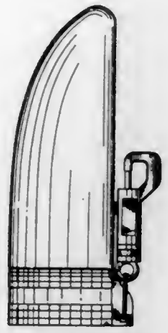


346,739
CRANK
Bernhard Tinz, Reutlirgen, Fed. Rep. of Germany, assignor to Heinrich Kipp Werk Spanntechnik + Normelemente, Sulz/-Neckar, Fed. Rep. of Germany
Filed Mar. 1, 1993, Ser. No. 5,306
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, M 92 06527
Term of patent 14 years
U.S. Cl. D8—309



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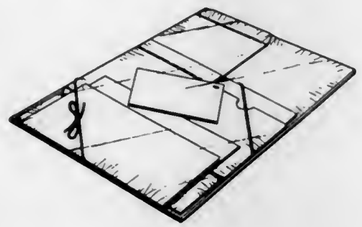
346,740
BOTTLE
Pierre Charet, and Govelio R. Gonzalez, both of Miami, Fla., assignors to Vuarnet Cosmetics, USA, Inc., Miami, Fla.
Filed Feb. 24, 1992, Ser. No. 839,887
Term of patent 14 years
U.S. Cl. D9—337



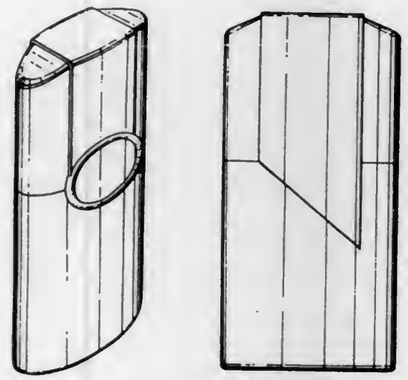
346,741
FLUID COLLECTION PAN
Jonothon M. W. McIntyre, North Hollywood, Calif., assignor to Altech Corporation, Coeur d'Alene, Id.
Filed Oct. 24, 1990, Ser. No. 602,702
Term of patent 14 years
U.S. Cl. D9—431



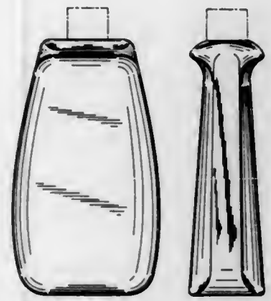
346,742
GIFT ENSEMBLE
James M. Gannon, and Germaine A. Gannon, both of 21 W. 542 22nd St., Glen Ellyn, Ill. 60137
Filed Oct. 7, 1992, Ser. No. 191
Term of patent 14 years
U.S. Cl. D9—433



346,743
CONTAINER WITH CAP
Brigitte Cazaudebore, Puteaux, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Dec. 21, 1992, Ser. No. 2,941
Claims priority, application France, Jun. 22, 1992, 923867
Term of patent 14 years
U.S. Cl. D9—529



346,744
BOTTLE
John M. B. Ford, Cordova; Doug M. Lund, Memphis, and Tammye L. Byars, Cordova, all of Tenn., assignors to Intellectual Property Holding Co., Wilmington, Del.
Filed Jul. 23, 1992, Ser. No. 919,113
Term of patent 14 years
U.S. Cl. D9—542



346,745
FLUTED CONTAINER
Thomas W. Heynen, Wilmette; Andrew Halasz, Crystal Lake, and Christopher L. Caliendo, Wood Dale, all of Ill., assignors to American National Can Company, Chicago, Ill.
Filed Sep. 24, 1991, Ser. No. 765,111
Term of patent 14 years
U.S. Cl. D9—552



346,746
PERFUME BOTTLE
Joel Desgrippes, Paris, France, assignor to Diana de Silva Cosmetiques S.p.A., Milan, Italy
Filed Jan. 31, 1992, Ser. No. 830,346
Claims priority, application Italy, Sep. 4, 1991, MI910000640
Term of patent 14 years
U.S. Cl. D9—552



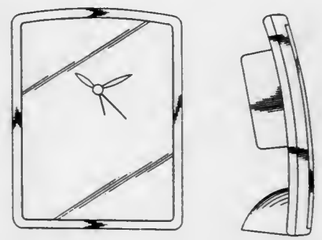
346,747
BOTTLE
Pierre Dinand, Levallois Perret, France, assignor to L'Oreal, Paris, France
Filed Jun. 29, 1992, Ser. No. 906,125
Claims priority, application France, Dec. 27, 1991, 021555
Term of patent 14 years
U.S. Cl. D9—574



346,748
WALL CLOCK
George Ede, P.O. Box 2625, Oceanside, Calif. 92054
Filed Jan. 23, 1992, Ser. No. 824,468
Term of patent 14 years
U.S. Cl. D10—10

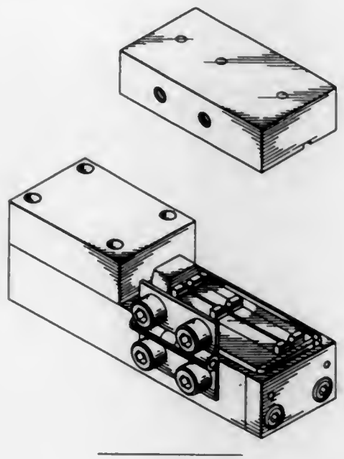


346,749
CLOCK
Lai L. Wong, Hong Kong, Hong Kong, assignor to Ballanda Limited, Kwai Chung, Hong Kong
Filed Nov. 15, 1991, Ser. No. 792,759
Term of patent 14 years
U.S. Cl. D10—28



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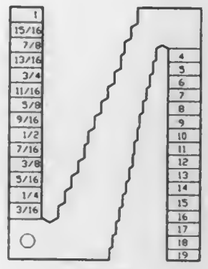
346,750
REFERENCE POWER MODULE FOR MEASURING LIGHT ENERGY ENTERING AN OPTICAL FIBER SPLICE
George F. DeVeau, Jr., Stone Mountain, and Walter S. Konik, Lilburn, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 30, 1992, Ser. No. 954,369
Term of patent 14 years
U.S. Cl. D10—46



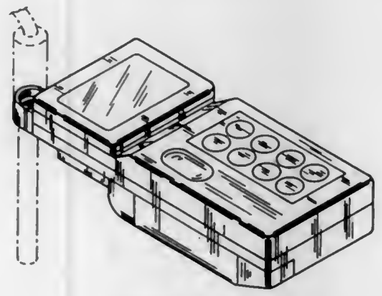
346,751
WOOD MOISTURE METER
Motohiko Emori, Tokyo, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed Sep. 30, 1992, Ser. No. 952,781
Claims priority, application Japan, Apr. 8, 1992, 4-10288
Term of patent 14 years
U.S. Cl. D10—56



346,752
NUT AND BOLT SIZING GAUGE
William A. Krusling, 4614 McNell Ave., Cincinnati, Ohio 45212, and Thomas H. Spurr, 4214 Eddystone Dr., Cincinnati, Ohio 45251
Filed Apr. 27, 1992, Ser. No. 877,610
Term of patent 14 years
U.S. Cl. D10—64



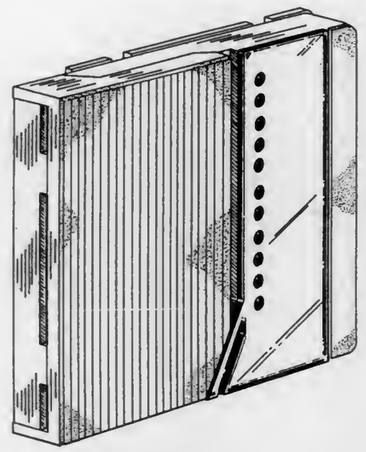
346,753
PH AND CONCENTRATION METER
James Barbookles, Jr., Malden; Jeffrey S. Cohen, Wilmington; Laura Brockway, Charlestown; Thomas Paquette, Shrewsbury, and Paul Sydlowski, Wakefield, all of Mass., assignors to Orion Research, Inc., Cambridge, Mass.
Filed May 10, 1990, Ser. No. 552,747
Term of patent 14 years
U.S. Cl. D10—81



346,754
ROD MEASURER AND WEIGHER
Travon Evers, P.O. Box 243, Gladewater, Tex. 75647
Continuation-in-part of Ser. No. 293,490, Jan. 4, 1989, abandoned. This application Mar. 9, 1992, Ser. No. 849,309
Term of patent 14 years
U.S. Cl. D10—88



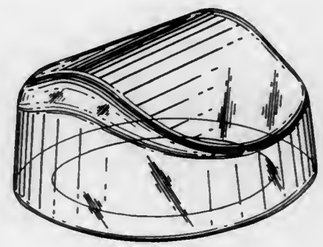
346,755
KEYPAD FOR A SECURITY ALARM SYSTEM
Richard L. Soloway, Amityville, N.Y., assignor to Alarm Lock Systems, Inc., Amityville, N.Y.
Filed Jun. 6, 1991, Ser. No. 711,440
Term of patent 14 years
U.S. Cl. D10—106



346,756
PORTABLE AUDIO BABY MONITOR RECEIVER
Mark A. Grasso, 20748 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Feb. 5, 1992, Ser. No. 831,384
Term of patent 14 years
U.S. Cl. D10—106



346,757
ROADWAY MARKER
Robert G. Allan, Springs, South Africa, assignor to Glass(SA) Holdings (Proprietary) Limited, Johannesburg, South Africa
Continuation-in-part of Ser. No. 838,103, Feb. 18, 1992. This application May 26, 1992, Ser. No. 889,088
Claims priority, application South Africa, Nov. 29, 1991, 91/1019
Term of patent 14 years
U.S. Cl. D10—113



346,758
COMBINED CLOCKFACE AND HANDS THEREFOR
Howard L. Adler, 1101 E. 25th St., Baltimore, Md. 21218
Filed Jan. 9, 1992, Ser. No. 818,367
Term of patent 14 years
U.S. Cl. D10—124



346,759
DISPLAY DEVICE
Elmer G. Job, Ft. Wayne, Ind.; Peter F. Lynch, and Martin V. Maloney, both of Skaneateles, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 28, 1992, Ser. No. 2,991
Term of patent 14 years
U.S. Cl. D10—125



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346,760
HOLIDAY ORNAMENT
Elizabeth L. Snoddy, 752 E. Samford Ave., Auburn, Ala. 36860
Filed Jan. 21, 1993, Ser. No. 3,923
Term of patent 14 years
U.S. Cl. D11—121



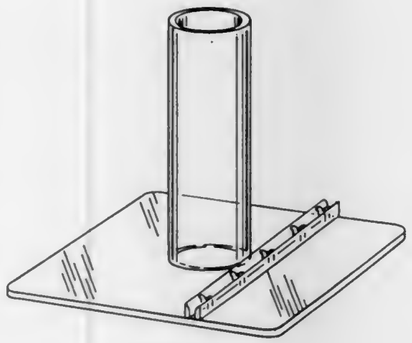
346,761
DISPLAY PLAQUE
William T. Milam, 672 Heathmoor Pl., Decatur, Ga. 30032
Filed Feb. 5, 1992, Ser. No. 831,379
Term of patent 14 years
U.S. Cl. D11—132



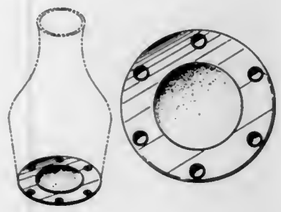
346,762
WATCH BAND PORTION
Joerg Hysek, St-Prex, Switzerland, assignor to Tag-Heuer, S.A., Maria, Switzerland
Division of Ser. No. 803,400, Dec. 5, 1991. This application Nov. 16, 1992, Ser. No. 1,473
Claims priority, application World Int. Prop. O., Nov. 16, 1990, DM/020 790
Term of patent 14 years
U.S. Cl. D11—3



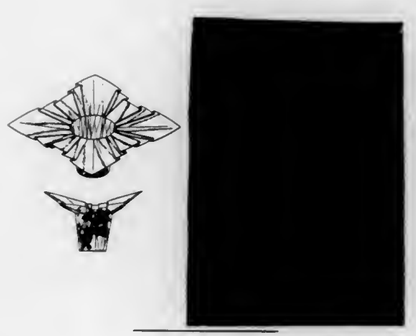
346,763
COMBINATION CARD HOLDER/BUD VASE
Barton P. Smith, 550 S. Erie Hwy., Hamilton, Ohio 45011
Filed Nov. 16, 1992, Ser. No. 1,499
Term of patent 14 years
U.S. Cl. D11—144



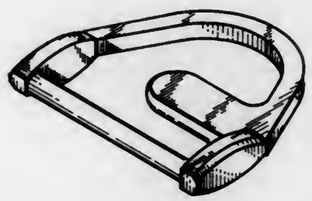
346,764
SUPPORT SURFACE PROTECTOR FOR USE WITH ORNAMENTAL OBJECTS SUCH AS VASES
Kathleen R. Seliers, 228 E. Boca Raton Rd., Boca Raton, Fla. 33432
Filed Apr. 24, 1992, Ser. No. 874,360
Term of patent 14 years
U.S. Cl. D11—164



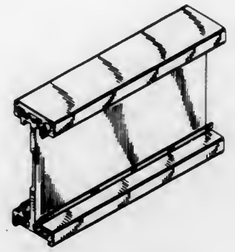
346,765
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Division of Ser. No. 603,825, Oct. 24, 1990, Pat. No. Des. 329,405, which is a division of Ser. No. 357,103, May 25, 1989, Pat. No. Des. 319,991, which is a continuation-in-part of Ser. No. 108,316, Oct. 13, 1987, Pat. No. Des. 316,838, which is a continnation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224. This application Jun. 26, 1992, Ser. No. 906,115
Term of patent 14 years
U.S. Cl. D11—164



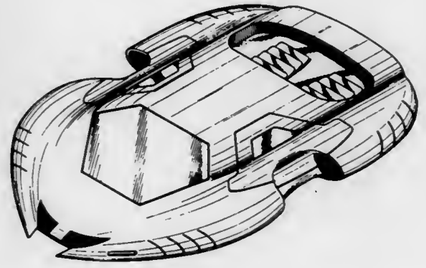
346,766
BUCKLE
Dana Franklin, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Division of Ser. No. 670,149, Mar. 15, 1991, Pat. No. D. 333,804. This application Mar. 4, 1993, Ser. No. 5,509
Term of patent 14 years
U.S. Cl. D11—218



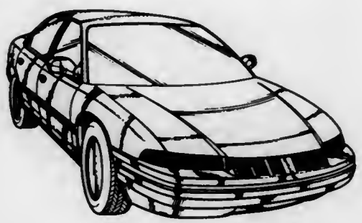
346,767
GUIDE RAIL FOR AN OVERHEAD MONORAIL
Shigeyoshi Fujita, Osaka, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan
Filed Sep. 9, 1992, Ser. No. 942,528
Term of patent 14 years
U.S. Cl. D12—50



346,768
CAR
Phetmone Phengsikeo, 3402 Lebadie, Houston, Tex. 77026
Filed Feb. 3, 1992, Ser. No. 829,175
Term of patent 14 years
U.S. Cl. D12—90

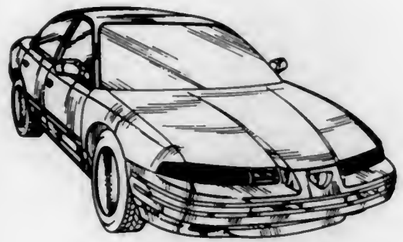


346,769
AUTOMOBILE
Robert S. Ackerman, West Bloomfield; John E. Crain, Birmingham; Lance R. Wagner, Lake Orion, and Steven W. Ferrerio, Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1992, Ser. No. 864,904
Term of patent 14 years
U.S. Cl. D12—92

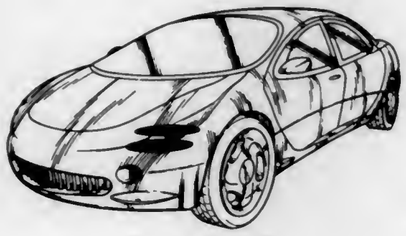


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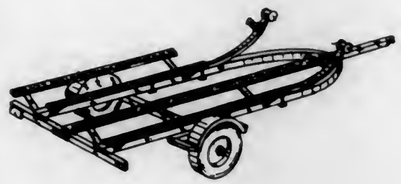
346,770
AUTOMOBILE
John D. Bucci, Rochester Hills, and Steven W. Ferrerio, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1992, Ser. No. 864,906
Term of patent 14 years
U.S. Cl. D12—92



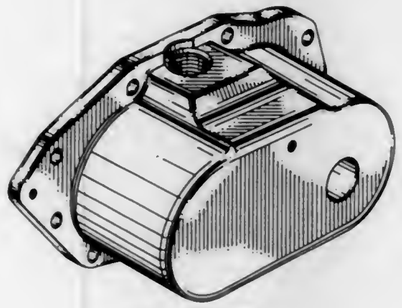
346,771
AUTOMOBILE
Kevin R. Verduyn, Oceanside, Calif., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1992, Ser. No. 868,376
Term of patent 14 years
U.S. Cl. D12—92



346,772
PERSONAL WATERCRAFT TRAILER
Byron L. Godbersen, Lake LaJune Estates, Ida Grove, Iowa 51445
Filed Jan. 27, 1993, Ser. No. 4,154
Term of patent 14 years
U.S. Cl. D12—101



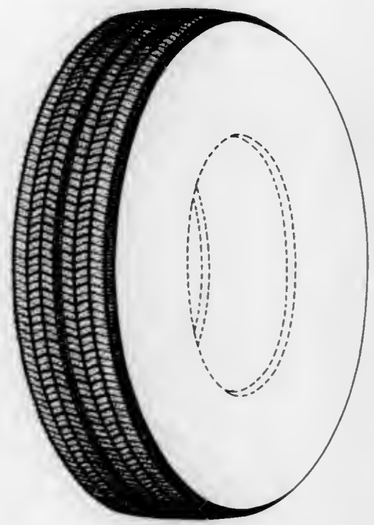
346,773
MOTORCYCLE STARTER HOUSING
Glenn M. Sarver, 17415 N. 15th Ave., and Rick A. Solesbee, 19210 N. 15th Ave., both of Phoenix, Ariz. 85027
Filed Dec. 10, 1992, Ser. No. 2,371
Term of patent 14 years
U.S. Cl. D12—126



346,774
TIRE TREAD
Randall R. Brayer, Uniontown, and Rudy E. Consolacion, Copley, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 937,196
Term of patent 14 years
U.S. Cl. D12—147



346,775
TIRE TREAD
Robert P. Loser, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 10, 1992, Ser. No. 927,353
Term of patent 14 years
U.S. Cl. D12—146



346,776
MOTORCYCLE TIRE
Johann Haas, and Ernst Mader, both of Munich, Fed. Rep. of Germany, assignors to Metzeler Reifen GmbH, Breuberg, Fed. Rep. of Germany
Filed Aug. 18, 1992, Ser. No. 932,034
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1991, M 9201493.3
Term of patent 14 years
U.S. Cl. D12—147



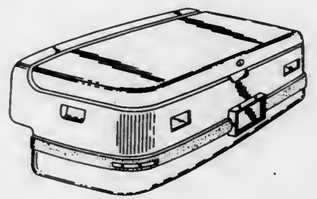
346,777
MOTORCYCLE TIRE
Johann Haas, and Ernst Mader, both of Munich, Fed. Rep. of Germany, assignors to Metzeler Reifen GmbH, Breuberg, Fed. Rep. of Germany
Filed Aug. 18, 1992, Ser. No. 932,007
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1992, M9201490.9
Term of patent 14 years
U.S. Cl. D12—151



346,778
ANTI-SKID TIRE TRACTION UNIT
Masao Hori, Osaka, Japan, assignor to Obtsu Tire & Rubber Co., Ltd., The, Osaka, Japan
Filed Mar. 23, 1992, Ser. No. 855,936
Term of patent 14 years
U.S. Cl. D12—154

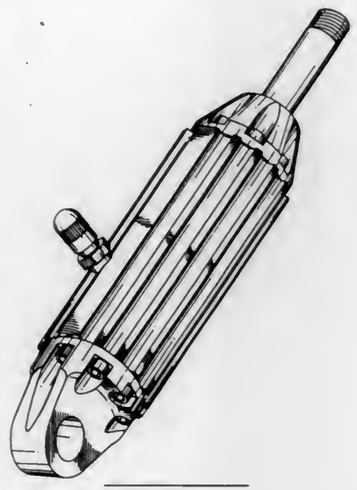


346,779
LUGGAGE AND MATERIAL CARRIER FOR A VEHICLE
Mark E. Liscinsky, 2175 Garry, Troy, Mich. 48084
Filed Nov. 20, 1992, Ser. No. 1,802
Term of patent 14 years
U.S. Cl. D12—413

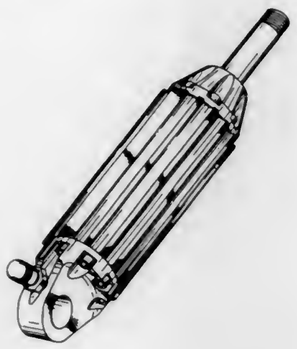


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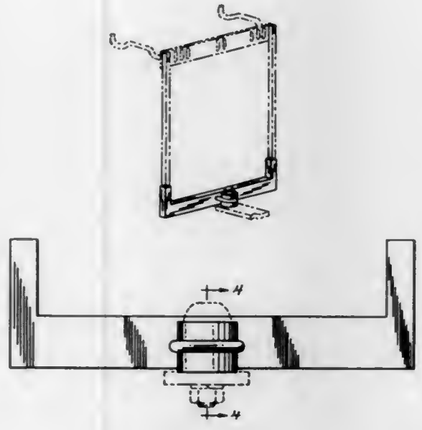
346,780
SHOCK ABSORBER
Steven O. Homme, Goodridge, Minn., assignor to Ride On, Inc., Thief River Falls, Minn.
Continuation of Ser. No. 641,350, Jan. 15, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,397
Term of patent 14 years
U.S. Cl. D12—159



346,781
SHOCK ABSORBER
Steven O. Homme, Goodridge, Minn., assignor to Ride On, Inc., Thief River Falls, Minn.
Continuation of Ser. No. 641,367, Nov. 15, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,402
Term of patent 14 years
U.S. Cl. D12—159



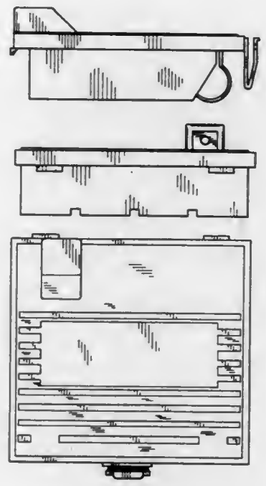
346,782
BALL-HITCH FOR BICYCLE CARRIER
Albert L. Schmidt, 1000 W. Eva La., Mount Prospect, Ill. 60056
Filed Feb. 19, 1992, Ser. No. 836,944
Term of patent 14 years
U.S. Cl. D12—162



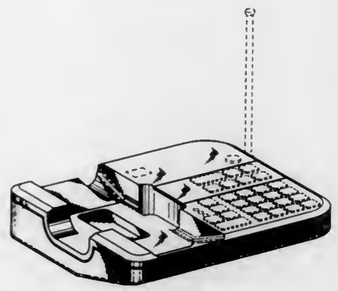
346,783
MOTORCYCLE MIRROR
Jay E. Brainard, 999 Balmer Rd., Youngstown, N.Y. 14174
Filed Mar. 25, 1992, Ser. No. 857,795
Term of patent 14 years
U.S. Cl. D12—187



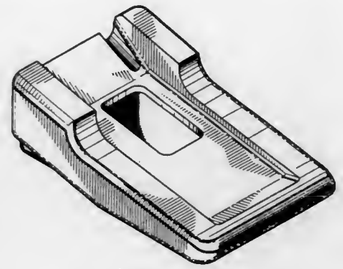
346,784
RECHARGEABLE BATTERY PACK
Steven G. Leiserson, Ste. C, 10845 Wheatlands Ave., Santee, Calif. 92071, and Helmut Ochner, 5312 Shearynne La., Torrance, Calif. 90505
Division of Ser. No. 29/000876, Oct. 27, 1992, which is a division of Ser. No. 793,122, Nov. 18, 1991, Pat. No. 5,225,760. This application Nov. 15, 1993, Ser. No. 15,345
Term of patent 14 years
U.S. Cl. D13—103



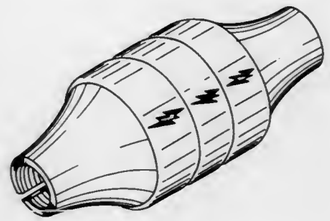
346,785
CHARGING BASE FOR A CORDLESS TELEPHONE
Louis J. Lundell, Buffalo Grove, and Albert L. Nagele, Wilmette, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 7, 1993, Ser. No. 3,459
Term of patent 14 years
U.S. Cl. D13—108



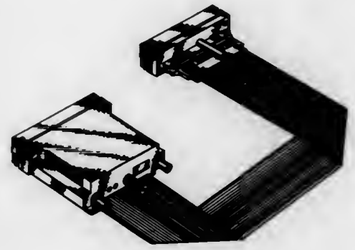
346,786
CHARGING BASE FOR A CORDLESS TELEPHONE
Albert L. Nagele, Wilmete, and Louis J. Lundell, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 7, 1993, Ser. No. 3,460
Term of patent 14 years
U.S. Cl. D13—108



346,787
LOCK FOR HOLDING POWER CORD TO EXTENSION CORD
James E. Cullen, 24 Lomita Dr., Mill Valley, Calif. 94941
Filed Oct. 26, 1992, Ser. No. 833
Term of patent 14 years
U.S. Cl. D13—154

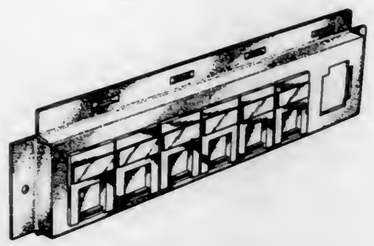


346,788
MINI CHANNEL EXTENDER APPARATUS
James L. Korzik; Richard S. LaBarbera, both of Roanoke, Va.; William K. Nailor, III, Camp Hill, Pa.; William A. Northey, Etters, Pa.; Harold W. Sundy, Landisburg, Pa., and John D. Walden, Mechanicsburg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 24, 1992, Ser. No. 919,695
Term of patent 14 years
U.S. Cl. D13—147

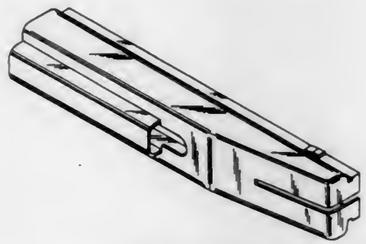


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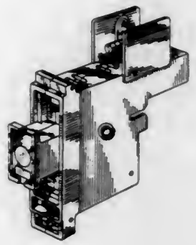
346,789
MODULAR TELECOMMUNICATIONS STATION OUTLET
Gene O. Sanchez, Aurora, and Joseph C. Coffey, Parker, both of Colo., assignors to MCI Communications Corp., Washington, D.C. and Krone, Inc., Englewood, Colo.
Filed Oct. 21, 1992, Ser. No. 676
Term of patent 14 years
U.S. Cl. D13—147



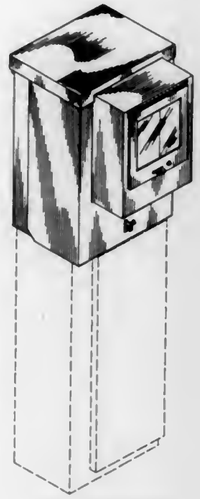
346,790
WIRE DRESS COVER FOR AN ELECTRICAL CONNECTOR
Fred L. Krehbiel, Chicago, Ill., assignor to Molex Incorporated, Lisle, Ill.
Filed Nov. 10, 1992, Ser. No. 1,320
Term of patent 14 years
U.S. Cl. D13—156



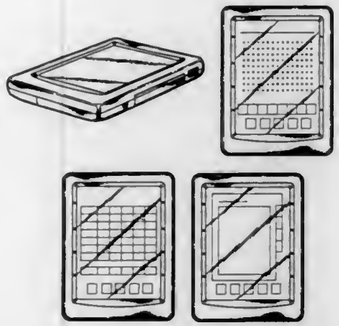
346,791
FUSED ELECTRICAL POWER DISCONNECT
David R. Marach, Marengo; Conrad Alfaro, Chicago, and Lawrence Happ, Mundelein, all of Ill., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Nov. 5, 1991, Ser. No. 788,731
Term of patent 14 years
U.S. Cl. D13—160



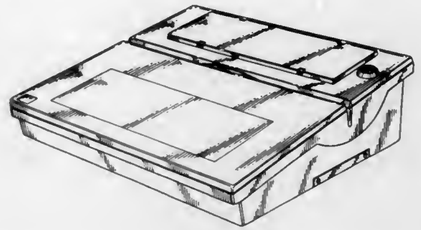
346,792
UPPER HOUSING OF AN ELECTRICAL SERVICE PEDESTAL
Wallace D. Tessmer, Sacramento, Calif., assignor to Tesco Controls, Inc., Sacramento, Calif.
Filed Mar. 2, 1993, Ser. No. 5,373
Term of patent 14 years
U.S. Cl. D13—184



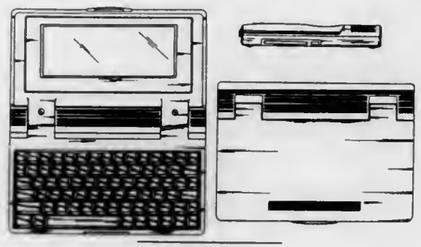
346,793
ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, and Osamu Kondo, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Sep. 30, 1992, Ser. No. 952,782
Claims priority, application Japan, Apr. 3, 1992, 4-9733
Term of patent 14 years
U.S. Cl. D14—100



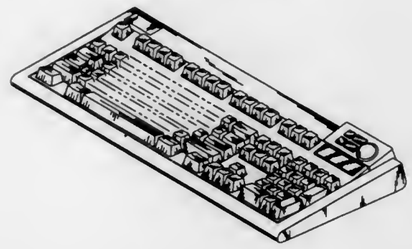
346,794
TRANSACTION SYSTEM CONSOLE
James S. Arakaki, Loomis; Allan Avnet, Fountain Valley, and J. Mark Stanton, San Jose, all of Calif., assignors to Verifone, Inc., Redwood City, Calif.
Filed Nov. 18, 1991, Ser. No. 794,165
Term of patent 14 years
U.S. Cl. D14—105



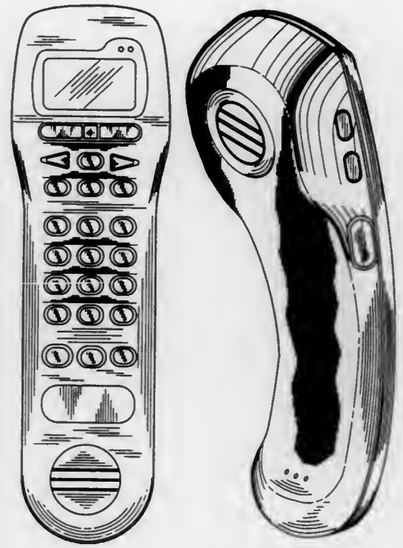
346,795
PERSONAL COMPUTER
Takuji Kaneko, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan
Filed Sep. 18, 1992, Ser. No. 948,915
Claims priority, application Japan, Mar. 18, 1992, H4-7457
Term of patent 14 years
U.S. Cl. D14—106



346,796
KEYBOARD
Thomas E. Pangburn, Lexington, Ky., assignor to Lexmark International, Inc., Greenwich, Conn.
Filed Oct. 9, 1992, Ser. No. 388
Term of patent 14 years
U.S. Cl. D14—115



346,797
MOBILE HANDSET
Masaru Tokiyama, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 24, 1992, Ser. No. 904,529
Term of patent 14 years
U.S. Cl. D14—138

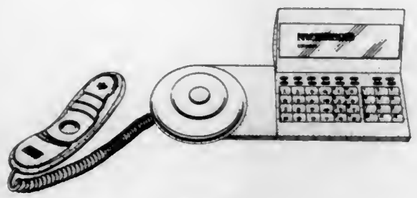


346,798
HANG-UP CUP
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 19, 1993, Ser. No. 5,035
Term of patent 14 years
U.S. Cl. D14—149

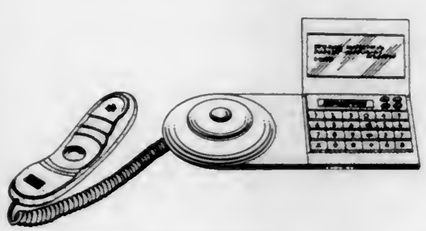


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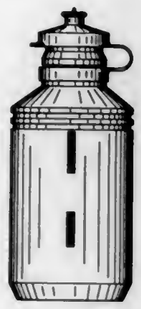
346,799
TELEPHONE SET
Isao Hosoe, Milan, Italy, assignor to Telenorma GmbH, Fed. Rep. of Germany
Filed Feb. 21, 1992, Ser. No. 839,873
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, M9105590.3
Term of patent 14 years
U.S. Cl. D14—151



346,800
TELEPHONE SET
Isao Hosoe, Milan, Italy, assignor to Telenorma GmbH, Fed. Rep. of Germany
Filed Feb. 21, 1992, Ser. No. 839,875
Term of patent 14 years
U.S. Cl. D14—151



346,801
RADIO
Troy G. Traina, 4309 Grant St., Hollywood, Fla. 33021
Filed Jan. 29, 1992, Ser. No. 827,970
Term of patent 14 years
U.S. Cl. D14—189



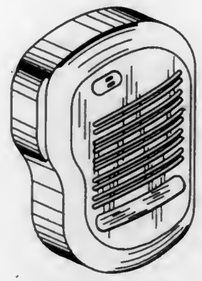
346,802
HEADSET
Jim Sacherman, and John Toor, both of Palo Alto, Calif., assignors to Hello Direct, San Jose, Calif.
Filed Sep. 28, 1992, Ser. No. 952,174
Term of patent 14 years
U.S. Cl. D14—206



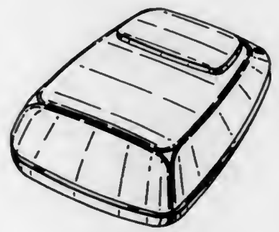
346,803
SPEAKER BOX
Jay Veto, 6010 Cavendish Blvd., Apt. 108, Cote St. Luc, Quebec, Canada H4V 2R9
Filed May 16, 1991, Ser. No. 672,581
Claims priority, application Canada, Sep. 25, 1990, 25099012
Term of patent 14 years
U.S. Cl. D14—221



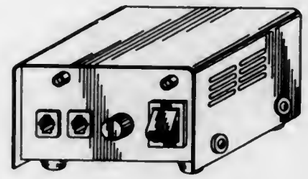
346,804
COMBINATION SPEAKER AND MICROPHONE ASSEMBLY
Masaru Tokiyama, Coral Springs, Fla., assignor to Motorola, Inc., Fort Lauderdale, Fla.
Filed Nov. 18, 1991, Ser. No. 794,177
Term of patent 14 years
U.S. Cl. D14—226



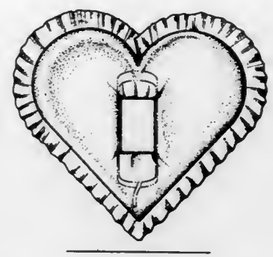
346,805
CELLULAR PHONE REMOTE CONTROL DEVICE
Kyu D. Kim, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 11, 1993, Ser. No. 3,627
Term of patent 14 years
U.S. Cl. D14—240



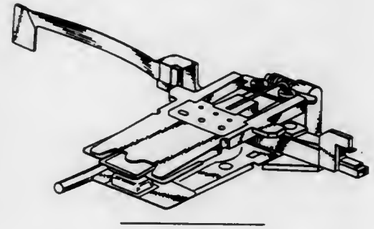
346,806
THREE-WAY CALL DETECTOR UNIT
Edward U. Chong, Davie, Fla., assignor to Communication Equipment & Engineering Company, Plantation, Fla.
Filed Feb. 24, 1993, Ser. No. 5,325
Term of patent 14 years
U.S. Cl. D14—240



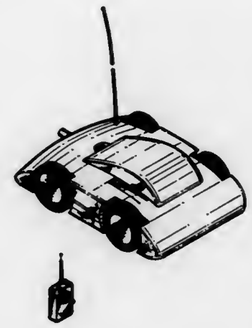
346,807
WALL TELEPHONE FRAME
Dani L. Ireland-Benitez, 229 Hickory Dale Dr., Dover, Del. 19901
Filed Jan. 8, 1991, Ser. No. 638,644
Term of patent 14 years
U.S. Cl. D14—251



346,808
MAGNETIC HEAD CARRIAGE
Kazuhiko Inoue; Hidetoshi Kabasawa, and Fumio Nagase, all of Tokyo, Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Nov. 6, 1991, Ser. No. 789,155
Claims priority, application Japan, May 8, 1991, 1-13198
Term of patent 14 years
U.S. Cl. D14—114

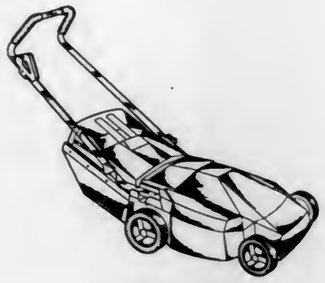


346,809
REMOTE CONTROLLED LAWN MOWER
Daniel Burgos, and Denise Wilson, both of 37 Hilltop Rd., New Haven, Conn. 06515
Filed Apr. 24, 1992, Ser. No. 873,060
Term of patent 14 years
U.S. Cl. D15—14



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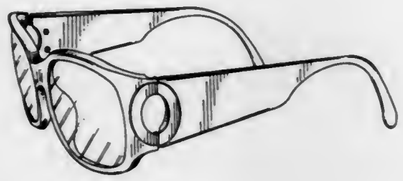
346,810
LAWN MOWER
Howard C. Schulz, and Gerard Gilliland, both of Victoria, Australia, assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 12, 1992, Ser. No. 929,636
Claims priority, application Australia, Feb. 12, 1992, 314/92
Term of patent 14 years
U.S. Cl. D15—14



346,811
BLADE FOR A ROTARY CUTTER FOR USE IN CUTTING PLASTIC PRODUCTS
Minoru Hamano, Utsunomiya, Japan, assignor to Yugen Kaisha Hamano Seishakucho, Tochigi Prefecture, Japan
Filed Dec. 2, 1992, Ser. No. 2,165
Term of patent 14 years
U.S. Cl. D15—139



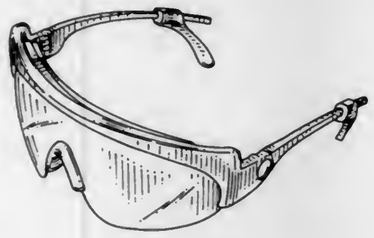
346,812
EYEGLASSES
Adolf Lüzlbaner, Munich, Fed. Rep. of Germany, assignor to Optyl Eyewear Fashion International, Norwood, N.J.
Filed Nov. 20, 1992, Ser. No. 1,834
Claims priority, application Fed. Rep. of Germany, May 22, 1992, 9203824
Term of patent 14 years
U.S. Cl. D16—102



346,813
SUNGLASSES
H. K. McAlpin, Largo, Fla., assignor to Klingers International Corp., Sarasota, Fla.
Filed Aug. 31, 1991, Ser. No. 939,863
Term of patent 14 years
U.S. Cl. D16—112



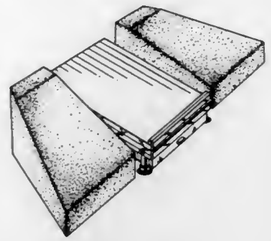
346,814
SUNGLASSES
Yoshiaki Iida, Katano, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Mar. 12, 1993, Ser. No. 5,779
Claims priority, application Japan, Sep. 16, 1992, 4-27344
Term of patent 14 years
U.S. Cl. D16—112



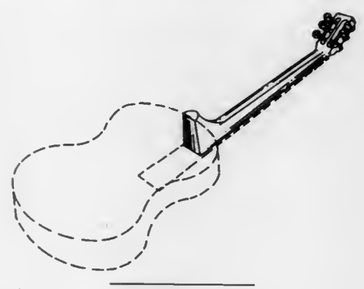
346,815
SUNGLASSES CASE
Elizabeth B. Wake, SE. Gibson Rd., Washougal, Wash. 98671
Filed May 11, 1992, Ser. No. 882,099
Term of patent 14 years
U.S. Cl. D3—265



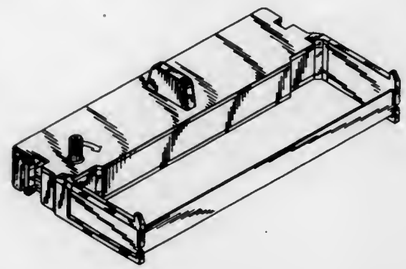
346,816
COMBINED ARMRESTS AND MICROSCOPE STAND
Richard C. Kline, Loveland, Colo., and James R. McCaleb, El Paso, Tex., assignors to Scopease, Inc., El Paso, Tex.
Filed Mar. 31, 1992, Ser. No. 861,502
Term of patent 14 years
U.S. Cl. D16—131



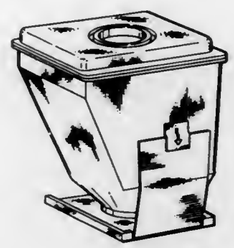
346,817
NECK OF A MUSICAL INSTRUMENT
James Attia, 19470 N.W. 59th Ave., Miami, Fla. 33015
Filed May 6, 1991, Ser. No. 695,772
Term of patent 14 years
U.S. Cl. D17—20



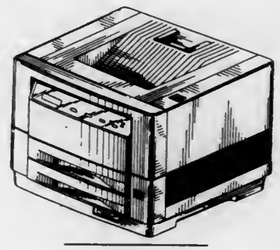
346,818
INK RIBBON CARTRIDGE
Hiroyuki Nakayama, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 30, 1991, Ser. No. 693,278
Claims priority, application Japan, Nov. 1, 1990, 2-36752
Term of patent 14 years
U.S. Cl. D18—12



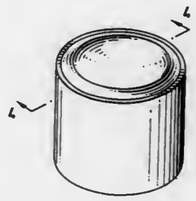
346,819
TONER CARTRIDGE
Masami Taniguchi, Osaka, and Yoshihiko Tanaka, Moriguchi, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Apr. 21, 1992, Ser. No. 871,470
Claims priority, application Japan, Nov. 26, 1991, 3-35795; Nov. 26, 1991, 3-35796
Term of patent 14 years
U.S. Cl. D18—43



346,820
ELECTRONIC COMPUTER OUTPUT PRINTER
Masayoshi Etou; Atsushi Ohta, and Toshiaki Mizushima, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Dec. 2, 1992, Ser. No. 2,154
Claims priority, application Japan, Jun. 4, 1992, 4-16586
Term of patent 14 years
U.S. Cl. D18—55

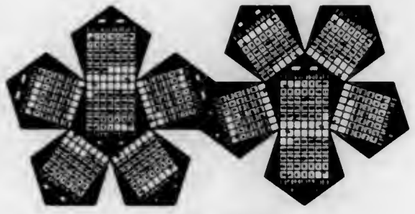


346,821
STEPPED DIAMETER RECESSED SOLID INK PELLET
Philip N. Smith, Valencia, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.
Continuation of Ser. No. 431,983, Nov. 2, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 919,973
Term of patent 14 years
U.S. Cl. D18—56

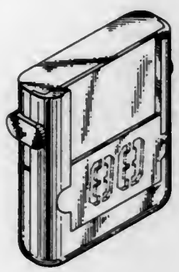


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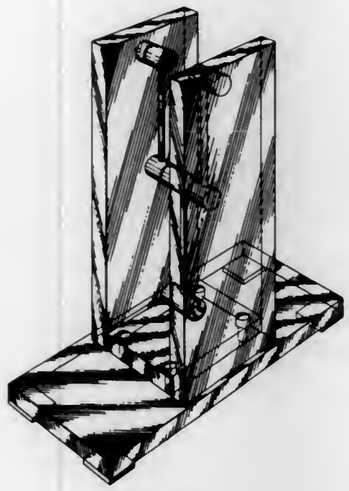
346,822
BLANK FOR A DODECAHEDRAL DESK CALENDAR
Robert L. Fennimore, Jr., 123 Fenimore Dr., Collings Lake, N.J. 08094
Filed Oct. 5, 1992, Ser. No. 98
Term of patent 14 years
U.S. Cl. D19—20



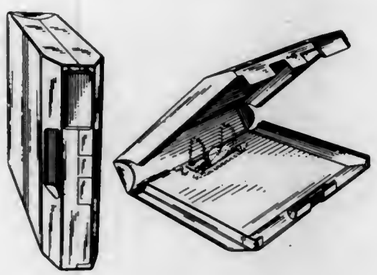
346,823
COMBINED HOLDER AND DISPLAY DEVICE FOR LEARNING CARDS
Brian L. Aiken, Orlando, Fla.; Dominick Loscalzo, Whitestone, and Anthony J. Barsanti, New York, both of N.Y., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 15, 1992, Ser. No. 948,708
Term of patent 14 years
U.S. Cl. D19—64



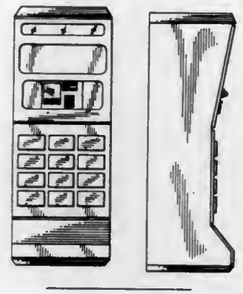
346,824
CHAOTIC MOTION PENDULUM
David Mitchell, Box 7042, Yale Station, New Haven, Conn. 06520, and James Hamilton, 189 Upland Rd., Cambridge, Mass. 02140
Filed Aug. 12, 1992, Ser. No. 929,778
Term of patent 14 years
U.S. Cl. D19—62



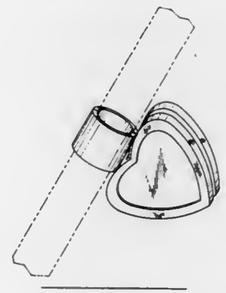
346,825
FILING CASE
Johannes F. Ros, Paris, France, assignor to Office Data Europe B.V., Netherlands
Continuation-in-part of Ser. No. 685,482, Apr. 15, 1991, and a continuation-in-part of Ser. No. 685,558, Apr. 15, 1991. This application Aug. 21, 1991, Ser. No. 748,337
Claims priority, application Hague, Oct. 15, 1990, DM/017848
Term of patent 14 years
U.S. Cl. D19—75



346,826
AUTOMATED CELLULAR DISTRIBUTION CENTER
Donald M. Marks, Boca Raton, Fla., assignor to Sims Communications Inc., Delray Beach, Fla.
Filed Nov. 23, 1992, Ser. No. 1,736
Term of patent 14 years
U.S. Cl. D20—3



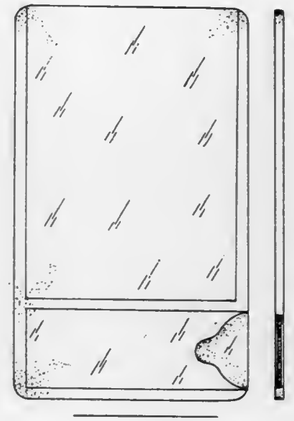
346,827
HOLDER FOR AN IDENTIFICATION TAG
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed Mar. 27, 1992, Ser. No. 858,776
The portion of the term of this patent subsequent to Nov. 26, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—22



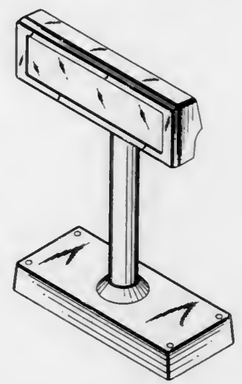
346,828
EMERGENCY INFORMATION LABEL
Mark A. Hagen, P.O. Box 589, Excelsior, Minn. 55331-0589
Continuation-in-part of Ser. No. 293,143, Jul. 7, 1992, Pat. No. D. 327,709. This application Jul. 6, 1992, Ser. No. 913,529
Term of patent 14 years
U.S. Cl. D20—22



346,829
TRADING CARD HOLDER
Brian Keefe, 6646 Clayton Ave., St. Louis, Mo. 63139
Filed May 4, 1992, Ser. No. 877,029
Term of patent 14 years
U.S. Cl. D20—40

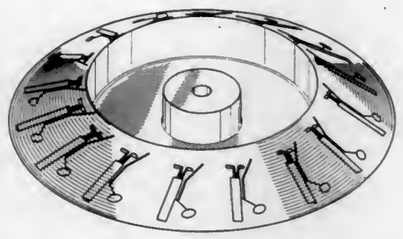


346,830
ILLUMINABLE PRICE DISPLAY FOR A GROCERY STORE CHECK-OUT COUNTER
Ikuo Masujima, and Kazuko Fukano, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Jul. 15, 1993, Ser. No. 10,708
Claims priority, application Japan, Jan. 20, 1993, 5-1130
Term of patent 14 years
U.S. Cl. D20—41



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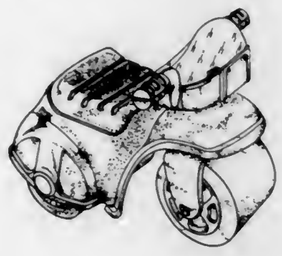
346,831
YARD GOLF
Douglas J. Adams, 4525 Binghamton Dr., Mobile, Ala. 33619
Filed May 18, 1992, Ser. No. 885,274
Term of patent 14 years
U.S. Cl. D21—8



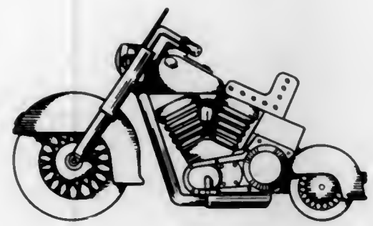
346,832
ROCKING HORSE
William K. Washburn, and Genevieve Washburn, both of 56 Seacrest Dr., Ormond Beach, Fla. 32176
Filed Feb. 8, 1993, Ser. No. 4,508
Term of patent 14 years
U.S. Cl. D21—70



346,833
TOY MOTORCYCLE
Ronald R. Klawitter, Berger, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Nov. 23, 1992, Ser. No. 1,769
Term of patent 14 years
U.S. Cl. D21—80



346,834
TOY MOTORCYCLE
James Consiglio, 70414 Canterbury Dr., Richmond, Mich. 48062
Filed Dec. 28, 1992, Ser. No. 3,029
Term of patent 14 years
U.S. Cl. D21—80



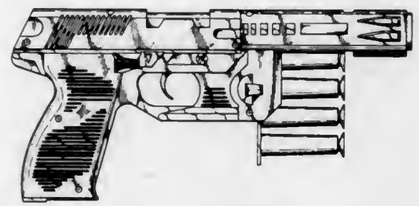
346,835
AMUSEMENT CHARACTER PLAYHOUSE
Donald J. Carson III, Tujunga, and Joseph A. Lanzisero, Burbank, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Jan. 22, 1993, Ser. No. 3,965
Term of patent 14 years
U.S. Cl. D21—114



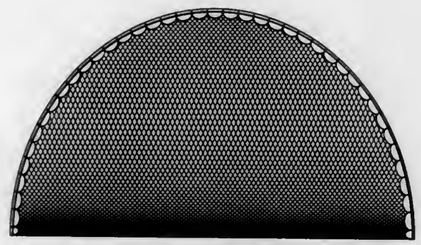
346,836
AMUSEMENT CHARACTER PLAYHOUSE
Hani D. El-Masri, Glendale, and Joseph A. Lanzisero, Burbank, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Jan. 22, 1993, Ser. No. 3,966
Term of patent 14 years
U.S. Cl. D21—114



346,837
CLIP LOAD DART GUN
Lee K. Sun, North Point, Hong Kong, assignor to Imperial Toy Corporation, Los Angeles, Calif.
Filed Apr. 21, 1992, Ser. No. 871,640
Term of patent 14 years
U.S. Cl. D21—147



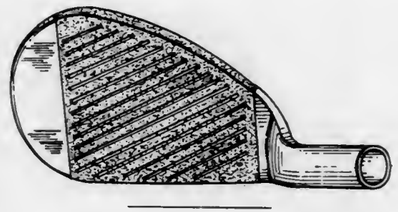
346,838
NET BARRIER FOR SPORTS TRAINING
Charles B. Noval, 1120 Union St., San Francisco, Calif. 94401
Filed Aug. 12, 1991, Ser. No. 744,022
Term of patent 14 years
U.S. Cl. D21—200



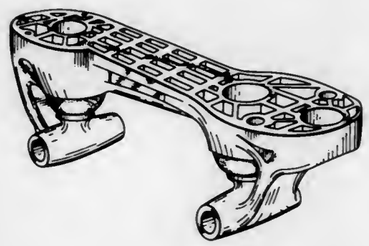
346,839
GOLF BALL
Kengo Oka, and Kiyoto Maruoka, both of Hyogo, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Oct. 11, 1991, Ser. No. 775,078
Claims priority, application Japan, Apr. 11, 1991, 3-10692
Term of patent 14 years
U.S. Cl. D21—205



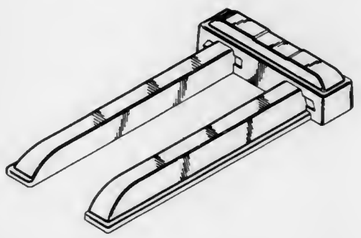
346,840
GOLF CLUB WEDGE HEAD
Frank Fenton, South Hadley, Mass., assignor to Lisco. Inc., Tampa, Fla.
Filed Jan. 27, 1992, Ser. No. 825,905
Term of patent 14 years
U.S. Cl. D21—220



346,841
ROLLER SKATE CHASSIS
Raymond Losi, II, Thousand Oaks, Calif., assignor to Variflex, Inc., Moorpark, Calif.
Filed Feb. 14, 1992, Ser. No. 835,672
Term of patent 14 years
U.S. Cl. D21—226

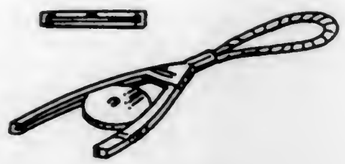


346,842
PUTTING TRAINING AID
Kenneth D. O'Neil, 3084 S.W. Fairmount Blvd., Portland, Oreg. 97201
Filed Mar. 11, 1992, Ser. No. 850,059
Term of patent 14 years
U.S. Cl. D21—234

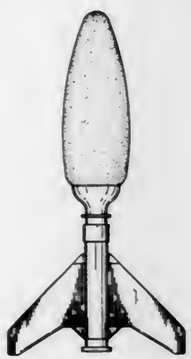


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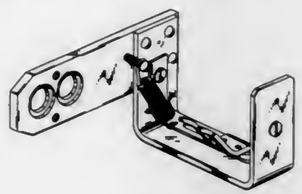
346,843
COMBINED GOLF BALL MARKER AND HOLDER
Bernard J. Flynn, 284 North St., Winooski, Vt. 05404
Filed Oct. 13, 1992, Ser. No. 300
Term of patent 14 years
U.S. Cl. D21—234



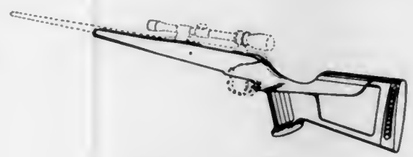
346,844
TOY ROCKET
Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Sta., N.J. 08889
Filed Jun. 19, 1992, Ser. No. 901,587
Term of patent 14 years
U.S. Cl. D22—113



346,845
ARCHERY ARROW REST
Benny Sears, Rte. 2, Cleveland, Ga. 30528
Filed Aug. 17, 1992, Ser. No. 930,295
Term of patent 14 years
U.S. Cl. D22—107



346,846
GUN STOCK
Glen R. Eberle, 2302 N. 14th St., Boise, Id. 83702-1109
Filed Jan. 23, 1992, Ser. No. 824,470
Term of patent 14 years
U.S. Cl. D22—108



346,847
ANIMAL LURE
Louis F. Barbanera, and Joseph Barbanera, both of 7622 Broadway, North Bergen, N.J. 07047
Filed Oct. 23, 1991, Ser. No. 781,282
Term of patent 14 years
U.S. Cl. D22—125



346,848
SCENTED FISHING LURE
Henry C. Wenger, deceased, late of Snohomish; by James Wenger, co-personal representative, 15406 Broadway, Snohomish, Wash. 98290, and by Evelina Smith, co-personal representative, 25915 86th Ave. East, Graham, Wash. 98338
Continuation-in-part of Ser. No. 396,012, Aug. 21, 1989, abandoned. This application May 29, 1992, Ser. No. 889,759
Term of patent 14 years
U.S. Cl. D22—126



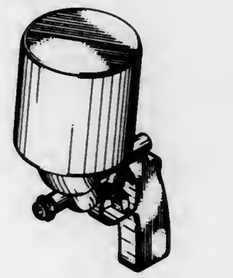
346,849
LINE GUIDE FOR FISHING RODS
Shigeru Yamamoto, and Shuichi Kimura, both of Higashikurume, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 29, 1992, Ser. No. 875,141
Claims priority, application Japan, Nov. 1, 1991, 3-33220
Term of patent 14 years
U.S. Cl. D22—143



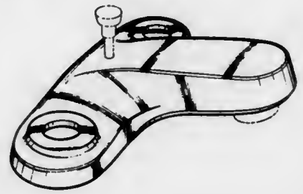
346,850
STUFFED ANIMAL TOY
Sonja D. Cleeton, 966 Bucknell Pl., Rockledge, Fla. 32955
Filed Nov. 16, 1992, Ser. No. 1,524
Term of patent 14 years
U.S. Cl. D21—187



346,851
SPRAY GUN
David Howe, 467 W. Duane, Benson, Ariz. 85602
Filed Mar. 9, 1992, Ser. No. 847,980
Term of patent 14 years
U.S. Cl. D23—225

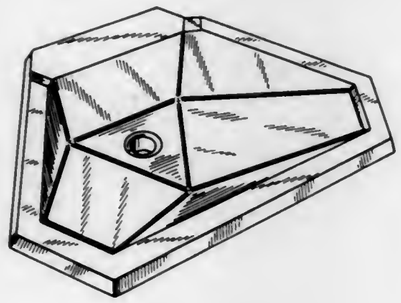


346,852
FAUCET BODY
Loran R. Hill, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.
Filed Jan. 22, 1992, Ser. No. 823,650
Term of patent 14 years
U.S. Cl. D23—241

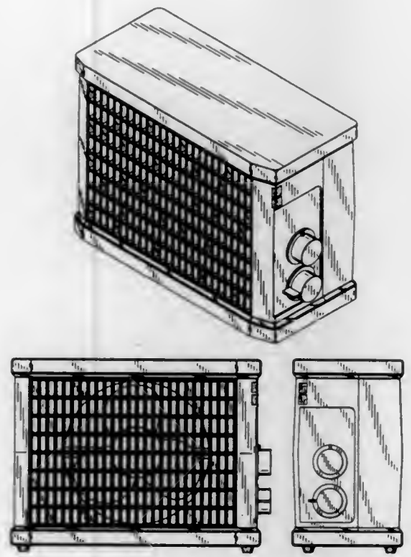


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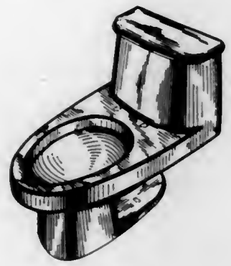
346,853
LAVATORY BASIN
George S. Gruber, Canyon Country, Calif., assignor to Six Eleven Limited, North Hollywood, Calif.
Filed Jun. 20, 1991, Ser. No. 721,352
The portion of the term of this patent subsequent to Apr. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—294



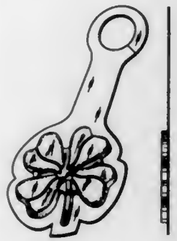
346,855
PORTABLE ELECTRICAL FAN HEATER
Bernard Chiu, Ashland, Mass., assignor to Duracraft Corporation, Whitinsville, Mass.
Filed May 27, 1993, Ser. No. 8,867
Term of patent 14 years
U.S. Cl. D23—328



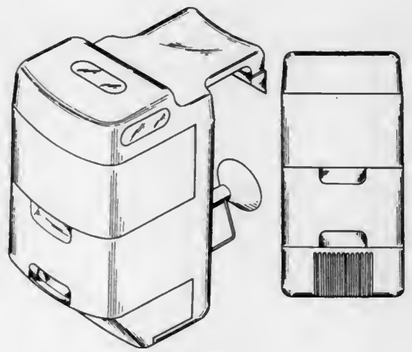
346,854
WATER CLOSET
Mary J. Reid, Sheboygan, Wis., assignor to Sterling Plumbing Group, Inc., Schaumburg, Ill.
Filed Aug. 14, 1992, Ser. No. 930,031
Term of patent 14 years
U.S. Cl. D23—301



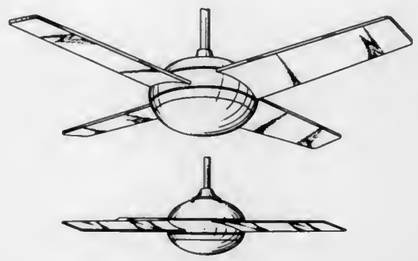
346,856
SCENT DISPENSER
Marie-Antoinette Kany, 20, rue Jacques Roth, 57200 Sarreguemines, France
Filed Nov. 20, 1992, Ser. No. 1,677
Claims priority, application France, May 22, 1992, 923,244
Term of patent 14 years
U.S. Cl. D23—368



346,857
TOILET DEODORIZER
Chang S. Pan, P.O. Box 82-144, Taipei, Taiwan
Filed Nov. 23, 1992, Ser. No. 1,770
Term of patent 14 years
U.S. Cl. D23—368



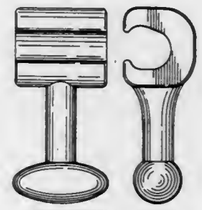
346,858
COMBINED CEILING FAN AND LIGHT
Ching-Tarn Lee, Feng Yuan, Taiwan, assignor to Davoil, Inc., Ft. Worth, Tex.
Filed Dec. 18, 1992, Ser. No. 3,752
Term of patent 14 years
U.S. Cl. D23—377



346,859
COMBINED MOUNTING CANOPY, MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT FOR A CEILING FAN
Charles J. DiPasquale, Argyle, Tex., assignor to Smartel, Inc., Carrollton, Tex.
Filed Mar. 11, 1993, Ser. No. 5,758
Term of patent 14 years
U.S. Cl. D23—411



346,860
ORTHODONTIC CRIMPABLE HOOK
Christopher K. Kesling, Green Acres, Ind., assignor to TP Orthodontics, Inc., Westville, Ind.
Filed Jun. 26, 1992, Ser. No. 905,029
Term of patent 14 years
U.S. Cl. D24—180



346,861
PERSONAL HYGIENIC HANDLE
Myra J. Martin, P.O. Box 245, Saginaw, Ala. 35137
Filed Jul. 8, 1991, Ser. No. 726,522
Term of patent 14 years
U.S. Cl. D24—133

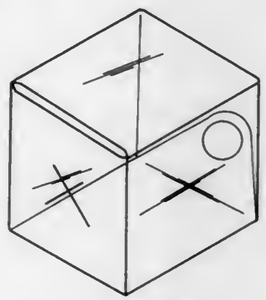


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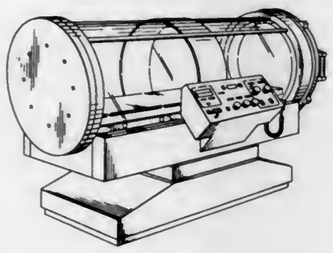
346,862
REVERSE ACTION SURGICAL NEEDLE HOLDER
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed Mar. 7, 1991, Ser. No. 665,750
Term of patent 14 years
U.S. Cl. D24—143



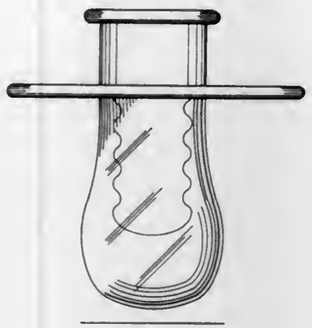
346,863
TRANSPARENT PATIENT ENCLOSURE FOR USE WITH RESPIRATORY FILTER APPARATUS
Thomas V. Choate, P.O. Box 1020, East Sandwich, Mass. 02537
Filed Jun. 20, 1991, Ser. No. 718,850
Term of patent 14 years
U.S. Cl. D24—164



346,864
HYPERBARIC CHAMBER
Raymond P. Reneau, 701 N. St. Mary's, #27, San Antonio, Tex. 78205
Filed Mar. 25, 1993, Ser. No. 6,305
Term of patent 14 years
U.S. Cl. D24—164



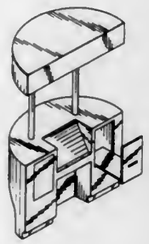
346,865
COMBINED PACIFIER AND TEETHER
George B. Gregory, 3805F Simpson St., Bergstrom AFB, Tex. 78743
Filed Mar. 23, 1992, Ser. No. 856,332
Term of patent 14 years
U.S. Cl. D24—196



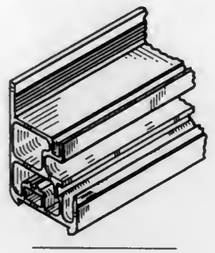
346,866
ACUPRESSURE POLE
Baltazara G. Lotuaco, 1003 S. Shore Dr., Parkville, Mo. 64151
Filed Jan. 22, 1993, Ser. No. 3,970
Term of patent 14 years
U.S. Cl. D24—200



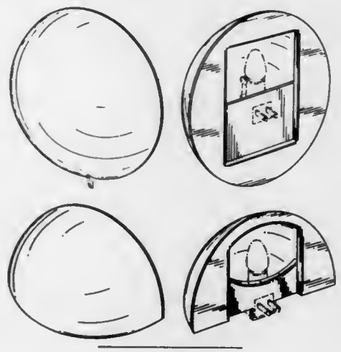
346,867
KIOSK
Fernando A. Montilla, Ann Arbor, Mich., assignor to Kiosk Information Systems, Inc., Ann Arbor, Mich.
Filed Aug. 7, 1992, Ser. No. 926,805
Term of patent 14 years
U.S. Cl. D25—16



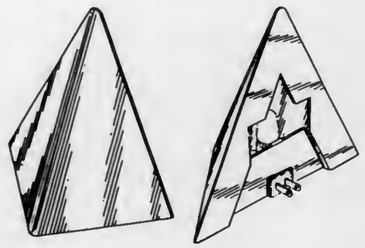
346,868
UPPER VENT SILL
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,836
Term of patent 14 years
U.S. Cl. D25—124



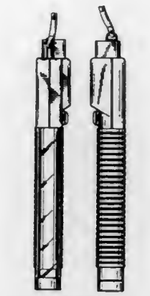
346,869
NIGHT LIGHT
Vazgen Houssian, 380 Mountain Rd., Union City, N.J. 07087
Filed May 6, 1992, Ser. No. 880,316
Term of patent 14 years
U.S. Cl. D26—26



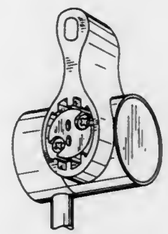
346,870
NIGHT LIGHT
Vazgen Houssian, 380 Mountain Rd., Union City, N.J. 07087
Filed May 6, 1992, Ser. No. 880,317
Term of patent 14 years
U.S. Cl. D26—26



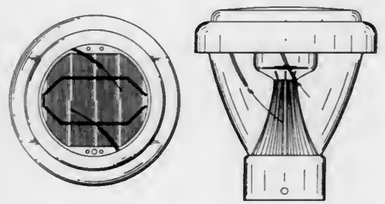
346,871
COMBINED FLUORESCENT AND INCANDESCENT FLASHLIGHT
Noel E. Zeller, c/o Zelco Industries, Inc., 630 S. Columbus Ave., Mount Vernon, N.Y. 10551-4445
Filed Apr. 24, 1992, Ser. No. 873,555
Term of patent 14 years
U.S. Cl. D26—42



346,872
ADJUSTABLE LAMP HOLDER
Bruno Gecchelin, Milan, Italy, assignor to iGuzzini Illuminazione S.p.A., Recanati, Italy
Filed Mar. 14, 1990, Ser. No. 493,225
Claims priority, application Italy, Sep. 18, 1989, 21748/89[U]
Term of patent 14 years
U.S. Cl. D26—63

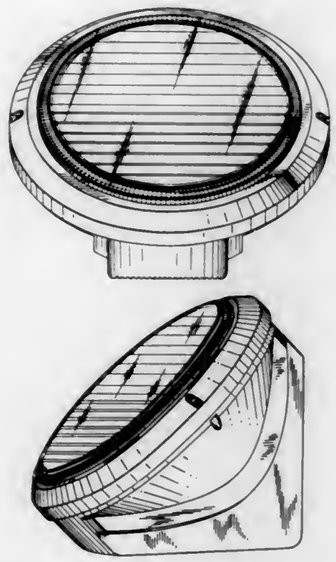


346,873
DECORATIVE SOLAR POWERED EXTENSION LIGHTING FIXTURE
John Frost, Thousand Oaks, Calif., assignor to Siemens Solar Industries International, Inc., Camarillo, Calif.
Filed Mar. 9, 1993, Ser. No. 5,681
Term of patent 14 years
U.S. Cl. D26—67



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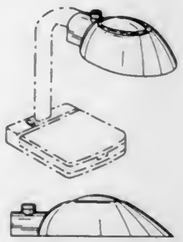
346,874
WALL LAMP
Roberto Fiorato, Verona, Italy, assignor to Prisma S.p.A., Italy
Filed Jun. 16, 1992, Ser. No. 899,656
Claims priority, application Italy, Dec. 20, 1991, MI910-000877
Term of patent 14 years
U.S. Cl. D26—87



346,876
LIGHTER
Shirley A. Cockram, 797 Lee Ridge Road, Edmonton, Alberta, Canada T6K 0P6
Filed Feb. 3, 1992, Ser. No. 829,331
Term of patent 14 years
U.S. Cl. D27—156



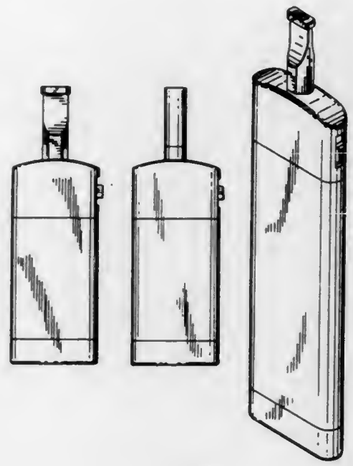
346,875
LAMP SHADE
Brooks Rorke, Fairfield, Conn., assignor to Holmes Products Corp., Milford, Mass.
Filed Jan. 6, 1993, Ser. No. 3,289
Term of patent 14 years
U.S. Cl. D26—128



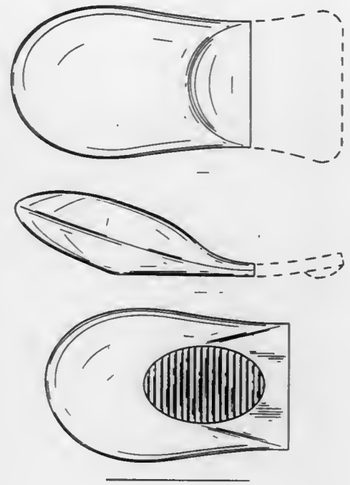
346,877
COMBINED TOBACCO SMOKING PIPE BOWL AND RECEIVING STEM
Richard Melograno, 546 25th St., Hermosa Beach, Calif. 90254
Filed Jun. 4, 1993, Ser. No. 9,101
Term of patent 14 years
U.S. Cl. D27—169



346,878
ELECTRICAL CIGARETTE
Edward S. Gee, Midlothian; A. Clifton Lilly, Chesterfield; D. Bruce Losee, Richmond; James L. Myracle, Jr., Midlothian; Jerry F. Whidby, Richmond; Francis V. Utsch; Constance H. Morgan, both of Midlothian, and F. Murphy Sprinkel, Glen Allen, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Mar. 25, 1991, Ser. No. 675,463
Term of patent 14 years
U.S. Cl. D27—194



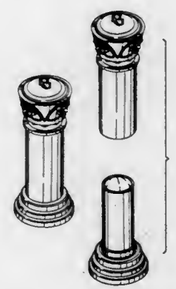
346,880
RAZOR BLADE HANDLE
Edward H. Meisner, Short Hills; Michael P. Ballone, New Providence, and Thomas V. Dyk, Prospect Park, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 19, 1992, Ser. No. 1,646
Term of patent 14 years
U.S. Cl. D28—48



346,879
HAIR CLASP
Peggy B. McAlister, 1120 Beacon Pkwy., East, Unit 307, Birmingham, Ala. 35209
Filed Mar. 29, 1993, Ser. No. 6,448
Term of patent 14 years
U.S. Cl. D28—42

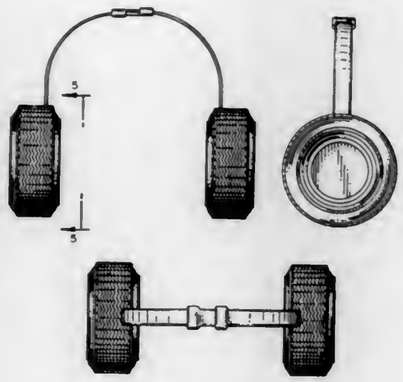


346,881
LIPSTICK CASE
Shen-Shyong Yang, No. 227-17, Tay-Tzyy-Miaw, Tay-Tzzy Tsuen, Ren-Der Shiang, Tainan Hsien, Taiwan
Filed Apr. 29, 1992, Ser. No. 875,140
Term of patent 14 years
U.S. Cl. D28—87

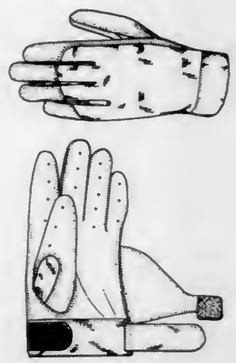


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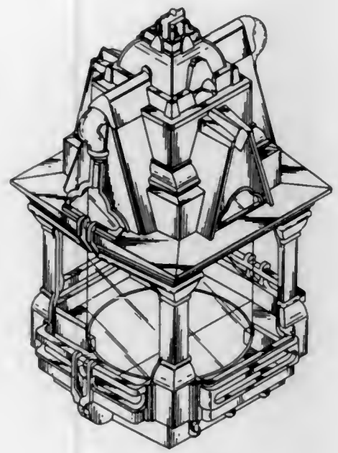
346,882
EAR MUFF
Donald W. Bryerton, Sr., 13th Ave. Box 297, Sylvan Beach, N.Y. 13157
Filed Jul. 15, 1991, Ser. No. 730,255
Term of patent 14 years
U.S. Cl. D29—19



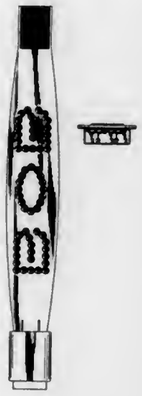
346,883
BATTER'S GLOVE
Gregory J. Easton, San Francisco, and Mark P. Hochgesang, Foster City, both of Calif., assignors to Easton Sports, Burlingame, Calif.
Filed May 7, 1992, Ser. No. 880,362
Term of patent 14 years
U.S. Cl. D29—22



346,884
BIRD FEEDER
Barbara J. Stork, Jersey City, N.J., assignor to Donsco, Inc., Wrightsville, Pa.
Filed Jun. 5, 1992, Ser. No. 896,091
Term of patent 14 years
U.S. Cl. D30—124



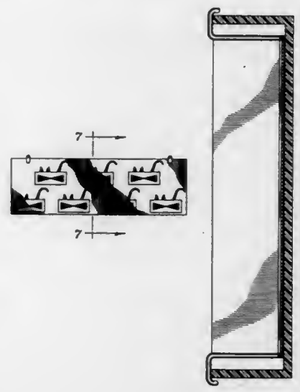
346,885
PET COLLAR
Robert Milo, and Lydia Griego, both of 7309 Minehead North West, Albuquerque, N. Mex. 87120
Continuation-in-part of Ser. No. 600,096, Oct. 19, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 873,569
Term of patent 14 years
U.S. Cl. D30—152



346,886
HANDLE FOR BRANDING IRON
Calvin P. Glade, 903 N. Waterview, Richardson, Tex. 75080
Filed Apr. 7, 1992, Ser. No. 864,965
Term of patent 14 years
U.S. Cl. D30—155



346,887
CAT LITTER BOX
Suzanne E. Desveaux, 4136 La Junta Dr., Claremont, Calif. 91711
Filed Aug. 3, 1992, Ser. No. 924,242
Term of patent 14 years
U.S. Cl. D30—161



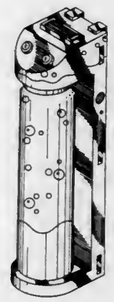
346,888
AUTOMATIC SWIMMING POOL CLEANER
William Stone, Coral Springs, Fla., assignor to Zarina Holding C.V., Amsterdam, Netherlands
Filed Sep. 6, 1991, Ser. No. 756,141
Term of patent 14 years
U.S. Cl. D32—1



346,889
SWEEPER
Charles T. Creecy, 218 13th St., Racine, Wis. 53403
Filed Jul. 1, 1992, Ser. No. 907,491
Term of patent 14 years
U.S. Cl. D32—19



346,890
LIQUID DISPENSER FOR A WASHING MACHINE
Surinder S. Panesar, 6100 Bolivar, Brossard, Montreal, Canada J4Z-3H3
Filed Jul. 25, 1990, Ser. No. 557,666
Term of patent 14 years
U.S. Cl. D32—30



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF MAY, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Kuivalainen, Reijo J., 5,310,528, Cl. 422-170.000.

A. Raymond & Cie: *See*—
Andre, Guy; Boville, Daniel; and Legat, Jean-Jacques, 5,310,240, Cl. 296-201.000.
Briere, Jean; and Moretti, Erminio, 5,309,612, Cl. 24-90.00B.

A/S Nunc: *See*—
Johansson, Arne; and Esser, Peter, 5,310,676, Cl. 435-285.000.

AAW Produktions Aktiengesellschaft: *See*—
Pirchl, Gerhard, 5,309,622, Cl. 29-566.100.

AB Erik Vinnars: *See*—
Vinnars, Erik, 5,310,768, Cl. 514-574.000.

AB Volvo: *See*—
Tenglund, Lars, 5,310,224, Cl. 285-256.000.

Abb Amdata Inc.: *See*—
Lareau, John P.; and Leonard, David S., 5,311,128, Cl. 324-233.000.

ABB Flakt, Inc.: *See*—
Josefsson, Leif E. B.; and Persson, Anders P. A. T., 5,309,650, Cl. 34-493.000.

Abbey Etna Machine Company: *See*—
Abbey, Nelson D., III, 5,309,746, Cl. 72-9.000.

Abbey, Nelson D., III, to Abbey Etna Machine Company. Automatic tube straightening system. 5,309,746, Cl. 72-9.000.

Abbott Laboratoires: *See*—
McMahon, Michael E.; and Gordon, Julian, 5,310,650, Cl. 435-6.000.

Abbott Laboratories: *See*—
Cunningham, David D.; Brontman, Susan B.; Geist, Jill M.; Helgren, R. Hayes; Henning, Timothy P.; Johnson, Kenneth S.; Morici, Laura S.; Schapira, Thomas G.; and Sleszynski, Neal T., 5,310,469, Cl. 204-403.000.
Donohue, Joseph P.; Bailey, Mark W.; and Mattimiro, Christopher N., 5,311,426, Cl. 364-413.090.
Gutcheck, Robert A.; Lindberg, John M.; and Vurek, Gerald G., 5,311,013, Cl. 250-227.230.
Rosenberg, Saul H.; and Denissen, Jon F., 5,310,740, Cl. 514-236.800.

Abdallah, Iman'al-Amin. Boardgame and method of measuring brain activity utilizing a board-game. 5,310,195, Cl. 273-444.000.

Abdel-Latif, A. Ismail, to General Electric Co. High temperature inorganic paint. 5,310,422, Cl. 106-635.000.

Abe, Hirotsugu: *See*—
Higuchi, Yukio; Abe, Hirotsugu; and Mikami, Shigeyuki, 5,311,160, Cl. 333-219.100.

Abe, Kengi, to Hirose Electric Co., ltd. Optical fiber connector. 5,311,609, Cl. 385-60.000.

Abe, Masaru: *See*—
Kubota, Hajime; Makino, Atsushi; Tanaka, Nobuyuki; Chisaka, Kazuto; and Abe, Masaru, 5,309,758, Cl. 73-118.100.

Abe, Tsutomu: *See*—
Hirasawa, Shinichi; Sato, Koichi; Terasawa, Koji; Miyakawa, Akira; Abe, Tsutomu; and Hattori, Yoshifumi, 5,311,214, Cl. 346-1.100.

Abel, William E.: *See*—
Marman, Douglas H.; and Abel, William E., 5,311,024, Cl. 250-353.000.

Abrahamsen, John G.: *See*—
Harck, Kurt; Abrahamsen, John G.; Nicolaisen, Holger; Boisen, Michael; and Kyster, Erik, 5,310,160, Cl. 251-129.150.

Acier, Bruno; Merle, Jean-Pierre; and Des Ordons, Jacques R., to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle. Device for determining the portion of a field seen by the eye of an observer. 5,311,225, Cl. 351-221.000.

Active Noise and Vibration Technologies, Inc.: *See*—
Ross, Colin F.; and Eatwell, Graham P., 5,311,446, Cl. 364-508.000.

Adachi, Tadashi, to Asmo Co., Ltd. Tension adjusting apparatus. 5,309,678, Cl. 49-352.000.

Adachi, Takeshi: *See*—
Kimpara, Mamoru; and Adachi, Takeshi, 5,310,962, Cl. 84-600.000.

Adam, Gerard: *See*—
Husson, Henri P.; Quirion, Jean C.; Bonin, Martine; Guardiola, Beatrice; Adam, Gerard; and Renard, Pierre, 5,310,739, Cl. 514-230.500.

Adams, Bruce E.: *See*—
Schietinger, Charles W.; and Adams, Bruce E., 5,310,260, Cl. 374-142.000.

Adams, L. Garry: *See*—
Ficht, Thomas A.; Sowa, Blair A.; and Adams, L. Garry, 5,310,649, Cl. 435-6.000.

Adams, Robert W.: *See*—
Ferguson, Paul F., Jr.; Ganesan, Apparajan; and Adams, Robert W., 5,311,181, Cl. 341-143.000.

Adams, Theodore P., to Angeion Corporation. Sterilizable hand-held programmer/interrogator. 5,311,449, Cl. 364-514.000.

Adir et Compagnie: *See*—
Husson, Henri P.; Quirion, Jean C.; Bonin, Martine; Guardiola, Beatrice; Adam, Gerard; and Renard, Pierre, 5,310,739, Cl. 514-230.500.

Advanced Medical Concepts, Inc.: *See*—
Teves, Leonides Y., 5,309,905, Cl. 128-207.140.

Advanced Optoelectronics, Inc.: *See*—
Wagner, David K.; and Danner, Allen D., 5,311,530, Cl. 372-36.000.

Advanced Photonix, Inc.: *See*—
Iwanczyk, Jan S.; Lewis, Thomas T.; and Madden, R. Michael, 5,311,044, Cl. 257-186.000.

Aerospace Corporation, The: *See*—
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Ishizawa, Maki; Ogata, Tsutomu; Shindo, Kazuhiko; Kitada, Syuichi; and Koyama, Mitsunori, to Nippon Telegraph and Telephone Corporation. Temperature difference storage battery. 5,310,608, Cl. 429-11.000.

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Jager, Horst, to Bayer Aktiengesellschaft. Triphendioxazine dyestuffs. 5,310,906, Cl. 544-76.000.

Jakobsen, Palle; and Drejer, Jorgen, to Novo Nordisk A/S. Aryloxyphenylpropylamines and their calcium overload blocking compositions and methods of use. 5,310,756, Cl. 514-524.000.

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Joan, David B.; Spaur, Michael R.; Hull, Richard W.; Asami, Takashi; Lee, Marshall D.; Mento, Robert P.; and Wang, Min-Hui, to Western Digital (Singapore) PTE. Information detecting system. 5,311,376, Cl. 360-51.000.

Jochem, David J.; and Willett, Timmy L., to Berry Plastics Corporation. Canister with lid-release control mechanism. 5,310,074, Cl. 220-296.000.

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Johnson Service Company: *See—*
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Jones, Allan S.; Mills, David E.; and Winnik, Mitchell A., to Eastman Chemical Company. Poly(ethylene 2,6-naphthalene dicarboxylate)-/aromatic ketone compositions having reduced fluorescence. 5,310,857, Cl. 528-220.000.

Jones, George B. Ratchet wrench. 5,309,796, Cl. 81-57.390.

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Josefsson, Leif E. B.; and Persson, Anders P. A. T., to ABB Flakt, Inc. Method and apparatus for ventilating a paint baking oven. 5,309,650, Cl. 34-493.000.

Joseph, Eugene B.; and Pavlidis, Theodosios, to Symbol Technologies, Inc. Analog waveform decoder utilizing histogram of edge sizes. 5,311,001, Cl. 235-462.000.

Josephson, Donad M., to Eastman Kodak Company. Real-time diagnostic system for detecting non-linear movement of an imaging member using optical fibers. 5,311,255, Cl. 355-206.000.

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Jozawa, Hirohisa; Singhal, Sharad; and Watanabe, Hiroshi, to Bell Communications Research, Inc. High efficiency coder and method employing overlapped motion compensation and perfect reconstruction filter banks. 5,311,310, Cl. 348-416.000.

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Jung, Kyung H.; and Lee, Sang Y., to Samsung Electronics Co., Ltd. Microwave ovens with infrared rays heating units. 5,310,979, Cl. 219-680.000.

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Kadlicko, George, to 814405 Ontario Ltd. Rotating exhaust valve. 5,309,871, Cl. 123-80.0BB.

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Kaigler, William J.; Buckshaw, Thomas M.; and Llewellyn, David T., to Robertshaw Controls Company. Pressure operated switch construction and method of making the same. 5,310,970, Cl. 200-83.00R.

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Kajimoto, Takeshi; Shimbo, Yutaka; Sato, Katsuyuki; Ogata, Masahiro; Kenmizaki, Kanehide; Kubono, Shouji; Kato, Nobuo; Manita, Kiichi; and Kanamitsu, Michitaro, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor memory, components and layout arrangements thereof, and method of testing the memory. 5,311,476, Cl. 365-222.000.

Kajitani, Makoto: *See*—
Hagiwara, Yu-ichi; Tanaka, Motoaki; Kajitani, Makoto; and Yasumoto, Mitsugi, 5,310,926, Cl. 548-247.000.

Kakiwaki, Shigeaki: *See*—
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Kakumu, Kiichiro; Shiraishi, Masaki; Nakagawa, Hiroyuki; Sakuno, Hiroaki; Iwahashi, Yoshiichiro; and Suzuki, Shigeaki, to Sumitomo Rubber Industries, Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Pneumatic tire. 5,309,963, Cl. 152-209.00R.

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Kameda, Osamu; Akutagawa, Hitoshi; Okita, Junichi; and Hirose, Ichiro, to Mazda Motor Corporation. Powertrain for an automotive vehicle. 5,309,789, Cl. 74-606.00R.

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Kawakita, Tadashi; and Sugiyama, Yukihisa, to Ikeda Bussan Co., Ltd. Energy-absorbing fastened structure. 5,310,030, Cl. 188-371.000.

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Kawamura, Kouichi, to Fuji Photo Film Co., Ltd. Light-sensitive compositions and articles utilizing a compound or polymer containing an aromatic diazonium salt group and a light-absorbing residue of a sensitizing dye for trichloromethyl-s-triazine or azinium salt photopolymerization initiators. 5,310,618, Cl. 430-157.000.

Kawamura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for measuring the electrical time constant of the quadrature-axis damper of a synchronous machine. 5,311,121, Cl. 324-158.0MG.

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Sankyo Company Ltd.: *See*—
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Stern, Donald J.; and Tryon, James A., to DJS&T Limited Partnership. Spray texturing apparatus and method having a plurality of dispersing tubes. 5,310,095, Cl. 222-402.100.
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Stieb, Werner; and Schulte, Johann, to Kabelmetal Electro GmbH. Attenuator for integration into optical transmission systems and methods for fabrication and use thereof. 5,311,613, Cl. 385-140.000.
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Yoshida, Motoaki: *See*—
Mase, Shoji; Otani, Noboru; and Yoshida, Motoaki, 5,310,577, Cl. 427-164.000.

Yoshida, Takehiro, to Canon Kabushiki Kaisha. Image communication apparatus with instructed communication result transmittal. 5,311,579, Cl. 379-100.000.

Yoshida, Toshiki; Kyomasu, Ryuichi; and Satoh, Toshihiro, to Kulicke and Soffa Industries, Inc. Method of preventing short-circuiting of bonding wires. 5,310,702, Cl. 437-211.000.

Yoshikawa, Mamoru: *See*—
Kubo, Kunimichi; Watanabe, Motokazu; Yoshikawa, Mamoru; Morikawa, Masatoshi; and Yamaguchi, Yoshihisa, 5,310,833, Cl. 526-88.000.

Yoshikawa, Naohiro: *See*—
Goda, Hiroshi; Kimura, Nario; Kimura, Satoshi; Yoshikawa, Naohiro; Teramoto, Masaki; Masuda, Yoshihide; and Matuzaki, Yuuji, 5,310,940, Cl. 549-71.000.

Yoshimori, Takashi: *See*—
Mori, Toshiaki; and Yoshimori, Takashi, 5,311,074, Cl. 307-443.000.

Yoshimoto, Masakazu. Image processing method. 5,311,307, Cl. 348-384.000.

Yoshinaga, Kazuo: *See*—
Katagiri, Kazuharu; Yoshinaga, Kazuo; Okada, Shinjiro; and Kanbe, Junichiro, 5,311,343, Cl. 359-90.000.

Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Matsuo, Kouziro; and Nakamura, Hidenosuke, to Matsushita Electric Industrial Co., Ltd. Radio wave absorbing material. 5,310,598, Cl. 428-328.000.

Yoshizawa, Hideo; Tamaki, Kiyoshi; Tadokoro, Hajime; and Fujimaki, Yoshihide, to Konica Corporation. Electrophotographic photoreceptor having an organic photoelectroconductive light sensitive layer. 5,310,614, Cl. 430-59.000.

Young, Thomas: *See*—
Davenport, Marcus K.; Shipman, Richard K.; Young, Thomas; and Strode, Stephen H., 5,311,582, Cl. 379-143.000.

Yow Li Feng Industrial Co., Ltd.: *See*—
Ko, Ching-Ho, 5,310,395, Cl. 482-146.000.

Yu, Dequan; and Brockner, Henry W., to Ford Motor Company. Automotive fuel pump housing with rotary pumping element. 5,310,308, Cl. 415-55.600.

Yu, Qian-Sheng: *See*—
Brossi, Arnold; Massari, Danilo C.; and Yu, Qian-Sheng, 5,310,935, Cl. 548-486.000.

Yu, Stella S.: *See*—
Djuric, Stevan W.; Docter, Stephen H.; and Yu, Stella S., 5,310,951, Cl. 549-405.000.

Yuhara, Hideo, to Okuma Corporation. Nonaxisymmetric shape cutting lathe. 5,309,800, Cl. 82-18.000.

Yuki, Ken: *See*—
Sato, Toshiaki; Yuki, Ken; Yamauchi, Junnosuke; and Okaya, Takuji, 5,310,790, Cl. 525-62.000.

Yukishige, Hidenori: *See*—
Matsui, Toshiyasu; Yukishige, Hidenori; and Natsuume, Tadao, 5,310,439, Cl. 156-307.300.

Yurman, Richard: *See*—
Schreiber, Melvin; and Yurman, Richard, 5,309,724, Cl. 62-87.000.

Yushita, Hisahide; and Nonaka, Mitsuhiro, to Ricoh Company, Ltd. Recycling automatic document feeder for a copier. 5,310,170, Cl. 271-3.100.

Z C Mines PTY LTD: *See*—
Sugden, David B.; Turner, John; Boyd, Robert J.; Hartman, Thomas M.; Dollinger, Gerald L.; and Moore, John G., 5,310,249, Cl. 299-1.300.

Zagar, Paul S.; and McLaury, Loren L., to Micron Technology, Inc. Integrated circuit memory with asymmetric row access topology. 5,311,478, Cl. 365-230.060.

Zagar, Paul S.: *See*—
Casper, Stephen L.; Ong, Adrian; and Zagar, Paul S., 5,311,481, Cl. 365-230.060.

Zahray, Walter P.: *See*—
Friedes, Albert; Leighton, Diane R.; Sahni, Paramdeep S.; and Zahray, Walter P., 5,311,583, Cl. 379-209.000.

Zaidel, Simon A.; Fabian, Walter; Baxter, Brian G.; and Manoni, Albert J., to General Electric Company. Method and apparatus for cleaving a semiconductor wafer into individual die and providing for low stress die removal. 5,310,104, Cl. 225-2.000.

Zaima, Fumiya: *See*—
Kawaki, Takao; Miyauchi, Yuh; Watanabe, Toshio; Hayashi, Katsushige; Ueno, Satoshi; Ogawa, Hiroshi; and Zaima, Fumiya, 5,310,944, Cl. 549-266.000.

Zak, Bennie: *See*—
Artiss, Joseph D.; and Zak, Bennie, 5,310,679, Cl. 436-18.000.

Zakin, Mitchell R.; Bernstein, Lawrence S.; and Moody, Richard A., to Spectral Sciences, Inc. Method of making a conductive polymer selective species sensor. 5,310,507, Cl. 252-500.000.

Zale, Stephen E.; and Colton, Clark K., to Sepracor Inc. Method and apparatus for eluting proteins in affinity membrane process. 5,310,688, Cl. 436-535.000.

Zambon Group S.P.A.: *See*—
Pozzi, Franco; and Furlani, Pia, 5,310,558, Cl. 424-476.000.

Zamboni, Robert; and Metters, Kathleen M., to Merck Frosst Canada, Inc. LTD_4 receptor and photoaffinity probe. 5,310,884, Cl. 530-408.000.

Zana, Lawrence J.; and Breakey, Gerald A., to United States of America, Air Force. Optical system for obtaining separate and simultaneous near-infrared and visible light images. 5,311,018, Cl. 250-330.000.

Zanini-Fisher, Margherita: *See*—
Willermet, Pierre A.; Gangopadhyay, Arup K.; Tamor, Michael A.; Vassell, William C.; and Zanini-Fisher, Margherita, 5,309,874, Cl. 123-90.510.

Zanotti, Richard: *See*—
Pricone, Robert M.; Zanotti, Richard; and Szopinski, Alex A., 5,310,436, Cl. 156-209.000.

Zare, Richard N.: *See*—
Dadoo, Rajeev; Colon, Luis A.; Fishman, Harvey A.; Shear, Jason B.; and Zare, Richard N., 5,310,463, Cl. 204-180.100.

Zarfoss, James R.; and Hoch, Richard A., to Environmental Elements Corp. Automatic back corona detection and protection system. 5,311,420, Cl. 364-148.000.

Zedda, Paolo F. Fixed lingual orthodontic appliance. 5,310,340, Cl. 433-8.000.

Zedel: *See*—
Maurice, Alain, 5,311,416, Cl. 362-362.000.

Zegarski, William J.: *See*—
Hedden, David B.; and Zegarski, William J., 5,310,505, Cl. 252-301.40R.

Zeidler, Siegmund: *See*—
Hohmann, Ralf; Kleinhens, Bernd; Kruger, Manfred; Mann, Stephan; Ruf, Erich; Spors, Ralf; Schreiter, Reiner; Stichel, Willi; Wachter, Gerhard; Winterstein, Gerhard; and Zeidler, Siegmund, 5,309,607, Cl. 24-274.00R.

Zeiger, Allen R., to Thomas Jefferson University. Solid phase polynucleotide syntheses. 5,310,894, Cl. 536-25.300.

Zeik, Andrew C.: *See*—
McGaha, Jerry A.; and Zeik, Andrew C., 5,311,395, Cl. 361-720.000.

Zell, Felician A.; and Miller, Gerald R., to Carborundum Company, The. High power ceramic microelectronic package. 5,311,399, Cl. 361-707.000.

Zemel, Irina: *See*—
Roland, Charles M.; Zemel, Irina; and Poranski, Chester F., Jr., 5,310,819, Cl. 525-385.000.

Zenith Electronics Corporation: *See*—
Dobrovolny, Pierre, 5,311,318, Cl. 348-731.000.
Grocki, Wayne D., 5,311,099, Cl. 315-8.000.

Zexel Corporation: *See*—
Tamai, Haruhisa, 5,311,434, Cl. 364-449.000.

Zexel-Gleason USA, Inc.: *See*—
Sato, Hideyuki, 5,310,389, Cl. 475-252.000.

Zhang, Jie: *See*—
Asmussen, Jes; and Zhang, Jie, 5,311,103, Cl. 315-111.810.

Ziegler, Philip D., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic composition. 5,310,556, Cl. 424-401.000.

Ziger, David H., to AT&T Bell Laboratories. Method of integrated circuit fabrication including selective etching of silicon and silicon compounds. 5,310,457, Cl. 156-657.000.

Zijderveld, Johannes M.: *See*—
Nelissen, Laurentius N. J. H.; and Zijderveld, Johannes M., 5,310,820, Cl. 525-391.000.

Zimmer, Inc.: *See*—
Allard, Randall N.; and Durcholz, Bradley T., 5,309,648, Cl. 33-783.000.

Zimmer, William, to Midwestern Bio-Ag Products and Services, Inc. Oral nutritional and dietary composition. 5,310,555, Cl. 424-438.000.

Zimmerhackl, Lothar; Kinne, Rolf; Fabricius, Thomas; Pietruschka, Fricke; and Brandis, Mathias, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V. Process for the detection of kidney tubule functioning. 5,310,655, Cl. 435-7.900.

Zimmerman, Robert. Seed drill. 5,309,852, Cl. 111-121.000.

Zimpro Passavatn Environmental Sys.: *See*—
Berrigan, John K., Jr., 5,310,484, Cl. 210-616.000.

Zingher, Arthur R., to International Business Machines Corporation. Convection transfer system. 5,310,440, Cl. 156-345.000.

Zink, Deborah L.: *See*—
Dufresne, Claude; Masurekar, Prakash S.; Ferrell, Leslie A.; Zink, Deborah L.; and Sosa, Margaret S., 5,310,949, Cl. 549-363.000.

Zirconium Technology Corporation: *See*—
Sharif, Sharif, 5,310,489, Cl. 252-8.551.

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Zivkov, Catherine: *See—*
Fajula, Francois; Bourgeat-Lami, Elodie; Zivkov, Catherine; Des Courieres, Thierry; and Anglerot, Didier, 5,310,534, Cl. 423-715.000.
ZNR Concept, Inc.: *See—*
Ouellet, Nelson; and Caouette, Robert, 5,310,995, Cl. 235-70.00R.
Zollinger, William T., to United States of America, Energy. Flexible pipe crawling device having articulated two axis coupling. 5,309,844, Cl. 104-138.200.
Zreloff, Peter J.: *See—*
Nilson, Bengt A .; and Zreloff, Peter J., 5,310,121, Cl. 241-27.000.
Zschalich, Arndt; and Schumann, Rudolf, to Chemie AG Bitterfeld-Wolfen. Method for decreasing the sulfur content of phosphorous. 5,310,530, Cl. 423-322.000.
Zuiderveen, Marc D.: *See—*
Weaver, James M.; Pino, Giovanni; Zuiderveen, Marc D.; and Umbach, Steven R., 5,309,600, Cl. 15-328.000.
Zumoto, Nobuyuki; Yagi, Toshinori; Izumo, Masao; and Tanaka, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Laser machining apparatus. 5,310,986, Cl. 219-121.700.
Zweig, Konrad; Burkle, Erwin; and Spotzl, Markus, to Krauss-Maffei Aktiengesellschaft. System for molding laminated articles of a thermoplastic resin. 5,310,330, Cl. 425-116.000.
Zwijnenberg, Antonius J. M.: *See—*
Wintraecken, Johannes J. M. H.; Zwijnenberg, Antonius J. M.; and Van Liempd, Virgilius C. J. N., 5,310,864, Cl. 528-361.000.
814405 Ontario Ltd.: *See—*
Kadlicko, George, 5,309,871, Cl. 123-80.0BB.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF MAY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amada Company, Ltd.: *See—*
Naito, Kinshiro; and Imamura, Yoshio, Re. 34,602, Cl. 83-49.000.
Bott, Richard R.: *See—*
Estell, David A.; Wells, James A.; and Bott, Richard R., Re. 34,606, Cl. 435-222.000.
Caison, Gregory W.; and Wilson, David G., to Fasco Industries Incorporated. Electrical junction box for support of a hanging appliance. Re. 34,603, Cl. 174-54.000.
Columbia Gas Service Corporation: *See—*
Cook, F. Bert; and Reid, Edward A., Jr., Re. 34,600, Cl. 62-483.000.
Cook, F. Bert; and Reid, Edward A., Jr., to Columbia Gas Service Corporation. Energy recovery system for absorption heat pumps. Re. 34,600, Cl. 62-483.000.
Dow Chemical Company, The: *See—*
Schrenk, Walter J.; and Wheatley, John A., Re. 34,605, Cl. 359-359.000.
Estell, David A.; Wells, James A.; and Bott, Richard R., to Genencor, Inc. Modified enzymes and methods for making same. Re. 34,606, Cl. 435-222.000.
Fasco Industries Incorporated: *See—*
Caison, Gregory W.; and Wilson, David G., Re. 34,603, Cl. 174-54.000.
Genencor, Inc.: *See—*
Estell, David A.; Wells, James A.; and Bott, Richard R., Re. 34,606, Cl. 435-222.000.
Hochstein, Peter A. Capacitive liquid sensor, Re. 34,601, Cl. 73-304.00C.
Imamura, Yoshio: *See—*
Naito, Kinshiro; and Imamura, Yoshio, Re. 34,602, Cl. 83-49.000.
Kitagawa, Sotoyuki: *See—*
Suzuki, Toshiaki; Kitagawa, Sotoyuki; Nakayama, Takashi; and Kuno, Takao, Re. 34,607, Cl. 521-134.000.
Kuno, Takao: *See—*
Suzuki, Toshiaki; Kitagawa, Sotoyuki; Nakayama, Takashi; and Kuno, Takao, Re. 34,607, Cl. 521-134.000.
Naito, Kinshiro; and Imamura, Yoshio, to Amada Company, Ltd. Multistroke punching method and apparatus therefor. Re. 34,602, Cl. 83-49.000.
Nakayama, Takashi: *See—*
Suzuki, Toshiaki; Kitagawa, Sotoyuki; Nakayama, Takashi; and Kuno, Takao, Re. 34,607, Cl. 521-134.000.
Reid, Edward A., Jr.: *See—*
Cook, F. Bert; and Reid, Edward A., Jr., Re. 34,600, Cl. 62-483.000.
Schrenk, Walter J.; and Wheatley, John A., to Dow Chemical Company, The. Infrared reflective optical interference film. Re. 34,605, Cl. 359-359.000.
Shaw, Herbert J., to Stanford University. Sensor using fiber interferometer. Re. 34,604, Cl. 356-345.000.
Stanford University: *See—*
Shaw, Herbert J., Re. 34,604, Cl. 356-345.000.
Suzuki, Toshiaki; Kitagawa, Sotoyuki; Nakayama, Takashi; and Kuno, Takao, to Tonen Chemical Corporation. Cross-linkable foamable polyolefin resin composition. Re. 34,607, Cl. 521-134.000.
Tonen Chemical Corporation: *See—*
Suzuki, Toshiaki; Kitagawa, Sotoyuki; Nakayama, Takashi; and Kuno, Takao, Re. 34,607, Cl. 521-134.000.
Wells, James A.: *See—*
Estell, David A.; Wells, James A.; and Bott, Richard R., Re. 34,606, Cl. 435-222.000.
Wheatley, John A.: *See—*
Schrenk, Walter J.; and Wheatley, John A., Re. 34,605, Cl. 359-359.000.
Wilson, David G.: *See—*
Caison, Gregory W.; and Wilson, David G., Re. 34,603, Cl. 174-54.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Albany International Corp.: *See—*
Eagles, Dana B.; Leon, Jeanne A.; and Ditaranto, Francis, B1 5,169,499, Cl. 428-175.000.
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., to Du Pont de Nemours, E. I., and Company. Process for producing stain-resistant, pigmented nylon fibers. B1 5,108,684, 5-10-94, Cl. 264-176.100.
Biowhittraker, Inc.: *See—*
Calenoff, Emanuel; Johnson, Ruth M.; Tsay, Yuh-Geng; and Scott, John, B1 4,845,027, Cl. 435-7.950.
Calenoff, Emanuel; Johnson, Ruth M.; Tsay, Yuh-Geng; and Scott, John, to Biowhittraker, Inc. Fluorometric assay of allergic reactions. B1 4,845,027, 5-10-94, Cl. 435-7.950.
Ditaranto, Francis: *See—*
Eagles, Dana B.; Leon, Jeanne A.; and Ditaranto, Francis, B1 5,169,499, Cl. 428-175.000.
Du Pont de Nemours, E. I., and Company: *See—*
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.
Eagles, Dana B.; Leon, Jeanne A.; and Ditaranto, Francis, to Albany International Corp. Paper machine felts of a copolymer of 1,4-dimethylocyclohexane, terephthalic acid, and isophthalic acid. B1 5,169,499, 5-10-94, Cl. 428-175.000.
Hunter Douglas International: *See—*
Lim, Guy H.; Rijnders, Willem; and Louwerens, Cornelis, B1 5,115,611, Cl. 52-537.000.
Johnson, Ruth M.: *See—*
Calenoff, Emanuel; Johnson, Ruth M.; Tsay, Yuh-Geng; and Scott, John, B1 4,845,027, Cl. 435-7.950.
Jones, Thomas P., to Lion Technology Limited. Alcohol or drugs breath detecting devices. B1 4,868,545, 5-10-94, Cl. 340-573.000.
Leon, Jeanne A.: *See—*
Eagles, Dana B.; Leon, Jeanne A.; and Ditaranto, Francis, B1 5,169,499, Cl. 428-175.000.
Lim, Guy H.; Rijnders, Willem; and Louwerens, Cornelis, to Hunter Douglas International. Metal cladding systems. B1 5,115,611, 5-10-94, Cl. 52-537.000.
Lion Technology Limited: *See—*
Jones, Thomas P., B1 4,868,545, Cl. 340-573.000.
Louwerens, Cornelis: *See—*
Lim, Guy H.; Rijnders, Willem; and Louwerens, Cornelis, B1 5,115,611, Cl. 52-537.000.
Minnesota Mining and Manufacturing Company: *See—*
Packard, Thomas J., B1 4,475,619, Cl. 181-137.000.
Packard, Thomas J., to Minnesota Mining and Manufacturing Company. Stethoscope with floating diaphragm. B1 4,475,619, 5-10-94, Cl. 181-137.000.
Parmelee, William P.: *See—*
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.
Pearlman, Paul S.: *See—*
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.
Raichle Sportschuh AG: *See—*
Walkhoff, Klaus, B1 5,088,211, Cl. 36-117.000.
Rijnders, Willem: *See—*
Lim, Guy H.; Rijnders, Willem; and Louwerens, Cornelis, B1 5,115,611, Cl. 52-537.000.
Sauerbrunn, Linda H.: *See—*
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.

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Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.

Scott, John: *See*—
Calenoff, Emanuel; Johnson, Ruth M.; Tsay, Yuh-Geng; and Scott, John, B1 4,845,027, Cl. 435-7.950.

Tsay, Yuh-Geng: *See*—
Calenoff, Emanuel; Johnson, Ruth M.; Tsay, Yuh-Geng; and Scott, John, B1 4,845,027, Cl. 435-7.950.

Walkhoff, Klaus, to Raichle Sportschuh AG. Ski boot. B1 5,088,211, 5-10-94, Cl. 36-117.000.

Windley, William T.: *See*—
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.

Witt, Peter R.: *See*—
Anton, Anthony; Witt, Peter R.; Sauerbrunn, Linda H.; Scholler, Diane M.; Parmelee, William P.; Windley, William T.; and Pearlman, Paul S., B1 5,108,684, Cl. 264-176.100.

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Ackerman, Robert S.; Crain, John E.; Wagner, Lance R.; and Ferrerio, Steven W., to Chrysler Corporation. Automobile. 346,769, 5-10-94, Cl. D12-92.000.

Adams, Douglas J. Yard golf. 346,831, 5-10-94, Cl. D21-8.000.

Adler, Howard L. Combined clockface and hands therefor. 346,758, 5-10-94, Cl. D10-124.000.

Aiken, Brian L.; Loscalzo, Dominick; and Barsanti, Anthony J., to Dart Industries Inc. Combined holder and display device for learning cards. 346,823, 5-10-94, Cl. D19-64.000.

Aktiebolaget Electrolux: *See*—
Eriksson, Jan, 346,727, Cl. D8-8.000.

Alarm Lock Systems, Inc.: *See*—
Soloway, Richard L., 346,755, Cl. D10-106.000.

Alfaro, Conrad: *See*—
Marach, David R.; Alfaro, Conrad; and Happ, Lawrence, 346,791, Cl. D13-160.000.

Allan, Robert G., to Glass(SA) Holdings (Proprietary) Limited. Roadway marker. 346,757, 5-10-94, Cl. D10-113.000.

Altech Corporation: *See*—
McIntyre, Jonothon M. W., 346,741, Cl. D9-431.000.

American National Can Company: *See*—
Heynen, Thomas W.; Halasz, Andrew; and Caliendo, Christopher L., 346,745, Cl. D9-552.000.

American Standard Inc.: *See*—
Kolada, Paul P., 346,725, Cl. D7-667.000.

Arakaki, James S.; Avnet, Allan; and Stanton, J. Mark, to Verifone, Inc. Transaction system console. 346,794, 5-10-94, Cl. D14-105.000.

Asics Corporation: *See*—
Kayano, Toshikazu; and Hase, Yoshiaki, 346,687, Cl. D2-953.000.

AT&T Bell Laboratories: *See*—
DeVeau, George F., Jr.; and Konik, Walter S., 346,750, Cl. D10-46.000.

Attia, James. Neck of a musical instrument. 346,817, 5-10-94, Cl. D17-20.000.

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Arakaki, James S.; Avnet, Allan; and Stanton, J. Mark, 346,794, Cl. D14-105.000.

Ayala, Caesar. Hand-operated dough press. 346,724, 5-10-94, Cl. D7-672.000.

Baer, William R. Convertible child's bed. 346,708, 5-10-94, Cl. D6-384.000.

Ballanda Limited: *See*—
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Ballone, Michael P.: *See*—
Meisner, Edward H.; Ballone, Michael P.; and Dyk, Thomas V., 346,880, Cl. D28-48.000.

Bancroft, Joseph C. Upper vent sill. 346,868, 5-10-94, Cl. D25-124.000.

Barbanera, Joseph: *See*—
Barbanera, Louis F.; and Barbanera, Joseph, 346,847, Cl. D22-125.000.

Barbanera, Louis F.; and Barbanera, Joseph. Animal lure. 346,847, 5-10-94, Cl. D22-125.000.

Barbookles, James, Jr.; Cohen, Jeffrey S.; Brockway, Laura; Paquette, Thomas; and Sydlowski, Paul, to Orion Research, Inc. PH and concentration meter. 346,753, 5-10-94, Cl. D10-81.000.

Barsanti, Anthony J.: *See*—
Aiken, Brian L.; Loscalzo, Dominick; and Barsanti, Anthony J., 346,823, Cl. D19-64.000.

Blasbjerg, Kaj. Glass holder. 346,719, 5-10-94, Cl. D7-620.000.

Black & Decker Inc.: *See*—
Schulz, Howard C.; and Gilliland, Gerard, 346,810, Cl. D15-14.000.

Brainard, Jay E. Motorcycle mirror. 346,783, 5-10-94, Cl. D12-187.000.

Brayer, Randall R.; and Consolacion, Rudy E., to Goodyear Tire & Rubber Company, The. Tire tread. 346,774, 5-10-94, Cl. D12-147.000.

Britt, Randall W.: *See*—
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 346,726, Cl. D8-1.000.

Brockway, Laura: *See*—
Barbookles, James, Jr.; Cohen, Jeffrey S.; Brockway, Laura; Paquette, Thomas; and Sydlowski, Paul, 346,753, Cl. D10-81.000.

Bromell, Arnell. Cosmetic bag. 346,692, 5-10-94, Cl. D3-275.000.

Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Dresser. 346,712, 5-10-94, Cl. D6-446.000.

Bryerton, Donald W., Sr. Ear muff. 346,882, 5-10-94, Cl. D29-19.000.

Bucci, John D.; and Ferrerio, Steven W., to Chrysler Corporation. Automobile. 346,770, 5-10-94, Cl. D12-92.000.

Burdick, Bruce; and Burdick, Susan K., to Burdick Group, The. Flatware. 346,722, 5-10-94, Cl. D7-645.000.

Burdick Group, The: *See*—
Burdick, Bruce; and Burdick, Susan K., 346,722, Cl. D7-645.000.

Burdick, Susan K.: *See*—
Burdick, Bruce; and Burdick, Susan K., 346,722, Cl. D7-645.000.

Burgos, Daniel; and Wilson, Denise. Remote controlled lawn mower. 346,809, 5-10-94, Cl. D15-14.000.

Byars, Tammye L.: *See*—
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Sato, Kazunori; Koreeda, Kazuharu; and Takanashi, Nobuaki, 8,723, Cl. 68.100.
Florfis/AC: *See*—
Schumann, Ingeborg, 8,727, Cl. 87.120.
Florfis AG: *See*—
Schumann, Ingeborg, 8,725, Cl. 87.120.
Schumann, Ingeborg, 8,726, Cl. 87.120.
Schumann, Ingeborg, 8,728, Cl. 87.120.
Hill, Richard. Apple tree named Applewaites. 8,720, 5-10-94, Cl. 34.100.
Koreeda, Kazuharu: *See*—
Sato, Kazunori; Koreeda, Kazuharu; and Takanashi, Nobuaki, 8,723, Cl. 68.100.
Sato, Kazunori; Koreeda, Kazuharu; and Takanashi, Nobuaki, to Dai-Ichi Engei Plantech Co., Ltd. Variety of limonium named Ocean Blue. 8,723, 5-10-94, Cl. 68.100.
Schumann, Ingeborg, to Florfis AG. Geranium plant name Fismag. 8,725, 5-10-94, Cl. 87.120.
Schumann, Ingeborg, to Florfis AG. Geranium plant named Fiscrid. 8,726, 5-10-94, Cl. 87.120.
Schumann, Ingeborg, to Florfis/AC. Geranium plant named Fisdia. 8,727, 5-10-94, Cl. 87.120.
Schumann, Ingeborg, to Florfis AG. Geranium plant named Fistantut. 8,728, 5-10-94, Cl. 87.120.
Takanashi, Nobuaki: *See*—
Sato, Kazunori; Koreeda, Kazuharu; and Takanashi, Nobuaki, 8,723, Cl. 68.100.
Van Staaveren B.V.: *See*—
van Andel, Jacob, 8,724, Cl. 70.200.
van Andel, Jacob, to Van Staaveren B.V. Spray carnation named Stagigi. 8,724, 5-10-94, Cl. 70.200.
Zary, Keith W., to Bear Creek Gardens, Inc. Shrub rose plant named 'JACwhip'. 8,718, 5-10-94, Cl. 1.000.
Zary, Keith W., to Bear Creek Gardens, Inc. Shrub rose plant named 'JACCASP'. 8,719, 5-10-94, Cl. 1.000.

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CLASSIFICATION OF PATENTS

ISSUED MAY 10, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

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299.65 5,310,502
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324 5,311,049
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666 5,311,056
676 5,311,057
691 5,311,058
778 5,311,059
796 5,311,060
797 5,311,061

CLASS 264

1.5 5,310,510
22 5,310,511
25 5,310,512
54 5,310,513
103 5,310,514
143 5,310,515
176.1 B1 5,108,684
250 5,310,516
255 5,310,517
326 5,310,518

CLASS 265

64 5,309,981

CLASS 266

5,310,164
5,310,165
5,310,166

CLASS 267

33 5,310,167
140.12 5,310,168
140.14 5,310,169

CLASS 271

3.1 5,310,170
9 5,310,171
150 5,310,172
198 5,310,173
225 5,310,174
250 5,310,175

CLASS 273

1.5 A 5,310,176
32.5 5,310,177
65 B 5,310,178
73 C 5,310,179
73 D 5,310,180
73 R 5,310,181
5,310,182
153 R 5,310,184
153 S 5,310,183
167 H 5,310,185
171 5,310,186
177 R 5,310,187
186.2 5,310,188
193 R 5,310,189
243 5,310,190
269 5,310,191
310 5,310,192
393 5,310,193
415 5,310,194
444 5,310,195

CLASS 277

180 5,310,196
235 B 5,310,197
5,310,198

CLASS 280

87.01 5,310,199
112.2 5,310,200
164.2 5,310,201
221 5,310,202
276 5,310,203
415.1 5,310,204
610 5,310,205
615 5,310,206
629 5,310,207
643 5,310,208
656 5,310,209
673 5,310,210
5,310,211
689 5,310,212
728 A 5,310,213
729 5,310,214
739 5,310,215
743 R 5,310,216
763.1 5,310,217
777 5,310,218
806 5,310,219
5,310,220
809 5,310,221

CLASS 283

86 5,310,222

CLASS 285

112 5,310,223
256 5,310,224
308 5,310,225
316 5,310,226
354 5,310,227

CLASS 290

4 R 5,311,062
40 C 5,311,063
53 5,311,064

CLASS 292

167 5,310,228

CLASS 294

26 5,310,229
49 5,310,230
59 5,310,231
64.1 5,310,232
86.4 5,310,233

CLASS 296

37.7 5,310,234
77.1 5,310,235
93 5,310,236
97.5 5,310,237
100 5,310,238
190 5,310,239
201 5,310,240
219 5,310,241

CLASS 297

14 5,310,242
61 5,310,243
153 5,310,244
219.12 5,310,245
359 5,310,246
378.12 5,310,247

CLASS 299

1.1 5,310,248
1.3 5,310,249

CLASS 301

5.3 5,310,250

CLASS 303

11 5,310,251
84.2 5,310,252
113.1 5,310,253

CLASS 307

10.1 5,311,065
87 5,311,066
108 5,311,067
112 5,311,068
262 5,311,069

279 5,311,070
353 5,311,072
355 5,311,071
443 5,311,073
5,311,074
5,311,075
5,311,076
5,311,077
446 5,311,078
465 5,311,079
5,311,080
475 5,311,081
5,311,082
5,311,083
491 5,311,084
494 5,311,085
498 5,311,086
520 5,311,087
5,311,088

CLASS 310

50 5,311,089
88 5,311,090
90 5,311,091
266 5,311,092
317 5,311,093
323 5,311,094
334 5,311,095
361 5,311,096

CLASS 312

213 5,310,254
334.5 5,310,255

CLASS 313

51 5,311,097
542 5,311,098

CLASS 315

8 5,311,099
111.81 5,311,103
129 5,311,100
5,311,101
205 5,311,102
307 5,311,104

CLASS 318

254 5,311,105
269 5,311,106
369 5,311,107
381 5,311,108
568.11 5,311,109
568.15 5,311,110
685 5,311,111

CLASS 320

15 5,311,112
20 5,311,113

CLASS 323

315 5,311,115

CLASS 324

72.5 5,311,116
142 5,311,117
144 5,311,118
158 F 5,311,119
5,311,120
158 MG 5,311,121
158 R 5,311,122
161 5,311,123
201 5,311,125
202 5,311,126
207.13 5,311,124
232 5,311,127
233 5,311,128
247 5,311,129
258 5,311,130
309 5,311,131
5,311,132
5,311,133
318 5,311,134
5,311,135
322 5,311,136
501 5,311,137
503 5,311,138
550 5,311,139
680 5,311,140

CLASS 328

167 5,311,141

CLASS 330

10 5,311,142
127 5,311,143
252 5,311,144
255 5,311,145
288 5,311,146
290 5,311,147
295 5,311,148

CLASS 331

1 A 5,311,149
59 5,311,150

CLASS 332

105 5,311,151
127 5,311,152

CLASS 333

26 5,311,153
5,311,154
28 R 5,311,155
103 5,311,156
132 5,311,157
174 5,311,158
204 5,311,159
219.1 5,311,160

CLASS 335

68 5,311,161
260 5,311,162

CLASS 336

222 5,311,163

CLASS 337

28 5,311,164
323 5,311,165

CLASS 340

541 5,311,166
542 5,311,168
573 B1 4,868,545
578 5,311,167
725 5,311,317
781 5,311,169
825.01 5,311,170
825.03 5,311,171
825.5 5,311,172
995 5,311,173

CLASS 341

34 5,311,175
50 5,311,176
51 5,311,177
59 5,311,178
118 5,311,179
131 5,311,180
143 5,311,181
155 5,311,182

CLASS 342

26 5,311,183
5,311,184
44 5,311,185
51 5,311,186
59 5,311,187
90 5,311,188
95 5,311,189
157 5,311,190
165 5,311,191
188 5,311,192
201 5,311,193
357 5,311,194
5,311,195
368 5,311,196
457 5,311,197

CLASS 343

701 5,311,198
767 5,311,199
771 5,311,200
791 5,311,201
909 5,311,202

CLASS 345

7 5,311,203
60 5,311,204
88 5,311,205
89 5,311,206
150 5,311,207
5,311,212
163 5,311,208
165 5,311,209
168 5,311,210
189 5,311,211
194 5,311,213

CLASS 346

1.1 5,311,214
108 5,311,216
5,311,217
140 R 5,311,218
5,311,219
160 5,311,215
614 5,311,315

CLASS 348

5.5 5,311,325
14 5,311,302
32 5,311,303
55 5,311,220
87 5,311,304
105 5,311,306
169 5,311,305
180 5,311,294
5,311,295
5,311,322
300 5,311,319
384 5,311,307
409 5,311,309
416 5,311,310
426 5,311,308
453 5,311,301
476 5,311,311
505 5,311,296
584 5,311,316
607 5,311,314
614 5,311,312
5,311,313
622 5,311,299
675 5,311,297
690 5,311,300
710 5,311,298
731 5,311,318
760 5,311,321

CLASS 351

160 H 5,311,223
214 5,311,224
221 5,311,225

CLASS 353

30 5,311,226
37 5,311,227

CLASS 354

106 5,311,228
152 5,311,229
195.12 5,311,230
288 5,311,231
298 5,311,232
300 5,311,233
317 5,311,234
320 5,311,235
324 5,311,236
341 5,311,237
400 5,311,238
5,311,239
402 5,311,240
5,311,241
403 5,311,242
413 5,311,243
414 5,311,244
442 5,311,245

CLASS 355

40 5,311,246
43 5,311,247
61 5,311,248
71 5,311,249
76 5,311,250
77 5,311,251
125 5,311,252
200 5,311,253
206 5,311,254
5,311,255
208 5,311,256
209 5,311,257
215 5,311,258
243 5,311,259
245 5,311,260
246 5,311,261
251 5,311,262
5,311,263
259 5,311,264
260 5,311,265
261 5,311,266
271 5,311,267
285 5,311,268
5,311,269
308 5,311,270

CLASS 356

5 5,311,271
5,311,272
43 5,311,273
133 5,311,274
237 5,311,275
239 5,311,276
312 5,311,277
326 5,311,278
345 Re.34,604
5,311,279
350 5,311,280
5,311,281
358 5,311,282
364 5,311,283
5,311,284
369 5,311,285
371 5,311,286
373 5,311,287
375 5,311,288
5,311,289
383 5,311,290
386 5,311,291
406 5,311,292
421 5,311,293

CLASS 358

80 5,311,336
335 5,311,323
342 5,311,324
434 5,311,326
444 5,311,327
447 5,311,328
448 5,311,329
498 5,311,330
501 5,311,331
518 5,311,332
5,311,333
537 5,311,334
413.13 5,311,428
413.23 5,311,427
419.01 5,311,429
424.04 5,311,430
424.05 5,311,431
5,311,432
426.01 5,311,433
449 5,311,434
459 5,311,435
468 5,311,436
5,311,437
5,311,438
470 5,311,439
481 5,311,440
483 5,311,441
488 5,311,442
491 5,311,443
497 5,311,444
498 5,311,445
508 5,311,446
509 5,311,447
514 5,311,449
550 5,311,450
5,311,451
571.05 5,311,452
574 5,311,453
578 5,311,448
606 5,311,454
708.1 5,311,455
715.11 5,311,456
724.13 5,311,457
736 5,311,458
754 5,311,459
761 5,311,460

CLASS 365

49 5,311,462
51 5,311,463
156 5,311,464
179 5,311,465
185 5,311,466
189.01 5,311,467
189.02 5,311,468
189.05 5,311,469
5,311,470
5,311,471
200 5,311,472
201 5,311,473
215 5,311,474
221 5,311,475
222 5,311,476
230.05 5,311,477
230.06 5,311,478
5,311,479
5,311,480
5,311,481
5,311,482
233 5,311,483

CLASS 366

77 5,310,256
208 5,310,257
251 5,310,258
349 5,310,259

CLASS 367

5,311,484
149 5,311,485

CLASS 368

10 5,311,486
230 5,311,487
250 5,311,488

CLASS 369

44.14 5,311,489
44.28 5,311,490
47 5,311,491
5,311,492
59 5,311,493
100 5,311,494
112 5,311,495
5,311,496
219 5,311,497
275.1 5,311,498
275.2 5,311,499
288 5,311,500

CLASS 370

16 5,311,501
5,311,502
31 5,311,114
32.1 5,311,503
50 5,311,504
56 5,311,505
58.1 5,311,506
58.2 5,311,507
60 5,311,508
5,311,509
61 5,311,510
84 5,311,511
85.1 5,311,514
5,311,515
85.2 5,311,512
85.4 5,311,513
94.1 5,311,516
95.1 5,311,517
110.1 5,311,518
112 5,311,519
377 5,311,588

CLASS 371

21.6 5,311,520
37.4 5,311,521
5,311,522
43 5,311,523
70 5,311,524

CLASS 372

6 5,311,525
26 5,311,526
33 5,311,527
35 5,311,528
5,311,529
36 5,311,530
38 5,311,531
41 5,311,532
46 5,311,533
5,311,534
50 5,311,535
5,311,536
61 5,311,537
94 5,311,538
96 5,311,539
97 5,311,540

CLASS 374

142 5,310,260
150 5,310,261

CLASS 375

1 5,311,541
5,311,542
5,311,543
5,311,544
14 5,311,545
5,311,546
18 5,311,547
22 5,311,548
25 5,311,549
38 5,311,550
5,311,551
5,311,552
5,311,553
75 5,311,554
86 5,311,555
88 5,311,556
94 5,311,557
99 5,311,558
113 5,311,559
120 5,311,560
122 5,311,561

CLASS 376

215 5,311,562
272 5,311,563
441 5,311,564

CLASS 378

43 5,311,565
64 5,311,566
166 5,311,567
205 5,311,568

CLASS 379

45 5,311,569
57 5,311,570
58 5,311,571
67 5,311,572
5,311,573
88 5,311,574
5,311,575
89 5,311,576
93 5,311,577
97 5,311,578
100 5,311,579
5,311,580
107 5,311,581
143 5,311,582
209 5,311,583
220 5,311,584
221 5,311,585
5,311,586
377 5,311,587
386 5,311,589
387 5,311,590

CLASS 380

4 5,311,591
9 5,311,592
23 5,311,593
5,311,594
25 5,311,595
33 5,311,596

CLASS 382

1 5,311,597
8 5,311,598
5,311,599
14 5,311,600
15 5,311,601
46 5,311,607
56 5,311,602

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CLASS 383

205 5,310,262

CLASS 384

100 5,310,263
5,310,264
5,310,265
448 5,310,266
462 5,310,267
537 5,310,268
568 5,310,269

CLASS 385

11 5,311,603
14 5,311,604
27 5,311,605
33 5,311,606
50 5,311,608
60 5,311,609
92 5,311,610
120 5,311,611
135 5,311,612
140 5,311,613
5,311,614

CLASS 388

836 5,311,615

CLASS 392

394 5,311,616

CLASS 395

630 5,311,461

CLASS 400

121 5,310,270
124 5,310,271
279 5,310,272

CLASS 403

171 5,310,273
209 5,310,274
322 5,310,275
349 5,310,276

CLASS 404

6 5,310,277
14 5,310,278
5,310,279

CLASS 405

38 5,310,280
39 5,310,281
58 5,310,282
67 5,310,283
102 5,310,284
169 5,310,286
246 5,310,287
258 5,310,288
282 5,310,289
283 5,310,290

CLASS 406

193 5,310,291

CLASS 408

141 5,310,292
145 5,310,293
226 5,310,294

CLASS 409

13 5,310,295
182 5,310,296

CLASS 410

77 5,310,297

CLASS 411

182 5,310,298
354 5,310,299

CLASS 414

280 5,310,300
416 5,310,301
424 5,310,302
462 5,310,303
606 5,310,304
609 5,310,305
788 5,310,306
796.2 5,310,307

CLASS 415

55.6 5,310,308
208.3 5,310,309
214.1 5,310,310
229 5,310,311

CLASS 416

2 5,310,312
88 5,310,314
100 5,310,313
114 5,310,315
188 5,310,316
215 5,310,317
219 R 5,310,318
220 R 5,310,319
241 R 5,310,320

CLASS 417

54 5,310,321
226 5,310,322
307 5,310,323

CLASS 418

55.1 5,310,324
61.2 5,310,325
76 5,310,326

CLASS 419

47 5,310,519
48 5,310,520

CLASS 420

109 5,310,521
585 5,310,522

CLASS 422

33 5,310,524
56 5,310,525
57 5,310,523
81 5,310,526
102 5,310,527
170 5,310,528

CLASS 423

300 5,310,529
322 5,310,530
324 5,310,531
445 B 5,310,532
446 5,310,447
593 5,310,448
604 5,310,533
715 5,310,534

CLASS 424

1.53 5,310,535
1.65 5,310,536
5 5,310,537
5,310,538
9 5,310,539
5,310,540
49 5,310,543
5,310,544
5,310,545
50 5,310,541
52 5,310,542
53 5,310,546
64 5,310,547
76.3 5,310,548
78.08 5,310,549
85.2 5,310,550
85.8 5,310,551
93 Q 5,310,552
401 5,310,556
411 5,310,557
438 5,310,555
439 5,310,554
448 5,310,559
451 5,310,560
465 5,310,561
476 5,310,558
489 5,310,562
616 5,310,563

CLASS 425

31 5,310,328
72.1 5,310,329
116 5,310,330
139 5,310,331
151 5,310,327
169 5,310,332
363 5,310,333

CLASS 426

115 5,310,564
231 5,310,566
250 5,310,567
271 5,310,565
422 5,310,568
504 5,310,569
590 5,310,570

CLASS 427

2 5,310,571
3 5,310,572
9 5,310,573
58 5,310,574
126.3 5,310,575
160 5,310,576
164 5,310,577
220 5,310,578
290 5,310,579
307 5,310,580
558 5,310,581
560 5,310,582
575 5,310,583

CLASS 428

2 5,310,584
15 5,310,585
34.1 5,310,586
35.2 5,310,587
40 5,310,588
5,310,589
102 5,310,590
117 5,310,592
166 5,310,593
167 5,310,594
175 B1 5,169,499
195 5,310,591
206 5,310,595
212 5,310,596
266 5,310,597
328 5,310,598
378 5,310,600
429 5,310,601
432 5,310,602
446 5,310,603
447 5,310,604
569 5,310,605
645 5,310,606
697 5,310,607

CLASS 429

11 5,310,608
160 5,310,609
212 5,310,553

CLASS 430

11 5,310,610
19 5,310,611
58 5,310,612
59 5,310,613
5,310,614
106.6 5,310,615
110 5,310,616
122 5,310,617
157 5,310,618
270 5,310,619
272 5,310,620
5,310,869
311 5,310,621
313 5,310,622
321 5,310,623
322 5,310,624
325 5,310,625
327 5,310,626
359 5,310,627
363 5,310,628
399 5,310,629
434 5,310,630
447 5,310,631
449 5,310,632
458 5,310,633
467 5,310,634
496 5,310,635
502 5,310,636
5,310,637
505 5,310,638
527 5,310,640
539 5,310,639
544 5,310,642
551 5,310,643
567 5,310,641
5,310,644
574 5,310,645

CLASS 431

5 5,310,334
12 5,310,335
131 5,310,336
174 5,310,337

CLASS 432

64 5,310,338
253 5,310,339

CLASS 433

8 5,310,340
116 5,310,341
166 5,310,342
173 5,310,343
215 5,310,344

CLASS 434

166 5,310,345
167 5,310,346
5,310,347
262 5,310,348
350 5,310,349

CLASS 435

4 5,310,646
5,310,647
5 5,310,648
6 5,310,649
5,310,650
5,310,651
5,310,652
5,310,654
7.23 5,310,653
7.9 5,310,655
7.93 5,310,656
7.95 B1 4,845,027
34 5,310,657
5,310,658
43 5,310,659
64.1 5,310,662
69.1 5,310,660
5,310,661
69.7 5,310,663
91.53 5,310,664
94 5,310,665
119 5,310,666
172.3 5,310,667
5,310,668
177 5,310,669
222 Re.34,606
229 5,310,670
235.1 5,310,671
240.45 5,310,672
240.47 5,310,673
252.1 5,310,677
252.3 5,310,678
285 5,310,676
293 5,310,674
320.1 5,310,675

CLASS 436

18 5,310,679
66 5,310,680
106 5,310,681
123 5,310,683
128 5,310,682
166 5,310,684
180 5,310,685
518 5,310,686
5,310,687
535 5,310,688

CLASS 437

24 5,310,689
31 5,310,690
5,310,691
41 5,310,692
43 5,310,693
52 5,310,694
60 5,310,695
84 5,310,696
129 5,310,697
141 5,310,711
160 5,310,698
183 5,310,699
195 5,310,700
209 5,310,701
211 5,310,702
229 5,310,703
231 5,310,720

CLASS 439

72 5,310,350
74 5,310,351
76 5,310,352
5,310,353
108 5,310,354
110 5,310,355
164 5,310,356
346 5,310,357
358 5,310,358
462 5,310,359
571 5,310,360
610 5,310,361
620 5,310,362
676 5,310,363
724 5,310,364
756 5,310,365
807 5,310,366
876 5,310,367

CLASS 440

38 5,310,368
5,310,369
75 5,310,370
80 5,310,371
112 5,310,372

CLASS 445

7 5,310,373
27 5,310,374

CLASS 446

71 5,310,375
107 5,310,376
219 5,310,377
268 5,310,378
279 5,310,379
489 5,310,380

CLASS 452

198 5,310,381

CLASS 464

1 5,310,382

CLASS 474

70 5,310,384
95 5,310,383
110 5,310,385
205 5,310,386

CLASS 475

5 5,310,387
88 5,310,388
252 5,310,389
312 5,310,390
338 5,310,391

CLASS 482

63 5,310,392
93 5,310,393
104 5,310,394
146 5,310,395

CLASS 483

15 5,310,396
18 5,310,397

CLASS 493

430 5,310,398

CLASS 494

54 5,310,399

CLASS 501

126 5,310,707
133 5,310,708
134 5,310,709
139 5,310,710

CLASS 502

9 5,310,712
30 5,310,713
64 5,310,714
84 5,310,715
107 5,310,716
407 5,310,717

CLASS 503

201 5,310,718
227 5,310,719

CLASS 504

116 5,310,721
134 5,310,722
243 5,310,723
273 5,310,724
297 5,310,725

CLASS 505

5,310,705
5,310,704
451 5,310,706

CLASS 514

11 5,310,726
12 5,310,727
5,310,728
15 5,310,729
35 5,310,730
46 5,310,731
5,310,732
75 5,310,733
78 5,310,734
210 5,310,735
212 5,310,736
215 5,310,737
230.5 5,310,739
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04 :	5,309,708		5,309,861		5,310,388		5,311,060		5,311,485		5,310,527
	5,309,889		5,309,869		5,310,394		5,311,062		5,311,486		5,310,551
	5,310,186		5,309,896		5,310,400		5,311,069		5,311,496		5,310,556
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	5,310,237		5,309,919		5,310,410		5,311,077		5,311,529		5,310,889
	5,310,312		5,309,923		5,310,421		5,311,082		5,311,530		5,310,890
	5,310,417		5,309,929		5,310,438		5,311,083		5,311,536		5,311,021
	5,310,564		5,309,969		5,310,448		5,311,091		5,311,545		5,311,022
	5,310,689		5,309,983		5,310,455		5,311,114		5,311,546		5,311,029
	5,310,711		5,310,023		5,310,462		5,311,115		5,311,566		5,311,128
	5,311,122		5,310,032		5,310,463		5,311,120		5,311,568		5,311,161
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	5,309,576		5,310,091		5,310,675		5,311,197		5,310,486		5,310,838
	5,309,577		5,310,094		5,310,677		5,311,199		5,310,683		5,310,861
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	5,309,582		5,310,129		5,310,705		5,311,212		5,311,194		5,310,924
	5,309,585		5,310,134		5,310,728		5,311,217		5,311,570		5,310,928
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

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—Corresponding prior U.S. national application filed	410.00
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March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on May 14, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,663,779 through 4,665,560
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 10, 1983 for which maintenance fees due at 11 years and six months may now be paid, the patents have patent numbers within the following ranges:

Utility Patents 4,382,301 through 4,383,334
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MARCH 6, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,407	07/843,950	10/12/93
(4,905,987)	(07/265,318)	(03/06/90)
4,318,200	06/215,628	03/09/82
4,318,218	06/235,072	03/09/82
4,318,724	06/221,112	03/09/82
4,318,782	06/222,989	03/09/82
4,318,861	06/244,848	03/09/82
4,318,864	06/216,720	03/09/82
4,318,894	06/220,569	03/09/82
4,318,971	06/234,012	03/09/82
4,318,985	06/229,733	03/09/82
4,318,998	06/237,141	03/09/82
4,319,000	06/248,893	03/09/82
4,319,050	06/234,161	03/09/82
4,319,075	06/228,644	03/09/82
4,319,164	06/236,368	03/09/82
4,573,216	06/512,020	03/04/86
4,573,217	06/635,810	03/04/86
4,573,219	06/740,812	03/04/86
4,573,224	06/616,107	03/04/86
4,573,225	06/608,357	03/04/86
4,573,230	06/607,221	03/04/86
4,573,233	06/687,721	03/04/86
4,573,234	06/575,028	03/04/86
4,573,242	06/533,353	03/04/86
4,573,245	06/503,864	03/04/86
4,573,246	06/536,981	03/04/86
4,573,250	06/541,711	03/04/86
4,573,252	06/673,050	03/04/86
4,573,253	06/626,509	03/04/86
4,573,260	06/749,629	03/04/86
4,573,268	06/743,594	03/04/86
4,573,270	06/690,041	03/04/86
4,573,275	06/607,598	03/04/86
4,573,279	06/667,351	03/04/86
4,573,280	06/605,680	03/04/86
4,573,281	06/691,115	03/04/86
4,573,284	06/603,448	03/04/86
4,573,286	06/678,502	03/04/86
4,573,287	06/572,226	03/04/86
4,573,290	06/643,682	03/04/86
4,573,292	06/646,141	03/04/86
4,573,296	06/675,031	03/04/86
4,573,299	06/548,292	03/04/86
4,573,302	06/710,311	03/04/86
4,573,304	06/555,142	03/04/86
4,573,310	06/670,209	03/04/86
4,573,312	06/644,220	03/04/86
4,573,313	06/662,964	03/04/86
4,573,322	06/750,237	03/04/86
4,573,327	06/652,849	03/04/86
4,573,329	06/674,754	03/04/86
4,573,333	06/524,602	03/04/86
4,573,336	06/615,344	03/04/86
4,573,344	06/622,295	03/04/86
4,573,345	06/630,155	03/04/86
4,573,346	06/514,576	03/04/86
4,573,348	06/610,217	03/04/86
4,573,349	06/625,489	03/04/86
4,573,351	06/579,863	03/04/86
4,573,352	06/618,548	03/04/86
4,573,353	06/492,219	03/04/86
4,573,355	06/560,138	03/04/86
4,573,356	06/627,537	03/04/86
4,573,378	06/618,920	03/04/86

Patent Number	Serial Number	Issue Date
4,573,381	06/583,443	03/04/86
4,573,385	06/519,671	03/04/86
4,573,393	06/575,540	03/04/86
4,573,394	06/580,366	03/04/86
4,573,395	06/563,152	03/04/86
4,573,396	06/505,554	03/04/86
4,573,399	06/732,895	03/04/86
4,573,400	06/514,859	03/04/86
4,573,408	06/702,825	03/04/86
4,573,409	06/446,336	03/04/86
4,573,411	06/614,833	03/04/86
4,573,413	06/495,773	03/04/86
4,573,414	06/632,751	03/04/86
4,573,415	06/629,187	03/04/86
4,573,417	06/605,086	03/04/86
4,573,421	06/745,009	03/04/86
4,573,423	06/588,984	03/04/86
4,573,429	06/638,222	03/04/86
4,573,436	06/554,211	03/04/86
4,573,437	06/654,397	03/04/86
4,573,440	06/743,280	03/04/86
4,573,441	06/636,530	03/04/86
4,573,443	06/734,816	03/04/86
4,573,444	06/670,023	03/04/86
4,573,449	06/473,353	03/04/86
4,573,451	06/669,475	03/04/86
4,573,457	06/566,781	03/04/86
4,573,460	06/610,417	03/04/86
4,573,462	06/596,620	03/04/86
4,573,464	06/405,161	03/04/86
4,573,483	06/625,165	03/04/86
4,573,491	06/640,765	03/04/86
4,573,498	06/594,646	03/04/86
4,573,503	06/655,604	03/04/86
4,573,504	06/609,130	03/04/86
4,573,505	06/600,285	03/04/86
4,573,506	06/651,019	03/04/86
4,573,509	06/646,475	03/04/86
4,573,510	06/282,498	03/04/86
4,573,511	06/549,821	03/04/86
4,573,512	06/635,286	03/04/86
4,573,513	06/490,784	03/04/86
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4,573,530	06/549,140	03/04/86
4,573,531	06/578,527	03/04/86
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4,573,534	06/650,071	03/04/86
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4,573,594	06/532,448	03/04/86
4,573,595	06/560,597	03/04/86
4,573,597	06/645,316	03/04/86
4,573,601	06/665,024	03/04/86
4,573,604	06/755,097	03/04/86
4,573,607	06/539,848	03/04/86
4,573,609	06/609,271	03/04/86
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4,573,648	06/491,953	03/04/86
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4,573,652	06/464,208	03/04/86
4,573,654	06/509,199	03/04/86
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4,573,661	06/661,062	03/04/86
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4,573,668	06/447,408	03/04/86
4,573,671	06/730,647	03/04/86
4,573,676	06/463,732	03/04/86
4,573,677	06/501,826	03/04/86
4,573,680	06/589,654	03/04/86
4,573,683	06/677,094	03/04/86
4,573,687	06/504,831	03/04/86
4,573,689	06/639,841	03/04/86
4,573,692	06/755,295	03/04/86
4,573,693	06/726,465	03/04/86
4,573,695	06/605,114	03/04/86
4,573,696	06/594,279	03/04/86
4,573,699	06/635,167	03/04/86
4,573,700	06/584,391	03/04/86
4,573,702	06/428,922	03/04/86
4,573,708	06/571,469	03/04/86
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4,573,711	06/581,725	03/04/86
4,573,723	06/639,430	03/04/86
4,573,728	06/632,503	03/04/86
4,573,729	06/546,027	03/04/86
4,573,732	06/605,070	03/04/86
4,573,734	06/679,698	03/04/86
4,573,736	06/646,811	03/04/86
4,573,739	06/552,560	03/04/86
4,573,741	06/547,969	03/04/86
4,573,743	06/681,543	03/04/86
4,573,744	06/679,249	03/04/86
4,573,745	06/453,864	03/04/86
4,573,746	06/510,232	03/04/86
4,573,747	06/656,319	03/04/86
4,573,749	06/544,133	03/04/86
4,573,750	06/568,601	03/04/86
4,573,751	06/607,507	03/04/86
4,573,756	06/435,362	03/04/86
4,573,759	06/390,520	03/04/86
4,573,763	06/682,836	03/04/86
4,573,765	06/638,711	03/04/86
4,573,766	06/562,855	03/04/86
4,573,768	06/558,231	03/04/86
4,573,773	06/606,398	03/04/86
4,573,776	06/560,165	03/04/86
4,573,778	06/475,854	03/04/86
4,573,791	06/649,767	03/04/86
4,573,797	06/583,549	03/04/86
4,573,798	06/408,128	03/04/86
4,573,799	06/525,710	03/04/86
4,573,804	06/720,530	03/04/86
4,573,805	06/479,593	03/04/86
4,573,806	06/729,544	03/04/86
4,573,808	06/694,005	03/04/86
4,573,809	06/669,629	03/04/86
4,573,813	06/692,244	03/04/86
4,573,814	06/668,158	03/04/86
4,573,815	06/653,077	03/04/86
4,573,820	06/627,288	03/04/86
4,573,821	06/709,972	03/04/86
4,573,823	06/695,470	03/04/86
4,573,826	06/594,832	03/04/86
4,573,829	06/626,191	03/04/86
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Patent Number	Serial Number	Issue Date
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4,573,853	06/583,468	03/04/86
4,573,857	06/458,200	03/04/86
4,573,861	06/503,793	03/04/86
4,573,865	06/595,754	03/04/86
4,573,867	06/443,609	03/04/86
4,573,874	06/657,902	03/04/86
4,573,881	06/736,271	03/04/86
4,573,883	06/707,255	03/04/86
4,573,885	06/723,624	03/04/86
4,573,889	06/549,680	03/04/86
4,573,892	06/746,467	03/04/86
4,573,895	06/581,979	03/04/86
4,573,896	06/487,446	03/04/86
4,573,899	06/563,373	03/04/86
4,573,902	06/507,548	03/04/86
4,573,903	06/513,998	03/04/86
4,573,905	06/670,264	03/04/86
4,573,906	06/704,048	03/04/86
4,573,911	06/605,549	03/04/86
4,573,913	06/651,477	03/04/86
4,573,914	06/695,706	03/04/86
4,573,916	06/637,395	03/04/86
4,573,923	06/614,078	03/04/86
4,573,924	06/670,065	03/04/86
4,573,926	06/688,142	03/04/86
4,573,927	06/645,235	03/04/86
4,573,933	06/506,042	03/04/86
4,573,938	06/583,657	03/04/86
4,573,944	06/688,837	03/04/86
4,573,948	06/610,512	03/04/86
4,573,951	06/592,787	03/04/86
4,573,953	06/606,627	03/04/86
4,573,967	06/558,060	03/04/86
4,573,973	06/641,487	03/04/86
4,573,975	06/688,734	03/04/86
4,573,977	06/583,775	03/04/86
4,573,981	06/544,464	03/04/86
4,573,982	06/550,427	03/04/86
4,573,984	06/532,711	03/04/86
4,573,985	06/568,745	03/04/86
4,573,990	06/673,350	03/04/86
4,573,999	06/541,994	03/04/86
4,574,000	06/644,315	03/04/86
4,574,002	06/615,658	03/04/86
4,574,003	06/606,500	03/04/86
4,574,005	06/643,103	03/04/86
4,574,007	06/647,901	03/04/86
4,574,010	06/730,927	03/04/86
4,574,011	06/586,790	03/04/86
4,574,013	06/724,642	03/04/86
4,574,020	06/555,758	03/04/86
4,574,033	06/506,380	03/04/86
4,574,034	06/580,970	03/04/86
4,574,035	06/671,627	03/04/86
4,574,037	06/566,931	03/04/86
4,574,041	06/641,253	03/04/86
4,574,042	06/576,636	03/04/86
4,574,046	06/653,029	03/04/86
4,574,047	06/638,126	03/04/86
4,574,048	06/583,872	03/04/86
4,574,051	06/519,995	03/04/86
4,574,054	06/566,384	03/04/86
4,574,059	06/706,319	03/04/86
4,574,060	06/438,687	03/04/86
4,574,062	06/619,707	03/04/86
4,574,079	06/498,736	03/04/86
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4,574,083	06/555,941	03/04/86
4,574,092	06/677,064	03/04/86
4,574,094	06/611,193	03/04/86
4,574,097	06/639,339	03/04/86
4,574,106	06/636,104	03/04/86
4,574,107	06/648,249	03/04/86
4,574,108	06/729,893	03/04/86
4,574,111	06/750,061	03/04/86
4,574,116	06/457,795	03/04/86
4,574,117	06/617,805	03/04/86
4,574,118	06/566,929	03/04/86
4,574,122	06/675,690	03/04/86
4,574,125	06/603,027	03/04/86
4,574,126	06/473,520	03/04/86
4,574,127	06/607,906	03/04/86
4,574,129	06/737,119	03/04/86
4,574,130	06/557,142	03/04/86
4,574,134	06/669,907	03/04/86
4,574,137	06/643,517	03/04/86
4,574,141	06/621,103	03/04/86
4,574,146	06/510,799	03/04/86
4,574,147	06/691,593	03/04/86
4,574,152	06/457,940	03/04/86
4,574,156	06/679,346	03/04/86
4,574,159	06/614,571	03/04/86
4,574,160	06/656,175	03/04/86
4,574,161	06/650,708	03/04/86
4,574,162	06/577,205	03/04/86
4,574,168	06/625,326	03/04/86
4,574,170	06/642,496	03/04/86
4,574,171	06/637,266	03/04/86
4,574,175	06/602,504	03/04/86
4,574,181	06/658,778	03/04/86
4,574,183	06/640,564	03/04/86
4,574,190	06/675,269	03/04/86
4,574,196	06/679,617	03/04/86
4,574,197	06/478,438	03/04/86
4,574,198	06/576,386	03/04/86
4,574,200	06/571,746	03/06/86
4,574,203	06/502,570	03/04/86
4,574,213	06/674,716	03/04/86
4,574,214	06/659,858	03/04/86
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4,574,229	06/565,870	03/04/86
4,574,230	06/610,252	03/04/86
4,574,231	06/596,726	03/04/86
4,574,244	06/623,802	03/04/86
4,574,249	06/718,712	03/04/86
4,574,252	06/715,992	03/04/86
4,574,254	06/648,241	03/04/86
4,574,258	06/644,513	03/04/86
4,574,259	06/684,207	03/04/86
4,574,281	06/401,045	03/04/86
4,574,283	06/451,648	03/04/86
4,574,285	06/581,100	03/04/86
4,574,287	06/472,330	03/04/86
4,574,288	06/411,958	03/04/86
4,574,289	06/499,505	03/04/86
4,574,294	06/621,100	03/04/86
4,574,300	06/556,260	03/04/86
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4,574,317	06/560,469	03/04/86
4,574,326	06/708,945	03/04/86
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4,574,339	06/604,877	03/04/86
4,574,341	06/555,069	03/04/86
4,574,348	06/499,842	03/04/86
4,574,356	06/468,627	03/04/86
4,574,358	06/418,125	03/04/86
4,574,360	06/481,487	03/04/86
4,574,362	06/367,660	03/04/86
4,574,369	06/461,741	03/04/86
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4,574,384	06/525,696	03/04/86
4,574,385	06/580,973	03/04/86
4,574,386	06/491,510	03/04/86
4,574,391	06/545,855	03/04/86
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4,907,056	07/248,150	03/06/90
4,907,060	07/056,650	03/06/90
4,907,078	07/212,151	03/06/90
4,907,079	07/101,750	03/06/90
4,907,081	07/184,776	03/06/90
4,907,124	07/239,622	03/06/90
4,907,127	07/171,118	03/06/90
4,907,136	07/319,305	03/06/90
4,907,138	07/217,432	03/06/90
4,907,139	07/176,318	03/06/90
4,907,141	07/356,709	03/06/90
4,907,142	07/129,258	03/06/90
4,907,143	07/273,093	03/06/90
4,907,152	07/281,954	03/06/90
4,907,153	07/088,817	03/06/90
4,907,164	07/248,751	03/06/90
4,907,168	07/142,147	03/06/90
4,907,175	07/145,849	03/06/90
4,907,209	07/334,767	03/06/90
4,907,229	07/211,522	03/06/90
4,907,242	07/255,280	03/06/90
4,907,246	07/331,967	03/06/90
4,907,276	07/177,981	03/06/90
4,907,292	07/103,141	03/06/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re.33,442	07/277,935	11/20/90	11/30/88	
(4,715,368)	(06/893,584)	(12/29/87)	(08/06/86)	02/28/94
4,430,668	06/291,479	02/07/84	08/10/81	03/14/94
4,436,718	06/311,077	03/13/84	10/13/81	03/14/94
4,448,764	06/395,805	05/15/84	07/06/82	03/14/94
4,491,337	06/378,836	01/01/85	05/17/82	02/02/94
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Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,508,141	06/474,204	04/02/85	03/10/83	03/04/94
4,515,152	06/379,106	05/07/85	05/17/82	03/03/94
4,523,600	06/510,271	06/18/85	07/01/83	03/04/94
4,527,685	06/470,579	07/09/85	02/28/83	12/30/93
4,532,892	06/606,132	08/06/85	05/02/84	03/04/94
4,541,500	06/440,030	09/17/85	11/08/82	02/14/94
4,544,454	06/578,869	10/01/85	02/10/84	03/08/94
4,558,438	06/335,205	12/10/85	12/28/81	03/04/94
4,578,874	06/478,906	04/01/86	03/25/83	02/23/94
4,617,964	06/791,748	10/21/86	10/28/85	03/04/94
4,623,119	06/792,043	11/18/86	10/28/85	02/02/94
4,726,501	06/808,005	02/23/88	12/12/85	03/21/94
4,784,569	06/818,444	11/15/88	01/10/86	11/15/93
4,796,027	07/157,132	01/03/89	02/10/88	03/08/94
4,808,098	07/168,935	02/28/89	03/16/88	09/13/93
4,826,244	07/178,420	05/02/89	04/06/88	03/08/94
4,832,051	06/879,839	05/23/89	06/27/86	03/14/94
4,837,415	07/112,170	06/06/89	10/26/87	03/04/94
4,847,484	07/147,152	07/11/89	01/21/88	03/04/94
4,857,461	06/855,222	08/15/89	04/23/86	03/03/94
4,858,225	07/117,061	08/15/89	11/05/87	11/15/93
4,875,623	07/074,885	10/24/89	07/17/87	02/22/94
4,877,489	07/105,387	10/31/89	07/21/87	03/14/94
4,882,700	07/204,078	11/21/89	06/08/88	03/04/94
4,891,794	07/208,676	01/02/90	06/20/88	03/04/94
4,899,107	07/252,606	02/06/90	09/30/88	03/04/94
4,933,080	07/297,094	06/12/90	01/13/89	03/07/94

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,548,689, Re. S.N. 08/214,005, Mar. 15, 1994, Cl. 522, PHOTOCURABLE RESIN COMPOSITION, Takeshi Sakashita, et. al., Owner of Record: *Mitsui Petrochemical Industries Ltd, Tokyo, Japan,* Attorney or Agent: Matthew Jacob, Ex. Gp.: 1507

4,757,833, Re. S.N. 08/164,984, Dec. 7, 1993, Cl. 252, METHOD FOR IMPROVING PRODUCTION OF VISCOUS CRUDE OIL, Dennis E. Danley, Owner of Record: *Pfizer Inc., New York, N.Y.,* Attorney or Agent: Ronald Abramson, Ex. Gp.: 2203

4,767,587, Re. S.N. 08/122,176, Sept. 17, 1993, Cl. 526/280, CYCLOOLEFIN COPOLYMERIZATION METHOD, FEED COMPOSITION AND PRODUCT, Steven H. Hahm, Owner of Record: *Hercules Incorporated, Wilmington, Del.,* Attorney or Agent: Neil F. Greenblum, Ex. Gp.: 1505

4,829,626, Re. S.N. 08/699,952, May 14, 1991, Cl. 15, METHOD FOR CONTROLLING A VACUUM CLEANER OR A CENTRAL VACUUM CLEANER, Jouk.o Harkonen, Owner of Record: *Allaway OY, Jyvaskyla, Finland,* Attorney or Agent: J. Harold Nissen, Ex. Gp.: 2402

4,887,133, Re. S.N. 08/111,828, Aug. 25, 1993, Cl. 321, PRINTER, Kunjhiko Ikeda, et. al., Owner of Record: *Ricoh Company* Ltd., Tokyo, Japan, Attorney or Agent: Ivan S. Kavrukov, Ex. Gp.: 2105

4,926,459, Re. S.N. 08/220,957, Mar. 30, 1994, Cl. 379, HEARING ASSIST TELEPHONE, Jai K. Advani, et. al., Owner of Record: *Plantronics, Inc., Santa Cruz, Calif.,* Attorney or Agent: Hugh R. Kress, Ex. Gp.: 2608

4,936,822, Re. S.N. 08/190,800, Feb. 2, 1994, Cl. 494/43, CHIP WRINGER BOWL/BLADE IMPROVEMENT, William D. Nemedi, Owner of Record: *Inter-Source Recovery Systems, Inc., Kalamazoo, Mich.,* Attorney or Agent: Owen J. Murray, Ex. Gp.: 2402

4,937,653, Re. S.N. 08/105,218, Aug. 11, 1993, Cl. 257/739, SEMICONDUCTOR INTEGRATED CIRCUIT CHIP-TO-CHIP INTERCONNECTION SCHEME, Greg E. Blonder, et. al., Owner of Record: *American Telephone And Telegraph Inc., New York, N.Y., Bell Telephone Labortories, Inc., Murray Hills., N.J.* , Attorney or Agent: David I. Caplan, Ex. Gp.: 2508

5,038,931, Re. S.N. 08/218,181, Mar. 28, 1994, Cl. 206/346, ASSEMBLY OF ATTACHMENTS AND DEVICE FOR ATTACHING SAME, Steven J. Kunreuther, Owner of Record: *Inventor,* Attorney or Agent: Robert L. Epstein, Esq., Ex. Gp.: 2404

5,075,863, Re. S.N. 08/185,696, Jan. 24, 1994, Cl. 364/561, DISTANCE MEASURING METHODS AND APPARATUS THEREOF, Akio Nagamune, et. al., Owner of Record: *NKK Corporation, Tokyo, Japan,* Attorney or Agent: Michael N. Meller, Ex. Gp.: 2304

5,080,299, Re. S.N. 08/216,822, Mar. 23, 1994, Cl. 242/107.40R, SEAT BELT RETRACTOR, Mark F. Gray, et. al., Owner of Record: *TRW Vehicle Safety Systems, Ltd., Ontario, Canada,* Attorney or Agent: Thomas L. Tarolli, Ex. Gp.: 2405

5,081,395, Re. S.N. 08/205,241, Jan. 13, 1994, Cl. 313/594, FLUORESCENT LAMP HAVING THREE ELECTRODES FOR STARTING AT LOW TEMPERATURES, Ryoji Ki Kuchi, et. al., Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2604

5,081,517, Re. S.N. 08/183,011, Jan. 14, 1993, Cl. 257/370, MIXED TECHNOLOGY INTEGRATED CIRCUIT COMPRISING CMOS STRUCTURES AND EFFICIENT LATEREAL BIPOLAR TRANSISTORS WITH A HIGH EARLY VOLTAGE AND FABRICATION THEREOF, Claudio Contiero, et. al., Owner of Record: *SGS-Thomson Microelectronics S.R.l., Milano, Italy,* Attorney or Agent: Robert Groover, Ex. Gp.: 2503

5,084,190, Re. S.N. 08/190,743, Jan. 28, 1994, Cl. 252/8, FIRE EXTINGUISHING COMPOSITION AND PROCESS, Richard Edward Fernandez, Owner of Record: *E.I. Du Pont De Nemours and Co., Wilmington, Del.,* Attorney or Agent: Herbert M. Wolfson, Ex. Gp.: 2203

5,084,683, Re. S.N. 08/189,576, Jan. 28, 1994, Cl. 330/107, COMPLETELY DIFFERENTIAL FILTER WITH SWITCHED CONDENSERS USING CMOS OPERATIONAL AMPLIFIERS WITH NO COMMON-MODE FEEDBACK, Germano Nicollini, Owner of Record: *SGS-Thomson Microelectronics S.R.L., Milano, Italy,* Attorney or Agent: James H. Morris, Ex. Gp.: 2515

5,086,993, Re. S.N. 08/195,247, Feb. 14, 1994, Cl. 244/48, AIRPLANE WITH VARIABLE-INCIDENCE WING, Barnaby Wainfan, Owner of Record: *Freewing Aircraft Corporation, College Park, Md.,* Attorney or Agent: Benjamin J. Hauptman, Ex. Gp.: 3107

5,087,601, Re. S.N. 08/195,479, Feb. 14, 1994, Cl. 503/200, REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL, Yoshihiko Hotta, et. al., Owner of Record: *Ricoh Co., Ltd., Tokyo, Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1513

5,090,281, Re. S.N. 08/200,225, Feb. 23, 1994, Cl. 83/13, SLITTING APPARATUS FOR CORRUGATED PAPERBOARD AND THE LIKE, Richard F. Paulson, et. al., Owner of Record: *Marquip, Inc.,* Attorney or Agent: Joseph J. Jochman, Jr., Ex. Gp.: 3204

5,097,642, Re. S.N. 08/217,491, Mar. 24, 1994, Cl. 52/171, GLASS REFRIGERATOR DOOR STRUCTURE, Richard J. Richardson, Owner of Record: *Anthony's Manufacturing Company, Inc., Fernando, Calif.,* Attorney or Agent: Alan P. Block, Ex. Gp.: 3504

5,097,682, Re. S.N. 08/210,348, Mar. 18, 1994, Cl. 63/014, ACCESSORY FOR EARRING, Azuko Nakamura, Owner of Record: *Inventor,* Attorney or Agent: Barry R. Lipsitz, Ex. Gp.: 3508

5,102,435, Re. S.N. 08/148,687, Nov. 5, 1993, Cl. 55/467, VACUUM SUCTION MACHINE WITH HIGH EFFICIENCY FILTER AND OPERATING INTERLOCK, Jerome E. Rau, et. al., Owner of Record: *Hako Minuteman, Inc., Addison, Ill.,* Attorney or Agent: James. J. Hill, Ex. Gp.: 1305

5,104,265, Re. S.N. 08/219,118, Mar. 29, 1994, Cl. 405/244, CHANNEL SIGN POST SOCKET AND METHOD OF INSTALLING SIGN POST, Charles F. Halloran, Jr., Owner of Record: *Inventor,* Attorney or Agent: Alan Ruderman, Ex. Gp.: 3501

5,129,049, Re. S.N. 08/215,796, Mar. 14, 1991, Cl. 395/113, METHOD AND APPARATUS FOR PREVENTING PRINT OVERRUNS, Clint Stephen Cuzzo, et. al., Owner of Record: *Hewlett-Packard Co., Palo Alto, Calif.,* Attorney or Agent: David N. Koffsky, Ex. Gp.: 2317

5,137,158, Re. S.N. 08/107,223, Aug. 16, 1993, Cl. 211/87, APPARATUS FOR SUPPORTING BAG MEMBERS, Ronald L. Brockway, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 3505

5,163,575, Re. S.N. 08/216,634, Mar. 23, 1994, Cl. 220/276, CONTAINER WITH CURLED TAMPER-EVIDENT BAND TO RETAIN CLOSURE, Daniel Luch, Owner of Record: *Portola Packaging, Inc., San Jose, Calif.,* Attorney or Agent: Julian Caplan, Esq., Ex. Gp.: 2401

5,166,273, Re. S.N. 08/217,712, Mar. 25, 1994, Cl. 525/286, METHOD OF PRODUCING MODIFIED POLYOLEFIN, Akira Kobayashi, et. al., Owner of Record: *Tonen Corp., Tokyo, Japan,* Attorney or Agent: Donald W. Hanson, Ex. Gp.: 1512

5,172,112, Re. S.N. 08/112,823, Aug. 26, 1993, Cl. 340/850, SUBSEA WELL PRESSURE MONITOR, Charles E. Jennings, et. al., Owner of Record: *ABB Vetco Gray Inc., Houston, Tex.,* Attorney or Agent: James E. Bradley, Ex. Gp.: 2201

5,178,283, Re. S.N. 08/213,544, Mar. 16, 1994, Cl. 211/4, SECURE GLASS DISPLAY, Jan S. Ennis, Owner of Record: *Ennco Display Systems, Inc., Redmond, Wash.,* Attorney or Agent: James R. Vance, Ex. Gp.: 3505

5,182,474, Re. S.N. 08/212,722, Mar. 14, 1994, Cl. 307/465, PULSE CONTROL CIRCUIT FOR ELECTRIC DISCHARGE MACHINE USING PROGRAMMABLE LOGIC, Yuji Kaneko, Owner of Record: *Sodick Co., Ltd., Yokohama, Japan,* Attorney or Agent: Paul Devinsky, Ex. Gp.: 2509

5,205,458, Re. S.N. 08/218,179, Mar. 28, 1994, Cl. 227/71, BUTTON ATTACHER WITH VARIABLE NEEDLE SPACING, Steven J. Kunreuther, Owner of Record: *Inventor,* Attorney or Agent: Robert L. Epstein, Esq., Ex. Gp.: 3204

5,216,690, Re. S.N. 08/217,424, Mar. 24, 1994, Cl. 373/10, ELECTRON BEAM ARC-DOWN PREVENTION, Charles W. Hanks, Owner of Record: *Inventor,* Attorney or Agent: Julian Caplan, Ex. Gp.: 2106

5,248,280, Re. S.N. 08/210,287, Mar. 18, 1994, Cl. 462/19, PHYSICIAN'S PRESCRIPTION PAD AND COVER INSERT, Fred L. Lockwood, et. al., Owner of Record: *Inventors,* Attorney or Agent: Ralph Bailey, Ex. Gp.: 3206

5,255,626, Re. S.N. 08/206,714, Mar. 7, 1994, Cl. 114/270, WATERCRAFT, Toshiyuki Hattori, et. al., Owner of Record: *Yamaha Hatsudoki Kabushiki Kaisha (D/B/A Yamaha Motor Co. Ltd.), Shizuoka, Japan,* Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 3102

5,265,383, Re. S.N. 08/201,886, Feb. 24, 1994, Cl. 51/439, FAN NOZZLE, James D. Shank, Jr., Owner of Record: *Church & Dwight Co., Inc., Princeton, N.J.,* Attorney or Agent: Stuart D. Frenkel, Ex. Gp.: 3203

5,268,979, Re. S.N. 08/217,956, Mar. 25, 1994, Cl. 392/418, ACHROMATIC OVERCLAD FIBER OPTIC COUPLER, David L. Weidman, Owner of Record: *Corning Incorporated, Corning, N.Y.,* Attorney or Agent: William J. Simmons, Jr., Ex. Gp.: 2106

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,477,754, Reexam. No. 90/003,365, Mar. 22, 1994, Cl. 318/568.1, INTERACTIVE MACHINING SYSTEM, Gerald V. Roch, et. al., Owner of Record: *Hurco Companies, Inc., Indianapolis, Ind.,* Attorney or Agent: Paul R. Overhauser, Baker & Daniels, Indianapolis, Ind., Ex. Gp.: 2107, Requester: Owner

4,549,532, Reexam. No. 90/003,369, Mar. 25, 1994, Cl. 600/015, FLEXIBLE MAGNETIC SHEET FOR THERAPEUTIC USE, Horst Baermann, Owner of Record: *Baermann Magnetics, Inc., Spartanburg, S.C.,* Attorney or Agent: Robert V. Vickers, Body, Vickers & Daniels, Cleveland, Ohio, Ex. Gp.: 3305, Requester: Nu-Magnetics, Inc., c/o Edwin D. Schindler, Coram, N.Y.

4,865,564, Reexam. No. 90/003,368, Mar. 18, 1994, Cl. 426/107, MICROWAVE FOOD PACKAGE, Curtis L. Larson, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Leland D. Shultz, St. Paul, Minn., Ex. Gp.: 1302, Requester: Owner

4,886,158, Reexam. No. 90/003,366, Mar. 22, 1994, Cl. 198/853, MODULAR CENTER DRIVE CONVEYOR BELT, James M. Lapeyre, Owner of Record: *The Laitram Corp., Harahan, La.,* Attorney or Agent: James T. Cronvich, The Laitram Corp., Harahan, La., Ex. Gp.: 3101, Requester: KVP Systems, Inc., Rancho Cordova, Calif.

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5,008,712, Reexam. No. 90/003,377, Mar. 29, 1994, Cl. 355/206, VARIABLE MAGNIFICATION COPYING APPARATUS AND AUTOMATIC SHUTDOWN THEREFOR, Tsuneki Inuzuka, et. al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Mark J. Itri, Fitzpatrick, Cella, Harper & Scinto, New York, N.Y., Ex. Gp.: 2105, Requester: Owner

5,092,496, Reexam. No. 90/003,363, Mar. 14, 1994, Cl. 222/386, DISPENSER FOR FLOWABLE MATERIALS HAVING A PISTON WITH A FLEXIBLE SEALING RIM, Harold R. Gayle, et. al., Owner of Record: *Package Research Corp., Cleveland, Ohio*, Attorney or Agent: Harold Pezzner, Connolly & Hutz, Wilmington, Del., Ex. Gp.: 3104, Requester: Owner

5,092,638, Reexam. No. 90/003,378, Mar. 30, 1994, Cl. 292/216, CHILD-LOCK MECHANISM FOR LOCKING APPARATUS FOR VEHICLE, Tetsurd Mizuki, Owner of Record: *Mitsui, Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Browdy & Neimark, Washington, D.C., Ex. Gp.: 3508, Requester: Owner

5,096,596, Reexam. No. 90/003,376, Mar. 29, 1994, Cl. 210/721, PROCESS AND APPARATUS FOR REMOVAL OF MINERAL CONTAMINANTS FROM WATER, Terence P. Hellenbrand, et. al., Owner of Record: *Hellenbrand Water Conditioners Inc., Waunakee, Wis.*, Attorney or Agent: Theodore J. Long, Lathrop & Clark, Madison, Wis., Ex. Gp.: 1308, Requester: Owner

5,149,875, Reexam. No. 90/003,362, Mar. 18, 1994, Cl. 564/412, HALLOGENATION OF AROMATIC AMINE COMPOUNDS, Jerry R. Patton, et. al., Owner of Record: *Mallinckrodt Specialty Chemicals Co., St. Louis, Mo.*, Attorney or Agent: George R. Repper, Bothwell, Figg, Ernst & Kuaz, Washington, D.C., Ex. Gp.: 1209, Requester: Norman F. Oblon, Oblon, Spivak, Mc Clelland, Maier & Neustadt, Arlington, Va.

5,223,172, Reexam. No. 90/003,367, Mar. 24, 1994, Cl. 252/182.12, HARDENER FOR EPOXIDE RESIN MASSES, Joachim V. Seyerl, et. al., Owner of Record: *SKW Trostberg Aktiengesellschaft, Trostberg, Germany*, Attorney or Agent: Vincent M. Fazzari, Felfe & Lynch, New York, N.Y., Ex. Gp.: 2204, Requester: Russell L. Brewer, c/o Air Products & Chemicals, Allentown, Pa.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
MARCH 28, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
92,256	71/066,007	06/24/1913
304,032	71/334,090	06/20/1933
304,038	71/333,921	06/20/1933
304,045	71/333,481	06/20/1933
304,055	71/332,136	06/20/1933
304,065	71/330,507	06/20/1933
304,070	71/334,507	06/20/1933
304,074	71/334,434	06/20/1933
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304,158	71/334,544	06/20/1933
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576,176	71/562,273	06/23/1953
576,177	71/564,798	06/23/1953
576,178	71/570,229	06/23/1953
576,182	71/574,697	06/23/1953
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576,187	71/584,315	06/23/1953
576,191	71/590,512	06/23/1953
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961,152	72/403,675	06/19/1973
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Reg. No.	Serial Number	Reg. Date
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961,163	72/427,662	06/19/1973
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961,809	72/411,005	06/19/1973
961,810	72/388,684	06/19/1973

Registration To Practice

The following list contains the names of a persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 1, 1994.

Boyd, John., 102 E. 22nd St., #6, New York, N.Y. 10010
Clarke, Vera C., 1431 Southern Ave., #P-3, Oxon Hill, Md. 20745
Current, Sara McDuffie, 4203 Dumbarton Pl., Charlotte, N.C. 28211
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Shentov, Ognjan Varbanov, 50 W. 56th St., #4C, New York, N.Y. 10019
Weidenfeld, Gil., 110 Ridge Rd., Greenbelt, Md. 20770

April 19, 1994 CAMERON WEIFFENBACH, Director
Office of Enrollment and Discipline

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

American Centurion, Inc., Louisville, Ky., Reg. No. 1,024,638, for the mark "CENTURION", Canc. No. 21,125

Eva K. Hain, Beverly Hills, Calif., Reg. No. 1,458,927, for the mark "EARTH OF EDEN AND DESIGN", Canc. No. 21,472

Agnes Farkas, Los Angeles, Calif., Reg. No. 1,671,805, for the mark "TRIXX AND DESIGN", Canc. No. 21,581

The Exchange Club Fair of Charleston, Inc., Charleston, S.C., Reg. No. 1,089,883, for the mark "THE BATTLE OF THE BANDS", Canc. No. 21,909

Druid Hill Products, Inc., Birmingham, Ala., Reg. No. 1,506,132, for the mark "GOLFMASTER (STYLIZED)", Canc. No. 22,088

Gerald Eckhart, St. Charles, Ill., Reg. No. 1,100,472, for the mark "DERMOPHILIC", Canc. No. 22,100

School Stuff, West New York, N.J., Reg. No. 1,596,319, for the mark "SCHOOL STUFF", Canc. No. 22,106

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For ROBERT M. ANDERSON,
Acting Assistant Commissioner for Trademarks

Means Or Step Plus Function Limitation Under 35 U.S.C. §112, 6th Paragraph

The following guidelines have been distributed to patent examiners for guidance on examining practice and procedure relating to limitations falling under 35 U.S.C. §112, 6th paragraph, after In re Donaldson, 29 USPQ2d 1845 (Fed. Cir. 1994). These guidelines will be incorporated into the Manual of Patent Examining Procedure.

April 20, 1994 CHARLES E. VAN HORN
Patent Policy and Projects Administrator

Examination Guidelines For Claims

Reciting A Means or Step Plus Function" Limitation In Accordance With 35 U.S.C. §112, 6th Paragraph

The purpose of this memo is to set forth guidelines for the examination of §112, 6th paragraph "means or step plus function" limitations in a claim. The court of Appeals for the Federal Circuit, in its *en banc* decision *In re Donaldson*, 29 USPQ2d 1845 (Fed. Cir. 1994), decided that a "means-or-step-plus-function" limitation should be interpreted in a manner different than patent examining practice has dictated for at least the last forty-two years. The *Donaldson* decision affects only the manner in which the scope of a "means or step plus function" limitation in accordance with §112, 6th paragraph, is interpreted during examination. *Donaldson* does not directly affect the manner in which any other section of the patent statutes is interpreted or applied.

When making a determination of patentability under 35 U.S.C. §§ 102 or 103, past practice was to interpret a "means or step plus function"limitation by giving it the "broadest reasonable interpretation."Under the PTO's long-standing practice this meant interpreting such a limitation as reading on any prior art means or step which performed the function specified in the claim without regard for whether the prior art means or step was equivalent to the corresponding structure, material or acts described in the specification. However, in *Donaldson* the Federal Circuit stated that.

Per our holding, the"broadest reasonable interpretation"that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.[1]

Thus, effective immediately, examiners shall interpret a §112, 6th paragraph "means or step plus function" limitation in a claim as limited to the corresponding structure, materials or acts described in the specification and equivalents thereof in accordance with the following guidelines.

I. Identifying a § 112, 6th paragraph limitation

Although there is no magic language that must appear in a claim in order for it to fall within the scope of §112, 6th paragraph, it must be clear that the element in the claim is set forth, at least in part, by the function it performs as opposed to the specific structure, material, or acts that perform the function. Limitations that fall within the scope of §112, 6th paragraph include:

(1) a jet driving device so constructed and located on the rotor as to drive the rotor . . .[2] ["means" unnecessary]
(2) "printing means" and "means for printing" would have the same connotations[3]
(3) force generating means adapted to provide . . .[4]
(4) call cost register means, including a digital display for providing a substantially instantaneous display for . . .[5]
(5) reducing the coefficient of friction of the resulting film6 [step plus function; "step" unnecessary], and
(6) raising the Ph of the resultant pulp to about 5.0 to precipitate . . .[7]

In the event that it is unclear whether the claim limitation falls within the scope of §112, 6th paragraph, a rejection under §112, 2d paragraph may be appropriate.

Donaldson does not affect the holding of *In re Hyatt*, 708 F.2d 712, 218 USPQ 195 (Fed. Cir. 1983) to the effect that a single means claim does not comply with the enablement requirement of §112, first paragraph. As *Donaldson* applies only to an interpretation of a limitation drafted to correspond to §112, 6th paragraph, which by its terms is limited to "an element in a claim to a combination," it does not affect a limitation in a claim which is not directed to a combination.

II. Examining procedure

A. *Scope of the Search and Identification of the Prior Art*

As noted above, in *Donaldson* the Federal Circuit recognized that it is important to retain the principle that claim language should be given its broadest reasonable interpretation. This principle is important because it helps insure that the statutory presumption of validity attributed to each claim of an issued patent is warranted by the search and examination conducted by the examiner. It is also important from the standpoint that the scope of protection afforded by patents issued prior to *Donaldson* are not unnecessarily limited by the latest interpretation of this statutory provision. Finally, it is important from the standpoint of avoiding the necessity for a patent specification to become a catalogue of existing technology.[8]

The *Donaldson* decision thus does not substantially alter examining practice and procedure relative to the scope of the search. Both before and after *Donaldson*, the application of a prior art reference to a means or step plus function limitation requires that the prior art element perform the identical function specified in the claim. However, if a prior art reference teaches identity of function to that specified in a claim, then under *Donaldson* an examiner carries the *initial* burden of proof for showing that the prior art structure or step is the same as or equivalent to the structure, material, or acts described in the specification which has been identified as corresponding to the claimed means or step plus function.

The "means or step plus function" limitation should be interpreted in a manner consistent with the specification disclosure. If the specification defines what is meant by the limitation for the purposes of the claimed invention, the examiner should interpret the limitation as having that meaning. If no definition is provided, some judgment must be exercised in determining the scope of the limitation.

B. *Making a prima facie case of equivalence*

If the examiner finds that a prior art element performs the function specified in the claim, and is not excluded by any

[1] *In re Donaldson*, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994).

[2] The term "device" coupled with a function is a proper definition of structure in accordance with the last paragraph of §112. The addition of the words "jet driving" to the term "device" merely renders the latter more definite and specific. *Ex partes Stanley*, 121 USPQ 621 (Bd. App. 1958).

[3] *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967). However, the terms "plate" and "wing", as modifiers for the structureless term "means", specify no function to be performed, and do not fall under the last paragraph of §112.

[4] *De Graffenreid v. U.S.*, 20 Cl. Cl. 458, 16 USPQ2d 1321 (Cl. Cl. 1990)

[5] *Intellicall Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 21 USPQ2d 1383 (Fed. Cir. 1992).

[6] *In re Roberts*, 470 F.2d 1399, 176 USPQ 313 (CCPA 1973).

[7] *Ex parte Zimmerley*, 153 USPQ 367 (Bd. App. 1966).

[8] A patent specification need not teach, and preferably omits, what is well known in the art. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986)

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explicit definition provided in the specification for an equivalent, the examiner should infer from that finding that the prior art element is an equivalent, and should then conclude that the claimed limitation is anticipated by the prior art element. The burden then shifts to applicant[9] to show that the element shown in the prior art is not an equivalent of the structure, material or acts disclosed in the application. *In re Mulder*, 716 F.2d 1542, 219 USPQ 189 (Fed. Cir. 1983).[10] The factors to be considered when determining whether the applicant has successfully met the burden of proving that the prior art element is not equivalent to the structure, material or acts described in the applicant's specification are discussed below.

However, even where the applicant has met that burden of proof and has shown that the prior art element is not equivalent to the structure, material or acts described in the applicant's specification, the examiner must still make a §103 analysis to determine if the claimed means or step plus function is obvious from the prior art to one of ordinary skill in the art. Thus, while a finding of non-equivalence prevents a prior art element from anticipating a means or step plus function limitation in a claim, it does not prevent the prior art element from rendering the claim limitation obvious to one of ordinary skill in the art.

Because the exact scope of an "equivalent" may be uncertain, it would be appropriate to apply a §102/§103 rejection where the balance of the claim limitations are anticipated by the prior art relied on.[11] In addition, although it is normally the best practice to rely on only the best prior art references in rejecting a claim, alternative grounds of rejection may be appropriate where the prior art shows elements that are different from each other, and different from the specific structure, material or acts described in the specification, yet perform the function specified in the claim.

C. *Determining whether an applicant has met the burden of proving non-equivalence after a prima facie case is made*

If the applicant disagrees with the inference of equivalence drawn from a prior art reference, the applicant may provide reasons why the applicant believes the prior art element should not be considered an equivalent to the specific structure, material or acts disclosed in the specification. Such reasons may include, but are not limited to:

1) teachings in the specification that particular prior art is not equivalent,

2) teachings in the prior art reference itself that may tend to show non-equivalence, or

3) Rule 132 affidavit evidence of facts tending to show non-equivalence. When the applicant relies on teachings in applicant's own specification, the examiner must make sure that the applicant is interpreting the "means or step plus function" limitation in the claim in a manner which is consistent with the disclosure in the specification. If the specification defines what is meant by "equivalents" to the disclosed embodiments for the purpose of the claimed means or step plus function, the examiner should interpret the limitation as having that meaning. If no definition is provided, some judgment must be exercised in determining the scope of "equivalents." Generally, an "equivalent" is interpreted as embracing more than the specific elements described in the specification for performing the specified function,[12] but less than any element that performs the function specified in the claim.

The scope of equivalents embraced by a claim limitation is dependent on the interpretation of an "equivalent." The interpretation will vary depending on how the element is described in the supporting specification. The claim may or may not be limited to particular structure, material or acts (e.g. steps) as opposed to any and all structure, material or acts performing the claimed function, depending on how the specification treats that question.

If the disclosure is so broad as to encompass any and all structure, material or acts for performing the claimed function, the claims must be read accordingly when determining patentability. When this happens the limitation otherwise provided by "equivalents" ceases to be a limitation on the scope of the claim in that an equivalent would be any structure, material or act other than the ones described in the specification that perform the claimed function. For example, this situation will often be found in cases where (1) the claimed invention is a combination of elements, one or more of which are selected from elements that are old per se, or (2) apparatus claims are treated as indistinguishable from method claims.[13]

On the other end of the spectrum, the "equivalents" limitation as applied to a claim may also operate to constrict the claim scope to the point of covering virtually only the disclosed embodiments. This can happen in circumstances where the specification describes the invention only in the context of a specific structure, material or act that is used to perform the function specified in the claim.

When deciding whether an applicant has met the burden of proof with respect to showing non-equivalence of a prior art element that performs the claimed function, the following factors may be considered. First, unless an element performs the identical function specified in the claim, it cannot be an equivalent for the purposes of §112, 6th paragraph.[14]

Second, while there is no litmus test for an "equivalent" that can be applied with absolute certainty and predictability, there are several indicia that are sufficient to support a conclusion that one element is or is not an "equivalent" of a different element in the context of §112, 6th paragraph. Among the indicia that will support a conclusion that one element is or is not equivalent of another are:

1) Whether the prior art element performs the function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in the specification.[15]

2)Whether a person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding element disclosed in the specification.[16]

3) Whether the prior art element is a structural equivalent of the corresponding element disclosed in the specification being examined.[17] That is, the prior art element performs the function specified in the claim in substantially the same manner as the function is performed by the corresponding element described in the specification.

4) Whether the structure, material or acts disclosed in the specification represents an insubstantial change which adds nothing of significance to the prior art element.[18] These examples are not intended to be an exhaustive list of the indicia that would support a finding that one element is or is not an equivalent of another element for the purposes of §112, 6th paragraph. A finding according to any of the above examples would represent a sufficient, but not the only possible, basis to support a conclusion that an element is or is not an equivalent. There could be other indicia that also would support the conclusion.

In determining whether arguments or Rule 132 evidence presented by an applicant are persuasive that the element shown in the prior art is not an equivalent, the examiner should consider and weigh as many of the above-indicated or other indicia as are presented by applicant, and should determine whether, on balance, the applicant has met the burden of proof to show non-equivalence. However, under no circumstance should an examiner accept as persuasive a bare statement or opinion that the element shown in the prior art is not an equivalent embraced by the claim limitation. Moreover, if an applicant argues that the "means" or "step" plus function language in a claim is limited to certain specific structural or additional functional characteristics (as opposed to "equivalents" thereof) where the specification does not describe the invention as being only those specific characteristics, the claim should not be allowed until the claim is amended to recite those specific structural or additional functional characteristics.[19]

Finally, as in the past, applicant has the opportunity during proceedings before the Office to amend the claims so that the claimed invention meets all the statutory criteria for patentability. An applicant may choose to amend the claim by further limiting the function so that there is no longer identity of function with that taught by the prior art element, or the applicant may choose to replace the claimed means plus function limitation with specific structure material or acts that are not described in the prior art.

D. *Related issues under Section 112, first or second paragraphs*

The *Donaldson* decision may create some uncertainty as to what applicant regards as the invention. If this issue arises, it should be addressed in a rejection under §112, 2d paragraph. While §112, 6th paragraph permits a particular form of claim limitation, it cannot be read as creating an exception either to the description, enablement or best mode requirements of the 1st paragraph or the definiteness requirement of the 2d paragraph of §112. *In re Knowlton*, 481 F.2d 1357, 178 USPQ 486 (CCPA 1973).

If a "means or step plus function" limitation recited in a claim is not supported by corresponding structure, material or acts in the specification disclosure, the following rejections should be considered: (1) under §112, 1st paragraph, as not being supported by an enabling disclosure because the person skilled in the art would not know how to make and use the invention without a description of elements to perform the function;[20] (2) under §112, 2d paragraph, as being indefinite because the element or step is not defined in the specification by corresponding structure, material or acts; and (3) under §§102 or 103 where the prior art anticipates or renders obvious the claimed subject matter including the means or step that performs the function specified in the claim. [Theory: since there is no corresponding structure, etc. in the specification to limit the means or step plus function limitation, an equivalent is any element that performs the specified function].

III. Avoid confusion with the doctrine of equivalents

An "equivalent" for the purposes of §112, 6th paragraph, should not be confused with the doctrine of equivalents. The doctrine of equivalents, most often associated with *Graver Tank & Mfg. Co. v. Linde Air Products*, 339 U.S. 605, 85 USPQ 328 (1950), is sometimes applied to do equity among the parties before the court in an infringement action involving an issued patent. The doctrine typically involves a three-part inquiry - whether an accused device performs substantially the same function, in substantially the same way, to obtain substantially the same result as the claimed invention.

Section 112, 6oth paragraph limits the scope of the broad language of "means or step plus function" limitations, in a claim to a combination, to the structures, materials and acts described in the specification and equivalents thereof. The doctrine of equivalents equitably expands exclusive patent rights beyond the literal scope of a claim.[21] Accordingly, decisions involving the doctrine of equivalents should not unduly influence a determination under §112, 6th paragraph during *ex parte* examination.

[9]No further analysis of equivalents is required of the examiner until applicant disagrees with the examiner's conclusion, and provides reasons why the prior art element should not be considered an equivalent.

[10]*See also, In re Walter*, 618 F.2d at 768, 205 USPQ at 407-08, (a case treating § 112, 6th paragraph, in the context of a determination of statutory subject matter and noting "If the functionally-defined disclosed means and their equivalents are so broad that they encompass any and every means for performing the recited functions . . . the burden must be placed on the applicant to demonstrate that the claims are truly drawn to specific apparatus distinct from other apparatus capable of performing the identical functions"); *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 229 (C.C.P.A. 1971)(a case in which the CCPA treated as improper a rejection under § 112, 2d paragraph, of functional language, but noted that "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristics relied on"); and *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980)(a case indicating that the burden of proof can be shifted to the applicant to show that the subject matter of the prior art does not possess the characteristic relied on whether the rejection is based on inherency under §102 or obviousness under §103).

[11]A similar approach is authorized in the case of product-by-process claims because the exact identity of the claimed product or the prior art product cannot be determined by the examiner. *In re Brown*, 450 F.2d 531, 173 USPQ 685 (CCPA 1972).

[12]To interpret "means plus function" limitations as limited to a particular means set forth in the specification would nullify the provisions of §112 requiring that the limitation shall be construed to cover the structure described in the specification and equivalents thereof. *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574, 225 USPQ 236, 238 (Fed. Cir. 1985).

[13]See, for example, *In re Meyer*, 688 F.2d 789, 215 USPQ 193 (1982); *In re Abele*, 618 F.2d at 768, 205 USPQ at 407-08; *In re Walter*, 618 F.2d 758, 767, 205 USPQ 397, 406-07 (C.C.P.A. 1980); *In re Maucorps*, 609 F.2d 481, 203 USPQ 812 (C.C.P.A. 1979); *In re Johnson*, 589 F.2d 1070, 200 USPQ 199 (C.C.P.A. 1978); and *In re Freeman*, 573 F.2d at 1246, 197 USPQ at 471.

[14]*Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 4 USPQ2d 1737 (Fed. Cir 1987), *cert. denied*, 484 U.S. 961 (1988).

[15]*Lockheed Aircraft Corporation v. United States*, 193 USPQ 449, 461 (Ct. Cl. 1977). *Graver Tank* concepts of equivalents are relevant to any "equivalents" determination. *Polumbo v. Don-Joy Co.*, 762 F.2d 969, 975, n. 4, 226 USPQ 5, 8-9, n. 4 (Fed. Cir. 1985).

[16]*Lockheed Aircraft Corporation v. United States*, 193 USPQ 449, 461 (Ct. cl. 1977). *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987).

[17]*In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

[18]*Valmont Industries, Inc. v. Reinke Manufacturing Co. Inc.*, 983 F.2d 1039, 25 USPQ2d 1451 (Fed. Cir. 1993).

[19]Otherwise, a claim could be allowed having broad functional language which in reality is limited to only the specific structure or steps disclosed in the specification. This would be contrary to public policy of granting patents which provide adequate notice to the public as to a claim's true scope.

[20]The description of an apparatus with block diagrams describing the function, but not the structure, of the apparatus is not fatal under the enablement requirement of §112, 1st paragraph, as long as the structure is conventional and can be determined without an undue amount of experimentation. *In re Ghiron*, 442 F.2d 985, 991, 169 USPQ 723, 727 (CCPA 1971).

[21]*Valmont Industries Inc. v. Reinke Manufacturing Co., Inc.*, 983 F.2d 1039, 1043, 1044, 25 USPQ2d 1451, 1455 (Fed. Cir. 1993).

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As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

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Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Correction Issue of May 17, 1994

P: 8,526	D: 334,262	4,732,763	4,921,757
P: 8,534	D: 341,855	4,788,462	4,931,384
Re: 34,196	D: 337,267	4,816,059	4,946,755
D: 310,637	D: 342,031	4,874,703	4,967,940
D: 318,320	4,419,991	4,879,821	4,972,864
D: 322,658	4,628,498	4,910,730	5,006,550

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

March 28 - April 1, 1994

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
3-29	OPP	83,714	American Home Products Corp. v. Gynopharma Inc.	2(d)	"NORDETTE" [oral contraceptives]	"NORCEPT" [oral contraceptives]		No
3-29	CANC	20,001	Dolfin Int'l. Corp. v. Dolphin Shirt Co.	2(d)	"DOLPHIN" and "DOLPHIN" (and design) [running and cycling shirts, shorts, suits and hats, and swimwear for men, women, and children]	"DOLPHIN SHIRT COMPANY QUALITY SCREEN PRINTING" (and dolphin design) [custom printing services]		No
					Petition to Cancel Granted	Opposition Sustained	TTAB Decision	

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
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	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — JOHN E. KITTLE, Director	308-0661	5/31/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	3/25/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	8/09/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	6/07/93
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	7/29/93
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INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — JOSEPH J. ROLLA, JR., Director	308-1782	9/29/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	10/19/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	4/27/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	5/02/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JANICE A. HOWELL, Director	308-0956	8/26/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	10/07/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	8/04/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	5/10/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	4/19/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	5/27/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — DONALD G. KELLY, Director	308-0861	12/04/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	6/10/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during April 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,015,294 to 4,020,506 inclusive
Plant Patents ..... 4,032 to 4,045

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of April 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/12/93	12/10/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/22/93	02/14/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/18/93	01/06/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/93	01/18/94
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/28/93	12/10/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/93	01/18/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/21/93	01/03/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/22/93	02/22/94
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/12/93	12/29/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/15/93	03/03/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/10/94	02/22/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/29/93	01/25/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/17/93	09/07/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	11/15/93	—0—
Renewals (All Classes)	12/06/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

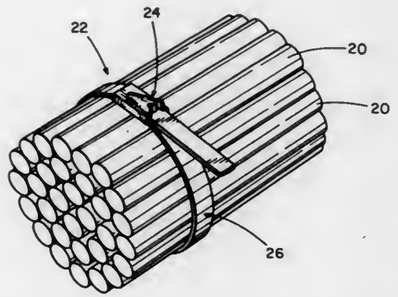
1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

MAY 17, 1994

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,366,602 (2301st)
METAL TIE
Thomas Conlon, Oak Forest, and Jack E. Caveney, Hinsdale, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Reexamination Request No. 90/002,942, Jan. 28, 1993.
Reexamination Certificate for Patent No. 4,366,602, issued Jan. 4, 1983, Ser. No. 178,206, Aug. 14, 1980.
Continuation of Ser. No. 958,296, Nov. 6, 1978, abandoned
Int. Cl.[5] B65D *63/08;* **F16L** *3/08*
U.S. Cl. 24—25



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

New claims **4** and **5** are added and determined to be patentable.

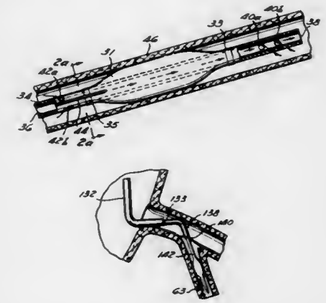
1. A tie for forming a plurality of elongate objects into a bundle and for holding a pair of objects together, said tie comprising:

at least one elongate metallic strap;

a metallic locking head disposed adjacent one end of a strap for receiving another end of a strap and comprising a strap entry face, a strap exit face and a strap-receiving aperture extending therebetween and further comprising a floor and a roof which diverge in the direction of said exit face; and

metallic roller means for lockingly engaging a strap, said head comprising retention means for retaining said roller means, said roller means being movable between a threading position wherein said roller means is disposed adjacent said exit face and a locking position wherein said roller means is closer said entrance face, said tie comprising *spring* means *formed in a portion of said strap* for causing a threaded strap in all of its positions to be maintained in engagement with said roller means without regard to the posture of said head whereby said tie is positive locking.

B1 4,581,017 (2302nd)
CATHETER SYSTEMS
Harvinder Sahota, Seal Beach, Calif., assignor to C.R. Bard, Inc., Murray Hill, N.J.
Reexamination Request No. 90/003,076, Jun. 1, 1993.
Reexamination Certificate for Patent No. 4,581,017, issued Mar. 7, 1983, Ser. No. 473,063, Apr. 8, 1986.
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A method of administering an angioplasty treatment to a patient to produce acceptable blood flow in a stenotic region of a coronary artery having restricted blood flow, comprising:

inserting a tube having an outer surface enclosing a main lumen terminating in a main axial orifice into said coronary artery, said tube having a proximal portion and a distal portion;

inflating a balloon attached to the outer surface of said tube between said proximal portion and said distal portion to compress said stenotic region;

channeling blood flow through the wall of said proximal portion of said main lumen immediately adjacent said balloon to fluidly connect locations within said coronary artery surrounding said proximal and distal portions of said tube while said balloon is inflated within said coronary artery to conduct blood downstream from the portion of said coronary artery occluded by the inflated balloon.

B1 4,743,262 (2303rd)
ACETABULAR CUP PROSTHESIS
Raymond G. Tronzo, 255 Clarke Ave., Palm Beach, Fla. 33480
Reexamination Request No. 90/002,666, Mar. 2, 1992.
Reexamination Certificate for Patent No. 4,743,262, issued May 10, 1988, Ser. No. 29,849, Mar. 24, 1987.
Continuation-in-part of Ser. No. 616,100, Jun. 1, 1984, Pat. No. 4,681,589
Int. Cl.[5] A61F *2/34*
U.S. Cl. 623—22

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

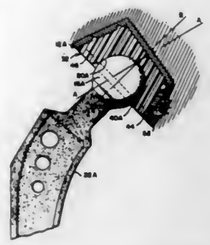
VOL 1162 ISS 3 MY 17 1994 UMI

The patentability of claims **1–8** is confirmed.

New claims **9–11** are added and determined to be patentable.

1. An acetabular cup prothesis comprising a body extending generally longitudinally and terminating into front and rear surfaces, said front surface extending substantially transversely to said body; and

at least one fin for securing said cup to a prepared acetabulum cavity, said fin having a length extending generally longitudinally from said front surface toward said rear surface continuously along said body throughout the entire length of said fin, and said fin being configured so as to extend radially outwardly beyond the perimeter of said



front surface and said body so as to engage with the cavity thereby securing said cup.

REISSUES

MAY 17, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,608

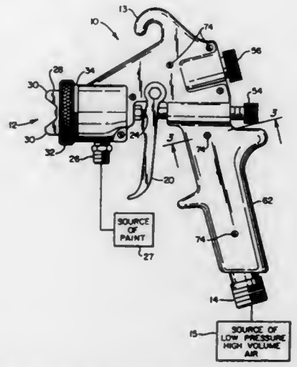
PAINT SPRAY GUN

John W. Hufgard, Novelty, Ohio, assignor to AccuSpray, Inc., Cleveland, Ohio

Original No. 4,915,303, dated Apr. 10, 1990, Ser. No. 297,128, Jan. 17, 1989. Continuation-in-part of Ser. No. 101,563, Sep. 28, 1987, Pat. No. 4,905,905. Application for reissue Apr. 7, 1992, Ser. No. 864,484

Int. Cl.[5] B05B *1/28*

U.S. Cl. 239—300 **31 Claims**



15. A spray gun for use with air atomizable liquid comprising:

a. a gun body forming a manually grippable handle and a spray directing section projecting from said handle;

b. a liquid flow controlling valve supported by said gun body in said spray directing section;

c. a chamber defined within said gun body spray directing section and an aperture defined in a wall of said chamber through which liquid and atomizing air may be directed;

d. liquid directing means for introducing liquid from a liquid supply to said liquid flow controlling valve;

e. air directing means for introducing air under pressure from an air supply to said chamber, said air directing means comprising a passage through which air flows to said chamber;

f. said liquid flow controlling valve disposed at least partly in said chamber, liquid from said valve and air from said chamber interacting so that liquid is atomized and air and atomized liquid are sprayed away from said aperture; and,

g. trigger means for governing operation of said liquid flow controlling valve to initiate and terminate an atomized liquid spray;

h. said gun body comprising first and second body parts each defining a portion of said handle and spray directing section, each body part defining:

i. a liquid flow controlling valve engaging structure;

ii. trigger means engaging structure; and,

iii. an air passage wall section; and,

i. connector means for detachably clamping said body parts in an assembled condition with said liquid flow controlling valve and said trigger means secured in position relative to each other, said air passage wall sections hermetically secured in place when said body parts are clamped, said connector means operable to detach the gun body parts for enabling access to said liquid flow controlling valve, said air directing means and said trigger means.

Re. 34,609

COLLECTORLESS DIRECT CURRENT MOTOR, DRIVER CIRCUIT FOR A DRIVE AND METHOD OF OPERATING A COLLECTORLESS DIRECT CURRENT MOTOR

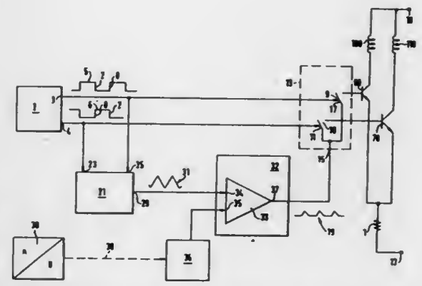
Rolf Müeller, Munich, Fed. Rep. of Germany, assignor to Papst Licensing GmbH, Spaichingen, Fed. Rep. of Germany

Original No. 4,804,892, dated Feb. 14, 1989, Ser. No. 72,264, Jun. 22, 1987. Application for reissue Feb. 13, 1991, Ser. No. 654,493

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1985, 3537403

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—254 **39 Claims**



24. A collectorless direct current motor for driving a fan, comprising

a stator having at least one stator winding,

a permanent magnet rotor having at least two poles and being disposed in the field of the at least one stator winding, and

circuit means for supplying the at least one stator winding with an operating current, the circuit means having a position sensing means for detecting a position of the permanent magnet rotor to determine a commutation phase for the operating current supplied by the circuit means to the stator winding,

the circuit means also including

at least one semiconductor element supplying current to the stator winding,

temperature sensing means for detecting a temperature influenced by the fan,

control means for controlling the at least one semiconductor element during the commutation phase based upon the temperature sensed by the temperature sensing means,

the at least one semiconductor element being controlled by the control means to operate in a switched mode for supplying the current to the stator winding over a part of the commutation phase, which is less than all of the commutation phase, and

the at least one semiconductor element and the control means being coupled to the temperature sensing means and operating to switch the current on only once in a commutation phase in variable dependence upon the detected temperature to change the revolution rate of the motor.

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Re. 34,610

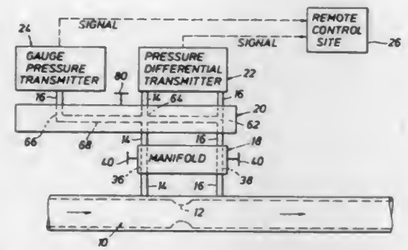
MOUNTING MEANS FOR FLUID PRESSURE TRANSMITTERS

Randall J. Miller, and Alan F. Chon, both of Sugar Land, Tex., assignors to Keystone International Holdings Corp., Houston, Tex.

Original No. 5,036,884, dated Aug. 6, 1991, Ser. No. 615,126, Nov. 19, 1990. Application for reissue Jun. 23, 1992, Ser. No. 903,141

Int. Cl.[5] G01F *1/34*

U.S. Cl. 137—597 **19 Claims**



1. A fluid measuring and transmitting assembly for transmitting to a remote location measurements of fluid pressure in a main flow line in fluid communication with a pair of fluid taps on opposed sides of a reduced diameter orifice in said main flow line; said fluid measuring and transmitting assembly comprising:

a valve manifold having a high pressure flow passage and a low pressure flow passage in fluid communication with said pair of fluid taps;

a [transmitting] *plate-like pressure transmitter* mounting [plate] *adapter* mounted on [said valve] *the* manifold and *capable of supporting two pressure transmitters side-by-side, said adapter* having high and low pressure flow passages therein in fluid communication with said high and low *pressure* flow passages in said manifold;

a differential pressure transmitter mounted on said mounting [plate] *adapter* and having high and low pressure flow passages therein in fluid communication with said high and low *pressure* flow passages in said mounting [plate] *adapter* for measuring the fluid pressure differential between said high and low *pressure* flow passages *and for transmitting the fluid pressure differential to a remote location*; and

a gauge pressure transmitter mounted on said mounting [plate] *adapter* having a flow passage in fluid communication with a predetermined one of said high and low *pressure* flow passages in said mounting [plate] *adapter* for measuring *the pressure in one of said high and low pressure passages* and transmitting the measurement to a remote location.

Re. 34,611

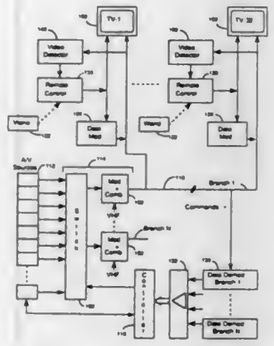
VIDEO SELECTION AND DISTRIBUTION SYSTEM

Robert B. Fenwick, Los Altos Hills; Larry L. Peden, Monte Sereno; Robert Snyder; John W. McMains, both of Saratoga, and Jeffrey R. Gile, Roseville, all of Calif., assignors to On Command Video Corporation, Santa Clara, Calif.

Original No. 4,947,244, dated Aug. 7, 1990, Ser. No. 346,778, May 3, 1989. Application for reissue Jul. 15, 1992, Ser. No. 913,860

Int. Cl.[5] H04N *7/67*

U.S. Cl. 348—7 **12 Claims**



8. A method of transmitting selected video programs to a number of independently controlled video monitors, said method comprising the steps of:

providing a multiplicity of video monitors;

providing a multiplicity of video sources of video signals;

simultaneously coupling, with a video crossbar switch, specified ones of said video monitors to specified ones of said video sources;

storing status information denoting which of said video sources, if any, is coupled to each of said video monitors and denoting which of said video sources are not coupled to any of said video monitors;

generating a menu display image representing a set of currently available video sources which are not coupled to any of said video monitors;

transmitting said menu display image to said video monitors;

locally generating, at the site of said video monitors, video connection requests, each said request specifying a video source to be connected to a specified one of said video monitors; wherein said specified video source is selected from said currently available video sources represented by said menu display image;

centrally receiving said video connection requests; and

coupling via said video crossbar switch the video source specified in each said request to the video monitor specified in that request, while preventing each of a predetermined set of said video sources from being simultaneously connected to two video monitors.

PLANT PATENTS

GRANTED MAY 17, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,729

STRAWBERRY PLANT CALLED 'SWEET CHARLIE'

Charles M. Howard, deceased, late of Dover, Fla. by Billie L. Howard, executor , assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.

Filed Aug. 28, 1992, Ser. No. 936,347

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—48 **1 Claim**

1. A new and distinct variety of strawberry plant, substantially as illustrated and described, characterized by its earliness of production, disease resistance, and the sweet flavor of its fruit.

8,730

ELM TREE VARIETY NAMED WIDELEAF

Raymond H. Smith, Elmsagain Nursery, 961 Bulter Ave., P.O. Box 83, Winnebago, Wis. 54985-0083

Filed Mar. 22, 1993, Ser. No. 35,269

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—53.3 **1 Claim**

1. A new and distinct variety of Elm tree, substantially as described and illustrated.

8,731

ASTER PLANT NAMED PINK MASTER

G. B. H. Bartels, Hornweg 53, 1432 GD Aalsmeer, Netherlands, assignor to G. B. H. Bartels, Aalsmeer, Netherlands

Filed Jul. 6, 1993, Ser. No. 86,146

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of aster plant named Pink Master, as illustrated and described.

8,732

CARNATION NAMED STAGIWIT

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Feb. 24, 1993, Ser. No. 21,843

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.3 **1 Claim**

1. A new and distinctive spray carnation plant, substantially as herein shown and described.

8,733

POINSETTIA PLANT '4-91'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed May 7, 1993, Ser. No. 59,620

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.1 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its blushed pink flower bracts, and self-branching traits.

8,734

POINSETTIA PLANT "H-29"

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed May 7, 1993, Ser. No. 59,614

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.3 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its unique peach pink flower bracts and unusual bract formation and presentation.

8,735

POINSETTIA PLANT GUTBIER MARLENE

Gregor Gutbier, Linz/Rhein, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Apr. 30, 1993, Ser. No. 56,210

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct poinsettia cultivar, substantially as herein described and shown, characterized by its brick-red bract color, vigorous self branching and compact habit.

8,736

ALSTROEMERIA NAMED NEVADA

G. E. Veldhuyzen van Zanten, Hillegom, Netherlands, assignor to Koninklijke van Zanten, Hillegom, Netherlands

Filed Oct. 21, 1992, Ser. No. 964,361

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinctive hybrid alstroemeria plant, substantially as herein shown and described, characterized in particular by its medium size flowers, the outer petals of which are in general of an ivory white color and inner petals being of an ivory white color with many yellow longitudinally extending pencil stripes, said plant having between 30 to 40 leaves per stem.

8,737

ALSTROEMERIA NAMED STAPULA

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Mar. 3, 1993, Ser. No. 25,579

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinctive Alstroemeria plant, substantially as herein shown and described.

8,738

ALSTROEMERIA NAMED STARHAP

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Mar. 3, 1993, Ser. No. 25,580

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinctive Alstroemeria plant, substantially as herein shown and described.

8,739

ALSTROEMERIA NAMED STALOVE

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Mar. 3, 1993, Ser. No. 25,587

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinctive Alstroemeria plant, substantially as herein shown and described.

8,740

ALSTROEMERIA NAMED STAMOLI

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Mar. 11, 1993, Ser. No. 31,397

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinctive Alstroemeria plant, substantially as herein shown and described.

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GRANTED MAY 17, 1994

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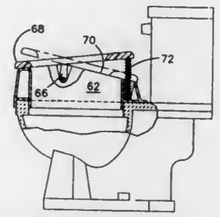
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359-077	5,313,562
364-405	5,313,664

PATENTS

GRANTED MAY 17, 1994

GENERAL AND MECHANICAL

5,311,617
PHYSIOLOGIC TOILET ATTACHMENT
Francis J. Ammatelli, 1235 W. 57th Ter., Kansas City, Mo. 64113, and Edward L. McMullen, 10004 Walnut Dr., Kansas City, Mo. 64114
Filed Apr. 16, 1992, Ser. No. 868,880
Int. Cl.[5] A47K *13/00*
U.S. Cl. 4—237 **3 Claims**



1. A toilet device for raising the legs of a user relative to the trunk of the user, comprising:

an extension body having a lower end adapted to engage with a rim of a bowl of the toilet, and a peripheral wall extending upwardly from said lower end and defining a passage therethrough for waste; and

a pivot seat mounted on said extension body, said pivot seat having a seat portion adapted to engage with the buttocks of the user including a forward end in close proximity to the user's knees and a rear end in close proximity to the user's tailbone, when the user is sitting thereupon, and including a passage therethrough for waste, said seat portion being pivotally mounted to said wall of said extension body for pivoting about an axis substantially horizontal and substantially lateral of the toilet, said axis being located substantially centrally of said forward and rear ends of said seat portion, whereby said pivot seat may be pivoted between first and second positions, in said first position a front portion of said pivot seat being vertically below a rear portion of said pivot seat, and in said second position a front portion of said pivot seat being vertically above a rear portion of said pivot seat.

5,311,618
COMMODE SEAT SPACER ASSEMBLY
Kenneth V. Breimon, and Mary Breimon, both of 12101 N.E. 5th St., Vancouver, Wash. 98684
Filed Feb. 16, 1993, Ser. No. 17,592
Int. Cl.[5] A47K *13/00*
U.S. Cl. 4—239 **2 Claims**

1. A commode seat spacer assembly arranged for mounting to a commode seat, wherein the spacer assembly comprises,

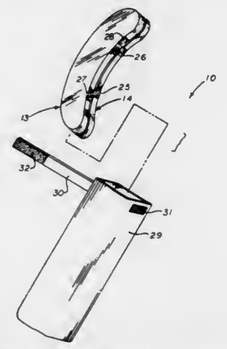
a first support member and a second support member of a mirror image configuration, wherein the first support member includes a first top wall spaced from a first bottom wall, and a first concave arcuate inner side wall spaced from a first convex arcuate outer side wall, and the second support member includes a second top wall spaced from a second bottom wall and a second convex arcuate inner side wall spaced from a second convex outer side wall, wherein the first bottom wall is arranged for securement in the contiguous, complementary, and coextensive relationship relative to the second bottom wall for storage and transport,

and

a flexible bag having a bag cavity arranged for receiving the first support member and the second support member, wherein the first support member and the second support member are in an assembled relationship, with the first bottom wall in said facing relationship to said second bottom wall, with the flexible bag having an entrance opening and a securement strip mounted to the flexible bag adjacent the entrance opening, and the securement strip having a strip first end mounted to the flexible bag, and a strip second end, with a first hook and loop fastener mounted to the flexible bag, and a second hook and loop fastener mounted to the strip end for securement to the first hook and loop fastener,

and

the first bottom wall including a first U-shaped bracket and a second U-shaped bracket, wherein the first U-shaped bracket includes first spring fingers extending beyond the first bottom wall and the second U-shaped bracket includes second spring fingers extending beyond the first bottom wall, wherein the first spring fingers are laterally biased towards one another and the second spring fingers are laterally biased towards one another, and the second bottom wall includes a third U-shaped bracket having third spring fingers extending beyond the second bottom wall and a fourth U-shaped bracket having fourth spring fingers extending beyond the second bottom wall, wherein the third spring fingers are laterally biased towards one another, and the fourth spring fingers are laterally biased towards one another, and the first and second spring fingers are arranged for biased securement of the respective second concave and second convex inner and outer side walls, with the third and fourth spring fingers arranged for biased engagement of the respective first concave and first convex inner and outer side walls when the first member and the second support member are arranged with the first bottom wall in a facing relationship relative to the second bottom wall.

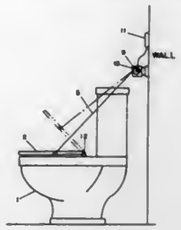


5,311,619
DEVICE FOR OPENING AND CLOSING TOILET SEAT
Keith J. Ward, 3351 E. 4th St., Tulsa, Okla. 74110
Filed Dec. 17, 1991, Ser. No. 808,667
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—246.1 **6 Claims**

1. A device for opening and closing a toilet seat hingedly attached to a toilet comprising an elongated flexible means having on one end of the elongated flexible means a means for attachment to extend from the outer periphery of the toilet seat at a point removed from the hinge attachment and having attached to the other end of the elongated flexible means a

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pulley adapted to be located at a position remote from the toilet seat and capable of acting as a reel, wherein said pulley is mounted on the shaft of a reversing electric motor and said motor is controlled by a switch which operates the motor in



reversing directions, wherein the motor has a holding means for holding the seat after the seat is raised from a horizontal or closed position to less than full vertical or open position and wherein the holding means can be released so that the motor can lower the seat back to the horizontal or closed position.

5,311,620

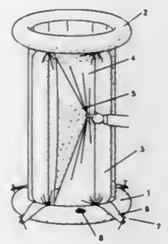
OUTDOOR PORTABLE SHOWER

James P. Ratje, 753 Stagecoach Dr., Las Cruces, N. Mex. 88011

Filed Jun. 4, 1993, Ser. No. 72,531

Int. Cl.[5] A47K *3/23*

U.S. Cl. 4—599 **3 Claims**



1. A portable showering device comprising:

a self standing enclosure comprised of a surrounding wall of flexible material with a vertical overlapped entrance, an inflatable bottom ring adapted to be filled with air or water and formed of said flexible material and permanently attached to a bottom edge of said surrounding wall, a plurality of vertical air inflatable columns formed of said flexible material and permanently attached to a top edge of said surrounding wall comprising an air inflatable top ring such that when said self standing enclosure is inflated a person may enter and obtain privacy for showering;

means for introducing a water spray into said enclosure for showering; and,

anchoring means for anchoring said enclosure to the ground.

5,311,621

SHOWER UNIT

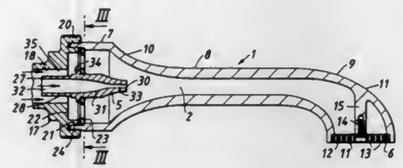
Ming B. Tung, London, United Kingdom, assignor to British Gas PLC, London, United Kingdom

Continuation of Ser. No. 611,675, Nov. 13, 1990, abandoned. This application May 21, 1992, Ser. No. 887,373

Claims priority, application United Kingdom, Nov. 13, 1989, 8925601

Int. Cl.[5] B05B *1/00*

U.S. Cl. 4—615 **7 Claims**



1. A shower unit, comprising:

a shower head body having internally thereof a hollow passage extending from a first end of the body to an opposite second end of said body where one of a shower head and a rose is positioned, said passage being for the flow of water therealong and having a length dimension which is greater than any width dimension of the passage when said width dimension is measured at a right-angle to the direction of said water flow along said passage at any point along the water flow direction, said passage leading directly to said one of a shower head and rose at said second end of said body,

said passage defining a mixing chamber between said first and second end of the body in which hot water supplied to the mixing chamber can be entrained by cold water supplied to said mixing chamber to form at least a partial mixture for discharging from said one of said shower head and rose,

a jet disposed at said first end of the body and terminating within said mixing chamber, said jet having a convergent passage portion therein for accelerating a stream of water flowing through said jet and through which said jet, in use, cold water is injected into the mixing chamber to entrain said hot water from a supply introducing said hot water into the passage means at said first end, between said jet and the body, said hollow passage wholly surrounding a part of the length of said jet which is within said passage such that a hot water supply path is provided which wholly surrounds an entire length portion of said part of the length of said jet and wherein said body is self-supporting such that the body retains an originally formed shape thereof when held at said first end in a cantilever fashion, and

a water distribution plate located at said first end of said body for surrounding and interconnecting said jet with said body at an upstream portion of said mixing chamber where said first end of said body is located, said water distribution plate having a plurality of apertures formed therein for flow of hot water therethrough into said mixing chamber.

5,311,622

PATIENT HANDLING DEVICE

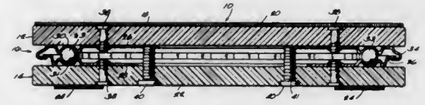
Roy H. Allen, 265 North 110th St., Wauwatosa, Wis. 53226

Filed Jul. 6, 1992, Ser. No. 909,148

Int. Cl.[5] A61G *7/10*

U.S. Cl. 5—81.1 **2 Claims**

1. A device for facilitating the transfer of an incapacitated individual from a bed to a wheelchair and including a foot support means having a generally planar upper surface for receiving the patient's feet, a base disposed vertically below said foot support means and having a generally planar lower surface for engaging a support floor, coupling means for rotatably coupling the foot support means to said base for relative rotational movement about a generally vertical axis and with the upper surface of the foot support means and the lower surface of the base lying in generally parallel horizontal planes so that the feet of an individual may be placed on the foot support means while the individual is seated on the side of a bed and permitting the individual's upper body to be lifted from the bed and the foot support means rotated to reposition the individual in a position for being seated in a wheelchair adjacent the bed, means disposed on the lower surface of the base to inhibit sliding, said foot support means and the base comprising first and second disc-like members, respectively, disposed in a parallel, side-by-side manner, said coupling means



including a first member secured to said first disc-like member and a second member secured to the second disc-like member and bearing means disposed between said first and second members to facilitate rotational movement therebetween, and adjustable means mounted on one of said disc-like members and frictionally engageable with the other disc-like member for retarding relative rotational velocity between said upper and lower disc-like members, wherein said adjustable means extend and move along a generally vertical axis and includes means threadably received in one of said disc-like members and having an end portion movable into frictional engagement with the other disc-like member for retarding the relative rotational movement between said disc-like members to minimize the possibility that an incapacitated person on the foot support will be thrown off when the foot support is rotated.

5,311,623

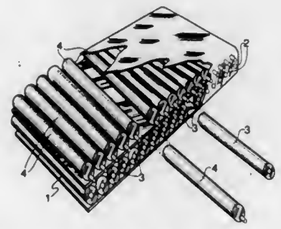
HYDROPNEUMATIC MATTRESS

Elias A. M. Hendi, Callao 25 5th Floor "K", Buenos Aires, Argentina

Filed Oct. 16, 1992, Ser. No. 962,267

Int. Cl.[5] A47C *27/10;* **A61G** *7/04*

U.S. Cl. 5—450 **2 Claims**



1. A hydropneumatic mattress having a length and a width and with the length being greater than the width, said hydropneumatic mattress comprising:

a top layer;

an intermediate flexible impervious layer

a bottom layer;

a plurality of air containing tubes situated between said bottom and intermediate layers, said air containing tubes extending transversely of the mattress across its width;

a plurality of water containing tubes situated between said intermediate and top layers, said water containing tubes extending transversely of the mattress across its width;

each said water containing tube being positioned directly above an air containing tube;

each said water containing tube and each said air containing tube being individually removable from said mattress;

each said air containing tube having a valve to enable adjustment of the amount of air in each said air containing tube;

each said water containing tube having a valve to enable adjustment of the amount of water in each said water containing tube; and

said mattress when in use being articulatable along its length.

5,311,624

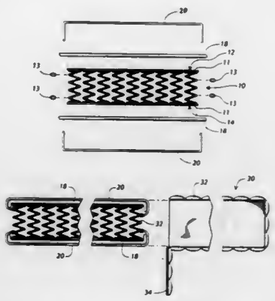
MATTRESS HAVING 2-PLY MOISTURE BARRIER AND REPLACEABLE UPHOLSTERY

Ronald G. Hutchinson, Dunwoody, Ga., assignor to Simmons Company, Atlanta, Ga.

Filed Mar. 1, 1993, Ser. No. 25,022

Int. Cl.[5] A47C *27/045, 27/04*

U.S. Cl. 5—478 **17 Claims**



1. A mattress construction, comprising:

a) an innerspring construction defining an upper primary surface and including at least one spring;

b) a laminated liquid-resistant barrier layer for discouraging liquid passage, said barrier layer itself comprising:

a liquid impervious layer for discouraging liquid passage; and

a structural backing layer comprised on non-woven polypropylene fibers, said structural backing layer attached permanently to said liquid impervious layer;

c) attachment means for attaching said laminated liquid-resistant layer to said innerspring construction such that said laminated liquid-resistant layer is positioned adjacent said upper primary surface of said innerspring construction; and

d) a removable cover.

5,311,625

PORTABLE, INTEGRATED, UNIVERSALLY ADJUSTABLE POSITION CONTROL SYSTEM

Donald Barker, Sandy Hook, and John Hamma, Milford, both of Conn., assignors to Truman Products, Abington, Pa.

Filed Jul. 22, 1992, Ser. No. 916,636

Int. Cl.[5] A61G *7/06*

U.S. Cl. 5—615 **33 Claims**

1. A portable, integrated, universally adjustable position controlling system for enabling users to position a back-supporting portion thereof into any one of a plurality of alternate positions, said position controlling system comprising:

A. a first, portable, self-contained, unitary, movably adjustable support assembly comprising

a. a support pad for comfortably supporting the user;

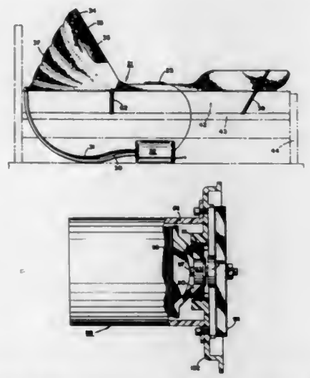
b. cover means peripherally surrounding and enveloping substantially the entire support pad;

c. position control means

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1. securely mounted between the support pad and the cover means in movement controlling relationship with a portion of the support pad;
2. constructed for moving the support pad through an arcuate distance of about 80° and securely supportingly maintaining the support pad in any position between 0° and 80°, and
3. responsive to a control signal to arcuately move the support pad away from a portion of the cover means until a desired raised position is reached and maintain the support pad in the raised position;

d. shroud means cooperatively associated with the cover means in peripherally surrounding, enclosing, visually obscuring relationship with the support pad and at least a portion of the position control means maintaining the position control means in contact with the support pad throughout the entire arcuate movement thereof;



B. control means connected to an air flow control assembly for providing a control signal and transmitting the control signal to an air flow control assembly; and

C. an air flow control assembly

a. constructed for drawing air from the ambient surroundings and delivering a continuous air flow to the position control means of the first support assembly for causing said position control means to arcuately pivot, and

b. incorporating valve means responsive to the control signal for selectively opening and closing air flow passageways incorporated therein for assuring the delivery of the air flow to the desired location;

whereby a completely integrated, portable, position-controlling system is attained which is capable of being easily transported to any desired location and placed on any desired support surface for providing the user with complete adjustable movement of the support assembly by employing the air flow control assembly connected therewith.

5,311,626

PROCESS FOR THE WET TREATMENT OF TEXTILE TUBULAR FABRIC

Christian Strahm, Bronschhofen, Switzerland, assignor to Solipat AG, Zug, Switzerland

Filed Sep. 21, 1992, Ser. No. 947,697

Claims priority, application Switzerland, Sep. 23, 1991, 2812/91-8

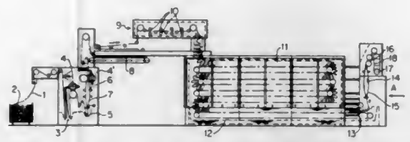
Int. Cl.[5] D06B *21/00*

U.S. Cl. 8—149.1 **14 Claims**

1. A method for the continuous wet treatment of textile tubular fabric, characterized in that said method comprises the steps of:

pre-treating said fabric to render said fabric in a wet state and in a strand form;

inflating said fabric to form a balloon by means of a gaseous medium so that a treatment fluid is evenly distributed over said balloon, and said inflating step thereby maintaining said fabric in an open-width form;



combining said fabric in open-width form to return said fabric to said strand form by guiding said fabric in open-width form through an overflow pipe filled with a treatment fluid; and

repeating said inflating and combining steps a plurality of times in analogous sequence.

5,311,627

METHOD AND APPARATUS FOR DISCONTINUOUS WET TREATMENT OF A HANK OF FABRIC

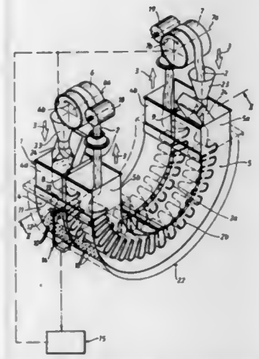
Werner Koch, Erbach-Bullau, and Gerd Kolmer, Erbach/Odw., both of Fed. Rep. of Germany, assignors to Bruckner Apparatebau GmbH, Erbach/Odw., Fed. Rep. of Germany

Filed Apr. 13, 1993, Ser. No. 46,771

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1992, 4212674

Int. Cl.[5] D06B *3/26, 3/28*

U.S. Cl. 8—152 **16 Claims**



1. In a process of discontinuous wet treatment of a continuous length of a hank of fabric (2) with a liquid treatment solution wherein sections of fabric (2a, 2b) run parallel and simultaneously through adjacent treatment chambers (4,5) of a liquid-containing treatment compartment (1), the improvement therein of:

transporting the sections of fabric out of each treatment chamber and into the other treatment chamber;

detecting the load of the hank of fabric in each treatment chamber;

in response to detecting the load of the hank of fabric being greater in one treatment chamber than the load of the hank of fabric in the other treatment chamber, transporting the section of fabric out of the treatment chamber having the larger load at a greater rate than transporting the other section of fabric out of the treatment chamber having the smaller load.

16. Apparatus for discontinuous wet treatment of a hank of fabric (2) comprising:

a treatment compartment (1) divided into parallel treatment chambers (4, 5) mounted adjacent each other for receiving sections of a hank of fabric;

transport elements (6, 7) for each treatment chamber for progressively moving a section of the hank in one treatment chamber to the other treatment chamber;

balance means (11, 12) for pivotably balancing said chambers about a pendulum axis; and

means (14, 15) responsive to an imbalance of said treatment chambers to adjust the rate of movement of a section of the hank from at least one treatment chamber to the other.

5,311,628

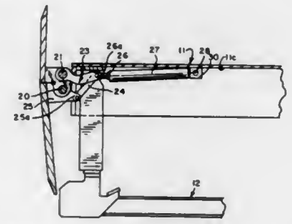
DOCK LEVELER WITH AN IMPROVED AUTOMATIC MATERIAL HANDLING VEHICLE BARRIER

Scott L. Springer, Milwaukee, and Norbert Hahn, Franklin, both of Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Jun. 5, 1992, Ser. No. 894,087

Int. Cl.[5] E01D *1/00*

U.S. Cl. 14—71.1 **7 Claims**



1. A dock leveler assembly for a loading dock comprising:

(a) a pivotally mounted ramp adjustable between a first position wherein an exposed surface of said ramp is substantially coplanar with a platform surface of the dock and a second position for loading and unloading the bed of a vehicle parked at the dock;

(b) a barrier member pivotally connected about an axis to a front edge portion of said ramp for selected solely pivotal movement about the axis between an operative position wherein a substantial portion of said barrier member angularly protrudes above the ramp exposed surface, and an inoperative position, wherein no substantial portion of said barrier member angularly protrudes above the ramp exposed surface;

(c) a lip extension connected to said barrier member for pivotal movement between a first position wherein said lip extension depends from the ramp front edge portion and a second position wherein said lip extension is cantilevered from said ramp front edge bridging a gap formed between said ramp front edge portion and the bed of the parked vehicle, the lip extension being operatively connected to the barrier member such that when said lip extension is in the first position, said barrier member may selectively assume either the operative or inoperative position, and when the lip extension is in the second position, said barrier member assumes said inoperative mode; and

(d) at least one actuator for initiating and coordinating the pivotal movement of said barrier member and said lip extension.

5,311,629

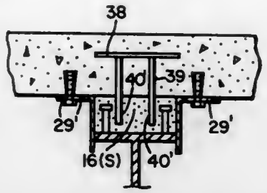
DECK REPLACEMENT SYSTEM WITH IMPROVED HAUNCH LOCK

Peter J. Smith, 157 Parkhurst Rd., Gansevoort, N.Y. 12831

Filed Aug. 3, 1992, Ser. No. 924,200

Int. Cl.[5] E01C *7/00*

U.S. Cl. 14—73.1 **7 Claims**



1. A precast, quadrilaterally shaped slab having disposed therein at least one adjusting screw means proximate each of an end thereof, said slab having demarcated on the underside thereof at least one haunch region characterized by at least two protruding and downwardly depending flat elongate legs of right angled plates that are parallel and spacedly disposed to each other and are fixedly adjustable on, and relative to, said underside by the capture of a portion of each plate proximate slab-contacting surfaces of said plates by slab-anchored bolts, said region also characterized by at least one rigidly fixed grout-engaging means which depends downwardly from the slab between said plates and further characterized by at least one orifice which communicates the region with a top surface of the slab.

5,311,630

ROTARY ERASER

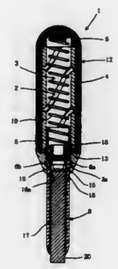
Shinsuke Nakamura, and Satoshi Mochizuki, both of Tokyo, Japan, assignors to Midori Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,002

Claims priority, application Japan, Dec. 24, 1991, 3-111999

Int. Cl.[5] B43L *19/00*

U.S. Cl. 15—3.53 **1 Claim**



1. A rotary eraser comprising:

a cylindrical body having a top opening, a bottom opening, and an inner periphery at which a spiral groove is formed;

an eraser holder including a flange located in said cylindrical body and having an outer periphery, a plurality of protrusions extending from the outer periphery of said flange into said spiral groove, and an eraser holding cylinder which is approximately cylindrical and extends axially from the flange beyond the bottom opening of said body, said eraser holding cylinder having a slot extending axially therealong;

an eraser bearer in the eraser holding cylinder adjacent to

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the flange, the eraser bearer having engaging protrusions which protrude outward from the slot;

a rod-shaped eraser located inside the eraser holder;

an outer cylinder supported rotatably by the body, said outer cylinder having an upper end upon which are radially arranged teeth that contact a bottom surface of the flange of the eraser holder, and an internal spiral groove that receives the engaging protrusions of said eraser bearer, and said outer cylinder protruding from said body and surrounding said eraser holding cylinder;

a cap plugging up the top opening of said body; and

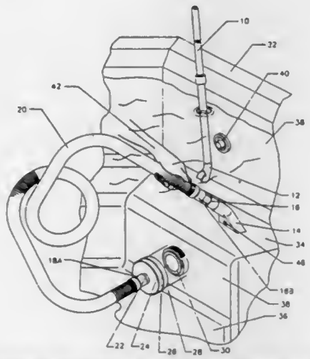
a restoring force component which is provided between the cap and said flange of the eraser holder located in said body, said restoring force component exerting a biasing force opposing an externally applied downward force generated by a user on said rod-shaped eraser via said body and restoring the rotary eraser to a resting position upon cessation of the externally applied downward force.

5,311,631

CLEANING APPARATUS FOR SPAS AND HOT TUBS

Cossie L. Smith, Jr., 4469 Firmont Dr. SE., Port Orchard, Wash. 98366

Filed Oct. 21, 1992, Ser. No. 964,448
Int. Cl.[5] E04H *3/20*
U.S. Cl. 15—1.7 **3 Claims**



1. A cleaning apparatus for cleaning a spa, hot tub or like open-topped water enclosure which contains water, said enclosure having at least one main outlet, defined by a projection, and at least one inlet located therein to circulate the water from the enclosure via a circulation pump, thereby creating suction pressure through the at least one main outlet, said apparatus comprising:

a) an outlet cover adapter of continuous band form defining a passage therethrough having spaced parallel longitudinal ends, one end adapted to fit over the at least one main outlet of the enclosure for detachable engagement therewith, the other end of the outlet cover adapter having a recess around its periphery,

b) a filter,

c) a connector defining a passage therethrough, said connector having spaced opposite sides, one side defining a broad opening sealingly engaging said recess, said connector sandwiching the filter between the one side and the recess such that said filter completely covers the broad opening, the other side of the connector defining a cylindrical projection having an opening smaller than said broad opening therethrough such that the outlet cover adapter and connector are held in place on the outlet by the suction pressure created by the circulation pump,

d) an elongated flexible vacuum hose having one end engaging said cylindrical projection and the other end has coupled thereto a swivel cuff,

e) a vacuum tool, said tool comprises an elongated member with a fluid passage therethrough, said member having a fluid inlet at one end fluidly communicating with said passage, said member connected at the other end to the swivel cuff, said cuff allowing rotation of the tool relative to the hose,

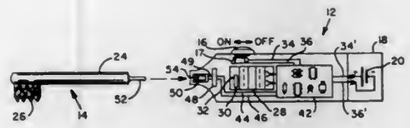
f) an elongated, telescopic extension pole having a connector at one end, said connector is removably attached to said elongated member, said apparatus utilizing the spa, hot tub or like open-topped water enclosure's circulation pump to generate suction pressure therethrough to remove debris from said enclosure for collection in said filter.

5,311,632

ULTRASONIC PLAQUE REMOVAL DEVICE

Leslie T. Center, P.O. Box FL 284, Smith's Parish FL BX, Bermuda

Filed May 12, 1993, Ser. No. 61,617
Int. Cl.[5] A61C *17/34;* A46B *13/02*
U.S. Cl. 15—22.1 **8 Claims**



1. An ultrasonic plaque removal device for removing plaque from teeth comprising:

a) a toothbrush device having a hollow grip portion and a brush portion extending from and being separable from said brush portion, said toothbrush device having a central axis extending through said brush portion and said grip portion;

b) first means located within said grip portion for creating a rotational vibration of said toothbrush device about said central axis; and

c) second means located within said grip portion connected with and producing an ultrasonic wave within said brush portion.

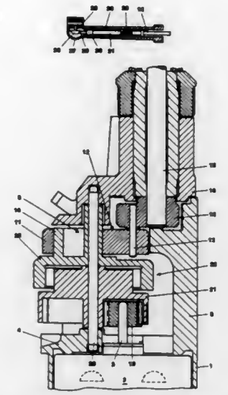
5,311,633

ELECTRIC POWER DRIVEN TOOTHBRUSH

Karl Herzog, Frankfurt am Main, and Gustav Gassner, Kelkheim, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/DE90/00671, § 371 Date May 1, 1992, § 102(e) Date May 1, 1992, PCT Pub. No. WO91/07115, PCT Pub. Date May 30, 1991
PCT Filed Sep. 5, 1990, Ser. No. 854,670
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1989, 3937854
Int. Cl.[5] A46B *13/02*
U.S. Cl. 15—28 **15 Claims**

1. An elongated electric power driven toothbrush comprising a rotary toothbrush section coupled with an elongated drive shaft, said toothbrush further comprising a handle section, a driving mechanism, and an electric motor disposed in said handle section, wherein said driving mechanism comprises a crank, a connecting rod, and a rocker connected together as a four-bar linkage, said crank adapted to be driven by said electric motor said rocker being coupled to said drive shaft for oscillation therewith, said crank driving in an oscillatory manner at least indirectly said drive shaft of said toothbrush section through said connecting rod and said rocker, wherein said crank comprises an eccentric disk and said connecting rod includes a bearing eye receiving said eccentric disk in a rotatable relationship therethrough, said driving mechanism further comprising a spindle, a bearing block, and a bearing plate, said spindle extending through said eccentric disk and, on one side



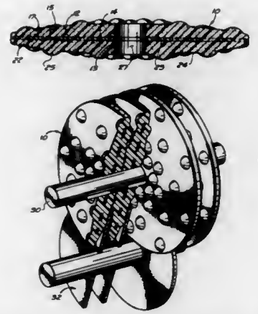
of said eccentric disk, being rotatably carried in said bearing block and, on an opposite side of said eccentric disk, being rotatably carried in said bearing plate.

5,311,634

SPONGE CLEANING PAD

Nicholas Andros, 913 W. Glenrosa, Phoenix, Ariz. 85013

Filed Feb. 3, 1993, Ser. No. 12,910
Int. Cl.[5] A47L *25/00*
U.S. Cl. 15—97.1 **10 Claims**



4. Improvement to a cleaning apparatus having driving means for rotating cleaning pads, and support apparatus for supporting a disk shaped article having a first and a second surface, said improvement comprising:

a first and a second cleaning pad mounted on said driving means in opposed fashion for receiving said disk shaped article therebetween such that said first and second surfaces of said disk shaped article is adapted to be in cleaning engagement with said first and second cleaning pads respectively;

said first and second cleaning pads each including;

a disk shaped plate having opposed major surfaces, an axis of rotation extending through said major surfaces and having a plurality of apertures extending therethrough,

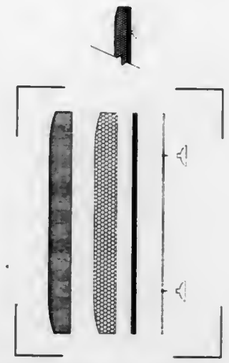
a disk shaped sponge affixed to one of said major surfaces; and coupling means for coupling said cleaning pad to said driving means.

5,311,635

SHOWER BATH AID

Gaylon L. Moore, P.O. Box 382, Odessa, Tex. 79760

Filed Jun. 28, 1993, Ser. No. 82,791
Int. Cl.[5] A47K *7/02*
U.S. Cl. 15—244.3 **1 Claim**



1. A back cleaning apparatus comprising:

a backer board comprising a substantially rigid sheet member having a first and second opposite sides;

a vinyl sheet attached to and coextensive with the first side of the backer board;

a plurality of suction cups outwardly extending from said vinyl sheet for selectively attaching said apparatus to a supporting surface;

a sponge rubber member attached to and coextensive with the second side of the backer board; and

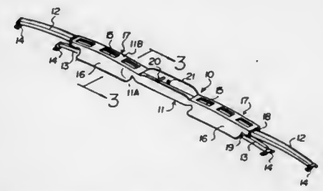
a covering material attached to and substantially covering said sponge rubber member.

5,311,636

WINDSHIELD WIPER FRAME

Albert Lee, 232 Margate Rd., Timonium, Md. 21093

Continuation of Ser. No. 744,418, Aug. 13, 1991, abandoned. This application Jul. 21, 1992, Ser. No. 915,750
Int. Cl.[5] B60S *1/38, 1/04*
U.S. Cl. 15—250.42 **19 Claims**



12. A windshield wiper assembly for a motor vehicle, which comprises:

a wiper arm attached to a body of said motor vehicle;

a windshield wiper frame comprising an elongated bridge member attached to said wiper arm, said bridge member having a flat front surface and a flat rear surface which are generally parallel to one another, and a top surface connecting said front and rear surfaces, said bridge member

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supporting a bendable lip which contacts a windshield glass of said motor vehicle, said bendable lip having two sides; and

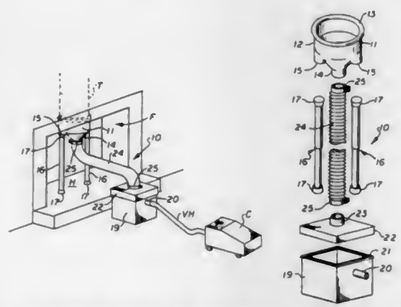
means for directing air flow to press said bridge member downwardly, said means for directing comprises two horizontally elongated vanes extending downwardly and at a slant from said front surface of the bridge member, a gap being provided between the two vanes, a portion of the air flow passing through the gap, the two vanes direct another portion of the air flow over said bridge member such that a downward force is exerted on the bridge member.

5,311,637

VACUUM APPARATUS FOR CLEANING FIREPLACE FLUES

Kenneth J. Broussard, Rte. 5, Box 4, Beaumont, Tex. 77713

Filed Mar. 22, 1993, Ser. No. 34,522
Int. Cl.[5] F23J *1/00*
U.S. Cl. 15—301 **10 Claims**



1. A vacuum apparatus for temporary installation in a fireplace or stove of the type having a central opening with a floor at the bottom and a flue at the top thereof which apparatus is to be connected to a conventional vacuum cleaner for cleaning the flue, the apparatus comprising;

a hollow adapter member having an open top end and an upper portion configured to generally conform to the size and shape of the bottom portion or throat of the flue of the fireplace or stove and having an open bottom end;

at least one elongate vertically adjustable tubular leg having a top end engaged on said adapter member and a bottom end engaged on the floor of the fireplace or stove, said at least one tubular leg being extensible for supporting and maintaining said adapter member upper portion in form engagement with the bottom portion or throat of the flue of the fireplace or stove;

a hollow enclosed collection container having an inlet and an outlet, said outlet adapted to be connected to an air intake of the conventional vacuum cleaner; and

a length of flexible hole releasably connected at one end to said adapter member open bottom end and releasably connected at its other end to said collection container inlet;

said adapter member, said flexible hose, and said collection container providing an air flow passageway from the interior of the flue of the fireplace or stove, through said adapter member, said flexible hose, into the interior of said collection container, and through said collection container outlet into the air intake of the conventional vacuum cleaner; whereby

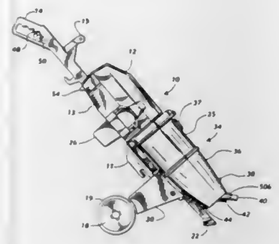
when the conventional vacuum cleaner is on, soot, ash, and particles of burned materials dislodged from the interior of the flue will be drawn into said adapter member, and through said flexible hose, into the interior of said collection container wherein heavier materials will fall to the bottom of said collection container and lighter materials will be drawn from said collection container and inducted into the conventional vacuum cleaner and captured by an existing filter in the conventional vacuum cleaner.

5,311,638

CLEANING DEVICE

Kent J. Furcron, Bristol, and John W. Walch, Abingdon, both of Va., assignors to The Regina Company, Atlanta, Ga.

Continuation of Ser. No. 730,203, Jul. 15, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 86,752
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—321 **13 Claims**



1. A cleaning system of the type which applies a cleaning fluid to a surface to be cleaned and subsequently vacuums dirty cleaning fluid from the surface, said system comprising:

a main cleaner unit comprising a cleaning fluid pump, cleaning fluid supply means, first fluid conduit means for connecting said cleaning fluid supply means to an inlet of said cleaning fluid pump, switch means for selectively activating said pump, main cleaner unit actuator means for actuating said switch means, and second fluid conduit means for directing cleaning fluid output from a cleaning fluid nipple connector,

said main cleaner unit further comprising an air/liquid separator and a blower attached thereto, a motor for driving said blower, said blower drawing air and dirty fluid from a first end of a suction conduit into said air/liquid separator, said separator separating the air from the dirty cleaning fluid and exhausting said air through an exhaust conduit and funneling said dirty cleaning fluid to a dirty cleaning fluid storage tank, a second end of said suction conduit terminating in a generally cylindrical flange, said cylindrical flange extending parallel to said cleaning fluid nipple connector,

a floor nozzle including a first spray nozzle for spraying said cleaning solution onto the floor, said first spray nozzle having a bore therein for connecting said first spray nozzle to said cleaning fluid nipple connector, said floor nozzle further comprising a suction passageway leading from a suction opening to a coupling collar, spraying means affixed to said coupling collar, whereby said coupling collar detachably connects to said cylindrical flange of said main cleaner unit suction conduit with said cleaning fluid nipple connector detachably fitting in said bore of said first spray nozzle;

a hand tool including a second spray nozzle for applying cleaning fluid to a surface to be cleaned, a third fluid conduit means for supplying said second spray nozzle with cleaning fluid, valve means for controlling the flow of cleaning fluid in said third fluid conduit means, and hand tool actuator means for actuating said valve means, said hand tool further comprising a suction nozzle and attachment means for detachably connecting both said suction nozzle and said third fluid conduit of said hand tool to said cylindrical flange of said main cleaner unit suction conduit and said cleaning fluid nipple connector,

respectively, whereby said hand tool may be attached to said main unit suction conduit and main unit cleaning fluid nipple connector when said floor nozzle is detached therefrom; and

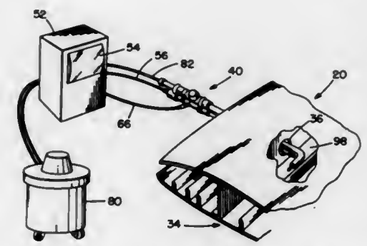
means for selectively locking said main cleaner unit actuator means in a position so that said pump remains on, whereby said hand tool actuator means actuates said valve means to control the application of cleaning fluid to the surface to be cleaned when said hand tool is attached to said main cleaner unit.

5,311,639

SYSTEM FOR DETECTING AND REMOVING FOREIGN OBJECT DEBRIS

Geoffrey C. Boshler, Greenbrier, Tenn., assignor to Avco Corporation, Providence, R.I.

Filed May 26, 1993, Ser. No. 67,722
Int. Cl.[5] A47L *9/02*
U.S. Cl. 15—324 **10 Claims**



1. A system capable of insertion through a small-sized opening into an enclosed region for detecting and removing foreign object debris from the enclosed region comprising:

an elongated tubular borescope having an outer peripheral surface and extending between proximal and distal ends, said borescope including:

first and second windows in said outer peripheral surface adjacent said distal end;

a source of light remote from said distal end;

first optical transmission means within said borescope for transmitting light from said light source to and through said first window to illuminate a debris containing region to be inspected externally of said distal end of said borescope;

television means for presenting an image to a viewer;

second optical transmission means within said borescope for transmitting an image from the debris containing region to said television means;

a vacuum conduit extending between a near end and a tip end proximate to said distal end of said borescope and being flexible at least adjacent said tip end, said vacuum conduit being operably connected to a source of vacuum to create a suction at said tip end; and

an elongated guide sleeve having a longitudinal axis for slidably receiving said vacuum conduit therethrough, said guide sleeve extending between first and second ends, said near end of said vacuum conduit being external of said guide sleeve and extending beyond said second end, said tip end of said vacuum conduit being movable relative to said guide sleeve between a retracted position whereat said tip end of said vacuum conduit is substantially coincident with said first end of said guide sleeve and an extended position whereat said tip end of said vacuum conduit is distant from said first end, said first end of said guide sleeve being capable of articulation from a neutral position aligned with said longitudinal axis and an operating position extending transverse of said longitudinal axis whereby said tip end of said vacuum conduit is similarly turned to an operating position extending transverse of said longitudinal axis;

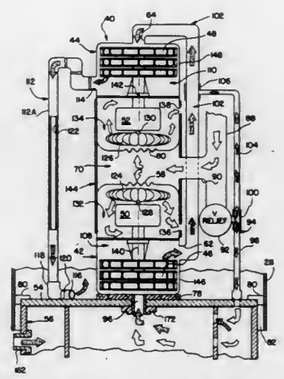
said vacuum conduit being rotatable relative to said guide sleeve about said longitudinal axis to position said tip end thereof proximate to the debris at the debris containing region when said tip end is in the operating position to thereby withdraw the debris for disposal.

5,311,640

DENTAL VACUUM APPARATUS

Robert S. Holland, P.O. Box 774, Georgetown, Conn. 06829

Filed Aug. 21, 1992, Ser. No. 934,020
Int. Cl.[5] A47L *5/38*
U.S. Cl. 15—353 **22 Claims**



1. A vacuum apparatus for a dental operatory comprising

(a) a pair of vacuum motor fan units, each unit including

(i) a blower with a vacuum air inlet and a vacuum air outlet, and

(ii) a motor drivingly connected to the blower and having a motor air inlet and a motor air outlet,

(iii) the vacuum air outlet of one of the pair of blowers being connected in series relation to the vacuum air inlet of the other blower,

(b) mounting means forming a common sealed plenum chamber and maintaining the vacuum motor fan units with their motor air inlets adjacent one another and opening into the plenum chamber for communicating the plenum chamber with the motors, and

(c) an air cooling circuit including and air supply line connected to the plenum chamber for supplying cooling air to the plenum chamber and to the motors.

5,311,641

APPARATUS FOR DETERMINING ANY CONTAMINATION OF DUST, ETC., IN A DUCT PRIOR TO CLEANING THE DUCT

Kenji Matsuura, Moriyama, and Katsumi Toritani, Miki, both of Japan, assignors to Ataka Construction & Engineering Co., Ltd., Osaka and Kobe Mechatronics Co., Ltd., Kobe, both of Japan

Filed Oct. 28, 1992, Ser. No. 967,502
Claims priority, application Japan, Jul. 27, 1992, 4-220683
Int. Cl.[5] A47L *5/14*
U.S. Cl. 15—406 **2 Claims**

1. An apparatus for searching for any contamination of an inside surface of a duct, comprising:

a traveling truck (3);

a driving means for driving said traveling truck forwardly

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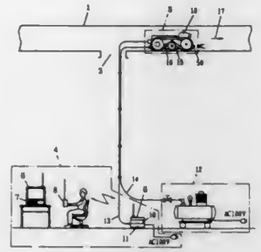
and backwardly in an interior of said duct (1) whose inside contamination is to be investigated;

a monitor video camera (5) positioned on said traveling truck (3) for monitoring an inside view of said duct (1);

a remote monitor image display means (6) for displaying an image taken by said monitor video camera;

a transceiver (9) for transmitting radio signals from and to said remote monitor image display means and via a connecting line (13) from and to said video camera;

at least one compressed air ejecting nozzle (50) provided on a forward end of said traveling truck for ejecting compressed air toward inside surfaces of said duct firstly to permit an examination by said video camera whether any dust has accumulated on said inside surfaces of said duct and is capable of being blown off by said compressed air, and secondly to expose the inside surfaces of said duct for viewing by said video camera by blowing off said dust;



an air compressor for supplying compressed air to said at least one compressed-air ejecting nozzle via an air transmission tube (14);

an electromagnetic control valve in said air transmission tube for controlling the compressed air supplied to said compressed-air ejecting nozzle;

an electronic circuit connected with said transceiver for controlling said driving means, said monitor video camera and said electromagnetic control valve,

a remote control for controlling said remote monitor image display means and said transceiver;

whereby the inside contamination of said duct is made clear both by determining if any dust accumulated inside the duct is capable of being blown off and by observing underlying contamination appearing on the inner surfaces of the duct if the accumulated dust has been blown off.

5,311,642

DOOR CLOSER WITH A DETENT FOR HOLDING A DOOR OPEN AND THE DETENT THEREFOR

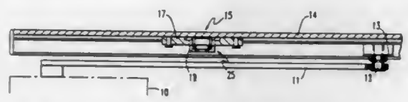
Horst Tillmann; Dietrich Jentsch, both of Ennepetal; Thomas Hering, Wetter; Thomas Warschewitz, Ennepetal; Dieter Sichelschmidt, Herdecke, and Bernd Winkler, Breckerfeld, all of Fed. Rep. of Germany, assignors to Dorma GmbH + Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,281

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1990, 4005203

Int. Cl.[5] E05F *3/00;* **E05D** *15/58;* **E05C** *17/04*

U.S. Cl. 16—65 **14 Claims**



1. A door closer apparatus being affixable to a door;

said door closer apparatus comprising:

a channel, affixable to a member of a door mounting frame which is perpendicular to a plane passing through the hinge axis of the door, with said channel for being disposed parallel to the longitudinal axis of the frame member;

an arm extending from said door closer to said channel for closing a door;

said arm having a first end and a second end;

said door closer having detent apparatus for holding a door open;

said detent apparatus being affixable to a door mounting frame and to a door hinged from the door mounting frame to pivot the door about an axis from a normally closed position to an open position, and for detenting the door at a selected open position, said detent apparatus comprising:

a slide positioned inside the channel and slidable along the channel;

said arm pivotally connected at said first end to the said slide and operatively, pivotally connectable at said second end to the door at a point removed from the door hinge axis;

a detent member having mutually orthogonal longitudinal and lateral axes;

said detent member for being selectively positioned within said channel;

said slide and said detent member comprising in combination detent means;

said detent means comprising at least one surface having:

a) a leading level portion and a trailing bevel portion, and

b) a catch portion between said leading bevel portion and said trailing bevel portion;

said catch portion joining said leading bevel portion and said trailing bevel portion with one another;

said bevel portions each having a lower portion and a raised portion;

said lower portions being disposed away from said catch portion and said raised portions being disposed against said catch portion;

said detent means comprising means for urging at least one of said slide and said detent member in contact with said catch portion and into a detent relationship with one another;

said slide and said detent member being configured so that said detent member extends into the path of said slide along the guide channel and being further configured so that said slide contacts said detent member as said slide moves within the channel said detent member being yet further configured so that said slide makes contact with said detent member at a position corresponding to a desired detent position of the door;

said detent means being configured to be substantially resilient but having sufficient rigidity to generally prevent said slide from being pulled past said detent member in the absence of external forces applied to the door;

wherein said detent bevel means portions are disposed on said slide; and

wherein said detent means bevel portions are disposed on said detent portion;

said detent portion comprises an abutment, said abutment is configured to comprise a flat piece being fastened to the guide rail, said abutment comprises two legs configured to form an isosceles triangle configuration to form said bevel portions, said triangle configuration having a tip where said legs join; said tip forming at least a portion of said catch portion;

said tip forming a line, said line oriented transverse to the longitudinal axis of said channel of said guide rail;

said urging means configured for urging said abutment into contact with said slide to engage at least a portion of said catch portion with said slide.

5,311,643

HINGE FOR A FOLDABLE RAIL SECTION FOR MOUNTING A CONTAINER OF AN OXYGEN SUPPLY UNIT IN AN AIRCRAFT

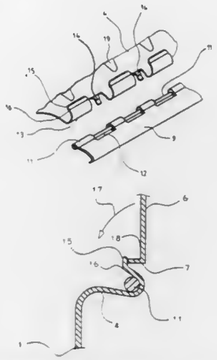
Wolfgang Marquardt; Roderich Thometschek, both of Stockelsdorf; Wolfgang Rittner, Bad Schwartau; Alfred Rother; Holger Wollnik, both of Lübeck; Christoph Bauer, Ibbenbüren, and Christian Schnoor, Lübeck, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,882

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140266

Int. Cl.[5] E05D *7/10*

U.S. Cl. 16—267 **12 Claims**



1. A container and hinge, comprising:

a container of an oxygen supply unit for an aircraft;

a foldable rail section for mounting the container;

a container door connected at an edge of the container, said container door extending in parallel to a longitudinal side of said rail section and being pivotable around a pivot axis on a rear part of said edge of said container;

a first hinge part on the rail section, said first hinge part including a bead integrally formed with a sequence of sections of a longitudinal side of the rail section, slots being provided between said bead and said longitudinal side of the rail section, said slots being provided adjacent sections of said bead which are not integrally formed with the sections of the longitudinal side of the rail section; and

a second hinge part including tongues formed integrally in one piece with a rear container edge and a front container edge, an outer surface of said tongues being adapted to a circumferential shape of said bead, said tongues extending into said slots, said tongues of said rear container edge being raised at a tongue end, whereby said tongue end defines a stop limiting a pivoting stroke of said container door.

5,311,644

HINGE HAVING STOP NOTCHES FOR A DOOR, PARTICULARLY A CAR DOOR

Armand Laforgerie, Chilly-Mazarin, France, assignor to MGI Coutier S.A., France

PCT No. PCT/FR90/00448, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/19876, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 20, 1990, Ser. No. 952,854

Int. Cl.[5] E05D *11/02, 11/10*

U.S. Cl. 16—334 **15 Claims**

1. A hinge for a door having at least one stop notch, said hinge comprising:

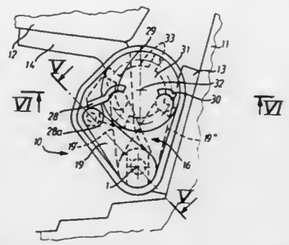
a fixed part attachable to a door frame;

a movable part being secured to a door (11) and rotatably articulated to said fixed part via a hinge pin (15) to allow said movable part to pivot with said door about said hinge pin,

a notch mechanism (16) interacting with said fixed and movable parts and having at least one stop notch for maintaining said door in at least a partially open position,

a housing (17) containing said mechanism (16) and being fastened to one of said fixed and movable parts (13, 14), and

a lever (19) being located within said housing (17) and being fastened to the other of said fixed and movable parts (13,



14), said lever (19) having an axial bore (19*a*) engaging said pin (15), and a first end of said lever (19) being engagable with said mechanism,

wherein a pivotable part (31) is located in said housing and has a rotational axis (32) which extends parallel to a longitudinal axis of said hinge pin (15), said mechanism comprises at least first and second notches (29, 30) formed by concave surfaces which are supported by said pivotable part (31), and a biasing mechanism (33) biases said pivotable part (31) to a central pivot position so that said pivoting part initially pivots in a first direction as said lever (19) engages said first notch (29) and pivots in a second opposite direction initially as said lever (19) engages said second notch (30).

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CAN DISTRIBUTION APPARATUS

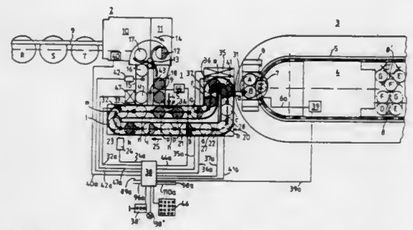
Hans-Werner Schwalm; Rolf Schumacher, and Reiner Reising, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 945,026

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130463

Int. Cl.[5] D04H *11/00;* **D01H** *13/02*

U.S. Cl. 19—159 A **16 Claims**



1. A sliver can distribution apparatus for distributing cans of the type which carry sliver to be withdrawn for processing at a textile machine comprising:

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means for conveying sliver cans in an endless path interconnecting a plurality of can distribution locations, the can distribution locations including a can transfer location at a textile machine at which cans having sliver prepared for automatic engagement of the sliver by a textile machine are distributed from the endless path to a textile machine and cans are returned to the endless path from the textile machine, a full can supply location at which cans with full loads of sliver are supplied to the endless path, and a can receipt location at which cans having less than a usable load of sliver are received from the endless path for subsequent filling of the cans with sliver;

said conveying means simultaneously advancing along the endless path cans of varying degrees of sliver fullness and varying degrees of readiness independent of whether a can is an empty can, a can having less than a usable load of sliver, a can having a usable partial load of sliver but not prepared for automatic engagement of the sliver by a textile machine, a can having a full load of sliver but not prepared for automatic engagement of the sliver by a textile machine, or a can having a full or usable partial load of sliver prepared for automatic engagement of the sliver by a textile machine;

means for sensing the condition of the sliver in the cans; and

control means responsive to said sensing means to control transfer of cans at at least one of said can distribution locations depending on the sensed condition of sliver in the cans.

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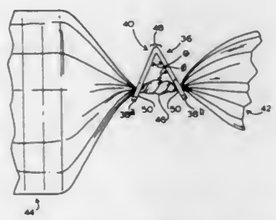
BAG CLOSURE ELEMENT

Clem G. Eischen, Sr., 601 NE. 67th Pl., Portland, Oreg. 87230

Filed Jan. 26, 1993, Ser. No. 9,273

Int. Cl.[5] B65D *77/00*

U.S. Cl. 24—30.5 S **15 Claims**



1. The combination of a bag having a gathered portion closing off the bag and a closure element holding the gathered portion comprising:

a sheet-like body including two spaced expanses;

each expanse having a constricted opening to grip a bag passed therethrough, each expanse accessed by a slit in the body, the slit extending from each opening to a perimeter of the body; and

the expanses extending at an acute angle with respect to each other such that the body is bent along a central fold region when gripping the bag, the fold region extending transversely between the openings such that the fold region does not intersect the openings.

5,311,647

JEWELRY CLOSURE HAVING BOTH MAGNETIC AND MECHANICAL CLASPS

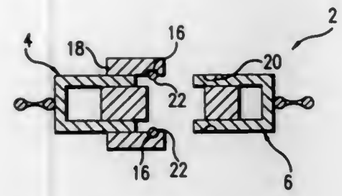
Davida Levy, 1340 Biscaya Dr., Surfside, Fla. 33154

Continuation-in-part of Ser. No. 536,777, Jun. 12, 1990, Pat. No. 5,008,984, and a continuation-in-part of Ser. No. 688,102, Apr. 19, 1991, Pat. No. 5,092,019, and a continuation-in-part of Ser. No. 844,863, Mar. 2, 1992. This application Jun. 21, 1993, Ser. No. 78,886

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—303 **6 Claims**



1. A jewelry closure comprising:

a magnetic closure comprising first and second closure members for engaging together magnetically, wherein at least one of said first and second closure members comprises a magnet;

a casing for supporting said first closure member and extending outwardly for engaging said second closure member; and

a mechanical closure on said casing for engaging said second closure member when said second closure member is held by magnetic attraction to said first closure member, wherein said mechanical closure member comprises an annular groove on each member and a wire member partially embedded in a first of said grooves,

wherein said wire member engages in a second of said grooves when said first and second members are engaged together, and said magnetic and mechanical closures must both be released in order to open the jewelry closure.

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CLOSURE ATTACHMENT ASSEMBLY

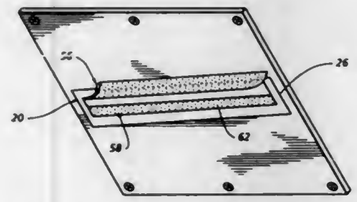
William Semons, 14 Highland Ave., Salem, Mass. 01970

Filed Dec. 2, 1991, Ser. No. 801,652

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] A44B *19/00*

U.S. Cl. 24—381 **6 Claims**



1. A unitary closure attachment assembly comprising:

A) a monolithic one-piece base having two outside end edges, two outside side edges, a front surface and a back surface, said base being mounted on a mounting element at said back surface with said front surface facing away from said mounting element, said back surface and said mounting element defining a pocket therebetween;

B) a closure mechanism mounted on said base front surface adjacent to and spaced from both of said outside side edges and adjacent to and spaced from both of said outside end edges to be completely surrounded by said base, said base having a monolithic border completely surrounding said closure mechanism, said closure mechanism having a first end located adjacent to and spaced from a first outside end edge of said base end edges, a second end located adjacent to and spaced from a second outside end edge of said base end edges, a first side located adjacent to and spaced from one outside side edge of said base side edges, a second side located adjacent to and spaced from a second outside side edge of said base side edges, said closure mechanism being openable to define an access opening;

C) said closure mechanism being spaced from said base back surface to be spaced from said mounting element on which said base back surface is mounted, said base being located beneath said access opening;

D) adhesive material on said base back surface and covering essentially the entire base back surface;

E) a monolithic, uninterrupted one-piece protective cover releasably attached to said base back surface via said adhesive material to cover essentially the entire base back surface and which is removed prior to mounting said base on said mounting element; and

F) a base opening defined through said base beneath said access opening, said base opening including a first end located adjacent to said closure mechanism first end, a second end located adjacent to said closure mechanism second end, said border completely surrounding said opening on all peripheral locations of said opening.

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FASTENER WITH A FIXING PIECE

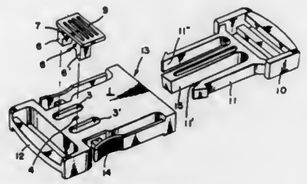
Sam A. Suh, 2-Dong 901 Daewon Mansion, 245-1 Younsun 4-Dong, Yongdo-ku, Pusan, Rep. of Korea

Filed Apr. 19, 1993, Ser. No. 47,301

Claims priority, application Rep. of Korea, Jan. 27, 1992, 92-1277

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—625 **5 Claims**



1. A lockable fastener comprising:

a fastening body;

an insert for mating with said fastening body; and

a locking piece slidably and removably engaged with said fastening body,

said fastening body including an inlet opening for receiving said insert therein, a pair of longitudinal guide holes formed in an upper surface of said fastening body, a fixing projection upwardly projecting from the upper surface of said fastening body and between the pair of longitudinal guide holes, and a pair of deformable pushing members formed along longitudinal sides of said fastening body and each with a first end fixed adjacent the inlet opening and a second pushing end terminating at a position in lateral correspondence with the pair of longitudinal guide holes and the fixing projection;

said insert including a pair of longitudinally extending leg members, each having toothed ends for engaging with a portion of the fastening body, and a central supporting member extending parallel to and laterally between the leg members; and

said locking piece including a pair of fixing legs snap fit into the pair of longitudinal guide holes, respectively, and slidable within a longitudinal length of the guide holes, and an upper gripping surface for manually actuating said locking piece,

wherein positioning of said locking piece at ends of the longitudinal guide holes toward the inlet opening of said fastening body wedges the fixing legs between the longitudinally extending leg members and the central supporting member thereby locking said fastener, and wherein position of said locking piece at ends of the longitudinal guide holes away from the inlet opening of said fastening body releases the fixing legs from between the longitudinally extending leg members and the central supporting member thereby unlocking said fastener.

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TEXTURIZING SYSTEM AND APPARATUS

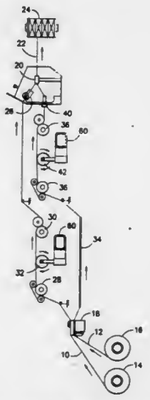
Andre' M. Goineau, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 633,465, Dec. 24, 1990, abandoned.

This application Jan. 13, 1992, Ser. No. 821,322

Int. Cl.[5] D02J *1/22;* **B65M** *51/08*

U.S. Cl. 28—246 **3 Claims**



1. Apparatus to air texture and blend continuous filament synthetic yarns comprising: a texturing machine having a plurality of side-by-side positions, means supplying synthetic yarn to be textured to each position, a first drive roll at each position supplying each of the synthetic yarns to a separate draw zone, pin heater reciprocally mounted in each draw zone with its axis substantially parallel to the axis of said first drive roll, means operably associated with each of said draw zones to draw and texturize the synthetic yarn supplied to the respective draw zone, means to take up the blended yarn and means connected to said pin heaters to automatically and periodically move each of said pin heaters in a direction transverse to the path of travel of the yarn in the draw zone, means supplying at least two synthetic yarns to each position and a wetting means for one of each of said yarns is mounted downstream of the means to texturize said yarns.

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5,311,651

METHOD FOR MANUFACTURING MULTI-LAYER CERAMIC CAPACITOR

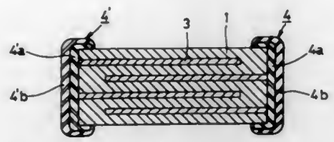
Yoon Ho Kim; Tae Sung Oh, and Chang Bong Lee, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology (KIST), Seoul, Rep. of Korea

Filed Sep. 4, 1992, Ser. No. 940,586

Claims priority, application Rep. of Korea, Sep. 11, 1991, 15865/1991

Int. Cl.[5] H01G *4/30*

U.S. Cl. 29—25.42 **4 Claims**



1. A method for manufacturing a multi-layer ceramic capacitor by introducing a molten metal material into void layers formed by stacking and sintering a plurality of ceramic dielectric sheets applied with a combustible carbon paste so as to form internal electrodes in a stacked ceramic dielectric body, said method comprising the steps of:

forming injection openings which are in communication with the void layers and opening at side surfaces of the ceramic dielectric body prepared by stacking the ceramic dielectric sheets;

applying paste for forming first external electrodes to both end surfaces of the ceramic dielectric body and baking the ceramic dielectric body to which the paste is applied;

introducing molten metal material for forming internal electrodes into the void layers through the injection openings; and

forming metal layers having Ni for forming second external electrodes on the said first external electrodes.

5,311,652

METHOD OF IMPROVING THE SURFACE OF STEEL PIPE FOR CORROSION RESISTANT COATING

Stephen E. McConkey, Calgary, and Guntrum N. Franzky, Lisle, both of Canada, assignors to Shaw Industries Ltd., Toronto, Canada

Filed May 26, 1992, Ser. No. 888,115

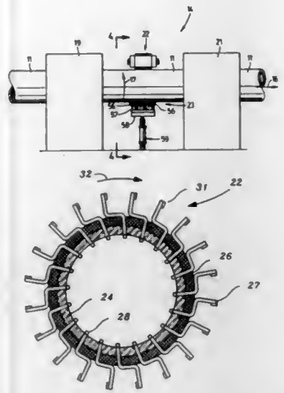
Int. Cl.[5] B23P *25/00;* **B21C** *43/00;* **B24C** *3/10;* **B21J** *1/00*

U.S. Cl. 29—81.04 **13 Claims**

1. Method of improving a surface of steel pipe for coating comprising a sequence of the following steps:

(a) subjecting the surface of said pipe to particulate blasting to remove substantially all ferric oxide therefrom, thereby producing a blasted pipe surface;

(b) applying to said blasted surface a wire brush element comprising wires extending generally radially with respect to the pipe and having free wire ends adjacent the pipe surface, biasing the free ends of the wires into abrasive engagement with the pipe surface, and rotating the wires relative to the pipe surface to abrade off substantially all surface anomalies from the pipe and provide a substantially smoothly curved abraded pipe surface; and



(c) subjecting said abraded surface to particulate blasting to form indentations therein thus providing an anchor for a plastic coating.

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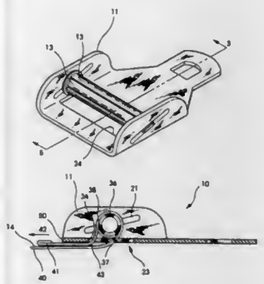
WEB ADJUSTER FOR PLASTIC COATED WEB

David D. Merrick, Indianapolis, Ind., assignor to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Filed Mar. 11, 1993, Ser. No. 29,671

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—196 **18 Claims**



1. A web adjuster comprising:

a frame with a pair of spaced apart slots and having a web stop extending across said frame;

a bar with opposite ends slidably mounted in said slots to receive a web extending at least partially around said bar, said bar movable in said slots with said web to and from said web stop; and,

first means mounted on said bar and located between said bar and said web operable to position said web apart from said bar allowing relative motion between said web and said bar when said web is positioned apart from said web stop and further operable under web pressure to allow contact between said web and said bar to limit relative motion between said web and said bar as said bar forces said web against said web stop.

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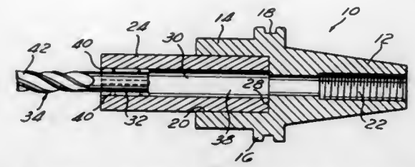
TOOL HOLDER SYSTEM AND METHOD OF MAKING

Harold D. Cook, 33642 Via Martos, Dana Point, Calif. 92629

Filed Sep. 25, 1992, Ser. No. 951,210

Int. Cl.[5] B23P *11/02;* **B21D** *39/00;* **B23B** *5/22, 51/06*

U.S. Cl. 29—447 **15 Claims**



1. A method of mounting a cutting tool having a cylindrical tool shank and a cutting end into a tool holder having a conically tapered end for mounting and use in the rotating spindle of a milling machine, comprising the steps of:

forming a central aperture of generally uniform diameter in said tool holder, said central aperture having a diameter slightly less than the outer diameter of a cylindrical sleeve member to be mounted within the central aperture;

forming a mounting aperture in said sleeve member, said mounting aperture having a diameter slightly less than the diameter of the tool shank;

forming at least one elongate channel longitudinally along the inner surface of said mounting aperture, said channel defining a coolant fluid passage between the tool shank and said sleeve member when the tool shank is mounted within the mounting aperture and the sleeve member is mounted within the central aperture for allowing coolant fluid introduced into the conically tapered end of the tool holder to be directed onto the cutting end of the cutting tool;

heating said sleeve member to a temperature sufficient to thermally increase the diameter of said mounting aperture to a size sufficient to slidably receive the tool shank;

inserting said tool shank into the mounting aperture to a desired axial position;

cooling said sleeve member to cause a thermal construction of said mounting aperture about the tool shank to mount said cutting tool within said sleeve member in said desired axial position;

heating said mounting portion to a temperature sufficient to thermally increase the diameter of said central aperture to a size sufficient to slidably receive said sleeve member;

inserting said sleeve member into said central aperture to a desired axial position; and

cooling said mounting portion to cause a thermal contraction of said central aperture about said sleeve member to mount said sleeve member within said central aperture in said desired axial position;

wherein the thermal contraction of the central aperture about the sleeve member and the mounting aperture about the tool shank is adapted to maintain the concentricity of the cutting tool throughout the rotary motion of the rotating spindle of the milling machine.

5,311,655

METHOD OF MANUFACTURING TITANIUM-ALUMINUM BASE ALLOYS

Heimo Jager, Bruck an der Mur, and Herbert Puschnik, Kapfenberg, both of Austria, assignors to Böhler Edelstahl GmbH, Kapfenberg, Austria

Filed Oct. 4, 1991, Ser. No. 770,936

Claims priority, application Austria, Oct. 5, 1990, A2013/90

Int. Cl.[5] B22D *27/02*

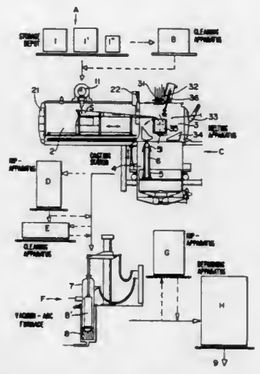
U.S. Cl. 29—526.3 **18 Claims**

1. A method for manufacturing articles formed of metallic alloys, said metallic alloys being composed of titanium-aluminum base alloys, wherein melted starting materials are teemed into a mold to form a casting and the casting is remelted, comprising the steps of:

holding in readiness starting materials in the form of pieces which substantially proportionally correspond to an alloy composition of the metallic alloy;

melting the pieces of the starting materials in a melting crucible to form a melt;

adding at least one alloy component to the melt in the melting crucible in order to set a desired alloy composition containing a maximum of 40 to 60 atomic-% titanium;



casting the melt from the melting crucible into a mold to form an ingot for the use as an electrode;

remelting the ingot as a self-consumable electrode of a vacuum arc-melting furnace into a compact remelted ingot;

hot forming the compact ingot obtained from the arc-melting furnace; and

adjusting the oxygen content of the metallic alloy obtained by the melting and remelting steps to an amount which is less than 600 ppm.

5,311,656

KEYPAD METHOD OF MANUFACTURE

Michael K. Eldershaw, Stittsville, Canada, assignor to Mitel Corporation, Canada

Division of Ser. No. 667,872, Mar. 2, 1991, abandoned. This application Mar. 12, 1991, Ser. No. 845,503

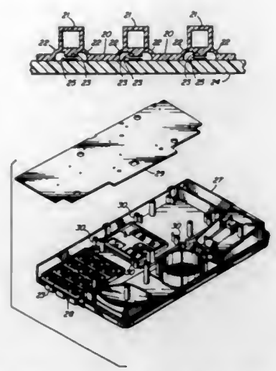
Int. Cl.[5] H01H *11/00*

U.S. Cl. 29—622 **3 Claims**

3. A method of manufacturing a structure comprising: injecting molding as a single piece part using elastomeric material, a keypad comprising a supporting frame, a plurality of snap action domes, and a plurality of pushbuttons overlying the domes, the pushbuttons each being surrounded by thin pieces of elastomeric material buttressing it upwardly, each said thin piece of material and an associated portion of a pushbutton forming a dome, said thin pieces of material extending from and being continuous with said frame, and conductive buttons each being disposed below a corresponding dome; inserting the injection molded keypad into an injection mold for a housing; and injection molding the housing by filling the housing mold

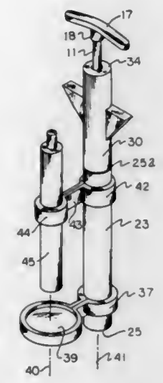
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with plastic resin to provide a combined keypad and housing as a single piece part wherein the pushbuttons, domes and frame



are formed of elastomeric material and the housing is formed of plastic.

5,311,657
MOTHERBOARD TOOL
Joel L. Kressman, 735 Urban St., Sulphur, La. 70663
Filed Dec. 31, 1992, Ser. No. 999,273
Int. Cl.[5] H01R *43/00*; H05K *3/30*
U.S. Cl. 29—721 **2 Claims**

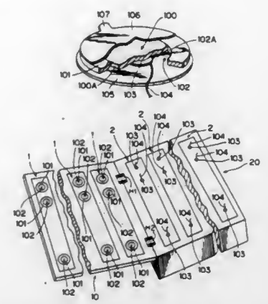


1. A motherboard tool, comprising,
an elongate cylindrical punch, the punch having a punch first end spaced from a punch second end, the punch first end including a first end boss, the punch second end having a second end socket, and
a collar fixedly mounted to the punch between the punch first end and the punch second end, and
a punch head having a punch head boss, the punch head boss arranged for securement within the second end socket, and the punch head further including a punch head socket coaxially aligned with the punch head boss and with the punch, and
the punch including a handle, with the handle having a handle boss, the handle boss arranged for fixedly receiving the first end boss, and
a guide housing, with the punch mounted slidably through the guide housing permitting positioning of the guide housing onto a workpiece to effect projection of the workpiece by projecting the punch relative to the guide housing, and
the guide housing including a guide housing lower tube, and a guide housing upper tube arranged for securement relative to one another, with the guide housing lower tube having a lower tube first end and a lower tube second end, the lower tube includes a first bore directed into the lower tube from the lower tube first end, with the first bore having a first diameter, and a second bore in communication with the first bore within the lower tube, with the second bore having a second diameter greater than the first diameter, and a third bore directed from the second bore to the lower tube second end, and an annular flange at an interface between the first bore and the second bore, with a return spring, the return spring captured between the annular flange and the fixed collar to bias the punch within the housing in a retracted orientation, and the third bore including a third bore internally threaded portion, and the upper tube having an upper tube pilot shaft received within the third bore, and an upper tube externally threaded surface threadedly received within the third bore internally threaded portion, and the upper housing having a through-extending upper tube bore, and the guide housing and the punch symmetrically oriented about a housing axis, and the upper housing having upper tube wing plates fixedly mounted to the upper tube projecting exteriorly of the upper tube for cooperation with a handle for manually securing the housing relative to the punch when projecting the punch through the housing, and
a first collar fixedly mounted to the lower tube in adjacency to the lower tube first end, and the first collar having a first collar link and a magnification lens, the magnification lens symmetrically oriented about a lens axis parallel to the housing axis, and a second collar fixedly mounted to the lower tube in adjacency to the lower tube second end, and the second collar having a second collar link, and a third collar fixedly mounted to the second collar link, with the third collar coaxially aligned with the lens axis, and a flashlight member fixedly mounted within the third collar coaxially aligned with the lens axis to project illumination through the magnification lens.

5,311,658
APPARATUS FOR PRODUCING LIVING BODY LEADING ELECTRODE
Chuji Shimizu, Tokyo, Japan, assignor to Fukuda Denshi Co., Ltd., Tokyo, Japan
Filed Aug. 21, 1992, Ser. No. 933,071
Claims priority, application Japan, Apr. 6, 1992, 4-113031
Int. Cl.[5] B23P *19/04*; H01R *43/00*
U.S. Cl. 29—746 **3 Claims**

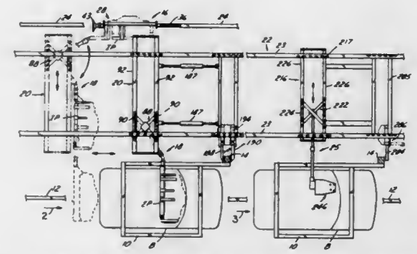
1. An apparatus for producing living body leading electrodes, said apparatus comprising:
a first substrate having a plurality of first boards fixed thereto and arranged in a plurality of rows disposed substantially parallel to each other, said first boards each having a plurality of annular skin adhering members bonded thereto, thereby to define a plurality of openings formed by inner, side wall portions of said annular skin adhering members, and by a surface of a corresponding first board;
a second substrate having a plurality of second boards fixed thereto and arranged in a plurality of rows disposed substantially parallel to each other corresponding to said plurality of rows of said first boards, said second boards each having a plurality of electrode elements disposed thereon;
pouring means for pouring a solution of electrolyte into an upper portion of each of said openings thereby to fill said openings such that side faces of said electrolyte touch the side wall portions of said openings;

hardening means for hardening said poured solution of electrolyte, thereby to fix the side faces of said electrolyte to the side wall portions of said openings;



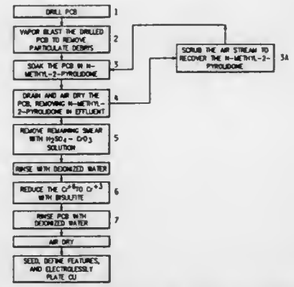
wherein said first substrate and said second substrate are operative to be superposed on each other, thereby to respectively join each of said electrode elements together with a corresponding one of said hardened electrolytes fixed to said annular skin adhering members.

5,311,659
APPARATUS FOR INSTALLING INSTRUMENT PANEL ASSEMBLIES IN AUTOMOTIVE VEHICLE BODIES
Robert J. Barnhart, East Detroit, and Richard M. Hackman, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 9, 1993, Ser. No. 103,380
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—823 **5 Claims**



1. Apparatus for transferring an instrument panel assembly from a pick-up station to the interior of an automotive vehicle body for installation while said body moves along a path spaced laterally from said pick-up station, comprising track means extending generally parallel to said path, a first bridge mounted for movement along said track means, said first bridge extending between said pick-up station and said path, a swing frame assembly comprising a carriage mounted on said first bridge for movement between first and second positions adjacent said pick-up station and said path, respectively, an arm pivoted to said carriage for swinging movement about a generally vertical axis, means for holding an instrument panel assembly on said arm, said arm being swingable from a receiving position for picking up an instrument panel assembly at said pick-up station when said carriage is in its first position to a transfer position in which said instrument panel assembly may be introduced into said body and installed therein when said carriage is moved along said track means with the body, means for moving said first bridge with said body, a second bridge mounted for movement generally parallel to said path, said second bridge extending transversely of said path and being spaced from said first bridge in the direction of vehicle body movement, a second swing frame assembly comprising a second carriage mounted on said second bridge for movement therealong, a second arm pivoted to said second carriage, a mounting unit on said second arm having means for attaching the installed instrument panel assembly to the frame of the vehicle body, said second swing frame assembly being movable along said second bridge to introduce said second arm into the moving body, means for operating said attaching means after introduction of said second arm into the moving body to secure the installed instrument panel assembly to the frame of the body, and means for moving said second bridge with said body.

5,311,660
METHYL CHLOROFORM-FREE DESMEAR PROCESS IN ADDITIVE CIRCUITIZATION
Warren A. Alpaugh, Chenango Forks; Anilkumar C. Bhatt, Johnson City; Michael J. Canestaro, Endicott; Robert J. Day, Dryden; Edmond O. Fey, Vestal, and John E. Larrabee, Conklin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 10, 1993, Ser. No. 15,742
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—852 **10 Claims**

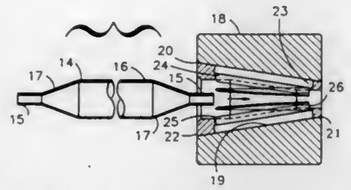


1. In a method of additive circuitization of a glass and polymer printed circuit board comprising the steps of:
a. drilling the printed circuit board, thereby forming glass and polymer smeared holes;
b. vapor blasting the drilled printed circuit board to remove particulate residue therefrom;
c. soaking the printed circuit board in a solvent to swell the drill smear and to loosen and remove fibers from the internal circuit interplanes which intersect the drilled through holes of the printed circuit board;
d. removing solvent from the printed circuit board;
e. passing a stream of an aqueous, acidic, oxidizing solution through the printed circuit board holes to remove fibers and smears in the thru holes and produce an etchback of conductors;
f. passing an aqueous reducing agent solution through the printed circuit board to reduce and remove the aqueous acidic oxidizing agent solution;
g. rinsing the printed circuit board to remove the aqueous reducing agent solution;
h. seeding the printed circuit board to form a seed layer on the surface thereof;
i. photolithographically defining circuitization on the printed circuit board; and
j. electrolessly plating through holes and surface features of the printed circuit board, the improvement comprising first passing a stream of heated air through the printed circuit board to remove the solvent from the printed circuit board by gas entrainment in the heated air before passing the aqueous, acidic oxidizing solution there-

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through, and thereafter scrubbing the air to recover solvent therefrom.

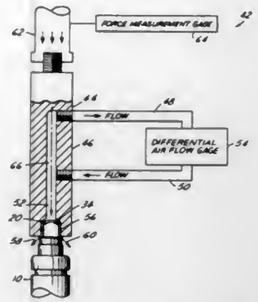
5,311,661
METHOD OF POINTING AND CORRUGATING HEAT EXCHANGE TUBING
Lothar R. Zifferer, Waco, Tex., assignor to Packless Metal Hose Inc., Waco, Tex.
Filed Oct. 19, 1992, Ser. No. 962,660
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.053 **10 Claims**



1. A method of producing a high surface area tube for use in tube-in-shell heat exchange apparatus comprising
providing a thin wall heat exchange tube of selected length and wall thickness facilitating a high heat transfer rate,
providing at least one tapered tube pointing die of selected size and smooth conical taper having a large entrance end and a small cylindrical exit opening,
pointing said tube by the steps of
first forcing the ends of said tube into said tube pointing die to substantially reduce the diameter uniformly to enter said exit opening and correspondingly increase the wall thickness of a selected length of said ends, and
said tube pointing thus producing a tube having uncorrugated smooth cylindrical ends of substantially reduced diameter and increased wall thickness suitable for securing in the tube sheet of a tube-in-shell heat exchanger and a main unreduced cylindrical body portion which is of the initial wall thickness and tapering at each end in a smooth conical taper to the increased thickness of said end, and then
linearly corrugating said main body portion along substantially its entire length to produce a smaller diameter portion with linear corrugations extending along substantially the entire length of said main body portion and terminating at said tapered end portions adjacent to said reduced diameter smooth cylindrical end portions and thus providing a surface area for heat transfer which is substantially greater than the surface area said ends.

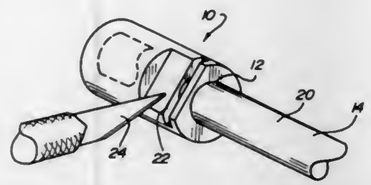
5,311,662
PRESS METERING APPARATUS AND METHOD
Gerald L. Losser, Gloucester, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.
Filed Apr. 22, 1992, Ser. No. 872,229
Int. Cl.[5] B23Q *15/00*; **B23P** *19/02*; **F02M** *65/00*
U.S. Cl. 29—890.124 **2 Claims**

2. For obtaining a desired air flow through an atomizer of a fuel injector while the atomizer is being pressed onto a fuel-emitting nozzle of the fuel injector, said atomizer having an inlet via which atomizing air enters and an outlet via which atomized fuel exits, a press metering method comprising:
pressing the atomizer onto the nozzle by a pressing means;
directing air flow via the pressing means to enter the atomizer via the latter's outlet and exit the atomizer via the latter's inlet while the atomizer is being pressed onto the nozzle by the pressing means;



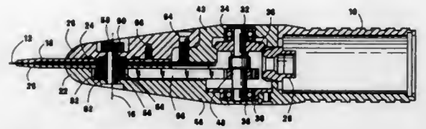
and continuing the pressing until a desired air flow is obtained.

5,311,663
DEVICE FOR TRIMMING COAXIAL CABLE
Josef Garze, Lawndale, and James D. Ingram, Lakewood, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Sep. 4, 1992, Ser. No. 940,574
Int. Cl.[5] B21F *21/00*
U.S. Cl. 30—90.6 **14 Claims**



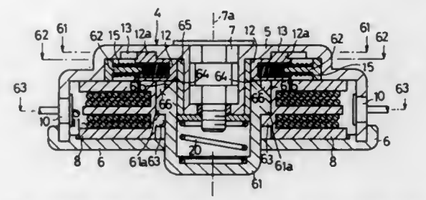
1. A device for removing successive stepwise cylindrical portion of insulation from a cable, such cable including a center conductor disposed upon a longitudinal axis and at least one insulation layer coaxially surrounding said center conductor, such device comprising:
a first cutter including a cutting blade for creating a circumferential cut in at least one insulation layer in a plane substantially orthogonal to said longitudinal axis;
first guide means for guiding the cutting blade;
at least a second cutter including a cylindrical cutting means for creating a cylindrical cut in at least one insulation layer coaxially surrounding the center conductor in an axial direction to said circumferential cut, each cylindrical cutting means having a cylindrical bore disposed therewithin for passage of a portion of said cable therethrough; and
a main body having a fixturing means for securing the cable in a substantially stationary position and a second guide means for guiding each cylindrical cutting means.

5,311,664
POWER SKINNING KNIFE WITH UNIDIRECTIONAL ROTATING BLADE
Michael A. Abdul, Middletown, Conn., assignor to Jarvis Products Corporation, Middletown, Conn.
Filed Dec. 2, 1992, Ser. No. 984,443
Int. Cl.[5] B26B *7/00, 9/00*
U.S. Cl. 30—276 **22 Claims**



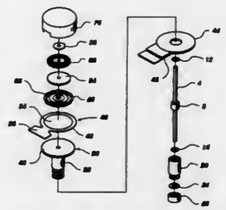
1. A power skinning knife comprising:
a handle;
a single substantially disk shaped blade having a center offset from an axis of cutting rotation, the blade being mounted for offset rotation about the axis of cutting rotation;
a non-rotating blade shield covering a central region of the blade and exposing a limited depth arcuate cutting region of the blade between the perimeter of the shield and the cutting edge of the blade, the depth of the arcuate cutting region varying as the offset blade rotates;
a motor mounted in the handle; and
a drive mechanism connected between the blade and the motor for rotating the blade in a continuous unidirectional rotary motion about the axis of cutting rotation.

5,311,665
CUTTING HEAD FOR A CORD TYPE MOWER
Hideo Sugihara, and Hajime Tomita, both of Gifu, Japan, assignors to Diatop Corporation, Gifu, Japan
Continuation-in-part of Ser. No. 792,788, Nov. 15, 1991, Pat. No. 5,222,301. This application Dec. 30, 1992, Ser. No. 998,563
Int. Cl.[5] B26B *7/00*
U.S. Cl. 30—276 **11 Claims**



1. A cutting head for a cord-type mower having a motor for driving the cutting head, the cutting head being capable of automatic and manual cord feeding, the cutting head comprising:
a casing driven by the motor to rotate about an axis;
a bobbin mounted in said casing, and adapted to rotate around said axis relative to said casing;
a cord wound about said bobbin;
a cord feed slot provided on the outer periphery of said casing, for permitting one end of said cord to extend outside said casing, to a suitable cutting position;
a drive link holder mounted in said casing, and being capable of rotating relative to said casing around said axis, for supporting at least one drive link, such that said drive link is capable of reciprocate relative to said axis;
a boss for coupling said bobbin to said drive link holder, said boss being capable of sliding along said axis relative to said bobbin, and along said axis relative to said drive link holder, said boss rotating about said axis together with said bobbin and said drive link holder, and said boss having a tapered guide surface at its top end, and a bottom portion which projects from said casing and which should be pressed at the time of tapping operation;
said drive link being moveable between a transmitting position for transmitting the rotation of said casing to said bobbin, via said drive link holder and said boss, and an idling position for allowing said bobbin, said boss and said drive link holder, to slip relative to said casing, without transmitting the rotation of said casing to said bobbin;
at least one biasing member for urging said drive link toward said transmitting position from said idling position;
said boss being freely slidable within said bobbin between a first position for permitting said biasing member to urge said drive link toward said transmitting position, and a second position for forcibly moving said drive link by means of said guide surface to said idling position against the action of said biassing member, in response to tapping operation; and urging means for urging said boss toward the first position from the second position, wherein said boss returns to the first position from the second position, when said bottom portion is free from the pressing, whereby the cutting head has an automatic cord feed mode in which said drive link moves to said idling position against the action of said biassing member, as a function of the centrifugal force of said drive link depending on the rotational speed of said casing, and a manual cord feed mode in which said drive link is forcibly moved to said idling position, in response to the tapping operation.

5,311,666
ROTARY DISPLACEMENT MEASURING APPARATUS
Stephen C. Jacobsen; Michael G. Mladejovsky; Clark C. Davis, and Roland F. Wyatt, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah
Continuation of Ser. No. 719,285, Jun. 21, 1991, abandoned. This application May 18, 1993, Ser. No. 63,152
Int. Cl.[5] G01B *7/30*
U.S. Cl. 33—1 PT **33 Claims**



27. A rotary displacement measuring system comprising
a shaft whose rotary displacement is to be measured, said shaft being rotatable about its long axis,
an emitter plate mounted on the shaft to rotate therewith in a plane corresponding to the plane of the plate, said plate including a pattern of sections for emitting electric fields normally of one face of the plate when energized,
detector means disposed adjacent said face of the plate in fixed position relative thereto, for detecting changes only in the electric field pattern as the emitter plate rotates, said detector means including means attached thereto for energizing the sections of the emitter plate to produce the electric fields.

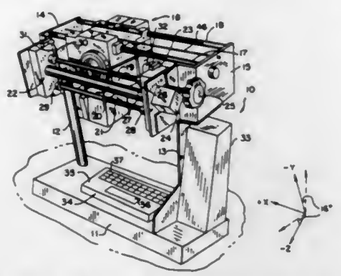
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5,311,667

METHOD AND APPARATUS FOR ADJUSTING LINE WIDTH IN A SIGN ENGRAVING MACHINE

George F. Jambor, Cedarburg, Wis., assignor to Brady USA, Inc., Milwaukee, Wis.

Filed Mar. 2, 1993, Ser. No. 24,978
Int. Cl.[5] B41C *1/02*; B23C *9/00*
U.S. Cl. 33—18.1 6 Claims



1. A method of line width adjustment and engraving a line on a piece of sign material, the method comprising:

positioning a first planar cutter for movement along a first path, the first cutter having a first cutter tip projecting along an axis running substantially perpendicular to the first path;

positioning a second planar cutter for movement along a second path in face-to-face opposing relationship to the first planar cutter, the second cutter having a second cutter tip projecting along an axis running substantially perpendicular to the second path and the second path lying adjacent the first path and having a portion running alongside a portion of the first path;

moving the first and second cutters along their respective paths to select the spacing between the first and second cutter tips;

moving the first and second cutters into contact with the piece of sign material;

rotating the two cutters with the selected spacing between the first and second cutter tips to effect a cutting width; and

causing relative movement of the rotating cutters in relation to the face of the piece of sign material to cut a line of the selected width.

5,311,668

WHEEL POSITION MEASURING APPARATUS

Simone Longa, Arcisate, and Marco Castelnuovo, Milan, both of Italy, assignors to Hofmann Werkstatt-Technik GmbH, Pfungstadt, Fed. Rep. of Germany

Continuation of Ser. No. 903,945, Jun. 26, 1992, abandoned.
This application Sep. 10, 1993, Ser. No. 118,690
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1991, 4121655
Int. Cl.[5] G01B *7/315*
U.S. Cl. 33—203.18 8 Claims

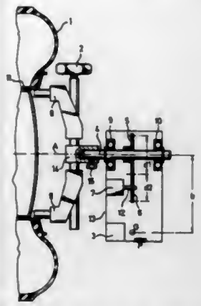
1. A wheel position measuring apparatus comprising:

(a) a detector device;

(b) a wheel adaptor for pivotably mounting the detector device to a vehicle wheel in a predetermined relationship relative to a rotational axis of the wheel; and

(c) an angle measuring device operatively disposed between the detector device and the wheel adaptor for measuring an angle between the wheel adaptor and the detector device corresponding to an angular displacement of the wheel that occurs between a lifted position and a lowered, weight-bearing position, said angle measuring device being oriented to measure an angle in a plane which is substantially perpendicular to the rotational axis of the wheel, said angle measuring device further including:

(1) sensing means for determining the pivotal movement of the detector device about the wheel axis following lowering the wheel to a weight-bearing position; and



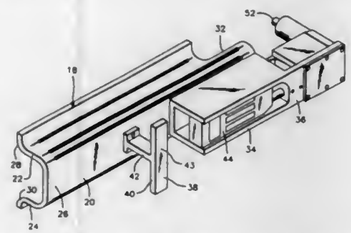
(2) a measuring transducer for converting the sensed pivotal movement into an electrical signal, said measuring transducer including a first gear fixedly connected to said wheel adaptor and a second gear which meshes with said first gear and which is connected to said measuring transducer.

5,311,669

NON-MAGNETIC PRINTING PRESS PACKING GAUGE

John D. Proffit, 1436 River Rd., Clarksville, Tenn. 37040

Filed Oct. 27, 1992, Ser. No. 967,112
Int. Cl.[5] G01B *3/22*, *5/06*
U.S. Cl. 33—618 12 Claims



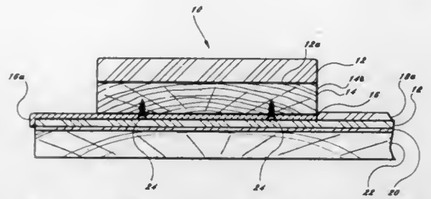
1. A press packing gauge including an elongated body having first and second opposite sides, said first side including a pair of elongated, laterally spaced apart and outwardly facing abutment surfaces extending longitudinally of said body throughout a major portion of the length thereof adjacent one end of said body, a sensor mounted from said body for reciprocation along a path at least substantially normal to a plane containing said abutment surfaces and operatively connected to indicator means mounted from said body for indicating distances said sensor is shifted along said path, and a handle mounted from said body and including an elongated hand grip portion spaced outward of said second side, generally paralleling said plane and disposed transverse to said body, said elongated hand grip portion including a longitudinal mid-portion disposed between laterally spaced planes paralleling said path and extending along said abutment surfaces.

5,311,670

SHINGLE ALIGNMENT TOOL

Ioan Tomoiaga, 1025 W. Prospect Rd. #6, Fort Lauderdale, Fla. 33309, assignor to Peter Bejusca and Ioan Tomoiaga, Fort Lauderdale, Fla.

Filed Apr. 5, 1993, Ser. No. 42,730
Int. Cl.[5] G01D *21/00*
U.S. Cl. 33—648 4 Claims



1. A shingle alignment tool for aligning a strip of shingles to be fastened to a roof surface relative to a line of shingles already fastened to the roof, comprising:

a rigid, elongated platform capable of receiving human weight, said platform having an alignment surface adapted to abut against a bottom edge of said strip of shingles to be fastened;

a resilient kneeling pad disposed on an upper surface of said rigid platform for comfortably receiving a shingle installer's knee area, wherein kneeling pressure is applied from the weight of the shingle installer, firmly holding said alignment tool in position; and

a pair of rigid brackets attached at predetermined points along said rigid platform, said rigid brackets including end flanges sized in length the thickness of a shingle to fit snugly against a shingle at one end, said bracket length and flange location of each of said brackets predetermined in size relative to said elongated platform so that the strip of shingles to be fastened is aligned relative to said elongated platform while the installer kneels on said alignment tool, whereby the shingle installer can fasten the strip of shingles to be aligned to the roof surface while kneeling on the platform, holding the platform in place.

5,311,671

APPARATUS FOR RECOVERING DRY CLEANING FLUID

Floyd L. Brooks, 1901 N. Redwood, and James E. Gilchrist, Box 234, both of, Canby, Oreg. 97013

Filed Mar. 23, 1993, Ser. No. 36,039
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—66 6 Claims

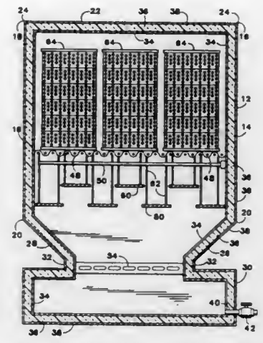
1. Apparatus for recovering a dry cleaning fluid, the vapor of which is more dense than air, comprising:

(a) a chamber;

(b) a support, located at a first position in said chamber, for supporting a filter element containing a liquid dry cleaning fluid;

(c) heating means, located proximate said support in said chamber, for heating and vaporizing said liquid dry cleaning fluid in said filter element to form a vaporized dry cleaning fluid; and

(d) cooling means, located in said chamber at a second position, said second position being below said first position, for cooling and condensing said vaporized dry cleaning fluid to a liquid condensate in said chamber,



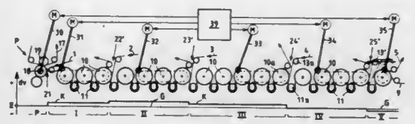
wherein said support, said heating means, and said cooling means are all located in the same chamber.

5,311,672

DRY END OF A MACHINE FOR THE PRODUCTION OF A FIBER WEB

Gerhard Kotitschke, Steinheim, and Wilfried Kraft, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,261
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1992, 4218595
Int. Cl.[5] F26B *11/02*
U.S. Cl. 34—117 20 Claims



1. A machine for manufacturing a paper web, the machine including a dewatering press through which the web is moved and a dry end following the dewatering press in the path of the web;

the dry end comprising a plurality of dryer groups arranged one after the other along the path of the web through the dry end; each dryer group comprising: a single row of heatable drying cylinders; a reversal suction roll between each two drying cylinders in the group; an endless, web support belt which supports the web to travel together with the support belt through the dryer group; guide means in each dryer group for guiding the respective support belt in an endless loop through the respective dryer group;

the support belt passes through the dryer group in a meander path so that the web on the support belt directly contacts one of the drying cylinders in the respective dryer group, the support belt then touches the next reversal roll in sequence and the web then touches the next drying cylinder in sequence so that the web comes into direct contact with the drying cylinders and the support belt comes into direct contact with the reversal suction rolls;

the press is so placed and the drying cylinders, the suction reversal rolls and the support belt of the first dryer group after the press are so placed that there is a first, open

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separation place where the web travels free of support between the press and the first dryer group;

the respective drying cylinders, suction reversal rolls and guide means of each of the dryer groups being so placed so as to define a respective separation place between each preceding dryer group and the succeeding dryer group thereafter in the path of the web through the dry end, and including means at the separation place for transferring the web from the preceding dryer group to the succeeding dryer group in the dry end;

at least toward the terminal end region of the path of the web through the dry end, at least one of the separation places between a preceding and a succeeding dryer group is developed as an open separation place where the web has a free unsupported path of travel from the respective preceding to the respective succeeding endless web support belt of the dryer groups;

a respective drive means for the press for driving the press to move a web through the press to the first dryer group of the dry end;

respective drive means for driving the drying cylinders in each of the dryer groups to rotate to move the web through the dryer group; each of the drive means for each of the dryer groups has a drive which is adapted to produce a selectively variable rotation speed for the drying cylinders in that dryer group, and a respective speed control device for the drying cylinders of each of the dryer groups for enabling adjustment to produce a difference in rotation speeds between the drying cylinders of adjacent dryer groups;

at least the drive of the press and of the first dryer group following the press being set to achieve a positive speed difference at the first separation place, the positive speed difference meaning that the speed of the web through the first dryer group is greater than the speed of the web through the press, thereby relieving the tendency of the web to adhere to the surfaces of the drying cylinders of at least a first one of said plurality of dryer groups;

in the dry end, at the separation place between two of the dryer groups that are toward the terminal end of the path of the web away from the press, the drives of the two dryer groups being set to a negative speed difference where the support belt in the succeeding dryer group is moving the web slower than the support belt in the preceding group is moving the web, thereby enabling attaining a paper web with extremely low moisture content.

5,311,673

DEHYDRATOR FOR VEGETABLES, FRUITS, OR THE LIKE

Yung-Sen Su, P.O. Box 82-144, Taipei, Taiwan

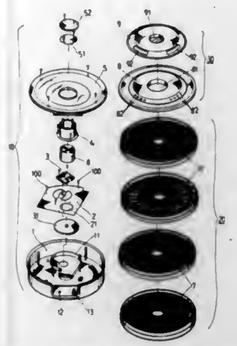
Filed Mar. 1, 1993, Ser. No. 24,384
Int. Cl.[5] A23B *4/04*
U.S. Cl. 34—197 **1 Claim**

1. A dehydrator for vegetables and fruits, comprising:

a heating device including a base having a frame in which is mounted an impeller, a fixing plate arranged on said base by screws and having an outlet, a motor mounted on said fixing plate and drivingly connected with said impeller, a cylindrical seat fitted in the outlet of said fixing plate, a heater fitted within said cylindrical seat and provided with a temperature controller and a fuse, a cover installed on said base and having a packing and a top plate, said packing being mounted on said cylindrical seat in such a way that there is a clearance therebetween;

a receiving device composed of a plurality of circular containers which are mounted on said cover in order; and

a regulating device including a circular disc mounted on the circular containers at the uppermost position, and a top cover, said circular disc having a center hole and a plurality of perforations, said top cover being formed with a plurality of slots so that said top cover may be turned to



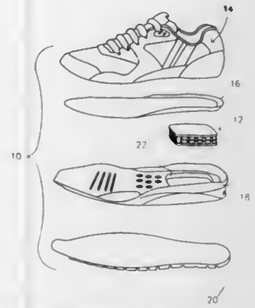
selectively align the slots with perforations of said circular disc.

5,311,674

ENERGY RETURN SYSTEM IN AN ATHLETIC SHOE

Kiartchai Santiyanont, all of 27 Pramuan Road, Silom, Bangrak, Bangkok, Thailand; Narong Chokwatana, and Krisada Suchiva, all of Bangkok, Thailand

Continuation of Ser. No. 862,910, Apr. 3, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 103,607
Claims priority, application United Kingdom, Apr. 22, 1991, 9108548
Int. Cl.[5] A43B *13/18*
U.S. Cl. 36—28 **16 Claims**



1. An athletic shoe in which the midsole region includes at least one energy return system comprising:

a top member made of resilient material and including a base having a plurality of integrally formed, downwardly depending first elements, the plurality of first elements each having a first tip;

a bottom member made of resilient material and including a base having a plurality of integrally formed, upwardly extending second elements, the plurality of second elements each having a second tip; and

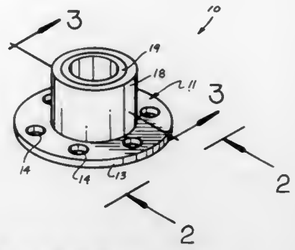
a stiff intermediate sheet positioned between, and being movable relative to, the first and second tips, said stiff sheet being sufficiently stiff and having a coefficient of friction such that the tips are prevented from sliding one over the other and thereby the tips remain in alignment upon compression of the first and second elements toward each other.

5,311,675

HIGH HEEL SHOE CAP

Tracy L. Topel, Rte. 1, Box 1396, Granby, Mo. 64844

Filed May 10, 1993, Ser. No. 58,143
Int. Cl.[5] A43B *13/22*
U.S. Cl. 36—72 B **3 Claims**



1. A high heel shoe cap, comprising,

a base plate, the base plate symmetrically oriented about a predetermined axis, with the base plate including a base plate peripheral side wall, with an annular array of openings directed through the base plate in adjacency to the side wall symmetrically oriented relative to the axis, and

the base plate including a base plate top wall and a base plate bottom wall, with the base plate top wall having a rigid first tubular sleeve mounted concentric relative to the axis, with a resilient second tubular sleeve mounted within the first tubular sleeve in contiguous communication with the first tubular sleeve and coextensive with the first tubular sleeve for receiving a high heel portion of a shoe member therewithin, and

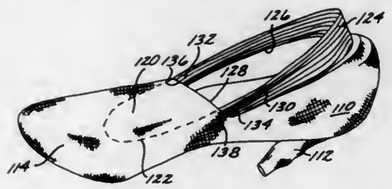
the base plate bottom wall includes a plurality of semi-cylindrical projections fixedly mounted to the bottom wall, with an individual of said semi-cylindrical projections mounted in a partial covering of an individual one of said openings, wherein each of the projections includes a projection front wall, wherein each projection front wall is arranged in a parallel relationship relative to one another.

5,311,676

CHANGEABLE SHOE COVERING

Thomas S. Hughes, and Marielena Brown, both of 31310 Eagle Haven Cir., Ste. 100, Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 982,800, Nov. 30, 1992, abandoned. This application Jun. 2, 1993, Ser. No. 73,231
Int. Cl.[5] A43B *3/24*
U.S. Cl. 36—100 **5 Claims**



1. A cover for a woman's shoe of a type having a projecting heel, a shoe front sole, and a upper defining a foot opening and including a shoe toe area, a shoe upper heel area, and a shoe upper instep area, the cover comprising:

stretch cover means for covering a surface of a woman's shoe having a D shaped opening in said stretch cover means for receiving said shoe into said stretch cover means;

noncontinuous elastic strip means having a first end and a second end wherein said first end is not joined to said second end for retaining said stretch cover means on said shoe upper heel area attached to said D shaped opening in said stretch cover means; and

overlap means, integral to said stretch cover means and forming a straight side of said D shaped opening in said stretch cover means, for stretching said stretch cover means across said foot opening in said shoe;

wherein said overlap means stretches across said foot opening in said shoe from said shoe toe area to cover said shoe upper instep area when said shoe is inserted into said stretch cover means and before a foot is inserted into said shoe; and

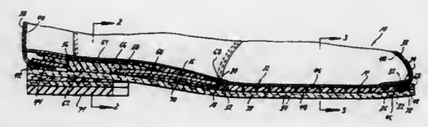
wherein said overlap means stretches down and inside said shoe toe area thereby stretching said stretch cover means over said shoe toe area when a foot is inserted into said foot opening.

5,311,677

SHOE HAVING IMPACT ABSORPTION MEANS

Ernest S. Mann, Northbrook; Carlos B. Paytuvi, Addison; Roy V. Nolting, Glenview, and Thomas F. Riha, Berwyn, all of Ill., assignors to Interco Incorporated, St. Louis, Mo.

Filed Aug. 2, 1991, Ser. No. 739,882
Int. Cl.[5] A43B *23/00*
U.S. Cl. 36—107 **11 Claims**



1. A shoe comprising:

an upper portion,

an insole joined to the upper portion, and

an outsole portion joined to the insole portion,

the insole portion have a forepart comprising a layer of shoe upper leather of a thickness in the range of at least 2½ ounces and less than 5 ounces and a layer of foam material,

the forepart having a back margin,

the foam layer being located between the leather layer and the outsole and extending over substantially the entire area directly below the insole forepart of the shoe,

the insole portion having a back part comprising a layer of generally stiff material extending over the heel area of the shoe and having a front margin,

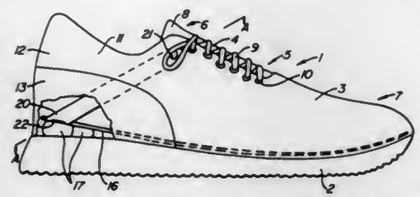
means for adhering the front margin of the back part to the back margin of the forepart thereby forming a composite insole having a forepart of upper leather within said range of thickness and a back part of generally stiff material,

an opening through the layer of stiff material in the central portion of the heel area, and

a foam cushion overlaying the back part of the insole and having a thickened central area projecting into and through the opening in the back part whereby the strike impact of the heel of a human foot wearing the shoe will be at the thickened central area.

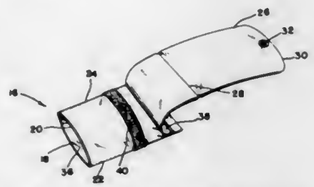
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5,311,678
SHOE SHOCK ABSORPTION SYSTEM
Richard G. Spademan, 2600 Capitol Ave., Sacramento, Calif. 95816
Continuation of Ser. No. 500,812, Mar. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 11,409, Feb. 4, 1987, Pat. No. 4,924,605, which is a continuation-in-part of Ser. No. 736,666, May 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 688,464, Jan. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 623,449, May 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 538,079, Jan. 30, 1984, abandoned. This application Feb. 19, 1993, Ser. No. 21,631
Int. Cl.[5] A43B *5/00, 7/14*
U.S. Cl. 36—114 11 Claims



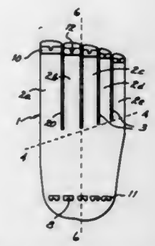
1. A shoe including an upper shell and a lower sole secured to the upper shell, the improvement comprising:
means for sensing when a user of the shoe applies increased weight to the sole upon touching a support surface of the shoe;
tightening means responsive to the sensing means for increasing the tightness of the fit of the shoe on a foot of the user as the user applies the increased weight to the sole; and
additional means coupled to the tightening means for maintaining the tightening of the tightening means for period of time after the user of the shoe reduces said increased weight from the sole.

5,311,679
SHOE POCKET
John A. Birch, Sr., 230 Tughland Ave., Marlboro, N.Y. 12542
Filed Nov. 24, 1992, Ser. No. 980,973
Int. Cl.[5] A43B *5/00*
U.S. Cl. 36—136 2 Claims



1. A removable shoe packet pocket for securing to the laces of a shoe for carrying articles comprising:
a pocket body formed of a sheet of material folded to form a front side and a back side, said front side and said back side having peripheral edges sewn together to provide said pocket with an open end to receive articles;
a u-shaped loop member attached to said back side where said sheet of material forming said pocket body is folded and having a length to wrap around said open end of said pocket body and fastened to said front side; where said u-shaped loop member is passed between the shoe and the laces and pulled until said u-shaped loop member catches on the laces, where u-shaped loop member is attached to said back side, and where said u-shaped loop member covers said open end of said pocket body when folded and fastened to said front side of said pocket body; and
a fastening means attached to said back side of said pocket body for removably engaging the laces of a shoe, where said fastening means is covered by said u-shaped loop member, and said fastening means having hooks of a hook and loop system for engaging the laces.

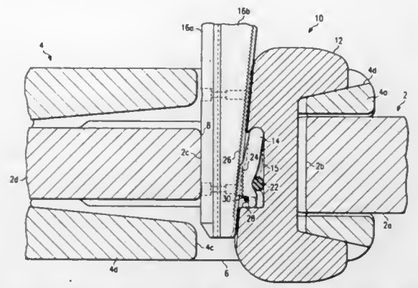
5,311,680
DYNAMIC ORTHOTIC
John E. Comparetto, 4953 Nighthawk Dr., Cincinnati, Ohio 45247
Filed Nov. 7, 1991, Ser. No. 788,838
Int. Cl.[5] A43B *7/14*
U.S. Cl. 36—154 6 Claims



1. A spring platform for supporting the human foot through various stages of gait comprising:
a base having a proximal end for underlying the heel of a wearer up to an area corresponding to a midtarsal joint of the wearer and a distal end for underlying the toes back to the midtarsal joint area of the wearer, said distal end having a plurality of separated rays joined to said proximal end, each said ray separated from an adjacent ray by a longitudinal slot and terminating at a position underlying the midtarsal joint area, each said slot being substantially progressively longer from a first metatarsal side to a fifth metatarsal side of said platform such that a line joining a proximal end of each said ray is acutely angulated with respect to a longitudinal axis of said platform.

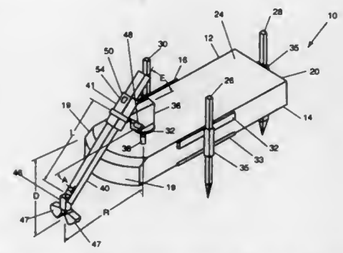
5,311,681
RETAINING MECHANISM
John A. Ruvang, Carrollton; Howard W. Robinson, Grapevine, both of Tex., and Darrell L. Carver, Scottsdale, Ariz., assignors to GH Hensley Industries, Inc., Dallas, Tex.
Filed Apr. 8, 1992, Ser. No. 865,122
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—457 20 Claims

1. A retaining mechanism for captively retaining an adapter interengaged to the forward lip of an excavating bucket, said adapter and lip having aligned transverse openings therethrough, said retaining mechanism comprising:
(a) a C-clamp with a first and second face, said first face engaged to a forward wall of the adapter, said second face having a pawl cavity, said pawl cavity defined by opposing pawl cavity side walls and a rear pawl cavity wall, at least one of said pawl cavity side walls having an access port therein;
(b) a pawl cavity retained within the pawl cavity of the C-clamp, said pawl having a plurality of pawl ratchet teeth thereon;
(c) a split pin having a rear half and a forward half, a face of the rear half having a plurality of ratchet teeth thereon, said split pin providing a wedge fit between the C-clamp and the lip; and



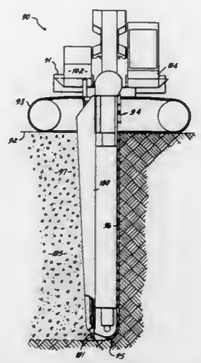
(d) a biasing means between said C-clamp and said pawl, said biasing means positioned to bias the pawl against the split pin.

5,311,682
HYBRID DREDGE
Charles N. Sturdivant, 5120 Pine Hill Rd., Nashville, Tenn. 37221
Filed Jan. 7, 1993, Ser. No. 1,840
Int. Cl.[5] E02F *3/34*
U.S. Cl. 37—312 8 Claims



1. An apparatus for dredging material from a bottom of a fluid reservoir comprising:
a. a floating platform;
b. a rigid telescoping boom mounted to said platform;
c. means to rotate said boom horizontally with respect to said platform;
d. means to pivot said boom vertically with respect to said platform;
e. a clamshell attached to said boom; and
f. a positive displacement pump means for pumping said dredged material from said platform without the use of additional fluid for suspension of said material.

5,311,683
PROPULSION APPARATUS
Paul Camilleri, Queensland, Australia, assignor to Foundation Technology Limited, Australia
Continuation of Ser. No. 338,010, Apr. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 59,745, Jun. 8, 1987, Pat. No. 4,843,742. This application Jul. 15, 1991, Ser. No. 729,920
Claims priority, application Australia, Jun. 13, 1986, PH 6409; Jan. 27, 1989, PJ 2467
Int. Cl.[5] E02F *3/14, 5/08;* E02D *5/18*
U.S. Cl. 37—90 7 Claims



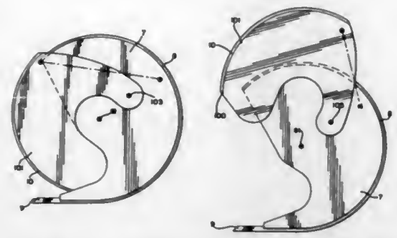
1. A method of commencing and continuing a trench, said method comprising the steps of:
providing a tractor operable at ground level;
providing a trenching arm mechanically coupled to said tractor; and
operating said trenching arm and a combined digging and propulsion unit at a lower end of said trenching arm, said operating step including the steps of: (a) commencing said trench by digging substantially vertically downwardly from said ground level to establish a base thereof and (b) propelling said trenching arm in a desired, non-downward trenching direction.

5,311,684
SCOOPING APPARATUS, VEHICLE AND COUPLING PLATE THEREFORE
Rudolf Van Dalfsen, Buitenhaven 2, NL-8281 BL Genemuiden, Netherlands
Continuation-in-part of Ser. No. 694,644, May 2, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 16,498
Claims priority, application Netherlands, May 4, 1990, 9001080
Int. Cl.[5] E02F *3/76;* B07B *1/49*
U.S. Cl. 37—409 35 Claims

22. A material handling apparatus, comprising:
a frame having a back portion an two side brackets extending from the back portion, each of the side brackets having a first end adjacent to the back portion and a second end remote from the back portion;
a cage rotatably mounted to the second ends of the side brackets about a first axis, the cage including a first pair of end walls, a scoop part firmly engaging the first pair of end walls, a second pair of end walls rotatably mounted to the first pair of end walls about a second axis spaced from the first axis, and a flap part firmly engaging the second

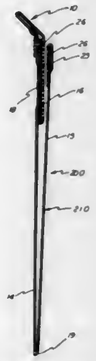
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pair of end walls, wherein at least one pair of end walls is not mounted to the frame; and



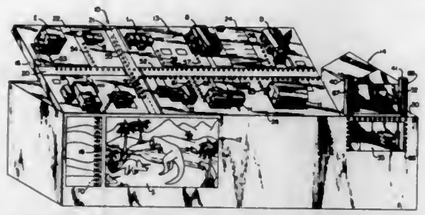
a coupling device mounted to the back portion of the frame for coupling the frame to a vehicle.

5,311,685
HANGING FILE FOLDER ASSEMBLY
Jon R. Wyant, Spring Valley, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 576,534, Aug. 31, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 851,340
Int. Cl.[5] B42F *21/06*
U.S. Cl. 40—359 **14 Claims**



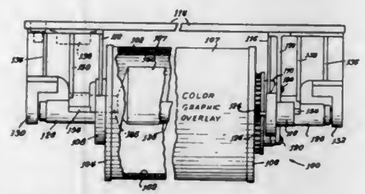
1. A hanging file folder assembly, comprising:
a file folder comprising a pair of walls joined along a lower fold line, and a mounting flap folded downwardly from an upper edge of one of said walls and medially joined to a surface of said one wall along a substantially continuous, full length medial joinder line, thereby defining an open gripping channel below said joinder line and an enclosed guide passage thereabove;
a first suspension bar captured in said guide passage for hanging said file folder;
an index tab holder comprising a lower retaining plate inserted into said gripping channel, a support plate secured to said lower retaining plate and extending upwardly outside said gripping channel, an upper retaining plate supported by said support plate and positioned against the upper edge of said one wall opposite said support plate for retaining said one wall, said first suspension bar and said mounting flap therebetween, and means supported by said support plate for defining an index tab receiving slot; and
a second suspension bar secured to edge of the other of said walls.

5,311,686
ILLUMINATED NATURAL GAS FLOW DISPLAY PANEL ASSEMBLY
Kenneth K. Christensen, Grand Junction; Randy A. Bishop, Broomfield; Daniel Bettis, Littleton, and Michael Markano, Fort Collins, all of Colo., assignors to Public Service Company of Colorado, Denver, Colo.
Filed Jan. 10, 1992, Ser. No. 819,460
Int. Cl.[5] G09F *13/06;* **G09B** *25/02*
U.S. Cl. 40—442 **13 Claims**



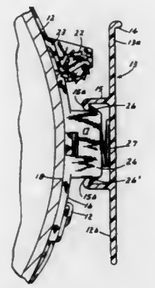
1. In a natural gas display panel assembly for simulating the generation and transmission of natural gas to users wherein an opaque panel includes visual representations of a gas supply source an different types of users including industrial and residential users, the combination therewith comprising:
a. a plurality of elongated light-transmitting arrays on said panel, each of said arrays including a series of light-transmitting holes in said panel extending between said supply source and each of said users;
a plurality of light elements including means supporting said light elements behind said holes along each of said arrays; and
light sequencing means associated with each of said plurality of light elements associated with each said array for sequentially activating said light elements simultaneously along each said array but at different sequencing rates in accordance with the pressure level of the natural gas flowing to each of said users whereby to simulate the rate an direction of flow of natural gas to each of said users.

5,311,687
DISPLAY SIGN
Harold Reed, Elk Grove Village, Ill., assignor to Robert Nielsen & Associates, Ltd., Rolling Meadows, Ill.
Filed Feb. 18, 1992, Ser. No. 837,165
Int. Cl.[5] G09F *13/00*
U.S. Cl. 40—502 **7 Claims**



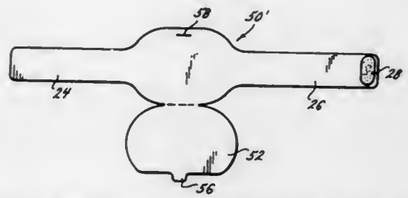
1. A display sign comprising
a. an elongate sign body,
b. illumination means within said body for illuminating said body substantially from end to end,
c. a display portion comprising at least a part of said elongate body, said display portion including
i. a hollow, elongate rotatable display cylinder forming an exterior for said display portion, and
ii. means mounting said display cylinder for rotation,
d. a back support for said body,
e. a stationary reflector extending within said cylinder and having a length substantially the same as a length of said cylinder, said reflector being curved and including an end projection extending from each end of said cylinder, each end projection having a first clip element, and
f. a mounting bracket extending from said back support and engaging each said end projection, said mounting bracket having a second clip element complementary to each said first clip element.

5,311,688
PIPEMARKER
Lori L. Aeschbacher, Whitefish Bay; Scott J. Collins; Gary J. Wirth, both of Milwaukee, and George F. Jambor, Jackson, all of Wis.
Filed Jan. 7, 1993, Ser. No. 1,483
Int. Cl.[5] G09F *3/14*
U.S. Cl. 40—665 **7 Claims**



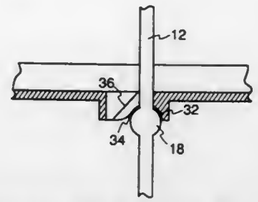
1. A pipemarker comprising (a) an elongated sign body having a flat front face and a back face with a bracket-receiving channel; (b) a bracket for attachment to a pipe; and (c) an elongated strap for attaching the bracket to a pipe; said bracket having means for anchoring one end of the strap and rachet means for receiving the other end of the strap after the strap has been placed circumferentially about a pipe and for tightening the strap to attach the bracket to a pipe whereupon the sign body can be attached to the pipe by positioning the bracket in the bracket-receiving channel of the sign body.

5,311,689
PERSONAL MEMO DEVICE
Ellen H. Lindsey, 12 Greymore, Chesterfield, Mo. 63017
Filed Aug. 2, 1991, Ser. No. 739,412
Int. Cl.[5] A44C *5/00*
U.S. Cl. 40—633 **6 Claims**



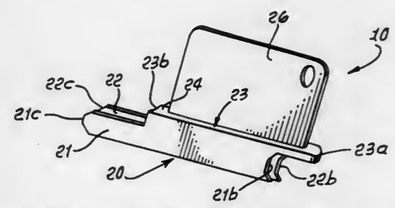
6. A pad of a plurality of personal memo devices, each device including a message-receiving portion with wrist straps extending from opposite sides thereof, means for securing the ends of the wrist straps, a flap which may be folded over the message-receiving portion, and a means for releasably securing the flap in a folded-over position, each personal memo device being releasably secured to the other personal memo devices to form the pad.

5,311,690
IDENTIFICATION TAG
Douglas R. Batten, R.R. #1, Box 280, Crozet, Va. 22932
Filed Sep. 3, 1991, Ser. No. 753,830
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—642 **6 Claims**



1. An identification tagging device having
a substantially rectangular base unit, said rectangular base unit having an interior region and an exterior region, a first end and a second end, a pair of raised sides and a raised end, said pair of raised sides extending substantially perpendicular from the periphery of said rectangular base unit, between said first end and said second end, said raised end extending perpendicular from said rectangular base between said pair of raised sides at said second end, said pair of raised sides having tag retaining means extending therefrom, said pair of raised sides and said raised end forming said exterior region and enclosing said interior region, a tag receiving means region said tag receiving region being within said interior region;
shaft means, said shaft means extending from and being integral with said second end of said rectangular base unit, said shaft means including a plurality of enlarged spaced locking elements; and
locking means, said locking means being in said rectangular base unit between said pair of raised sides, said enlarged locking elements being configured to interact with said locking means to lock said shaft means to said rectangular base unit at anyone of a plurality of positions along said shaft means, whereby when a tag is positioned in said tag receiving region and said shaft means is inserted through said locking means, said shaft means passes through said tag receiving region and said tag, thereby locking such tag in said tag receiving region.

5,311,691
RIFLE SAFETY INDICATOR
Thomas E. Cacek, Lakewood, Calif., assignor to Viper Products Company, Inc., Huntington Beach, Calif.
Filed Mar. 26, 1993, Ser. No. 42,290
Int. Cl.[5] F41A *35/00, 17/44*
U.S. Cl. 42—1.01 **10 Claims**



1. An indicator for use on a rifle to indicate from a distance

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that the bolt of the rifle is open, the rifle having a charging handle and a receiver, and comprising in combination:

a) a body having two forwardly extending upright rails which are laterally spaced apart,

b) a forwardly extending base integral with the rails and from which the two rails depend,

c) an indicator flag integral with the base and upstanding therefrom,

d) the rails having forward ends configured for interfit with the receiver, and having rearward ends configured for interfit with the charging handle, whereby the flag projects visibly upwardly relative to said charging handle and receiver,

e) said rearward ends projecting rearwardly and being configured to interfit said charging handle,

f) said base having a rearward terminus spaced rearwardly from said rial rearward ends.

5,311,692

REMOVABLE FIREARM LOCK

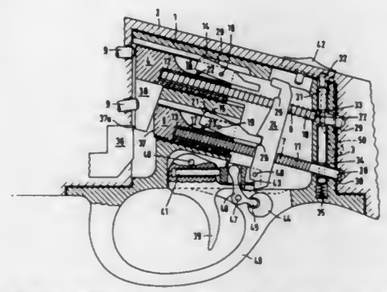
Horst Blaser, Isny im Allgäu, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 640,812, Jan. 14, 1991, abandoned. This application Jul. 9, 1992, Ser. No. 911,111

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1990, 4000819

Int. Cl.[5] F41A *9/15*

U.S. Cl. 42—42.01 **2 Claims**



1. A sport or hunting firearm comprising at least one barrel, each barrel being associated with a firing pin driven by a striker, a breech casing, a lock housing located within said breech casing, said lock housing containing a triggering arrangement, at least one striker wherein the at least one striker is guided in an axially movable fashion within said lock housing and when several strikers are provided, said strikers are arranged in superimposed relationship within said lock housing, and a cocking device comprising a cocking bar, and a safety device, the at least one striker having, in cross section, an angular, substantially rectangular shape and being accommodated in the lock housing which can be removed from within the breech casing of the firearm; the lock housing fitting in a shape-mating fashion into the breech casing and a locking pawl at the rear wall of the lock housing providing fixed mounting of the lock housing within the breech casing.

5,311,693

RIFLE AND PISTOL REST

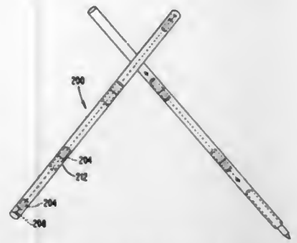
John Underwood, Rte. 9, Box 564, Mocksville, N.C. 27028

Filed Aug. 5, 1992, Ser. No. 924,923

Int. Cl.[5] F41C *27/00*

U.S. Cl. 42—94 **12 Claims**

5. A folding rifle and pistol rest comprising two elongate members and means for pivotally connecting said two elongate members intermediate the ends thereof so that the elongate members can be pivoted to cross one another in the form of an X shape, each of the two elongate members including at least



two hollow tubular members and means for releasably joining adjacent ends of the hollow tubular members to one another.

5,311,694

ELECTROFISHING APPARATUS AND METHOD

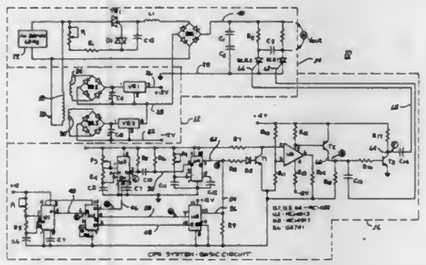
Norman G. Sharber, and John P. Sharber, both of Flagstaff, Ariz., assignors to Coffelt Manufacturing, Inc., Flagstaff, Ariz.

Continuation of Ser. No. 876,397, Apr. 30, 1992, Pat. No. 5,233,782, which is a division of Ser. No. 446,652, Dec. 6, 1989, Pat. No. 5,111,379. This application May 6, 1993, Ser. No. 57,577

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] A01K *79/02*

U.S. Cl. 43—17.1 **7 Claims**



1. Apparatus for electrofishing, said apparatus comprising in combination:

a) means for stimulating the red muscle tissues of fish to be captured in order to induce electrotaxis;

b) means for relaxing any stimulated white muscle tissues in the fish prior to onset of epileptic seizure and

c) means for automatically and on a continuing basis interleaving stimulation of the red muscle tissues with relaxation of any stimulated white muscle tissues.

5,311,695

FISHING ROD HAVING LINE GUIDES, AND METHOD OF MANUFACTURING SAME

Toshihiko Yasui, Tondabayashi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jan. 11, 1993, Ser. No. 2,658

Claims priority, application Japan, Jan. 17, 1992, 4-006062

Int. Cl.[5] A01K *87/04*

U.S. Cl. 43—24 **8 Claims**

1. A fishing rod comprising:

rod stock; and

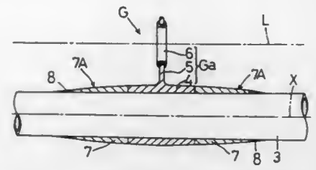
fixed guide means including

a line guide element having an annular shape and formed of a material having wear resistance,

a tubular element mounted on said rod stock,

a frame formed integral with said tubular element for supporting said line guide element, and

a pair of sleeves having a tubular shape for mounting on



said rod stock, said sleeves being arranged axially of said rod stock with said tubular element placed in between;

each of said sleeves defines an outer surface having an arcuate sectional shape gently tapered to approach an outer surface of said rod stock as said outer surface extends away from said tubular element.

5,311,696

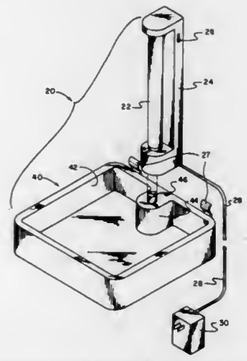
DEVICE FOR ATTRACTING AND KILLING FLEAS

Betty Gauthier, 2222 6th St., S.W. Akron, Ohio 44314, and Paul Terwilliger, 844 Indian Trail, Akron, Ohio 44314

Filed May 10, 1993, Ser. No. 59,065

Int. Cl.[5] A01M *1/04*

U.S. Cl. 43—113 **4 Claims**



1. A new and improved device for trapping and killing fleas and other small insects, comprising:

a reservoir adapted to be filled with a liquid substance adapted to kill fleas and other small insects upon contact, said reservoir being in the form of a container having a central recess for holding said liquid substance, said container having a front wall, a rear wall and first and second opposed side walls; said rear wall having a central portion jutting in a direction toward said central recess and said front wall to define a horizontal support surface adjacent the central recess of said container and proximal to said rear wall thereof;

an elongated illumination source removably mounted on said support surface and extending upwardly and orthogonally with respect to said horizontal support surface, said illumination source adapted to be energized by an external source of electricity to emit a light attractive to fleas or other small insects, and

backboard means for extending upwardly and orthogonally from said rear wall behind said central jutting portion and for extending substantially the full transverse dimension determined by the distance between said first and second side walls of said container, said backboard means having a vertical extent above said horizontal support surface substantially equal to the elongated extent of said illumination source above said horizontal support surface whereby fleas or other small insects attracted to said illumination source hits said back board means and falls into said central container recess.

5,311,697

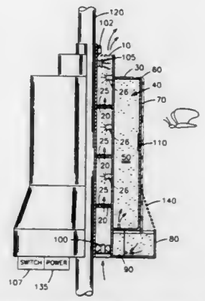
APPARATUS FOR REDUCING THE POPULATION OF FLYING INSECTS

Martin P. Cavanaugh, and William P. L. Cavanaugh, both of 10901 Sidney Pl., Garden Grove, Calif. 92640

Filed Dec. 29, 1992, Ser. No. 998,127

Int. Cl.[5] A01M *1/02, 1/04, 1/14*

U.S. Cl. 43—132.1 **15 Claims**



1. An apparatus for reducing the population of flying insects comprising:

a first cylindrical container oriented with the axis vertical and providing a plurality of storage shelves each holding an insect bait, natural air convection currents producing an insect attracting scent in the vicinity of the apparatus for attracting insects to the apparatus;

a second cylindrical container mounted externally to, and coaxially with the first container for providing a space in which is held defatting agent and having an open top lip so that the liquid may spill over said lip to run downward across the outer surface of the second container;

a storage container positioned below the second container to receive the liquid that spills over the top lip;

a pump interconnected between the storage container and the second container to replace liquid in the second container so that the liquid moves from the storage container to the second container over the top lip and back to the storage container in a continuous process whereby insects attracted to the apparatus by the scent may contact the liquid moving over the outer surface of the second container so that they are destroyed by the defatting agent.

5,311,698

PORTABLE STORAGE FOR SMALL ITEMS

Herbert B. Plost, 2951 E. 56th Pl., Tulsa, Okla. 74105

Filed Feb. 16, 1993, Ser. No. 18,042

Int. Cl.[5] A01K *97/00*

U.S. Cl. 43—54.1 **18 Claims**

1. A container system for small items comprising:

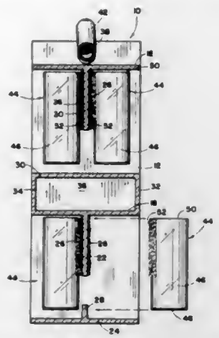
an assembly having at least one planar back plate and a top plate fixedly extending perpendicularly therefrom;

a plurality of open top, closed bottom containers;

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first Velcro strip means of a first type secured to said planar back plate adjacent said top plate; and

second Velcro strip means of a second type affixed to each of said containers whereby each said container may be removably attached to and supported by said first Velcro strip means, the open top of each said container being supported in closed proximity to said top plate whereby said top plate functions as a closure of said open tops of



said containers and wherein said back plate has a first side and a second side, and wherein said top plate extends perpendicular to both said back plate first and second sides and wherein said first Velcro means is attached to both said back plate first and second sides adjacent said top plate, said plurality of containers being removably supported to both said sides of said back plate with said open tops adjacent said top plate.

5,311,699
SHADE HOUSE
David Huffman, P.O. Box 70, R.R. #3, Vanessa, Ontario, N0E 1V0, Canada
Filed Jul. 30, 1992, Ser. No. 921,581
Claims priority, application Canada, Jul. 30, 1991, 2048157
Int. Cl.[5] A01G *13/00*
U.S. Cl. 47—26 **10 Claims**



1. A shade house having a multilateral plan with a contour with a plurality of corners and including a flat roof formed by a flexible sheet material supported by a cable network, said shade house comprising;

(a) a plurality of corner poles disposed one at each corner of said plan, each said corner pole being anchored to the ground by an auger-type earth anchor;

(b) a plurality of peripheral poles disposed at a generally equidistant spacing on lines defining the contour of said plan, each said peripheral pole being anchored to the ground by an auger-type earth anchor;

(c) a plurality of inside poles spaced from each other and defining a pattern of cable support points located on longitudinal and transverse rows within said plan, each said inside pole being anchored to the ground by an auger-type earth anchor;

(d) a peripheral cable system forming a part of said cable network and including a plurality of peripheral cables, each peripheral cable extending, in a tensioned state, between top portions of a pair of adjacent ones of said corner poles and passing through top portions of the peripheral poles disposed between the respective pair of adjacent ones of said corner poles, whereby the peripheral cable system coincides with said contour;

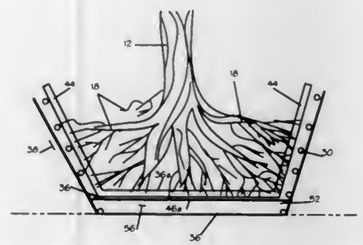
(e) an anchor cable arrangement located exteriorly of the shade house and including a plurality of anchor cable means, each anchor cable means being secured, at a first end thereof, to one of said corner poles or to one of said peripheral poles, and, at a second end thereof, to an earth anchor means, whereby each of said corner poles and said peripheral poles is provided with anchor cable means, the anchor cable means being tensioned thus holding said corner poles and said peripheral poles in a generally upright position and maintaining said cable network in a tensioned state;

(f) a plurality of inside cable means forming a part of said cable network, each inside cable means extending, in a tensioned state, across the plan of the house, from one of said peripheral poles to an opposed one of said peripheral poles, each inside cable means being supported by a number of said inside poles;

(g) said flexible sheet material having peripheral edge portions secured to said network; and

(h) a plurality of holding cable systems parallel with and generally equidistantly spaced from each other and disposed parallel with and closely vertically above at least some of the inside cables, with said flexible sheet material disposed on top of the supporting cables but below the holding cable systems.

5,311,700
CONTAINER FOR PLANTS
Johnny D. Thomas, 7459 County Rd. 130, Enterprise, Miss. 39330
Continuation-in-part of Ser. No. 467,047, Jan. 18, 1990, abandoned. This application Oct. 7, 1991, Ser. No. 771,869
Int. Cl.[5] A01G *23/04*
U.S. Cl. 47—76 **9 Claims**

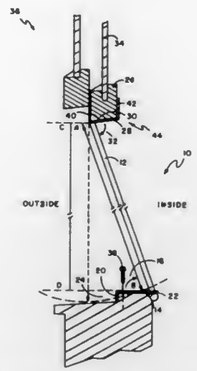


1. A container for containing a growing plant within a root growth medium comprising:

supporting means, having an open mesh construction, for supportably containing a root ball; and

means for air pruning the roots of a plant in a root growth medium, said means further comprising a polyurethane liner, being permeable, rot-resistant and root-penetrable, surrounding said root growth medium within said supporting means; means, within said supporting means, for spacing said liner means for air flow about the bottom of said liner.

5,311,701
CHILD WINDOW GUARD
George C. Psaros, 135 Lincoln Rd., Rockland, Mass. 02370
Filed Oct. 18, 1993, Ser. No. 137,262
Int. Cl.[5] E06B *3/68*
U.S. Cl. 49—57 **7 Claims**



1. A window guard to be used in a window having a window sill, window sash receipt area, and a lower window sash raisable to a height above said window sill, said lower window sash having a bottom rail, said window having an inner side and an outer side, comprising:

a plurality of vertical members, each having a length, a top and a bottom, said vertical members spaced apart from one another;

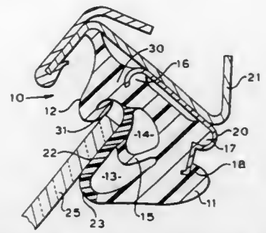
a base member having an inner and outer side positioned on said window sill, said bottoms of said vertical members attached to said inner side of said base member at an angle, said vertical members extending upwards and outwards from said window sill;

means for preventing inward movement of said base member; and

bottom rail retention means attached to said tops of said vertical members to retain said bottom rail of said lower window sash, said vertical members disposed in a non-perpendicular relationship to said base member and to said bottom rail retention means.

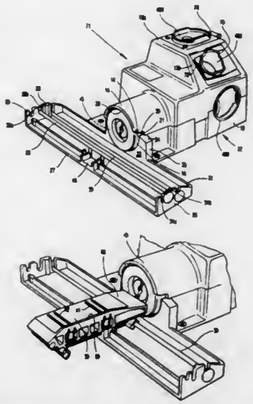
5,311,702
DOOR SEALS
Donald J. Moore, Wolston, United Kingdom, assignor to Jaguar Cars Limited, United Kingdom
Filed Jun. 30, 1992, Ser. No. 906,798
Claims priority, application United Kingdom, Jul. 3, 1991, 9114421
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—495.1 **10 Claims**

1. A door seal for a vehicle, for providing a seal between a door opening and a sideglass of a door comprising an elongate resilient strip having a body section adapted to be secured to the vehicle around the door opening, so that the body section is disposed inboard of the sideglass when the door is closed and the sideglass raised; and a lip section extending outwardly from the body section at an acute angle thereto, the lip section having a root portion by which it is attached to the body section and a tip remote from the root portion, the tip being directed back towards the body section such that when the door is closed with the sideglass raised, the tip will be deflected inwardly towards the root portion and the lip section will be engaged by the sideglass and will engage the sideglass on its



outer surface and the body section of the seal engaging the sideglass on its inner surface.

5,311,703
MULTIPLE PURPOSE TOOL GRINDING DEVICE
Thomas Ketteringham, Mevagissey, England, assignor to Martek Limited, Cornwall, England
Filed Aug. 12, 1991, Ser. No. 743,870
Claims priority, application United Kingdom, Aug. 11, 1990, 9017825
Int. Cl.[5] B24B *3/26, 3/52, 3/54*
U.S. Cl. 51—3 **9 Claims**



1. A tool sharpening device having a rotary grindstone with a planar end grinding face, a tool support having a support face defining a first support surface for supporting a tool to be sharpened against the end grinding face, and linear guide means along which the tool support is displaceable in use of the device, the linear guide means extending transversely of the axis of rotation of the rotary grindstone, and the location of the linear guide means being such as to guide a tool supported on the tool support face to transit across the end grinding face of the rotary grindstone, wherein:

the tool support has guide engagement means for enabling its releasable engagement with the linear guide means

the guide engagement means and the linear guide means are selectively engageable so as to locate the tool support in a selected one of two distinct, predetermined orientations relative to the grindstone in each of which the tool support face is inclined at a respective one of two different inclinations to the plane defined by the end grinding face of the grindstone,

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said tool support face defines said first tool support surface and a second tool support surface at an obtuse angle to each other and intersecting at an adjoining end edge extending transversely of the axis of rotation of the grindstone, and

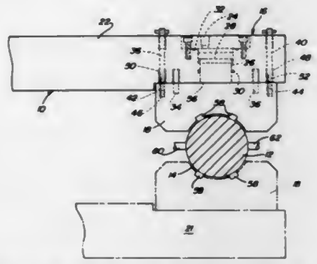
said first tool support surface has a lateral edge extending transverse to said adjoining end edge and an upstanding shoulder extending along the lateral edge and terminating at the adjoining end edge in an end face substantially coplanar with said second tool support surface, whereby a tool supported on the first tool support surface in use of the device can be located securely on the tool support against said shoulder whereas a tool supported on the second tool support surface can project therefrom.

5,311,704

METHOD AND APPARATUS FOR CORRECTING DIAMETRICAL TAPER ON A WORKPIECE

Kenneth A. Barton II, 1413 Airway Dr., Waterford, Mich. 48327, and Rolf O. Bochsler, 288 Dino Dr., Ann Arbor, Mich. 48103

Filed May 20, 1992, Ser. No. 886,682
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.76 **27 Claims**



1. A microfinishing arm assembly for reducing taper on selected bearing journal surfaces of a workpiece which is rotated about a longitudinal axis, past predetermined locations comprising:

a primary finishing arm;

taper correction means for applying a plurality of adjacent, independently variable grinding pressures to said journal surfaces at said predetermined locations, said taper correction means mounted on said primary finishing arm;

primary abrasive means for finishing said journal surfaces, said abrasive means mounted on said primary finishing arm and adapted for use in cooperation with said taper correction means;

measuring means for gauging said bearing journal surfaces at a plurality of spaced points thereon during rotation of said workpiece to generate a plurality of gauging signals,

processor means in electrical contact with said measuring means for receiving said gauging signals, calculating the diameters of said journal surfaces at said spaced points and generating a plurality of output signals corresponding to the diameters of said journal surfaces at said spaced points;

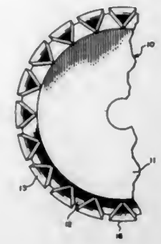
comparator means in electrical contact with said processor means for comparing said output signals to determine the taper on said selected journal surfaces and controlling the extent to which said taper correction means applies variable grinding pressure to said selected surfaces to correct said taper.

5,311,705

CONTOURED CUTTING TOOL

Edward A. Zuzelo, 622 Broad Acres Rd., Narberth, Pa. 19072

Filed Mar. 6, 1992, Ser. No. 846,479
Int. Cl.[5] B24D *7/02*
U.S. Cl. 51—206 R **12 Claims**



1. A contoured cutting element adapted to be secured to a rotatable cutting wheel for cutting a substrate:

said cutting element having a contoured cutting surface with a central longitudinal axis and a longitudinal dimension in the direction of rotation of the cutting wheel and a transverse dimension, said cutting surface adapted to engage and cut said substrate to contour the surface of the substrate with the amount of material cut from the substrate varying transversely of said cutting element;

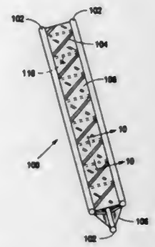
and said cutting surface decreasing in length longitudinally of said cutting element from the central longitudinal axis thereof in direct proportion to the amount of substrate being cut by that portion of said cutting element in order to provide uniform wear to said cutting element and maintain the contour of said cutting element.

5,311,706

INFLATABLE TRUSS FRAME

Bradley Sallee, Austin, Tex., assignor to Tracor Aerospace, Inc., Austin, Tex.

Filed Jul. 19, 1991, Ser. No. 732,810
Int. Cl.[5] E04C *3/28*
U.S. Cl. 52—2.18 **5 Claims**



1. A frame member for use in an inflatable tube support frame comprising:

an inflatable truss, said truss comprising a plurality of elongated inflatable tubes, trussed together in a generally parallel spaced relation, and separated by shear load carrying interlacing inflatable tubes;

means for interconnecting the parallel inflatable tubes and the interlacing inflatable tubes, the means comprising a web material; and

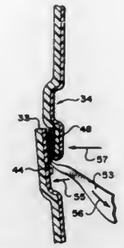
rigid stays inserted between the parallel inflatable tubes.

5,311,707

SHOWER ENCLOSURE

Joel A. LaRoche; William J. Critchley, and Steve G. Mardero, all of Winnipeg, Canada, assignors to Fiat Products Ltd., Winnipeg, Canada

Filed Jan. 29, 1993, Ser. No. 11,240
Int. Cl.[5] A47K *3/16*
U.S. Cl. 52—35 **19 Claims**



1. A shower enclosure comprising a wall assembly including a rear wall and at least one side wall, said wall assembly being divided at a horizontal joint into an upper wall part and a lower wall part for separate transportation into an installation location and for subsequent connection together at the horizontal joint to form the complete wall assembly, each of the upper wall part and the lower wall part including a respective portion of the rear wall and of the at least one side wall, the wall assembly having an inner surface facing inwardly and forwardly and an outer surface facing outwardly and rearwardly, the lower wall part having an upper most edge at the horizontal joint and the upper wall having a lowermost edge at the horizontal joint, and lap joint means defining a lap joint between the upper wall part and the lower wall part at the horizontal joint, said lap joint means comprising a horizontal recessed band defined in the upper wall part adjacent to but spaced from the lowermost edge thereof and having a base of the recessed band displaced outwardly and a bottom edge of the recessed band turned inwardly from the base, a first horizontal band portion of the upper wall part connected to the bottom edge of the recessed band and thus extending between the recessed band and the lowermost edge, which is displaced inwardly relative to the base of the recessed band, a portion of the upper wall part adjacent to and above the recessed band which is displaced inwardly relative to the base of the recessed band, a second horizontal band portion of the lower wall part at the uppermost edge thereof which is displaced outwardly relative to the first horizontal band portion, the second horizontal band portion being overlapped with the first horizontal band portion lie outwardly thereof with the uppermost edge in contact with the outer surface of the bottom edge of the recessed band, and sealing means bonding the outer surface of the first horizontal band portion to the inner surface of the second horizontal band portion.

5,311,708

ANCHOR SYSTEM FOR COMPLETED STRUCTURES

Filmore O. Frye, 42 W. Blaine St., McAdoo, Pa. 18237

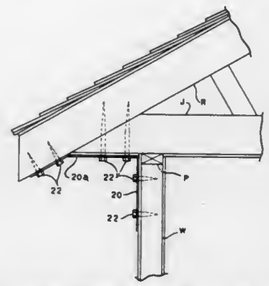
Filed May 21, 1993, Ser. No. 64,437
Int. Cl.[5] E04B *7/02*
U.S. Cl. 52—90.1 **2 Claims**

1. In an existing completed permanent frame structure having a foundation, walls formed of a plurality of studs having a top plate thereacross and having door and window openings therein, and a sloped roof covered by a plurality of rows of shingles and supported by opposite sloped end rafters and a plurality of intermediate sloped rafters and horizontal joists, an external anchoring system for securing the roof to the walls of the structure, comprising:

a plurality of unitary externally installed roof securing straps;

each of said externally installed roof securing straps has a width substantially equal to a wall stud and includes a right angle bend therein and a plurality of fasteners providing securing means for the installation of said straps to the studs and the joists, and

each of said straps includes an extension having a bend therein which is complementary to the rafter slope, and means for securing said each of said straps to the sloped



rafters corresponding to each of the joists and each of the wall studs; whereby

said straps are externally installed to each of the walls studs and to each corresponding joist adjacent the top plate and each of the sloped rafters by means of said fasteners, thereby securing each of the wall studs to each corresponding joists and the sloped rafters; and

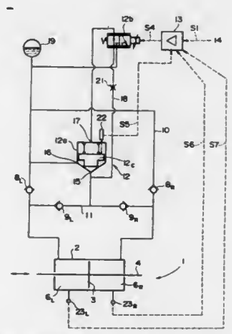
said roof securing straps are installed externally to the structure and without removing any of the frame structure to secure the structure against damage to the roof and walls due to the storms and the high winds.

5,311,709

VARIABLE DAMPING DEVICE FOR SEISMIC RESPONSE CONTROLLED STRUCTURE

Takuji Kobori; Yoshinori Matsunaga; Naoki Niwa, all of Tokyo; Takayuki Mizuno, Chofu; Hironori Sasaki, Kobe; Ichiro Arimoto, Kobe, and Naoshi Shinohara, Kobe, all of Japan, assignors to Kajima Corporation, Tokyo and Kawasakijukogyo Kabushiki Kaisha, Hyogo, both of Japan

Filed Dec. 17, 1992, Ser. No. 992,491
Claims priority, application Japan, Dec. 25, 1991, 3-343499
Int. Cl.[5] E04B *1/98*
U.S. Cl. 52—167 DF **6 Claims**



1. In a variable damping device for a seismic response con-

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trolled structure, said variable damping device having a piston slidably mounted in

a hydraulic cylinder and said piston being adapted to reciprocate therein, said cylinder being connected to said frame main body or to one of the said variable stiffness elements;

said piston being connected to one of said variable stiffness elements or to said frame main body;

hydraulic chambers in said hydraulic cylinder being provided on opposite sides of said piston;

a flow passage for interconnecting said hydraulic chambers with each other; and

a flow regulating valve provided on said flow passage; the improvement comprising:

control means for controlling the opening of said flow regulating valve, said control means including

damping force judging means for judging a damping force to be generated by said device on the basis of the responses of said structure by the vibrational and external force and for generating the value corresponding to said damping force as a generated damping force command value S1;

valve opening detection means for detecting the opening of said flow regulating valve and for generating the value corresponding to said opening as a detected valve opening value S5;

pressure detection means for detecting the hydraulic pressure of said both hydraulic chambers and for generating the value corresponding to said hydraulic pressure as detected hydraulic pressure values S6 and S7, respectively;

a subtraction circuit for generating the value corresponding to the difference between said both detected hydraulic pressure values S6 and S7 as a differential pressure value S8;

a command value judging circuit for judging the sign of said generated damping force command value S1 and that of said differential pressure value S8 and for generating the value corresponding to said generated damping force command value S1 as a pressure command value S2 when said signs are the same, while generating the value corresponding to the value where the opening of said flow regulating valve is fully opened as a valve opening command value S3 when said signs are different;

a pressure controller circuit for feeding back said differential pressure value S8 with respect to said pressure command value S2 to make a correction and for generating the valve opening command value S3 corresponding to the correction value;

a valve opening controller circuit for feeding back said detected valve opening value S5 with respect to said valve opening command value S3 to make a correction and for generating the valve opening control command value S4 corresponding to the correction value; and

operating means for actuating said flow regulating valve on the basis of said valve opening control command value S4.

5,311,710

PORTABLE CURING CELL

Jay S. Eaton, Rte. 2, Buladean, Bakersville, N.C. 28705

Filed Mar. 11, 1992, Ser. No. 850,410

Int. Cl.[5] E04H *6/00*; A47F *5/08*

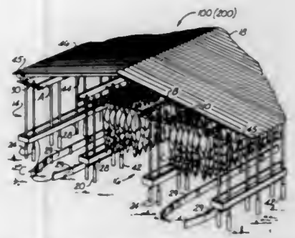
U.S. Cl. 52—174 **19 Claims**

19. A portable curing cell assembly for storing tobacco for curing, the tobacco having been cut and impaled on tobacco rods which have been loaded onto a trailer for transferring to the curing cell assembly, said curing cell assembly comprising:

a frame structure, said frame structure defining three storage bays formed by four rows of paired vertical support poles fitted into tubular sockets which have been driven into the ground, said storage bays having a width sufficient for allowing the trailer to be transported therethrough, said frame structure including horizontal braces secured transversely across said pairs of vertical support poles generally at the top thereof;

oppositely faced rigid elongated carrying members secured to said horizontal braces along the length of said storage bays, said elongated carrying members disposed longitudinally along each side of said storage bays so that tobacco laden tobacco rods can be suspended from said elongated carrying members across said bays, said elongated carrying members being supported by said frame structure at a predetermined height thereon so that the suspended tobacco stalks have a predetermined degree of ground clearance;

a roof disposed across and above said storage bays, said roof comprising a plurality of roofing braces extending across said storage bays and secured to the outermost vertical



support poles of said frame structure, said roof supported by said frame structure at a predetermined height above said elongated carrying members and comprising a flexible poly sheet material fitting over said roofing braces;

means for maintaining tobacco rods in place along said elongated carrying members so that said tobacco rods extending across said storage bay are generally parallel relative each other, said maintaining means comprising spaced apart protuberances extending from the top of said rigid elongated carrying members along the length thereof; and

means for positively aligning and guiding the trailer through said storage bays.

5,311,711

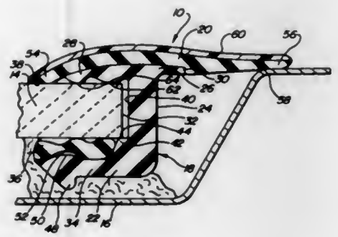
J-TYPE WINDOW LACE ASSEMBLIES

Julio Desir, Sr., Inkster, Mich., assignor to Standard Products Company, Cleveland, Ohio

Filed Oct. 30, 1992, Ser. No. 968,858

Int. Cl.[5] E06B *3/62*

U.S. Cl. 52—208 **9 Claims**



1. A molding comprising:

a clamping member having an overall "J" shape in cross section including a leg, body and head, said leg including a first portion which extends from said body and a second portion which extends from said first leg portion, said head being divided by said body into front and rear halves such that said first leg portion, body and front half of said head define a channel for receiving a panel edge, said first leg portion extending substantially perpendicular to said body and said second leg portion extending from said first leg portion into said channel for securing the panel; and

a crown coupled with said head and extending beyond said head front and rear halves wherein said clamping member and crown are unitarily formed and said first leg portion, body and head are formed of a material more rigid than said second leg portion and crown.

5,311,712

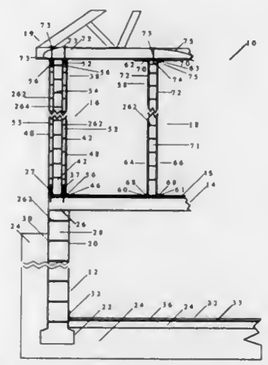
BUILDING WITH CASING SYSTEM CONSTRUCTION AND CONSTRUCTION METHOD THEREOF

William J. Accousti, 775 Shuttle Meadow Rd., Southington, Conn. 06489

Filed Mar. 8, 1991, Ser. No. 666,853

Int. Cl.[5] E04B *1/00*

U.S. Cl. 52—259 **9 Claims**



1. A building system comprising: a foundation system comprised of a plurality of preformed foundation casing members for forming the foundation of a building, each foundation casing member having a first side wall, a second side wall and a bottom defining a void for receiving a pourable hardenable load-bearing material therein, each of said plurality of foundation casing members having a first end and a second end, the first end configured and dimensioned such that the first end of each one of said plurality of foundation casing members is engagingly acceptable by the second end of another one of said plurality of foundation casing members so as to be interconnectable at a construction site and define a continuous void for receiving the load-bearing material poured therein at the construction site and effective to form a continuous section of hardened load-bearing material contained between two or more interconnected foundation casing members, said bottom of at least one of said foundation casing members having at least one through-hole effective to allow some of the poured load-bearing material to ooze out of the foundation casing member before hardening so as to anchor the foundation casing member in the ground.

5,311,713

ELECTRIC AND TELEPHONE POLE GROUND PROTECTOR

Bill J. Goodrich, 4728 SE. Roethe Rd., Milwaukie, Oreg. 97267

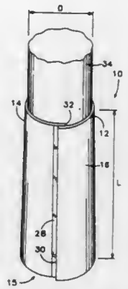
Continuation-in-part of Ser. No. 785,778, Nov. 29, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 949,270

Int. Cl.[5] E04H *12/00*

U.S. Cl. 52—301 **15 Claims**

1. A device for protecting the end of a wooden utility pole set in the ground, comprising:

(a) an integrally formed, substantially cylindrical member having an elongate dimension, said member having a closed end, and being partially split into first and second sections along said elongate dimension thereof so as to form a first edge along the side and across said closed end of said first section and a second edge along the side and across said closed end of said second section, a hinge being formed along the side of said member where said first section is joined to said second section, said member further having an interior surface and an exterior surface and being formed of a substantially flexible material; and



(b) fastener means, disposed on said first section and said second section of said cylindrical member adjacent said first edge and said second section respectively such that said first edge is adapted to be placed over said second edge thereby substantially sealing said first and second sections together.

5,311,714

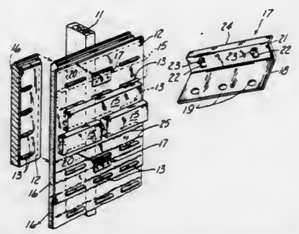
BRICK PANEL APPARATUS

James K. Passeno, Fairbury, Nebr., assignor to National Brick Panel Systems, Inc., Fairbury, Nebr.

Division of Ser. No. 680,058, Apr. 3, 1991, Pat. No. 5,228,937. This application Feb. 19, 1993, Ser. No. 20,312

Int. Cl.[5] E04F *13/08*

U.S. Cl. 52—314 **29 Claims**



1. A brick panel construction apparatus comprising:

a stiff backing member;

a water impermeable sheet, which is primarily planer in shape, one side of said sheet being attached to one side of said backing member;

a plurality of integrally formed spaced apart projections disposed in a plurality of horizontal rows on said impermeable sheet whereby said projections and said sheet constitute a one piece structure, said projections extending to the other side of said sheet, at least some of the projections which are adjacent to each other in each of the horizontal rows being spaced from each other by portions of said primarily planer in shape water impermeable sheet;

a plurality of spaced apart bricks attached to said other side of said sheet, said bricks being disposed between said rows of projections; and

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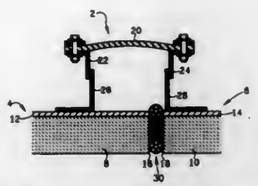
grout disposed between adjacent bricks and covering said sheet and said projections.

5,311,715

EXPANSION JOINT FLEXIBLE SEAL

Ed Linck, Kemah, Tex.; Neil R. Raskin, Rancho la Costa, and V. Swaminathan, El Cajon, both of Calif., assignors to Pyropower Corporation, San Diego, Calif.

Filed Oct. 16, 1990, Ser. No. 598,250
Int. Cl.[5] E04B *1/62*
U.S. Cl. 52—396 **15 Claims**



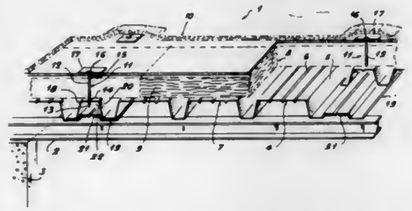
1. A flue and duct system expansion joint flexible seal comprising:
a flexible insulating body having a pair of end faces, a pair of lateral faces and a longitudinal dimension;
a filter element positioned adjacent one of said end faces and extending in said longitudinal dimension, said filter element being made from a wire mesh material; and
means for securing said filter element to said insulating body.

5,311,716

WATERPROOF COVERING DEVICE FOR A ROOF OR THE LIKE

Emmanuel Houssin, Paris, France, assignor to Siplast, S.A., Paris Cedex, France

Filed Jan. 11, 1993, Ser. No. 2,901
Claims priority, application France, Jan. 24, 1992, 92 00777
Int. Cl.[5] E04B *7/00*
U.S. Cl. 52—410 **7 Claims**



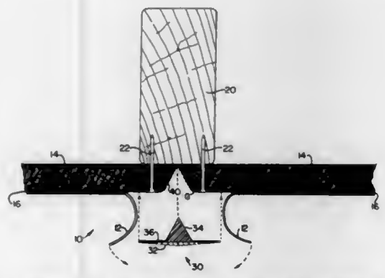
1. A corrugated waterproof roof covering having a plurality of adjacently positioned sections, each section comprising:
an intermediate series of separated, adjacently positioned ridges interconnected by identical U-shaped channels;
an additional lowered ridge located at a first end of the series of ridges and appending therefrom by an L-shaped channel;
an outer edge of the lowered ridge appending to a shallow U-shaped channel;
the sections positioned in edgewise overlying relation;
an nd ridge at a second end of each section overlying and receiving the lowered ridge of an adjacent section to create a passageway therebetween and to laterally interlock the sections;
a protective layer positioned atop the ridges; and
a plurality of fasteners, each of which extends through the layer for termination in the passageway and concealment of the fasteners from sight, as viewed in a direction opposite the layer.

5,311,717

PREDECORATED WALLBOARD JOINT AND METHOD OF JOINING PREDECORATED WALLBOARDS TO FORM A CONCEALED JOINT

Patty L. Yount, Lexington, and Jacob E. Fisher, Jr., Granite Quarry, both of N.C., assignors to J.P. Walls, Inc., Lexington, N.C.

Continuation-in-part of Ser. No. 452,763, Dec. 14, 1989, abandoned. This application Jun. 12, 1992, Ser. No. 859,472
Int. Cl.[5] E04B *2/10*
U.S. Cl. 52—417 **19 Claims**



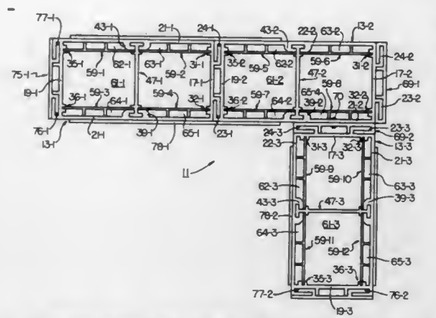
1. A method of joining a pair of predecorated square edge wallboards so as to conceal the joints therebetween without the use of battens and the like comprising:
providing a pair of predecorated square edge wallboards (**10**) each having a predecorated sheet (**12**) adhered to the major central portion of the face of the undecorated wallboard (**14**)and wherein the predecorated sheet is not adhered adjacent to the side edges of said wallboard and extends beyond the side edges thereof to form edge flaps;
attaching said wallboards (**14**) in adjacent relationship to wall studs or the like (**20**), said wallboards of the type each having a predecorated sheet (**12**) adhered to the major central portion of the face of the undecorated wallboard and wherein the predecorated sheet is not adhered adjacent to the side edges of said wallboard and extends beyond the side edges thereof to form edge flaps;
pulling said adjacent edge flaps of said predecorated wallboards back to expose the joint between said adjacent wallboards and the surface area of undecorated wallboard adjacent to the side edges thereof;
cutting a groove (G) alone at least a substantial portion of the length of the joint (J) between said pair of adjacent wallboards and within the square edges of said adjacent wallboards;
adhering a joint strip (**30**) over at least a substantial portion of the length of said groove, said joint strip comprising a rib along the length thereof adapted to matingly fit within said groove and a support strip secured thereto which extends laterally over at least a portion of the undecorated wallboard adjacent to the side edge of each of said adjacent wallboards;
releasing said edge flaps of said adjacent predecorated wallboards and positioning said flaps in overlapping relationship; and
removing overlapping portions of said edge flaps and adhering said remaining portions of said edge flaps to said joint strip to form a smooth surface.

5,311,718

FORM FOR USE IN FABRICATING WALL STRUCTURES AND A WALL STRUCTURE FABRICATION SYSTEM EMPLOYING SAID FORM

Jan P. V. Trousilek, 9 Guerney Ct., Newport, R.I. 02540

Filed Jul. 2, 1992, Ser. No. 908,286
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—425 **3 Claims**



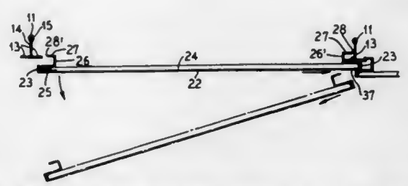
1. A prefabricated wall structure kit comprising a pair of identical forms, each of said pair of identical forms comprising a generally rectangular elongated structure having a cavity defined by a right end panel, a left end panel and a pair of side panels, said right end panel and said left end panel being matingly engageable so that said pair of identical forms may be interconnected in an end-to-end relationship, said right end panel and said left end panel also being provided with alignable openings so that, when said pair of identical forms are interconnected in an end-to-end relationship, said right end panel and said left end panel also being provided with alignable openings so that, when said pair of identical forms are interconnected in an end-to-end relationship, concrete may be distributed monolithically between said pair of identical forms, a right end member and a left end member, said right end member being matingly engageable with said right end panel of said pair of identical forms and being appropriately shaped to contain concrete which has passed through said alignable opening in said right end panel, said left end member being matingly engageable with said left end panel of said pair of identical forms and being appropriately shaped to contain concrete which has passed through said alignable opening in said left end panel.

5,311,719

METAL PANELS FOR ACCESSIBLE CONCEALED CEILING SYSTEM

Martin D. Jahn, Chicago, Ill., assignor to Chicago Metallic Corporation, Chicago, Ill.

Filed Nov. 18, 1992, Ser. No. 978,363
Int. Cl.[5] E04B *5/52*
U.S. Cl. 52—506.09 **18 Claims**



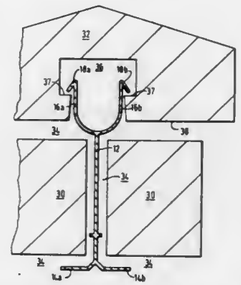
1. A metal panel for use in a ceiling system having a plurality of main runners provided with flanges, said panel comprising a rectangular planar sheet member having first rims on two opposite edges, said first rims being provided with integral suspension means for suspending the panel on the flanges of adjacent main runners, said suspension means of each rim being formed by an integral first portion inwardly extending at right angles to the rim and parallel to a plane of the sheet member, said first portion terminating in a second portion extending at right angles to the first portion away from the sheet member, said second portion terminating in a third portion extending at right angles to the second portion and parallel to the first portion and facing outward with an edge terminating inward of the rim, said second portion having a width greater than the height of the rim to enable insertion of an adjacent rim in a space between the first portion and a flange supporting the third portion.

5,311,720

METHOD AND APPARATUS FOR ATTACHING PARTS OF BUILDINGS OR OTHER ARTICLES TO A SUPPORT STRUCTURE

Michael N. Glickman, London, England, assignor to Ibstock Building Products Limited, Ibstock, England

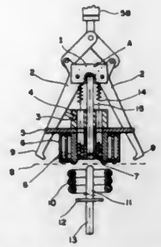
Filed Dec. 5, 1991, Ser. No. 803,183
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—747 **9 Claims**



1. A method of attaching a masonry article to a support structure selected from a wall structure and a building structure, the method comprising securing an apparatus to or within said support structure said apparatus comprising an elongate attachment member of indefinite length, which has an upper region, a first part made up of two symmetrical opposed outwardly extending resilient latch portions, the latch portions together defining and forming a wall of a channel portion of the elongate member, the elongate member also having an elongate web which is connected to the first part and which has, at an edge remote from the said wall, anchor portions which extend laterally of the web; said method comprising placing the masonry article, provided with a recess in its underside, over the latching portions; and pressing down on the masonry article, the recess wall having a taper into the recess such that the two latch portions are compressed towards each other and the recess also having an enlarged area in an interior of the recess such that the two latch portions can expand after being compressed so that they interengage with said walls of the recess of the masonry article to hold said article on the structure.

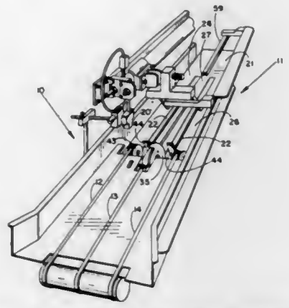
VOL 1162 ISS 3 MAY 17 1994 UMI

5,311,721
WIRE WINDING AND TYING MACHINE WITH MAGNETIZED HANKING HEAD
Miguel C. Urchaga, Barbastro, Spain, assignor to Hanscom-Madex, A.I.E., Barbastro, Spain
Filed Nov. 27, 1992, Ser. No. 982,472
Int. Cl.[5] B65B *13/28, 63/04*
U.S. Cl. 53—118 7 Claims



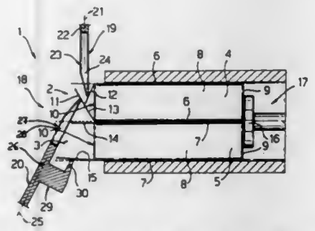
3. A wire winding and typing machine for winding a strand having ends into a hank and then individually tying, comprising:
- a hanking head with a pair of clamping arms and a lower face; said lower face including a plurality of magnetic elements;
- conveying means for delivering ferrous wire to said lower face, said ferrous wire being magnetically affixed to said lower face;
- means for moving said head from said conveying means to said wound strand to deliver the wire,
- a winding plate having spaced winding fingers and an adjustable clamp adjacent one finger
- said strand ends remaining fixed to said winding plate, and
- twisting means for engaging said wire to complete a tied hank.

5,311,722
HANDLING AND LOADING BATCHES OF PRODUCTS ON EDGE
Colleen Staton, 1132 Orange Ave. East, St. Paul, Minn. 55106
Filed May 28, 1992, Ser. No. 889,249
Int. Cl.[5] B65B *35/44, 35/50;* B65G *57/11*
U.S. Cl. 53—443 16 Claims



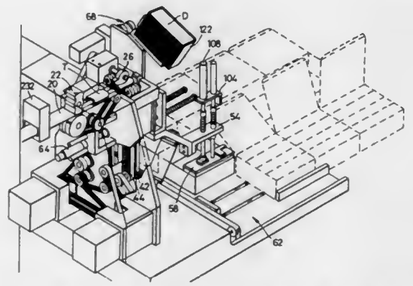
1. A method of arranging a multitude of separated articles into a batch of articles, comprising the steps of:
- a) moving a plurality of separated articles resting freely in tandem on a first conveyor toward an output end of said first conveyor with a leading edge of each article generally transverse tot he direction of travel of said article; then
- b) transferring each article in sequence from the output end of said first conveyor downward to the receiving end of a second conveyor so that its leading edge contacts said second conveyor;
- c) restraining the ledge of an article which is transferred to said second conveyor to keep said article partially upright angled rearward on said second conveyor;
- d) moving said partially upright article on edge on said second conveyor so that successive articles reaching said second conveyor reverse shingle one behind the other on edge to form a reverse-shingled batch of articles consisting of predetermined number of articles; and then
- e) advancing said batch of reverse-shingled articles on edge on said second conveyor towards an output end of said second conveyor to space said batch from the next article which is transferred to said second conveyor from said first conveyor.

5,311,723
METHOD AND DEVICE FOR SIMULTANEOUSLY CLOSING PAIRS OF BOXES
Silvano Boriani, and Antonio Gamberini, both of Bologna, Italy, assignors to G. D Societa' per Azioni, Bologna, Italy
Filed Jun. 26, 1992, Ser. No. 904,822
Claims priority, application Italy, Jul. 16, 1991, B091A000254
Int. Cl.[5] B65B *7/20*
U.S. Cl. 53—491 13 Claims



1. A method of simultaneously closing a pair of boxes comprising a first and second box (**4, 5**), each having a pair (**2, 3**) of lateral tabs, which are folded one on top of the other for forming the lid (**11**) of the respective said box (**4, 5**); said method comprising the steps of:
- arranging said boxes (**4, 5**) adjacent to each other; whereby individual tabs (**12, 13, 14, 15**) in said two pairs (**2, 3**) of tabs are arranged, prior to folding, facing and parallel to each other, so as to define a series of tabs with two inner tabs (**13, 14**) relative to said series and two outer tabs (**12, 15**), relative to said series; wherein the two inner tabs (**13, 14**) are located between the two outer tabs (**12, 15**); wherein each of said first and second box (**4, 5**) comprises one of said outer tabs (**12, 15**) and an inner tab closest thereto, respectively (**13, 14**);
- adjacently stationarily positioning said boxes (**4, 5**) between first and second folding means (**19, 20**) with said first and second folding means being
- adjacent to said first and said second box (**4, 5**) respectively and moving said first and second folding means along separate folding paths (**21, 25**) relative to the stationarily positioned boxes;
- folding, via each of said folding means (**19, 20**), the outer tab (**12; 15**) of the box (**4; 5**) adjacent thereto and the inner tab (**14; 13**) of the other box (**5; 4**); wherein said inner tabs (**13, 14**) are folded successively; with a first (**13**) of the two inner tabs (**13, 14**) being directly accessible by the second folding means (**20**) as the second foldings means (**20**) travels along its folding path (**25**), and said first inner tab (**13**) being folded first; and wherein the other inner tab (**14**) is directly inaccessible by the first folding means, until said first inner tab is folded by said second folding means, with the other inner tab (**14**) being made accessible to the respective folding means (**19**), subsequent to folding of said first inner tab (**13**); with said other inner tab (**14**) being folded thereafter.

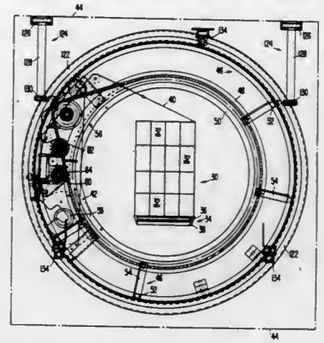
5,311,724
COLLATING APPARATUS
Geoffrey W. Vernon, Kenilworth; James Goodwin, Coventry; David Seaward, Kingshurst, and Thomas W. Bailey, Berkswell, all of Great Britain, assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.
Continuation of Ser. No. 801,325, Dec. 2, 1991, abandoned. This application May 26, 1993, Ser. No. 67,410
Claims priority, application United Kingdom, Nov. 30, 1990, 9026124.9; Jun. 19, 1991, 9113197.9
Int. Cl.[5] B65B *35/50*
U.S. Cl. 53—529 16 Claims



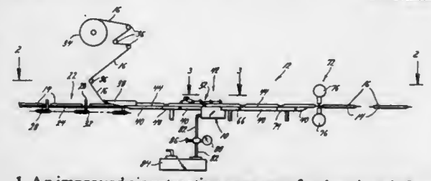
1. A collating apparatus for a stack of generally flat articles comprising a downwardly extending guide for containing the articles, an entry region at the upper end of the guide for receiving said articles into the guide, stack support means within said guide for supporting the articles as they are accumulated therein, said support means comprises two support arrangements each of which comprises a pair of conveyor bands extending downwardly in diagonally opposite positions at the sides of the guide downwardly from said upper entry region and engagement elements for the articles projecting from each said conveyor band across the face of that band of the other pair of bands on the same side of the guide and being downwardly displaceable with their respective conveyor bands, means for displacement of said support arrangements with the accumulation of said articles within the guide to at least partly compensate for the increasing height of the accumulating stack, take-off means for removing a completed stack from the guide, and means displaceable within the guide for engaging the top of the completed stack prior to its removal from the guide by said take-off means to compress the height of the stack in preparation for the insertion of the articles as a stack into a container.

5,311,725
STRETCH WRAPPING WITH TENSION CONTROL
Stuart Martin, Corydon, Ind.; Jim Lancaster, and John Faln, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.
Filed Jul. 30, 1992, Ser. No. 921,663
Int. Cl.[5] B65B *13/12*
U.S. Cl. 53—556 20 Claims

1. An apparatus for stretch wrapping a load with a web of packaging material, the apparatus comprising:
- a support frame;
- a rotatable frame rotatably mounted on the support frame;
- a dispenser mounted on the rotatable frame to travel along an orbital path as the rotatable frame is rotated, the dispenser having a web tensioning system which is selectively operable in a plurality of different web tensioning operation states;
- at least one actuation ring movably mounted on the support frame and configured to operatively interact with the web tensioning system throughout the travel of the dispenser along the orbital path to selectively operate the web tensioning system in each of the plurality of different web tensioning operation states; and
- at lest one activator for moving the actuation ring to selectively operate the web tensioning system in each of the different web tensioning operation states throughout the travel of the dispenser along the orbital path.



5,311,726
AIR EXTRACTION APPARATUS FOR CONTINUOUS PACKAGE MAKING
Franc W. Rauscher, 19 Oakridge West, St. Peters, Mo. 63376, and Daniel P. McEntee, 225 Bellm, Florissant, Mo. 63031
Filed Jun. 17, 1992, Ser. No. 899,732
Int. Cl.[5] B65B *9/06, 31/04*
U.S. Cl. 53—511 17 Claims



1. An improved air extraction apparatus for drawing air from an interior volume of a longitudinally extending, continuously moving tube of packaging material with a continuous succession of objects enclosed therein, the tube having an unsealed longitudinally extending seal from which project two unsealed overlapping flaps, the apparatus comprising:
- a pair of conveyor top surfaces for engaging and supporting the continuously moving tube, the pair of top surfaces being substantially coplanar and laterally spaced apart forming a longitudinally extending slot between the top surfaces;
- a pair of conveyor side surfaces each joined to and depending downward from one of the pair of top surfaces, the pair of side surfaces being substantially parallel and laterally spaced apart so that they mutually oppose each other and form a longitudinally extending slot between the side surfaces that is an extension of the slot between the top surfaces, the side surfaces directing the overlapping flaps of the packaging material longitudinally through the slot between the side surfaces as the packaging material is continuously moved over the conveyor top surfaces;
- means for subjecting the slot between the side surfaces to a vacuum pressure for drawing air out of the interior volume of the packaging material and through portions of the overlapping flaps directed through the slot as the packag-

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ing material is continuously moved over the conveyor top surfaces;

means provided in the slot between the side surface at longitudinally spaced positions on opposite sides of the means for subjecting the slot to vacuum pressure for sealing across the slot between the side surfaces;

the means for sealing across the slot between the side surfaces also engages against the overlapping flaps of packaging material at opposite longitudinal ends of the portions of the overlapping flaps directed through the slot; and

the means for sealing across the slot engages against the overlapping flaps of packaging material for causing the overlapping flaps to press against each other.

5,311,727

FLOATATION CUTTING APPARATUS WITH SUPPORT SURFACE SEALANT AND CENTRIFUGE CHAMBER

Arthur L. Fassauer, 420 Foster La., Canyon, Tex. 79015

Filed Jul. 20, 1992, Ser. No. 918,202

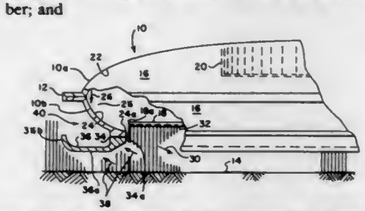
Int. Cl.[5] A01D *34/72*

U.S. Cl. 56—12.8 **18 Claims**

7. An air-floated apparatus, comprising:

a substantially endless housing having an open bottom and an air intake opening, said housing being adapted to cooperate with a support surface beneath said housing to define a substantially enclosed chamber;

air moving means located in said chamber for pressurizing air within said chamber sufficient to float said housing above the support surface, said air moving means being adapted to provide a downward flow of air in said chamber; and



centrifuge means located in said chamber and defining a centrifuge raceway for centrifuging material in said chamber, said chamber being configured to accommodate centrifuging of material in the presence of air pressure sufficient to float said housing above the support surface.

5,311,728

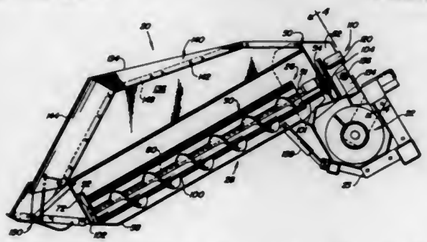
COTTON HARVESTER

Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 30, 1992, Ser. No. 968,691

Int. Cl.[5] A01D *46/12*

U.S. Cl. 56—33 **19 Claims**



1. In a cotton harvester having a main frame supported for forward movement through a field of cotton planted in parallel rows, a row unit for stripping cotton from a row of plants, comprising:

a row unit housing supported by the frame;

first and second fore-and-aft extending stripper rolls supported for rotation about parallel axes of rotation in the housing and defining a row receiving area;

first and second augers offset from the first and second stripper rolls, respectively, for conveying stripped cotton rearwardly, wherein the axes of rotation of the first and second stripper rolls are parallel to the axes of rotation of the first and second augers, respectively; and

a roll drive connected to the first and second stripper rolls and an auger drive connected to the first and second augers, the roll drive and auger drive rotatable about axes parallel to the axes of the rolls and augers.

5,311,729

WRAPPING MECHANISM FOR THE BALES OF A BALER

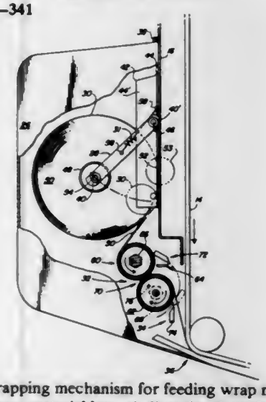
Jean Viaud, Sarreguemines, France, assignor to Deere & Company, Moline, Ill.

Filed Aug. 8, 1991, Ser. No. 742,679

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 4032763

Int. Cl.[5] A01F *15/07*

U.S. Cl. 56—341 **3 Claims**



1. In a wrapping mechanism for feeding wrap material from a spool of wrap material into a baling chamber of a large round baler for wrapping a bale formed in said baling chamber, an improved mounting for the spool comprising: a pair of parallel, spaced apart arms located at opposite ends of the spool and having first ends vertically pivotally mounted to an arm support for swinging about a horizontal pivot axis and having second ends respectively connected to the opposite ends of the spool so as to permit the latter to freely rotate about a rotation axis extending parallel to the pivot axis; and an upright surface being located beneath said first axis and being disposed in constant contact with said spool, whereby the weight of the spool and arms act as a force biasing the spool against said surface.

5,311,730

SPINNING MACHINE WITH DRIVABLE TRANSPORT BELTS AND STATIONARY GUIDING BELTS FOR SLIVERS

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,355

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1991, 4123823

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] D01H *13/04*

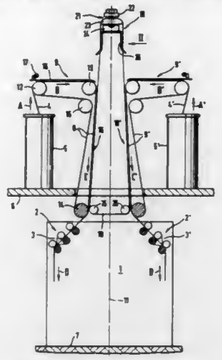
U.S. Cl. 57—90 **24 Claims**

1. A spinning machine comprising:

a plurality of spinning stations for the spinning of slivers fed in cans,

drivable transport belts for conveying the slivers from the cans to the spinning stations, and

stationary guiding belts which extend in parallel to the transport belts and form a sliding guide for the slivers to be transported by the transport belts, the slivers being guided between the transport belts and the guiding belts such that



the slivers contact the transport belts and the guiding belts.

5,311,731

SPINNING MACHINE

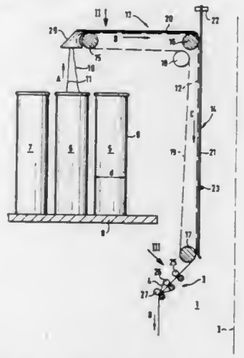
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Jun. 8, 1992, Ser. No. 895,031

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1991, 4118957

Int. Cl.[5] D01H *13/04*

U.S. Cl. 57—90 **17 Claims**



1. A spinning machine arrangement comprising:

a plurality of spinning stations,

depositing sites for cans containing sliver to be spun,

a plurality of cans, with each can containing at least two slivers.

conveying means for simultaneously withdrawing the at least two slivers from each can and conveying the slivers from the cans to the spinning stations,

wherein the cans each have a diameter of at least 400 mm and are designed for receiving at least two slivers, and

wherein the conveying means include a common conveying device assigned to each can for said at least two slivers contained in each can, said common conveying device leading to adjacent spinning stations, and comprising a conveyor belt for conveying these slivers side-by-side, each conveying device having an inlet,

and further comprising guiding elements at the inlet to the conveying devices, the guiding elements guiding the slivers during travel of the slivers into the conveying device and maintaining a separation of the slivers from one another.

5,311,732

APPARATUS FOR CLEANING RESERVE SURFACES OF RING-SPINNING SPINDLES

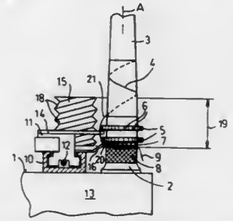
Daniel Friedrich, Marmoutier, France, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 962,142

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1991, 4134217

Int. Cl.[5] D01H *1/38, 9/16*

U.S. Cl. 57—303 **9 Claims**



1. In combination with a ring-spinning or twisting machine having:

a common support beam and

a longitudinal row of upright and normally rotating spindles mounted on the common support beam and each having a lower reserve surface below a sleeve carried on the spindle and

upper and lower axially spaced disks forming a radially outwardly open gap, an apparatus for clearing roving wound on the surface, the apparatus comprising:

a guide rail extending longitudinally along a back side of the beam adjacent the spindles;

a carriage displaceable along the rail past the spindles;

drive means including a longitudinally extending drive element secured to the carriage for displacing same longitudinally along the rail past the spindles;

a roving-cutting element fixed on the carriage engageable into the gap between the disks; and

a roving-clearing element on the carriage below the cutting element and engageable immediately underneath the disks of the spindles.

5,311,733

COMBINATION GOLF BALL RETRIEVER AND TRAP RAKE

Edward G. Krenkel, Clarklake, Mich., assignor to Michigan Business Consulting Services, Inc., Jackson, Mich.

Filed Aug. 6, 1992, Ser. No. 925,187

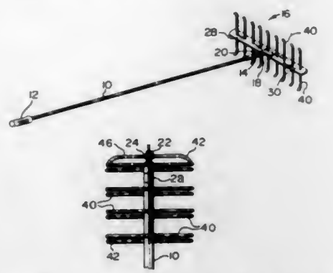
Int. Cl.[5] A01D *07/06*

U.S. Cl. 56—400.06 **3 Claims**

1. A combination golf ball retriever and trap rake comprising, in combination, a handle having a holding end, an implement end and a longitudinal axis, an elongated head mounted on said handle implement end transversely disposed to said handle axis, said head having opposite sides, a plurality of elongated spaced tines mounted on said head extending from both of said head sides, said tines including free end regions, said end regions being angularly deformed in the direction toward said handle, adjacent tines being spaced apart a distance slightly less than the diameter of a golf ball whereby said

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tines will retain submerged golf balls upon drawing said head in the direction of said handle, said head including a bracket mounted upon said handle implement end, a pair of elongated arms pivotally mounted upon said bracket pivotal between a folded position disposing said arms substantially parallel to said handle axis and an extended open position wherein said arms are substantially axially aligned, said tines being mounted upon said arms, said arms each including an inner end located adja-



cent said bracket, an abutment surface defined upon each arm inner end, said abutment surfaces engaging upon said arms being pivoted to said open position to position and retain said arms at said open position, said tines on one of said arms being dimensionally staggered with respect to the tines on the other arm whereby said tines' free end regions of said respective arms are misaligned with respect to each other when said arms are pivoted to said folded position toward said handle.

5,311,734

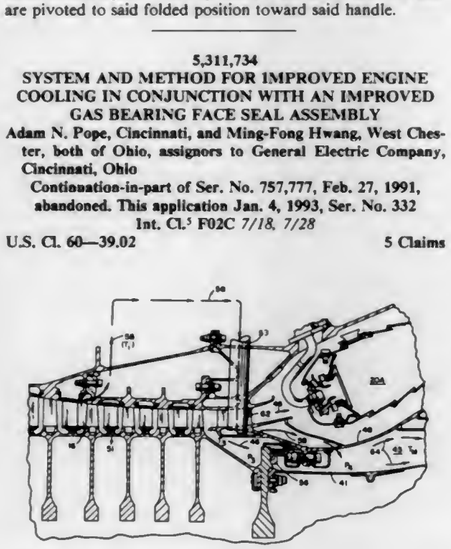
SYSTEM AND METHOD FOR IMPROVED ENGINE COOLING IN CONJUNCTION WITH AN IMPROVED GAS BEARING FACE SEAL ASSEMBLY

Adam N. Pope, Cincinnati, and Ming-Fong Hwang, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 757,777, Feb. 27, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 332

Int. Cl.[5] F02C *7/18, 7/28*

U.S. Cl. 60—39.02 **5 Claims**



4. A gas turbine engine comprising:

a) a multi-stage air compressor having a compressor discharge stage and at least one lower pressure stage;

b) an annular combustor structure having air inlet means coupled for receiving air from said compressor discharge stage;

c) a rotor structure supported generally centrally of said combustor and spaced therefrom whereby an annular cavity is defined between said rotor structure and said combustor structure;

d) sealing means connected between said rotor structure and said combustor structure adjacent said air inlet means for inhibiting compressor discharge air from entering said cavity;

e) means for extracting a preselected flow of air from said lower pressure stage of said compressor and for directing said extracted air onto said rotor structure;

f) wherein said sealing means comprises a gas bearing face seal assembly, said gas bearing face seal assembly comprising

i) a face seal ring member including

A) a primary flow restrictor dam, said dam being a radially and circumferentially extending surface, and

B) a gas bearing face surface, and

ii) means for supporting said face seal ring member on said combustor structure for translation of said primary flow restrictor dam and said gas bearing face surface relative to a primary rotating sealing surface on a rotating member which comprises a portion of said rotating structure to establish an axially and circumferentially extending primary gas bearing face clearance between said primary rotating sealing surface and each of said primary flow restrictor dam and said gas bearing face surface.

5,311,735

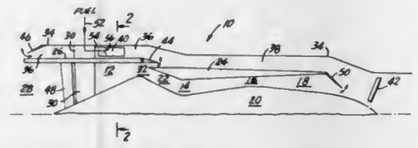
RAMJET BYPASS DUCT AND PREBURNER CONFIGURATION

Robert J. Orlando, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 10, 1993, Ser. No. 58,182

Int. Cl.[5] F02K *3/11*

U.S. Cl. 60—204 **10 Claims**



1. A jet engine, comprising:

a turbofan section comprising a fan section, a compressor section, a combustor section, and a turbine section disposed in axial series;

a main duct for admitting inlet air into said turbofan section;

a mid bypass duct selectively communicating with said fan section for bypassing said inlet air around said compressor section, said combustor section and said turbine section;

a forward bypass duct selectively bypassing said inlet air around said turbofan section and into said mid bypass duct;

an augmenter disposed downstream of said main duct and said mid bypass duct; and

preburner means provided in said forward bypass duct for preheating said inlet air, said preburner means being generally radially aligned with said fan section.

5,311,736

VARIABLE CYCLE PROPULSION ENGINE FOR SUPERSONIC AIRCRAFT

Alain M. J. Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." , Paris, France

Filed Dec. 22, 1992, Ser. No. 994,914

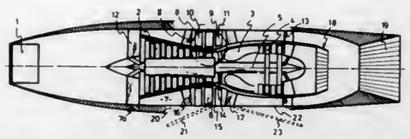
Claims priority, application France, Dec. 24, 1991, 91 16094

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.3 **7 Claims**

1. A variable cycle turbojet propulsion engine, particularly for supersonic aircraft, comprising:

a primary unit including a compressor, a combustion chamber, a turbine, a common shaft interconnecting said compressor and said turbine whereby said compressor is driven by said turbine, and an exhaust assembly having at least one adjustable section nozzle, an annular outer casing surrounding said primary unit and defining therebetween an annular cold flow secondary duct, an air intake at the upstream end of said outer casing, a secondary adjustable section exhaust nozzle at the downstream end of the said outer casing, and a compression fan assembly disposed in



said secondary duct, said fan assembly including at least one stage of movable rotor blades rigidly connected to said shaft of said primary unit so as to be driven thereby, a stage of fixed inlet guide vanes on the upstream side of said rotor blade stage, a stage of fixed flow straightener vanes on the downstream side of said rotor blade stage, a first adjuster for adjusting the pitch of said inlet guide vanes, and a second adjuster for adjusting the pitch of said fixed flow straightener vanes.

5,311,737

EXHAUST PURIFICATION APPARATUS FOR AN ENGINE

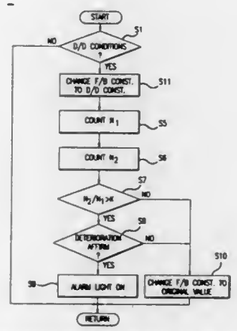
Kazunari Komatsu; Kiyoshi Kuronishi; Naoyuki Noguchi, and Hirofumi Nishimura, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 30, 1992, Ser. No. 959,762

Claims priority, application Japan, Mar. 29, 1991, 3-093517; Mar. 29, 1991, 3-0933518; Jul. 16, 1991, 3-202597

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—276 **9 Claims**



1. An exhaust purification apparatus for an engine comprising:

a catalytic converter located in an exhaust system of the engine for purifying exhaust gas from the engine;

first exhaust sensor means for detecting concentration of remaining oxygen in the exhaust gas and provided in the exhaust system on an upstream side of said catalytic converter;

second exhaust sensor means for detecting concentration of remaining oxygen in said exhaust gas and provided in the exhaust system on a downstream side of said catalytic converter;

feed back control means for controlling an air fuel ratio of said engine in response to a detected value of said first exhaust sensor means and a predetermined control constant;

operating condition detecting means for detecting a predetermined operating state of the engine suitable for judging deterioration of a catalyst in said catalytic converter;

deterioration judging means for judging deterioration of a catalyst in said catalytic converter on the basis of a detected value of said second sensor means when said operating condition detecting means detects said predetermined operating state of said engine; and

control constant changing means for changing a control constant of said air fuel ratio of said feed back control means from the predetermined control constant when the deterioration judging means judges deterioration of said catalyst.

5,311,738

EXHAUST GAS DUCT FOR A ROW OF CYLINDERS OF AN INTERNAL COMBUSTION ENGINE

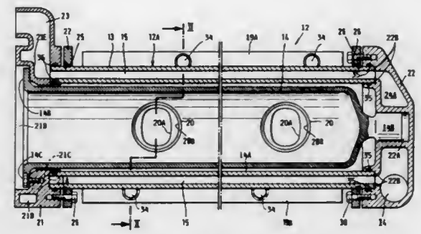
Joachim Huster, Friedrichshafen, and Hermann Baumann, Tettnang, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen- Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 22, 1993, Ser. No. 21,162

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206247

Int. Cl.[5] F01N *7/10*

U.S. Cl. 60—321 **10 Claims**



1. An exhaust gas duct for a row of cylinders of a combustion engine (**11**) comprising an exhaust gas pipe section (**14**) for extending alongside said row of cylinders, a cooling housing (**13**) wherein said exhaust gas pipe section is mounted, a gap (**14A**) between said cooling housing and said pipe section, said cooling housing comprising an elongated section and two end sections (**21, 22**) for closing said elongated section, said elongated section comprising an elongated portion (**13A**) with an approximately circular cross-section and a flange portion (**19**) forming, an integral unit with said elongated portion for mounting said exhaust gas duct (**12**) to said combustion engine (**11**), cooling liquid flow channels(**15, 16**) in said cooling housing, means (**24A, 21B**) for interconnecting said cooling liquid flow channels of said cooling housing, a longitudinal wall (**17**) in said cooling housing between said flange portion (**19**) and said elongated portion (**13A**), exhaust gas flow passages (**20**) through said flange portion (**19**), through said longitudinal wall (**17**), and through said exhaust gas pipe section (**14**), for passing exhaust gas from said cylinders (**20A**) into said pipe section (**14**), said end sections (**21, 22**) comprising means (**22A, 21E**) for mounting said pipe section (**14**) in said cooling housing.

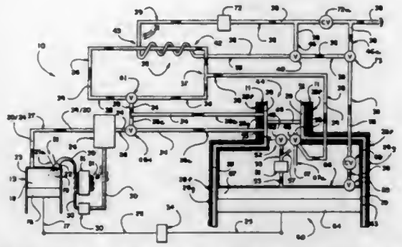
VOL 1162 ISS 3 MY 17 1994 UMI

5,311,739

EXTERNAL COMBUSTION ENGINE

Garry E. Clark, 853 Stone Mill Manor, Lithonia, Ga. 30058

Filed Feb. 28, 1992, Ser. No. 843,996
Int. Cl.[5] F02G *3/02*
U.S. Cl. 60—39.6 41 Claims



1. A method of operating an external combustion engine comprising the steps of:

monitoring power demand of said internal combustion engine;

adjusting the internal volume of a combustion chamber from an initial volume which is substantially zero to a set volume in response to said power demand;

admitting a mixture of fuel and air into said combustion chamber; and

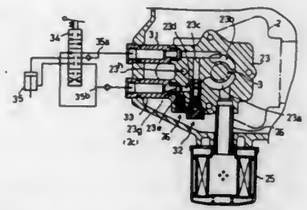
igniting and combusting said mixture while maintaining said combustion chamber at said set volume.

5,311,740

HYDRAULIC POWER TRANSMISSION

Kenji Shiba; Ryota Ohashi, and Kenichi Takada, all of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Amagakasi, Japan

Filed Mar. 11, 1992, Ser. No. 849,731
Claims priority, application Japan, Mar. 11, 1991, 3-013413[U; Mar. 13, 1991, 3-014395[U]; Nov. 18, 1991, 3-094403[U]; Nov. 21, 1991, 3-095542[U]
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—453 24 Claims



1. A hydraulic power transmission comprising:

a housing;

a hydrostatic transmission, including an input shaft, disposed in said housing;

a charge pump, including a suction port, driven by said input shaft of said hydrostatic transmission, disposed in said housing;

an oil sump formed in said housing;

a filter attached to an outer wall of said housing, including a discharge port, whereby oil in said oil sump is taken into said filter;

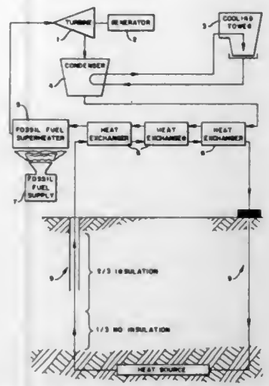
means disposed within said housing for placing indirect fluid communication said discharge port of said filter with said suction port of said charge pump.

5,311,741

HYBRID ELECTRIC POWER GENERATION

Louis J. Blaize, 7138 Hillgreen Dr., Dalias, Tex. 75214

Filed Oct. 9, 1992, Ser. No. 959,313
Int. Cl.[5] F01K *13/00*
U.S. Cl. 60—676 2 Claims



1. A method of electric power generation using a total amount of heat energy, comprising the steps of:

(a) heating and completely evaporating water to produce dry, saturated steam at a first high temperature and first high pressure with geothermal heat energy from a high temperature geothermal heat source, which geothermal heat energy is more than about seventy percent (70%) of all of said total heat energy used in said method of electric power generation, said high pressure sufficient for effective use in a large scale electric power turbine generator, said energy from said high temperature geothermal heat source is derived from injecting brine from a selected earth surface location into high temperature hot, dry rock for absorbing said heat energy therefrom and returning said brine to said earth surface location and passing it through a counterflow heat exchanger to completely evaporate said water to produce said dry saturated steam at said first high temperature and pressure;

(b) then superheating said dry saturated steam to produce steam at a second high temperature and at said first high pressure using an amount of heat energy which is less than about 30% of said total amount of heat energy; and

(c) then applying said superheated steam at said high pressure to drive a large scale electric power turbine generator.

5,311,742

GAS TURBINE COMBUSTOR WITH NOZZLE PRESSURE RATIO CONTROL

Atsubiko Izumi, and Masao Itoh, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1992, Ser. No. 982,583
Claims priority, application Japan, Nov. 29, 1991, 3-315671
Int. Cl.[5] F23R *3/34*
U.S. Cl. 60—742 3 Claims

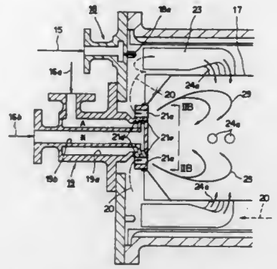
1. A gas turbine combustor for a gas turbine power plant comprising:

a combustion liner operatively connected to a turbine, said combustion liner being provided with a main fuel nozzle assembly and a sub-fuel nozzle assembly having nozzle holes for injecting fuel to an inside of the combustion liner through said nozzle holes;

a base fuel supply line having one end connected to a fuel source;

a main fuel line extending from said base fuel supply line for supplying a fuel from the base fuel line to the main fuel nozzle assembly and injecting the fuel through the nozzle hole of the main fuel nozzle assembly into a premixing assembly where the fuel is premixed with air and supplied to said combustion liner for permitting a lean-burning in the combustion liner;

a plurality of sub-fuel lines extending from said base fuel supply line for supplying the fuel from the base fuel supply line to the sub-fuel nozzle assembly for mixing the fuel with a combustion air in said combustion liner so as to permit a diffusion burning in the combustion liner,



wherein said main and sub-fuel lines branch from the base fuel supply line;

distributing valve means provided in the main fuel line and at least one of the sub-fuel lines for distributing the fuel into the main and sub-fuel lines; and

a control unit for controlling an opening amount of the distributing valve means so as to control a fuel flow through said distributing valve means and thereby control a fuel distribution ratio to the main and sub-fuel lines;

wherein a fixed orifice is provided in an other one of said sub-fuel lines which maintains a fuel flow through said other one of the sub-fuel lines.

5,311,743

GAS SEPARATOR FOR A COMBUSTION CHAMBER

Denis R. H. Ansart, Bois le Roi, and Denis J. M. Sandelis, Nangis, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.", Paris, France

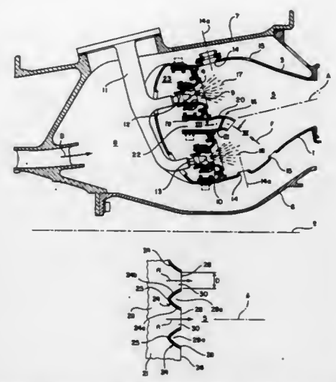
Filed May 12, 1993, Ser. No. 59,752
Claims priority, application France, May 13, 1992, 92 05771
Int. Cl.[5] F23R *3/34*
U.S. Cl. 60—747 4 Claims

1. A gas separation assembly for a gas turbine combustion chamber having a longitudinal axis of symmetry and defined by spaced apart side walls and an end wall, and at least two fuel injection nozzles extending through the end wall to inject fuel into two combustion zones, the gas separation assembly comprising:

a) first and second spaced apart partition walls extending through the end wall about the axis of symmetry between the at least two fuel injection nozzles and defining therebetween an oxidizer chamber, the first and second partition walls each having a downstream edge portion located in the combustion chamber;

b) a plurality of first spacers extending between the first and second partition walls adjacent to their downstream edge portions, each of the spacers having a pair of legs each defining a downstream edge and arranged in a generally "V" shaped configuration with the apex of the "V" configuration extending toward the end wall of the combustion chamber, the plurality of spacers laterally spaced apart from each other so as to define oxidizer passageways therebetween in communication with the oxidizer chamber and the combustion chamber so as to enable oxidizer to pass into the combustion chamber;

c) downstream partition wall edges defined by each partition wall located substantially co-planar with the downstream edges of the legs of the first spacers; and,



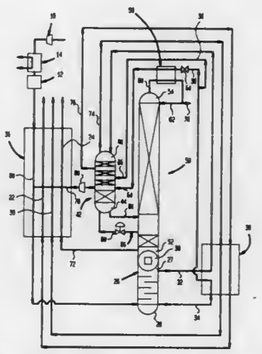
d) notches defined by the downstream edge portions of the first and second partition walls such that the notches extend toward the end wall between the legs of each first spacer.

5,311,744

CRYOGENIC AIR SEPARATION PROCESS AND APPARATUS

Paul A. Sweeney, Basking Ridge, and Ramachandran Krishnamurthy, Piscataway, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Dec. 16, 1992, Ser. No. 991,663
Int. Cl.[5] F25J *3/04*
U.S. Cl. 62—22 9 Claims



1. A cryogenic air separation process for producing high purity argon comprising:

compressing and purifying the air;

cooling the air after compression and purification thereof to a temperature suitable for its rectification;

rectifying the air in a rectification column so that an oxygen enriched liquid column bottom and a nitrogen rich tower overhead are produced within the rectification column;

separating an argon-oxygen containing liquid lean in nitrogen within an argon column to form a liquid oxygen

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column bottom and a high purity argon vapor tower overhead;

removing an argon stream composed of the high purity argon vapor tower overhead from the argon column, condensing the argon stream by indirect heat exchange, and introducing the argon stream, after having been condensed, back into the argon column as reflux;

removing an oxygen enriched stream composed of the oxygen enriched liquid column bottom from the rectification column, expanding the oxygen enriched stream to a pressure at which the oxygen rich liquid has a temperature no greater than the condensation temperature of the high purity argon vapor tower overhead, at least partially vaporizing the oxygen enriched stream against the condensation of the argon stream through the indirect heat exchange, and then introducing the oxygen enriched stream, after having been at least partially vaporized, into the nitrogen stripper column at an entry level thereof having a concentration compatible with that of the oxygen enriched stream;

stripping nitrogen from the oxygen enriched stream introduced into the nitrogen stripper column with a stripper gas so that the argon-oxygen containing liquid lean in nitrogen is produced as an argon-oxygen liquid column bottom;

removing an argon-oxygen stream composed of the argon-oxygen liquid column bottom from the nitrogen stripper column and introducing it into the argon column for the separation of the argon-oxygen containing liquid and for vaporization of part of the argon-oxygen containing liquid, thereby to produce the stripper gas;

removing the stripper gas from the argon column and introducing it into the nitrogen stripper column;

regulating the nitrogen stripper column to operate at a predetermined pressure range by regulating stripper gas pressure of the stripper gas upon its entry into the nitrogen stripper column so that the entry level of the oxygen enriched stream has a pressure level no greater than the pressure of the oxygen enriched stream after expansion to allow the oxygen enriched stream to flow into the nitrogen stripper column and the argon column operates at a higher pressure range than the predetermined pressure range of the nitrogen stripper column so that the stripper gas flows into the nitrogen stripper column under impetus of a pressure differential therebetween;

the argon-oxygen stream being made to flow into the argon column by increasing its head; and

removing a product stream from the argon column composed of the argon vapor tower overhead.

5,311,745

PRESSURE MEASUREMENT SYSTEM FOR REFRIGERATION SYSTEM

Douglas L. Lockhart, Cobble Hill, and Oreste B. N. Varelas, Vancouver, both of Canada, assignors to Digi-Cool Industries Ltd., Duncan, Canada

Filed Jan. 27, 1993, Ser. No. 9,671
Int. Cl.[5] G05D *23/00*
U.S. Cl. 62—127 **6 Claims**

1. A pressure measuring system for a refrigeration system, comprising:

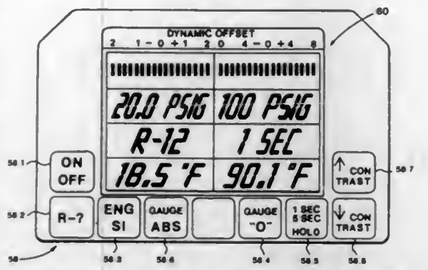
conversion means for converting a pressure being measured into a digital signal representing said measured pressure;

processing means for calculating a corresponding boiling point temperature for a selected refrigerant at said measured pressure;

refrigerant selection means for selectively inputting into said processing means the boiling point temperature-pressure relationship or coefficient of said selected refrigerant;

display means for displaying said measured pressure and the calculated boiling point temperature;

wherein said processing means further comprises means for continuously performing successive calculations as said measured pressure varies with time and update means for updating the pressure and boiling point temperature values displayed by said display means at predetermined intervals; and



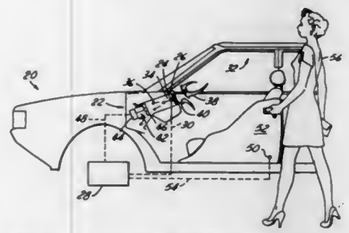
control means for activating said display means to indicate the direction of a pressure change, upward or downward, during said predetermined time intervals in between said updating of the pressure and temperature values.

5,311,746

METHOD AND APPARATUS FOR SENSING TEMPERATURE OF VEHICLE INTERIOR

Henry P. Dombrowski, Highland; Michael A. Dahl, Royal Oak, and Robert P. Hennessee, Rochester Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 1, 1993, Ser. No. 71,136
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—131 **15 Claims**



1. A method for accurately measuring a temperature of air from an interior passenger compartment of a vehicle comprising the steps of:

sensing when a passenger is entering said vehicle;

activating an aspirator upon said sensing;

purging air surrounding a thermistor by pulling said air from said passenger compartment through a vent; and

measuring said temperature using said thermistor.

5,311,747

WATER-ASSISTED CONDENSER COOLER

Robert D. Pringle, R.R. 1, Baldwin, Kans. 66006, and John Prikkel, III, 2952 Ensley Ave., Dayton, Ohio 45414

Filed Jun. 30, 1992, Ser. No. 906,381
Int. Cl.[5] F25B *39/04*
U.S. Cl. 62—183 **10 Claims**

10. A sprinkler system for a condenser unit or the like comprising:

flue means for directing an air flow forced over the condenser unit therethrough;

a fluid valve assembly mounted within said flue means for regulating a delivery of a fluid onto the condenser unit, said assembly including:

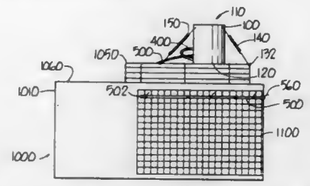
an inlet line for delivering the fluid from a fluid reservoir,

a fluid outlet line,

a valve for regulating the fluid flow between said fluid lines, said valve having a first closed position and a second open position,

an associated valve stem having first and second ends,

drive means responsive to a temperature of the air flow in said flue means, said drive means including thermally responsive structure having a first contracted mode at a first temperature and a second expanded mode at a second temperature, and



means for positioning said first end of said valve stem adjacent said drive means structure, whereupon movement of said drive means structure between said contracted and expanded modes moves said valve stem in a manner to close and open said valve;

means for positioning said outlet line about the condenser unit; and

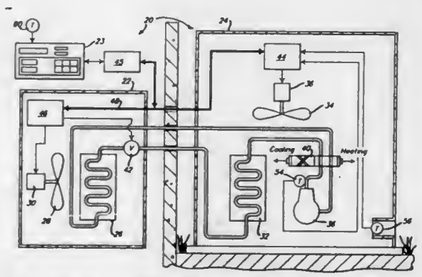
means along the extent of said outlet line for discharge of the fluid in said outlet line onto the condenser unit.

5,311,748

CONTROL SYSTEM FOR HEAT PUMP HAVING DECOUPLED SENSOR ARRANGEMENT

Vijay Bahel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton, and Gregory P. Herroon, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Aug. 12, 1992, Ser. No. 928,892
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—160 **11 Claims**



1. A method of controlling a refrigeration cycle of a heat pumping system of the type having an indoor heat exchanger and an outdoor heat exchanger and having an expansion valve for delivering refrigerant into the indoor heat exchanger to extract heat from the environment in which the heat pumping system is situated, the heat pumping system further having a compressor for processing the refrigerant after it has extracted heat in the indoor heat exchanger and discharging the refrigerant at an elevated pressure, comprising the steps of:

measuring a first parameter indicative of the temperature of the refrigerant discharged from the compressor within the heat pumping system;

measuring a second parameter indicative of the temperature of the environment in which the outdoor heat exchanger is situated;

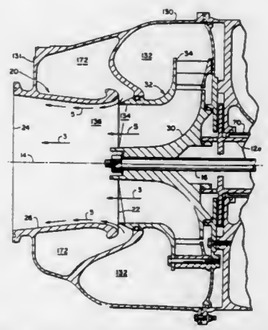
using the first and second parameters to control the expansion valve to thereby control the metering of refrigerant delivered to the indoor heat exchanger.

5,311,749

TURBINE BYPASS WORKING FLUID ADMISSION

Christopher McAuliffe, Windsor, and John F. Maher, Jr., Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 3, 1992, Ser. No. 862,883
Int. Cl.[5] F25D *9/00*; **F01D** *17/00*
U.S. Cl. 62—402 **5 Claims**



1. A turbomachine having at least a compressor wheel and a turbine wheel mounted to a common shaft for rotation therewith, said turbine wheel being operative to extract energy from a flow of compressed working fluid for driving the shaft in rotation about a longitudinally extending axis, said turbine wheel mounted to an end portion of the shaft and having a fixed stator and an outlet for directing an exhaust flow discharging from said turbine wheel along said axis, said turbomachine characterized by a bypass flow nozzle disposed coaxially about said longitudinal axis and extending coaxially along said axis, said bypass flow nozzle having a nozzle inlet including a central region for receiving the turbine exhaust flow passing from said turbine wheel outlet and an outer annular region extending circumferentially about said central region for receiving a flow of working fluid having bypassed said turbine wheel, whereby said received turbine bypass flow passes through said outer annular region as an outer annular flow stream passing substantially parallel to and about the turbine exhaust flow passing through said central region, and a nozzle outlet for directing the received turbine exhaust flow and the received turbine bypass flow therethrough.

5,311,750

OIL COLLECTOR UNIT

John P. Stark, P.O. Box 566, Great Bend, Kans. 67530

Filed Dec. 17, 1992, Ser. No. 991,972
Int. Cl.[5] F25B *43/02, 43/04*
U.S. Cl. 62—468 **21 Claims**

1. An oil collector unit for use in a refrigerant recovery system, said unit comprising:

(a) a housing defining an interior cavity;

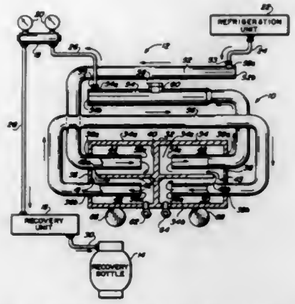
(b) a substantially vertical interior wall in said housing extending substantially intermediately thereof across said interior cavity and mounted to said housing;

(c) a substantially horizontal interior wall in said housing extending substantially intermediately thereof across said interior cavity and mounted to said vertical interior wall to define right and left pairs of upper and lower chambers

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on opposite sides of said vertical interior wall and on opposite sides of said horizontal interior wall, said upper and lower chambers of each pair interconnected in flow communication; and

(d) a plurality of tubes connected in flow communication with selected ones of said chambers of said housing so as to define a circuitous flow path through said chambers of said housing permitting travel of a fluid mixture of refrigerant and oil therethrough and disengagement of oil from



refrigerant therewithin, said plurality of tubes including first, second and third tubes defining said circuitous fluid flow path into an inlet and through said first tube, then from said first tube into and through one of said pairs of said upper and lower chambers of said housing, then from said housing through said third tube, then from said third tube back into said housing through the other of said pairs of said upper and lower chambers of said housing and, finally, from said housing and through said second tube to an outlet.

5,311,751

CONTROL ARRANGEMENT FOR WARP KNITTING MACHINE GUIDE BARS

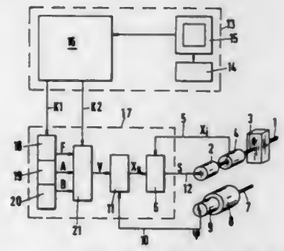
Karl Winter, Obertshausen; Hans Lotz, Muhlheim/Main, and Friedrich Gille, Obertshausen, all of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed May 10, 1993, Ser. No. 60,307

Claims priority, application Fed. Rep. of Germany, May 13, 1992, 4215716

Int. Cl.[5] D04B *23/00*; G06F *15/46*

U.S. Cl. 66—207 **19 Claims**



1. Control arrangement for the displacement of a guide bar of a warp knitting machine having a main shaft, comprising:

a setting motor for axially displacing said guide bar; and

a schedule transmitter coupled to said main shaft for generating target lapping values for a displacement schedule, in response to angular displacement of said main shaft, said schedule transmitter being coupled to and operable to control said setting motor in accordance with said target lapping values, said schedule transmitter including:

(a) an input arrangement for providing a characteristic signal signifying characteristic data for a selected lapping pattern;

(b) a storage means having a first storage section for storing data signifying a selectable plurality of transition curves for regulating overlap and underlap displacements;

(c) a computer means coupled to said first storage section and responsive to said characteristic signal for processing sequentially data of at least two of the transition curves to form a displacement function providing displacement values related to revolution of said main shaft; and

(d) an output arrangement coupled to said main shaft and said computer means for selecting said displacement values of the displacement function in response to angular rotation of the main shaft to provide said target lapping values.

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WARP KNITTING MACHINE WITH ELECTRICALLY CONTROLLED THREAD FEED

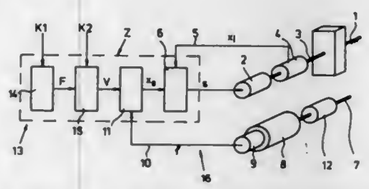
Friedrich Gille, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed May 10, 1993, Ser. No. 60,304

Claims priority, application Fed. Rep. of Germany, May 13, 1992, 4215691

Int. Cl.[5] D04B *23/00*; G06F *15/46*

U.S. Cl. 66—207 **9 Claims**



1. A warp knitting machine adapted to be connected to a main power source, comprising:

at least one guide bar;

a main shaft;

an electrical main motor coupled to said main shaft for driving the shaft;

braking means coupled to said main shaft for braking the shaft upon interruption of current to said electrical main motor; and

at least one supplemental system for influencing delivery of threads, said supplemental system being commonly powered with said main motor by said main power source, said supplemental system comprising:

(a) at least one electrical setting motor for displacing said guide bar,

(b) a control arrangement coupled to said main shaft and said setting motor and responsive to the angular position of the main shaft for positioning said guide bar as determined by a predetermined displacement function correlating positions of said guide and said main shaft, and

(c) an intermediate circuit having an energy storage device for replacing interrupted power from said main power source to keep said setting motor and said control arrangement powered at least temporarily.

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DRAIN HOSE FOR WASHING MACHINE AND WHICH INCLUDES A CORRUGATED INTERMEDIATE PORTION

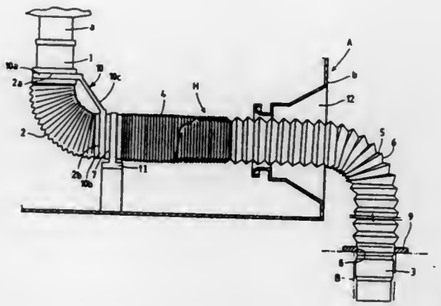
Shiro Kanao, 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

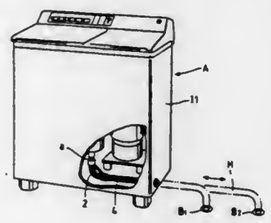
Filed Jun. 11, 1992, Ser. No. 897,071

Claims priority, application Japan, Jun. 19, 1991, 3-54816[U]

Int. Cl.[5] D06F *33/00*

U.S. Cl. 68—208 **6 Claims**





1. A drain hose in combination with a washing machine, said washing machine having an outer casing, a drain pipe located at an inside of the outer casing and a hole formed on the outer casing; said drain hose comprising:

a one-piece main body including:

an integral water-intake port at one end of said main body and connected to the drain pipe;

an integral bending part succeeding to said water-intake port and bent into an L-shape;

an integral drain port at the other end of said main body and disposed outside said outer casing through said hole; and

an integral intermediate part between said bending part and said drain port, said intermediate part being formed with a plurality of corrugations, each of said corrugations being shaped in cross-section so as to have a first inclined wall and a second inclined wall longer in length than said first inclined wall, said first inclined wall and said second inclined wall being joined together at ends thereof, and said intermediate part having such a length as to be completely accommodated inside said outer casing of said washing machine when in a contracted position, wherein each first inclined wall is easily brought into the contracted position substantially parallel to the respective second inclined wall and is operative to self-hold the contracted position so that said intermediate part is completely retracted into the inside of said outer casing of said washing machine through said hole, and wherein when said intermediate part is completely accommodated inside said outer casing in the contracted position, said drain port of said drain hose remains exposed outside of said outer casing of said washing machine through said hole.

5,311,754

STEAM-FILLED TREATMENT CHAMBER

Dietrich Itgenshorst, and Walter Otten, both of Krefeld, Fed. Rep. of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & Co. KG, Krefeld, Fed. Rep. of Germany

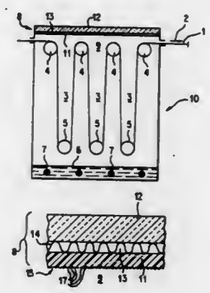
PCT No. PCT/DE91/00574, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/02675, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 12, 1991, Ser. No. 983,582

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1990, 4025010

Int. Cl.[5] D06B *3/12*

U.S. Cl. 68—5 D **26 Claims**



1. A steam-filled treatment chamber for material that is sensitive to condensation drops, comprising:

an inner wall of the treatment chamber that forms the ceiling of the treatment chamber,

a heat-insulation layer that surrounds the inner wall,

and means for preventing drops that are large enough to harm the material being treated from falling from the ceiling,

wherein said means comprise a relief structure on the surface of the ceiling facing the treatment chamber, said relief

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structure having subdivisions, the spacing between said subdivisions being smaller than the diameter of the drop.

5,311,755

Patent Not Issued For This Number

5,311,756

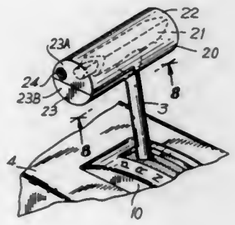
AUTOMOBILE ANTI-THEFT DEVICE

Fiorenzo L. Villani, 243 Deems Ave., Staten Island, N.Y. 10314

Filed Jul. 8, 1992, Ser. No. 910,630

Int. Cl.[5] B60R *25/06*

U.S. Cl. 70—247 **1 Claim**



1. In combination, an automobile with a floor-mounted gear shift having a handle, a device for preventing the movement of said handle from the "park" position to a position useful for operating the automobile, said handle containing an activating retractable button for said lever on one side of said handle, said device comprising a rounded hollow retaining lock housing adapted to enclose said handle and said housing being mountable over said handle of said gear shift lever, said housing being cylindrical in shape and closed at both ends by first and second flat end faces, said cylindrical housing having a first openable lower portion and a second closed lower portion integral with a closed upper portion of said housing, said first lower portion of a bottom of said housing on the side of said handle containing said button including a lower portion of the first flat end face being pivoted, the pivoted portion of said housing including said lower portion of said first end face being hinged and rotatable between one position closing said housing to prevent actuation of said button and downwardly to another position below said handle, opening said housing at one end of said housing corresponding to said button of the handle while closing said housing at an end of handle opposite the button to permit removal of said housing or access from below to said button of said handle without removal of said housing off of said handle, and lock means mounted in the upper portion of said first end face for locking said pivoted portion of said housing in the closed position for securing said shift lever against unauthorized use.

5,311,757

FLAT KEY WITH CIRCUIT CHIP

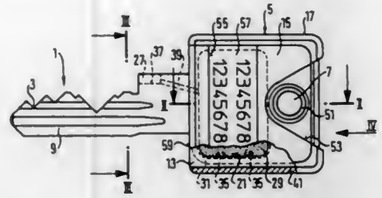
Karl-Heinz Spahn, Ostbevern, Fed. Rep. of Germany, assignor to Aug. Winkhaus GmbH & Co. KG, Telgte, Fed. Rep. of Germany

Filed Mar. 8, 1993, Ser. No. 27,688

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 9202995[U]

Int. Cl.[5] E05B *19/04*

U.S. Cl. 70—408 **18 Claims**



1. A flat key comprising a flat basic shaped part (**11**) having a shank section (**9**) including mechanical lock-control members (**3**) and a bow section (**13**), a circuit chip (**23**) with structural elements (**25**) of an electronic circuit disposed in a recess (**21**) of the bow section (**13**),

and two housing shells (**15**, **17**) substantially completely surrounding the bow section (**13**) and disposed on facing flat sides of the bow section (**13**), wherein

the recess (**21**) is closed toward a first one of the two flat sides of the bow section (**13**) by a bottom (**19**) formed integrally by the basic shaped part (**11**),

the recess (**21**) with the circuit chip (**23**) is filled with an insulating casting compound (**29**),

the housing shell (**15**) on the second one of the two flat sides is bonded to the basic shaped part (**11**) along a bonding seam (**31**) sealingly surrounding the recess (**21**).

5,311,758

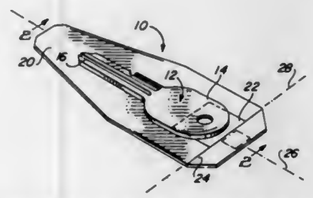
KEY STORAGE TAG

William J. Neltzke, and G. Lynn Hagen, both of Paradise Valley, Ariz., assignors to Axxess Entry Technologies, Tempe, Ariz.

Filed Dec. 16, 1992, Ser. No. 991,310

Int. Cl.[5] A47G *29/10*

U.S. Cl. 70—456 R **28 Claims**



1. In combination a key storage tag which stores a key blank having a defined area, a head with upper and lower surfaces and a blade with upper and lower surfaces; said key storage tag and said key blank capable of being housed in a key storage container having an internal storage cavity with a cross sectional area the key storage tag including a longitudinal axis and comprising:

a. a substantially planar tag main body having a first area with a perimeter edge dimensioned to fit within the storage cavity of the key storage container and including first and second spaced apart linear junction elements;

b. a substantially planar key to tag interface having a second area and including means for detachably coupling the interface to the lower surface of the key head and a third junction element, the key to tag interface extending below and overlapping a portion of the key head;

c. a substantially planar junction body having a third area and a linear junction surface defining a lateral axis perpendicular to the longitudinal axis of the key storage tag, the junction surface including spaced apart first and second junction segments aligned with the lateral axis for joining the junction body to the first and second junction elements of the tag main body and a third junction segment positioned between and aligned with the first and second junction elements for joining the junction body to the third junction element of the key to tag interface, the tag main body, the key to tag interface and the junction body defining a continuous perimeter of the key storage tag with the tag main body lying on a first side of the lateral axis and the junction body lying on a second side of the lateral axis; and

d. a hinge aligned with and moveable about the lateral axis of the key storage tag for enabling the tag main body to be deflected about the lateral axis between a key blank storage configuration where the tag main body, key to tag interface and junction body all lie within a first plane and are positioned substantially parallel to and below the key blank and a key duplication configuration where the tag main body is deflected into a second plane displaced away from the key to tag interface and the lower surface of the key blank while the key to tag interface is maintained within the first plane, thereby opening a window within the perimeter of the key storage tag.

5,311,759

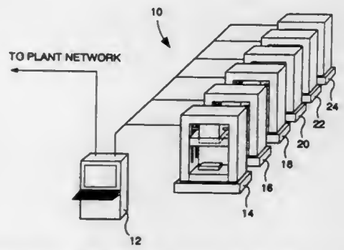
METHOD AND SYSTEM FOR REAL-TIME STATISTICAL PROCESS MONITORING

Suresh M. Mangrulkar, Farmington Hills; Thomas A. Spoto, Birmingham, and James S. Rankin, II, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1992, Ser. No. 991,071

Int. Cl.[5] B21D *5/01*; **G06F** *15/46*

U.S. Cl. 72—12 **16 Claims**



1. A method of monitoring the operation of a stamping press for forming parts, the method comprising:

operating the stamping press so as to produce a predetermined number of production parts while collecting a set of production process signatures for each part;

defining a plurality of features for each set of production process signatures, each feature representing a parameter incapable of being directly measured by a single sensor associated with the process of forming the parts;

extracting feature values from each set of production process signatures in real-time to obtain a corresponding set of production feature values; and

comparing each set of production feature values to predetermined operating limits representing limits within which the process is in control or producing acceptable parts.

5,311,760

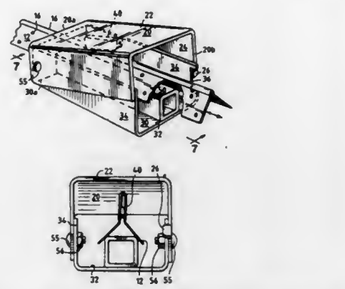
METHOD AND APPARATUS FOR CORNER BEAD ANGLE ENLARGEMENT

Matthew H. Thompson, 1217 Sheridan Rd., Apt. 1, Withrop Harbor, Ill. 60096

Filed Aug. 4, 1992, Ser. No. 924,832

Int. Cl.[5] B21D *5/06*, *5/16*

U.S. Cl. 72—176 **14 Claims**



1. A method of increasing the included angle between two relatively disposed wings of an elongated article having a longitudinal apex, such as a corner bead, which comprises:

a. arranging pivotally connected first and second outer members,

said first outer member, having an upper and a lower surface, with a guide means centrally disposed longitudinally on said lower surface, and having a forward end in opposition longitudinally to a remote end which is pivotally connected to the second outer member,

said second outer member having an upper and a lower surface, with a spreader means centrally disposed longitudinally on said upper surface, and having a forward end in opposition longitudinally to a remote end which is pivotally connected to the first outer member,

to have the lower surface of the first outer member facing the upper surface of the second outer member;

b. raising the forward end of the first outer member pivotally relative to the forward end of the second outer member to a distance between the guide means and the spreader means which permits easy reception of the article;

c. introducing a leading end of the article longitudinally through an end opening of the outer members between the guide means and the spreader means;

d. lowering the forward end of the first outer member pivotally relative to the forward end of the second outer member to permit the guide means to slidably engage a longitudinal portion of the apex of the article and the spreader means to transversely slidably engage a longitudinal section of each of the disposed wings of said article along the surfaces thereof bordering the included angle between said wings at a spaced distance from the apex,

e. moving the article slidably through the guide means and the spreader means longitudinally to increase the included angle between the wings of the article.

5,311,761

METAL EXTRUSION DUMMY BLOCK HAVING A SPRING LOADED VALVE

Paul H. Robbins, Aurora, Canada, assignor to Exco Technologies, Limited, Markham, Canada

Filed Sep. 18, 1992, Ser. No. 947,167

Int. Cl.[5] B21C *26/00*

U.S. Cl. 72—273 **7 Claims**

1. In an extrusion press for extruding through a dye extrudable metals, a mechanical venting device in a circular dummy

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block for venting gases from a circular container, said venting device comprising:

i) a circular shaped valve member provided in a front face of said dummy block, said valve member being moveable inwardly and outwardly of said dummy block from an open venting position to a closed position,

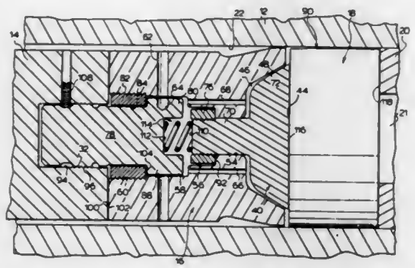
ii) channel means in said dummy block and leading away therefrom to vent gases away from said valve and said open position,

iii) said valve member having a sealing face which seals against a mating face of said dummy block,

iv) said dummy block having means for guiding movement of said valve member into and out of said closed position,

v) said valve member having a post portion, said dummy block having a bore through which said post portion extends,

vi) said post portion having a rear face, means for locating movement of said valve member to said open position, said locating means being positioned on said post portion,



vii) a connector stud being provided in said dummy block and extends rearwardly therefrom to provide connection to a reciprocal stem of said extrusion press,

the improvement comprising:

viii) means for resiliently mechanically biasing said valve member to said open position, said mechanical biasing means being positioned between said post portion rear face and a front face of said stud,

ix) said mechanical biasing means resisting movement of said valve member toward said closed position by virtue of said dummy block moving into said container and said valve member contacting a metal billet in said container and thereby being urged toward said closed position,

x) said mechanical biasing means having a pre-set resistance value which resists movement of said valve member to said closed position at least until a metal billet in said container commences to upset and flow within said container at which moment force on said valve member due to said dummy block advancing into said container exceeds said resistance value of said biasing means.

5,311,762

FLOW SENSOR CALIBRATION

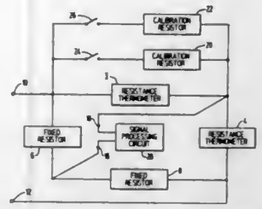
Charles F. Drexel, Rolling Hills, Calif., assignor to DXL USA, Torrance, Calif.

Filed Dec. 16, 1991, Ser. No. 809,275
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 **17 Claims**

1. A method of calibrating a flow sensor composed of two heat sensors each having an electrical impedance parameter which varies as a defined function of the temperature of the heat sensor, means for supplying electric power at a selected level to the heat sensors, means for causing a fluid to flow in thermal communication with the heat sensors such that the relation between heat flow to or from one sensor and heat flow to or from the other sensor varies with the rate of fluid flow, and output means connected to produce an output signal representative of that heat flow relation, said method comprising:

establishing a known flow rate for the fluid;

electrically connecting one of the heat sensors to a circuit element which alters the magnitude of current flowing through the one heat sensor; and



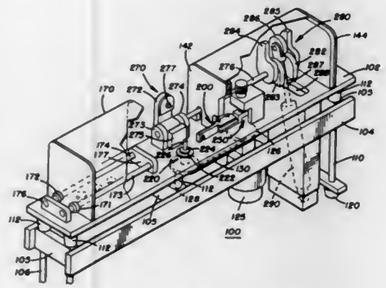
determining, in a first determining step, the output signal value while the one heat sensor is electrically connected to the circuit element, wherein the circuit element is a resistor and said step of electrically connecting connects the resistor in parallel with the one of the heat sensors.

5,311,763

METHOD AND APPARATUS FOR MEASURING BEARING FRICTION

Robert M. Gibbs, Jr., San Jose; Christopher L. Marquis, Milpitas, and Bernard A. Messineo, San Jose, all of Calif., assignors to Conner Peripherals, Inc., San Jose, Calif.

Filed Feb. 27, 1992, Ser. No. 843,893
Int. Cl.[5] G01N *19/02*
U.S. Cl. 73—9 **24 Claims**



1. A method for improving the reliability of manufactured disk drives, comprising:

testing the bearing structures found within the disk drives by

(a) measuring the running friction when the bearing is rotated in a counterclockwise direction;

(b) measuring the running friction when the bearing is running in a clockwise direction, and

(c) comparing each measurement prior to installing the bearing in a manufactured disk drive.

5,311,764

REBOUND HAMMER

Anthony Smith, Oxnard; Dan Goff, Ventura; Roman Kruchowy, Somis, and Carl Rhoads, Ventura, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 860,743, Mar. 25, 1992. This application Jul. 19, 1993, Ser. No. 94,662
Int. Cl.[5] G01L *5/00*
U.S. Cl. 73—12.04 **18 Claims**

1. A measuring apparatus for testing and measuring the compressive strength of an underwater concrete structure, said measuring apparatus comprising:

a housing having a nose at the front end;

a plunger extending from the nose of said housing;

a guide rod mounted within said housing, said guide rod having a spring driven mass mounted thereon, said spring driven mass being in slidable engagement with said guide rod;

the end of said plunger extending from said nose being adapted to engage a surface of said underwater concrete structure so as to allow said measuring apparatus to measure the compressive strength of said structure;

said spring driven mass being released from a locked position and impacting the opposite end of said plunger when said plunger is pressed against the surface of said underwater concrete structure being measured, said spring driven mass rebounding along said guide rod toward the rear of said housing after impacting said plunger;

a resistive film strip mounted within said housing approximately parallel to said guide rod;

an electrically conductive wiper attached to said spring driven mass, said electrically conductive wiper being in slidable engagement with said resistive film strip;

said electrically conductive wiper providing an analog signal proportional to the distance that said spring driven mass rebounds from said plunger after impacting said plunger;

detection circuit means for tracking said analog signal until

input connected to the output of said inverting amplifier and a status output;

a voltage source for providing a logic one signal;

a first Flip-Flop having a data input for receiving said logic one signal, a clock input connected to the status output of said first peak detector, a clear input connected to the output of said voltage comparator and a not Q output;

a second inverter having an input connected to the not Q output of said first Flip-Flop and an output;

a NAND gate having a first input connected to the output of said second inverter, a second input and an output;

a third inverter having an input connected to the output of said NAND gate and an output;

a second peak detector having a first logic input connected to the output of said third inverter, a second logic input connected to the not Q output of said first Flip-Flop, a signal input for receiving said analog signal, a signal output connected to the first signal input of said processing means and a status output;

a second Flip-Flop having a data input for receiving said logic one signal, a clock input connected to the status output of said second peak detector, a clear input connected to the not Q output of said first Flip-Flop and a Q output; and

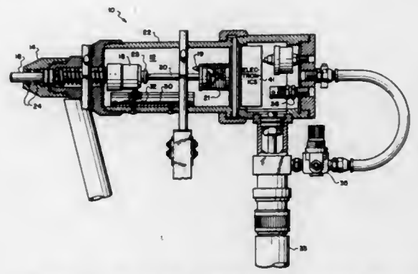
a third Flip-Flop having a data input for receiving said logic one signal, a clock input connected to the Q output of said second Flip-Flop and a not Q output connected to the status input of said processing means.

5,311,765

DEVICE FOR DETERMINING ENGINE KNOCKING INTENSITY FROM DETECTED VARIATIONS IN ENGINE CYLINDER INTERNAL PRESSURE

Yasunori Iwakiri, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Dec. 18, 1991, Ser. No. 808,851
Claims priority, application Japan, Dec. 21, 1990, 2-405077
Int. Cl.[5] G01L *23/22*
U.S. Cl. 73—35 **3 Claims**



the peak voltage of said analog signal is reached and then holding the peak voltage of said analog signal;

said detection circuit means providing a status signal indicating that the peak voltage of said analog signal is being held by said detection circuit means; and

processing means having a status input and at least three signal inputs, said status input being adapted to receive said status signal from said detection circuit means, said status signal interrupting said processing means so as to allow said processing means to receive at the first signal input thereof the peak voltage of said analog signal and then store the peak voltage of said analog signal;

said processing means calculating the compressive strength of said underwater concrete structure being measured after receiving the peak voltage from at least one test of said structure using said measuring apparatus;

said detection circuit means comprising:

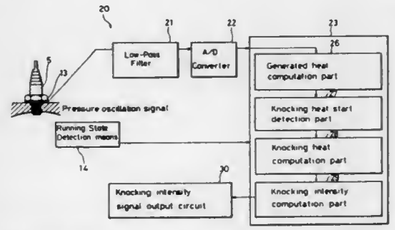
an amplifier circuit for providing a reference voltage;

a voltage comparator having an inverting input for receiving said reference voltage, a noninverting input for receiving said analog signal and an output;

a first inverter having an input connected to the output of said voltage comparator and an output;

an inverting amplifier having an input for receiving said analog signal and an output;

a first peak detector having a first logic input connected to the output of said first inverter, a second logic input connected to the output of said voltage comparator, a signal



1. A knocking detector for an engine provided with a crankshaft and combustion chamber, comprising:

means for detecting regularly a combustion pressure in said combustion chamber and outputting a corresponding pressure waveform,

means for eliminating high frequency components from said waveform,

means for extracting high frequency components from said waveform,

means for detecting a running state of said engine,

means for detecting a rotation angle of said crankshaft,

means for computing a total amount of heat generated in said combustion chamber during one revolution of said crankshaft based on the waveform processed by said high frequency component eliminating means, and on the running state of said engine,

means for setting a reference level regarding the extracted high frequency components based on the running state of the said engine,

means for determining a knocking heat start point during

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one revolution of said crankshaft based on the extracted high frequency components and the reference level set by said setting means,

means for setting a knocking heat end point during one revolution of said crankshaft;

means for computing a knocking heat generated during one revolution of said crankshaft based on the knocking heat start point and end point, and on the waveform processed by said high frequency component eliminating means,

means for determining a knocking intensity based on the total amount of heat and knocking heat.

5,311,766

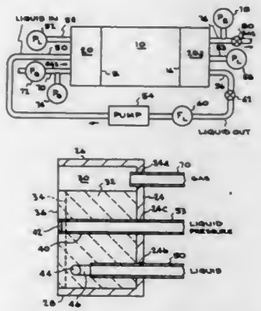
METHOD AND APPARATUS FOR DETERMINING TWO-PHASE FLOW IN ROCK FRACTURE

Peter Persoff, Oakland; Karsten Pruess, Berkeley, and Larry Myer, Benicia, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 7, 1992, Ser. No. 909,937

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—38 **9 Claims**



1. A method for measuring the permeability of one or more phases in a rock fracture sample which includes the steps of:

a) delivering a first wetting phase uniformly distributed across one edge of said rock fracture through first manifold means within a first porous block, said first manifold means comprising a first bore formed in said first porous block parallel to the surface of said first porous block facing said fracture edge and also parallel to said fracture edge, said first porous block having surfaces on one side thereof facing said rock fracture and in communication with said one edge thereof; said first manifold means, including said first bore, providing uniform distribution of said first wetting phase through said first porous block to said first porous block surfaces for delivery to said one edge of said rock fracture;

b) uniformly collecting said first wetting phase across an opposite edge of said rock fracture through a second porous block in communication with said opposite edge of said rock fracture and having second manifold means therein to uniformly collect said first phase entering into said second porous block from said opposite edge of said rock fracture, said second manifold means comprising a second bore formed in said second porous block parallel to the surface of said second porous block facing said fracture edge and also parallel to said fracture edge to thereby promote uniform collection of said wetting phase from said fracture edge through said second porous block;

c) delivering a second non-wetting phase uniformly distributed across said one edge of said rock fracture through a series of parallel grooves formed in said one side of said first porous block facing said one edge of said rock fracture and disposed generally perpendicular to said one edge of said rock fracture to uniformly distribute the delivery of said second non-wetting phase along said one edge of said rock fracture; and

d) uniformly collecting said second non-wetting phase across said opposite edge of said rock fracture through a second series of parallel grooves formed in said one side of said second porous block facing said opposite edge of said rock fracture, said second parallel grooves disposed generally perpendicular to said opposite edge of said rock fracture to uniformly distribute the collection of said second non-wetting phase along said opposite edge of said rock fracture.

5,311,767

INSTRUMENT AND METHOD FOR VISCOELASTICITY MEASUREMENTS

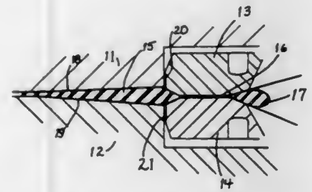
Michael Mathews; David G. Rusling, and Michael J. Stolc, all of Swindon, England, assignors to Monsanto PLC, Basingstoke, United Kingdom

Filed Apr. 23, 1992, Ser. No. 872,374

Claims priority, application United Kingdom, Apr. 26, 1991, 9108961

Int. Cl.[5] G01N *3/24*

U.S. Cl. 73—843 **6 Claims**



1. An instrument for measuring the viscoelastic properties of rubber and like materials, comprising two opposed ideas, each die having a die housing, the dies and housings being moveable between an open position and a closed position, and wherein:

a) each die is separated from its housing by a substantially uniform circumferential gap such that the die is rotatable relative to its housing, and one die is rotatable relative to the other,

b) in the closed position, the two dies define between them a cavity for holding under pressure a sample of material to be tested,

c) the design of the dies and housings is such that during movement from the open position to the closed position, a sample of test material located between the dies is compressed so that excess material is extruded radially from between the dies, across the gap between the dies and their housings and through a narrowing space separating the housings until the two housings reach their closed position, when the said space is sealed, characterised in that there is provided a film of heat- and distortion-resistant material which is substantially non-adherent to the surfaces of the dies and die housings, the strength of the film being such that the bridge of film resists rupture during closure of the dies and die housings with a sample of test material in situ and during the subsequent test, the radial dimension of the gap between each die and its housing being such that the film completely bridges the gap, and there being no annular seal within the gap bearing against an axially-extending face of the die and/or die housing.

5,311,768

MULTI-FACED PROBE AND METHOD OF MEASURING THE STICKINESS OF COOKED STRING PASTA PRODUCTS

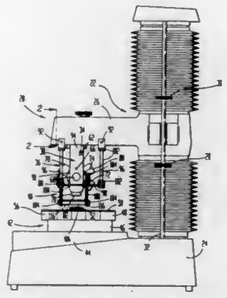
Paul A. Seib, and Feng Guan, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Dec. 28, 1992, Ser. No. 997,574

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[5] G01N *11/02*

U.S. Cl. 73—54.22 **24 Claims**



1. A method of measuring the adhesiveness of a sample, comprising the steps of:

providing a supporting surface;

placing the sample in contact with the supporting surface;

positioning an apertured restraining member in engagement with the sample for holding the sample against separation from the supporting surface, and with a portion of the sample adjacent the aperture presenting a test region;

providing a sample-engaging probe presenting an adhesion surface;

shifting said probe toward and through said apertured restraining member and into engagement with said test region of said sample, and causing adherence between the probe and test region;

shifting said probe out of engagement with said test region; and

measuring a parameter correlated with the force required for disengaging said probe from said test region.

5,311,769

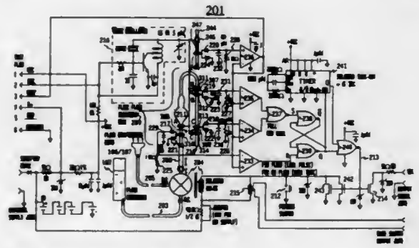
METHOD AND APPARATUS FOR AUTOMATIC MEASUREMENT OF EVAPOTRANSPIRATION

Henry T. Hetzel, 1931 S. County Rd. 19, Loveland, Colo. 80537

Filed Mar. 4, 1992, Ser. No. 845,611

Int. Cl.[5] G01N *33/18*

U.S. Cl. 73—61.77 **15 Claims**



1. An atmometer comprising:

an evaporator, having a fluid inlet, that evaporates a fluid whose evaporation is to be measured;

a fluid supply that supplies fluid to be evaporated;

a flow metering reservoir having a service orifice that receives, retains and subsequently supplies retained fluid, through the service orifice;

a valve, hydraulically coupled to the fluid inlet of the evaporator, to the fluid supply and to the service orifice of the flow metering reservoir, that while in a first state (a) hydraulically couples the fluid inlet of the evaporator to the service orifice of the flow metering reservoir and (b) blocks fluid flow from the supply outlet of the fluid supply, and also that while in a second state (c) blocks fluid flow between the valve and the fluid inlet of the evaporator and also (d) hydraulically couples the supply outlet of the fluid supply to the service orifice of the flow metering reservoir;

a fluid sensing circuit, disposed proximate the flow metering reservoir, that produces a first signal indicative of when the flow metering reservoir contains an amount of fluid less than or equal to a first selected amount and a second signal indicative of when the flow metering reservoir contains an amount of fluid greater than or equal to a second selected amount that is greater than the first selected amount; and

a valve control circuit, coupled to the valve and responsive to the first and second signals, that causes the valve to be in the second state upon the presence of the first signal, to then remain in the second state until the presence of the second signal, to return to the first state upon the presence of the second signal, and to subsequently remain in the first state in the absence of both the first and second signals.

5,311,770

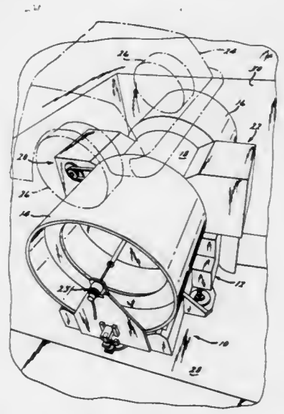
FRICTIONLESS BEARING CHASSIS DYNAMOMETER

Severino D'Angelo, Laguna Beach, Calif., assignor to Horiba Instruments Incorporated, Irvine, Calif.

Filed Jun. 5, 1992, Ser. No. 893,678

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—117 **16 Claims**



1. A frictionless bearing, chassis dynamometer apparatus comprising:

roll means for engaging at least one wheel of a vehicle during rotational movement of said wheel;

inner bearing means associated with said roll means for enabling rotational movement of said roll means relative to a frame portion of said dynamometer;

outer bearing means disposed between said inner bearing

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means and said frame portion for enabling rotational movement of said inner bearing means relative to said frame portion;

race means disposed between said inner and said outer bearing means forming an outer race for said inner bearing means and an inner race for said outer bearing means, for enabling said inner bearing means to be driven in the same direction of rotation as said roll means; and

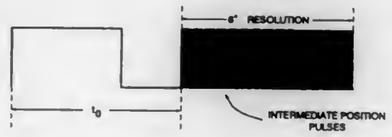
means for driving said race means in the same direction of rotation as said inner bearing means and at variable speeds in relation to the rotational speed of said roll means, to thereby cancel frictional forces of said inner bearing means opposing rotational movement of said roll means.

5,311,771

METHOD FOR DETERMINING THE ROTATIONAL POSITION OF A CRANKSHAFT OF AN INTERNAL COMBUSTION ENGINE

Paul M. Young, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 30, 1992, Ser. No. 860,533
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **8 Claims**



1. A method for determining the rotational position of a crankshaft of an internal combustion engine, comprising the steps of:

monitoring the rotation of the crankshaft and responsively producing a crankshaft pulsetrain;

producing a clock signal with a predetermined frequency;

receiving the clock signal and the crankshaft pulsetrain, sampling each pulse of the crankshaft pulsetrain, responsively determining the period of each sampled pulse, and producing signals representative of the determined pulse periods;

receiving the determined pulse period signals, responsively determining a value which is predictive of a period of the next pulse to be produced, and producing a signal representative of the predictive value; and

receiving the representative predictive value signal, and producing an intermediate position signal based on the predictive value, the intermediate position signal being an electronic pulse wherein each pulse is representative of a predetermined angular rotation of the crankshaft.

5,311,772

ACTIVE THERMAL ISOLATION FOR TEMPERATURE RESPONSIVE SENSORS

Scott D. Martinson, Hampton; David L. Gray, Newport News; Debra L. Carraway, Virginia Beach, all of Va., and Daniel C. Reda, San Jose, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 2, 1992, Ser. No. 820,431
Int. Cl.[5] G01F *1/68*; G01M *9/00*
U.S. Cl. 73—147 **11 Claims**

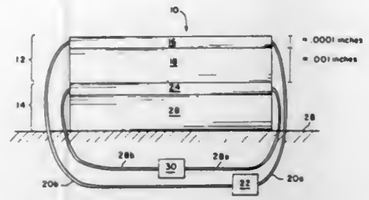
1. An apparatus for monitoring airflow over a specified surface of a body comprising:

a temperature responsive sensor located in the airflow over the specified surface of the body;

means for maintaining said temperature responsive sensor at a constant temperature;

an active thermal isolator located between said temperature responsive sensor and the specified surface of the body; and

means for controlling the temperature of said active thermal isolator to reduce conductive heat flow from said temperature responsive sensor to the body, wherein said temperature controlling means maintains a fixed boundary temperature of said active thermal isolator between the body and said temperature responsive sensor which is different from the temperature of said sensor.

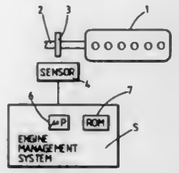


5,311,773

METHOD OF AND AN APPARATUS FOR MISFIRE AND ROUGH ROAD DETECTION

Benjamin J. Bradshaw, West Midlands; Russel W. Jones, Stratford-on-Avon, and Stuart M. Briscoe, West Midlands, all of England, assignors to Lucas Industries, United Kingdom

Filed Jan. 14, 1993, Ser. No. 4,342
Claims priority, application United Kingdom, Jan. 16, 1992, 9200920
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **28 Claims**



1. An apparatus for detecting misfire in a multi-cylinder internal combustion engine having an output shaft, said apparatus comprising comparing means for comparing engine output shaft speed variations following engine combustion events with a threshold value, distribution forming means for forming a distribution of numbers of the speed variations exceeding the threshold value with respect to the cylinders, and misfire signalling means for signalling a misfire when the numbers are predominantly distributed among less than a predetermined number of the cylinders.

5,311,774

METHOD AND INSTALLATION FOR GENERATING A HIGH MASS FLOW OF UNPOLLUTED HIGH ENTHALPY AIR

Pierre Sava, Chatenay-Malabry; Alain Chevalier, Asnieres; Jean-Pierre Minard, Allois; Dominique Piton, Civray, and Gérard Pradet, Le Subdray, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

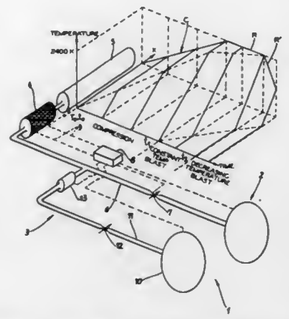
Filed Dec. 8, 1992, Ser. No. 988,290
Claims priority, application France, Dec. 18, 1991, 91 15708
Int. Cl.[5] G01M *9/00*
U.S. Cl. 73—147 **29 Claims**

29. An installation for generating an unpolluted high enthalpy air blast of several seconds duration, said installation comprising:

a blow down type wind tunnel for generating a blast of air under pressure;

an air circulation line in fluidic communication with said blow down type wind tunnel for receiving said blast of air;

an elongate confinement tunnel having an inlet in fluidic communication with said air circulation line, an outlet orifice, and a temporary closure device disposed at said outlet orifice for retaining a mass of feed air within said elongate confinement tunnel, said elongate confinement tunnel having a length to mean width ratio of between about 20 and about 150;



means disposed within said elongate confinement tunnel for heating said mass of feed air to a temperature of at least about 500K;

means in thermal communication with said blast of air for preheating said blast of air to a temperature of at least about said temperature of said mass of feed air; and

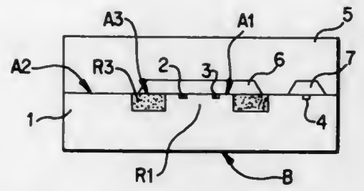
a control system for initiating flow of said blast of air from said blow down type wind tunnel to said elongate confinement tunnel so as to compress and heat said mass of feed air and open said outlet orifice at said temperature closure device.

5,311,775

SEMICONDUCTOR FLOW SENSOR

Jan Suski, Antony; Minh-Trang Chau, Rungis, and Didier Dominguez, Montrouge, all of France, assignors to Schlumberger Industries, Montrouge, France

Filed Dec. 12, 1991, Ser. No. 805,768
Claims priority, application France, Dec. 14, 1990, 90/15658
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 **13 Claims**



1. A flow rate sensor comprising a silicon substrate having a first face provided:

with a heating element disposed in a first cylindrical region of said substrate;

with at least one thermometer component disposed in a second region of said substrate; and

with a third annular region constituted by at least one insulating channel surrounding said first region, formed of or in part by oxidized porous silicon and isolating said first and second regions from each other;

said substrate having a second face for receiving a flow of fluid;

said first and second regions forming respective very low thermal resistances between said first and second faces of said substrate; and

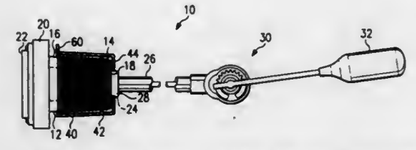
a cap fixed on said first face of said substrate, said cap having at least one cavity formed facing said first region and at least a portion of said third region and said cap being in contact with an interface between said second and said third regions, thereby stiffening said substrate.

5,311,776

PRE-INSTALLATION LIQUID LEVEL GAUGE ASSEMBLY WITH THREAD PROTECTOR

Lloyd R. Morris, Flower Mound, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

Filed Apr. 12, 1993, Ser. No. 46,091
Int. Cl.[5] B65D *59/00*; G01F *23/00*
U.S. Cl. 73—306 **25 Claims**



1. A pre-installation liquid level gauge assembly, comprising:

(a) a fitting having a threaded outer surface and having a first end and a second end, the fitting defining a passage extending into the second end of the fitting;

(b) a thread protector friction fit over at least a portion of the threaded outer surface, the thread protector comprising

(i) a sleeve portion having an open end for being slid over the second end of the fitting and towards the first end of the fitting, and a shoulder end longitudinally opposite the open end, the sleeve portion being of sufficient thickness to protect the portion of the threaded outer surface from being damaged during assembly;

(ii) a shoulder portion extending radially inwardly from the shoulder end of the sleeve portion to define a hole with a diameter greater than the outer diameter of the passage, the shoulder portion abutting alongside the second end of the fitting and extending radially inwardly sufficiently to prevent the shoulder from being pushed over the second end of the fitting, the shoulder portion being of sufficient thickness to protect the second end of the fitting from being damaged during assembly;

(iii) a tab extending from the open end of the sleeve portion so as to define a first corner and a second corner where the tab joins the sleeve portion, the tab sized such that it is readily pullable;

(iv) a scored line extending from the first corner across the sleeve portion and shoulder portion to the hole, the scored line scored such that when the tab is pulled, the thread protector splits from the open end of the sleeve portion to the hole defined by the shoulder portion along the scored line;

(v) an additional scored line extending from the second corner and running generally parallel to the scored line such that when the tab is pulled, a strip of material will be removed from the thread protector between the scored line and the additional scored line;

(d) an extension piece having a fixed end attached to the fitting at the passage and a free end opposite thereto; and

(e) a float mechanism attached to the extension piece.

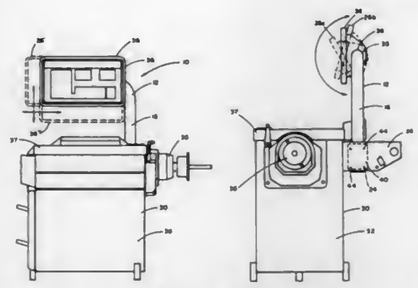
VOL 1162 ISS 3 MY 17 1994 UMI

5,311,777

WHEEL BALANCER WITH ADJUSTABLE OPERATOR POD

Charles L. Cunningham, Nashville, and Randy C. Hunt, Murfreesboro, both of Tenn., assignors to Hennessy Technology Corporation, LaVergne, Tenn.

Filed Sep. 28, 1992, Ser. No. 952,916
Int. Cl.[5] G01M *1/08*
U.S. Cl. 73—462 **7 Claims**



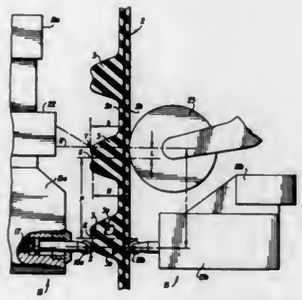
1. An operator interface pod for use in conjunction with an electronic wheel balancer machine comprising:
   a. a pod support joining said pod to a wheel balancer base of said machine;
   b. bracket means attaching said pod support to said wheel balancer base, said base bracket means adapted for vertical adjustment of said pod above said base and for rotation of said pod and said pod support in a horizontal plane above said base; and
   c. bracket means attaching said pod to said pod support, said pod bracket means adapted for horizontal adjustment of said pod parallel to said base and for rotation of said pod around said support in a vertical plane.

5,311,778

PROCESS AND APPARATUS TO IDENTIFY THE PRESENCE OF STRUCTURAL CAVITIES IN SLEEVES FOR THE MANUFACTURE OF DRIVING BELTS

Federico Mancosu, Milan; Roberto Sgnaolin, Piovera, and Roberto Zavaglio, Milan, all of Italy, assignors to Pirelli Prodotti Diversificati S.p.A., Milan, Italy

Filed Nov. 21, 1991, Ser. No. 793,733
Claims priority, application Italy, Nov. 21, 1990, 22126 A/90
Int. Cl.[5] G01N *29/26*
U.S. Cl. 73—622 **18 Claims**



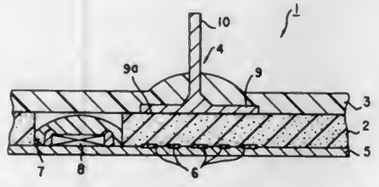
1. A process for identifying the presence of structural cavities in elongated sleeves for the manufacture of driving belts, each sleeve having a longitudinal axis and at least one toothed surface with a plurality of generally axially extending shaped teeth which are disposed parallel to one another in side by side relation according to a predetermined spacing P, said process comprising the following steps:
   a) operatively mounting the sleeve on supporting and handling means;
   b) moving the sleeve in a direction transverse to its longitudinal axis;
   c) positioning an ultrasonic emitting and receiving member and a reading member in an operating position on one wall of the sleeve;
   d) moving the ultrasonic emitting and receiving member and the reading member in a helical manner and in a direction parallel to the longitudinal axis of the sleeve, so that said emitting and receiving member and said reading member act on the sleeve at a first read point "X" and a second read point "Y" respectively;
   e) repeatedly reading a height "h" of the toothed surface passing under the second read point "Y" in order to identify an outline of individual teeth;
   f) measuring the interval of time between different detections of height value "h" carried out during the repeated reading step;
   g) identifying passage under the second read point "Y" of at least two characteristic points "K" of each outline of one of said teeth, said characteristic points "K" being spaced apart from each other by a known predetermined amount;
   h) measuring the interval of time between the passage of said characteristic points "K" under the second read point "Y", to which interval a displacement of the toothed surface equal to said known amount is correlated;
   i) assigning a corresponding distance value "L" from one of said characteristic points "K", to each height value "h" detected during step e), based on a time elapsing between a detection of a height value and the detection of the passage of said characteristic point K, as well as on a value of a space/time ratio resulting from step h);
   j) detecting and processing signals emitted from the ultrasonic emitting and receiving member in order to identify the presence of structural cavities in the sleeve;
   k) stopping step e) when the first read point X is located in a region of the toothed surfaced included between two contiguous teeth;
   l) detecting and storing the position of the ultrasonic emitting and receiving member on the longitudinal axis of the sleeve when the presence of structural cavities has been ascertained.

5,311,779

PRESSURE-SENSITIVE SENSOR

Okamoto Teruo, Osaka, Japan, assignor to Inabagomu Co., Ltd., Osaka, Japan

Filed Jan. 3, 1992, Ser. No. 817,041
Int. Cl.[5] G01M *9/04*
U.S. Cl. 73—726 **8 Claims**



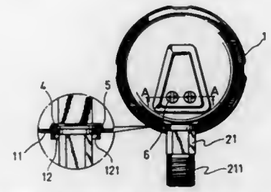
1. A pressure-sensitive sensor comprising:
a pressure-sensitive and conductive elastomer component;
an electronic sensing means disposed at a first location on a front side of said pressure-sensitive and conductive elastomer component for sensing changes in the electrical resistance occurring in response to the deformation thereof; and
a pressure sensing convex portion formed at a second location opposite the first location on a reverse side of said pressure-sensitive and conductive elastomer component, wherein
said electronic sensing means comprises a plurality of electrodes arranged such that the direction of pressure exerted upon said convex portion in a plurality of directions relative to said surface of said pressure-sensitive and conductive component may be detected.

5,311,780

OIL-FILLED PRESSURE GAUGE LEAK-STOPPAGE DEVICE

Wen-Fu Ku, No. 2, Lane 58, Hu Shan Rd., Ying Ko Town, Taipei Hsien, Taiwan

Filed Mar. 2, 1993, Ser. No. 24,740
Int. Cl.[5] G01L *7/04*
U.S. Cl. 73—739 **1 Claim**



1. An oil-filled pressure gauge leak-stoppage device comprising a casing, a gauge received inside casing, said gauge having a stem extended out of said casing through an axle hole on a vertical peripheral wall thereof, a transparent covering on said casing, an oil filled inside said casing, and tie screws respectively threaded through holes on said casing into screw holes on said gauge to fix said gauge in place, first sealing means to seal the gap between said stem and said casing, and second sealing means to seal the gaps between said tie screws and said casing, wherein said axle hole is made on a plane on said vertical peripheral wall of said casing; said first sealing means comprises a rivet-like rubber gasket and a metal gasket, said rivet-like rubber gasket having a tubular body fitted into said axle hole and a head stopped at said plane inside said casing, said metal gasket being retained between said rivet-like rubber gasket and said gauge; said second sealing means comprises a plurality of plastic gaskets respectively and directly molded on a chamfered annular groove on the bottom of the head of either tie screw around its shank.

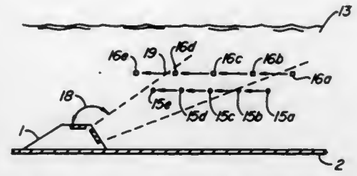
5,311,781

FLOWMETER FOR OBJECT-BEARING LIQUIDS

Wendall C. Gates, Santa Cruz, Calif., assignor to Advanced Instrumentation Inc., Santa Cruz, Calif.

Continuation of Ser. No. 829,810, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 594,729, Oct. 9, 1990, abandoned. This application Mar. 5, 1993, Ser. No. 27,262
Int. Cl.[5] G01F *1/66*
U.S. Cl. 73—861.25 **10 Claims**

1. A flowmeter for measuring the movement of an object-bearing liquid in a conduit, the liquid containing one or more objects, the flowmeter comprising:
   an emitter which emits energy into the liquid at successive points in time;
   a receiver which receives energy reflected back from the one or more objects in the liquid at the successive points in time;
   means for converting the reflected energy received by the receiver from the one or more objects into a first set of individual electric signals corresponding to the energy reflected form the one or more objects;
   means for storing the first set of individual electric signals;
   means for comparing the first set of individual electric signals and a second set of individual electrical signals from the successive point in time, the comparing means have a predetermined threshold for comparing the first and second set of individual electrical signals, the comparing means identifying pairs of electric signals, one from the first set and one from the second set, being within the predetermined threshold of each other, each pair of electric signals defining an identified object at the successive points in time; and
   means for determining the displacement of each of the identified objects between the successive points in time.

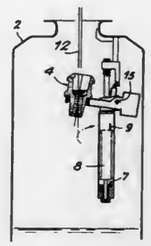


5,311,782

PROCESS AND APPARATUS FOR THE AUTOMATIC REMOVAL OF A MATERIAL SAMPLE DURING ITS POURING INTO A CONTAINER

Roger Bonniaud, Bagnois sur Cée; Antoine Jouan, Villeneuve les Avignon; Jean-Pierre Moncouyoux, Bagnols sur Céze, and Michel Saint-Gaudens, Laudun, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 9, 1991, Ser. No. 806,000
Claims priority, application France, Dec. 12, 1990, 90 15567
Int. Cl.[5] G01N *1/10, 33/38;* **G21F** *9/00*
U.S. Cl. 73—863.53 **8 Claims**



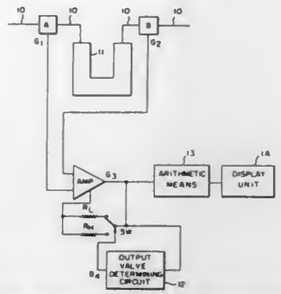
1. Apparatus for the automatic collecting of a material sample of a glass composition in its liquid phase while the glass composition is being poured as a liquid stream into an open container having an upper rim and with said glass composition solidifying in said open container, comprising:
   a bucket for collecting the material sample,
   a support rod extending from said upper rim of said container in substantial vertical alignment with the longitudinal axis of said container;
   an oscillating arm connected to said bucket and rotatably mounted on said support rod for rotation about said support rod in such manner so as to reciprocate said bucket into a position beneath said liquid stream and for retracting said bucket from said position; and
   means for controlling the rotation and retraction of said oscillating arm, so that said bucket can collect said sample while the bucket is beneath the liquid stream.

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5,311,783
SYSTEM FOR AUTOMATICALLY SHIFTING A MEASURING RANGE OF SURFACE AREA MEASURING DEVICE

Minoru Takeuchi, Tokyo, Japan, assignor to Nikkiso Company Ltd., Tokyo, Japan

PCT No. PCT/JP90/01112, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/03724, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 31, 1990, Ser. No. 721,533
Claims priority, application Japan, Aug. 31, 1989, 1-225861
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—865.5 **2 Claims**

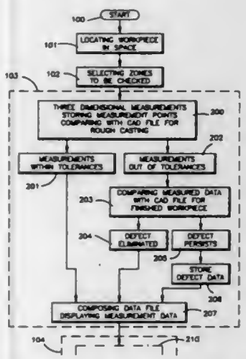


1. In a surface area measuring device comprising:
a gas passage;
a sample cell mounted detachably in said gas passage;
said sample cell having a tube-like form containing a sample, a surface area of said sample to be measured for an amount of gases absorbed by said sample,
first measurement means, located in said gas passage and connected to a first end of said sample cell to which gases are supplied through said gas passage, for detecting a flow rate of gases to be supplied to said sample cell to measure an amount of supplied gases and generating a supply-gases-flow-rate detecting signal;
second measurement means, located in the gas passage and connected to a second end of said sample cell from which said supplied gases are discharged, for detecting a flow rate of gases discharged from said sample cell in order to measure an amount of discharge gases and generating a discharge-gases-flow-rate detecting signal;
an amplifier electrically connected to said first measurement means and to said second measurement means for receiving said supply-gases-flow-rate detecting signal and said discharge-gases-flow-rate detecting signal and amplifying a difference between said supply-gases-flow-rate detecting signal and said discharge-gases-flow-rate detecting signal, and generating a differential signal,
said amplifier being capable of varying a gain;
arithmetic means, electrically connected to said amplifier to receive said differential signal, for calculating an amount of gases absorbed in said sample cell by integrating said differential signal;
an improvement of said measuring device comprising:
output value determining circuit electrical means, connected between said amplifier and said arithmetic means for receiving said differential signal to said amplifier and generating a shift signal for setting a gain of said amplifier to a low level when said differential signal reaches a set gain of an output of said amplifier and for generating a shift signal for setting a gain of said amplifier to a high level when said differential signal is smaller than a predetermined value with respect to said set gain during a period of time that gases absorbed in a sample are desorbed; and
shift switch means electrically connected with said output value determining circuit means and said amplifier, for receiving said shift signal and switching said gain of said amplifier in accordance with said shift signal.

5,311,784
DIMENSIONAL QUALITY CONTROL METHOD FOR CAST PARTS

Francis Girard, Viroflay; José Guezou, Jouy le Moutier, and Jean-Claude Manceau, Taverny, all of France, assignors to Societe HISPANO-SUIZA, Saint Cloud, France

Filed Nov. 21, 1991, Ser. No. 795,742
Claims priority, application France, Nov. 21, 1990, 90 14495
Int. Cl.[5] G06F *15/46, 15/60;* G01B *21/02, 21/30*
U.S. Cl. 73—865.8 **8 Claims**

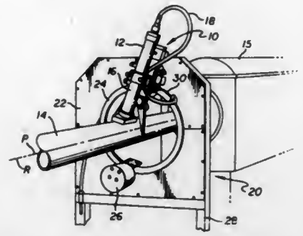


8. A method for inspecting and ascertaining the quality of a cast workpiece comprising the steps of:
a) providing a computer having a computer assisted design (CAD) file of both the as cast workpiece and the finished workpiece;
b) positioning and spatially locating the workpiece on a support surface;
c) subjecting the workpiece to a preliminary stage wherein the presence of any machinery defects is ascertained, wherein the preliminary stage comprises the additional steps of:
i) defining a initial plane;
ii) defining an orientation system; and,
iii) establishing the location of the workpiece on its support relative to the initial plane;
d) selecting a zone of the workpiece to be inspected;
e) conducting a shape analysis of the workpiece in the selected zone using a three-dimensional measuring means operatively associated with the computer so as to transmit three-dimensional measurement data to the computer;
f) storing the three-dimensional measurement data relating to the selected inspection zone;
g) comparing the three-dimensional measurement data with data in the CAD file for the workpiece;
h) repeating steps c) through f) until substantially the entire workpiece has been analyzed; and,
i) accepting or rejecting the workpiece based upon the comparison of the three-dimensional measurement data and the CAD file data.

5,311,785
PROBE HOLDER FOR A ROTARY SCANNER

Abraham Bar-Shay, Silver Haifa, Israel, assignor to Nucleonics Development Company, Monrovia, Calif.

Filed Mar. 11, 1992, Ser. No. 849,360
Int. Cl.[5] B29C *47/92*
U.S. Cl. 73—866.5 **20 Claims**

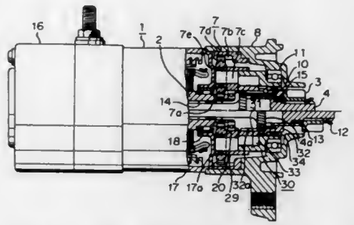


1. A holder for mounting a probe to a ring of a rotary type scanner, the probe having a sensing beam directed along a probe axis of the probe for inspecting a pipe extending through the ring, the scanner having means for rotating the ring such that the holder, when mounted to the ring, is movable 360 degrees around the pipe, the holder comprising:
a shaft for mounting to the ring of the rotary type scanner, the shaft having a longitudinal axis;
a support rotatably mounted to the shaft;
a counterweight; and
a pair of levers pivotally mounted to the support, each of the pair of levers having a first end portion and a second end portion, with the first end portions spaced from the second end portions, respectively, in the direction of the longitudinal axis of the shaft, the first end portions for pivotally holding the probe and the second end portions pivotally mounted to the counterweight, such that when the probe is pivotally mounted to the first end portions of the pair of levers, the pair of levers, the counterweight and the probe form a parallelogram arrangement.

5,311,786
COAXIAL STARTER MOTOR

Satoshi Moribayashi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,113
Claims priority, application Japan, May 29, 1992, 4-163805
Int. Cl.[5] F02N *11/00*
U.S. Cl. 74—7 C **1 Claim**

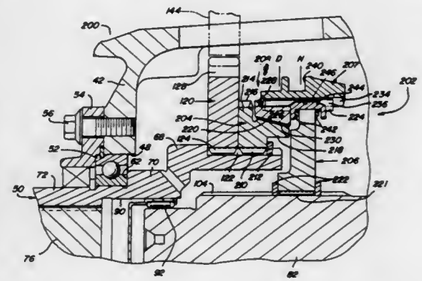


1. A coaxial type starter motor which comprises:
a d.c. motor comprising a hollow armature rotary shaft and a front bracket connected to a yoke,
an overrunning clutch disposed in the front bracket to transmit a rotational force from the rotary shaft,
an output shaft having a rear end portion which is extended into the hollow rotary shaft and is supported by a bearing so as to be slidable forwardly and backwardly, said output shaft having a helical spline connection to a clutch inner in the overrunning clutch to obtain the transmission of a rotational force, and
a pinion mounted on the front end portion of the output shaft so as to come to interlocking with the ring gear of an engine when the output shaft is forwardly moved, wherein
a clutch outer in the overrunning clutch has an enlarged diameter portion for supporting a roller at its rear end side, a boss portion of a reduced diameter at its front end side, in which the outer periphery of the boss portion is supported by the front bracket by means of a bearing, and
the clutch inner is supported by the inner periphery of the boss portion of the clutch outer by means of a bearing.

5,311,787
POWER TAKE-OFF ADAPTOR

Robert J. Wilson, Warners; Arthur H. Bouchard, II, Cazenovia, and John D. Zalewski, Liverpool, all of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 895,539, Jun. 8, 1992. This application Oct. 5, 1992, Ser. No. 957,046
Int. Cl.[5] F16H *37/06;* B60K *17/34;* F16D *23/06*
U.S. Cl. 74—15.88 **4 Claims**



1. An adapter unit for a two-wheel drive motor vehicle of the type having a source of driving torque and incorporating a conventional four-wheel drive transmission including a transmission output shaft, the adapter unit comprising:
a first housing adapted at a first end to receive the transmission output shaft;
a drive shaft journally supported within the housing for delivering the driving torque from the source of power to ground engaging wheels;
an input shaft journally supported within the housing and coupled between the transmission output shaft and the drive shaft;
a power take-off output gear having an externally splined surface and being fixed to the input shaft;
an aperture formed in the first housing adjacent the powered take-off gear;
a power take-off unit contained within a second housing, the second housing being completely independent from the first housing and detachable therefrom, a power take-off output shaft journally supported therein, an input gear fixed to the power take-off output shaft, the input gear being adapted for meshing engagement with the power take-off output gear for delivering driving torque to the power take-off output shaft;
synchronizer means for on-the-fly delivery of the driving torque to the drive shaft; and
means for detachably securing the first housing to the second housing;
whereby the adapter unit converts the conventional four-wheel drive transmission for use in the two-wheel drive

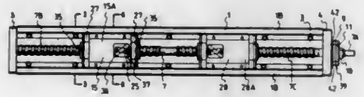
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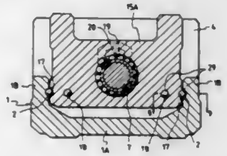
vehicle and further equips the vehicle with a power take-off provision.

5,311,788
LINEAR WORKING UNIT

Shinichi Kasuga, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,012
Claims priority, application Japan, Sep. 25, 1991, 3-85339[U]; Oct. 21, 1991, 3-299530[U]; Oct. 24, 1991, 3-94968[U]; Dec. 4, 1991, 3-108172[U]
Int. Cl.[5] F16H *25/22*
U.S. Cl. 74—89.15 **17 Claims**



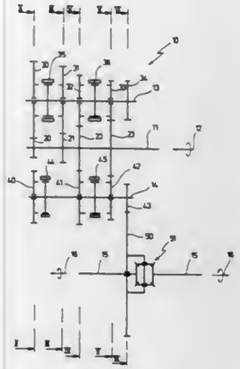


1. A linear working unit driven by an electric motor, comprising:
- a U-shaped linear movement guiding member including an elongated guide rail portion, two mutually confronting side surfaces, and a rolling groove formed, for receiving a plurality of rolling elements in an axial direction, on each of the two mutually confronting side surfaces;
- a ball screw shaft member rotatably supported by said linear movement guiding member at both ends thereof, said ball screw shaft member having a left-hand ball screw part and a right-hand ball screw part;
- a first screw nut threadedly mounted on said left-hand ball screw part of said ball screw shaft member via balls to move along said ball screw shaft member by rotation thereof, said first screw nut being guided by said guide rail portion via rolling elements in the form of first balls disposed between said first screw nut and said guide rail portion when said first screw nut is moved along said ball screw shaft, said first balls being circulated in a return passage formed in said first screw nut; and
- a second screw nut threadedly mounted on said right-hand ball screw part of said ball screw shaft member via balls to move along said ball screw shaft member by rotation thereof, said second screw nut being guided by said guide rail portion via rolling elements in the form of second balls disposed between said second screw nut and said guide rail portion when said second screw nut is moved along said ball screw shaft, said second balls being circulated in a return passage formed in said second screw nut.

5,311,789
MOTOR VEHICLE TRANSMISSION HAVING GEARINGS FOR SIX FORWARD SPEEDS AND ONE REVERSE SPEED

Helga Henzler, Murr; Guenter Knoedel, Muehlacker, and Monika Rack, Markgroeningen, all of Fed. Rep. of Germany, assignors to Getrag Getriebe-Und Zahnradfabrik H.H. GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Nov. 5, 1992, Ser. No. 972,376
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1991, 4136455
Int. Cl.[5] F16H *3/093;* B60K *17/08*
U.S. Cl. 74—331 **2 Claims**

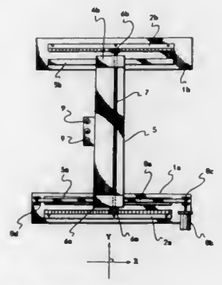


1. A motor vehicle transmission having gearings for six forward speeds and one reverse speed, said transmission comprising:
- a drive shaft;
- a first countershaft;
- a second countershaft;
- an output shaft;
- a first meshing gearwheel set for a first forward speed, comprising a first non-rotatable gearwheel on said drive shaft and a first freely-rotatable gearwheel on said first countershaft;
- a second meshing gearwheel set for a second forward speed, comprising a second non-rotatable gearwheel on said drive shaft and second freely-rotatable gearwheel on said first countershaft;
- a third meshing gearwheel set for a third forward speed comprising a third non-rotatable gearwheel on said drive shaft and a first freely-rotatable gearwheel on said second countershaft;
- a fourth meshing gearwheel set for a fourth forward speed, comprising a fourth non-rotatable gearwheel on said drive shaft and a second freely-rotatable gearwheel on said second countershaft;
- a fifth meshing gearwheel set for a fifth forward speed, comprising said third non-rotatable gearwheel on said drive shaft and a third freely-rotatable gearwheel on said first countershaft;
- a sixth meshing gearwheel set for a sixth forward speed, comprising said fourth non-rotatable gearwheel on said drive shaft and a fourth freely-rotatable gearwheel on said first countershaft;
- a seventh meshing gearwheel set for a reverse speed, comprising said first non-rotatable gearwheel on said drive shaft and said first freely-rotatable gearwheel on said first countershaft belonging both to said first gearwheel set, and comprising a third further, freely-rotatable gearwheel on said second countershaft, said first freely-rotatable gearwheel from said first gearwheel set meshing with said third freely-rotatable gearwheel of said second countershaft;
- an eighth meshing gearwheel set comprising a non-rotatable gearwheel each on said first countershaft, said second countershaft and said output shaft, respectively, said non-rotatable gearwheel on said output shaft meshing with both non-rotatable gearwheels on said countershafts;
- a first gearshift sleeve on said first countershaft arranged between said first and said second gearwheel sets for selectively engaging said first or said second forward speed, respectively;
- a second gearshift sleeve on said second countershaft arranged between said third and said fourth gearwheel sets for selectively engaging said third or said fourth forward speed, respectively;
- a third gearshift sleeve on said first countershaft arranged between said fifth and said sixth gearwheel sets for selectively engaging said fifth or said sixth forward speed, respectively; and
- a fourth gearshift sleeve on said second countershaft arranged adjacent said seventh gearwheel set for selectively engaging said reverse gear.

5,311,790
DRIVE SYSTEM

Ken Yanagisawa, c/o Kabushiki Kaisha Mechanic Sekkei Jimusho, 5175-1, Ooaza Toyoshina, Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Filed Jul. 22, 1992, Ser. No. 916,681
Claims priority, application Japan, Jul. 25, 1991, 3-208679
Int. Cl.[5] G05G *11/00;* B25J *11/00*
U.S. Cl. 74—479 PH **17 Claims**

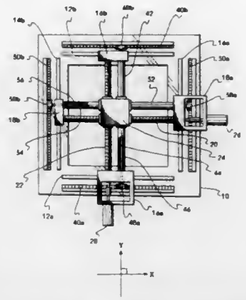


1. A drive system, comprising:
- a base;
- a pair of racks provided in a first direction on the base;
- a connecting member having two ends, the connecting member being provided in a second direction generally perpendicular to the first direction, each end of said connecting member being fixed to each said traveller;
- a pair of pinions, each of which engages with said rack and rolls thereon in the first detection, and pinions being coaxially connected by a shaft; and
- first driving means for driving at least one of said travellers in the first direction, said first driving means being mounted on the base separate from said travellers and said connecting member.

5,311,791
TWO DIMENTIONAL DRIVE SYSTEM

Ken Yanagisawa, c/o Kabushiki Kaisha Mechanic Sekkei Jimusho, 5175-1, Ooaza, Toyoshina, Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Filed Jul. 30, 1992, Ser. No. 921,732
Claims priority, application Japan, Aug. 7, 1991, 3-222274
Int. Cl.[5] G05G *11/00;* F16H *27/02*
U.S. Cl. 74—479 PH **7 Claims**



1. A two dimensional drive system, comprising:
- a pair of first linear guides provided in a first direction;
- a pair of second linear guides provided in a second direction perpendicular to the first direction;
- a pair of first travellers respectively engaged with said first linear guides, said first travellers being capable of moving in the first direction along said first linear guides;
- a pair of second travellers respectively engaged with said second linear guides, said second travellers being capable of moving in the second direction along said second linear guides;
- a first ball bearing screw being provided in the first direction, said first ball bearing screw rotatably extending between said second travellers;
- a second ball bearing screw being provided in the second direction, said second ball bearing screw rotatably extending between said first travellers;
- a slider being screwed with said first ball bearing screw and said second ball bearing screw, said slider being capable of moving in the first direction and the second direction on said first ball bearing screw and said second ball bearing screw with rotation thereof;
- a first motor for driving said first ball bearing screw, said first motor being provided on one of said second travellers;
- a second motor for driving said second ball bearing screw, said second motor being provided on one of said first travellers;
- first restraining means for restraining the inclination of said first ball bearing screw with respect to the first direction; and
- second restraining means for restraining the inclination of said second ball bearing screw with respect to the second direction;
- said first restraining means comprises:
- a pair of first racks being respectively provided in parallel to each of said second linear guides;
- a first shaft being provided in the first direction, said first shaft rotatably projecting through said second travellers; and
- a pair of first pinions being respectively fixed at each end of said first shaft, said first pinions respectively engaging with each of said first racks, and
- said second restraining means comprises:
- a pair of second racks being respectively provided in parallel to each of said first linear guides;

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a second shaft being provided in the second direction, said second shaft rotatably projecting through said first travellers; and

a pair of second pinions being respectively fixed at each end of said second shaft, said second pinions respectively engaging with each of said second racks.

5,311,792

HAND LEVER FOR MOTORCYCLES OR SIMILAR VEHICLES

Donald Brown, Thiensville, and Richard Donaj, Milwaukee, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.

Filed Sep. 23, 1992, Ser. No. 949,900
Int. Cl.[5] G05G *11/00*
U.S. Cl. 74—489 **2 Claims**



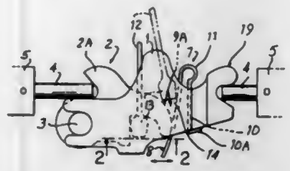
1. A hand lever for operating a motorcycle brake, the motorcycle having a handlebar and a pair of handgrips on the opposite ends of the handlebar for steering, the handgrips having a longitudinal axis and being curvilinear in a section transverse to its longitudinal axis, the hand lever including a head portion adjacent one end adapted to be pivotally mounted on the handle bar adjacent one of the handgrips and on the side opposite the other handgrip so that the lever is positioned to be engaged by the operator's fingers, said hand lever also including a handle portion extending away from the head portion and having a proximal end attached to the head portion and a distal end, said handle portion being adapted to be pivoted by the operator's fingers from a normal position in which the distal end is spaced from a handgrip to a second position in which the distal end is adjacent a handgrip, said handle portion having an inner surface adapted to face away from the handgrip and a pair of sides disposed at the junction of the inner and outer surfaces, said handle portion tapering inwardly along said sides from adjacent its proximal end to adjacent its distal end, the inner surface being concave in transverse section and generally linear in the direction extending from adjacent the distal end to adjacent the proximal end to define a generally cylindrical section complimentary to the outer surface of a handgrip, the outer surface of the handle portion being convex in transverse section, said hand lever being adapted to pivot towards a handgrip whereby said concave inner surface is moveable toward proximity with the curvilinear surface of a handgrip, said handle portion being thicker in its center between said edges and tapering to the edges which are relatively thinner than the center whereby the convex outer surface is adapted to define a generally oval configuration with a handgrip in a section transverse to the longitudinal axis of the handle portion when the lever is in close proximity with a handgrip, thereby reducing the finger extension required to operate the motorcycle brake and permitting the operator to exert the required breaking pressure with less effort than if the lever were spaced from a handgrip.

5,311,793

BRAKE CABLE FIXING DEVICE FOR A PARKING BRAKE, IN PARTICULAR FOR A DUO-SERVO HAT-SECTION-TYPE PARKING BRAKE

Claus-Peter Panek, Steinbach; Jurgen Musolf, Frankfurt am Main; Uwe Wohlmann, Worth/Main, and Wulf Post, Pfungstadt, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00215, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/15685, PCT Pub. Date Oct. 17, 1991
PCT Filed Feb. 5, 1991, Ser. No. 930,602
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1990, 4010460.5; Dec. 8, 1990, 4039274
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.6 **9 Claims**



1. In combination, a brake cable, parking brake expanding lock, and a cable brake fixing arrangement connecting an end of said brake cable to said parking brake expanding lock, said expanding lock including a pressure bracket comprised of fork legs connected with an end wall at one end thereof comprising an actuating portion, and an actuating lever comprised of fork legs disposed within said pressure bracket fork legs, said actuating lever fork legs spaced apart a predetermined distance and connected at one end with a brake actuating portion, the unconnected end of each of said actuating lever fork legs adjacent said end wall of said pressure bracket and extending at an inclination with respect to said end wall to create a convergent space therebetween;

an elastic leg mounted to said end wall of said pressure bracket and having a free end inclined towards said unconnected end of each of said actuating lever fork legs to create a convergent entry space; a cable end nipple connected to the end of said cable, of a width greater than said distance between said actuating lever fork legs, and said convergent entry space, whereby said cable end nipple can be inserted by deflecting said elastic leg to allow said cable end nipple to pass by and allow said cable to be pushed between said actuating lever fork legs and retained therebetween by said connected cable end nipple.

5,311,794

CONTROL SYSTEM FOR ENGINES AND AUTOMATIC TRANSMISSIONS

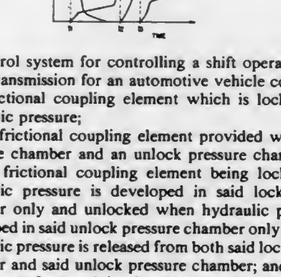
Mitsuru Takada, Aichi, and Jun Harada, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 729,684, Jul. 15, 1991, Pat. No. 5,178,041. This application Oct. 28, 1992, Ser. No. 967,732
Claims priority, application Japan, Jul. 16, 1990, 2-187542; Jul. 16, 1990, 2-187543; Jul. 16, 1990, 2-187544; Dec. 17, 1991, 3-353457
Int. Cl.[5] F16H *61/16*
U.S. Cl. 74—857 **4 Claims**

1. A control system for controlling both: an engine having a plurality of cylinders, a plurality of intake ports formed individually for said cylinders, a plurality of intake valves for opening or closing said intake ports individually for said cylinders, and a control valve for opening or closing one of the intake ports of each of said cylinders; and an automatic transmission connected to said engine, comprising:

valve control means for opening said control valve, when an engine load is high, and for closing said control valve when the engine load is low;

air/fuel ratio control means for making an air/fuel ratio when said control valve is closed higher than that when said control valve is open; and



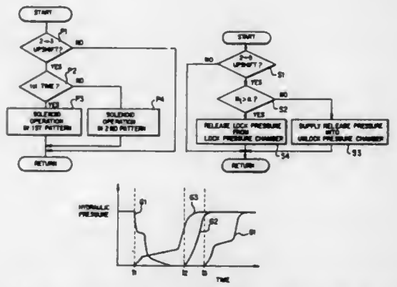
shift inhibit means for inhibiting the shift in said automatic transmission till a predetermined time period elapses after the switching of said control valve.

5,311,795

CONTROL SYSTEM WITH BAND BRAKE ACTUATOR FOR AUTOMATIC TRANSMISSION

Hiroshi Yoshimura; Toshihisa Marusue; Masahito Kitada, and Hidetoshi Kambara, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 17, 1992, Ser. No. 903,464
Claims priority, application Japan, Jun. 17, 1991, 3-144775; Sep. 10, 1991, 3-230213
Int. Cl.[5] F16H *61/04*
U.S. Cl. 74—867 **4 Claims**



1. A control system for controlling a shift operation of an automatic transmission for an automotive vehicle comprising:

a first frictional coupling element which is locked under hydraulic pressure;

a second frictional coupling element provided with a lock pressure chamber and an unlock pressure chamber, said second frictional coupling element being locked when hydraulic pressure is developed in said lock pressure chamber only and unlocked when hydraulic pressure is developed in said unlock pressure chamber only and when hydraulic pressure is released from both said lock pressure chamber and said unlock pressure chamber; and

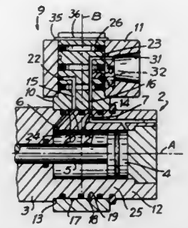
control means for supplying hydraulic pressure to said first frictional coupling element, so as to lock said first frictional coupling element, and releasing hydraulic pressure from said lock pressure chamber of said second frictional coupling element while keeping hydraulic pressure released from said unlock pressure chamber, so as to unlock said second frictional coupling element, when it is necessary for said automatic transmission to shift into a predetermined gear.

5,311,796

HYDRAULIC TOOL

John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Filed Jul. 23, 1990, Ser. No. 557,166
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—57.39 **3 Claims**



1. A hydraulic tool, comprising an action part arranged to act on a threaded connector for tightening and loosening the same; a drive part arranged to operate said action part so that said action part tightens or loosens a threaded connector, said drive part being formed as a hydraulically-operated drive and including a hydraulic cylinder-piston unit having a first axis; hose means arranged to supply a hydraulic working liquid to said drive; and a connector connecting said hose means with said drive part, said connector including a first connector portion mounted on one of said parts turnably relative to the latter about said first axis of said hydraulic cylinder-piston unit; and a second connector portion mounted on said first connector portion turnably about a second axis which is inclined substantially perpendicularly relative to said first axis of said hydraulic cylinder-piston unit, so that said hose means are turnable relative to said one part about said first axis of said hydraulic cylinder-piston unit and also about said second axis which is substantially perpendicular to said first axis of said hydraulic cylinder-piston unit, said hose means including two hoses each having one end connectable with a source of hydraulic working liquid and another end connected with said connector, so that the other ends of said two hoses are jointly turnable about said first axis of said hydraulic cylinder-piston unit and also about said second axis which is substantially perpendicular to said first axis.

5,311,797

PRESSURE-OPERATED POWER WRENCH

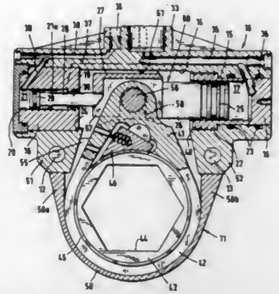
Klaus Ruessmann, Koenigswinter; Thomas Beyert, Much, and Paul-Heinz Wagner, Haus Nr. 70,, D-5103Much-Birrenbachshöhe, all of Fed. Rep. of Germany, assignors to Paul-Heinz Wagner, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,605
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210512
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—57.39 **6 Claims**

1. A pressure-operated power wrench comprising a housing (10) which includes a working cylinder (17) with a working piston (25) movable therein, a headpiece (11) being connected to said housing (10) and comprising a rotatable annular member (43) which is coupled, for being taken along by rotation, to a lever (41) engaging said working piston (25), and an additional piston (29) being connected to said working piston (25)

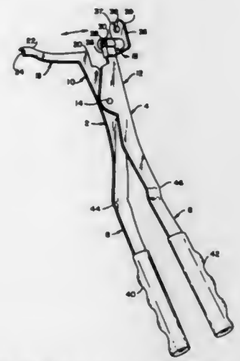
VOL 1162 ISS 3 MY 17 1994 UMI

and being arranged in an additional cylinder (21) on the side opposite to said working cylinder (17),



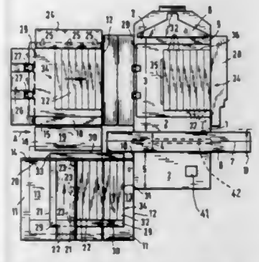
characterized in that the cross-sectional area of said additional cylinder (21) is substantially smaller than that of said working cylinder (17).

5,311,798
SPRING SPREADING TOOL
Michael T. Trusky, 205 Idaho, Laredo, Tex. 78041
Continuation of Ser. No. 503,841, Apr. 2, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,939
Int. Cl.[5] B25B *7/00*
U.S. Cl. 81—485 **12 Claims**



1. A tool for spreading high tension springs comprising a first level and a second level opposed thereto, each level having a handle at the bottom end, an arm at the top end, and an intermediate region at which the levers are hinged to each other by a pivot means having a pivot axis about which the levers pivot, an end of the arm of said first lever having a first means to hold a hook of a helical spring said first means extending perpendicular to said first lever generally in a plane in which said first lever pivots, an end of the arm of said second lever having a second means to hold a separate section of said spring, said second means having a slot cut in its top said slot lying perpendicular to a plane in which said second lever pivots, said second means having a right side and a left side extending above and below the plane in which said second lever pivots; the separate section of said spring being stretchable away from said hook, the handle and arm of each lever being on the same side of said pivot means, the arrangement being such that the handles are squeezed together to spread the arms to stretch said spring; wherein said second means is detachable from the end of the arm of said second lever having a shank extending towards the end of the arm of said second lever further comprising an extension between the end of the arm of said second lever and said second means, said shank fitting into a non-round hole in said extension which fits into a non-round hole in the end of the arm of said second lever.

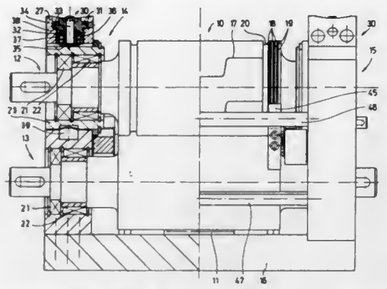
5,311,799
PROCESS AND APPARATUS FOR CUTTING STACKED SHEET-LIKE MATERIAL IN MORE THAN ONE DIRECTION WITH A SINGLE CUTTING KNIFE
Wolfgang Mohr, Hundshager Weg 42, D-6238, Hofheim/-Taunus, Fed. Rep. of Germany
Continuation of Ser. No. 691,462, Apr. 25, 1991. This application Mar. 1, 1993, Ser. No. 22,693
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013418
Int. Cl.[5] B26D *5/20, 7/01*
U.S. Cl. 83—36 **21 Claims**



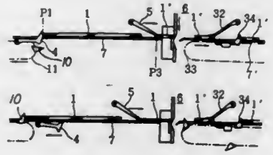
1. A process for cutting stacked sheet-like material in more than one direction with a single cutting knife, comprising:
pushing material to be cut from an entry zone of an apparatus toward said cutting knife located above a cutting table of said apparatus;
cutting said material in a first direction;
placing said cut material on a thin walled, plate-shaped transport base positioned on a first table part located proximate to an exit zone of said cutting table;
rotating said cut material prior to placing it on said transport base;
moving said transport base to said entry zone;
moving said cut material from said transport base onto said entry zone; and
pushing said cut material from said entry zone toward said cutting knife to cut said material in a second direction that differs from the first direction in which the material is cut.

5,311,800
APPARATUS FOR SEVERING (COLLAR) BLANKS FROM A WEB OF MATERIAL
Heinz Focke, Verdon, and Frank Oberscheip, Hanover, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany
Filed May 15, 1992, Ser. No. 883,771
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116141
Int. Cl.[5] B26D *1/40*
U.S. Cl. 83—168 **9 Claims**

1. In an apparatus for severing collar blanks of a hinge lid pack from a web of material, said apparatus comprising: a rotatable knife roller (10) having a rotational axis and having severing knife edges (17) in a region of an outer periphery thereof; a likewise rotatable counter roller (11) having an outer periphery and acting as a counter means for the knife roller (10); and adjustable pressure means for pressing said knife roller (10) against the counter roller (11) with a contact pressure; the improvement wherein:
a) the outer periphery of the knife roller (10) comprises a cylindrical shell surface;
b) outside the region of the knife edges (17), the knife roller (10) has, at an axial end of the cylindrical shell surface, a plurality of parallel annular supporting means for supporting the knife roller on the periphery of the counter roller (11);
c) said supporting means comprise parallel annular rims (18) having annular grooves (19) formed therebetween; and
d) said adjustable pressure means exert sufficient contact pressure of the knife roller (10) on the counter roller (11) to cause the annular rims (18) to be slightly radially compressible in a resilient manner.

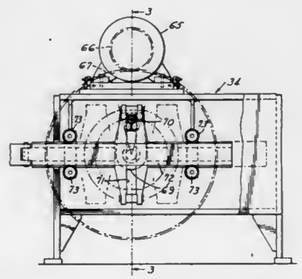


5,311,801
CUTTING DEVICE
Tadao Uno, 1-84, Matsugaoka 1-chome, Chigasaki-shi, Kanagawa-ken, Japan
Filed Dec. 17, 1992, Ser. No. 991,966
Claims priority, application Japan, May 25, 1992, 4-158568
Int. Cl.[5] B26D *5/20*
U.S. Cl. 83—278 **4 Claims**



1. A cutting device comprising:
a transportation railway for guiding a pile of sheets by supporting a lower surface thereof;
a cutting means positioned along said transportation railway for cutting a pile of sheets delivered thereto along said transportation railway into a plurality of smaller sheets;
a first pusher movable along said transportation railway from a primary delivery starting position to a primary delivery completion position and engageable with a pile of sheets to be cut for intermittently moving a part of the length of the pile of sheets in the direction of the transportation railway past said cutting means for enabling said cutting means to subject the pile of sheets to a primary cutting operation for cutting the part of the pile of sheets into piles of smaller sheets;
first pusher moving means connected to said first pusher for intermittently moving said first pusher along said transportation railway in a delivery direction and for, upon the first pusher reaching the primary delivery completion position, immediately retracting said first pusher to said primary delivery starting position for engagement with a succeeding pile of sheets and starting intermittent movement of said first pusher for moving said succeeding pile of sheets toward said primary delivery completion position;
a second pusher movable along said transportation railway from a secondary delivery starting position coincident with said primary delivery completion position and to a secondary delivery completion position adjacent said cutting means and engageable with said first mentioned pile of sheets for intermittently moving the remainder of said length of said first mentioned pile of sheets past said cutting means for enabling said cutting means to subject the pile of sheets to a secondary cutting operation for cutting the remainder of said first mentioned pile of sheets into piles of smaller sheets;
second pusher moving means connected to said second pusher for intermittently movingly said second pusher along said transportation railway in a delivery direction and for, upon said second pusher reaching the secondary completion position, immediately retracting said second pusher to said secondary delivery starting position for engagement with the succeeding pile of sheets and starting intermittent movement of said second pusher for moving said succeeding pile of sheets toward said secondary delivery completion position, said second pusher moving means having the operation thereof timed for starting the movement in the delivery direction immediately after said first pusher has reached said primary delivery completion position and carrying out movement of the second pusher in the delivery direction as said first pusher is being retracted and the movement of the succeeding pile of sheets is being started, and carrying out the retracting movement of the second pusher within the time said first pusher completes movement of the succeeding pile of sheets to the primary delivery completion position.

5,311,802
TUBE CUT OFF MACHINE
Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128
Continuation-in-part of Ser. No. 682,725, Apr. 9, 1991, Pat. No. 5,243,889. This application Mar. 2, 1992, Ser. No. 844,437
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] B23D *25/04*
U.S. Cl. 83—311 **5 Claims**

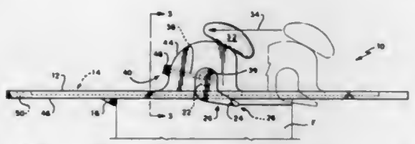


1. An apparatus for cutting predetermined lengths from a moving length of roll form material such as tubing adapted to be positioned downstream from a source comprising
at least one cut-off assembly including a knife blade that is moved in an endless path to cut a length of tubing which is being moved such that the knife blade is moved in a straight line tangential to its axis and transverse to the path of the tubing when the knife blade intersects the path of the tubing to cut the tubing,

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a servo motor drive for moving said knife blade in said endless path,
said servo motor driving comprising
a servo motor,
a crank driven by said servo motor,
a slot track,
a cam follower on said crank engaging said slot track such that as the crank is rotated the cam follower is moved in a generally circular path,
means yieldingly mounting said cam follower such that it is urged radially outwardly,
said cam track having a flat portion on at least one end of said slot track, such that the cam follower traverses a straight line and the cam follower is yieldingly urged radially inwardly by said flat portion during contact of the cam follower with the flat portion of the slot track,
said servo motor drive being connected to said cut-off assembly and said cam follower for moving said knife blade in said straight line of said endless path and during this movement the cam follower is in contact with said flat portion of said cam track such that the knife blade cuts tubing when the cam follower is in engagement with said flat portion.

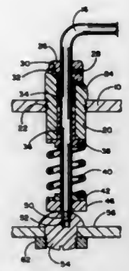
5,311,803
CHEESE SLICER
Timothy J. Crowley, P.O. Box 171, Treadwell, N.Y. 13846
Filed Feb. 16, 1993, Ser. No. 18,310
Int. Cl.[5] B26D *1/547*
U.S. Cl. 83—745 **4 Claims**



1. A cheese slicer which sits atop and is supported by a block of cheese when being used, said cheese slicer comprising:
a substantially planar base having lateral edges;
a cutter means which comprises:
a carriage slidably mounted on said base;
a shaft having an axis and first and second ends, said shaft being rotatably mounted about said axis on said carriage and extending laterally beyond said edges of said base;
a first arm and a second arm each having proximal and distal ends, said first arm being solidly attached to the first end of the shaft, said second arm being solidly attached to the second end of the shaft such that said arms rotate in tandem when said shaft rotates; and
wire means held under tension between said distal ends of said arms, said wire means slicing the block of cheese when said cutter means is pushed along said base.

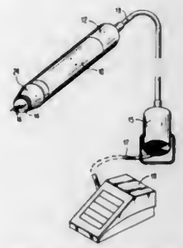
5,311,804
LOCKING MECHANISM FOR FLOATING VIBRATO BRIDGE
Trevor A. Wilkinson, 1280 Fawnridge Dr., Brea, Calif. 92621
Filed Jan. 19, 1993, Ser. No. 6,060
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—313 **7 Claims**

1. A lockable floating vibrato bridge mechanism, comprising:
a) a string instrument having a body;
b) a vibrato bridge mounted on said body for pivotal movement with respect thereto about a horizontal fulcrum; and
c) a locking mechanism for selectively locking said bridge in a predetermined position with respect to said body, said mechanism including:
i) a vibrato arm having a substantially vertical portion mounted on said bridge for rotational movement with respect thereto between a play position and a park position;
ii) a cam assembly interposed between said bridge and said vibrato arm, said cam assembly being arranged to raise said arm with respect to said bridge when said arm is rotated toward the play position, and to allow said arm



to be lowered with respect to said bridge when said arm is rotated toward the park position.
iii) an anchor mounted on said body and having a seat positioned so as to engage said vibrato arm when said vibrato arm is lowered into the park position; and
iv) a spring interposed between said bridge and vibrato arm, said spring being arranged to so bias said arm as to lower it toward engagement with said anchor.

5,311,805
VOICE SCRIBE
Edward A. Muller, 2142, Rte. 82, LaGrangeville, N.Y. 12540
Filed Feb. 20, 1992, Ser. No. 839,488
Int. Cl.[5] G10G *7/00*
U.S. Cl. 84—460 **10 Claims**

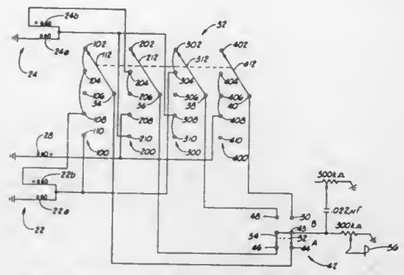


1. A voicing tool comprising at least four needles arranged in sets in a row, the movement of adjacent needles being one hundred and eighty degrees out of phase, one of said needles being advanced while another of said needles is being retracted from the wool end of a piano hammer.

5,311,806
GUITAR PICKUP SYSTEM FOR SELECTING FROM MULTIPLE TONALITIES
John T. Riboloff, Antioch, Tenn., assignor to Gibson Guitar Corp., Nashville, Tenn.
Filed Jan. 15, 1993, Ser. No. 3,983
Int. Cl.[5] G10H *3/18*
U.S. Cl. 84—728 **3 Claims**

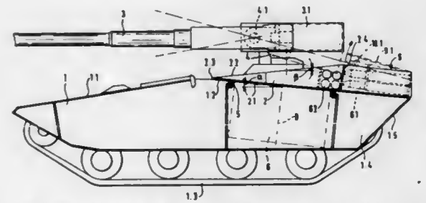
1. A guitar pickup system, comprising:
a dual coil bridge humbucker pickup;
an intermediate pickup;
a dual coil fingerboard humbucker pickup;

first switch means for selecting a desired pickup configuration and thereby selecting a desired tonality signal, said first switch means including a four pole, five position switch connected to said bridge humbucker pickup, said intermediate pickup and said fingerboard humbucker pickup so that any of a first set of five tonality signals is selected through first and second poles of said first switch



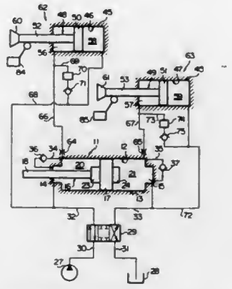
means and so that any of a second set of five tonality signals is selected through third and fourth poles of said first switch means; and
second switch means for connecting to an output of said second switch means either the tonality signal selected through said first and second poles of said first switch means or the tonality signal selected through said third and fourth poles of said first switch means.

5,311,807
MILITARY TANK
Gottlieb Rüttgerodt, Baunatal, Fed. Rep. of Germany, assignor to Firma Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany
Filed Sep. 11, 1992, Ser. No. 943,668
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1991, 4133797
Int. Cl.[5] F41H *7/02*
U.S. Cl. 89—36.08 **11 Claims**



1. A military tank comprising: a chassis having a front half and a rear half having an upper surface; a turret; means mounting the turret for rotation on the upper surface of the rear half of the chassis; a heavy weapon; means mounting the weapon for pivotable movement on the turret; wherein at least a section of the upper surface of the rear half of the chassis below the turret slopes back and down at a given angle α to the horizontal of 3° to 70°; wherein a vertical cross section of the turret is a wedge which tapers together towards the front half and with a bottom wall paralleling said section of the upper surface of the rear half of the chassis and a top wall disposed at a given angle β to the horizontal of 3° to 7°; wherein the means mounting the weapon comprises a weapon mount on the top wall of the turret to suspend the weapon pointed forward and pivoting up and down; and wherein the turret has a rear wall and further comprising an ammunition bunker attached behind and to the rear wall of the turret above the chassis.

5,311,808
CYLINDER APPARATUS
Etuo Ando, Tokyo, Japan, assignor to Ando Seisakujo Co., Ltd., Tokyo, Japan
Filed Feb. 12, 1993, Ser. No. 16,834
Int. Cl.[5] F15B *15/20, 7/00*
U.S. Cl. 91—392 **6 Claims**



1. A cylinder apparatus comprising:
a main cylinder incorporating a cylinder chamber partitioned into two subchambers by a piston;
a pair of supply/exhaust passages, connected to said two subchambers of said main cylinder, for supplying and exhausting a fluid to and from said two subchambers;
a cut-off member, provided on said piston of said main cylinder, for cutting off a communication between said one subchamber from which the fluid is pushed and said one supply/exhaust passage on a low pressure side when said piston moves toward one stroke end and reaches the vicinity of said one stroke end;
a subcylinder incorporating a cylinder chamber partitioned into two subchambers by a piston;
a connection passage for always connecting any one of said subchambers of said subcylinder to said one subchamber of said main cylinder and causing a movement of said piston of said subcylinder by leading the fluid of said one subchamber of said main cylinder having an increased pressure due to a cut-off by said cut-off member into said subchamber of said subcylinder;
an escape passage for connecting the middle of said connection passage to said one supply/exhaust passage on the low pressure side and escaping the fluid of said connection passage to said one supply/exhaust passage on the low pressure side; and
a flow rate control valve, provided in the middle of said escape passage, for controlling a flow rate of the fluid to be escaped.

5,311,809
METHOD OF MAKING TAMPER-RESISTANT BRAKE ACTUATORS
Graydon J. Choinski, Utica, Mich.; Allen L. Gummer, Santa Rosa, Calif., and David W. Brooks, Royal Oak, Mich., assignors to Indian Head Industries, Inc., Southfield, Mich.
Continuation of Ser. No. 778,307, Oct. 16, 1991, abandoned, which is a division of Ser. No. 583,795, Sep. 17, 1990, Pat. No. 5,067,391, which is a continuation of Ser. No. 118,372, Nov. 6, 1987, Pat. No. 4,960,036. This application Jul. 8, 1992, Ser. No. 910,464
Int. Cl.[5] F01B *7/00*
U.S. Cl. 92—63 **11 Claims**

1. A method for forming a tamper-resistant fluid operated brake actuator by securing a brake actuator head to a brake

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actuator flange case, wherein the brake actuator is of the type having a power spring housed within the head, the power spring being in a compressed state in one mode of operation, and exerting a force on the head during period of compression tending to separate the head from the flange case, the method comprising the steps of:

(1) forming an annular flange on said flange case, said annular flange having a first portion extending generally radially outwardly from a body of said flange case;

(2) forming an annular rim on said brake head, said annular rim having a first portion extending radially outwardly from a body of said brake head;

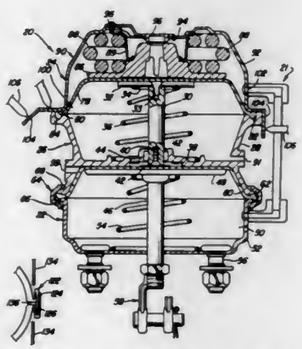
(3) disposing a power spring within said head;

(4) disposing a push rod in said flange case having a portion extending through an opening in said flange case;

(5) disposing a diaphragm between said first portion of said annular flange and said first portion of said annular rim and between said push rod and said power spring; and

(6) deforming a retainer member beyond its elastic limit about said first portions of said annular flange and said annular rim, to secure said head to said flange case.

7. A method of forming a tamper-resistant fluid operated brake actuator by securing a brake actuator head to a brake actuator flange case, wherein the brake actuator is of the type having a power spring housed within said brake actuator head, said power spring being in a compressed state in one mode of



operation and exerting a substantial force on the head during said period of compression tending to separate said head from said flange case, the method comprising the following steps:

(1) forming a flange case having a generally cylindrical wall defining a body portion and an annular flange portion extending generally radially from said body portion;

(2) forming a head having a cup-shaped portion and on annular rim extending generally radially from said cup-shaped portion having substantially the same diameter as said flange of said flange case;

(3) disposing a flexible diaphragm in said flange case body portion and locating an outer periphery of said diaphragm on said annular flange;

(4) inserting a power spring in said cup-shaped portion of said head, said power spring located on a retainer member;

(5) caging said power spring within said head by inserting a caging member through said head into said retainer member and compressing said power spring;

(6) locating said head over said flange case with said annular rim overlying said diaphragm outer periphery and said annular flange portion;

(7) permanently deforming a retainer member beyond its elastic limit located about said flange portion of said flange case and said rim portion of said head, said connector member securely and rigidly clamping said rim portion to said flange portion and requiring permanent deformation of said connector member to remove said head from said flange case; and

(8) releasing said power spring within said head.

5,311,810

RODLESS CYLINDER

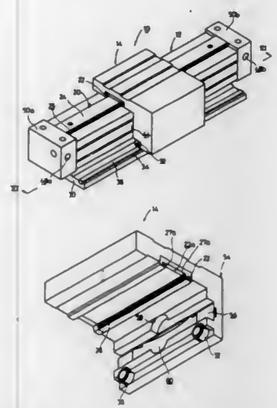
Yoshiyuki Takada, Tokyo, and Michikazu Miyamoto, Ibaraki, both of Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

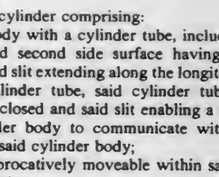
Filed Oct. 30, 1992, Ser. No. 969,449

Claims priority, application Japan, Nov. 1, 1991, 3-288121

Int. Cl.[5] F01B *29/00*

U.S. Cl. 92—88 **14 Claims**





1. A rodless cylinder comprising:

a cylinder body with a cylinder tube, including a first side surface and second side surface having a slit defined therein, said slit extending along the longitudinal direction of said cylinder tube, said cylinder tube having ends which are closed and said slit enabling a bore portion of said cylinder body to communicate with an extension portion of said cylinder body;

a piston reciprocatively moveable within said bore of said cylinder body;

a substantially L-shaped sliding table having a first leg with a first surface and a second leg with a second surface and being coupled to said piston by a connecting portion extending through said slit and moved in accordance with the reciprocating motion of said piston;

a guide member provided at said first side surface of said cylinder body, which is opposed to said first surface of said sliding table and guiding thereof; and

first and second sealing members engaged with said piston and said sliding table, respectively, so as to close at least a portion of said slit;

wherein when compressed fluid is fed to a pressure receiving portion of said piston, said sliding table is moved in a direction to which said piston is moved through said connecting portion under guidance of said guide member.

5,311,811

BREWING CONTAINER

Ron D. Kuzyk, Box 599, Marysville, British Columbia, Canada VOB-120

Filed May 10, 1993, Ser. No. 58,150

Int. Cl.[5] C12G *1/02*

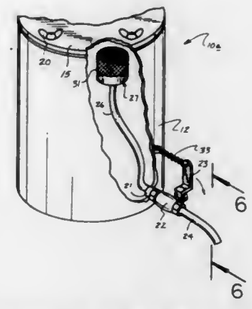
U.S. Cl. 99—277.1 **3 Claims**

1. A brewing container, comprising,

a floor, the floor including a side wall extending form the floor terminating in a container entrance spaced from the floor, wherein the container entrance includes an annular flange radially directed into the container entrance from the side wall, and

a lid plate arranged for securement to the flange, and securement means for securing the lid plate to the flange, and

the securement means includes an annular array of securement rods fixedly and orthogonally mounted to the flange, and the lid plate including an annular array of lid apertures, wherein each of said lid apertures is arranged for coaxial alignment with one of said securement rods, and an annular sealing gasket interposed between the lid plate and the flange, wherein the sealing gasket includes an annular array of gasket apertures, wherein each of said gasket apertures is arranged for alignment with one of said lid apertures and one of said securement rods, and each of



the securement rods having a fastener mounted to said each of the securement rods for securing the lid plate and the gasket to the annular flange, and

a pressure indicator head mounted to the lid plate, and

an outlet conduit directed into the side wall in adjacency to the floor, and a valve mounted to the outlet conduit exteriorly of the container, the valve including an actuator lever, the actuator lever including an axle fixedly mounted to the actuator lever, the axle directed into the valve, and a flexible conduit mounted to the outlet conduit within the container, with the flexible conduit having a conduit first end secured to the outlet conduit, and a conduit second end, the conduit second end including a buoyant head, with the conduit second end directed through the buoyant head, and the buoyant head including a filter screen head extending over the buoyant head and the conduit second end.

5,311,812

RAPIDLY HEATING COFFEE MAKING APPARATUS HAVING A LARGE CAPACITY

Gerard C. Smit, Amerongen, Netherlands, assignor to Smit-design B.V., Amerongen, Netherlands

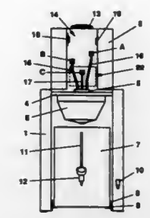
Filed Dec. 4, 1992, Ser. No. 986,140

Claims priority, application Netherlands, Dec. 6, 1991, 9102044; Mar. 30, 1992, 9200585

Int. Cl.[5] A47J *31/00*

U.S. Cl. 99—280 **19 Claims**

1. A coffee making apparatus in which in a housing (1) above a coffee tank (7) a filter holder (6) is arranged an directly above the filter holder (6) a spray head (5) is arranged, whilst a water reservoir (3) comprising built-in heating means, level control means (15) and a control panel (20) is constructed as a detachable unit and is arranged directly above the spray head, an at least one water outlet of the water reservoir terminates directly above the spray head thereby defining an effective volume of the water reservoir, characterized in that the water outlet is connected to the water reservoir via an outlet valve, the effective volume of the water reservoir (3) located above the outlet valve substantially corresponds to the amount of water necessary for making the relevant amount of coffee to be made in



one cycle, and the level control means (15) are adapted for directly admitting water via a connection (24) under the heating means (22, 22*a*) near the bottom of the reservoir.

5,311,813

CUTTING SURFACE HAVING A TENT-LIKE COVER PROVIDING CLOSABLE ACCESS TO THE CUTTING SURFACE

Myron J. Fairbanks, 2727 Bradford Cir., West Valley City, Utah 84119, and Colin J. Buck, 3205 S. 2112 East, Salt Lake City, Utah 84109

Filed Dec. 29, 1992, Ser. No. 997,853

Int. Cl.[5] A47J *47/00*; E04H *15/02, 15/36*

U.S. Cl. 99—645 **19 Claims**



1. A disassemblable, coverable cutting board assembly comprising:

a cutting board having an upper surface providing an area upon which to prepare and serve food;

truss structure attachable to said cutting board, said truss extending upwardly over said cutting board;

a cover positionable over said truss structure to form a tent-like enclosure over said cutting board, said cover having at least one opening formed therein providing access to said cutting board, said opening being closeable by closure means;

securement means associated with said opening and said closure means of said cover to secure said closure means in a closed position; and

a waterproof top positionable over said cover.

5,311,814

ASSEMBLY FOR EMBOSSING A PATTERN ON SURFACES OF A SLAT USED IN A VERTICAL BLIND ASSEMBLY

Jacob Klerson, 7530 NW. 79th St., Miami, Fla. 33166

Filed Jun. 28, 1993, Ser. No. 82,488

Int. Cl.[5] B41F *19/02*; B44B *5/02*

U.S. Cl. 101—6 **3 Claims**

1. An assembly for the embossing of a pattern on at least one exposed surface of an elongated, thermoplastic material slat

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while the slat is in a heated, semi-rigid state immediately subsequent to formation thereof from a heated melt by a forming machine, said assembly comprising:

a. a first roller and a second roller each rotatably mounted in immediately adjacent and spaced apart relation to one another and disposed downstream of the forming machine in receiving relation to the slat issuing therefrom,

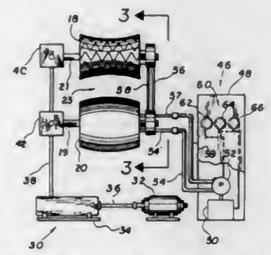
b. said first and second rollers each including an exterior surface cooperatively configured relative to one another and said respective exterior surfaces disposed in space, non-engaging relation to one another,

c. a receiving space defined between said exterior surfaces and dimensions to allow the slat to travel through said receiving space in engaging relation to both said exterior surfaces on said first and second rollers,

d. driving means connected to said first and second rollers for forced rotation of both said rollers and comprising a drive motor connected to a gear assembly, said gear assembly arranged to positively drive said first and second rollers in opposite directions and exert a pulling force on the slat as it passes through said receiving space,

e. said first and second rollers arranged to position said respective exterior surfaces thereof in movable, driving engagement with correspondingly positioned opposite surfaces of the slat, the slat being forced through the receiving space and along the intended path of travel beyond said first and second rollers,

f. said first roller and said second roller having respective exterior surf aces disposed in confronting, driving engage-



ment with a front surface and a rear surface respectively of the slat,

g. said exterior surface of said first roller having a decorative pattern formed thereon and being structurally adapted to emboss the corresponding engaged front surface of the slat with said decorative pattern,

h. cooling means connected to each of said first and second rollers for reducing the temperature thereof and a temperature of opposite surfaces of the slat confronting said exterior surfaces of said first and second rollers of the slat passing through said receiving space,

i. said cooling means including a refrigeration assembly and a pumping means respectively adaptive for cooling a fluid and pumping the fluid into heat transferring engagement with both said first and second rollers,

j. said first and second rollers and said cooling means cooperatively adapted to concurrently and respectively exert a pulling, driving force on and a reduction in temperature of the slat passing through said receiving space,

k. said pumping means defining a portion of a substantially closed circulating system further defined by a path of fluid flow between and through both said first and second rollers and said pump means,

l. said cooling means further comprising regulating means connected to said refrigeration assembly and structurally adapted for regulating the temperature cooling fluid issuing from said cooling means sufficient to maintain both said first and second rollers substantially between a temperature of 40 degrees Fahrenheit and 180 degrees Fahrenheit, and

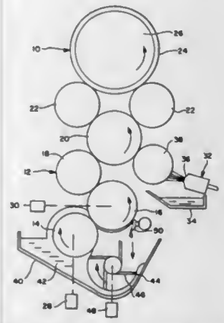
m. said first and second rollers being adjustable relative to one another and said receiving space between said exterior surfaces of said first or second rollers being adjustable to regulate the dimension thereof and the intended pressure of said respective exterior surfaces of said rollers on the opposite surfaces of the slat.

5,311,815

INK FEEDING DEVICE FOR A PRINTING PRESS

Yuji Ijichi, Hidaka, Japan, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 2, 1992, Ser. No. 907,967
Claims priority, application Japan, Jul. 23, 1991, 3-65116[U]
Int. Cl.[5] B41F *31/06*; B41L *27/08*
U.S. Cl. 101—350 **3 Claims**



1. An ink feeding device for a printing press, comprising:
an ink pan having a cavity to receive and retain ink;
a rotatable fountain roller mounted in the cavity of the pan;
means for rotating the fountain roller;
a rotatable metering roller positioned to receive ink from the fountain roller;
means for rotating the metering roller;
a doctor blade for removing residual ink from the metering roller;
a rotatable impeller mounted on one side of the fountain roller in the cavity of the pan generally below the doctor blade and having a plurality of blades to direct ink returned by the doctor blade towards the fountain roller, said impeller being only partially submerged in the ink in the cavity of said pan; and means for rotating the impeller.

5,311,816

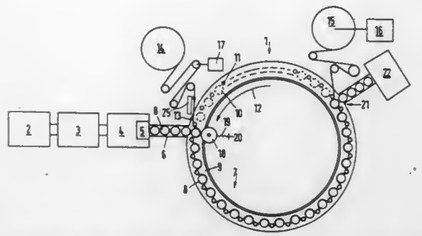
METHOD OF APPLYING PRINTED MATTER TO CYLINDRICAL OBJECTS

Kurt Schliessmann, Pfarrer-Schwahn-Strasse 20, D-6052 Obertshausen, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,330
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1992, 4201377
Int. Cl.[5] B41L *35/14*
U.S. Cl. 101—488 **7 Claims**

1. A method of imprinting external surfaces of cylindrical objects, comprising the steps of:
coating the surfaces of said objects with at least one layer of plastic material having an affinity of printing ink to produce a coated object;
establishing a temperature gradient in said plastic material layer, wherein the inside of said layer adjacent said object is at a higher temperature than the outside of said layer,

prior to or upon entry of said coated objects into an ink application zone;
conveying successive objects of a series of said cylindrical objects through said zone;
heating in said zone at least a flexible carrier of printing ink above the sublimation temperature of said ink;



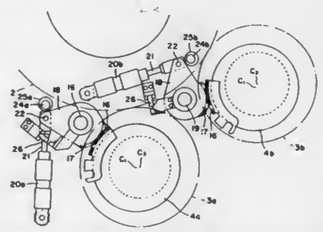
transferring the ink from the carrier onto the coated surfaces of said successive objects, wherein the transferring step comprises the steps of tensioning the carrier, contacting the tensioned carrier with the surfaces of successive objects of the series and rolling the objects along the carrier.

5,311,817

PRINTING PRESSURE ADJUSTING APPARATUS OF PRINTING CYLINDERS

Hitoshi Funada, Sekiyadomachi, Japan, assignor to Komori Corporation, Tokyo, Japan

Filed May 12, 1992, Ser. No. 882,446
Claims priority, application Japan, May 15, 1991, 3-034157[U]
Int. Cl.[5] B41F *5/18*
U.S. Cl. 101—177 **4 Claims**



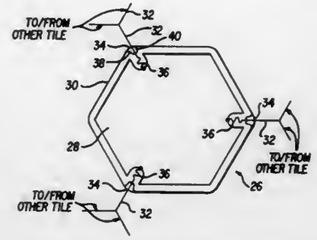
1. In a printing press of the type having a blanket cylinder and a plurality of plate cylinders rotatable in contact with said blanket cylinder;
means for adjusting the printing pressure of said plate cylinders on said blanket cylinder, said adjusting means comprising:
a frame of said printing press;
an eccentric bearing fitted on said frame and rotatably supporting said blanket cylinder in an eccentric position;
a plurality of eccentric sleeves rotatably supported on said frame and respectively rotatably supporting said plate cylinders in an eccentric position;
stop means for adjustably regulating the angular rotation of said eccentric bearing of said blanket cylinder;
stop means for adjustably regulating the angular rotation of said respective plate cylinders; and
an interlock mechanism for maintaining constant the state of contact of said plate cylinders with said blanket cylinder, said interlock mechanism simultaneously changing the position of each said stop means of said respective eccentric sleeves of said plate cylinders in dependence on an adjustment of the angular position of said eccentric bearing of said blanket cylinder.

5,311,818

SELF LIMITING EXPLOSIVE LOGIC NETWORK

Denis A. Silvia, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 23, 1986, Ser. No. 874,206
Int. Cl.[5] F42C *19/095*
U.S. Cl. 102—200 **7 Claims**



1. An explosive panel including a plurality of interconnected explosive tile assemblies, each tile assembly comprising:
a tile of explosive material;
a peripheral path of explosive material extending about the tile;
a plurality of connecting links of explosive material, each extending from an inner end across the peripheral path to an outer end which is connected to a link outer end of at least one adjacent tile assembly, the number of links being sufficient to connect the tile assembly to every adjacent tile assembly, the intersection of each link with the peripheral path being such that a detonation propagating along the peripheral path will cut and open the link without propagating the detonation outwardly in the link;
a like plurality of explosive logic means, associated respectively with the connecting links, for propagating an incoming detonation to the tile assembly from the associated link to the peripheral path; and
a like plurality of explosive delay means, connected respectively between the inner ends of the connecting links and the tile, for delaying an incoming detonation along any link so that the detonation will be propagated about the peripheral path and all other connecting links of the tile assembly will be cut before the detonation can be propagated through the tile to any of the other connecting links.

5,311,819

EXPLOSIVE LOGIC NETWORK

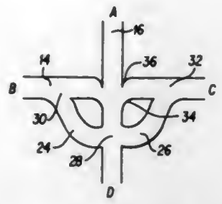
Denis A. Silvia, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 23, 1986, Ser. No. 874,200
Int. Cl.[5] F42C *19/095*
U.S. Cl. 102—200 **18 Claims**

1. An explosive logic network, comprising:
a first explosive path extending from a first end to an opposite end;
second and third explosive paths which are disposed on opposite sides of the first path and which intersect the first path at a common intersection intermediate the first and second ends of the first path, the second and third paths approaching the common intersection at respective acute angles between the second and third paths and a first portion of the first path extending from the common intersection towards the first end of the first path, and the

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sides of the second paths adjacent the first portion of the first path being respectively tapered inwardly to further



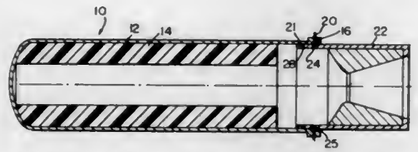
reduce the respective acute angles at which the second and third paths intersect the first path.

5,311,820

METHOD AND APPARATUS FOR PROVIDING AN INSENSITIVE MUNITION

Warren Ellingsen, Lewisville, Pa., assignor to Thiokol Corporation, Ogden, Utah

Filed Jan. 17, 1991, Ser. No. 642,523
Int. Cl.[5] F42B *15/36*
U.S. Cl. 102—481 **14 Claims**



1. A munition that loses integrity and separates into component parts when the ambient temperature of an interface mounting means of said munitions exceeds a predetermined temperature comprising:

a case having a groove therein;

said groove having a plurality of holes spaced radially around and in communication with said groove;

a nozzle having a groove therein, said grooves in said case and nozzle being in alignment and forming an interface between the case and nozzle when said case and nozzle are positioned together;

a spring retainer positioned in said grooves;

a fusible material adjacent said radial holes, and positioned in said case groove holding said spring retainer in said aligned grooves in a loaded position thereby securing said case and nozzle together and which upon exposure of said munition to an ambient temperature higher than the melting point of said fusible material, the fusible material melts to thereby flow through said radial holes in communication with said case causing separation of said nozzle from said case.

5,311,821

RAIL VEHICLE HAVING SUPPLEMENTARY SPRING PROVIDING THE RESTORING MOMENT AT HIGH ANGLES OF BODY ROLL

Hans P. Lang, Harburg, and Alfred Uttner, Donauworth, both of Fed. Rep. of Germany, assignors to Man GHH Schienenverkehrstechnik GmbH, Nuremberg, Fed. Rep. of Germany

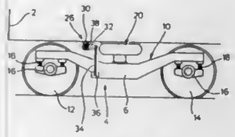
Filed Jul. 23, 1992, Ser. No. 919,020
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1990, 4037672
Int. Cl.[5] B61F *5/50*
U.S. Cl. 105—199.2 **6 Claims**

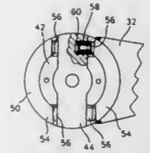
1. In a rail vehicle which comprises a car body, and running gear on which the car body is supported, stabilizer apparatus for countering tilting movements of the car body relative to the running gear in a range of such movements from low angle to high angle tiltings, the stabilizer apparatus

including suspension means comprising pressure controlled air springs supporting the car body on the running gear, and

an elongated torsion spring supported from one of the car body and the running gear, the torsion spring being connected at each of opposite ends thereof to the other of the car body and running gear by levers mounted at a first lever end on the said torsion spring opposite ends, with there being control rods extending from second ends of the levers to the said other of the vehicle car body and running gear,

the pressure controlled air springs being operable to apply a stabilizing moment to counter car body low angle tilting movements,





the first lever ends being connected to the torsion spring opposite ends with a coupling element, the coupling element including means for providing limited rotational play of the levers relative to the torsion spring in each of two opposite directions from a normal lever centered position and wherein during said limited rotational play a stabilizing moment applied by the torsion spring to counter body low angle tilting movements is less than that applied by the pressure controlled air springs, said providing means embodying a lever stopped position wherein the levers and the torsion spring are rigidly coupled so that the torsion spring applies a stabilizing moment for countering car body high angle tilting movements which is greater than any stabilizing moment the pressure controlled air springs can apply to counter said high angle tilting movements.

5,311,822

BALLAST HOPPER DOOR CONTROL APPARATUS AND METHOD WITH INDEPENDENTLY AND SELECTIVELY ACTUATED MOTORS IN RESPONSE TO UNIQUELY CODED SIGNALS

Ivan E. Bounds, St. Joseph, Mo., assignor to Herzog Contracting Corporation, St. Joseph, Mo.

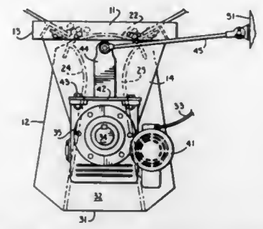
Filed Dec. 7, 1992, Ser. No. 986,600
Int. Cl.[5] B61D *7/30*
U.S. Cl. 105—311.1 **18 Claims**

1. On a train including a plurality of railroad cars, each car including a plurality of hopper discharge openings and pivoting discharge control members, a hopper door control apparatus for controlling said pivoting discharge control members, comprising:

(a) a drive shaft extending lengthwise through each said discharge control member at the pivot point;

(b) a reversible electromechanical power source connected to each said drive shaft to selectively drive said drive shaft in a clockwise or a counter-clockwise direction;

(c) a receiver on each car connected to the respective power sources on that car and adapted to selectively, independently and individually control the on/off state and the direction of each said power source, each receiver being adapted to respond to a different coded signal; and



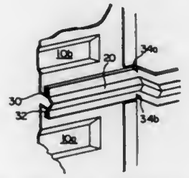
(d) a mobile remote transmitter selectively operable to transmit any one of said coded signals to cause a selected one of said receivers to control the connected power sources.

5,311,823

BUMPER SEAL FOR AUTO RACK CAR

John W. Rudibaugh, West Chester, and Charles L. Vanauken, Dillsburg, both of Pa., assignors to Pennsy Corporation, West Chester, Pa.

Filed Jul. 22, 1991, Ser. No. 736,290
Int. Cl.[5] B61D *49/00*
U.S. Cl. 105—355 **12 Claims**



1. An expandable bumper seal for sealing the horizontal gap between side panels of auto rack railroad cars to protect the autos from damage by bumping and from swirling dirt, comprising

a strip of flexible resilient synthetic plastic material having a horizontal center axis,

an upper leg above and a lower leg below the center axis, and

spring means at the center axis for allowing extension and retraction of the bumper seal in the vertical sense.

said upper and lower legs having channel means including an upper and lower channel facing toward the center axis for receiving and grasping a flange member of a side panel of an auto rack railroad car,

said spring means also exerting a force to move said channels toward each other.

5,311,824

HATCH COVER HINGE AND LOCK ASSEMBLY HAVING SAFETY INTERLOCK FOR HINGE

Robert J. Saner, Blackwood, N.J., and Michael J. Pavlick, Blue Bell, Pa., assignors to Transit America Inc., Philadelphia, Pa.

Filed Feb. 22, 1993, Ser. No. 20,730
Int. Cl.[5] B61D *39/00*
U.S. Cl. 105—377 **23 Claims**

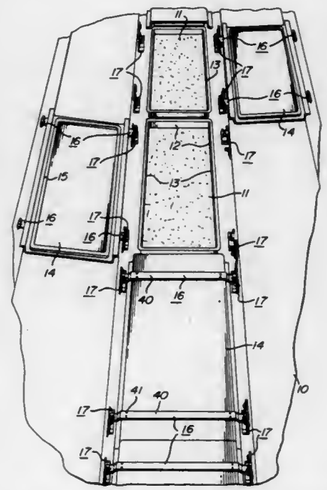
19. Hatch cover hinge and lock assemblies for railroad hopper cars in which each car is characterized by having a roof provided with a hatch opening which is fitted with a hatch cover, two such hinge and lock assemblies being disposed respectively at opposite sides of the hatch providing captive bi-directional hatch opening hinging movement for the hatch cover, and each such assembly comprising in combination,

a) a fixed position sub-assembly fixedly securable to the roof of the car adjacent to one side of the hatch opening, comprising in combination,

1) hinge pin receiving means having an opening adapted to receive for rotation therewithin a cylindrical surface of at least one hinge pin,

2) lockable and unlockable manually swingable closure means movable between first and second positions for respectively closing and opening the said opening of said hinge pin receiving means, to thereby prevent escape of said at least one hinge pin positioned within said hinge pin opening when said opening is closed by said swingable closure means in its first position,

3) locking means for said swingable closure means for locking said closure means in said first position, said locking means comprising a fixed part and a movable part, one of said fixed and movable parts being affixed to said swingable closure means for movement there-



with, and the other of said parts being positionally fixed with respect to said hinge pin receiving means, and

4) an interlock means first part,

b) a movable position sub-assembly fixedly securable to the hatch cover in position to interengage with the said fixed position sub-assembly, said movable sub-assembly being movable with said hatch cover, comprising in combination,

2) said at least one hinge pin being positionable within the said opening of said hinge pin receiving means of said fixed position sub-assembly, said hinge pin when so positioned within said opening of said hinge pin receiving means as being rotatably securable therewithin by said swingable closure means when the latter is in its said first position closing the opening of said hinge pin receiving means,

2) an interlock means second part, so engageable with the said interlock means first part that when the hatch cover is opened from either side of the hatch, the hatch cover remains secured to the car even if said swingable closure means is in its second position.

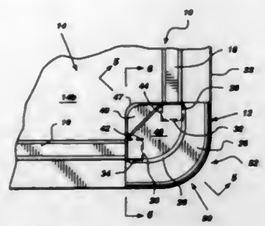
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5,311,825

TABLE CORNER APPARATUS AND METHOD OF MINIMIZING DAMAGE FROM IMPACT

Brent Bonham, Orem, Utah, assignor to Mity-Lite, Inc., Salt Lake City, Utah

Filed Jul. 31, 1992, Ser. No. 923,261
Int. Cl.[5] A47B *13/08, 17/00*
U.S. Cl. 108—27 16 Claims



1. A table corner apparatus comprising:

a tabletop having a corner, the corner comprising the intersection of first and second outer edges of the tabletop;

a first elongate support beam mounted underneath and substantially parallel to the tabletop, and having an end disposed inwardly from the corner, wherein said support beam is disposed near and substantially parallel to the first outer edge;

a second elongate support beam mounted underneath and substantially parallel to the tabletop, and substantially parallel to the second outer edge, and having an end disposed inwardly from the corner;

a web formed between the ends of the first and second support beams;

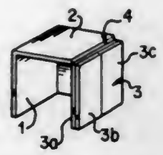
a durable corner insert disposed at the corner adjacent the first and second edges and intersection thereof, said corner insert comprising an outer body section having an abutment surface which abuts the end of the first support beam and a first clamping surface which abuts the web, wherein said outer body section includes a second abutment surface which abuts the end of the second support beam, whereby when the corner insert is impacted at least part of the force of the impact is transferred through the outer body section and at least one of the abutment surfaces to the corresponding support beam.

5,311,826

FURNISHING ELEMENT WITH FOLDABLE PANELS

Giuseppe Baggiani, Via Provinciale Castiglionese, Catiglione della Pescaia, Italy 58043

PCT No. PCT/IT90/00076, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/03965, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 17, 1990, Ser. No. 838,407
Claims priority, application Italy, Sep. 18, 1989, 48378 A/89
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—166 12 Claims



1. A furnishing element with foldable panels for forming a table, comprising:

a support base;

hinge means connected to a top portion of said support base;

at least one primary movable panel connected via said hinge means to said support base, said at least one primary panel being rotatable about a first axis of rotation from a substantially vertical rest position to a horizontal position;

at least two secondary movable panels having an overall size and shape substantially equal to that of said primary movable panel, said at least two secondary movable panels being hingedly connected to said at least one primary movable panel about a second axis of rotation substantially transverse to said first axis of rotation so that when the primary movable panel is in its horizontal position, said at least two secondary movable panels are rotatable from a folded position in which they rest against the primary movable panel to a horizontal position coplanar with the primary movable panel;

means for supporting said at least one primary movable panel and said at least two secondary movable panels in their horizontal positions;

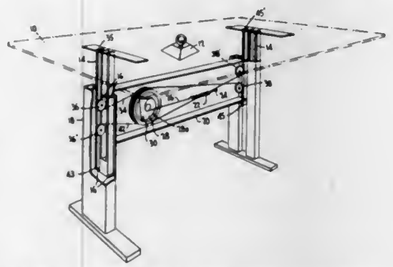
wherein a plurality of said furnishing elements are selectively connectable together to form a single structure wherein each of said primary and secondary movable panels are arranged so as to be rotatable in a desired direction to form a table of a desired configuration.

5,311,827

LOAD COMPENSATOR FOR SPRING COUNTER-WEIGHTING MECHANISM

H. Peter Greene, 31 S. Main St., Schwenksville, Pa. 19473

Filed Jun. 18, 1992, Ser. No. 900,489
Int. Cl.[5] A47B *9/00*; F16H *27/02*
U.S. Cl. 108—147 22 Claims



1. A load compensator for a spring counter-weighting mechanism, said counter-weighting mechanism comprising:

a spring arranged to exert tension on a tension member, said tension varying linearly with extension of said spring;

a snail cam journaled for rotation about an axis and comprising a cam surface for receiving said tension member, said cam surface effectively spacing the point at which said tension member contacts said cam surface from said axis by a radial distance varying continuously radially about said snail cam, such that a net torque applied to said snail cam due to tension applied to said tension member by said spring varies with respect to the point at which said tension member contacts said cam surface; and

fixed-radius lever arm means pivotable about an axis and adapted to receive torque exerted on said snail cam by said tension member and to transfer said torque from said snail cam to means for exerting a constant counter-weighting force on a load to be counter-weighted;

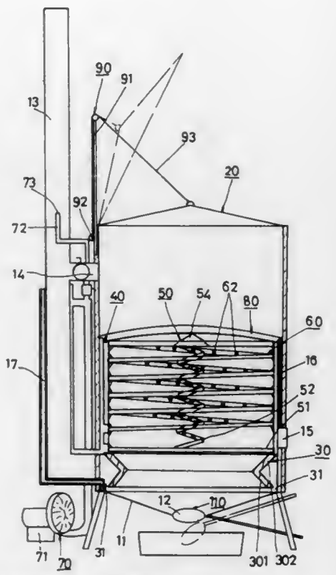
said load compensator comprising means for controllably varying the relative radial positions of said snail cam with respect to said lever arm means.

5,311,828

INCINERATOR

I-Cheng Wu, and Guor-Rern Wu, both of No. 147, Hou-Li Rd., Hou-Li Hsiang, Taichung Hsien, Taiwan

Filed Apr. 26, 1993, Ser. No. 53,905
Int. Cl.[5] F23G *5/12*
U.S. Cl. 110—248 17 Claims



1. An incinerator, comprising:

a furnace body which confines a combustion chamber for receiving refuse therein, said furnace body having an open top, an inner surrounding wall surface, a lower part, an upper part, a bottom wall formed with a central opening, an ash release gate mounted pivotally to said bottom wall at said central opening, a stack which is provided on one side of said furnace body and which has an upper end part and a lower end part that is communicated with said combustion chamber adjacent to said bottom wall, and an exhaust port provided on said furnace body adjacent to said open top and operable so as to communicate said stack and said combustion chamber of said furnace body;

a furnace cover provided on said open top of said furnace body;

a first preheating tube arrangement secured to said inner surrounding wall surface of said furnace body at said lower part of said furnace body, said first preheating tube arrangement including a plurality of upwardly extending concentric coil turns and having a surface formed with a plurality of air holes;

a second preheating tube arrangement secured to said lower part of said furnace body, said second preheating tube arrangement having at least a portion provided adjacent to a lower part of said first preheating tube arrangement and further having a surface formed with a plurality of air holes; and

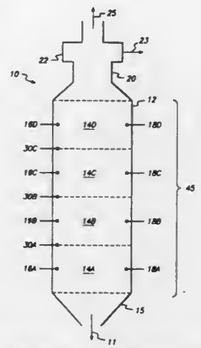
a high pressure air generating unit for supplying high pressure air to said first and second preheating tube arrangements and to said upper end part of said stack.

5,311,829

METHOD FOR REDUCTION OF SULFUR OXIDES AND PARTICULATES IN COAL COMBUSTION EXHAUST GASES

Kimble J. Clark, Los Altos; Tsveton S. I. Torbov; Robert J. Impev, both of San Jose, all of Calif., and Thomas D. Burnett, Houston, Tex., assignors to Aptech Engineerig Services, Inc., Sunnyvale, Calif. and Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 627,642, Dec. 14, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 855,253
Int. Cl.[5] F23J *15/00*
U.S. Cl. 110—345 5 Claims



1. A process utilizable in the combustion of pulverized sulfur-containing coal for reducing the emission of gaseous sulfur dioxide and for increasing the removal of particulate matter, wherein pulverized sulfur-containing coal and combustion air are injected through a plurality of vertically disposed burners into a combustion chamber and fired to create a combustion zone within the chamber, thereby creating emission products, including particulate matter and gaseous sulfur compounds, such as sulfur dioxide, the emission products being directed to an exhaust means where the particulate matter is removed, comprising:

a. injecting a fuel and combustion air through at least one fuel burner into the combustion chamber at at least one location below at least one of said plurality of coal burners, said fuel and combustion air being injected substantially parallel to the injection of the coal and its combustion air stream, said fuel containing negligible sulfur and having a heating value higher than coal.

5,311,830

METHOD OF ENERGETIC AND MATERIAL UTILIZATION OF WASTE GOODS OF ALL KIND AND DEVICE FOR IMPLEMENTING SAID METHOD

Günter H. Kiss, Monaco, Monaco, assignor to Thermoselect Aktiengesellschaft, Lichtenstein, Liechtenstein

Filed Feb. 20, 1991, Ser. No. 658,142
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1990, 4005804; Apr. 12, 1990, 4011945; Jul. 16, 1990, 4022535; Oct. 19, 1990, 4033314; Dec. 17, 1990, 4040377
Int. Cl.[5] F23G *5/12*
U.S. Cl. 110—346 19 Claims

1. Method for the intermediate storage, transport and/or energetic and material utilization of industrial, dangerous and domestic waste and of industrial wrecks of differing composition and the like waste goods of all kinds, said method comprising the steps of

mechanically compacting waste goods down to a fraction of their original volume while maintaining their mixed and composite structure,

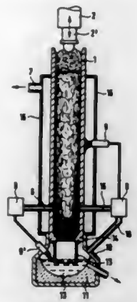
subjecting the waste goods in their compacted form to py-

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rolysis thereby forming pyrolysis products while maintaining the totality of the pyrolysis products under elevated pressure and

immediately and without intermediate cooling subjecting the pyrolysis products to a high-temperature onset, thereby

gassifying any condensed carbon portions of said pyrolysis products to form a gaseous portion,



adding oxygen to the high-temperature onset so that carbon dioxide is produced due to the exothermic reaction of the carbon with oxygen in accordance with the Boudouard reaction which is transformed into carbon monoxide, and wherein temperatures of over 1500° C. act upon the totality of the reaction products, and

melting any metallic mineral component parts out of the remaining pyrolysis products.

5,311,831

DEVICE FOR REVERSAL OF AN END-OF-STITCHING CHAIN IN A TWO-NEEDLE OVEREDGING TRIMMING MACHINE

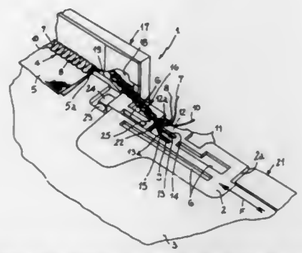
Giorgio Fieschi, Rimoldi S.r.l. Via Montebello, 33 Olcella Di Busto Garolfo, Milano, Italy

Filed May 21, 1993, Ser. No. 65,599

Claims priority, application Italy, Jul. 22, 1992, MI92A001769

Int. Cl.[5] D05B *65/00*

U.S. Cl. 112—262.1 **4 Claims**



1. A device for reversal of an end-of-stitching chain or end chain in a two-needle overedging machine in which said end chain (**16**) extending from an end edge (**5***a*) of a sewn workpiece (**5**) is formed about a primary tab (**12**) provided parallel to the sewing direction ("F") on an inner side edge (**11**) of a needle plate (**2**) and having a free end (**12***a*) oriented in the sewing direction, as well as about an auxiliary tab (**13**) provided on the needle plate itself (**2**) at a parallel side by side position relative to the primary tab (**12**) and having a free end (**13**) oriented in the sewing direction, said device comprising:

a suction chain-cutting member (**17**) operatively disposed in an extension of the side edge (**11**) of the needle plate (**2**), immediately downstream of said needle plate with reference to the sewing direction and arranged to draw in and cut the end chain (**16**) for separating it from the sewn workpiece (**5**);

a primary nozzle (**20**) disposed laterally in the extension of the side edge (**11**) of the needle plate (**2**) and arranged to produce a first air blow substantially perpendicular to the sewing direction ("F") for causing reversal of the end chain (**16**) thereby orienting it in a direction opposite that of the direction sewing;

a grip member (**21**) operatively located before a front edge (**2***a*) of the needle plate (**2**) for retaining the reversed end chain (**16**) upon the action of the primary nozzle (**20**),

further comprising at least one auxiliary nozzle (**22**) operatively associated with the needle plate (**2**) and oriented in an opposite direction with respect to the stitching direction for projecting a second air blow towards the free end (**13***a*) of the auxiliary tab (**13**), so that the cut chain (**16**) disengaged from the auxiliary tab (**13**) by effect of the suction action produced by the chain-cutting member (**17**) and reversed by the first air blow, is engaged by effect of the second air blow in a first notch (**14**) defined between the primary and auxiliary tabs (**12** and **13**).

5,311,832

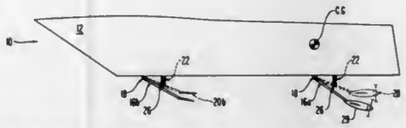
ADVANCED MARINE VEHICLES FOR OPERATION AT HIGH SPEEDS IN OR ABOVE ROUGH WATER

Peter R. Payne, Severna Park, Md., assignor to Dynafoils, Inc., Severna Park, Md.

Filed Dec. 20, 1991, Ser. No. 810,869

Int. Cl.[5] B63B *1/24*

U.S. Cl. 114—274 **12 Claims**



1. A hydrofoil craft comprising:

a hull having a longitudinal centerline plane;

a support arm rigidly connected to the hull and extending from the hull into the water; and

a foil attached to the support arm and extending transversely with respect to the centerline plane,

wherein the support arm is sufficiently flexible to enable the support arm and the foil to move with respect to the hull parallel to the centerline plane in concert with upgusts and downgusts of water located around the foil by bending of the support arm with respect to the hull so that the hull maintains an approximately constant elevation above the water.

5,311,833

WEIGHT RELEASE SYSTEM

Charles E. VanTassel, Oceanside, and Scott P. Seligman, Carlsbad, both of Calif., assignors to Sea Quest, Inc., Carlsbad, Calif.

Continuation of Ser. No. 402,540, Sep. 1, 1989, Pat. No. 5,085,163. This application Aug. 1, 1991, Ser. No. 738,863

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

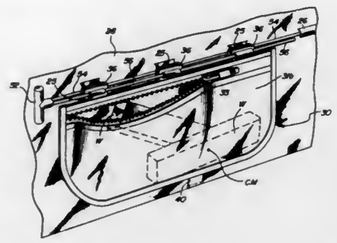
Int. Cl.[5] B63C *11/46*

U.S. Cl. 114—315 **2 Claims**

1. A weight release system for selectively releasing a weight from a diver comprising:

a buoyancy control device wearable about the torso of the diver;

a retaining member secured at one end to the buoyancy control device and releasable at the other end from the buoyancy control device, said second end being releasable while said first end remains secured, said retaining member retaining a weight, said retaining member being positioned so that when the weight is held by the retaining member and when the diver is in a substantially prone position, the center of mass of the diver relative to the center of buoyancy of the diver is lowered thereby increasing the rotational stability of the diver, the weight



being releasable by a releasing means simultaneously from said retaining member and away from the diver in a manner such that said retaining member remains affixed to the buoyancy control device, thereby permitting the diver to reload said retaining member with an additional weight without reattaching said retaining member to said buoyancy control device, and

a release mechanism slidably engaged proximate to the center of an interior portion of said buoyancy control device.

5,311,834

INDICATING DEVICE

Gregory E. Ross, 2007 Long Leaf Crt., Santa Rosa, Calif. 95403

Continuation of Ser. No. 703,420, May 21, 1991, abandoned. This application Oct. 30, 1991, Ser. No. 787,314

Int. Cl.[5] G09F *9/00*; B42D *9/00*

U.S. Cl. 116—306 **42 Claims**



1. A indicia indicating device comprising: an elongated member closed to the atmosphere and having a plurality of spaced serially connected chambers, each pair of adjacent chambers having a tube therebetween for placing the chambers in fluid communication with each other; and a fluid within the member and moveable relative to the chambers and tubes when a pressure is exerted on the fluid, said member having a depressable wall for each chamber, respectively, the volume of the fluid being substantially equal to the combined volumes of the tubes and the chambers minus the volume of one chamber, whereby the fluid in a filled chamber can be forced into the adjacent chambers and tubes by depressing said wall of the filled chamber, the fluid having a characteristic sufficient to prevent flow of fluid in the member until the wall of a selected, filled chamber is depressed, said member having means to indicate at least partial removal of the fluid from the selected chamber.

5,311,835

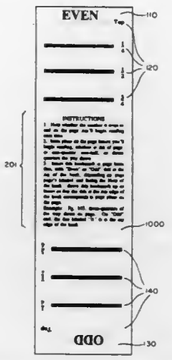
BOOKMARK FOR IDENTIFYING A LOCATION ON A PAGE

Horace A. Knowles, 506 G Street, SW., Washington, D.C. 20024

Filed Oct. 4, 1993, Ser. No. 131,518

Int. Cl.[5] B42D *9/00*

U.S. Cl. 116—235 **6 Claims**



2. A book mark for identifying a single page of a book and location on said page, consisting of a substrate of a thickness suitable for insertion between pages of said book, said substrate having indicia printed near a top edge of one end for indicating odd-numbered pages and indicia printed near a top edge of an opposite end for indicating even-numbered pages, said substrate also having indicia printed one each end beneath said indicia at a top edge for indicating locations on the page identified, wherein said indicia are configured sot at an end of the substrate which extends from a top of the book identifies the page as odd or even, and exposing a selected one of said indicia for indicating locations identifies the location on the page.

5,311,836

VENTILATED CAGE AND OPEN RACK SYSTEM

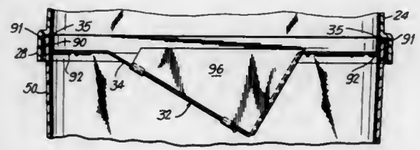
John E. Sheaffer, Perryville, and Eric A. Deitrich, Woodbine, both of Md., assignors to Lab Products, Inc., Maywood, N.J.

Continuation of Ser. No. 596,808, Oct. 12, 1990, Pat. No. 5,165,362, which is a continuation-in-part of Ser. No. 515,803, Apr. 27, 1990, Pat. No. 4,989,545. This application Nov. 12, 1992, Ser. No. 975,033

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] A01K *1/00*

U.S. Cl. 119—17 **4 Claims**



1. A wire bar lid for use in animal cage having a bottom portion and a filter bonnet, said wire bar lid comprising a perimeter having a length, a portion of said perimeter defining a flat surface for receiving a filter bonnet, a plurality of wire bars substantially extending in a lengthwise direction parallel to the length of said perimeter at substantially spaced intervals, each of said bars being supported within said perimeter, whereby said wire bar lid is adapted to be positioned between

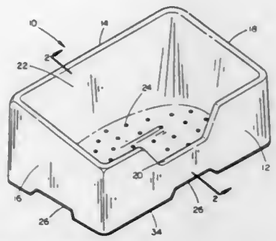
VOL 1162 ISS 3 MY 17 1994 UMI

said filter bonnet and bottom portion, said perimeter limiting any openings formed between said filter bonnet and bottom when said filter bonnet is placed upon said bottom a skirt extending from said perimeter at a substantially right angle, a support flange affixed to said skirt, said plurality of wire bars being supported on said support flange so that said wire bars are supported below said perimeter; said cage being a cage level barrier cage.

5,311,837
PET BED

Leslie Mamer-Boellstorff, R.R. 3, Box 125, Auburn, Nebr. 68305

Filed Apr. 19, 1993, Ser. No. 47,892
Int. Cl.[5] A01J *1/00*
U.S. Cl. 119—28.5 **3 Claims**



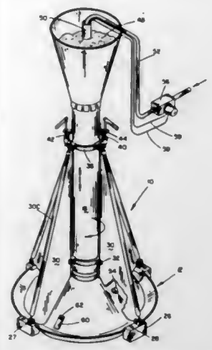
1. A pet bed consisting of:
a molded plastic apparatus having an interior structure provided with a bottom portion and a peripheral structure; said interior structure having a concave, oval configuration; said peripheral structure having a rectangular configuration with substantially vertical supporting walls; said interior structure having a plurality of apertures formed in the bottom portion; wherein, the bottom portion is elevated above the surface upon which said peripheral supporting wall rests; and, wherein said peripheral supporting wall has a plurality of cutouts formed in the lower edge thereof; a non-skid strip affixed to said lower edge; and, an externally mounted releasable securing means for securing the bed to a horizontally spaced object; and further comprising a cushioned pad and a plurality of fastening means for securing said cushion to the bottom portion of the interior structure.

5,311,838
METHOD AND MEANS FOR FEEDING ANIMALS

Richard J. Thomas, Eddyville, and Larry L. Coleman, Broken Bow, both of Nebr., assignors to GroMaster, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 869,226, Apr. 14, 1992, Pat. No. 5,255,632. This application Jan. 26, 1993, Ser. No. 8,548
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—51.5 **35 Claims**

1. A feeder for animals comprising a trough having a front surface adjacent to an animal feed position, a rear surface spaced from the animal feed position, a base between the front and rear surfaces, the front and rear surfaces each including at least a portion thereof adjacent the base which is inclined to the horizontal so as to define in cross section at the base a substantially V-shape of the trough with the portions converging substantially to an apex at the base between the portions, a hopper for containing feed, surface means located beneath the hopper onto which feed falls from the hopper, the surface means being arranged such that the animal at the animal feed position can reach the surface means to take the feed therefrom and such that feed caused by the animal to fall from the surface means falls into the trough, supply means for supplying water into the trough and means for detecting a level of the water in the trough and for actuating said supply means in response to a reduction in the level of water to maintain the level of water at a predetermined height within said substantially V-shape of

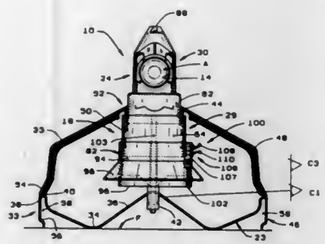


the trough, said trough including a U-shaped cup at the base thereof defining said substantially V-shape, upper edges of the U-shaped cub being connected to said front and rear surfaces respectively.

5,311,839
POULTRY FEEDER

Eugene B. Pollock, Assumption, and Jeffrey Knollenberg, Taylorville, both of Ill., assignors to Grain Systems, Inc., Earth City, Mo.

Filed Dec. 15, 1992, Ser. No. 991,383
Int. Cl.[5] A01K *39/012, 39/014*
U.S. Cl. 119—53 **48 Claims**

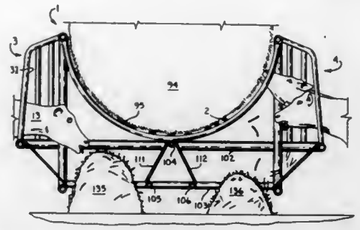


1. A feeder adapted to be installed on a feed conveyor for receiving feed therefrom, said feeder having a connector for installation of said feeder on said feed conveyor, a feed pan for having feed from said conveyor deposited therein, and a feed pan support between said feed pan and said connector including a generally vertically disposed rim proximate said feed pan, said feed pan support permitting relative lost motion movement between said feed pan and said rim between a raised position in which said rim extends up above the level of said feed pan thereby to aid in containing feed within said feed pan and a lowered position in which said rim moves downwardly with respect to said feed pan thereby to lower the height of the feed pan.

5,311,840
HAY SAVING ROUND BALE FEEDING APPARATUS AND METHOD

Earnest F. Rumbaugh, R.R. 1, Box 155, Morrill, Kans. 66515

Filed Jan. 8, 1993, Ser. No. 2,340
Int. Cl.[5] A01K *1/10*
U.S. Cl. 119—60 **15 Claims**

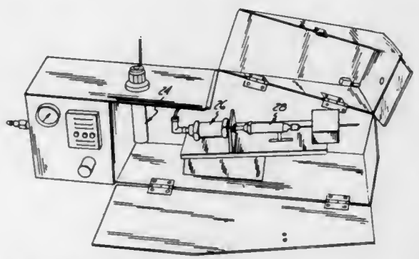


1. A livestock feeding apparatus, comprising:
(a) a framework including a plurality of livestock feeding stations in at least one side frame, each said at least one side frame comprising a pair of vertical frame members at respective ends thereof, a horizontal non-pivoting top frame member fixedly connected between said vertical frame members, a horizontal station support member parallel with but spaced vertically and horizontally from said top frame member, and a plurality of side bars connected between said top frame member and said station support member, said side bars each extending downward and outward at an angle from said top frame member to said horizontal station support, each adjacent pair of said side bars forming one of said feeding stations;
(b) a bale cradle within said framework, said cradle being adapted to support a round hay bale;
(c) a hay saving space being formed between said horizontal station support member and said bale cradle; and
(d) means for directing hay dropped from said round hay bale into said hay saving space.

5,311,841
ADMINISTRATION OF MEDICAMENTS OF POULTRY

J. Paul Thaxton, 117 Campfire Cir., Brandon, Miss. 39042

Filed Jul. 10, 1992, Ser. No. 911,972
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **11 Claims**

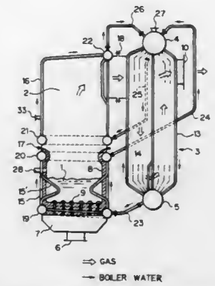


1. A method for the delivery of medicaments to newly hatched, domestically raised poultry, comprising the steps of:
(a) sequentially and individually orienting the poultry in a manner that facilitates access to the skin covering the residual yolk sac of each individual chick, and
(b) injecting an effective amount of the medicament thorough the skin and into the yolk sac of each oriented chick.

5,311,842
FLUIDIZED BED WATER PIPE BOILER DIVIDED TYPE

Shuichi Nagato; Takahiro Ohshita; Masaji Kamisada, all of Kanagawa; Norihisa Miyoshi, Chiba, and Hiroshi Ishibe, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 46,871
Claims priority, application Japan, Apr. 17, 1992, 4-122845; Jul. 31, 1992, 4-223509
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D **21 Claims**



1. A fluidized bed water tube boiler comprising a fluidized bed combustion section including a fluidized bed formed from a continuous water tube wall, a free-board section for burning volatile components produced in said fluidized bed combustion section, and a convective heat transfer section comprised of a steam drum and a water drum connected to the downstream side of said freeboard section through water tubes for recovering heat from combustion exhaust gas; said boiler being characterized in that said fluidized bed combustion section and said freeboard section are formed as separable modules which are connected to each other, and circulation of a boiler water between said fluidized bed combustion section and said convective heat transfer section is separated from that between said freeboard section and said convective heat transfer section.

5,311,843
WATER HEATING APPARATUS

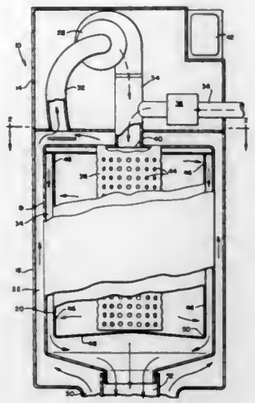
Kevin J. Stuart, Dallas, Tex., assignor to Weben-Jarco, Inc., Dallas, Tex.

Filed May 12, 1993, Ser. No. 60,861
Int. Cl.[5] F22B *37/10*
U.S. Cl. 122—248 **16 Claims**

1. A water heating apparatus comprising a housing; a radially fired burner member within the housing; a plurality of vertically spaced, multiple-loop, finned coil tubing means for circulating water around the burner member; horizontally disposed, circumferentially extending flue gas baffle means for separating and supporting the coil tubing means; inlet and outlet water headers disposed radially outward of the coil tubing means and providing fluid communication therewith;

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and partitioned annular means disposed radially outward of the coil tubing means but within the housing for establishing countercurrent flows of flue gas and inlet air, and for conducting heat from the flue gas to the inlet air.

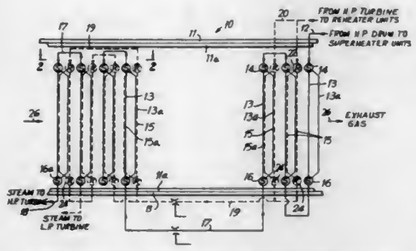


5,311,844

INTERNESTED SUPERHEATER AND REHEATER TUBE ARRANGEMENT FOR HEAT RECOVERY STEAM GENERATOR

John Polcer, Morris, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Mar. 27, 1992, Ser. No. 858,800
Int. Cl.[5] F62G *7/12*
U.S. Cl. 122—470 **11 Claims**



1. A heat recovery steam generator containing a plurality of superheater and reheater tubular units, comprising:

(a) an elongated casing through which a hot exhaust gas can flow in a general longitudinal direction;

(b) a plurality of superheater units each including an upper header which extends substantially horizontally within said casing, said upper headers being each connected pressure-tightly to a corresponding lower header by a plurality of spaced-apart superheater tubes extending therebetween, said superheater units being spaced apart from each other; and

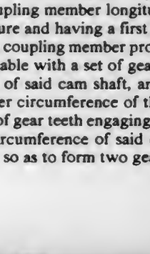
(c) a plurality of reheater units each including an upper header which extends parallel to and is located between the upper headers of said superheater units, said reheater upper headers being each connected pressure-tightly to a corresponding lower header by a plurality of spaced-apart reheater tubes extending therebetween, wherein the tubes in said superheater and reheater units are in alignment with and are internested with the reheater tubes.

5,311,845

OIL PRESSURE LASH ADJUSTER EQUIPPED WITH AIR VENT

Shigetada Takahashi, Tokyo, Japan, assignor to Nittan Valve Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01389, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO92/07171, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 11, 1991, Ser. No. 30,492
Claims priority, application Japan, Oct. 12, 1990, 2-106532
Int. Cl.[5] F01L *1/24*
U.S. Cl. 123—90.43 **7 Claims**



1. An internal combustion engine with oil pressure lash adjustable valve actuating mechanism, comprising a cylinder head having a lash adjuster mounting hole with an upper opening; an oil gallery formed on an inner circumference of said lash adjuster mounting hole for supplying an actuating oil; an oil pressure lash adjuster having a lash adjuster main body inserted in said lash adjuster mounting hole and a plunger located in said lash adjuster main body and lockable by the actuating oil supplied from said oil gallery; a high pressure chamber located at a lower portion of said main body to receive said actuating oil; a valve actuating member having a swingable rocker arm arranged so that said lash adjuster main body forms a supporting point for swinging of said rocker arm; and an air vent communicating a lower end portion of said lash adjuster mounting hole with said oil gallery, said air vent being provided at an outer circumference of said adjuster main body.

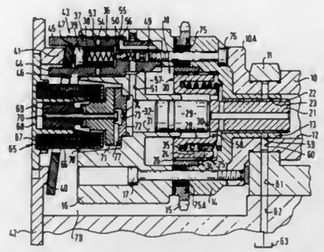
5,311,846

HYDRAULIC CONTROL DEVICE

Martin Mueller, Moeglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00741, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO93/08378, PCT Pub. Date Apr. 29, 1993
PCT Filed Sep. 4, 1992, Ser. No. 64,011
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135378
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **11 Claims**

1. A hydraulic control device for rotating a cam shaft of an internal combustion engine, comprising a hollow-cylindrical sprocket wheel driven by an internal combustion engine and having a central bore hole with a set of gear teeth at its inner circumference; a coupling member longitudinally displaceable by a hydraulic pressure and having a first location on an outer circumference of the coupling member provided with a first set of gear teeth engageable with a set of gear teeth located at an inner circumference of said cam shaft, and a second location provided on the outer circumference of the coupling member having a second set of gear teeth engaging with said set of gear teeth at the inner circumference of said central bore hole of said sprocket wheel, so as to form two gear teeth pairs, one of said gear teeth pairs constituting spiral gear teeth and the other of said gear teeth pairs constituting spur gear teeth; an electromagnetic valve arranged so that said coupling member is axially displaced by said hydraulic pressure controlled by said electromagnetic valve so as to bring about a relative rotation of said cam shaft relative to said sprocket wheel; a main piston acting on said coupling member and arranged so that said hydraulic pressure acts on said main piston; a main housing mounted on said drive wheel to which said cam shaft is also connectable; an axial piston pump connected to said main housing having axial bore holes being substantially parallel to a central axis of said cam shaft, and a plurality of additional pistons which are located in said axial bore holes; each piston having an outer rounded portion which contacts a wobble plate; outlet valves arranged at an outlet side of said bore holes and connected to a pressure space in the pump housing adjacent said main piston, said electromagnetic valve controls the hydraulic pump by controlling a pressure in said pressure space, said main piston and said coupling member arranged so that a mechanical force providing means acts on said coupling member against a force on said main piston.

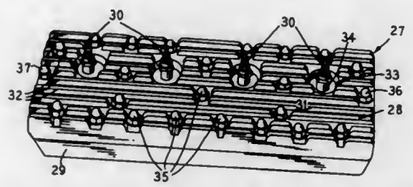


5,311,847

FLATHEAD ADAPTION SYSTEM FOR ENGINE

Jack Boehning, 13037 S. Park Ct., Crestwood, Ill. 60445

Filed Sep. 27, 1993, Ser. No. 126,605
Int. Cl.[5] F01M *9/10*
U.S. Cl. 123—90.38 **19 Claims**



1. A flathead adaption system for an engine having at least one valve cover and at least one spark plug extending from the engine at a location separated from the valve cover, comprising:

a rectangular plate-shaped flathead member having at least one non-energized spark plug therein; and

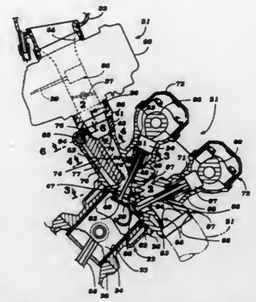
an adapter member having a first mounting surface at which the flathead member is attached and an opposite second mounting surface which is attached at a valve opening in an engine block of the engine in place of a valve cover which is removed prior to mounting of the flathead member and adapted member.

5,311,848

INDUCTION SYSTEM FOR ENGINE

Yoshiharu Isaka, and Masahiro Ito, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 19, 1992, Ser. No. 901,588
Claims priority, application Japan, Jul. 18, 1991, 3-203288
Int. Cl.[5] F01L *3/20*
U.S. Cl. 123—188.14 **55 Claims**



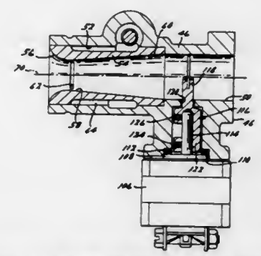
1. An intake arrangement for an internal combustion engine having a combustion chamber, an intake passage having an inlet opening for receiving an intake charge and an outlet opening for delivering a charge, a first portion of said intake passage between said inlet opening toward said outlet opening defining a generally straight section and terminating at a second angularly related portion leading to said outlet opening, and means for changing the effective angle of said straight section to said outlet opening and the shape of the transition between said straight section and said second portions without introducing any void areas during the running of said engine for redirecting the charge flow passing through said outlet opening.

5,311,849

CARBURETOR ASSEMBLY FOR AN INTERNAL COMBUSTION GAS ENGINE

John E. Lambert, Dublin; Larry E. Schluer, Sugar Grove, and Douglas Dickson, Columbus, all of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 14, 1992, Ser. No. 914,360
Int. Cl.[5] F02D *9/08;* **F02M** *21/04*
U.S. Cl. 123—337 **6 Claims**



1. A carburetor for a gas engine comprising a throttle body, an air inlet passage in said throttle body adapted to communicate with an air/fuel mixture inlet flow conduit;

a shaft opening in said throttle body extending in a direction transverse to said inlet passage;

an electric actuator motor mounted in said throttle body on the exterior thereof and having an armature shaft extending into said shaft opening;

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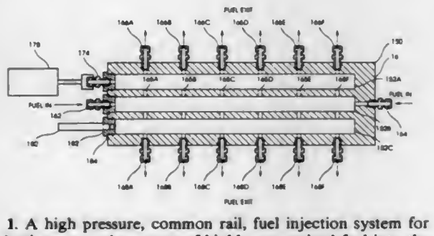
a throttle blade shaft in said shaft opening;
a throttle blade in said inlet flow conduit, a mechanical connection between said throttle blade and said throttle blade shaft whereby rotary adjustment of said throttle blade shaft by said motor effects opening and closing of said inlet flow conduit; and
said throttle blade shaft being carried by and driven by said armature shaft and being supported entirely by said armature shaft.

5,311,850

HIGH PRESSURE ELECTRONIC COMMON-RAIL FUEL INJECTION SYSTEM FOR DIESEL ENGINES

Tiby M. Martin, 3836 Holly La., Waterloo, Iowa 50702

Continuation-in-part of Ser. No. 508,068, Apr. 11, 1990, Pat. No. 5,035,221, which is a division of Ser. No. 295,588, Jan. 11, 1989, abandoned. This application May 3, 1991, Ser. No. 695,221
Int. Cl.[5] F02M *41/00*
U.S. Cl. 123—456 **9 Claims**



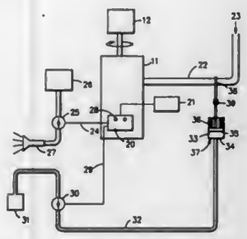
1. A high pressure, common rail, fuel injection system for injecting metered amounts of highly pressurized fuel into the cylinder of a diesel engine, comprising:
a first body adapted to receive fuel from a source;
a rotatable camshaft supported in the first body so as to be rotatable about an axis, and having a pair of cam lobes including a first cam lobe and a second cam lobe disposed 180 degrees apart and adapted to rotate in an annular path about the axis of rotation of the camshaft;
at least one pair of reciprocating pumping elements mounted in the first body perpendicular to the axis of rotation of the camshaft, each of said pumping elements including an elongated plunger having an axial passage, including a first end and a second end, the first end being connected to a source of liquid fuel, a structure slideably mounted on the plunger so as to form an expandable chamber at the second end of the axial passage, and being movable either to enlarge or reduce the volume of the chamber depending upon the direction of relative motion of said structure and said plunger, tappet means connecting the camshaft to said structure such that as said chamber is being enlarged in volume, fuel is received therein, and as said chamber is being reduced in volume, fuel is discharged therefrom;
means for fluidly connecting the pumping elements to common rail means for passing fuel under pressure thereto in response to rotation of said camshaft;
the common rail means including a second body having a longitudinal central chamber adapted to receive fuel under pressure from said first body and one or more side chambers adapted to discharge fuel under pressure;
cross-drilled passage means connecting said central chamber with said side chambers to eliminate the pumping stroke effect and the wave reflection effect in fuel under pressure and to provide a constant pressure and fuel distribution in fuel discharged from said side chambers;
means for fluidly connecting the common rail means to fuel injection means for passing fuel under pressure thereto in response to rotation of said camshaft;
the fuel injection means including an injector body having an upper portion and a lower portion, and having an internal passage means with a first end in said upper portion for receiving pressurized fuel and a second end in said lower portion for passing pressurized fuel from the passage;
a solenoid-actuated first valve slideably mounted at the first end of said passage means having a pressure balanced annulus openable between a solenoid-energized position in which high pressure fuel is delivered through said annulus to said passage means, and a solenoid de-energized position in which high pressure fuel is blocked by said annulus from passing to said passage means;
a needle valve movable in the injector body to control the flow of pressurized fuel through the second end of said passage means, said needle valve being movable in a first direction toward an open position for passing pressurized fuel through the second end of said passage means when said solenoid-actuated valve is in said solenoid-energized position, and an opposite, second direction toward a closed position for blocking pressurized fuel from passing through the second end of said passage means when said solenoid-actuated valve is in said solenoid de-energized position;
a spring cage forming a seat for said needle valve in the injector body adjacent the second end of said passage and biasing said needle valve in said second direction in fluid communication with said passage means, and having an upper balancing chamber and a lower balancing chamber, and a first sized orifice therebetween; and
an adjustable pressure balanced second valve slideably mounted on said lower portion of said injector body and having means openable to open said second valve when said solenoid-actuated valve is in said solenoid de-energized position to communicate pressurized fuel into said spring cage to aid the spring cage in biasing said needle valve in said second direction to a closed position to thereby obtain a sharp end of injection; and
a second sized orifice in said lower balancing chamber in fluid communication with means to maintain a residual fuel pressure within said spring cage when said solenoid-actuating valve is in said solenoid de-energized position to thereby slow the movement of said needle valve in said first direction toward an open position when said solenoid-actuated valve is next in said solenoid-energized position.

5,311,851

METHANE MONITOR AND ENGINE SHUTDOWN SYSTEM

Harold W. Wright, Jr., 2 Begonia, Casper, Wyo. 82604

Filed Mar. 2, 1992, Ser. No. 844,166
Int. Cl.[5] F02P *11/00*
U.S. Cl. 123—630 **5 Claims**



1. A methane monitor and engine shutdown system for use at oil well and natural gas well sites in cooperation with an internal combustion engine, comprising:
sensor means for detecting ambient concentration amount of methane gas, said sensor means responsive to said ambient concentration amount of methane gas;

said sensor means continually providing an indication of said ambient concentration amount of methane gas to a control unit;
said control unit being adapted to provide a first signal upon said ambient concentration amount of methane gas exceeding the lower of two predetermined threshold settings;
said first signal being connected to open a pneumatic valve to permit compressed air to flow from a compressed air storage means through said pneumatic valve to an air horn to provide an audible signal;
said control unit being adapted also to provide a second signal upon said ambient concentration amount of methane gas exceeding the higher of said two predetermined threshold settings;
said second signal being connected to open a second pneumatic valve to permit compressed air to flow from a second compressed air storage means through said second pneumatic valve to a roto-chamber to provide mechanical movement within said roto-chamber;
said roto-chamber attached to air intake valve means of said internal combustion engine for obstructing the intake of ambient air by said mechanical movement within said roto-chamber;
said roto-chamber including a piston connected through a rod with said air intake valve means; spring means for urging said piston to move said air intake valve means to a first normal fully open position providing non-interference to the intake of ambient air by said engine;
whereby upon the occurrence of said second signal said mechanical movement within said roto-chamber is adapted for urging said piston for movement against said spring means away from said first normal fully open position into a second fully closed position providing substantial interference to said intake of ambient air by said engine thereby resulting in the safe shutdown of said engine; and
wherein said sensor means is located in close proximity to said intake of ambient air by said engine and said system does not produce an electrical arc that is exposed to said ambient concentration amount of methane gas.

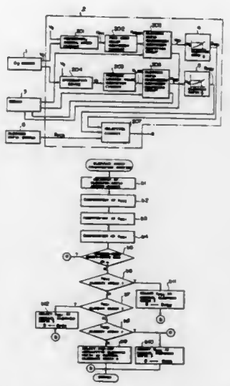
5,311,852

METHOD FOR DETECTING FUEL BLENDING RATIO

Masato Yoshida, Kyoto; Takanao Yokoyama, Nagaokakyo; Muneyoshi Nanba, Kyoto; Yoshihiko Kato, Kyoto; Kazumasa Iida, Kyoto, and Katsuhiko Miyamoto, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 752,452, Sep. 26, 1991, Pat. No. 5,263,464.
This application Aug. 31, 1993, Ser. No. 113,685
Claims priority, application Japan, Jan. 19, 1990, 2-11515
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—674 **6 Claims**

1. A fuel blending ratio detecting device for an internal combustion engine comprising:
a blending ratio sensor disposed in a fuel path for feeding fuel to the internal combustion engine to detect a first blending ratio of methanol;
an O_2 sensor for generating information of an air/fuel ratio in exhaust gases from the internal combustion engine, said O_2 sensor output being increased or decreased with time relative to a rich/lean decision voltage;
fuel control means for computing an air/fuel ratio feedback compensation coefficient from an integral control of the output of said O_2 sensor to regulate the quantity of supplied fuel so that an air/furl ratio of the fuel mixture supplied to the internal combustion engine corresponds to a predetermined target value;
a first computing means for computing a feedback learned value at intervals of a first predetermined period as a result of said integral control on the basis of the factor of the feedback compensation coefficient and multiplying the current blending ratio compensation coefficient by said feedback learned value to compute the next blending ratio compensation coefficient so as to compute a second blending ratio on the basis of said next blending ratio compensation coefficient;
second computing means for computing a peak mean value of the current and preceding peak values of said feedback compensation coefficient each time peak values appear and multiplying the current blending ratio compensation



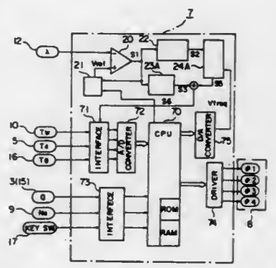
coefficient by said peak mean value to compute the next blending ratio compensation coefficient so as to compute a third blending ratio on the basis of said next blending ratio compensation coefficient; and
selecting means for selecting one of said first, second and third blending ratios according to the operating conditions of the internal combustion engine.

5,311,853

EXHAUST GAS CLEANING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Akira Takahashi; Masashi Chino; Tohru Hashimoto; Mitsuhiro Miyake, all of Tokyo; Minoru Nishida, and Hideaki Katashiba, both of Amagasaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 803,993, Dec. 9, 1991, abandoned, which is a division of Ser. No. 555,442, Jun. 29, 1990, Pat. No. 5,099,818.
This application Feb. 3, 1993, Ser. No. 12,641
Claims priority, application Japan, Sep. 25, 1989, 1-248848; Sep. 25, 1989, 1-248849; Nov. 1, 1989, 63-277990
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—681 **2 Claims**



1. An exhaust gas cleaning device for controlling an air-to-fuel ratio of an air-fuel mixture supplied to an internal combus-

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tion engine including a catalytic converter disposed in an exhaust gas outlet passage of the engine for removing noxious components contained in an exhaust gas of the engine, said exhaust gas cleaning device comprising:

air-to-fuel ratio sensor means, disposed in the exhaust gas outlet passage of the internal combustion engine, for detecting, from a concentration of a component of the exhaust gas, an air-to-fuel ratio parameter indicative of the air-to-fuel ratio of the air-fuel mixture supplied to the internal combustion engine;

comparator means, coupled to said air-to-fuel sensor means, for comparing said air-to-fuel ratio parameter with a reference level to determine whether the air-to-fuel is in a rich or a lean state, said comparator means outputting a comparison judgement signal that take two levels indicative of the rich and the lean state of the air-to-fuel ratio, respectively;

integrator means, coupled to said comparator means, for integrating said comparison judgement signal with predetermined integration characteristics, to output an integrated signal;

operation condition detector means for detecting an operating condition of the internal combustion engine, to output a corresponding detection signal;

oscillation signal generating means, coupled to said integrator means and said operating condition detector means, for generating an oscillation signal which oscillates around a central level of the integrated signal of the integrator means, wherein a frequency of the oscillation signal is varied in response to the detection signal of the operating condition detector means in accordance with the operating condition of the engine, a period of the oscillation signal being maintained shorter than an inversion half period of said comparison judgement signal;

air-to-fuel ratio feedback control means for effecting a feedback control of the air-to-fuel ratio of the air-fuel mixture in accordance with said oscillation signal, and

reference level modifying means, coupled to said operating condition detector means, for varying and modifying the reference level to which the air-to-fuel ratio parameter is compared by said comparator means, wherein said reference level modifying means modifies said reference level, in response to the detection signal of the operating condition detector means, for a predetermined length of time corresponding to the operating condition of the engine after each inversion of the level of the comparison judgement signal, by a predetermined amount in the reference level in such a direction as to make an inversion of the level of the comparison judgement signal more difficult to take place.

5,311,854

TWO-CYCLE INTERNAL COMBUSTION ENGINE WITH REDUCED UNBURNED HYDROCARBONS IN THE EXHAUST GAS

Harry Cullum, East Hampton, N.Y., assignor to BRQT Corporation, New York, N.Y.

Filed Jan. 25, 1993, Ser. No. 7,937
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—703 **20 Claims**

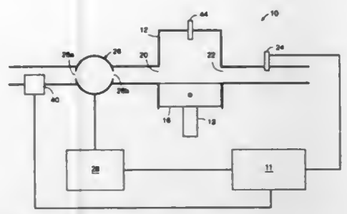
1. In a two-cycle internal combustion engine operable with a source of fuel and a source of air, the engine including a cylinder with inlet and outlet ports, a piston slidable in the cylinder for opening and closing said ports, and fuel introduction means, the improvement comprising

a—sensor means for detecting unburned hydrocarbons in the exhaust gas and providing signal information,

b—blower with an outlet for directing its outflow into the cylinder inlet port, said fuel introduction means having an outlet upstream of and directed into said blower,

c—drive means driven by said engine and coupled to said blower for varying the the blower outflow, and

d—control means for receiving said signal information from said sensor means as to unburned hydrocarbons in the exhaust gas and for controlling the blower outflow into



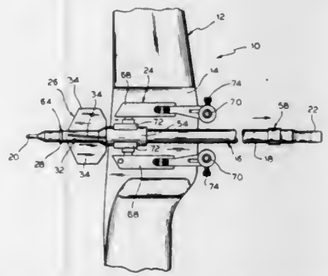
the cylinder to reduce unburned hydrocarbons in the exhaust gas.

5,311,855

BOW LAUNCHER AND ARROW SYSTEM

Ronald Basik, 4521 N. Kimball, Chicago, Ill. 60625

Continuation-in-part of Ser. No. 749,917, Aug. 26, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 924,132
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—44.5 **29 Claims**



28. A launcher for an arrow, comprising:

a base adapted to be mounted on a riser of a bow and resilient gripping means supported by a stand-off in spaced relation to said base, said base being adapted to extend rearwardly of said bow to position said resilient gripping means rearwardly of a riser of said bow, said resilient gripping means being adapted to grip said arrow so as to isolate said arrow from contact with said base or said riser.

5,311,856

GAS GUN AND QUICK RELEASE MECHANISM FOR LARGE LOADS

Howard G. White; Alan P. Ohrt, and Charles R. Welch, all of Vicksburg, Miss., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 20, 1992, Ser. No. 963,364
Int. Cl.[5] G01M *19/00*; F41B *11/00*
U.S. Cl. 124—56 **10 Claims**

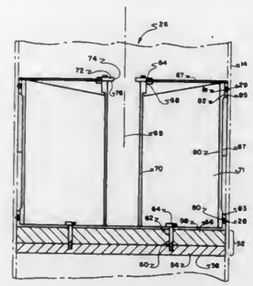
1. A fluid actuated large diameter gun for producing repeatable controlled shock fields in a target area comprising:

a hollow barrel having a downstream projectile end for alignment with the target area and an opposite axially aligned upstream reaction end and having an intermediate side wall portion formed with a plurality of fluid inlets;

a projectile releasably securable in the barrel from a cocked position in communication with the fluid inlets; and wherein the projectile includes side walls having respective forward and rearward portions extending axially for closely engaging internal sidewalls of the barrel and for straddling the inlets when in the cocked position and forming a fluid seal therebetween;

a chamber for containing a fluid under pressure, said chamber secured externally of the barrel and enclosing the fluid inlets therewithin, said fluid for communicating with and pressurizing the barrel to cause the projectile to be slidably accelerated along the barrel to the outlet when released from the cocked position for engagement with the target area to thereby produce said shock field;

release means secured within the barrel for releasable attachment to the projectile, said release means for releasably



supporting the projectile in the cocked position in sealing relation with the fluid inlets and for releasing the projectile from the cocked position to the firing, wherein the release means further comprises:

latches for engaging the projectile; a latch housing secured in the barrel carrying the latch between first and second positions for supporting and releasing the projectile respectively; and

a releasable collar mounted in the barrel for relative movement with respect to the latch for engaging the latch in the first position and for disengaging the latch in the second position and wherein the latch and the collar each have corresponding camming surfaces for urging the projectile away from the outlet prior to release.

5,311,857

STRUCTURE SMOKE EXHAUSTER

Hsing-Wen Chang, Suite 1, 11 F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed Jun. 17, 1992, Ser. No. 900,200
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299 D **2 Claims**

1. A structure of a smoke exhauster comprising:

an enclosure having a top plate, a pair of lateral side plates, and a front panel;

an exhaust vent passing through a central portion of said top plate;

at least one motor secured under said top plate;

at least one suction fan, each said at least one suction fan being coupled to the shaft of a corresponding said at least one motor and disposed thereunder;

a fan housing disposed within said enclosure and surrounding each said at least one suction fan and said exhaust vent, said fan housing having at least one first circular aperture formed thereon, each said at least one first circular aperture being positioned below the fan rotor of a corresponding said at least one suction fan;

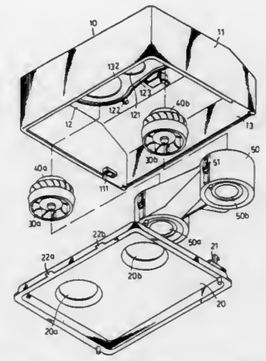
a first releasable securing means for attaching said fan housing to the underside of said top plate;

a concave lower hood plate disposed under said enclosure, said hood plate having at least one second circular aperture formed thereon, each said second circular aperture being positioned under a corresponding said at least one first circular aperture in registry therewith and having substantially equal diameter;

a second releasable securing means for attaching said hood plate under said enclosure;

a pair or roughly angle iron shaped pivoting bars pivotably mounted above said hood plate about respective corner portions thereof, each said pivoting bars having a release rod protruding downward from a horizontal arm thereof through a corresponding slot on said hood plate;

a generally L shaped catch formed on the end portion of a vertical arm of each said pivoting bar, having a sloped upper cam surface and a substantially level lower abutment surface;



a torsion spring biasing each said pivoting bar in a predetermined rotational direction;

a pair of sloped locking bars fixedly secured at predetermined positions in a rear portion of said enclosure for engaging corresponding said pivoting bars;

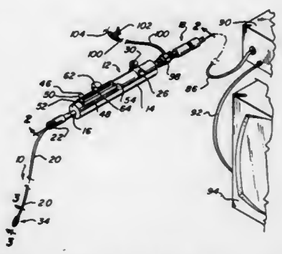
wherein, when the rear portion of said hood plate is raised upwards in said enclosure, each said locking bars engages said cam surface of a corresponding said catch, causing the rotation of said pivoting bar against said spring, said spring subsequently causing said pivoting bar to rotate in an opposite direction so that each said locking bars engages said abutment surface of a corresponding said catch.

5,311,858

IMAGING TISSUE OR STONE REMOVAL BASKET

Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104

Filed Jun. 15, 1992, Ser. No. 898,311
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



1. An endoscope having an imaging tissue or stone removal

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basket for removal of unwanted tissue or stone from an operative site within a body, said endoscope comprising:

an elongated tube, having a distal end and a proximal end;

an elongated basket, having generally circular distal end with a central opening therein and a proximal end, said proximal end of said basket being attached to the periphery of said distal end of said tube, said basket being formed as a plurality of spaced flexible members which normally bow outwardly between said distal end and said proximal end thereof;

an optic fiber bundle slidably received within said tube, said optic fiber bundle having a distal end and a proximal end and a smaller diameter than said tube;

an elongated handle having a distal end, a proximal end and a central passageway therethrough whose diameter is substantially greater than the diameter of said optic fiber bundle;

a sleeve slidably received over said tube, having a distal end and a proximal end;

a slidable tubular arm having a distal end and a proximal end, within said passageway, said distal end thereof projecting beyond said distal end of said handle, releasably connectable to said proximal end of said sleeve, said optic fiber bundle extending centrally through said arm within said passageway and having a diameter substantially smaller than the inner diameter of said arm;

slidable control means on said handle connected to said arm for extending and retracting said arm with respect to said distal end of said handle to extend and retract said distal end of said sleeve with respect to said basket; and

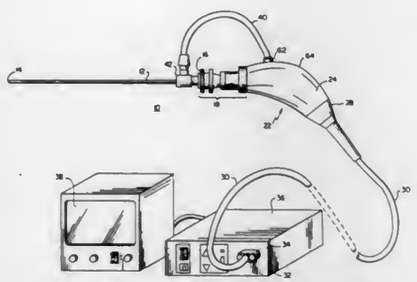
clamping means intermediate said ends of said handle for releasably holding said proximal end of said tube in a fixed position relative to said handle.

5,311,859

ADD-ON VIDEO CAMERA ARRANGEMENT FOR OPTICAL LAPAROSCOPE

Richard A. Monroe, Liverpool, and Robert J. Wood, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 11, 1992, Ser. No. 943,931
Int. Cl.[5] A61B *1/06*
U.S. Cl. 126—6 **8 Claims**



1. Add-on video camera arrangement to permit on-screen viewing of a target within an enclosed structure using an optical laparoscope of the type comprising an elongated insertion tube containing optical means for conducting an optical image of the target from an objective at a distal end of the insertion tube to an ocular at a proximal end thereof, and light conduit means therein for conducting illumination for a proximal light tube fitting to said distal end of the insertion tube to illuminate said target; and a C-mount adaptor which includes a distal end fitting said ocular, a proximal end having a standard male thread for fitting to a camera, and internal focussing means for adjustably focusing the image of said target; said add-on camera arrangement comprising:

a handle unit including an elongated housing having a hollow interior with a camera lens and imager assembly disposed therein, a distal end thereof having a socket with a standard female thread to receive the standard male thread of said adapter; and a light conduit port exiting said housing;

a flexible umbilical tube coupled to said housing and to a connector module and containing conductors for carrying power to said camera lens and imager assembly and conducting therefrom a video signal,

said connector module insertably fitting a socket of a light unit which contains a light source;

a fiber optic bundle light conduit having a proximal end carried in said connector module to receive light from said light source, and extending through said umbilical tube and said handle unit housing and exiting said light conduit port; and

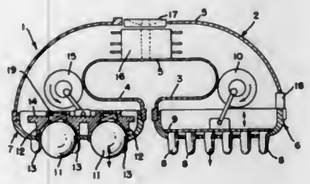
a flexible tubular connector extending from said light conduit port and carrying said fiber optic bundle light conduit, and including a coupler device at a distal end of the conduit, in which a distal end of said fiber optic bundle light conduit is disposed, for engaging onto said light tube fitting, such that the flexible tubular connector forms a short loop, from the handle unit to the light tube fitting of the insertion tube, that is sufficiently long to permit rotation of the insertion tube relative to the handle over at least 90 degrees but is short enough so that the loop does not contact the structure being inspected during a procedure.

5,311,860

ELECTRIC MASSAGER

Alessandro Doria, Milan, Italy, assignor to Daniels, S.r.l., Milan, Italy

PCT No. PCT/EP90/00781, § 371 Date Mar. 13, 1992, § 102(e) Date Mar. 13, 1992, PCT Pub. No. WO91/04002, PCT Pub. Date Apr. 4, 1991
PCT Filed May 14, 1990, Ser. No. 838,273
Claims priority, application Italy, Sep. 14, 1989, 21723/89[U]
Int. Cl.[5] A61H *7/00, 15/00*
U.S. Cl. 601—103 **8 Claims**



1. A hand held body massager comprising:

a main body portion;

a first and second massaging heads provided in connection with said main body portion, said first and second massaging heads being spaced apart from each other;

a plurality of finger protrusions operably mounted on said first massaging head and a plurality of ball protrusions operably mounted on said second massaging head, said plurality of finger and ball protrusions all essentially lying in the same plane; and

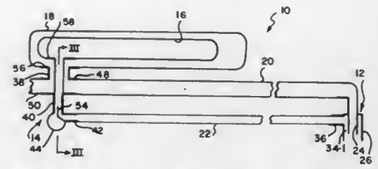
motor means for jointly and separably operating said first and second massaging heads.

5,311,861

BREATHING APPARATUS

Donald M. Miller, 4 Weltevreden, Pinelands, 7405, South Africa

Filed Oct. 15, 1992, Ser. No. 961,453
Claims priority, application South Africa, Aug. 24, 1992, 92/6365
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—201.13 **9 Claims**



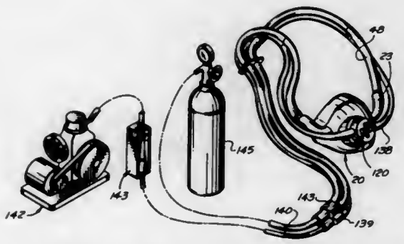
1. Breathing apparatus comprising a first connector structure having a first port for connection to a supply of fresh breathing gas, a second port, an afferent gas tube having one end and another end with said one end thereof connected to said second port, a third port, an efferent gas tube having one end and another end with said one end thereof connected to said third port, a first flow path within the first connector structure placing said first and second ports in communication with one another, a fourth port for connection to a ventilator, a squeeze bag or a scavenger, a second flow path within said first connector structure placing said third and fourth ports in communication with one another, a breathing bag construction comprising a first afferent gas compartment and a second efferent gas compartment separated by a diaphragm wall, said first connector structure being attached to said bag construction with said first flow path in communication with said first afferent compartment and said third and fourth ports in communication with said second efferent compartment, and a second connector structure having an afferent port, an efferent port and a patient port for connection to the patient, the other end of said afferent tube being connected to said afferent port of the second connector structure and the other end of said efferent tube being connected to said efferent port of the second connector structure, the second connector structure including flow control means for causing preferential flow between said afferent port and said patient port, the volume of the afferent gas tube exceeding said volume of the efferent gas tube.

5,311,862

INHALATION APPARATUS

Richard J. Blasdell, 4233 E. Mountain View Rd., Phoenix, Ariz. 85028, and Raymond L. Blasdell, 691 E. Fairway Dr., Litchfield Park, Ariz. 85340

Continuation-in-part of Ser. No. 270,003, Nov. 14, 1988, Pat. No. 5,109,839. This application May 4, 1992, Ser. No. 878,838
Int. Cl.[5] A62B *18/02*
U.S. Cl. 128—205.25 **6 Claims**



1. An inhalation mask for administering a selected respirable gas to an individual, which individual includes a facial area containing a respiratory organ, said mask comprising:

a) a generally cup-shaped body for enclosing said respiratory organ and receivable against the facial area of said individual;

b) inlet means formed integrally with said cup-shaped body, for allowing entrance of said respirable gas into said cup-shaped body;

c) an exhalation valve assembly extending from said cup-shaped mask;

d) a vacuum scavenger removably coupled to said exhalation valve assembly including;

i) an adaptor removably attachable to said exhalation valve,

ii) a vacuum conduit coupling a vacuum source to said adapter, and

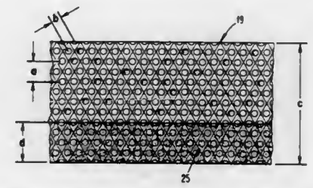
iii) a relief valve formed in said adapter selectively coupling said vacuum source to an outside atmosphere for relieving excess negative pressure generated by said vacuum source.

5,311,863

LASER RESISTANT ENDOTRACHEAL TUBE, TAPE, MATERIAL AND ARTICLE

Anthony N. Toppses, Gansevoort, and David S. Sheridan, Argyle, both of N.Y., assignors to Sheridan Catheter Corp., Argyle, N.Y.

Filed Jun. 12, 1992, Ser. No. 897,841
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.15 **25 Claims**



1. A laser resistant endotracheal tube comprising:

a) a tube capable of providing gas to a patient, said tube having a distal end for insertion in the patient and a proximal end for connection with a respirating device; and

b) a laser resistant layer surrounding the tube along at least a portion of the length of the tube between the distal end and the proximal end, said laser resistant layer comprising a non-corrugated, non-woven reflective metal foil material having a plurality of surface irregularities which are spaced from one another in a plurality of directions and which reflectively scatter laser energy.

5,311,864

TRACHEAS EVACUATION AND TRANSMITTAL TUBE

Christine M. Hnerta, 2548 Indian Ave., Bellcair, Fla. 34640

Filed Dec. 11, 1992, Ser. No. 989,390
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.15 **10 Claims**

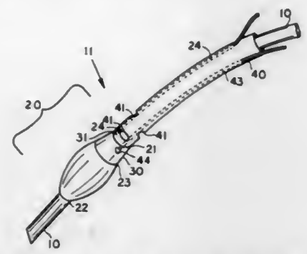
1. A breathing augmentation apparatus for insertion from a point outside a patient's body through the patient's tracheal region in the patient's lung cavity, the apparatus comprising:

a ventilation tube, said ventilation tube being of a flexible material and of diameter adequate to pass sufficient air or oxygen at a pressure safe to a person's lung but small enough to fit through said tracheal region without trauma or damage to the epiglottis or interior throat surfaces and of sufficient length to reach from a point outside said patient's body, through said tracheal region and to the lung cavity opening;

a balloon cuff, said balloon cuff being positioned radially

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bout said ventilation tube at a point between said patient's epiglottis and lung opening, said balloon cuff further being adapted to alternatively be inflated to permit its expansion radially about said ventilation tube to fill the space between said ventilation tube and throat wall and then be deflated to permit its collapse upon said ventilation tube, said balloon cuff further including a rigid collar member, said rigid collar member extending from the balloon cuff, radially surrounding said ventilation tube and extending a distance sufficient to isolate said balloon cuff from suction applied from the surface of said ventilation tube through



the ports of a fluid collar and hold said balloon cuff in place and to permit the insertion of a fluid pressure lumen for inflating and deflating said balloon cuff from a pressure source outside the patient's body; and

a fluid collection collar, said collar further comprising a concentric evacuation sheath about said ventilation tube and extending from said rigid collar member proximally and about said ventilation tube to a pressure source outside the patient's body, said fluid collection collar being further provided with at least two ports about its circumference nearer said rigid collar member.

5,311,865

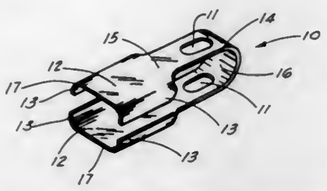
PLASTIC FINGER OXIMETRY PROBE HOLDER

Charles D. Mayeux, 825 Roseland Pky., Harahan, La. 70123

Filed Nov. 7, 1991, Ser. No. 788,840

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **9 Claims**



1. Apparatus including a pulse oximetry probe and a holder for placement between the pulse oximetry probe and a finger, the pulse oximetry probe having a light transmitter and a light receive, the holder comprising:

(a) attachment means for attaching the holder to the finger;

(b) an outer surface onto which the pulse oximetry probe is removably attached so that the probe may be moved from one finger to another;

(c) visual aperture means in the holder for allowing light from the light transmitter of the pulse oximetry probe to travel completely through the holder from the outer surface of the holder to the light receiver of the pulse oximetry probe when the pulse oximetry probe is attached to the outer surface of the holder.

5,311,866

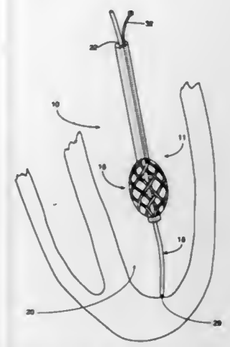
HEART MAPPING CATHETER

Jonathan Kagan, Minneapolis; Graydon E. Beatty, and Jeffrey R. Budd, both of St. Paul, all of Minn., assignors to Endocardial Therapeutics, Inc., St. Paul, Minn.

Filed Sep. 23, 1992, Ser. No. 949,690

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—642 **12 Claims**



1. A mapping catheter for use in mapping cardiac electrical potentials of a patient's heart comprising:

a set of electrodes;

first positioning means coupled to said set of electrodes for spacing a portion of said set of electrodes, defined as a first subset of electrodes, apart from and not in contact with a surface of said patient's heart;

second positioning means coupled to said set of electrodes for placing a second predetermined subset of said set of electrodes into contact with a surface of said patient's heart, said second predetermined subset being different from said first subset; and

means for excluding blood from an interior of said spaced portion of said set of electrodes.

5,311,867

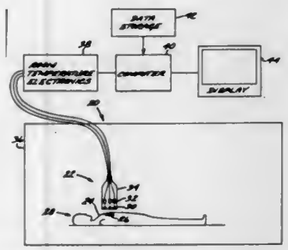
DETECTION AND GROUPING ANALYSIS OF CARDIAC CYCLES

David Kynor, San Diego, Calif., assignor to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Jan. 4, 1993, Ser. No. 141

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—653.1 **18 Claims**



1. Apparatus for measuring the physiology of the heart, comprising:

means for detecting a series of cardiac cycles of a subject;

means for storing the patterns of the series of cardiac cycles detected by the means for detecting;

means for performing correlation analysis of cardiac cycles in the series of cardiac cycles; and

means for classifying groupings of cardiac cycles, the means for classifying comprising

means for identifying a first template cardiac cycle,

means for forming a first selected group of cardiac cycles from among those of the series of cardiac cycles having at least a first preselected degree of correlation with the first template cardiac cycle, and leaving a first ungrouped group of cardiac cycles having a correlation less than the first preselected degree of correlation,

means for selecting a second template cardiac cycle from the first ungrouped group of cardiac cycles, and

means for forming a second group of cardiac cycles from among the first ungrouped group of cardiac cycles having at least a second preselected degree of correlation with the second template cardiac cycle, and leaving a second ungrouped group of cardiac cycles having a correlation less than the second preselected degree of correlation.

5,311,868

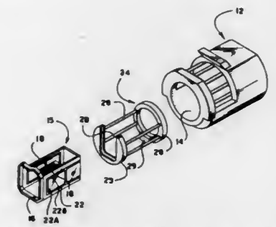
HOLDER FOR STEREOTACTIC FRAME

Carlos H. Carbini, and Michael L. Goodman, both of Atlanta, Ga., assignors to Peachtree Research & Development, Inc., Atlanta, Ga.

Filed Oct. 7, 1992, Ser. No. 957,715

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—653.5 **5 Claims**



1. In an imaging system including a transceiver, a stereotactic frame having a front and a rear received on the head of a patient to be imaged and reference markers on said stereotactic frame for use in a coordinate system for stereotactic surgery, said stereotactic frame being selectively receivable in said transceiver for imaging said patient, the combination therewith of a stereotactic frame holder for supporting said stereotactic frame with respect to said transceiver, said frame holder including means for attaching said stereotactic frame to said frame holder for preventing movement of said stereotactic frame with respect to said frame holder, said frame holder having a size and shape to move longitudinally of said transceiver while preventing lateral movement thereof, said transceiver defining an opening having a longitudinal axis, said opening being adapted to receive said stereotactic frame therein, said stereotactic frame including a base ring, said frame holder including a base member for receiving said base ring, and means for maintaining said base member perpendicular to said longitudinal axis of said transceiver, said means for maintaining said base member perpendicular to said longitudinal axis comprising a top member parallel to said base member and fixed with respect thereto, post means extending from said base member to said top member for fixing said top member to with respect to said base member, said base ring of said stereotactic frame including dovetails, said base member of said frame holder defining dovetail slots for receiving said dovetails for fixing said base ring of said stereotactic frame with respect to said member of said frame holder, and further including a block fixed to said top member of said frame holder, said block being located to engage the rear of said stereotactic frame when said stereotactic frame is received by said frame holder.

5,311,869

METHOD AND APPARATUS FOR ULTRASONIC WAVE TREATMENT IN WHICH MEDICAL PROGRESS MAY BE EVALUATED

Kiyoshi Okazaki, Takanezawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

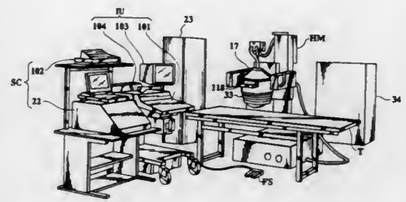
Filed Mar. 22, 1991, Ser. No. 673,335

Claims priority, application Japan, Mar. 24, 1990, 2-074394; Sep. 10, 1990, 2-237132

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—660.03 **16 Claims**



1. An ultrasonic wave medical treatment apparatus, comprising:

setting means for setting a total number of ultrasonic wave irradiations for an entire ultrasonic wave medical treatment process which is divided into a plurality of sections, and a sectional number of ultrasonic wave irradiations for each of the plurality of sections;

ultrasonic wave irradiation means for irradiating ultrasonic waves on a treatment target as many times as the total number of ultrasonic wave irradiations;

control means for controlling the ultrasonic wave irradiation means such that the ultrasonic waves are irradiated as many times as the sectional number of ultrasonic wave irradiations for each of the plurality of sections and then the ultrasonic wave irradiation is paused before the ultrasonic wave irradiation for a subsequent one of the plurality of sections is executed; and

means for notifying that the ultrasonic wave irradiation for each of the plurality of sections is completed by generating a notification sound when the ultrasonic waves are irradiated as many times as the sectional number of ultrasonic wave irradiations successively.

5,311,870

ULTRASONIC DOPPLER IMAGING APPARATUS

Hiroshi Fukukita, Tokyo; Hisashi Hagiwara, Yokohama; Morio Nishigaki, Kawasaki, and Yasuhiro Nakamura, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 5, 1992, Ser. No. 878,623

Claims priority, application Japan, May 10, 1991, 3-105479

Int. Cl.[5] A61B *8/06*

U.S. Cl. 128—661.09 **16 Claims**

1. An ultrasonic Doppler analysis and display apparatus comprising:

ultrasonic means for emitting ultrasonic pulse waves to an object body under test and receiving dispersed ultrasonic wave signals dispersed from said object body;

means for A/D converting, in synchronism with said ultrasonic means, said dispersed ultrasonic wave signals and outputting a data string;

computing means, receiving said data string, for performing a quadrature addition/subtraction operation on a selected set of data elements including D_i, D_{i+1}, D_{i+2}, and D_{i+3} selected from said data string to obtain complex Doppler

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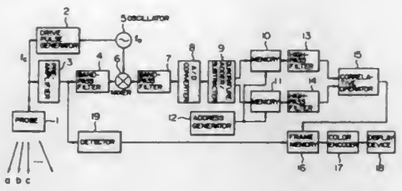
data having a real part R and an imaginary part X expressed by, where i is an odd number,

$$R = C_f D_i + C_{i+2} \cdot D_{i+2}$$

$$X = C_f D_{1+1} + C_{i+2} \cdot D_{i+3}, \text{ and}$$

expressed by, where i is an even number,

$$R = C_f D_{i+1} + C_{i+2} \cdot D_{i+3}$$



$$X = C_f D_i - C_{i+2} \cdot D_{i+2}$$

where $C_i = (-1)^{i/2}$, and $i/2$ is an integer operation,

wherein the addition/subtraction operation for the real part R and the imaginary part X have a quadrature relation;

means for implementing frequency analysis of said complex Doppler data provided by said computation means; and

means for displaying a result of said frequency analysis.

5,311,871

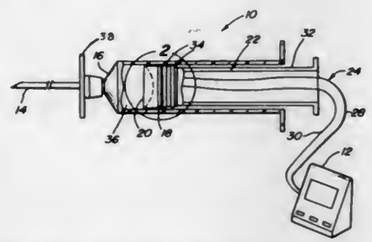
SYRINGE WITH ULTRASOUND EMITTING TRANSDUCER FOR FLOW-DIRECTED CANNULATION OF ARTERIES AND VEINS

Paul G. Yock, 2200 Redington Rd., Hillsborough, Calif. 94010

Filed Jan. 12, 1993, Ser. No. 3,203

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.95 **11 Claims**



1. A needle and syringe assembly comprising:

a needle, a syringe means, and a releasable connector between said needle and syringe means;

said syringe means including a body having an inner surface;

plunger means movable within said body and an ultrasonic transducer positioned adjacent one end of said plunger means with means for transmitting and receiving ultrasonic waves; and

the surface area of said transducer being substantially greater than the cross-sectional area of said needle.

5,311,872

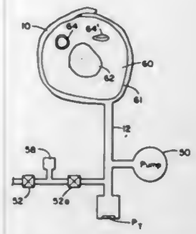
PERIPHERAL ARTERIAL MONITORING INSTRUMENTS

Howard P. Apple, Highland Park, N.J., assignor to Critikon, Inc., Tampa, Fla.

Division of Ser. No. 823,909, Jan. 22, 1992, Pat. No. 5,218,968, which is a division of Ser. No. 453,519, Dec. 20, 1989, Pat. No. 5,103,833. This application Mar. 25, 1993, Ser. No. 36,797

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—687 **13 Claims**



1. Instrumentation for performing measurements of arterial volume comprising:

an inflatable cuff;

means, connected to said cuff, for inflating and deflating said cuff;

means for detecting pressure levels within said cuff; and

means, coupled to said cuff inflating and deflating means, for expelling air from said cuff in a quantified manner and means for computing said quantified amount of expelled air, including means of known volume for transferring pressurized air form said cuff; and

means responsive to said computed amounts of air for computing arterial volume.

5,311,873

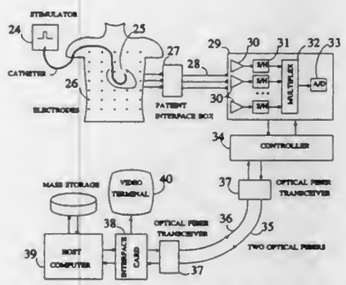
COMPARATIVE ANALYSIS OF BODY SURFACE POTENTIAL DISTRIBUTION DURING CARDIAC PACING

Pierre Savard, Sainte-Thérèse; Reginald Nadeau, Outremont, and Marc Dubuc, Longueuil, all of Canada, assignors to Ecole Polytechnique, Montreal, Canada

Filed Aug. 28, 1992, Ser. No. 937,487

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—696 **21 Claims**



1. A method of locating a position of interest in the heart of a patient and in positioning a surgical instrument at this position, comprising the steps of:

A. placing a plurality of electrodes on the surface of said patient in the area of the torso of the patient;

B. obtaining readouts from said electrodes during a pre-exci-

tation phase or at the onset of an abnormal beat and forming therefrom a first body surface potential map (BSPM);

C. estimating said position of interest from said first BSPM;

D. placing said surgical instrument at said estimated position;

E. pacing the heart of said patient with an electrical signal applied through said surgical instrument;

F. obtaining readouts from said electrodes during said paced phase and forming a further BSPM therefrom;

G. determining from said further BSPM, when compared with the first BSPM, if the surgical instrument is in the correct position;

H. if the instrument is not in the correct position, moving the instrument in a direction as indicated by the comparison of the further BSPM with the first BSPM;

I. repeating steps E. to G. until the surgical instrument is at the position of interest.

5,311,874

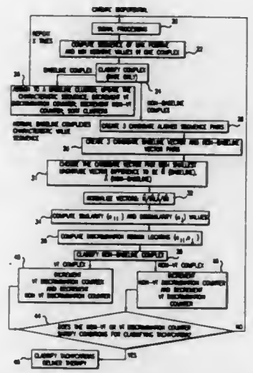
METHOD FOR TACHYCARDIA DISCRIMINATION

Lawrence S. Baumann, Bloomington; David K. Swanson, Roseville, and Douglas Lang, Arden Hills, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed May 18, 1992, Ser. No. 884,770

Int. Cl.[5] A61B *5/0464*

U.S. Cl. 128—705 **22 Claims**



1. A method for discriminating between tachycardias comprising the steps of:

sensing a cardiac biopotential signal comprising consecutive biopotential complexes;

determining a characteristic cycle length associated with each cardiac biopotential complex;

designating a biopotential complex to be non-baseline if the characteristic cycle length is less than a predetermined threshold and otherwise designating the complex to be baseline;

obtaining a characteristic sequence of feature values for cardiac biopotential complexes determined to be baseline for a particular patient;

obtaining a sequence of feature values for each cardiac biopotential complex determined to be non-baseline for that patient;

creating a baseline vector and creating non-baseline vectors from said characteristic sequence of feature values for complexes determined to be baseline and from each sequence of feature values for complexes determined to be non-baseline, respectively;

comparing each of the non-baseline vectors with the baseline vector; and

determining the type of tachycardia of a non-baseline complex based on the comparison of each non-baseline vector with the baseline vector.

5,311,875

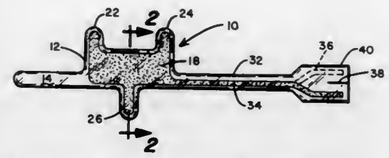
BREATH SENSING APPARATUS

Peter Stasz, 8357 Eastwood Rd. NE., Moundsview, Minn. 55112

Filed Nov. 17, 1992, Ser. No. 977,486

Int. Cl.[5] A61B *5/087*

U.S. Cl. 128—724 **10 Claims**



1. A breathing sensor comprising in combination:

(a) a transducer adapted to be disposed relative to the respiratory passages of an animal or person to intercept the tidal flow of respiratory gases exiting said passages, said transducer comprising a flexible, compliant polyvinylidene fluoride (PVDF) film substrate exhibiting piezoelectric and pyroelectric properties, said film substrate having first and second major surfaces supporting electrodes having a pattern of flexible metallization thereon defining zones of sensitivity to thermal changes, said transducer producing a low frequency output voltage signal proportional to changes in temperature due to the impingement of respiratory gases thereon;

(b) first and second flexible layers of insulation covering the flexible metallization on said first and second major surfaces; and

(c) circuit means coupled to said electrodes for receiving said low frequency output voltage signal and producing one of a visual and audible indication when said output voltage signal is above a prescribed amplitude.

5,311,876

AUTOMATIC DETECTION OF SEIZURES USING ELECTROENCEPHALOGRAPHIC SIGNALS

Dale E. Olsen, Columbia; Ronald P. Lesser, Baltimore; John C. Harris, Gaithersburg; W. Robert S. Webber, Howard County, and John A. Cristion, Columbia, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Nov. 18, 1992, Ser. No. 978,220

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—731 **45 Claims**

1. A method of operating a patient monitoring system wherein a seizure in the patient is automatically detected comprising the steps of:

detecting an electrical discharge in the patient's brain;

converting the detected electrical discharge into a digital signal;

inputting the digital signal into a microprocessor;

detecting automatically a seizure using the microprocessor and the digital signal comprising the steps of:

dividing the digital signal into a plurality of time segments;

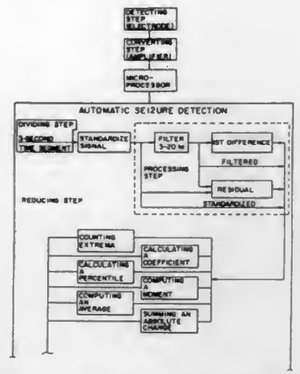
standardizing the digital signal in each time segment;

processing the standardized digital signal in each time segment to form at least one additional signal in each time segment;

reducing each signal in each time segment to a feature, the

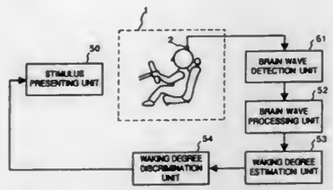
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feature providing information about whether a seizure is occurring ;
standardizing each feature; and



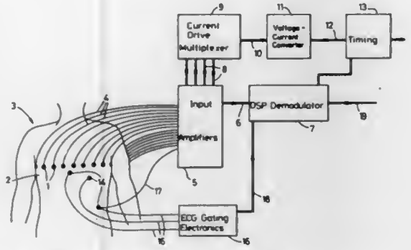
determining whether a seizure is occurring using the standardized features from each time segment; and indicating that a seizure is occurring.

5,311,877
WAKING DEGREE MAINTAINING APPARATUS
Atsuhide Kishi, Sagamihara, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Sep. 30, 1992, Ser. No. 954,147
Claims priority, application Japan, Oct. 2, 1991, 3-255553
Int. Cl.[5] A61B *5/04, 5/103;* **G08B** *23/00*
U.S. Cl. 128—732 **15 Claims**



1. A waking degree maintaining apparatus comprising:
stimulus means for presenting a predetermined stimulus to a person in order to maintain the person in a waking state;
first detection means for detecting a reaction time to the predetermined stimulus;
second detection means for detecting a quantity which represents a physiological condition correlating to a waking degree of the person;
first generation means for generating an estimated waking degree of the person, based upon the reaction time and the quantity;
second generation means for generating an average value and a standard deviation of a distribution of a plurality of said estimated waking degrees; and
determination means for determining a drop in waking degree in conformity with the average value and the standard deviation, and for causing said stimulus means to present a predetermined stimulus to the person, when the drop in waking degree is determined, so as to maintain the person in a waking state.

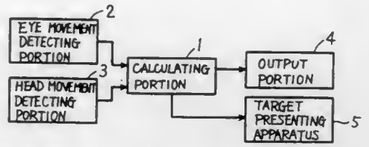
5,311,878
REAL-TIME ELECTRICAL IMPEDANCE TOMOGRAPHY SYSTEM
Brian H. Brown, and David C. Barber, both of Sheffield, England, assignors to British Technology Group Limited, London, England
PCT No. PCT/GB91/00915, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO91/19454, PCT Pub. Date Dec. 25, 1991
PCT Filed Jun. 7, 1991, Ser. No. 952,493
Claims priority, application United Kingdom, Jun. 13, 1990, 9013177
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—734 **6 Claims**



1. A method of real time imaging using electrical impedance tomography, comprising:
a) arranging a plurality of pairs of surface electrodes at spaced apart locations around a body to be investigated;
b) applying constant current drive to selected electrodes;
c) measuring the resulting potentials between adjacent pairs of other electrodes; and
d) forming images using an algorithm implemented as a single matrix multiplication of the measured data set with a matrix of weights, whereby the measurement noise is minimised by:
(i) measuring potentials between adjacent pairs of said other electrodes simultaneously;
(ii) de-modulating the potential measurement by digital signal processing, and
(iii) measuring the drive current at the same time as the potentials, and dividing the drive current into potential measurements before image reconstruction.

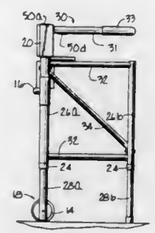
5,311,879
MEDICAL DIAGNOSTIC APPARATUS UTILIZING LINE-OF-SIGHT DETECTION
Mitsubo Yamada; Hitoshi Hongo; Kenya Uomori; Hiroshi Yoshimatsu; Keiichi Ueno, all of Kyoto; Mitsuru Fujii, Hokkaido; Shinji Murakami, Hokkaido; Norihito Nakano, Hokkaido; Jiro Miyazawa, Hokkaido; Ryo Fukatsu, Hokkaido, and Naohiko Takahata, Hokkaido, all of Japan, assignors to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan
Filed Dec. 18, 1992, Ser. No. 995,651
Claims priority, application Japan, Jul. 9, 1992, 4-182227
Int. Cl.[5] A61B *13/00*
U.S. Cl. 128—745 **4 Claims**

1. A medical diagnostic apparatus utilizing line-of-sight detection for diagnosing a disease related to brain function by detecting the line-of-sight of a subject, comprising:
eye movement detecting means for detecting eye movement of said subject;
target presenting means for presenting a target to said subject;
calculating means responsive to a detection output from said eye movement detecting means while said subject is gazing at a target presented by said target presenting means for calculating spatial movement of the line-of-sight of said subject to determine whether or not the disease is related to brain function; and
output means for outputting the movement of the line-of-sight calculated by said calculating means and information indicating whether or not the disease is related to the brain function; and
head movement detecting means for detecting head movement of said subject,



wherein said calculating means include means responsive to a detection output from said head movement detecting means while said subject is gazing at the target and to the detection output from said eye movement detecting means for detecting spatial movement of the line-of-sight of said subject to output a result to said output means, and
said target presenting means includes means for presenting targets from different angles with respect to said subject.

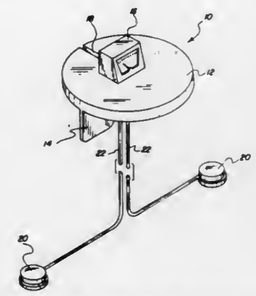
5,311,880
METHOD AND APPARATUS FOR OBJECTIVE EVALUATION OF PATIENT AMBULATION, BALANCE AND WEIGHT BEARING STATUS
Eric B. Lancaster, 311 E. Sycamore, Independence, Kans. 67301, and Michael F. Kocher, 7363 Yosemite, Lincoln, Nebr. 68507
Filed Apr. 14, 1993, Ser. No. 47,092
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—782 **19 Claims**



1. An apparatus for determining the ambulation capacity of a user comprising:
a user moveable frame for supporting the user during ambulation, said frame being moveable by the user to support the user in ambulation,
handle means on said frame for receiving the force of the weight of an ambulating user,
means for measuring the force thereon as user body weight is supported by said frame during ambulation, and
means for determining the distance said frame is moved by a user during ambulation.

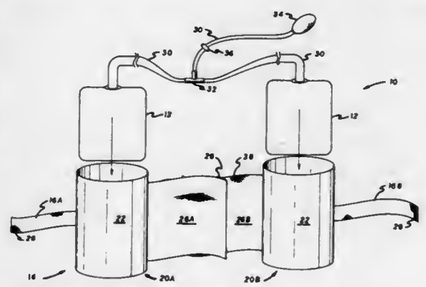
5,311,881
LOAD SENSING AND MEASURING SYSTEM
Louis Cabral, Rte. 8, Box 327, Fayetteville, Tenn. 37334
Filed Jan. 29, 1993, Ser. No. 11,239
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—782 **15 Claims**

1. A system for sensing and measuring forces acting on a body extremity comprising:
a pressure indicator;
support means;
first fastener means for detachably mounting said pressure indicator on said support means;
first attachment means for detachably securing said pressure indicator and said support means to a stationary portion of a water-containing vessel;
pressure sensing means;
connecting means for hydraulically joining said sensing means to said pressure indicator; and
second attachment means detachably mountable on said body extremity for detachably connecting said pressure



sensing means to said second attachment means and said body extremity;
whereby when said body extremity is positioned in and held stationary in said water contained in said vessel, water pressure acting on said pressure sensing means is detected thereby and displayed on said pressure indicator to provide a measure of a static force acting on said body extremity; and when said body extremity is positioned in and moved in said water contained in said vessel, water pressure acting on said pressure sensing means is detected thereby and displayed on said pressure indicator to provide a measure of a dynamic force acting on said body extremity.

5,311,882
TOMOGRAPHY HEAD RESTRAINT
George J. Gagne, R.F.D. 1, Box 261, Epsom, N.H. 03234
Filed Jul. 8, 1993, Ser. No. 87,382
Int. Cl.[5] A61G *15/00;* **A61F** *5/37*
U.S. Cl. 128—845 **12 Claims**



1. A head restraint comprising:
a plurality of adjustably pressurized, inflatable members,
fluid supply means enabling pressurization above ambient air pressure of said inflatable members,

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structural means for holding at least two of said inflatable members on opposite sides of a patient's head,

said inflatable members being dimensioned and configured to enable said inflatable members to fit in and partially fill space between the patient's head and a head holder furnished with an X-ray machine,

said structural means further comprising a structural flexible member having adjustment means for positioning and securing said head restraint in encirclement of the patient's head, and

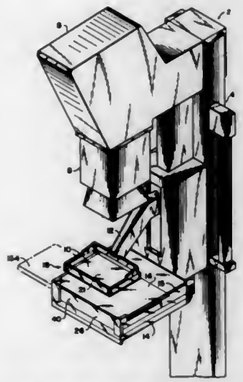
said structural flexible member further comprising a plurality of pockets collectively enclosing all of said inflatable members, whereby said inflatable members are inserted and withdrawn from said pockets when said head restraint is not deployed.

5,311,883

SANITARY SHIELD FOR DEDICATED MAMMOGRAPHY APPARATUS

Eleanor Sherman, 283 Murray Ave., Larchmont, N.Y. 10583

Filed Nov. 6, 1992, Ser. No. 972,639
Int. Cl.[5] A61F *5/37*; A61B *19/00*
U.S. Cl. 128—846 **3 Claims**



1. A sanitary shield for a dedicated mammography x-ray machine compression paddle comprising a generally rectangular pan shaped, substantially transparent non x-ray attenuating thermoplastic plastic cover having a generally flat planar surface, and walls extending normally from said planar surface to a rim, an inwardly extending flange formed integrally in said walls and spaced slightly from said rim, said walls dimensioned so as to extend around the sides of said compression paddle, said flange being dimensioned so as to slidingly engage the sides of said compression paddle and to extend over the top edge of said compression paddle sides when said cover is all the way on said compression paddle.

5,311,884

PROCESS FOR MAKING A PIEZOELECTRIC BIOMEDICAL DEVICE

Angelo G. Scopelianos, Whitehouse Station, N.J., assignor to Ethicon, Inc., Sommerville, N.J.

Continuation-in-part of Ser. No. 790,810, Nov. 12, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,500
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 **9 Claims**

1. A process for preparing a biomedical device exhibiting piezoelectrically comprising the steps of electrostatically spinning fibers of a copolymer of the following:

a) a predominant amount of vinylidene fluoride, and

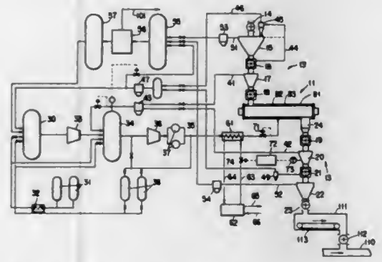
b) a second fluorinated hydrocarbon, selected from the group consisting of trifluoroethylene and tetrafluoroethylene, under conditions suitable for the formation of piezoelectric fibers; and collecting the spun fibers on a suitable receiver.

5,311,885

EXPANDING APPARATUS FOR AGRICULTURAL PRODUCT SUCH AS TOBACCO MATERIAL

Kazuo Yoshimoto; Takashi Ogawa; Hiromi Uematsu; Manabu Takeuchi, and Kensuke Uchiyama, all of Hiratsuka, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,963
Claims priority, application Japan, May 20, 1991, 3-145560; May 20, 1991, 3-145563
Int. Cl.[5] A24B *3/18*
U.S. Cl. 131—291 **3 Claims**



1. An expanding apparatus for continuously expanding an agricultural material comprising:

an impregnating vessel;

an expanding agent supply means for supplying carbon dioxide as an expanding agent to said impregnating vessel, the expanding agent supply means maintaining a predetermined impregnating pressure;

material supply means for continuously supplying the material to said impregnating vessel, the material supply means increasing a pressure of the material;

material discharge means for continuously discharging the material from said impregnating vessel, the material discharge means decreasing the pressure of the material;

said expanding agent supply means comprises:

a heat exchanger for cooling carbon dioxide by performing heat exchange between carbon dioxide and a coolant before the carbon dioxide is supplied to said impregnating vessel;

cooling means for cooling said coolant to said heat exchanger; and

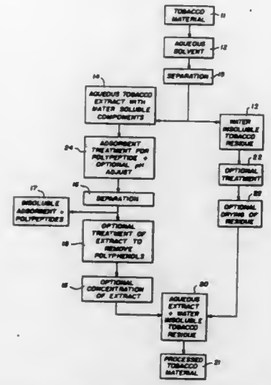
control means for controlling a heat exchange amount to the carbon dioxide before the carbon dioxide is supplied to said impregnating vessel, said control means detects a temperature of gaseous carbon dioxide or material in said material discharge means, and controls the heat exchange amount to the carbon dioxide before the carbon dioxide is supplied to said impregnating vessel in accordance with the detected temperature, thereby controlling the heat exchange amount.

5,311,886

TOBACCO EXTRACT TREATMENT WITH INSOLUBLE ADSORBENT

Yves D. De Grandpré, Boucherville, and Andrew R. Porter, Montreal, both of Canada, assignors to Imasco Limited, Canada

Filed Dec. 31, 1991, Ser. No. 816,520
Int. Cl.[5] A24B *15/20, 15/24*
U.S. Cl. 131—297 **11 Claims**



1. A method for removal of polypeptides from an aqueous tobacco extract solution, which method comprises the steps of:

(a) mixing the solution together with an insoluble absorbent selected from the group consisting of hydroxylapatite, bentonite, and fuller's earth mineral; and

(b) separating the extract from the absorbent.

5,311,887

COMB FOR HOLDING A LIQUID AND DISPENSING THE LIQUID THROUGH COMB TEETH

Floyd W. Ramsey, 608 NW. 116th Ter., Oklahoma City, Okla. 73114

Filed Dec. 29, 1992, Ser. No. 997,822
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—114 **47 Claims**

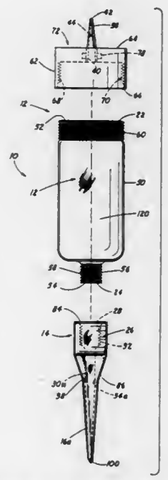
1. A comb for combing an individual's hair or scalp and applying a liquid to the individual's hair or scalp comprising:

a reservoir encompassing a reservoir space,. the reservoir comprising an elongated cylindrically shaped reservoir member having an upper end and a lower end, a reservoir inlet being formed through the upper end of the reservoir member and a reservoir outlet being formed through the lower end of the reservoir member, the reservoir space being adapted to store a quantity of liquid, the reservoir inlet and the reservoir outlet each being in fluidic communication with the reservoir space, the reservoir further comprising:

a cap having an upper end and a lower end with a cap opening being formed through the lower end of the cap and extending a distance through the lower end of the cap toward the upper end of the cap, the cap opening being sized to receive a portion of the reservoir member near the upper end thereof, the cap being removably connected to the upper end of the reservoir member with a portion of the reservoir member near the upper end thereof being disposed in the cap opening, the cap comprising a supplemental reservoir outlet formed through a portion thereof in fluidic communication with the reservoir space;

a comb base encompassing a base space having a base inlet and at least two base outlets, the base inlet and each of the base outlets being in fluidic communication with the base space;

at least two comb teeth, each comb tooth encompassing a tooth space and having a tooth inlet and a tooth outlet with each tooth inlet and each tooth outlet in each comb tooth being in fluidic communication with the tooth space in the comb tooth, the reservoir being connected to the comb base with the reservoir outlet being in fluidic communication with the base inlet and each comb tooth being connected to the comb base with each tooth inlet being in fluidic communication with one of the base outlets, the liquid being disposable in the reservoir space and the liquid being passable from the reservoir space through the reservoir outlet and through the base inlet and into the base space, and the liquid being passable from the base space through each of the base outlets and through the tooth inlet of each of the comb teeth and into the tooth space of each comb tooth, and the liquid being passable from the tooth space of each of the comb teeth out through the tooth outlets for applying the liquid to the individual's hair or scalp, the reservoir and the comb base

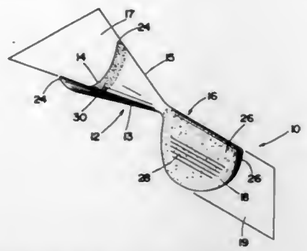


and the comb teeth each being constructed of a transparent material whereby the flow of liquid from the reservoir space through the base space and through the tooth spaces is observable by the individual; and

a supplemental tooth encompassing a tooth space and having a tooth inlet in fluidic communication with the tooth space and a tooth outlet in fluidic communication with the tooth space, the supplemental tooth being movably connected to the upper end of the cap for moving the supplemental tooth to an operating position and a storage position, the supplemental tooth extending a distance from the cap and the tooth inlet in the supplemental tooth being in fluidic communication with the supplemental reservoir outlet in the cap in the operating position of the supplemental tooth whereby liquid in the reservoir space is passable through the reservoir outlet and through the supplemental reservoir outlet and through the tooth inlet and through the tooth space and through the tooth outlet for dispensing liquid onto the individual's hair or scalp via the supplemental tooth, the tooth inlet in the supplemental tooth not being in fluidic communication with the reservoir space in the storage position of the supplemental tooth.

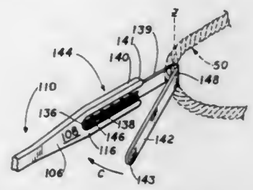
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5,311,888
ERGONOMIC MAKE-UP SHIELD
Mary E. Leigh, 604 Trotwood Ridge Rd., Pittsburgh, Pa. 15241
Filed Jul. 12, 1993, Ser. No. 91,423
Int. Cl.[5] A45D *40/30*
U.S. Cl. 132—319 11 Claims



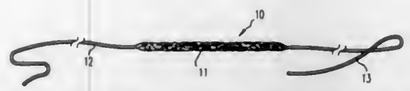
1. An ergonomic make-up shield comprising:
an eye portion having a curved smooth edge for engaging against a person's face adjacent to the eye; and
a handle portion integrally attached to the eye portion, said handle portion forming a solid closed planar surface extending from said eye portion, said eye portion essentially a concave triangle which tapers into the handle portion and said handle portion comprised of two folded curved tabs which abut in a parallel relationship.

5,311,889
DENTAL FLOSS & PRE-THREADED LEADER
Larry L. Ringle, Sacramento, and Ronald G. Lax, Grass Valley, both of Calif., assignors to CSM Patents, Inc., Sacramento, Calif.
Continuation-in-part of Ser. No. 712,405, Jun. 10, 1991, Pat. No. 5,183,063. This application Feb. 1, 1993, Ser. No. 12,658
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 33 Claims



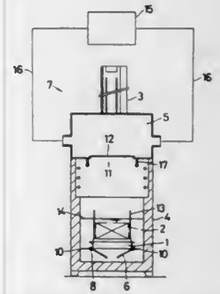
1. An integrally formed dental floss and leader for use with bridges, implants or other structures such as teeth and prosthodontic devices, comprising in combination:
a leader having a free end for threading into interproximal dental spaces and a tethered end which supports said floss, said tethered end including said floss tethered thereto,
said tethered end including a door means extending from said tethered end and connected to said tethered end through a hinge means,
said tethered end including a reinforcing means to support and receive said door, said reinforcing means including said tethered end having a plurality of shoulders extending therealong and a support channel extending therealong, said shoulders having a thickness not less than a thickness of said door means plus a thickness of said support channel, such that when said door means is adjacent said support channel, said door means does not extend above said shoulders, and
wherein said door means is pivotable about said hinge means and connectable to said tethered end with said floss captured between said door means and said tethered end.

5,311,890
TEETH CLEANING ELEMENT
Thomas F. Thornton, 43 Contentment Island Rd., Darien, Conn. 06820
Filed Mar. 5, 1993, Ser. No. 26,843
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—329 9 Claims



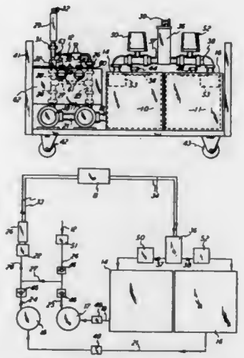
1. A teeth cleaning element for cleaning relatively large spaces in teeth comprising:
an elongated bundle from about 400 to about 800 individual filaments in which the filaments in a mid-portion of the length of the bundle are textured by being crimped and crinkled with the crimps and crinkles of the respective filaments being in contact with each other and adhered together at their points of contact, forming a bulky, cohesive, laterally and longitudinally resilient mass of the textured filaments, and in which the filaments in the end portions of the bundle extending outward from the bulky mid-portion are adhered together in compact, smooth, substantially parallel relation, said bundle being of from about 1,200 to about 2,400 denier.

5,311,891
SOLVENT RECOVERING SYSTEM FOR A CLEANING MACHINE
Masahide Uchino, Tokyo, Japan, assignor to Japan Field Company, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 505,388, Apr. 6, 1990, abandoned. This application Jan. 17, 1992, Ser. No. 821,881
Claims priority, application Japan, Apr. 11, 1989, 1-91140
Int. Cl.[5] B08B *3/06, 15/02*
U.S. Cl. 134—46 2 Claims



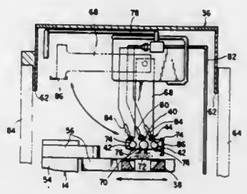
1. A solvent recovering system for recovering residual solvent from solvent-cleaned articles processed in a cleaning machine associate with said solvent recovering system comprising:
a treatment chamber connected to said cleaning machine;
isolating means for isolating said treatment chamber from said cleaning machine,
a cleaning table for supporting said solvent cleaned articles and moveable between said cleaning machine and said treatment chamber;
said isolating means comprising a pair of shafts rotatably supported at the opposite ends of the lower surface of the cleaning table, a pair of doors attached for swing motion respectively to the pair of shafts, a pair of arms attached respectively to the pair of shafts so as to extend outward of the cleaning table, and a pair of pressing members attached to a wall separating the treatment chamber and the cleaning machine at positions corresponding to the pair of arms, respectively, to press the arms to cause the pair of doors to swing on the pair of shafts and to close an opening formed in the wall of the treatment chamber to isolate the treatment chamber and the cleaning machine upon the cleaning table being moved to a predetermined location within the treatment chamber;
solvent recovering means for separating solvent from a gas containing vapor of the solvent; and
circulation means for continuously and repeatedly circulating a gas containing a vapor of the solvent between said treatment chamber and said solvent recovering means;
wherein gas containing vapor of the solvent is isolated from outside atmosphere and remains within the associated cleaning machine or solvent recovery system separate from gas external to said cleaning machine and said solvent recovering system.

5,311,892
APPARATUS FOR DISPENSING CLEANING FLUIDS TO AN OBJECT
Heinz E. Adelt, and Robert E. Weeks, both of Racine, Wis., assignors to Cyclotron, Inc., Racine, Wis.
Filed Dec. 3, 1992, Ser. No. 984,973
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—58 R 17 Claims



1. An apparatus for dispensing cleaning fluids to an object, at least two cleaning fluid supplies for said apparatus, a fluid-flow inlet line in respective fluid-flow communication with each of said supplies and being connectable to said object for the inlet flow of said fluids into said object, a fluid-flow outlet line in respective fluid-flow communication with each of said supplies and being connectable to said object for the outlet flow of said fluids from said object, a fluid-flow control valve respectively disposed in at least two of said outlet lines for controlling the flow of said fluids from said object and to said supplies and with said control valves being arranged to operationally open and close relative to fluid flow, the improvement comprising electrically powered means operatively associated with said control valve and being in at least said two of said outlet lines for operationally opening and closing said control valves in operational directions opposite to each other for the respective flow and blockage of the flow of fluids relative to said supplies, a fluid-flow one-way check valve respectively disposed in each of said inlet lines for blocking the flow of fluid in said inlet lines in the direction opposite said inlet flow into said object and thereby block the flow of fluid from said inlet lines and to said supplies before the fluid flows past said object, and an electric circuit, a fluid-flow electric pump electrically connected in said circuit and being in fluid flow communication with each of said supplies for respectively sequentially moving the fluids from said supplies through said inlet lines and said object and said outlet lines, for circulating said supplies through said apparatus in the sequence mentioned.

5,311,893
CLEANING APPARATUS
Mitsuo Nishi, Kurume, Japan, assignor to Tokyo Electron Limited, Tokyo and Tokyo Electron Saga Limited, Tosu, both of Japan
Division of Ser. No. 880,543, May 8, 1992, Pat. No. 5,265,632. This application Aug. 25, 1993, Ser. No. 111,473
Claims priority, application Japan, May 8, 1991, 3-131672; May 13, 1991, 3-135302
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—95.2 11 Claims



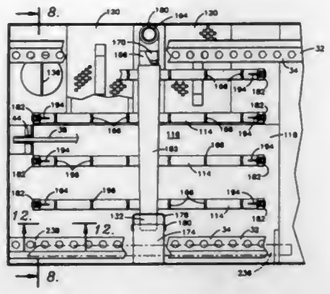
1. A cleaning apparatus comprising:
a cleaning unit having cleaning tubs in which cleaning liquid is contained;
means for carrying matters to be processed into and out of the cleaning unit and having matters-holding members;
a chamber in which the carrying means is housed; and
means located in an upper portion of the chamber to clean and dry the holding members of said carrying means, said cleaning and drying means including cleaning and drying nozzles through which cleaning liquid and dried air are jetted against the holding members of said carrying means.

5,311,894
DISHWASHING MACHINE AND METHOD
Russell L. Payzant, Olathe, Kans., assignor to TCA, Inc., Kansas City, Kans.
Division of Ser. No. 815,500, Dec. 30, 1991. This application Nov. 2, 1992, Ser. No. 970,158
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—200 3 Claims

1. In a dish washing machine, a spray arm construction comprising:
a spray arm having plural outlets for discharging washing liquid toward the dishes in a spray, said spray arm having an open inlet end and an end opposite the inlet end;
an end cap mounted on said spray arm for pivotal movement between an open position wherein the opposite end of the arm is exposed for cleaning and a closed position wherein the end cap closes said opposite end, said end cap remaining attached to the spray arm in both the open and closed positions; and
a latch pivotally mounted on said spray arm for pivoting in a single first direction to a latching position at which said latch engages said end cap and latches the end cap in said

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closed position, said latch pivoting in a single second direction, opposite to said first direction, to a releasing



position at which said latch disengages said end cap and releases said end cap to said open position.

5,311,895

COMBINATION OF A FUEL MANIFOLD AND A PLURALITY OF LIKE FUEL CONTROL DEVICES MOUNTED THERETO, A MANIFOLD FOR SUCH COMBINATION AND METHODS OF MAKING THE SAME

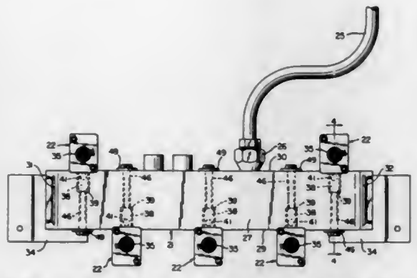
David D. Martin, Dunbar, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 914,800, Jul. 16, 1992, Pat. No. 5,232,007. This application May 19, 1993, Ser. No. 63,862

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] F16L *55/18*

U.S. Cl. 137—15 **18 Claims**



1. In a method of making a combination of a fuel manifold having a fuel receiving chamber therein and a plurality of like fuel control devices mounted to said manifold and having inlet projections extending into said manifold to receive fuel from said chamber thereof, said manifold having a pair of opposed spaced apart substantially flat front and rear walls and a pair of opposed spaced apart substantially flat side walls interconnecting said front and rear walls together, one of said side walls having a plurality of spaced apart openings therethrough and through which said inlet projections of said control devices respectively extend, the improvement comprising the step of forming said side walls to be spaced apart a distance that will permit two of said control devices to have said inlet projections thereof respectively extend through coaxially aligned openings in said side walls so that said two of said control devices can be respectively mounted to said manifold in coaxially aligned relation on opposite sides thereof.

5,311,896

METHOD FOR PRODUCING A HEATABLE AND REFRIGERABLE ELEMENT FOR A SYSTEM HANDLING SMALL QUANTITIES OF LIQUID, AND AN ELEMENT MANUFACTURED BY THE METHOD

Niilo Kaartinen, Vuolahti, SF-21620 Kuusisto, Finland

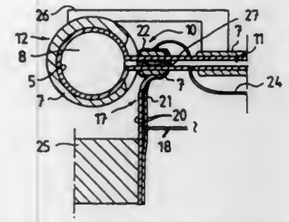
PCT No. PCT/FI90/00102, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO90/12350, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 10, 1990, Ser. No. 768,654

Claims priority, application Finland, Apr. 10, 1989, 891697

Int. Cl.[5] F16L *55/18;* **F15C** *1/04*

U.S. Cl. 137—15 **39 Claims**



1. A method for making an element that controls the flow of small amounts of liquid, said element having an inside liquid space and flow channels extending from said space, the method comprising the steps of:

providing a mould having an external shape that corresponds to the inside shape of said element;

depositing metallic materials having predetermined thermal conductivities over all exterior surfaces of the mould to form a shell having a plurality of locations wherein said shell has a predetermined high thermal conductivity and the areas of said shell that are adjacent to said locations are of a predetermined lower thermal conductivity;

extracting said mould from said shell so that said shell defines a liquid space and a plurality of flow channels extending from said liquid space; and

connecting said locations of said shell to a refrigerator and a heater to enable controlled cooling and heating of a liquid within said element at said locations.

5,311,897

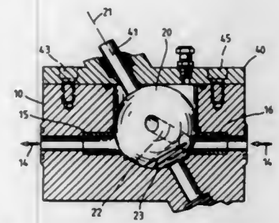
ROTARY CONTROL VALVE WITH OFFSET VARIABLE AREA ORIFICE AND BYPASS

Cecil B. Greer, Longview, Tex., assignor to Robert L. Cargill, Jr., Longview; J.J. Letesh Royalty Trust, Houston and H.M.G. Trust, Longview, all of Tex.

Filed Sep. 18, 1992, Ser. No. 947,713

Int. Cl.[5] F16L *55/18;* **F16K** *5/10*

U.S. Cl. 137—15 **19 Claims**



1. A method of controlling fluid flow and suppressing noise created in control, of the fluid flow comprising:

(a) providing a rotary control valve having a main housing defining a receptacle having a mina axis, an upstream flow port and a downstream flow port communicating with the receptacle at spaced points to define a flow-way therethrough disposed at an acute angle to the main axis, a bypass channel receptacle along the outer body of the main housing, upstream and downstream bypass channel ports communicating with the receptacle and the bypass channel receptacle to define a flow-way, and a stem port; a removable bypass channel housing that is shaped to fit the bypass channel receptacle defining a entrance port and an exit port communicating with the bypass channel receptacle ports and a bypass channel defining a flow-way; a silencing means disposed within the bypass channel housing; and a flow-control member rotatably disposed within the receptacle, the flow control member comprising:

(i) a control member shaped to fit the receptacle and having an axis of rotation coaxial with the main axis;

(ii) the control member defining an axial bore having an axis generally at an acute angle with respect to the axis of rotation, and the bore opening through the outer wall of the control member, whereby the opposite ends of the bore will be in register with the flow ports at the fully-open position of the control member;

(iii) an elongated orifice slot through the wall of the control member extending latitudinal around the control member and tapering away from the upstream bypass channel port in the main housing, the slots being defined by walls converging toward their trailing ends;

(iv) the control member having a non-slotted closure portion between the trailing end of the orifice slot and the adjacent end of the bore, the closure portion being adapted to close off the flow ports in the flow-way-closed position of the control member; and

(v) a stem;

(b) rotating the control member from the flow-way closed position until the elongated orifice slot permits flow of the desired amount of fluid from the upstream port to the tortuous path of the bypass channel; and

(c) suppressing the noise and diffusing the pressure drop across the valve by passing the controlled fluid flow through the bypass channel and its silencing means.

5,311,898

DASHPOT DAMPENED HIGH PRESSURE FLUID SHUTOFF VALVE

Julian S. Taylor, 8300 SW. 8th, Oklahoma City, Okla. 73128

Filed Sep. 27, 1993, Ser. No. 126,863

Int. Cl.[5] F16K *17/00*

U.S. Cl. 137—67 **6 Claims**

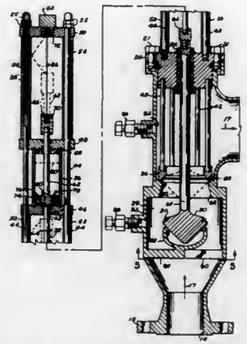
1. A high pressure fluid flow emergency shutoff valve, comprising:

a valve body having an inlet port and an outlet port forming a fluid passageway interposed in the flow line;

a valve seat intersecting the fluid passageway;

normally open valve means including a valve stem slidably supported by said body for movement of the valve means toward said valve seat and closing the fluid passageway;

axially collapsible pin means including a pin supported by said body in axial alignment with the valve stem for normally biasing said valve means toward a fluid passageway open position and releasing said valve means for seating on said valve seat in response to a predetermined value of fluid pressure in the fluid passageway; and,



valve movement dampening means including a dashpot interposed between said valve stem and said pin means.

5,311,899

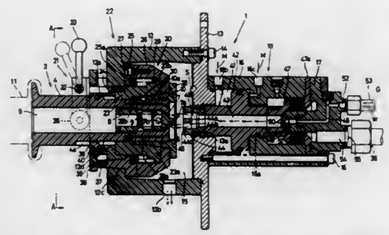
COUPLING DEVICE

Kazuhisa Isayama, Mizumakimachi; Norihiro Takasaki; Eiji Kariya, both of Kitakyushu, and Toshiyuki Fukumoto, Toyonaka, all of Japan, assignors to Mitsubishi Kasei Corporation; Mitsubishi Kasei Engineering Company and Nippon Pillar Packing Co., Ltd., all of Japan

Filed Feb. 24, 1993, Ser. No. 21,550

Int. Cl.[5] F16K *11/20*

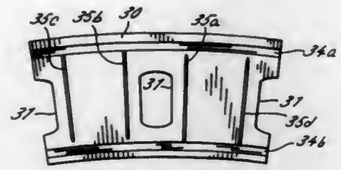
U.S. Cl. 137—240 **9 Claims**



1. In a coupling device comprising means for fixing a solution supplying male pipe, which is to be inserted into a cleaning chamber, adjacent and in opposite to a solution supplied female pipe which is arranged in the cleaning chamber, and means for moving the solution supplied female pipe in such a direction that it can be connected to the solution supplying male pipe, said coupling device further comprising a check valve arranged in that end portion of a solution passage in the male pipe which is located on the side of the female pipe; a valve pusher formed in that end portion of a solution passage in the female pipe which is located on the side of the male pipe to push the female pipe against the male one so as to cause the check valve to open the solution passage in the male pipe; a valve system arranged in the rear end portion of the solution passage in the female pipe; a cleaning liquid passage communicated with the solution passage in the female pipe to supply cleaning liquid through it; and a check valve arranged in the outlet of the cleaning liquid passage.

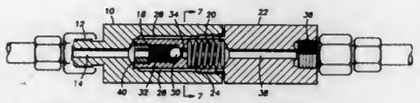
VOL 1162 ISS 3 MY 17 1994 UMI

5,311,900
LEAK RESISTANT PLUG VALVE
Steven C. Jankowski, Roscoe, Ill., assignor to Mueller Co., Decatur, Ill.
Continuation of Ser. No. 883,471, May 15, 1992, Pat. No. 5,232,009. This application May 17, 1993, Ser. No. 61,566
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] F16K *3/22*
U.S. Cl. 137—246 2 Claims



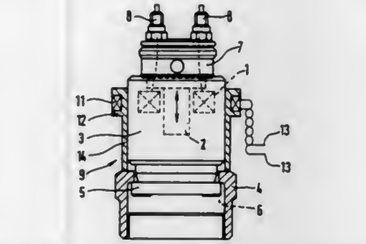
1. A plug valve controlling the flow of gas through a line, which valve comprises a body portion and a valve key, wherein
(a) said body portion comprises a bore and further comprises an inlet port and an outlet port which communicate with said bore;
(b) said valve key is mounted to rotate in said bore between open and closed positions connecting and disconnecting said inlet and outlet ports;
(c) said valve key comprises a first and second O-ring groove, an O-ring disposed in each said O-ring groove with said O-ring grooves being located at opposite ends of said valve key and at least one pair of grease channels, wherein said grease channels are disposed on the surface of said valve key; and
(d) each said grease channel is disconnected from at least one of said O-ring grooves but connected to the other said O-ring groove with each grease channel connected to a different O-ring groove.

5,311,901
PRESSURE INTERRUPTER DEVICE
Charles R. Ostrom, 11802 Boxhill, Houston, Tex. 77066
Filed Jun. 1, 1993, Ser. No. 69,421
Int. Cl.[5] F16K *17/18*
U.S. Cl. 137—493.3 7 Claims



1. A pressure interrupter device comprising:
(a) a body having an internal axial chamber, an inlet end and a first distal end with connecting threads, said chamber having at least one axial channel disposed near and spaced a distance from the inlet end of said chamber;
(b) a piston slidably disposed within the internal axial chamber of said body, further comprising:
(i) an internal axial channel and
(ii) a pressure sensitive valve disposed within said internal axial chamber for allowing fluid flow through said piston toward said inlet end, said piston closing said inlet and preventing communication between said inlet and said axial channel until said piston has moved said distance;
(c) an end cap having an internal axial channel an outlet end and a second distal end with a connecting threads, the second distal end connected to the connecting threads of the first distal end of said body; and
(d) a biasing spring disposed within the internal axial chamber of said body between said end cap and said piston, for biasing said piston in said internal axial chamber toward said inlet.

5,311,902
RECIPROCATING COMPRESSOR VALVE
Norbert W. Overfield, 20029 S. Center St., Corry, Pa. 16407
Continuation-in-part of Ser. No. 731,154, Jul. 2, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 973,210
Int. Cl.[5] F04B *21/02*
U.S. Cl. 137—512.1 10 Claims

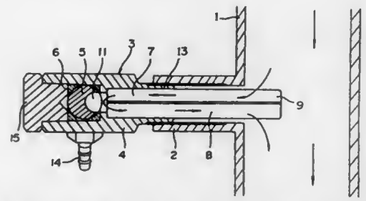


10. A positive displacement compressor means having a pressure actuated suction and/or discharge valve means, which comprises:
(a) a seat means having a passage for fluid flow;
(b) a flow control means for the fluid passage; and
(c) a seal means having a frusto-conical shape and held in alignment with the flow control means by a housing means, the sealing means providing a sealing engagement between the flow control means with the valve means in a closed position and wherein the flow control means has an area on its upstream side subject to upstream pressure and another area on its downstream side exposed to downstream pressure, said areas being substantially equal prior to valve opening.

5,311,903
APPARATUS FOR MEASURING THE MECHANICAL MOTION OF A MAGNET VALVE ARMATURE FOR CONTROLLING FUEL INJECTION IN A FUEL INJECTION SYSTEM
Philippe Poulin, St. Symphorien d'Ozon, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 23, 1992, Ser. No. 996,252
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142996
Int. Cl.[5] F16K *31/06*
U.S. Cl. 137—554 2 Claims

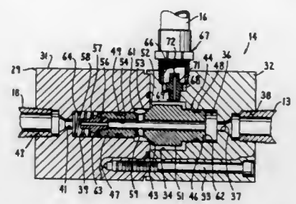
1. In an apparatus for measuring the mechanical motion of a magnet armature (2) of a magnet valve for controlling fuel injection in fuel injection systems, having a magnet coil (1) serving as a primary coil, by which the magnet armature is actuatable, and having a secondary coil (11) for measuring induction generated in the magnet coil (1) by a motion of the magnet armature after interruption of a flow of current through the magnet coil, and having an evaluation device for measuring a voltage generated in the secondary coil, the improvement comprising the magnet valve has a magnet valve housing (3) that in a region of the annularly embodied magnet coil (1) of the magnet valve is embodied cylindrically, the secondary coil (11) is disposed on a bush (9) that is slipped onto a cylindrical part of the magnet valve housing, said bush having a tubular portion (14) adapted to come to rest on a stop on the magnet valve housing, the tubular portion and the stop serving to define a position of the secondary coil (11) relative to the magnet coil (1), wherein said secondary coil surrounds said magnet coil in spaced relation thereto.

5,311,904
VALVE WITH FUNCTION TO PREVENT STAGNANTS WATER
Takashi Beppu, Saitama, Japan, assignor to Organo Corporation, Tokyo, Japan
Filed Jun. 16, 1993, Ser. No. 77,083
Claims priority, application Japan, Jun. 16, 1992, 4-047640[U]; Apr. 27, 1993, 5-122155
Int. Cl.[5] F16K *5/06*
U.S. Cl. 137—561 R 1 Claim



1. A valve provided for a branch pipe connected to a main pipe which has a function of preventing liquid flowing through a liquid flow passageway of said main pipe form stagnating within said branch pipe and said valve upon the closing of said valve, said valve comprising:
a valve case connected to an end portion of said branch pipe;
a flow passageway formed within said valve case through which said liquid flowing through said liquid flow passageway of said main pipe flows, a first end portion of said flow passageway extending into said liquid flow passageway of said main pipe;
a diversion member mounted within said valve case so as to divide said flow passageway into a plurality of chambers along a direction of liquid flow; and
a valve ball formed at a second end portion of said flow passageway and having an opening therethrough, said valve ball being rotatable into a first position and a second position such that when said valve ball is rotated into said first position, liquid flowing through said liquid flow passageway of said main pipe flows through a first chamber of said flow passageway in a first direction and through said opening to exit said valve, and when said valve ball is rotated into said second position, liquid flowing through said liquid flow passageway of said main pipe flows through said first chamber of said flow passageway in said first direction, through said opening, and back through a second chamber of said flow passageway in a direction opposite to said first direction so as to flow back into said liquid flow passageway of said main pipe, thereby continuously circulating said liquid and preventing stagnation thereof.

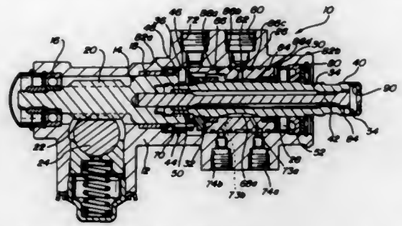
5,311,905
REMOTE DUMP AND SAFETY VALVE
Gerard J. De Santis, Battle Creek, Mich., assignor to Hytech Pumps International Inc., Bedford, Mich.
Filed Jan. 26, 1993, Ser. No. 9,465
Int. Cl.[5] G05D *16/00*
U.S. Cl. 137—613 22 Claims



1. A remote pressure sensitive dump valve, comprising:
means defining a housing having a first fluid port means thereon adapted for connection to a source of pressurized fluid, a second fluid port means thereon adapted for connection to a remotely controllable fluid control valve operable between a closed condition blocking fluid flow and an open condition allowing fluid flow, and a third fluid port means thereon intermediate said first and second fluid port means adapted for connection to a conduit for dumping fluid when said remote controllable fluid control valve is in the closed condition;
means defining a chamber in said housing connected in fluid circuit with said first, second and third fluid ports;
an elongated valve member provided in said chamber and sealed support means for supporting opposite longitudinal ends of said valve member for movement between first and second positions, said valve member having means defining a first passageway therethrough enabling fluid flow from said first fluid port to said second fluid port regardless of the position of said elongated valve member, said valve member further having a second passageway enabling fluid flow from said first fluid port to said third fluid port only when said elongated valve member is in said second position;
means defining a first annular valve seat in said chamber between said second and third fluid ports and oriented in plane that is perpendicular to a longitudinal axis of said elongated valve member;
means defining a second annular valve seat on said elongated valve member axially opposing said first annular valve seat, said second annular valve seat sealingly engaging said first annular valve seat when said valve member is in said first position and being spaced from said first annular valve seat when said valve member is in said second position; and
means between an end of said first passageway adjacent said second fluid port and said second passageway and within said first passageway that has a diameter smaller than a diameter of said first passageway for effecting a substantial fluid pressure drop between opposite ends of said first passageway means so that when the remotely controllable fluid control valve is open, fluid flow will occur through said first passageway means and said substantial pressure drop will occur to cause said valve member to be automatically urged to said first position, and when said remotely controllable fluid control valve is in the closed condition, fluid flows through said first passageway means unhalted to cause a sufficient pressure imbalance between the opposite ends of said valve member to effect an automatic movement of said valve member from said first position to said second position and a diverting of fluid to the third fluid port means.

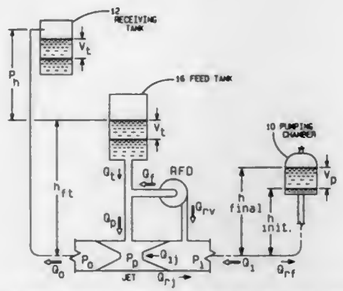
VOL 1162 ISS 3 MY 17 1994 UMI

5,311,906
PRELOAD MECHANISM FOR POWER STEERING APPARATUS
Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 828,659, Feb. 4, 1992. This application Jul. 31, 1992, Ser. No. 923,380
Int. Cl.[5] F15B *9/08*
U.S. Cl. 137—625.23 **9 Claims**



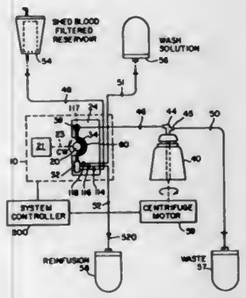
1. A rotary control valve comprising:
an input member adapted to receive input torque applied thereto, said input member having a first pair of spaced apart pins extending therefrom;
an output member having a second pair of spaced apart pins extending therefrom; and
a preload mechanism including tension spring for operable coupling said input member to said output member, said tension spring being partially compressed when in a neutral position where no torque is being applied to said input member, said tension spring having a pair of engagement portions, each engagement portion abutting one pin of said first and second pairs of spaced apart pins, said first pair of pins movable with respect to said second pair of pins whereby said tension spring is further compressed when input torque is applied to said input member.

5,311,907
VORTEX DIODE JET
Edward D. Houck, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 27, 1993, Ser. No. 67,914
Int. Cl.[5] F15C *1/16*
U.S. Cl. 137—810 **6 Claims**



1. A fluidic transfer system, having no moving parts, for transferring a liquid from a feed tank to a receiving tank comprising:
a. a jet ejector having an inlet, an outlet connecting by conduit means to the receiving tank, and a plenum, wherein the plenum is connected by a plenum conduit means to the feed tank;
b. a gas pressurized pumping chamber connecting by an inlet conduit means to the jet ejector inlet;
c. a vortex diode having an inlet connecting by a conduit means to the jet ejector inlet and a vortex diode outlet connecting by conduit means to the plenum conduit means, wherein applying a gas pressure to a liquid in the pumping chamber causes flow through the jet ejector, creating a flow into the jet ejector plenum from the feed tank, a combined flow going to the receiving tank, and wherein removing the gas pressure from the pumping chamber permits a reverse flow by gravity through the vortex diode to refill the pumping chamber.

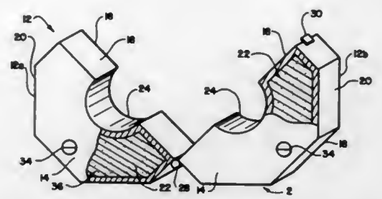
5,311,908
BLOOD PROCESSING METHOD AND APPARATUS WITH DISPOSABLE CASSETTE
David Barone; Russell Herrig, both of Sharon; Joseph M. Medberry, Seekonk; Paul M. Volpini, Quincy, and Joseph R. Plante, Ashland, all of Mass., assignors to Haemonetics Corporation, Braintree, Mass.
Continuation of Ser. No. 727,663, Jul. 9, 1991. This application Dec. 17, 1992, Ser. No. 992,057
Int. Cl.[5] B04B *11/00*; F16K *1/00*
U.S. Cl. 137—881 **23 Claims**



1. A blood-processing apparatus for providing failsafe control of fluid transfer between a primary tube and a plurality of secondary tubes with which the primary tube is in fluid communication, the apparatus comprising:
a cassette to which the secondary tubes are mounted, each secondary tube being mounted adjacent a closing surface;
a working surface to which the cassette is removably secured; and
a plurality of pinch valves each of which controls occlusion of one of the secondary tubes, the pinch valves being biased in a normally-closed position such that absent electrical power to the apparatus and with the cassette secured to the working surface, each pinch valve compresses a secondary tube against a closing surface to restrict fluid flow therethrough.

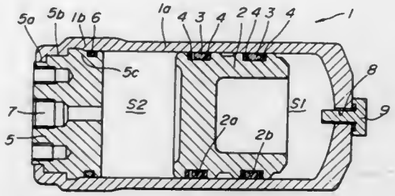
5,311,909
FLEXIBLE HOSE STABILIZING DEVICE
John R. Adcock, 1605 Stanolind, Midland, Tex. 79705
Continuation-in-part of Ser. No. 962,734, Oct. 19, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 43,754
Int. Cl.[5] A01G *25/09*
U.S. Cl. 137—899 **23 Claims**

1. Stabilizing device for a hose, comprising a body member including a pair of body portions each having spaced front, back, inner and outer wall portions, said body portions each having a complementary cutout portion adjacent said inner wall portion thereof which together define a hose receiving opening in said body member, means for pivotally connecting said pair of body portions together, such that said body member is selectively pivotable between an open condition, wherein the hose may be placed between said body portions, and a closed condition, wherein said hose is clampingly held therebetween in said hose receiving opening, and further



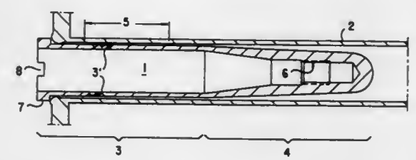
wherein at least one of said body portions includes an internal chamber therein and means for enabling said internal chamber thereof to receive and hold a ballast material therein, thereby providing weight for stabilizing the hose.

5,311,910
CAP ATTACHMENT STRUCTURE FOR ACCUMULATOR
Tadashi Hasegawa; Masanobu Miyazaki, and Haruya Oka, all of Saitama, Japan, assignors to Kabushiki Kaisha Showa Seisakusho, Gyoda, Japan
Filed Feb. 19, 1992, Ser. No. 838,497
Claims priority, application Japan, Feb. 20, 1991, 3-014289[U]; Feb. 20, 1991, 3-014291[U]
Int. Cl.[5] F16L *55/04*
U.S. Cl. 138—31 **9 Claims**



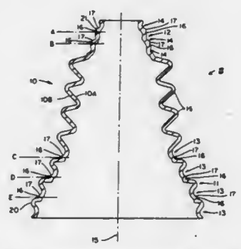
1. A cap attachment structure in a piston-type accumulator having a cylindrical outer case, a piston slidably fitted in the cylindrical outer case, a piston slidably fitted in the cylindrical outer case, and a cap mounted in an open end of the outer case, said cap having first and second opposite ends with said first end within said outer case and said second end external of said outer case, said cap having a periphery with first, second and third annular steps arranged, in that order, between said second and first ends, said first step having a diameter less than said second step and said second step having a diameter less than said third step, said cylindrical outer case being deformed by staking of said open end of the outer case onto said first and second steps of said cap wherein said cylindrical outer case has a first inwardly bent portion radially inwardly deformed on said second step of said cap and a second inwardly bent portion radially inwardly bent on said first step of said cap.

5,311,911
TUBE PLUG FOR CLOSING A DEFECTIVE HEAT EXCHANGER TUBE, METHOD FOR CLOSING A DEFECTIVE HEAT EXCHANGER TUBE AND METHOD FOR LOOSENING A TUBE PLUG
Peter Krausser, Fürth, and Alexander Hümmeler, Röttenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 683,577, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 443,597, Nov. 29, 1989, abandoned. This application May 18, 1992, Ser. No. 885,075
Claims priority, application PCT Int'l Appl., Nov. 29, 1988, PCT/DE88/00738
Int. Cl.[5] F16L *55/10*
U.S. Cl. 138—89 **16 Claims**



1. Tube plug for closing a defective heat exchanger tube, comprising a hollow conical portion having outer and inner surfaces and a closed free end, a hollow cylindrical portion having outer and inner surfaces merging smoothly with said outer and inner surfaces respectively of said hollow conical portion without an edge, said outer surface of said hollow cylindrical portion having an outside diameter being smaller than the inside diameter of the heat exchanger tube to be closed, said outer surface of said hollow cylindrical portion having a predeterminedly roughened region to be expanded into sealing contact with the inner surface of the heat exchanger tube, said roughened region having a peak-to-valley height of substantially between 0.05 and 0.2 mm, and means disposed in at least one of said portions for positioning and locking a pulling tool.

5,311,912
PROTECTIVE GAITERS FOR JOINTS
Philip F. Hayward, 47 Firbank, Euxton, Chorley, Lancashire, PR7 6HP, United Kingdom
Continuation of Ser. No. 886,127, May 20, 1992, abandoned, which is a continuation of Ser. No. 833,340, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 538,917, Jun. 14, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 90,708
Int. Cl.[5] F16J *15/50*
U.S. Cl. 138—121 **12 Claims**



1. In a protective gaiter to fit around a lubricated joint between first and second joint members, said gaiter comprising a generally frusto-conical flexible tubular body having axially located first and second end portions and an intermediate

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central portion, each with inner and outer surfaces, said first end portion being wider than said second end portion and both said end portions having a plurality of axially spaced annular fitting sections to receive fixing devices for sealing said inner surfaces of said first and second end portions respectively to the first and second joint members, the improvement wherein

A. said tubular body is formed with a substantially constant thickness throughout said first and second end portions and said central portion whereby said inner and outer surfaces are essentially and effectively equidistantly spaced throughout the axial length of said tubular body,

B. said central portion has axially displaced folds for enabling axial extension of said central portion, and

C. each of said annular fitting sections in one of said first and second end portions comprises an annular seating channel having a curved cross section and an axially juxtaposed fold positioned at the side of the seating channel which is nearer said central portion for enabling flexing of said end portions whereby said gaiter has substantial flexibility through said central portion and said end portions centrally of the fixing device.

5,311,913

DISPERSION PREPARATION METHOD

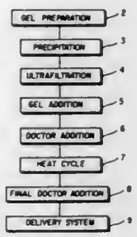
Daivd G. N. English, Rickmansworth, United Kingdom, and Raymond H. Glabach, Fort Collins, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1993, Ser. No. 83

Claims priority, application United Kingdom, Feb. 8, 1992, 9202697

Int. Cl.[5] B65B *3/28*

U.S. Cl. 141—1 **14 Claims**



1. A method for the preparation of a dispersion to be coated onto a photographic support characterized in that at least one vessel visits a plurality of preparation stations until a dispersion is prepared, the dispersion when prepared is stored for a period, and thereafter is supplied to an apparatus in which it is coated onto a photographic support, wherein the vessel visit to each preparation station is matched to the period of liquid preparation required at each preparation station.

5,311,914

ATTACHMENT FOR A PORTABLE ROUTER

Ase J. Stornetta, Walnut Creek, Calif., assignor to Ritter Manufacturing, Inc., Antioch, Calif.

Filed Apr. 14, 1993, Ser. No. 46,638

Int. Cl.[5] B27M *3/00*; **B27G** *19/00*

U.S. Cl. 144—372 **28 Claims**

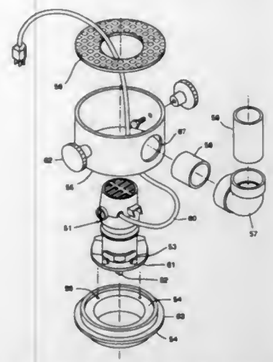
21. A method for cutting a pattern into a piece of wood using a router, the method comprising the steps of:

a. positioning a template around a piece of wood;

b. coupling a circular sub base to a base of a router, the circular sub base adapted to cooperatively interact with the template;

c. coupling a dust hood to the circular sub base and to the base of the router;

d. creating a vacuum inside the dust hood for removing chips and dust from around a router bit; and



e. guiding the router around the template using the sub base, to cut a pattern in the piece of wood.

5,311,915

TIRE TREAD AND TIRE HAVING MARKING TO FACILITATE REMOVAL OF TREAD FOR RECAPPING

Hubert Dugas, Riom, France, assignor to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Cedex, France

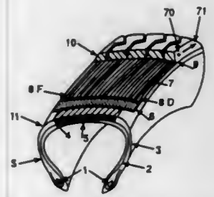
Division of Ser. No. 879,595, May 7, 1992, Pat. No. 5,226,999.

This application Mar. 5, 1993, Ser. No. 26,852

Claims priority, application France, May 23, 1991, 06255

Int. Cl.[5] B60C *9/22*

U.S. Cl. 152—209 R **8 Claims**



1. A tire having a crown reinforcement which comprises a spirally wound zero-degree cord over the entire width of said crown, characterized by the fact that the position of at least one of the ends of said cord which is arranged at zero degree is marked on at least one shoulder of the tire.

5,311,916

WHEEL RIM WELL SAFETY DEVICE

Richard L. Fuller, Massillon, Ohio, assignor to Standards Testing Laboratories, Inc., Massillon, Ohio

Filed Jan. 29, 1992, Ser. No. 827,748

Int. Cl.[5] B60B *25/00*

U.S. Cl. 152—381.6 **12 Claims**

1. In a tire and wheel rim combination wherein said wheel rim has, when viewed in axial cross section, a pair of rim bead seating surfaces for receiving beads of the tire; a pair of radially outwardly extending wheel rim flanges at the axial outer ends of the rim bead seating surfaces for limiting axial outward movement of the tire beads; a well portion located in the axial central portion of said rim cross section, said well portion being of a smaller diameter than the diameter of said rim bead seating surfaces;

said tire having a carcass with a pair of tire beads, each bead having a circular bead seat of a carefully selected diameter to correspond with said rim bead seating surfaces such that, when mounted, the tire bead seats will snugly fit on the rim bead seating surfaces so as to mount the tire securely on said rim,

wherein the improvement comprises:

means to prevent the incorrect mounting of a tire of an improper bead seating diameter which is smaller than said carefully selected diameter, said means comprising a substantially annular filler means mountable in said well portion for increasing the diameter thereof to a point where that diameter generally corresponds to the diameter of said carefully selected diameter so that when a tire is mounted by placing one portion of its bead into said well while the diametric opposite portion of said tire bead is forced over the rim flange, only a tire having a correct bead seating diameter of at least said carefully selected diameter will be able to pass over said flange and a tire with a bead seating diameter of less than said carefully selected diameter cannot pass over said flange.

5,311,917

PNEUMATIC RADIAL TIRES WITH CORE-SHEATH STEEL BELT CORDS

Kiyoshi Ikehara, Chofu, and Kiyohito Kawasaki, Akigawa, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

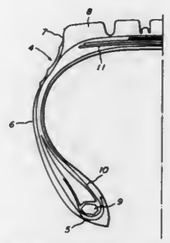
Filed May 18, 1990, Ser. No. 525,353

Claims priority, application Japan, May 22, 1989, 1-126684

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] B60C *9/18, 9/20*

U.S. Cl. 152—527 **3 Claims**



1. A pneumatic radial tire comprising a carcass ply containing cords arranged substantially in a radial direction of the tire and a belt superimposed about said carcass ply and comprised of plural belt layers each containing steel cords arranged at a cord angle of 5°–20° with respect to an equator of the tire, characterized in that:

(a) said steel cord has a two-layer structure comprising a core composed of two steel filaments and a single sheath surrounding said core and composed of 8 steel filaments, in which a twisting direction of said core is the same as a twisting direction of said sheath, and satisfies the following relationships:

$0.22 \leqq Dc \leqq 0.44$ (mm),

$0.22 \leqq Ds \leqq 0.50$ (mm),

$12 \leqq Ps \leqq 22$ (mm),

$1.0 \leqq Ps/Pc \leqq 4.0$

wherein Dc is a diameter of steel filament in the core, Pc is a twisting pitch of the core, Ds is a diameter of steel filament in the sheath and Ps is a twisting pitch of the sheath;

(b) said steel cord has a bending rigidity B of not less than 100 kg.mm^2 calculated from the following equation:

$$B = 1.3 \times \Sigma_i B_i = 1.3 \times \Sigma_i (\pi D_i^4/64) \times 20{,}000$$

wherein B_i is a bending rigidity of each steel filament and D_i is a diameter of each steel filament:

(c) said steel cord has a breaking load S (kgf) satisfying the following relationship:

$$S \geqq 110 \times (0.6 + D)$$

wherein D is a diameter of steel cord;

(d) said steel cords are arranged so that a distance G between adjoining cords is within a range of 0.6–2.0 mm in said belt layer; and

(e) said steel cord satisfies the following relationship:

$Ds/Dc \leqq 0.9$.

5,311,918

MOLD FOR AND METHOD OF CASTING VEHICLE WHEELS

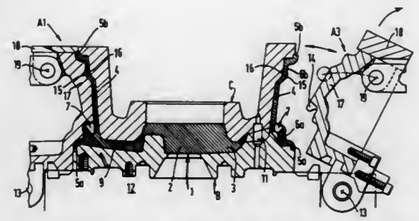
Roy Scott, Maidstone, United Kingdom, assignor to Alloy Wheels International Ltd., Rochester, United Kingdom

Filed Nov. 30, 1992, Ser. No. 982,887

Claims priority, application United Kingdom, Nov. 29, 1991, 9125524

Int. Cl.[5] B22D *17/22, 18/06*; **B22C** *9/28*

U.S. Cl. 164—63 **7 Claims**



1. A casting mold for casting a cast vehicle wheel having a central disc, said casting mold comprising:

a tire rim profile block including a plurality of segments,

a styling face block located at a base of the mold;

an inside profile block,

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means for locating said blocks in relation to one another to form a mold cavity defining the wheel to be cast, the mold cavity being located at the base of the mold,

the tire rim profile block having a substantially annular portion shaped to define a substantially under-cut annular recess in the cast vehicle wheel, said recess being on the underside of a tire bead seating surface in the cast vehicle wheel, and being substantially coplanar with respect to the mold cavity defining the central disc of the wheel,

a support member,

means for pivotally connecting the tire rim profile block segments to said support member at hinge points to enable said tire rim profile block segments to be hinged between an open inoperative position and a closed operative position where said segments together with said other blocks define said mold cavity, the hinge points being located immediately below the styling face block so as to enable said substantially annular portion to be extracted from the under-cut annular recess formed thereby without fouling the material of the cast vehicle wheel adjacent said recess.

4. A method of manufacturing a cast metal wheel having an outer rim surface and a central disc, which comprises the steps of:

a) forming a casting mold including a tire rim profile block comprising a plurality of segments, a styling face block located at a base of the mold, an inside profile block, means for locating said blocks in relation to one another to form a mold cavity defining the wheel to be cast, the tire rim profile block having a substantially annular portion shaped to define a substantially under-cut annular recess in the cast vehicle wheel, said recess being on the underside of a tire bead seating surface in the cast vehicle wheel, and being substantially coplanar with respect to the mold cavity defining the central disc of the wheel, a support member, means for hinging the tire rim profile block segments to said support member at hinge points to enable said tire rim profile block segments to be hinged between an open inoperative position and a closed operative position where said segments together with said other blocks define said mold cavity, the hinge points being located immediately below the styling face block so as to enable said substantially annular portion to be extracted from the under-cut annular recess formed thereby without fouling the material of the cast vehicle wheel adjacent the said recess;

b) introducing molten metal into the said mold cavity;

c) allowing the molten metal to cool and set;

d) hingedly moving the said segments forming the tire rim profile block substantially radially away from the cast vehicle wheel to expose the outer rim surface of the cast vehicle wheel;

e) removing in a substantially axial direction one of the styling face block and the inside profile block; and

f) extracting the cast vehicle wheel from the remaining mold block.

5,311,919

METHOD OF FORMING A METAL MATRIX COMPOSITE BODY BY A SPONTANEOUS INFILTRATION TECHNIQUE

Michael K. Aghajanian, Bel Air, Md., and Alan S. Nagelberg, Wilmington, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 702,802, May 20, 1991, Pat. No. 5,172,747, which is a continuation of Ser. No. 269,377, Nov. 10, 1988, Pat. No. 5,016,703. This application Dec. 21, 1992, Ser. No. 994,243

The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.

Int. Cl.[5] B22D *19/14*

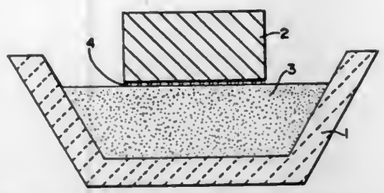
U.S. Cl. 164—97 **20 Claims**

1. A method for forming a metal matrix composite body comprising:

providing a permeable mass comprising at least one material selected from the group consisting of a substantially non-reactive filler material and a preform comprising a substantially non-reactive filler;

providing a source of matrix metal;

defining at least a portion of a surface boundary of the permeable mass with a barrier;



providing at least one of an infiltration enhancer and an infiltration enhancer precursor to at least a portion of an interface between said matrix metal source and said permeable mass;

heating said matrix metal to render it molten; and

spontaneously infiltrating at least a portion of said permeable mass with molten matrix metal such that said molten matrix metal contacts at least a portion of said barrier.

5,311,920

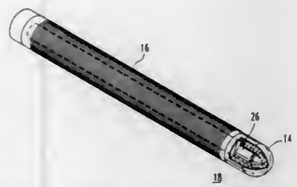
METHOD OF FORMING A METAL MATRIX COMPONENT WITH INTERNAL AND EXTERNAL STRUCTURES

Arnold J. Cook, 372 N. Craig St., Pittsburgh, Pa. 15213

Continuation of Ser. No. 737,493, Jul. 29, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,932

Int. Cl.[5] B22D *19/02, 19/14*

U.S. Cl. 164—97 **31 Claims**



1. A method of forming a metal matrix composite comprising the steps of:

combining at least one insert with reinforcement material;

orienting the insert with reinforcement material within a mold chamber of a closed mold; and

infiltrating the mold chamber with liquid metal such that the reinforcement material around the insert is infiltrated and the insert is completely encased within the metal.

5,311,921

DEVICE FOR THE CONTINUOUS ADDITION OF CASTING AUXILIARIES ONTO THE SURFACE OF A MELT IN A CONTINUOUS-CASTING MOLD

Hans-Friedrich Smets, Meerbusch-Lank, Fed. Rep. of Germany, assignor to Intocast GmbH Feuerfestprodukte und Giesshilfsmittel, Ratingen, Fed. Rep. of Germany

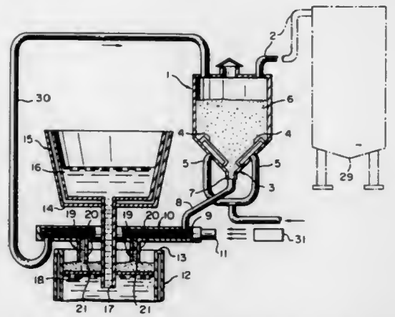
PCT No. PCT/DE91/00398, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/00819, PCT Pub. Date Jan. 23, 1992

PCT Filed May 17, 1991, Ser. No. 966,058

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1990, 4022117

Int. Cl.[5] B22D *11/10*

U.S. Cl. 164—268 **5 Claims**



1. A device for the continuous addition of casting auxiliary in powder form onto a bath surface of a melt, the device comprising:

a continuous-casting mold containing the melt, the continuous-casting mold having a top surface;

a tundish having a bottom surface;

a screw conveyer disposed between the top surface of the continuous-casting mold and the bottom surface of the tundish;

a supply tank having the casting auxiliary therein, the supply tank being connected to the screw conveyer to allow the casting auxiliary to pass from the supply tank into the screw conveyer;

a plurality of removal shafts in communication with an interior of the screw conveyer, each of the plurality of removal shafts having a lower end which is located a predetermined distance above the bath surface; and

a return line connecting an end of the screw conveyer to the supply tank;

wherein said screw conveyer receives the casting auxiliary from the supply tank and conveys the casting auxiliary through the interior of the screw conveyer such that at each of the plurality of removal shafts a portion of the casting auxiliary passes therethrough and exits from the lower end of each of the plurality of removal shafts onto the bath surface, and the casting auxiliary which does not pass through the plurality of removal shafts is returned to the supply tank via the return line;

wherein the predetermined distance ensures that the portion of casting auxiliary removed at each of the plurality of removal shafts is self-regulated by a chicken feeding principle, and a capacity of the screw conveyer to convey the casting auxiliary is at least twice as large as a capacity of all of the plurality of removal shafts to remove the casting auxiliary from the screw conveyer.

5,311,922

MOLD FOR CONTINUOUSLY CASTING STEEL STRIP

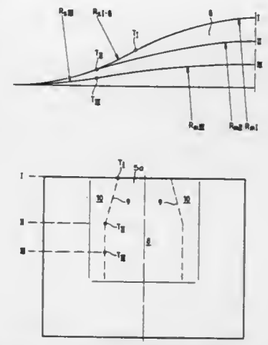
Hans Streubel, Erkrath, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 13, 1993, Ser. No. 3,552

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1992, 4201363

Int. Cl.[5] B22D *11/04*

U.S. Cl. 164—418 **2 Claims**



1. In a continuous-casting mold for strip steel wherein relatively long side walls have inner surfaces bridged by and forming an upwardly open passage with relatively short end walls, and wherein each side wall has starting at an upper edge an inwardly open recess having an inwardly concave central portion joined at respective upright lines with a pair of flanking inwardly convex side portions, each of said side portions has an outer portion joined at respective upright lines with said central portion, the portions having respective radii of curvature, the improvement wherein:

the radius of curvature of the central portion increases continuously from the upper edge to a straight line at a lower edge of the respective recess, and

the radius of curvature of each outer portion is substantially constant within at least 100 mm of the upper edge of the respective side wall.

5,311,923

SUPPORTING AND FASTENING MEANS FOR MOLD BLOCKS IN A CONTINUOUS BLOCK CASTER

John W. Cobes, Lower Burrell; S. John Pien, Export, and Larry W. Cisko, Irwin, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 4, 1991, Ser. No. 787,618

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—430 **11 Claims**

10. In a continuous block caster for casting molten metal in a moving mold cavity defined by opposed casting faces of mold blocks in mold block assemblies carried by carriage blocks in upper and lower casting trains of said block caster, wherein each of said mold block assemblies is mounted with plural mounting units to a carriage block, and each said mounting unit comprises a supporting means connected to a fastening means attached to said carriage block, the improvement comprising,

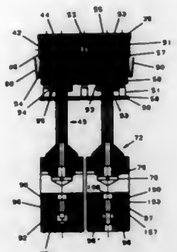
said fastening means include plural slide members and a single fixed fastening member,

said fixed fastening member is fixedly secured to the center of said carriage block, and

said slide members are secured to said carriage block on either side of said fixed fastening member, said slide mem-

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bers include a row of y-slides movable to-and-fro along the y-axis, and a row of x-y slides movable in the x-y plane, each row of said slides being interchangeably disposed in



fore and aft rows above the transverse sides of the non-casting face of said mold block, and said fixed fastening member is centrally disposed in a row of y slides which are oppositely disposed relative to a row of x-y slides.

5,311,924

MOLTEN METAL LEVEL CONTROL METHOD AND DEVICE FOR CONTINUOUS CASTING

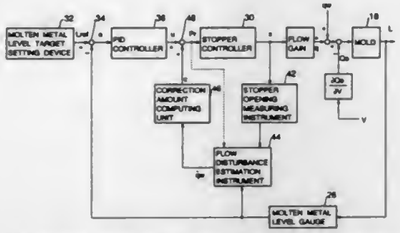
Kazuya Asano; Takayuki Kaji; Kazuo Arai; Shuji Tanaka; Michio Ibaraki; Yuki Nabeshima; Hiromitsu Yamanaka; Masaki Takashi; Saburo Moriwaki; Mototatsu Sugizawa; Hiroshi Nomura, and Masayuki Onishi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

PCT No. PCT/JP91/01210, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993

PCT Filed Sep. 12, 1991, Ser. No. 30,149

Int. Cl.[5] B22C *19/04*

U.S. Cl. 164—453 **13 Claims**



1. A molten metal level control method for continuous casting so that during continuous casting of ingots by a continuous casting machine, which is equipped with a flow control actuator used to control input flow of molten metal into a mold, said molten metal level control method comprises the steps of:

estimating flow fluctuations caused by disturbances of the molten metal flowing into or out of the mold on the basis of at least a measured value of the molten metal level and a measured value of position of said flow control actuator or a command value for the position of said flow control actuator from among group consisting of the measured value of the molten metal level in the mold, the measured value of the position of the flow control actuator or the command value for the position of the flow control actuator and a measured value of the casting speed,

determining operation amount of said flow control actuator necessary to counterbalance the estimated flow fluctuation (disturbance), and

operating said flow control actuator on the basis of the determined operation amount.

5,311,925

MAGNESIUM HYDROXIDE TO PREVENT CORROSION CAUSED BY WATER SPRAY IN CONTINUOUS CASTING

George B. Waltman, Naperville, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 12, 1993, Ser. No. 150,313

Int. Cl.[5] B22D *11/04, 11/24*

U.S. Cl. 164—486 **7 Claims**

1. An improved process for reducing the corrosion of ferrous metal equipment in a continuous casting operation comprising spraying a cast steel product with water, collecting the water in a scale pit and recycling the water, the improvement comprising adding an effective amount of an aqueous slurry of magnesium hydroxide to the collected water to maintain the pH of the water between 8.5 to 9.5 prior to recycling.

5,311,926

Patent Not Issued For This Number

5,311,927

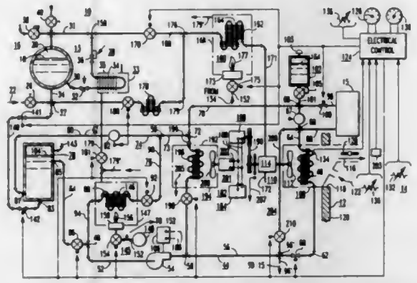
AIR CONDITIONING AND REFRIGERATION APPARATUS UTILIZING A CRYOGEN

David H. Taylor, Minneapolis; Herman H. Viegas, Bloomington, both of Minn., and Roland L. Roehrich, Pittsburgh, Pa., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Nov. 27, 1992, Ser. No. 982,370

Int. Cl.[5] F25B *29/00*

U.S. Cl. 165—64 **15 Claims**



1. A refrigeration system associated with a conditioned space to be controlled to a predetermined set point temperature via heating and cooling cycles, with the refrigeration system including heating means and cryogenic cooling means which includes a supply vessel containing a cryogen, the improvement comprising:

a slush tank,

expansion means connecting the supply vessel and said slush tank,

a fluid flow path which includes said slush tank,

a predetermined secondary liquid in said fluid flow path and said slush tank,

said expansion means expanding cryogen directly into the secondary liquid of said slush tank, forming a slush mixture of cryogen and secondary liquid,

first and second heat exchanger means in said fluid flow path,

said first heat exchanger means being disposed to condition the conditioned space,

said second heat exchanger means being in heat exchange relation with the heating means,

means configuring the fluid flow path to interconnect the first heat exchanger means and said slush tank when the conditioned space requires a cooling cycle,

means configuring the fluid flow path to interconnect the first and second heat exchanger means when the conditioned space requires a heating cycle,

and means for circulating said secondary liquid through said first heat exchanger means during cooling and heating cycles.

5,311,928

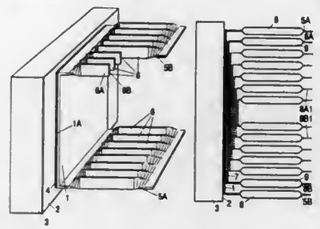
HEAT DISSIPATOR

Louis L. Marton, 401 Shirley Pl. No. 105, Beverly Hills, Calif. 90212

Filed Jun. 28, 1993, Ser. No. 83,940

Int. Cl.[5] F28F *7/00*

U.S. Cl. 165—80.3 **12 Claims**



1. A heat dissipator for electronic component means of the type having at least one heat transfer surface exposed to a flow of gaseous or liquid cooling medium, said dissipator comprising:

at least one layer of highly heat conductive material having a contact surface in heat conductive relationship with and connected to at least one of said transfer surfaces for receiving heat from said component means,

said layer including at least one extension means extending beyond said contact surface disposed in a first plane away from said transfer surface and comprising a louver-like structure for transferring heat between said contact surface and said cooling medium,

said louver-like structure comprising a multiplicity of substantially parallel fin means defining an axis of orientation parallel to their longitudinal dimension and a central axis for each fin means extending through the center of each, substantially parallel to said axis of orientation,

said fin means created by subdividing at least one portion of said extension means along substantially parallel lines and by rotating each of said fin means on its central axis into an angular deviation of less than 90 degrees with reference to said first plane, said fin means having two substantially parallel main surfaces on opposed sides, two edge surfaces at a leading and a trailing edge with reference to the flow of said cooling medium, the distance between central axes of adjacent fin means being equal to a width of the main surface of said fin means, the rotation of said fin means opening up gaps in said louver-like structure between main surfaces of adjacent fin means to allow better access to fresh cooling medium flowing through said gaps and exposing said fins means to said flow on both of their main surfaces and at least one edge surface, to increase the engagement of said fin means with said cooling medium for achieving optimum heat transfer between said fin means and said cooling medium.

5,311,929

HEAT EXCHANGER FOR DUSTY ENVIRONMENT

Normand Verret, 68 P'Tiso Park, Edmundston, N. B. E3V 3X7, Canada

Filed Jul. 20, 1993, Ser. No. 93,663

Int. Cl.[5] F28G *1/08*

U.S. Cl. 165—95 **9 Claims**

1. A heat exchanger for air comprising;

a bank of tubes through which warm air is blown,

a casing with baffles, enclosing said bank of tubes such that fresh air to be heated is forced between all said tubes in two or more successive passes,

a plurality of cones equally spaced on a rod inside each said tube,

a plurality of collapsible tube scrapers, each said scraper being mounted on said rod, next to each said cone,

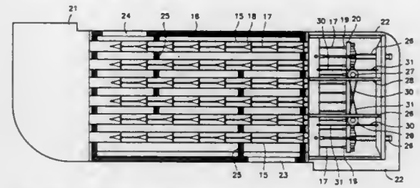
a pull frame connecting all said rods, and

a pull frame reciprocating means, having a reciprocating stroke length slightly longer than said spacing of said cones,

said collapsible tube scraper comprising,

a pivot disc having four sockets, extending radially from said rod, and being spaced at 90° apart, and

four wires having each



a stem pivotally retained within each said socket,

a sharp bend next to said stem

a scraping portion formed according to the curvature of one-quarter of the circumference of said tube, and

a tail end making an obtuse angle with said scraping portion,

each said wire being installed in said pivot disc such that each said tail end intersects with said sharp bend of said adjacent wire when said scraper is being pulled in the scraping direction.

5,311,930

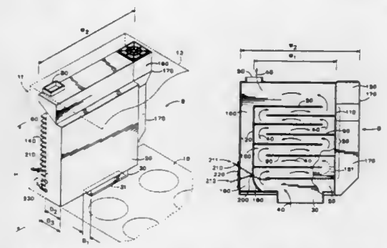
HEAT RECLAMATION DEVICE

Paul R. Bruenn, P.O. Box 917749, Longwood, Fla. 32791

Filed Nov. 17, 1992, Ser. No. 978,096

Int. Cl.[5] F28F *27/02*; F24C *15/24*

U.S. Cl. 165—102 **14 Claims**



1. A heat reclamation device for reclaiming waste heat from the exhaust outlet of an appliance to warm ambient air, comprising:

(a) enclosed baffle means, having a top, a bottom, a back wall, a device exhaust inlet disposed at the bottom for connection to an exhaust outlet of said appliance, and a device exhaust outlet disposed at the top, for guiding exhaust gas from said exhaust outlet of said appliance to said device exhaust outlet;

(b) guidance means, disposed within said baffle means and extending laterally with respect to said back wall, for guiding said exhaust gas over a circuitous path within said baffle means so as to increase the surface area within said baffle means in contact with said exhaust gas; and

(c) fin means, disposed on said back wall outside said baffle means, extending laterally from said back wall and being in thermal communication with said exhaust gas within

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said baffle means, for transferring heat from said exhaust gas within said baffle means to said fin means and transferring said heat from said fin means to the surrounding air.

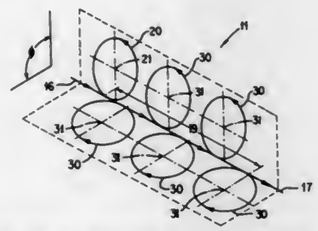
5,311,931
MIST SUPERCOOLING OF A HEATED SURFACE
Richard S. L. Lee, St. James, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.
Filed Dec. 27, 1991, Ser. No. 815,282
Int. Cl.[5] F28F *13/12, 25/06*
U.S. Cl. 165—109.1 **12 Claims**



1. A method for the cooling of a non-planar surface having at least one cavity which comprises:
(a) contacting a mist to said surface at a droplet size, liquid mass concentration, velocity and direction to effectively provide a non-pulsed flow at said surface sufficient to form a coolant film on said surface such that at least one vortex is formed within said cavity and said film evaporates from an outside surface of the film thereby cooling said surface.

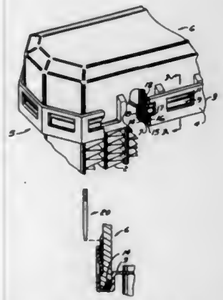
11. A method for the cooling of a non-planar surface having at least one cavity which comprises:
(a) contacting a mist to said surface at a droplet size, liquid mass concentration and velocity sufficient to form a coolant film on said surface such that at least one vortex is formed within said cavity and said film evaporates from an outside surface of the film thereby cooling said surface; and
wherein said mist consists of droplets ranging in size from about 18 to about 120 μm.

5,311,932
PROCESS AND APPARATUS FOR ENHANCING IN-TUBE HEAT TRANSFER BY CHAOTIC MIXING
Mihir Sen, South Bend, and Hsueh-Chia Chang, Granger, both of Ind., assignors to Gas Research Institute, Chicago, Ill.
Filed Jan. 5, 1992, Ser. No. 894,842
Int. Cl.[5] F28F *13/12*
U.S. Cl. 165—109.1 **10 Claims**



1. A process for enhancing in-tube heat transfer within a tubular member, comprising:
(a) introducing a fluid into the tubular member;
(b) directing the fluid in a downstream direction through a first coil of the tubular member, said first coil being at a first coil axis;
(c) further directing the fluid in the downstream direction, with respect to the first coil, through a plurality of downstream coils, a corresponding downstream coil axis of each of said downstream coils being rotated at an angle with respect to the coil axis of an immediately upstream coil thereby establishing chaotic flow of the fluid within the tubular member wherein the chaotic flowing fluid has a positive Lyapunov exponent;
(d) maintaining the fluid at a chaotic flow level within at least a portion of said downstream coils thereby increasing an in-tube heat transfer efficiency; and
(e) discharging the fluid from the tubular member.

5,311,933
CONNECTION OF TANK TO CORE FOR HEAT EXCHANGER
Lanny R. Lee, 926 Essex Rd., Westbrook, Conn. 06498
Filed Jan. 21, 1993, Ser. No. 7,250
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—149 **10 Claims**

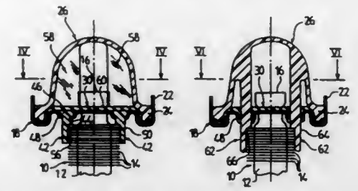


1. A heat exchanger having a stiff shear over compression connection for securing a tank to a header plate and a separation tool to effect release of said tank from said header plate, said heat exchanger comprising:
the tank having a peripheral flange with a top shoulder and a bottom rim;
the header plate having an open ended peripheral groove with a bottom, a location shoulder and an upstanding wall extending about the agroove;
the upstanding wall having a plurality of apertures spaced longitudinally thereon, each aperture including a spring dog having an offset with an edge portion, said offset being directed downwardly and inwardly toward said groove;
a gasket disposed in said groove bottom and enclosed by said tank bottom rim;
whereby an interference fit between said tank top shoulder and said spring dog provides a clamped connection between the tank and header plate.

5,311,934
HEAT EXCHANGER OF THE TYPE COMPRISING A FINNED TUBE BUNDLE AND A HEADER COMPRISING A HEADER PLATE AND A HEADER CASING
Michel Potier, Rambouillet, France, assignor to Valeo Thermique Moteur, Le Mesnil-St. Denis, France
Filed Apr. 20, 1993, Ser. No. 50,541
Claims priority, application France, Apr. 21, 1992, 92 04860
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—149 **7 Claims**

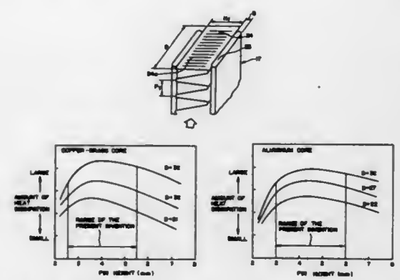
1. A heat exchanger comprising a bundle of tubes, each with an end portion; fins carried by the said tubes; and a header comprising a header casing having an open side and a header plate closing the said open side to define an enclosed header

space between them, the header plate being formed with holes, the said end portions of the tubes being sealingly fitted in the said holes; and further including at least one immobilising element extending through the header plate and beyond the latter on the opposite side thereof from the header casing, in a direction parallel to the longitudinal direction of the tubes, the header plate having at least one through aperture with each said immobilising element passing through a said aperture, and



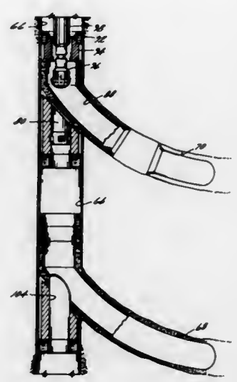
the heat exchanger further including means sealing the said at least one aperture from the header space, each immobilising element including an extension, the fins including a group of several fins adjacent to the header plate with said group defining opposed longitudinal sides of the group of fins, and with the said extensions of the immobilising elements bearing on the said longitudinal sides, whereby to constitute immobilising means for opposing any relative displacement of the tube bundle with respect to the header plate.

5,311,935
CORRUGATED FIN TYPE HEAT EXCHANGER
Michiyasu Yamamoto, Chiryu, and Mikio Fukuoka, Bisai, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 15, 1993, Ser. No. 2,832
Claims priority, application Japan, Jan. 17, 1992, 4-006524
Int. Cl.[5] F28D *1/053*
U.S. Cl. 165—152 **9 Claims**



1. A corrugated fin type heater core for an automotive air conditioner, comprising:
an inlet tank for receiving a fluid to be cooled;
a plurality of flat tubes through which the fluid flows;
a corrugated fin thermally connected to said flat tubes and cooperating with said flat tubes to radiate a heat of the fluid; and
an outlet tank for collecting the fluid from said flat tubes and discharging the fluid therefrom,
said flat tube having a cross section elongated in a direction parallel to the direction in which air flows thereto,
said corrugated fin including a group of louvers angled in the direction in which the air is introduced, and
said corrugated fin having a height Hf within the range of between 2.5 mm and less than 5.0 mm.

5,311,936
METHOD AND APPARATUS FOR ISOLATING ONE HORIZONTAL PRODUCTION ZONE IN A MULTILATERAL WELL
Robert J. McNair, The Woodlands; Mark W. Brockman, Cypress; L. Cameron White, Houston; Jeffrey D. Cockrell, Pearland; Alfred R. Curington, The Woodlands, and Daniel S. Bangert, Kingwood, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Aug. 7, 1992, Ser. No. 926,451
Int. Cl.[5] E21B *43/14;*
U.S. Cl. 166—50 **28 Claims**



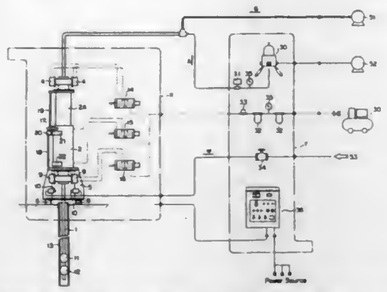
1. Apparatus for selectively controlling fluid flow when producing fluids from a primary borehole having at least two branch boreholes in flow communication with said primary borehole, comprising:
flow control means for selectively establishing fluid communication between at least one of said branch boreholes and said primary borehole and selectively preventing fluid communication between at least one of said branch boreholes and said primary boreholes;
operating means for selectively operating said flow control means; and
wherein said flow control means comprises;
guide means in said primary borehole, said guide means being defined by at least one housing positioned at a location proximate to the intersection between a primary borehole and a selected branch borehole previously formed or to be formed, said housing having at least one upper passageway and at least a first and second lower passageway, said first lower passageway being associated with diverter means attached to said guide means; and
said selected branch borehole communicating with said first lower passageway wherein an object can be directed from said upper passageway to either said first lower passageway or to said second lower passageway to selectively produce fluids from said branch boreholes.

5,311,937
EXTRACTOR FOR AN INJECTION PIPE
Tatemi Masaki, Urayasu, and Tetsuo Kawahito, Chiba, both of Japan, assignors to Raito Kogyo Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1992, Ser. No. 910,045
Int. Cl.[5] E21B *19/06*
U.S. Cl. 166—77 **4 Claims**

1. An extractor for a flexible pipe, comprising:
an extracting main body including a single chucking means for chucking the periphery of the flexible pipe through a single chucking member, a center hole type piston cylinder having a rod to which the chucking means is secured,

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and a rod position detecting means opposite to the rod of said center hole type piston cylinder for detecting a movement of the rod, said extracting main body further comprising a chucking actuating valve for actuating said chucking member and an ascending and descending actuating valve for actuating said center hole type piston cylinder; and



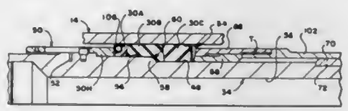
control means for providing a pipe chucking and releasing signal to said chucking actuating valve and for providing rod ascending and descending signals to said rod ascending and descending valve, said extracting main body and control means being separately located.

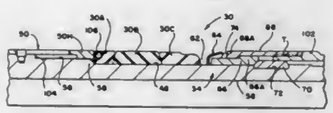
5,311,938

RETRIEVABLE PACKER FOR HIGH TEMPERATURE, HIGH PRESSURE SERVICE

James D. Hendrickson; Colby M. Ross, both of Carrollton, and William D. Henderson, League City, all of Tex., assignors to Halliburton Company, Houston, Tex.

Filed May 15, 1992, Ser. No. 884,529
Int. Cl.[5] E21B *33/128*
U.S. Cl. 166—134 **21 Claims**





18. In a well packer having a tubular body mandrel, an anchor slip assembly, a seal element assembly movably mounted for longitudinal travel along a seal element support surface of said body mandrel, and force transmitting apparatus coupled to said anchor slip assembly and said seal element assembly for radially expanding said seal element assembly into set engagement against the internal bore sidewall of a well casing, the improvement comprising:

an annular backup shoe mounted on said body mandrel adjacent said seal element assembly, said backup shoe defining a radial bridge between said body mandrel and a well casing when said seal element assembly is expanded into engagement against the internal bore sidewall of the well casing;

a seal element retainer ring slidably mounted for longitudinal movement along said body mandrel; a seal element retainer collar movably mounted on said retainer ring for longitudinal movement from a first position in which said seal element retainer collar and retainer ring are engagable against said backup shoe, to a sealed position in which the element retainer collar is longitudinally spaced from said outer backup shoe and is longitudinally shifted with respect to the retainer ring thereby defining an annular pocket for receiving a folded backup shoe;

stop apparatus mounted on said body mandrel for limiting retraction movement of said retainer ring relative to said seal element assembly; and,

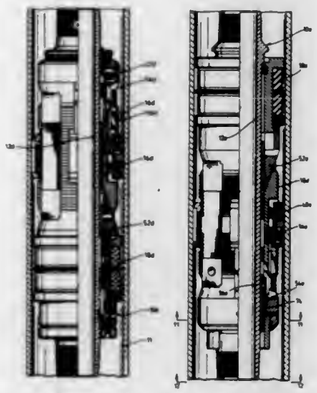
said retainer ring and said retainer collar having mutually engagable stop members for limiting extension of said element retainer collar relative to said retainer ring.

5,311,939

MULTIPLE USE WELL PACKER

Ronald E. Pringle, Houston, and Arthur J. Morris, Magnolia, both of Tex., assignors to Camco International Inc., Houston, Tex.

Filed Jul. 16, 1992, Ser. No. 914,402
Int. Cl.[5] E21B *23/06*
U.S. Cl. 166—134 **7 Claims**



1. A well packer for engaging and sealing against the inside of a conduit comprising,

a support mandrel,

friction blocks carried by the mandrel for engaging the conduit for allowing setting of the packer by movement of the mandrel,

slip means having a plurality of outwardly directed teeth, said slip means carried by the mandrel for outward movement into engagement with the inside of the conduit for holding the packer,

sealing means carried by the mandrel for outward movement into a sealing relationship with the conduit, and

the friction blocks are positioned within the outwardly directed teeth of the slip means.

5,311,940

CEMENTING PLUG

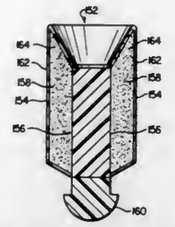
Karl K. LaFleur, Weatherford, Tex., assignor to LaFleur Petroleum Services, Inc., Weatherford, Tex.

Division of Ser. No. 777,645, Oct. 16, 1991, Pat. No. 5,242,018.
This application Mar. 29, 1993, Ser. No. 38,174
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—152 **2 Claims**

1. A cementing plug comprising:

a) a first body portion comprising solid polycrystalline diamond compact drillable material;

b) a second body portion concentrically disposed about said first body portion and comprising polycrystalline diamond compact drillable material, said second body portion having a frustoconical first end, a cylindrical intermediate portion and a second end defining a flange, wherein said second body portion has a constant outside



diameter except at said frustoconical first end thereof where said outside diameter tapers from said constant diameter to the outer surface of said first body portion; and

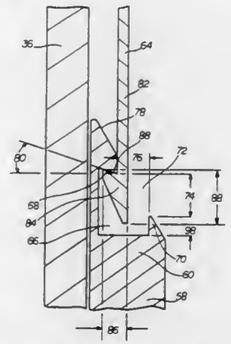
c) a nose comprising polycrystalline diamond compact drillable material engaged with said first body portion adjacent said first end of said second body portion.

5,311,941

ROTATION RELEASE LATCH FOR A WELLBORE TOOL

John L. Baugh, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Aug. 12, 1992, Ser. No. 928,816
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—208 **10 Claims**



1. A rotation release latch for use in a wellbore tool to selectively couple a first wellbore tool member to a second wellbore tool member by manipulating a workstring to which said wellbore tool is secured, said rotation release latch comprising:

a lock ring secured to said first wellbore tool member and having a coupling end which includes at least one coupling groove circumferentially disposed about said coupling end, each of said at least one coupling grooves defining a pathway about said coupling end and having a coupling shoulder circumferentially extending from said coupling end to provide a collet collar;

a latch ring secured to said second wellbore tool member, and having at least one collet finger which extends longitudinally for insertion into a latched position within one of said at least one coupling grooves of said coupling end of said lock ring, each of said at least one collet fingers including a collet finger shoulder extending therefrom for a mating abutment with said coupling shoulder of one of said at least one coupling grooves when said at least one collet finger is inserted into said latched position therein;

at least one cam member positioned for urging said at least one collet finger from said at least one coupling groove to an unlatched position wherein said at least one collet finger is disposed exteriorly of said at least one coupling groove;

wherein each of said at least one collet fingers are selectively positionable into said latched position disposed within one of said at least one coupling grooves in said coupling end, with said collet finger shoulder positioned for said mating abutment with said coupling shoulder to prevent movement between said first wellbore tool member and said second wellbore tool member in at least one longitudinal direction; and

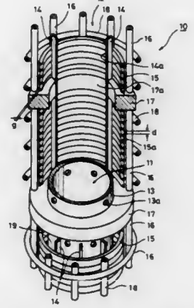
wherein rotation of said workstring selectively uncouples said first wellbore tool member from said second wellbore tool member by rotating said latch ring with respect to said coupling end of said lock ring to move said at least one collet finger past said cam member which urges said at least one collet finger to said unlatched position where said at least one collet finger is disposed exteriorly of said at least one coupling groove.

5,311,942

WELL SCREEN HAVING A PROTECTIVE FRAME FOR A HORIZONTAL OR HIGH-ANGLE WELL

Tadayoshi Nagaoka, Minami, Japan, assignor to Nagaoka International Corporation, Osaka, Japan

Filed Jul. 30, 1992, Ser. No. 922,137
Int. Cl.[5] E21B *43/08*
U.S. Cl. 166—232 **2 Claims**



1. A well screen for a horizontal or high angle well including a screen main body having a plurality of screen rods arranged in the circumferential direction of the well screen and a screen wire wound on said screen rods and said protective frame comprising:

a plurality of protective rods provided on the outside of the screen wire with a predetermined interval in the circumferential direction of the well screen and extending in the axial direction of the well screen;

a plurality of annular rod holding members provided with a predetermined interval in the axial direction of the well screen for holding the protective rods;

protective wire means provided about the protective rods in the circumferential direction of the well screen, and

a circumferential gap of a predetermined value, said gap being formed between the protective rods and the outer surface of the screen wire of the screen main body, and extending longitudinally between said plurality of annular rod holding members.

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5,311,943

BLENDS OF PROPOXY AND ETHOXY SURFACTANTS

Scott L. Wellington, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 19, 1992, Ser. No. 963,223
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—274 11 Claims

1. A method to recover oil from a subterranean formation comprising the steps of:

a) providing a surfactant mixture comprising at least a first surfactant, the first surfactant comprising at least one ethoxy group, a hydrophilic group, a cation, a hydrophobic radical selected from the group consisting of linear or branched alkyl radicals, and alkyl or alkenyl substituted benzene radicals, and not including any propoxy groups, and a second surfactant, the second surfactant comprising at least one propoxy group, a hydrophilic groups, a cation, a hydrophobic radical selected from the group consisting of linear or branched alkyl radicals, and alkyl or alkenyl substituted benzene radicals, and not including any ethoxy groups;

b) injecting the surfactant mixture into the subterranean formation;

c) displacing the surfactant mixture through the subterranean formation toward an oil production well whereby the surfactant mixture displaces oil from the formation through which it is displaced; and

d) recovering the displaced oil from the oil production well.

5,311,944

BLAST FURNACE SLAG BLEND IN CEMENT

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,972
Int. Cl.[5] E21B *33/14*; C09K *7/04*
U.S. Cl. 166—292 14 Claims

1. A method for drilling and cementing a well comprising:

combining a drilling fluid and a blend of microfine ground blast furnace slag and normally ground blast furnace slag to produce a universal fluid;

thereafter utilizing said universal fluid in a well drilling operation to form a borehole, thus producing a used universal fluid;

thereafter combining an additional amount of a blend of microfine ground blast furnace slag and normally ground blast furnace slag, and an activator with said used universal fluid;

disposing a pipe in said borehole;

passing said cementitious slurry down said pipe and up into an annulus formed by said borehole and said pipe.

5,311,945

DRILLING AND CEMENTING WITH PHOSPHATE

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,980
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—292 15 Claims

1. A method for drilling and cementing a well, comprising:

combining constituents comprising water and a proton acceptor metal compound selected from the group consisting of CaO, MgO, and ZnO to produce a drilling fluid;

thereafter utilizing said drilling fluid in a well drilling operation to form a borehole, thus producing a used drilling fluid;

thereafter combining said used drilling fluid with a stoichiometric amount of phosphorous acid to produce a cenentitious slurry; and

utilizing said cementitious slurry in a cementing operation.

5,311,946

METHOD AND PROCESS FOR THE STABILIZATION OF RESIN COATED PARTICULATES

David N. Harry, and Sharif Sharif, both of Midland, Tex., assignors to Benchmark Research and Technology, Inc., Midland, Tex.

Division of Ser. No. 924,488, Aug. 4, 1992. This application Jun. 4, 1993, Ser. No. 71,782
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—278 2 Claims

1. A method of hydraulically fracturing and propping a subterranean formation using proppants comprised of particulate substrates coated with a heat curable resin reacted with a formaldehyde source-metal compound (FS-MC) complex, comprising the steps of:

fracturing said subterranean formation using a fracturing fluid;

conveying said particulate substrates coated with said heat curable resin reacted with said FS-MC complex to said fractured formation using said fracturing fluid;

causing the coating of said heat curable resin reacted with said FS-MC complex on said particulate substrates to fuse and cure into a permeable mass; and

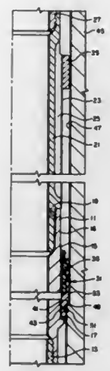
removing said fracturing fluid from said fractured formation, thereby leaving said permeable mass to prop said fractured formation.

5,311,947

PRESELECTED CASING TENSIONING SYSTEM

Peter M. Kent, Warthill by Inverurie, and Norman Brammer, Fyvie Turiff, both of Scotland, assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Sep. 10, 1992, Ser. No. 943,280
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—348 19 Claims



1. In a well assembly having a string of casing which secures in a well and extends upward to a wellhead housing which has an internal load shoulder, an apparatus for maintaining tension in the string of casing, comprising in combination:

a tubular mandrel having means for securing to the upper end of the string of casing, the mandrel having a lower portion and an upper portion, the lower portion having a set of exterior grooves;

a load ring having ratchet means including a set of interior grooves which engage the exterior grooves for allowing upward movement of the mandrel relative to the load ring but preventing downward movement of the mandrel relative to the load ring when the load ring is in engagement with the exterior grooves;

retaining means for retaining the load ring in the wellhead housing on the internal load shoulder for allowing the mandrel to be pulled upward relative to the load ring;

an external stop shoulder on the lower portion of the mandrel; and

positioning means for mounting on the upper portion of the mandrel at selected locations above the stop shoulder for initially providing a preselected distance between the stop shoulder and the load ring after the load ring is retained in the wellhead housing and the string of casing secured in the well, but prior to applying tension to the string of casing, so that subsequently pulling the mandrel upward will stretch the string of casing until the stop shoulder contacts the load ring, the amount of stretch being equal to the preselected distance, the load ring subsequently supporting the string of casing in tension on the load shoulder.

15. A method of applying and maintaining tension in a string of casing extending upward from a well to a wellhead housing, the wellhead housing having an internal load shoulder, the method comprising:

providing a tubular mandrel with an upper portion and a lower portion which has a set of exterior grooves, and securing the mandrel to the upper end of the string of casing;

providing an external stop shoulder on the lower portion of the mandrel;

providing a load ring having ratchet means including a set of interior grooves which will ratchet on the exterior grooves and placing the load ring on the mandrel;

securing a positioning member to the exterior of the upper portion of the mandrel a selected variable distance above the stop shoulder;

lowering the mandrel and the string of casing and landing the load ring on the load shoulder with the positioning member in contact with the load ring;

retaining the load ring on the load shoulder against upward movement relative to the wellhead housing an securing the string of casing in the well; then

pulling the mandrel and string of casing upward while retaining a lower portion of the string of casing secured in the well, thereby stretching the string of casing and causing the grooves of the load ring to ratchet on the exterior grooves until the stop shoulder contacts the load ring; then

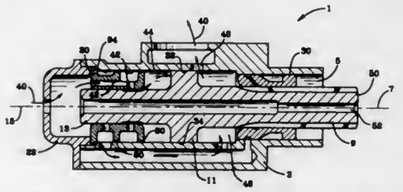
ceasing to pull upward on the mandrel and transferring tension on the mandrel to the load ring and load shoulder.

5,311,948

SOFT MOUNT AIR DISTRIBUTOR

Robert R. Kimberlin, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 936,489, Aug. 28, 1992, Pat. No. 5,259,562. This application Aug. 5, 1993, Ser. No. 102,450
Int. Cl.[5] B25D *17/24*
U.S. Cl. 173—017 5 Claims



1. A fluid distributor for flexible mounting in a pneumatic drill housing comprising;

(a) a flexible body portion forming a central passageway having a longitudinal axis therethrough;

(b) a flanged top end and a flanged bottom end on said body;

(c) passageway means through said distributor for transmitting fluid flow during a stroke cycle of said drill; and (d)

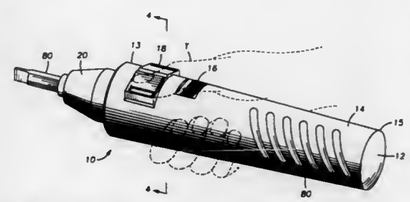
a plurality of raised land surfaces extending around a perimeter of said body encircling said longitudinal axis, said land surfaces flexibly and sealingly in contact with said housing.

5,311,949

POWER SCREWDRIVER HANDLE CONFIGURATION

David S. Chapin, Raleigh, N.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 3, 1992, Ser. No. 897,111
Int. Cl.[5] H02K *7/14*
U.S. Cl. 173—217 7 Claims



1. A power tool handle comprising:

an elongate housing having a frusto-conical shape and comprising a longitudinal axis, a forward end having a first diameter and an aft end having a second diameter smaller than said first diameter and an outer surface tapering from said forward end to said aft end, said housing constructed and arranged for containing:

a battery pack;

an electric motor constructed and arranged to be in line with and driven by said battery pack;

a gear box mechanically interconnected in line with said electric motor;

a manually activated rocker switch disposed in said housing near said forward end of said housing and adapted to control the direction of rotation of said electric motor;

a manually activated slidable switch for directing electrical energy from said battery pack to said electric motor, said rocker switch including a central ridge and a thumb-actuatable pad on each side of said ridge, said rocker switch being disposed on said housing such that said ridge ia substantially parallel to said longitudinal axis of said housing, said slidable switch disposed between said rocker switch and said aft end of said housing and adjacent said rocker switch; and a plurality of ridges located on said outer surface of said housing adjacent said aft end, said ridges comprising an array of substantially parallel raised segments formed on said outer surface of said housing;

wherein said manually activated rocker switch is positioned substantially over said gear box and;

wherein said rocker switch and said slidable switch are both disposed on said tapered surface of said housing.

5,311,950

DIFFERENTIAL PNEUMOPERCUSSIVE REVERSIBLE SELF-PROPELLED SOIL PENETRATING MACHINE

Michael B. Spektor, 1030 Tamera Dr., Klamath Falls, Oreg. 97603

Filed Apr. 19, 1993, Ser. No. 47,993
Int. Cl.[5] E21B *1/00*
U.S. Cl. 175—19 19 Claims

1. A differential pneumopercussive self-propelled reversible soil penetrating machine, comprising:

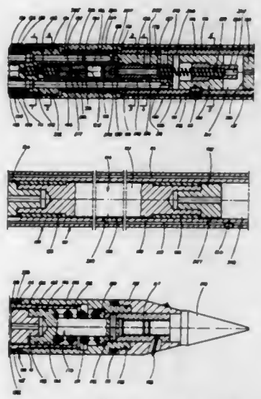
an elongated compound housing assembly, including concentrically mounted outer and inner tubes creating an essential annular space between the external surface of said inner tube and internal surface of said outer tube, front and rear guide sleeves which are mounted on the threaded ends of said inner tube and maintain the concen-

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tricity of said outer and inner tubes by means of centering surfaces, two longitudinal strips secured to the external surface of said inner tube parallel to the longitudinal axis of said inner tube dividing said annular space between said outer and inner tubes into two unequal hermetically insulated from each other longitudinal channels, the smaller of which is alternately connected with the atmosphere or connected with compressed air supply while the larger of which is always connected with the atmosphere, and means to prevent bending of said inner tube in case when said smaller channel is connected with the atmosphere;

a rear anvil assembly disposed inside the rear part of said inner tube and rigidly secured to said inner tube in order to prevent impact loading on all components of said machine located behind said rear anvil assembly, including a rear anvil having a central longitudinal stepped hole, and means for rigidly securing said rear anvil to said inner tube;

a moveable chisel assembly secured by said front guide sleeve to the front part of said compound housing, including a disposable front stepped anvil, an elastic link, a stepped shank slidably disposed inside front part of said inner tube and accommodating the tail part of said disposable front anvil and also carrying said elastic link, a set of dynamic resilient sealing O-rings mounted in appropriate



grooves on the larger step of said shank for preventing air leakage through the front part of said inner tube, a tapered head with a spiral mounted on it for developing a torque to twist said machine during its forward mode operation in order to ensure a uniform wear of the moveable components, a disposable tapered chisel representing the front part of said machine, a threaded bushing slidably disposed inside said front guide sleeve and carrying said tapered head and also connecting said stepped shank with said disposable chisel, a resilient bellows type diaphragm located between said front guide sleeve and said tapered head for preventing soil penetration into the gaps between moveable components, a dynamic sealing O-ring mounted in the groove on the smaller step of said front guide sleeve for sealing the slide fit between said front guide sleeve and said tapered head, and means to secure the threaded connections from loosening;

a striker assembly slidably disposed inside said inner tube for reciprocation and impacting against said rear anvil and said front anvil creating a forward stroke chamber between its rear end and front end of said rear anvil and a backward stroke chamber between its front end and rear end of said front anvil, including a striker having on both ends hollow journals, two bushings pressed on said hollow journals and having a slide fit with said inner tube, and two disposable bits pressed into said hollow journals; and

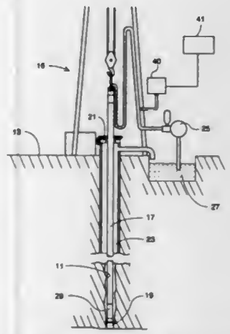
a differential air-distributing mechanism secured into the rear part of said compound housing remotely from said rear anvil providing pneumatically control of the reciprocating motion of said striker which during forward mode operation of said machine is accelerated without restriction in order to impart an impact to said front anvil and is restricted to impart a slight impact to said rear anvil and during reverse mode operation of said machine is braked to avoid an impact to said front anvil or restricted to impart a slight impact to said front anvil and is accelerated without restriction in order to impart an impact to said rear anvil, including an adjustable by a pressure regulator nominal (high) air pressure line, an adjustable by a pressure regulator reduced (low) air pressure line, a rear valve chest carrying two barbs for hoses for said air lines, a spring loaded relief valve slidably disposed inside said rear chest for connecting by an additional air passage said forward stroke chamber with the atmosphere at the backward stroke of said striker during reverse mode operation of said machine, a coil spring disposed inside said rear valve chest to push said relief valve to its extreme right position, a front valve chest assembled with said inner tube by a conical fit, a hollow stepped bushing accommodated by said rear and front valve chests and centering said rear and front valve chests, a stepped stroke control valve slidably disposed inside said front valve chest, a hollow follower slidably disposed inside said rear anvil, a coil spring disposed in longitudinal central holes of said stepped stroke control valve and said follower and simultaneously loading said stepped stroke control valve and said follower in opposite directions, a tail nut securing said differential air-distributing mechanism to said compound housing, and alignment and securing means.

5,311,951

METHOD OF MAINTAINING A BOREHOLE IN A STRATIGRAPHIC ZONE DURING DRILLING

David G. Kyte, Bedford; D. Nathan Meehan, Colleyville, and Theodore R. Svor, Bedford, all of Tex., assignors to Union Pacific Resources Company, Fort Worth, Tex.

Filed Apr. 15, 1993, Ser. No. 48,362
Int. Cl.[5] E21B *47/00*
U.S. Cl. 175—40 **7 Claims**



1. A method of determining the location of a borehole relative to strata in the earth, comprising the steps of:

a) providing information from said borehole, which information characterizes said strata;

b) providing characterizing information of said strata from an offset location; and

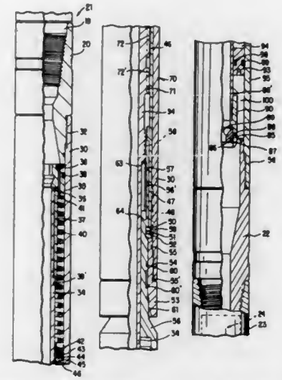
c) comparing said characterizing information from said borehole to said characterizing information from said offset location to determine the location of selected points along said borehole relative to said strata.

5,311,952

APPARATUS AND METHOD FOR DIRECTIONAL DRILLING WITH DOWNHOLE MOTOR ON COILED TUBING

Alan Eddison, Houston, Tex.; Lawrence J. Leising, Broken Arrow, Okla., and Charles Ingold, Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed May 22, 1992, Ser. No. 887,503
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—61 **23 Claims**



15. A method of providing a selected angular orientation in a borehole of the bent housing or sub that is operatively associated with a downhole drilling motor which drives a drill bit and which is suspended in the borehole on a string of coiled tubing, comprising the steps of: providing an orientation sub having an upper housing that is connected to the coiled tubing and a lower housing that is connected to said motor, said lower and upper housings being rotatable relative to one another from a first to a second angular position; rotationally indexing said upper and lower housings relative to one another so that said lower housing rotates counterclockwise to said second angular position; and using the counter-clockwise torque that is applied to said orientation sub as said bit is rotated on bottom by said motor to ensure complete rotation of said upper housing to said second position.

5,311,953

DRILL BIT STEERING

Colin Walker, Winster, England, assignor to Baroid Technology, Inc., Houston, Tex.

Filed Aug. 7, 1992, Ser. No. 926,912
Int. Cl.[5] E21B *7/06*
U.S. Cl. 175—61 **33 Claims**

9. A method of steering a drill bit at the end of a drill string within a borehole to permit drilling of the borehole along a deviated path, the method comprising:

(a) connecting an upper part of a tubular body to a lower portion of the drill string;

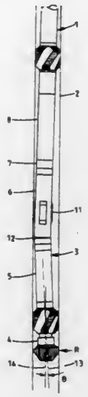
(b) connecting a lower part of the tubular body to a lower assembly including the drill bit;

(c) lowering the drill string into position within the borehole such that the drill bit is located at the bottom of the borehole;

(d) axially aligning the upper and lower parts of the tubular body within the borehole such that the drill bit is aligned with a section of the borehole immediately above the drill bit;

(e) moving a mandrel axially within the tubular body to a blade out position to move stabilizer blades on the upper part of the tubular body radially outward to engage the borehole wall;

(f) rotating the drill bit while the upper and lower parts of the tubular body are axially aligned and while the stabilizer blades are move radially outward to drill along substantially a straight path;



(g) thereafter retracting the stabilizer blades out of engagement with the borehole wall;

(h) with the stabilizer blades in their retracted positions, pivoting the lower part relative to the upper part to produce an axial bend in the tubular body between the upper and lower parts resulting in tilting of the drill bit; and

(i) rotating the drill bit while the lower part is pivoted relative to the upper part to drill along a deviated path.

5,311,954

PRESSURE ASSISTED RUNNING OF TUBULARS

Julio M. Quintana, La Habra, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 662,168, Feb. 28, 1991, Pat. No. 5,205,365.
This application Oct. 1, 1992, Ser. No. 956,690
Int. Cl.[5] E21B *7/04, 17/07*
U.S. Cl. 175—61 **12 Claims**

1. A process useful in overcoming drag while installing an element within a cavity, using a duct, a pressurizable fluid, a telescoping subassembly comprising a first component capable of being actuated by said pressurizable fluid from a first axial position to a second axial position relative to a second component, and a means for providing said pressurizable fluid to said subassembly and said cavity, said process comprising:

attaching said element to said first component and attaching an end of said duct to said second component, forming an assembly;

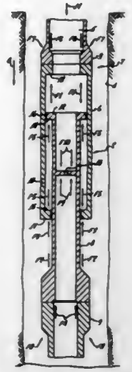
installing said assembly into said cavity;

connecting said means for providing pressurizable fluid to said subassembly and to said cavity; and

pressurizing said fluid to discharge into said cavity and actuate said subassembly from a first position having a first

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length to a second position having a different length when said second element is slidably contacting said cavity and

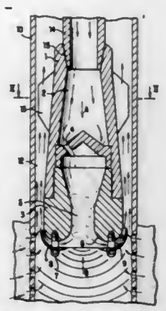


in the absence of pressure actuated return of said subassembly to said first position.

5,311,955
INSTALLATION FOR CLEANING THE ZONE NEAR THE DRILL HOLE

Rifner W. Ganijew, Moskau; Robert S. Mufassalow, Bassr; Remus C. Wasiliew, Moskau; Jurij P. Sacharow, Moskau, and Raschid G. Muchutdinow, Moskau, all of U.S.S.R., assignors to Wave Tec Ges.m.b.H., Laxenburg, Austria

Filed May 5, 1992, Ser. No. 878,476
Claims priority, application U.S.S.R., May 6, 1991, 4928469
Int. Cl.[5] E21B *7/18*
U.S. Cl. 175—67 **7 Claims**



1. An installation for cleaning a zone near a drill hole, comprising:

a hollow body having a cavity and containing therein a subassembly for generating hydrodynamic waves of fluid flow, said subassembly including a turbulence chamber having at least one entry channel for entry of fluid thereinto tangentially arranged in an upper part of the turbulence chamber for connecting said turbulence chamber to said cavity;

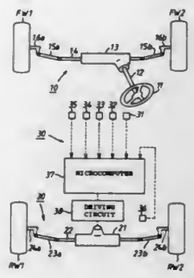
said turbulence chamber further including a conically tapering outlet channel for directing said hydrodynamic waves of fluid flow out of said turbulence chamber, and having a rounded-off outer frontal surface; and

a guide blade arranged at a lower part of said turbulence chamber so as to form an annular channel between said outer frontal surface and an inner surface of said guide blade, said annular channel developing an annular fluid current from fluid current flowing out of said outlet channel.

5,311,956
ELECTRIC CONTROL APPARATUS FOR REAR WHEEL STEERING MECHANISM OF WHEELED VEHICLE

Mizuho Sugiyama, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 12, 1992, Ser. No. 974,421
Claims priority, application Japan, Nov. 13, 1991, 3-297479
Int. Cl.[5] B62D *6/00*
U.S. Cl. 180—140 **3 Claims**



1. An electric control apparatus for a rear wheel steering mechanism in a four-wheel steering system of a wheeled vehicle, said rear wheel steering mechanism having an electrically operated actuator arranged to steer a set of dirigible rear road wheels in response to an electric control signal applied thereto, the electric control apparatus comprising:

detection means for detecting a yaw rate of a vehicle body,

means for determining a target steering amount in accordance with a magnitude of the detected yaw rate for steering the rear road wheels in a direction restraining the yaw rate of the vehicle body,

means for producing a control signal indicative of the target steering amount and applying the control signal to said electrically operated actuator,

means for detecting a roll angle of the vehicle body, and

correction means for correcting the target steering amount in accordance with a magnitude of the detected roll angle to steer the rear road wheels in an opposite direction relative to the direction restraining the yaw rate of the vehicle body.

5,311,957
STEERING LINKAGE

Colin A. McLaurin, Crozet, Va., and Kao-Chi Chung, Blawnox, Pa., assignors to Center for Innovative Technology, Herndon, Va.

Continuation of Ser. No. 790,397, Nov. 12, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 121,172
Int. Cl.[5] B60K *17/30*; **B62D** *7/09*
U.S. Cl. 180—253 **11 Claims**

1. A vehicle steering mechanism for a four wheel vehicle having two front wheels and two rear wheels, comprising in combination:

a vehicle frame;

said two rear wheels comprising a right rear wheel and a left rear wheel mounted on said vehicle frame with a common rotational axis;

said two front wheels comprising a right front steered wheel having a right front steered wheel rotational axis and a left front steered wheel having a left front steered wheel rotational axis;

a left and a right king pin rotatably mounting said left and said right front steered wheels respectively to said vehicle frame;

a left steering arm pivotally mounted to said vehicle frame and a right steering arm pivotally mounted to said vehicle frame;

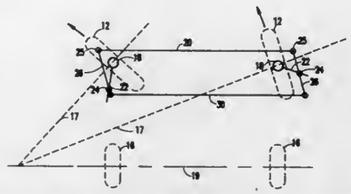
a left crank arm secured to said left king pin;

a right crank arm secured to said right king pin;

a tie rod pivotally secured to said left steering arm at a point outboard of said left king pin;

said tie rod pivotally secured to said right steering arm at a point outboard of said right king pin;

means movably securing said left steering arm to said left crank arm so that said left crank arm extends in an outboard direction and intersects said left steering arm at an acute angle when said left front steered wheel is in a straight ahead position;



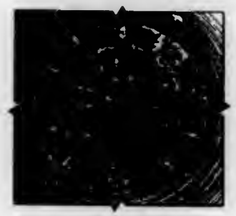
means movably securing said right steering arm to said right crank arm so that said right crank arm extends in an outboard direction and intersects said steering arm at an acute angle when said right front steered wheel is in a straight ahead position;

said tie rod, said vehicle frame, said left steering arm, and said right steering arm being pivotally linked together to from a parallelogram so that as said tie rod moves, said left steered wheel and said right steered wheel each turn at a different, but varying, turning rate, whereby said left front steered wheel rotational axis and said right front steered wheel rotational axis intersect at a point that moves along said common rotational axis as is centered between said right rear wheel and said left rear wheel when said tie rod is in its extreme left position and when said tie rod is in its extreme right position.

5,311,958
EARTH-BORING BIT WITH AN ADVANTAGEOUS CUTTING STRUCTURE

Matthew R. Isbell, and Rodolf C. O. Pessier, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 23, 1992, Ser. No. 949,660
Int. Cl.[5] E21B *10/14*
U.S. Cl. 175—341 **21 Claims**



1. An earth-boring bit with an improved rate of penetration into earthen formations, the earth-boring bit comprising:

a bit body;

at least two cutters mounted for rotation on a bearing shaft depending from the bit body, each cutter having a base and a nose;

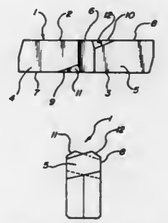
a heel disk cutting element disposed proximally to the base of at least one of the cutters and defined by a pair of generally oppositely facing disk surfaces that generally continuously converge to define a circumferential heel disk crest; and

a plurality of cutting teeth having axial crests thereon arranged in a plurality of rows on at least a second of the cutters, the plurality of rows including a heel row.

5,311,959
MINE TOOL ROOF BIT INSERT

Wayne F. Adams, Bristol, Va., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Apr. 13, 1992, Ser. No. 868,066
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—420.1 **5 Claims**

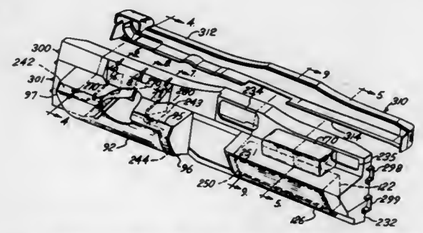


1. A mine tool roof bit insert having two flat parallel sides extending in the long dimension of the insert and having two uppermost slanted surfaces extending between said two flat parallel sides, the insert having a trough at the top thereof, the trough and the two uppermost slanted surfaces being substantially parallel and substantially orthogonal along their entire length to the two flat parallel sides, the trough being between the two uppermost slanted surfaces.

5,311,960
TWO PIECE MULTIFUNCTIONAL COMPOSITE STRUCTURAL CROSS VEHICULAR BEAM

Janis Kukainis, and Ali Kazemi, both of Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1992, Ser. No. 992,362
Int. Cl.[5] B62D *25/14*
U.S. Cl. 180—90 **19 Claims**



1. A multifunctional structural cross vehicular beam assembly for supporting an instrument panel, an air bag mechanism, a driver knee bolster, a passenger knee bolster and a steering column of a motorized vehicle operable by a driver, said steering column having a predetermined first bending mode frequency, said vehicle including an engine having an idle excitation frequency and including a body having a first bending

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mode frequency, a cowl and a compartment for one or more passengers, said beam assembly comprising:

a beam extending across substantially the entire width of said compartment between said cowl and said instrument panel, said beam integrally comprising

first means for defining a first cavity enabling deformation of said driver knee bolster and for supporting the position of a plurality of edges of said driver knee bolster with respect to said body so that said driver knee bolster absorbs kinetic energy resulting from impact,

second means for defining a second cavity enabling deformation of said passenger knee bolster and for supporting the position of a plurality of edges of said passenger knee bolster with respect to said body so that said passenger knee bolster absorbs kinetic energy resulting from impact,

third means for supporting said air bag mechanism,

fourth means for supporting said steering column to alter the structural feel of said steering column comprising means for defining integral reinforcing ribs arranged so that a first bending mode frequency of the combination of said steering column and said beam is different from said first bending mode frequency of said steering column alone,

fifth means for defining air distribution inlets for said passenger compartment,

sixth means for support said instrument panel, and

cover means connected to said beam for defining channels of an air distribution system for said passenger compartment.

5,311,961

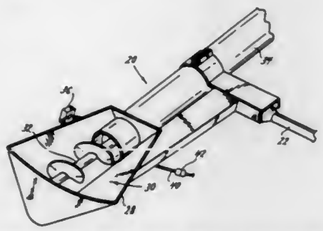
POWER-TAKE-OFF SAFETY SYSTEM

Eugene E. Stabenow, 11002 State Rte. 143, Marine, Ill. 62061

Filed Aug. 7, 1992, Ser. No. 925,973

Int. Cl.[5] B60R *21/00*

U.S. Cl. 180—271 **16 Claims**



1. In combination with a tractor having a power-take-off and a machine being driven by the power-take-off, a safety system for automatically shutting off the power-take-off in an emergency to thereby stop the machine, the safety system comprising:

at least one machine sensor for detecting the presence of a foreign body adjacent a portion of the machine;

shut-off means, responsive to the sensor, for shutting off the power-take-off when the sensor detects the presence of a foreign body adjacent the machine.

5,311,962

SEAT RECLINING MECHANISM AND SHIFT LEVER INTERLOCK SYSTEM

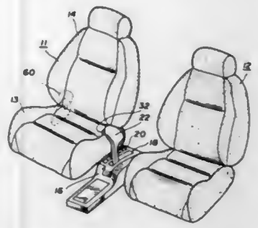
Nobuyuki Nakano, and Takuya Tomike, both of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase City, Japan

Filed Dec. 21, 1992, Ser. No. 993,853

Claims priority, application Japan, Dec. 20, 1991, 3-338915

Int. Cl.[5] B60K *28/02*

U.S. Cl. 180—271 **8 Claims**



3. In a motor vehicle:

a manual shift lever having a plurality of shiftable positions including a parking position;

a reclining seat including a seat cushion and a seat back, said seat back having an upright position and a reclined position;

first sensor means for detecting whether said shift lever is placed at said parking position or not and for generating a parking position indicative signal when said shift lever is placed at said parking position;

means for preventing said seat back from shifting toward said reclined position in response to an absence of said parking position indicative signal;

second sensor means for detecting whether said seat back is shifted to said upright position or not and for generating an upright position indicative signal when said seat back is shifted to said upright position; and

means for preventing said shift lever from moving out of said parking position in response to the absence of said upright position indicative signal and for allowing said shift lever to move out of said parking position in response to a presence of said upright position indicative signal.

5,311,963

IMPACT-SENSOR MOUNTING STRUCTURE FOR AN AUTOMOTIVE VEHICLE

Tadayuki Shigeoka; Shinpei Egawa; Makoto Tokuda, and Susumu Makimoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 25, 1992, Ser. No. 903,224

Claims priority, application Japan, Jun. 25, 1991, 3-181753

Int. Cl.[5] B60R *21/00*

U.S. Cl. 180—274 **5 Claims**

1. A front structure for a short nose automobile vehicle comprising:

a pair of horizontally extending elongated front frame members extending in the longitudinal direction of the automobile vehicle from front to back and being in parallel spaced relationship on opposite sides of a longitudinal centerline of the automobile vehicle;

a cross member fixed to the bottom of the forward end portions of the frame members;

a front bumper extending transversely of the automobile vehicle and being composed of a rigid bumper reinforcement and an energy absorbing material mounted on the forward side of the rigid bumper reinforcement;

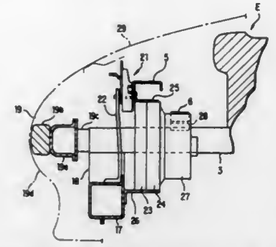
a stay, said stay fixing the rigid bumper reinforcement to the forward end of each of said front frame members;

a vertically oriented rigid shroud panel extending transversely across the automobile vehicle to define the forward end of the automobile vehicle engine room, the bottom part of said shroud panel being fixed to the front frame members;

a rigid shroud member extending transversely across the automobile vehicle and being fixed to the upper part of said shroud panel;

a stiffener member extending vertically on the centerline of the automobile vehicle and fixed at its lower portion to the cross member and at its upper portion to the rigid shroud member, said stiffener member having greater stiffness than the forward end of the bumper; and

an impact sensor mounted on the rigid shroud member on the centerline of the automobile vehicle, behind the stiffener member, below the top end of the stiffener member and vertically spaced above the horizontal level of the front bumper.



5,311,964

APPARATUS FOR CONTROLLING A FRONT WHEEL DRIVING FORCE FOR USE IN AN ALL WHEEL DRIVE ASPHALT FINISHER

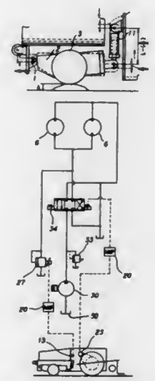
Yukitaka Miyazaki, Akashi; Shigeru Fujiwara, Kakogawa, and Takafumi Fujimoto, Akashi, all of Japan, assignors to Shin Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Nov. 19, 1991, Ser. No. 794,030

Claims priority, application Japan, Nov. 19, 1990, 2-120310[U]

Int. Cl.[5] B60K *7/00, 17/356*

U.S. Cl. 180—306 **4 Claims**



1. An all wheel drive asphalt finisher comprising:

a body;

right and left front wheels, each of said right and left front wheels being supported by a beam;

first and second pins for mounting one end of each of said beams to the body and allowing each of said beams to swing;

first and second hydraulic cylinders each having a piston rod, each of said hydraulic cylinders being vertically mounted on right and left hand sides of said body such that said piston rod extends in a downward direction, the other end of each of said beams being mounted to an end of each of said piston rods;

a first single oil line for connecting said first and second hydraulic cylinders to each other by a common hydraulic pressure, and balancing a level difference of the body in a direction transverse to a direction of movement of said asphalt finisher when the asphalt finisher travels over an uneven surface, such that the right and left front wheels support equal loads;

a hydraulic motor interconnected with each front wheel for driving said front wheels, the hydraulic motor being driving by a hydraulic circuit; and

a pressure sensor located within said first oil line for detecting the oil pressure within said first oil line and providing a signal indicative thereof to the hydraulic circuit for driving the hydraulic motor for the front wheels, wherein said hydraulic circuit controls said hydraulic motor to permit said hydraulic motor to generate a driving torque corresponding to sail oil pressure.

5,311,965

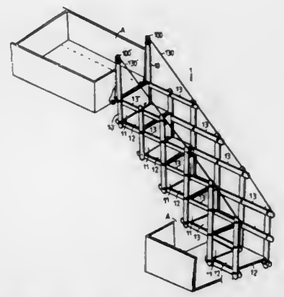
AUTO LIFE-SAVING LADDER

Hslen-Jung Wu, No. 36, Sec. 1, Jong Shan Rd., Yeong Her, Taipei, Taiwan

Filed May 18, 1993, Ser. No. 62,760

Int. Cl.[5] A62B *3/00*

U.S. Cl. 182—85 **4 Claims**

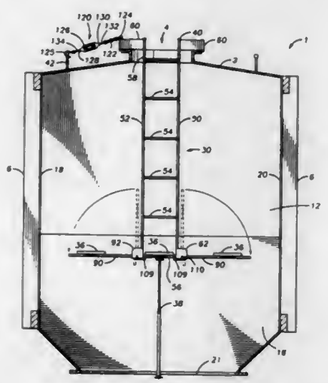


1. An auto safety escape system which serves as a means of escape from a building in case of fire, having a plurality of escape ladders each comprising a movable ladder, a rewinding mechanism and a safety bar which are located adjacent to an aperture of an exit veranda on an exterior wall of the building, in which the movable ladder can be folded and unfolded, and comprises a plurality of laterally spaced guard-railings in front of the aperture of the exit veranda, guardboards and footboards extending between laterally spaced guardrailings to serve as a means of connecting the guardrailings and also serving as a staircase when the movable ladder is unfolded in case of emergency; the rewinding mechanism comprises a rewinding wheel on which is wound a steel wire connecting a plurality of guardrailings, an idle wheel and a speed reducing motor, the idle wheel movably located within a sliding hole defined by a fixed plate with its position adjustable within the aforesaid sliding hole between a position operatively engaging the speed reducing motor, a position operatively engaging the speed reducing motor and the rewinding wheel, so as to enable the rewinding and folding the movable ladder by the speed reducing motor and a position operatively engaging only the

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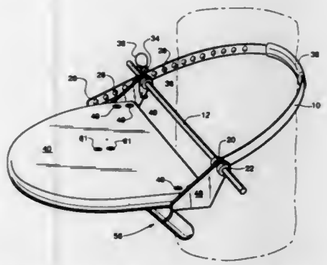
rewinding wheel, so as to enable the manual folding of the movable ladder an end of a safety bar engaging the rewinding wheel, so as to fix the movable ladder in a folded position, means mounting the safety bar such that it is disengageable from the rewinding wheel thereby enabling the movable ladder to drop downward and unfold itself by force of gravity until it reaches a next, escape ladder on a lower floor level the unfolding ladder causing the disengagement of the safety bar of the lower escape ladder so as to enable the movable ladder of that floor level to also drop downwardly and unfold itself under the force of gravity whereby this movement is repeated floor after floor until all ladders below the initial ladder are unfolded.

5,311,966
SCAFFOLD SYSTEM
Benjamin E. Daniels, Hallsville, Tex., assignor to GLNX Corporation, The Woodlands, Tex.
Filed Aug. 30, 1991, Ser. No. 753,210
Int. Cl.[5] E04G *1/36*
U.S. Cl. 182—128 **16 Claims**



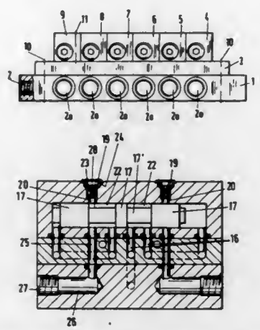
1. A scaffolding system for supporting workers or materials within a covered hopper car having multiple portholes through the cover thereof, comprising;
- a suspension member for suspending workers or materials from the cover portion of the covered hopper car, said suspension member being insertable and removable from the interior of the covered hopper car;
- a support member for supporting workers or materials used on the inside of the covered hopper car and suspended in the covered hopper car by said suspension member;
- a stabilizing member for stabilizing said support member within the confines of the covered hopper car;
- said suspension member including a hanging portion suspended from the cover portion having at least one moveable support arm disposed thereon, said support arm having a first position and a second position with respect to said hanging portion, said support arm being disposed in said first position during insertion of said hanging portion inward the hopper car and in said second position for receiving said support member, said support arm having a free end, an opposed support end, and an intermediate connection point, said support arm interconnected to said hanging portion at said connection point, such that in said second position, said support arm is supported on said hanging portion by said support end which is in that position disposed opposite said hanging portion from said free end; and
- said suspension member further including a support arm reaction member thereon to interact with said support end to support said support arm in said second position.

5,311,967
HAND CLIMBER
Mark B. Kennedy, 4670 Horn Rd., York, Pa. 17406
Filed May 5, 1993, Ser. No. 56,862
Int. Cl.[5] A63B *27/02*
U.S. Cl. 182—133 **7 Claims**



1. A hand climber for supporting a person climbing a tree trunk or similar substantially vertical generally cylindrical member, comprising:
- a. a flexible strap having first and second ends and length greater than the circumference of the tree trunk or similar member, the strap being formed from extruded nylon 6 with yield tensile strength between about 10,000 and about 15,000 psi;
- b. a rigid elongated cylindrical support bar having first and second ends;
- c. first attachment means for attaching the first end of the strap to the support bar at a first attachment point on the support bar inboard from the first end of the support bar by a distance sufficient to allow the person climbing to grip the portion of the support bar between the strap and the first end of the support bar, said first attachment means comprising a hole formed in the strap at the first end of the strap and receiving the support bar, and two collars attached to the support bar, one on either side of the first end of the strap, whereby the strap is retained at the first attachment point; and
- d. second attachment means for removably attaching the strap to the support bar at a second attachment point on the support bar inboard from the second end of the support bar by a distance sufficient to allow the person climbing to grip the portion of the support bar between the strap and the second end of the support bar, said second attachment means providing for attachment at any of a series of predetermined locations along the length of the strap beginning at the second end of the strap, said second attachment means comprising a longitudinal series of holes formed in the strap beginning at the second end of the strap, said holes being adapted for receiving the second end of the support bar, and removable retention means for retaining the strap at the second attachment point when the second end of the support bar engages a selected one of the longitudinal series of holes formed in the strap.

5,311,968
PROGRESSIVE DISTRIBUTOR FOR LUBRICANTS
Hans Pingel, Pegnitz, Fed. Rep. of Germany, assignor to Baier & Köppel GmbH & Co., Präzisionsapparate, Fed. Rep. of Germany
Filed Sep. 25, 1992, Ser. No. 951,007
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 9112030[U]
Int. Cl.[5] F01M *1/18*
U.S. Cl. 184—6.4 **6 Claims**

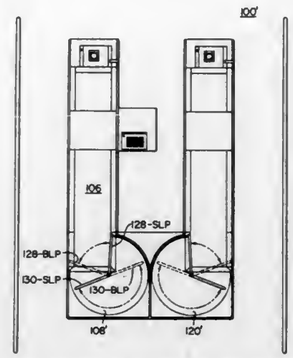


1. A progressive distributor for lubricants, including a row of metering elements and a base plate made up of individual components which include means defining apertures and conduits for feeding the lubricant to the metering elements, comprising:
- an intermediate plate between the base plate the metering elements; and
- means for permitting either separate removal of the individual metering elements from the intermediate plate, or removal of the intermediate plate together with the individual metering elements from the base plate.
- said separate removal means including means for individually detachably connecting each of the metering elements to the intermediate plate and means for detachably connecting the intermediate plate to the base plate.

5,311,969
ARTICLE CHECKOUT SYSTEM WITH ENHANCED THROUGHPUT
Wesley D. Dickover, Pampano Beach, and Chester N. Tingler, Boca Raton, both of Fla., assignors to CheckRobot, Inc., Deerfield Beach, Fla.
Continuation of Ser. No. 852,642, Mar. 17, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 105,777
Int. Cl.[5] A47F *9/04*
U.S. Cl. 186—61 **8 Claims**

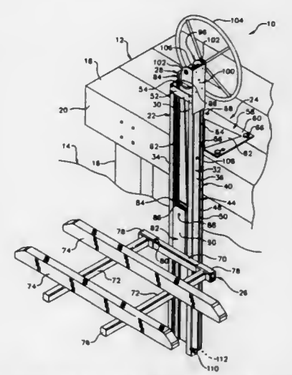
1. An article checkout station for checking out a customer order, comprising:
- (a) conveyor means for transport of articles;
- (b) a bagging station adjacent an exit of said conveyor means;
- (c) a first member rotatably supported for movement thereof in said bagging area; and
- (d) a second member rotatably supported for movement into a first position wherein said second member extends across said conveyor means and a second position wherein said second member extends generally aside said first member for providing respective different entry relations between said conveyor means and said bagging area when in said first and second positions,

said first member being movable responsively to engagement of said first member with said customer order when



said second member is in either of said first and second positions.

5,311,970
LOW-PROFILE WATERCRAFT LIFT
Samuel T. Basta, 2457 - 137th Ave. SE., Bellevue, Wash. 98005
Continuation of Ser. No. 689,301, Apr. 22, 1991, Pat. No. 5,143,182. This application Aug. 31, 1992, Ser. No. 938,274
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—11 **5 Claims**



1. A low-profile lift for jet skis and other small watercraft for use in combination with a dock positioned in a body of water and having a top surface and a side wall, the lift comprising:
A column:
- means for carrying a watercraft, said carrying means adapted to ride on said column;
- a rigid means for affixing said column to only the top surface of the dock and adjacent the side wall of the dock such that said column is oriented substantially perpendicular to the dock to extend above the dock and below the dock into the body of water without contacting the side wall of the dock, said affixing means comprising a rigid base plate for fixed attachment to the top surface of the dock, an upright member extending from said base plate for attachment to said column, and at

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least one reinforcing member attached to said base plate and said upright member for preventing tilting of said elongate guide means and for transferring all forces exerted on said guide means by said carrying means to the top surface of the dock; and

means for moving said carrying means on said column such that the watercraft on said carrying means is raised from and lowered to the body of water.

5,311,971

SELF ADJUSTING DRUM BRAKE ACTUATOR WITH LEVER AND END STOP

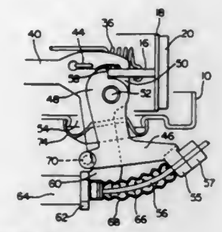
Pierre Courbot, Villiers Le Bel, France, assignor to Bendix Europe Services Techniques, Drancy, France

Continuation of Ser. No. 785,714, Oct. 31, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 41,283

Claims priority, application France, Nov. 13, 1990, 90 14066

Int. Cl.[5] F16D *65/16, 51/50;* **B60T** *1/06*

U.S. Cl. 188—79.54 **7 Claims**



1. A drum brake comprising:

a brake drum rotatable about an axis;

first and second brake shoes disposed around the axis and comprising respectively first and second webs and rims;

a strut having first and second ends cooperating respectively with said first and second webs for determining an adjustable distance between the brake shoes; and

actuation means cooperating with the strut for increasing selectively said adjustable distance, said actuation means comprising:

an extension of the strut having a remote end and a connected end integral with the second end of the strut;

a pivot disposed at the extension and between the connected and remote ends thereof;

a lever mounted rotatably on said pivot and having an actuated end and an actuating end, said actuating end pushing said second web away from the strut to increase said adjustable distance when the lever is rotated about said pivot by the application of a first force on said actuated end, and an end stop that engages abuttingly the extension of the strut to limit rotational movement of the lever in one direction,

first force applying means for applying selectively said first force on said actuated end, and

second force applying means for applying selectively, as a reaction to said first force, a second force on the remote end of said extension.

5,311,972

LUGGAGE WITH ATTACHABLE COMPONENTS

Robert V. Plath, 3030 NE 44th St., Lighthouse Point, Fla. 33064

Filed Mar. 27, 1992, Ser. No. 859,086

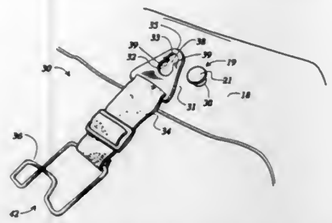
Int. Cl.[5] A45C *13/10, 13/40*

U.S. Cl. 190—102 **3 Claims**

2. A case for holding goods, comprising:

a stud mounted on an exterior surface of said case, said stud having an enlargement and a post extending outwardly from said exterior surface to said enlargement;

a clasp comprising a support member with a first aperture that is larger than said enlargement and a second aperture that is smaller than said enlargement, said first and second apertures being connected by a throat with a pair of resilient fingers disposed therein, to point toward said second aperture, said clasp being selectively operable for releasable engagement with said stud by passing said enlargement through said first aperture and urging said post into said second aperture; and



support means connected with said clasp for supporting an article separate from said case.

5,311,973

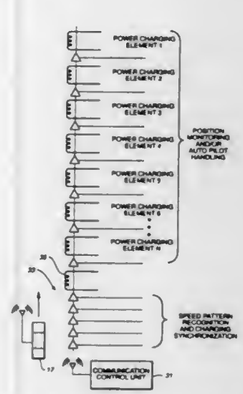
INDUCTIVE CHARGING OF A MOVING ELECTRIC VEHICLE'S BATTERY

Ling-Yuan Tseng, 5th Floor, 1-1 Lane 3, Alley 12, Chinhwa St., Chinmei, Taipei, Taiwan 11708 , and David Tseng, San Jose, Calif., assignors to Ling-Yuan Tseng, Saratoga, Calif.

Filed Jul. 31, 1992, Ser. No. 922,741

Int. Cl.[5] B60L *9/02;* **H01M** *10/44*

U.S. Cl. 191—10 **17 Claims**



1. An apparatus for inductively charging a battery of an electric vehicle equipped with an inductive charging coil while the electric vehicle is moving, comprising:

means for establishing a two-way wireless communications link between said apparatus and said electric vehicle for communicating in accordance with a service protocol one or more of the following, a charging request, a customer service number, battery specific data, autopilot commands, and electronic billing information;

means for producing a magnetic field along different portions of an extended linear distance and for individually controlling a time/intensity characteristic of said magnetic field of each different portion; and

means for sensing progress of said electric vehicle along said extended linear distance.

5,311,974

VALVE ARRANGEMENT FOR A HYDRAULIC TRANSMISSION CIRCUIT

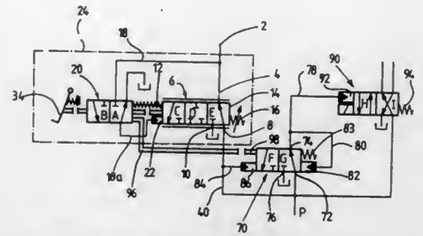
Winfried Rueb, Neustadt/Main, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed Jan. 13, 1992, Ser. No. 819,972

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1991, 4100672

Int. Cl.[5] F16H *59/56;* **F16D** *25/14*

U.S. Cl. 192—3.57 **18 Claims**



1. A valve arrangement for a hydraulic transmission circuit with a clutch valve arrangement for controlling at least one of a clutch and start-up clutch with the aid of a pressure-regulating valve, the position of which can be influenced mechanically by a clutch pedal, which comprises:

a pressure regulating valve outlet;

a reservoir;

a control valve which includes a piston;

a pressure-regulating valve having a piston which is shiftably guide din a receiving bore, a valve body, a pressure-measuring area and a control area;

a first spring located between the pressure-regulating valve and the control valve wherein the piston of the control valve, w hen acted on by the clutch pedal, is movable against the force of the first spring first of all from a position in which the pressure-measuring area is relieved of load into a floating position in which the pressure-measuring area is connected to said pressure-regulating valve outlet, and subsequently, after traversing a predetermined path, is brought into contact with the valve body of the pressureregulating valve to keep the latter, by slaving the valve body, into a position in which said pressure-regulating valve outlet is connected to the reservoir; and

a second spring which acts on said control area, in opposition to a force acting on said pressure measuring area, without utilizing a pressure tight chamber wherein said second spring is disposed outside said receiving bore for said pressure-regulating valve and wherein said first and second springs counteract each other and both act as governing springs for the pressure-regulating valve.

5,311,975

COIN SLIDE EXTENSION

John C. Hiortdahl, Lothian, Md., assignor to Hof Service Company, Inc., Silver Spring, Md.

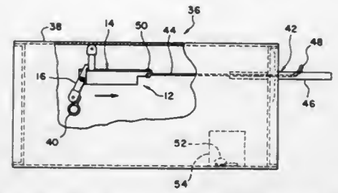
Filed Mar. 20, 1992, Ser. No. 854,690

Int. Cl.[5] G07F *5/06*

U.S. Cl. 194—235 **26 Claims**

1. A slide extension for a coin control unit having a housing, a starting mechanism disposed within the housing, and a coin slide mounted in and extending outwardly from the housing and being movable inwardly and outwardly for reciprocation between an outermost position and an innermost position, the slide extension comprising:

engaging means for operatively engaging the starting mechanism during outward movement of the coin slide after inward movement of the coin slide to a predetermined position, said engaging means including a pivotal lever normally oriented in a substantially vertical position by gravity, and a stop located to abut against said pivotal lever during outward movement of the coin slide and after said pivotal lever engages the starting mechanism which



pivots said pivotal lever from its normal vertical position to a nonvertical position before activating the starting mechanism; and

means for connecting the engaging means to the coin slide for movement therewith.

5,311,976

METHOD AND ARRANGEMENT FOR OPENING A SELF-CLOSING GRIPPER ON A GRIPPER CONVEYOR

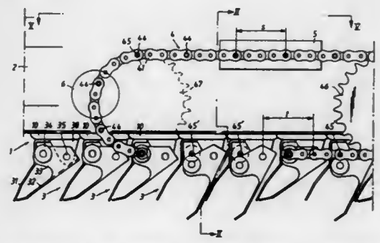
Ralf Backman, Eksjö , Sweden, assignor to Idab-Wamac AB, Eksjo, Sweden

Filed Nov. 5, 1992, Ser. No. 971,660

Claims priority, application Sweden, Nov. 7, 1991, 9103290

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—349.1 **9 Claims**



1. A method for opening self-closing grippers (3) disposed at regular spaced intervals (t) and mutually similar orientation on a driven first conveyor chain (1), comprising the steps of:

selecting whether a self-closing gripper (3) is to be opened or is to remain closed independently of whether the gripper immediately preceding the selected gripper was selected to be opened or to remain closed,

opening the gripper (3) selected to be opened independently of the other grippers, and

maintaining the opened gripper (3) in an open state independently of the other grippers along a gripper conveying path which is longer than the gripper spacing intervals (t) on the first conveyor chain (1).

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5,311,977

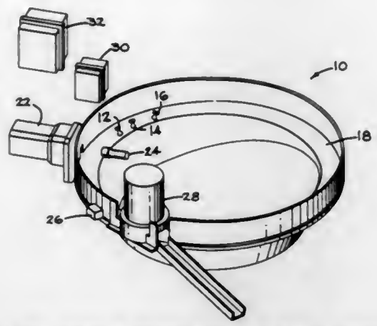
HIGH RESOLUTION PARTS HANDLING SYSTEM

Arthur L. Dean, 2750 Rebecca Dr., Indiana, Pa. 15701; Randy K. Baird, R.D. #1, Box 232, Bolivar, Pa. 15923; Stanley P. Turcheck, Jr., R.D. #3, Box 1105, Homer City, Pa. 15748, and James P. Martin, R.D. #4, Box 141B, Blairsville, Pa. 15717

Continuation of Ser. No. 587,448, Sep. 25, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 46,888

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—395 **2 Claims**



1. A high resolution handling systems for article orientation determined by geometric inspection and reorientation responsive to an output signal from a microprocessor, the high resolution handling system comprising:

means for conveying singulated work articles of like size and shape in a plurality of possible orientations along a path adjacent an article sensor responsive to article geometry;

said article sensor having at least 1000 pixels in a linear array that are oriented to be illuminated or shadowed depending on article geometry;

scanning means for producing an analog signal from said pixels during each scan period;

means responsive to article position as the article advances along said article conveying path for generating a master reset pulse that is used for initiating each scan at equidistant spacings even though conveyor speed may vary;

an analog to digital conversion means for producing digital data transitions at edge points of said article profile during each scan;

means for sensing data transitions for creating learned article geometry information data as part of a setting up procedure;

a memory for storing said learned article data;

means including a microprocessor for comparing learned article geometry information data from said memory with corresponding work article geometry information data in real time; said microprocessor including an automatic windowing system allowing an increased rate of processing by comparing fewer than all scans along the article length which comprises, means for generating a signal related to the article profile of a reference article in at least first and second different orientations as part of the setting up procedure, means for comparing said signals corresponding to different orientations to generate a scanned slice position signal at a scanned slice where the article edge points of corresponding scanned slices have a major difference that distinguishes the first orientation from the second orientation as part of the setting up procedure, means to identify and store said scanned slice position where said major difference exists as part of the setting up procedure, and means for determining in real time as part of the operating procedure the orientation of a work article on said conveyor which includes said means for generating a signal related to a work article profile, means for examining said work article profile signal at said identified scan slice portion and means responsive to a comparison of said examined signal and a signal previously stored at said identified scan slice position for producing an output signal that is used to control an article orienting means; and

said article orienting means for orienting articles in response to an output signal from the comparing means.

5,311,978

LOADING APPARATUS

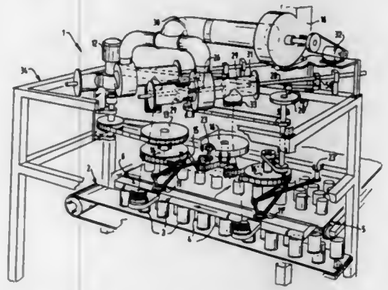
Frits Kroon, Nijverdal, and Martin Stroop, Almelo, both of Netherlands, assignors to Machinefabriek "CSW" B.V., Deventer, Netherlands

Filed Sep. 17, 1992, Ser. No. 946,860

Claims priority, application European Pat. Off., Apr. 3, 1992, 92200965.9

Int. Cl.[5] B65G *47/91*

U.S. Cl. 198—428 **11 Claims**



1. An apapratus for moving objects from a first conveyor belt traveling at a first speed in a first direction, to a second conveyor belt traveling at a second speed in a second direction, comprising:

a pick-up device for engaging the objects while the objects are positioned on the first conveyor belt traveling at the first speed in the first direction, and lifting the objects from the first conveyor belt; and

a drive connected to the pick-up device for transferring the objects to the second conveyor belt traveling in the second direction at the second speed;

the pick-up device including a first activated position for gripping the objects at the first conveyor belt, and a second activated position for depositing the objects onto the second conveyor belt;

the drive including a drive accelerator for varying the speed of the pick-up device between the first speed at the first conveyor belt and the second speed at the second conveyor belt;

the drive further including a pivoting device for varying the direction of the pick-up device betwen the first direction and the second direction; and

the pivoting device including a wheel rotatably mounted to a first fixed vertical shaft, a first arm pivotally connected to the wheel and to the pick-up device, and a second arm pivotally connected to the first arm and to a second fixed vertical shaft.

5,311,979

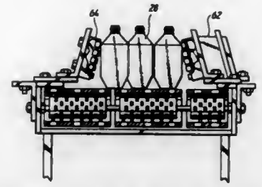
VACUUM COMBINER

Robert F. Risley, Ellicott City; Paul E. Barkley, Sykesville, and Gordon S. Lawless, Finksburg, all of Md., assignors to Ambec, Owings Mills, Md.

Filed Jan. 29, 1993, Ser. No. 10,770

Int. Cl.[5] B65G *47/12*

U.S. Cl. 198—453 **15 Claims**



1. A process for merging a randomly arranged multiple width mass of containers to a narrower stream of the containers as the containers are moved along a processing path comprising the steps of:

operating at least two laterally adjacent and parallel surface conveyors at progressively greater effective surface speeds;

delivering the containers in a randomly arranged mass to an upstream end of a slower operating conveyor surface;

guiding the containers through a progressively constricted path laterally across the surface conveyors progressively from the slower operating conveyors to the faster operating conveyor;

applying a substantially uniform level of vacuum across the width of each conveyor surface with the level of vacuum increased from the slower operating conveyor to the faster operating conveyor from beneath the surface conveyors to the containers moving on the surface conveyors as the containers are guided laterally across the surface conveyors;

so that the faster operating conveyor with the greater amount of vacuum therebeneath tends to pull the containers off the slower operating conveyor with the lessor amount of vacuum therebeneath onto the faster operating conveyor.

5,311,980

DEVICE AND METHOD FOR DISPLAYING ADVERTISEMENTS ON CONVEYORS

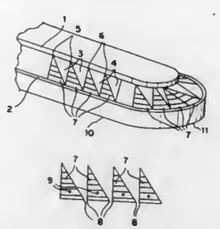
Jurgen R. Munkner, and Heinz-Joachim E. Schroeder, both of Valencia, Spain, assignors to Tap (International Airport Promotion) N.V., Curaco, Netherlands

Division of Ser. No. 828,191, Jan. 30, 1992, Pat. No. 5,209,340, which is a continuation of Ser. No. 505,271, Apr. 6, 1990, abandoned. This application May 7, 1993, Ser. No. 57,804

Claims priority, application Spain, Jun. 2, 1989, 8901789

Int. Cl.[5] B65G *43/00*

U.S. Cl. 198—502.1 **20 Claims**



1. A device for the displaying of an advertisement message, said device comprising an item supporting conveyor, which conveyor includes a straight section and a curved section and a plurality of belt-plates that overlap during passage through the curved section,

said device including an advertisement member with a message and means for securing said advertisement member to a series of adjacent item-supporting belt-plates, and

said advertisement member including a plurality of advertisement segments each secured to a surface of a respective one of said belt-plates arranged in series, said advertisement segments being dimensioned and arranged so as to be viewable during passage of the series of belt-plates through the curved section, and

said advertisement segments being arranged on said belt-plates so as to convey the message during travel of said series of advertisement segments through either said curved section or said straight section and to become disorientated so as to create a puzzle effect during the other of said curved section or said straight section.

5,311,981

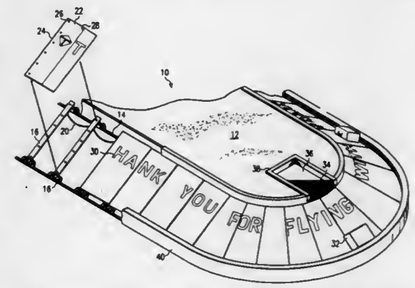
BAGGAGE CONVEYOR SYSTEM

Carl A. Crandall; William G. Walker, both of Fort Worth, and Charles G. Knight, Bedford, all of Tex., assignors to Trinity Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 41,716, Apr. 1, 1993, Pat. No. 5,263,571. This application Aug. 5, 1993, Ser. No. 103,881

Int. Cl.[5] B65G *43/00*

U.S. Cl. 198—502.1 **5 Claims**



1. A method of manufacturing a conveyor system comprising the steps of:

forming steel pallets with porcelain enamel figures thereon; and

placing the steel pallets on a moveable support structure.

5,311,982

CLIP FOR CONVEYOR CHAIN

Robert T. Clopton, Magnolia, Ky., assignor to Tekno, Inc., Cave City, Ky.

Division of Ser. No. 968,584, Oct. 29, 1992. This application Apr. 23, 1993, Ser. No. 52,173

Int. Cl.[5] B65G *17/24*

U.S. Cl. 198—779 **7 Claims**

1. A conveyor frame for a chain-driven conveyor, comprising:

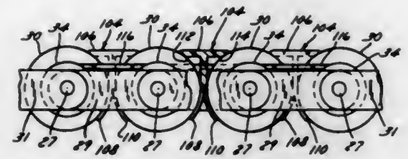
an elongated frame member, defining parallel, elongated upper and lower chambers, each of said chambers including a pair of rails for receiving a chain, and each of said chambers defining left and right sides, a top, and a bottom, wherein the top of said upper chamber defines an elongated opening;

a roller chain, including a plurality of interconnected links;

each of said links including two large rollers having the same diameter, four small rollers having the same diameter, two inner sidebars, two outer sidebars, and two chain pins;

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wherein said link has a substantially rectangular shape, with a large roller flanked by two smaller rollers forming a set of rollers at opposite ends of the rectangle and the inner sidebars connecting the opposite ends to form the other sides of said rectangle, and with the outer sidebars joining two adjacent links, so that a space is formed by the inner sidebars between the forward and rear sets of rollers within a link, and a space is formed by the outer sidebars between the rear set of rollers of one link and the forward set of rollers of the next adjacent link;



said chain being formed into a continuous loop, with an upper run of the loop lying in the upper chamber of said frame and a lower run of the loop lying in the lower chamber of said frame, with said small rollers rolling on said rails, and with the large rollers projecting out of said top opening in said frame, and further comprising a plurality of clips, mounted so as to close the spaces between adjacent sets of rollers of said chain so as to prevent debris from entering the space between the rollers, said clips being supported entirely by said rollers.

5,311,983

CONVEYOR FRAME WITH DRIVE HOUSING

Robert T. Clopton, Magnolia, Ky., assignor to Tekno, Inc., Cave City, Ky.

Continuation-in-part of Ser. No. 968,584, Oct. 29, 1992. This application Mar. 17, 1993, Ser. No. 32,617

Int. Cl.[5] B65G *21/00*

U.S. Cl. 198—860.1 **12 Claims**



1. A conveyor frame for a chain-driven conveyor, comprising:

an elongated frame member, defining parallel, elongated upper and lower chambers, each of said chambers including a pair of rails for receiving a chain, and each of said chambers defining left and right sides, a top, and a bottom, wherein the top of said upper chamber defines an elongated opening;

and wherein said frame member defines at least one elongated guide-receiving slot which opens outwardly from either its top or one of its sides, said guide-receiving slot having a substantially rectangular cross-section with a length in the direction in which it opens and a width at substantially right angles to the length, with the length being at least equal to the width, said guide-receiving slot being adapted to receive an off-the-shelf piece of sheet material to be used as a guide for guiding products as they are carried along the conveyor;

and further comprising a drive housing for enclosing the drive shaft and drive sprocket of the conveyor, said housing having a top and left and right sides aligned with the top and left and right sides of said conveyor frame and defining a guide-receiving slot which is aligned with the guide-receiving slot of said frame member.

5,311,984

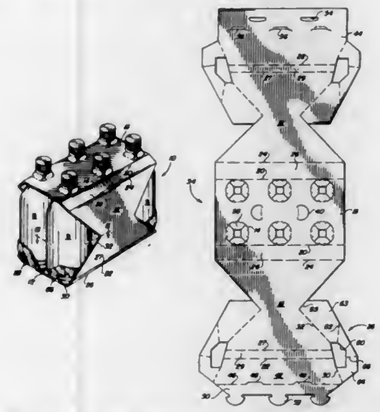
WRAP-AROUND CARRIER WITH END RESTRAINTS

Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jun. 29, 1993, Ser. No. 84,672

Int. Cl.[5] B65D *75/00*

U.S. Cl. 206—140 **8 Claims**



1. A wrap-around carrier containing a plurality of articles, comprising:

opposite side panels, each side panel being connected along an upper fold line to a top panel and along a lower fold line to a bottom panel flap, the bottom panel flaps being connected to each other to form the bottom panel of the carrier;

a gusset panel connected to a portion of each end edge of the side panels along a first fold line and connected to each end edge of an adjacent bottom panel flap along a second fold line;

each gusset panel having an intermediate diagonal fold line dividing the gusset panel into a first section extending between the intermediate fold line and said first fold line and a second portion extending between the intermediate fold line and said second fold line;

each gusset panel including a cutout at which the first, second and intermediate fold lines terminate;

the first fold line being longer than the second fold line; and

the end edge portions of each side panel to which the first fold lines of the gusset panels are connected converging toward each other;

each gusset panel being folded about its first, second and intermediate fold lines so that one face of the first gusset panel section is in contact with the adjacent side panel and a portion of the opposite face of the first gusset panel section is in contact with a portion of the second gusset panel section, another portion of the second gusset panel section extending upwardly from its associated bottom panel flap, whereby lower side portions of the articles adjacent the gusset panels contact both portions of the second gusset panel sections;

at least a substantial portion of the cutout being located in the upwardly extending portion of the second gusset panel section.

5,311,985

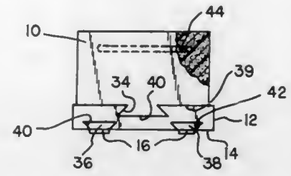
HOLDER FOR HYPODERMIC SYRINGES

Eleanor F. S. Suida, 2915 N. Steves Blvd., Flagstaff, Ariz. 86004

Continuation of Ser. No. 894,868, Jun. 8, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 100,210

Int. Cl.[5] B65D *85/24, 81/22*

U.S. Cl. 206—210 **8 Claims**



1. A new and improved holder for hypodermic syringes comprising; a supporting member, said supporting member defining a surface for receiving in a piercing and embedding manner the capped terminus of at least one hypodermic syringe, said supporting member being adapted to retain the capped terminus of said at least one hypodermic syringe embedded therein upon withdrawal of said hypodermic syringe from said capped terminus, wherein said supporting member further includes a reservoir disposed interiorly thereof, said reservoir containing antiseptic/disinfectant means therein, said reservoir adapted to be pierced and dispense said antiseptic/disinfectant into said supporting member upon being pierced by said hypodermic capped terminus or said hypodermic needle therein being embedded in said supporting member.

5,311,986

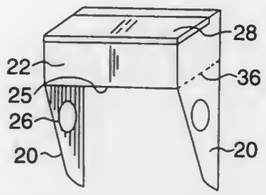
PREMOISTENED WIPE DISPENSER FOR CONVENTIONAL TOILET-TISSUE ROLL HOLDERS

Joan M. Putz, 5 Ginger Meadow Ct., Edwardsville, Ill. 62025

Filed Mar. 9, 1992, Ser. No. 848,542

Int. Cl.[5] B65D *69/00*

U.S. Cl. 206—233 **14 Claims**



1. A dispensing device to be mounted on a roll holder, said device comprising:

a. a container including a base, an opposed frontwall and backwall connected to said base, a pair of opposed sidewalls connected to said base, said frontwall and said backwall wherein said frontwall, said backwall and said sidewalls upstanding from said base and including a coplanar top edge, an endwall parallel to said base and connected to said backwall, said frontwall, and said sidewalls,

b. said base, said frontwall, said backwall, said sidewalls and said endwall define he boundaries of a hollow interior of said container,

c. said endwall having an exit means for removal of material from said container,

d. said backwall and said sidewalls extend downward from said base with sufficient area provided between said backwall and said sidewalls and below said base for replacement of rolled paper product, and

e. said sidewalls below said base having a pair of coaxial aligned holes for mounting on a roll holder.

5,311,987

GOLF BAG WITH FORM ORGANIZER

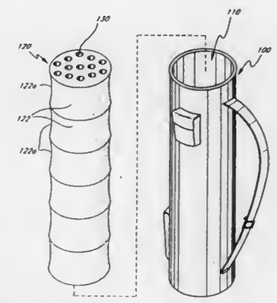
Han S. Shin, 293-24, Dok San 1-Dong, Kuro-Ku, Seoul, Rep. of Korea

Filed Aug. 3, 1992, Ser. No. 924,563

Claims priority, application Rep. of Korea, Feb. 29, 1992, 91-3141

Int. Cl.[5] A63B *55/00*

U.S. Cl. 206—315.6 **6 Claims**



1. A golf bag including

an elongated cavity adapted to receive golf clubs, with the shafts of the golf clubs disposed lengthwise in the cavity, said cavity terminating at one end in an open mouth,

a golf club receptacle structure having an enlarged, cylindrical-like body made of a foam water proof material having closed cells and disposed in said open mouth and extending from the open mouth lengthwise into the cavity at least about ⅓ of the length of the golf bag,

said receptacle structure including

a section of said body adjacent the open mouth which has essentially the same configuration as a section of the cavity adjacent the mouth, so that the receptacle section fits snug within the cavity, and

a plurality of holes which extend in a lengthwise direction through said body, each hole having a restricted diameter adapted to receive only one golf club.

5,311,988

PRESSURIZING CAP AND METHOD FOR USING SAME

Henry D. Bronson, 904 St. Stephens Green, Oak Brook, Ill. 60521

Filed Sep. 29, 1992, Ser. No. 952,961

Int. Cl.[5] B65D *85/00*

U.S. Cl. 206—315.9 **16 Claims**

1. A pressurizing enclosure for racket-sport balls comprising:

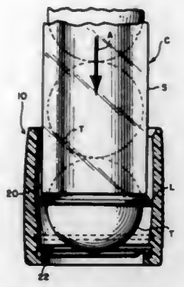
a container sized to receive racket-sport balls, said container comprising a sidewall that comprises an open end and an annular lip extending radially outwardly from the open end;

a pressurizing cap comprising an end panel, a sleeve sealed to the end panel and comprising an inwardly facing annular sealing surface formed of an elastomeric material which forms a seal against the lip, and an annular recess positioned near one end of the sealing surface, said recess receiving the annular lip to hold the cap releasably on the container;

the volume of the sleeve being at least one half of the free volume of the container; and

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said cap pressurizing a volume bounded by the container and the cap as the cap is pushed into position on the container



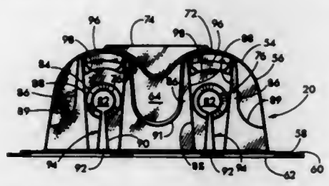
and the lip slides along the elastomeric sealing surface and then into the recess.

5,311,989

COMMON BLISTER BATTERY PACKAGE AND DISPLAY

Thomas F. Ward, Madison; Joseph R. Kuehn, Black Earth, and Stephen B. Studee, Middleton, all of Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed Jun. 25, 1993, Ser. No. 82,745
Int. Cl.[5] B65D *85/20, 73/00*
U.S. Cl. 206—333 **10 Claims**



1. A package for batteries comprising:
(a) a backing member;
(b) a plastic blister having a peripheral lip attached to the backing member, the blister and the backing member defining a space for retaining at least one battery therein, wherein the blister has a bottom which underlies a battery negative terminal, the bottom having portions for resiliently engaging the negative terminal, and wherein the blister has a top which overlies a battery positive terminal; and
(c) portions of the blister top which define a generally circular outwardly protruding cap which engages a protruding nubbin of a battery and an outwardly protruding stiffening arm extends between the cap and the blister peripheral lip to bias the cap against a battery nubbin, wherein the engaged battery is held by the package to resist rotation of batteries of varying dimensions within a standard size.

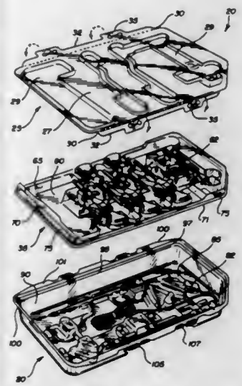
5. A package for batteries comprising:
(a) a backing member;
(b) a plastic blister having a peripheral lip attached to the backing member, the blister and the backing member defining a space for retaining at least one battery therein, wherein the blister has a bottom which underlies a battery negative terminal, and wherein the blister has a top which overlies a battery positive terminal;
(c) means for resiliently engaging the negative terminal end of a battery formed on the blister bottom;
(d) means for resiliently engaging the nubbin of a battery positive terminal end formed on the blister top; and
(e) means for resiliently engaging an annular depression in a battery positive terminal end formed on the blister top, wherein the engaged battery is held by the package to resist rotation of batteries of varying dimensions within a standard size.

5,311,990

THERMOFORMED BLISTER PACKAGE HAVING QUICK DISCONNECT LOCKING COVER MECHANISM

Robert J. Kalinski, Milford, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Feb. 19, 1992, Ser. No. 837,384
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—370 **10 Claims**



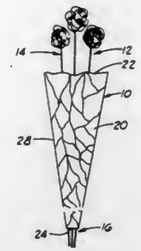
1. A thermoformed plastic package comprising,
a lower tray, said tray having a floor, upwardly extending sides and a flange extending outwardly from the sides, wherein the flange is substantially planar and has a top surface and a bottom surface;
a cover having at least one fold line along at least side,
at least one substantially flat flap foldably connected to the cover at the fold line; and,
locking means, such that when said cover is placed on top of said tray, and the locking means are engaged, the cover is securely locked into place, and the cover may be quickly disconnected for easy access to the contents of the package;
wherein said locking means comprises
at least one substantially flat male tab in each flap and a flap slot in the flap adjacent to the tab;
at least one female tab molded into the flange of the lower tray, the female tab having a cavity and an opening extending through the top surface of the flange in communication with said cavity, the female cavity having a pair of opposed ends; and,
a slot in the flange of the lower tray adjacent to each end of each female tab,
such that when the cover is place on top of the tray with the male and female tabs in substantial alignment, and the male tab is engaged by said cavity of the female tab and the female tab is contained within the flap slot, the cover is secured and locked to the tray.

5,311,991

PACKAGING FOR WRAPPING A FLORAL GROUPING WITH A WRAP HAVING A WRAP OPENING

David A. Weder, and Donald E. Weder, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Division of Ser. No. 906,089, Jun. 29, 1992, Pat. No. 5,205,108. This application Mar. 30, 1993, Ser. No. 40,330
Int. Cl.[5] B65D *85/50*
U.S. Cl. 206—423 **8 Claims**



1. A packaging comprising:
a floral grouping having a bloom end and a stem end; and
a wrap having an upper surface and a lower surface and an outer periphery, a wrap opening being formed through a portion of the wrap intersecting the upper and the lower surfaces of the wrap and being spaced a distance from the outer periphery of the wrap, said wrap being provided with a bonding material on at least one of the upper and lower surfaces of the wrap at lease near the wrap opening the stem end of the floral grouping being inserted through the wrap opening to a position wherein the stem end of the floral grouping extends a distance beyond the lower surface of the wrap and the wrap being formed about the floral grouping with the upper surface of the wrap being disposed near the floral grouping and the wrap encompassing a substantial portion of the floral grouping while a portion of the stem end of the floral grouping remains extended through the wrap opening, and the bloom end remains partially exposed, and portions of the wrap with the bonding material thereon being brought into contact and bonded with other portions of the wrap for forming bonded overlapping folds cooperating to secure the wrap tightly wrapped about the stem end of the floral grouping.

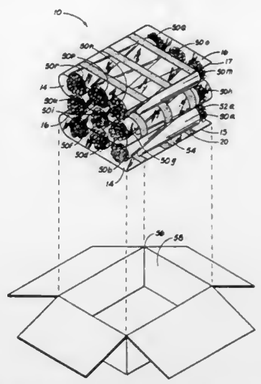
5,311,992

RETAINING FLAP FOR SHIPPING CARTONS

Donald E. Weder, Highland, and Jack Feld, Edwardsville, both of Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 892,441, Jun. 2, 1992, Pat. No. 5,240,109, which is a continuation-in-part of Ser. No. 692,329, Apr. 26, 1991, Pat. No. 5,092,465. This application Jul. 16, 1993, Ser. No. 93,109
Int. Cl.[5] B65D *85/50, 85/52*
U.S. Cl. 206—423 **27 Claims**

1. A shipping carton assembly for holding a floral grouping, comprising:
a carton having an inner surface defining a receiving space; and
a retaining flap comprising a flexible sheet of material having a bonding material disposed thereon, the sheet of material being positioned about a portion of the floral grouping with the bonding material being positioned on the sheet of material whereby the bonding material is releasably connected to the floral grouping and to the carton for connecting the sheet of material to the floral grouping and the carton by way of the bonding material for cooperating to



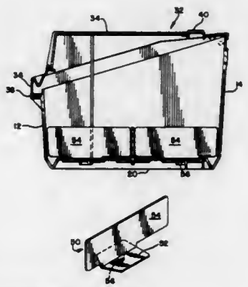
hold the floral grouping generally immobile within the receiving space of the carton.

5,311,993

MULTI-MEDIA TRAY HAVING UNI-DIRECTIONAL PARTITION MEMBERS

Richard C. Koch, Trabuco Canyon, Calif., assignor to Fellowes Manufacturing Company, Itasca, Ill.

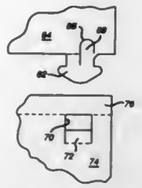
Filed Oct. 1, 1992, Ser. No. 955,113
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—425 **14 Claims**



1. A multi-media tray comprising:
a. a bottom with four upwardly extending walls including a front wall, a rear wall spaced from and substantially parallel to the front wall, a first side wall at a substantially right angle to the front wall, and a second side wall spaced from and substantially parallel to the first side wall;
b. a plurality of partition member positioning slots provided on the bottom with each positioning slot surrounded by a detent; and,
c. at least one removable uni-directional partition member comprising a substantially flat top surface with a front end and a rear end, the top surface having the same shape as the detent, a longitudinal wall extending substantially vertically upward from the top surface, and a depending tab provided on the underside of the partition member such that the detent and positioning slot removably receive the partition member and the tab, respectively, only when the front end of the partition member is oriented in a distinct direction with respect to the detent.

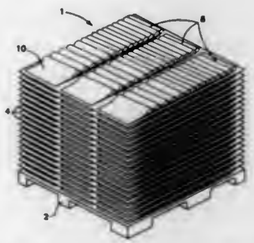
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5,311,994
PANEL LOCKING ARRANGEMENT WITH RELEASE MEANS
James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed May 18, 1993, Ser. No. 62,970
Int. Cl.[5] B65D *5/42, 5/54*
U.S. Cl. 206—427 **3 Claims**



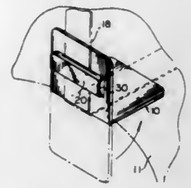
1. A locking arrangement for interlocking two or more overlapped panels, comprising:
an outer panel having defined therein a locking tab at least partially covering a first aperture, said locking tab being connected at a base to said outer panel along a foldable portion;
an inner panel having defined therein a retention tab at least partially covering a retention aperture, said retention tab being connected at a base to said inner panel along a foldable portion;
said inner and said outer panels being overlapped so that said locking and retention tabs are substantially overlapped with the foldable portions thereof in opposed relationship whereby said locking tab may be driven through said first aperture and said retention aperture to displace said retention tab into a mutually locked and braced position;
means for facilitating release of said locking tab from said locked and braced relationship including a pull tab struck from both said locking tab and said outer panel, said pull tab being connected to said locking tab and extending into said outer panel through said foldable portion.

5,311,995
STACK FOR STORING IMBRICATED SHEETS
James D. Terry, Edmonds, Wash., assignor to Graphic Management Associates, Inc., Southborough, Mass.
Filed Jul. 2, 1991, Ser. No. 724,763
Int. Cl.[5] B65D *69/00*
U.S. Cl. 206—449 **4 Claims**



3. A stack of imbricated copies of printed materials comprising a support for supporting a plurality of said copies, a bottom layer comprising at least one row of an imbricated copy stream of predetermined length, at least one intermediate layer comprising at least one row of said imbricated copy stream, said intermediate layer positioned on a flat separator sheet, said separator sheet supported by the imbricated copy stream of a preceding layer, said intermediate and bottom layer rows being arranged on substantially horizontal and parallel planes to form a vertically extending stack, each said separator sheet being unattached to an adjacent separator sheet, and an uppermost said separator sheet being removable from said stack.

5,311,996
EDGE PROTECTOR
Thomas J. Duffy, c/o Badger Plug Company, 1850 W. Reeve St., Appleton, Wis. 54912, and Roger R. Hanger, Jr., 900 Highridge Ct., Miamisburg, Ohio 45342
Filed Jan. 5, 1993, Ser. No. 658
Int. Cl.[5] B65D *6/36, 63/00*
U.S. Cl. 206—453 **12 Claims**

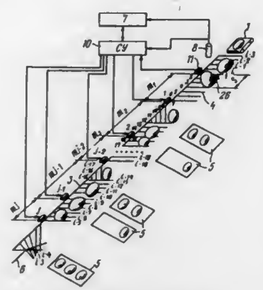


1. An edge protector for protecting goods having at least one edge against damage of the edge by a strap wrapping the goods, the edge protector comprising:
a force-distributing member for distributing a force supplied by a wrapping strap to goods wrapped by the strap in such a manner as to protect the edge from damage by the strap; and
a spring clip connected to the force-distributing member and engageable with the strap for securing the edge protector to the strap; wherein:
the clip comprises a proximal portion attached to the force-distributing member and a distal portion spaced apart from the proximal portion and adjacent to but detached from the force-distributing member;
the distal portion is formed with a cam that is contoured so that the strap can be pressed against the cam to elevate the distal portion of the clip relative to the force-distributing member and slid between the clip and the force-distrubuting member, the force-distributing member then extending underneath the strap and the clip overlying the strap, thereby securing the strap and the edge protector together and militating against their inadvertent separation even upon removal of the strap from the goods; and
the cam intersects a rear surface that is contoured so that the strap if pressed against the rear surface will not elevate the distal portion of the clip, whereby the cam can be operated only in a latching direction.

5,311,997
SELECTIVE SEPARATION OF FINELY-DIVIDED MINERALS BY ADDITION OF SELECTIVE COLLECTOR REAGENT AND CENTRIFUGATION
George E. Gantt, Milledgeville; Thomas J. Adkisson, Macon; Preston B. Gladin, Milledgeville, and Randall E. Ussery, Jr., Gordon, all of Ga., assignors to Engelhard Corporation, Iselin, N.J.
Continuation of Ser. No. 725,713, Jul. 3, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 988,393
Int. Cl.[5] B03B *1/04, 7/00;* **B04C** *9/00;* **B03D** *1/02*
U.S. Cl. 209—4 **7 Claims**

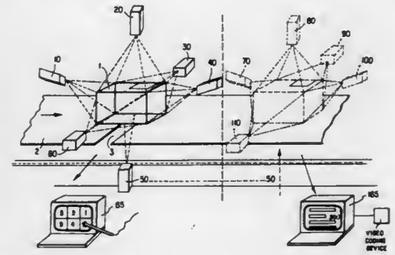
1. A method for removing particles of a colored iron contaminated titania impurity from kaolin clay which comprising forming a dispersed aqueous pulp of the impure clay using a dispersant selected from the group consisting of alumsilica hydrosol, sodium silicate, sodium carbonate, sodium polyacrylate and mixtures thereof, said pulp being free from a phosphate dispersant, conditioning said pulp by incorporating therein carrier mineral particles and an anionic collector reagent capable of selectively collector-coating said colored iron contaminated titania impurity and said carrier mineral particles, and agitating said pulp without grinding minerals therein, subjecting said conditioned pulp to centrifugation or hydrocloning to sediment said collector-coated particles of colored iron contaminated impurity along with said carrier mineral particles and separating said sediment from the remainder of the pulp which is a dispersed concentrate of purified kaolin particles, said centrifugation or hydrocloning step being carried out without an intermediate froth flotation step.

5,311,998
METHOD OF GRADING ITEMS AND AN APPARATUS MATERIALIZING SAME
Moisei M. Lerner, 56/5 Trumpeldor, Petah-Tikva; Svyatoslav M. Voldman, 49/15, Kadish Luzst, Kiryat-Mozkin, Haifa, both of Israel; Moisei F. Milgrom, bulvar Larisa, 16, kv. 13; Petr L. Buryan, ulitsa Karla Marxa 8, kv. 12, both of Moldova, Belts, Russian Federation; Khaskel A. Tarandash, 32/14 Einstein street, Lod, Israel, and Alexei I. Suschenko, ulitsa Volodarskogo, 27b, kv. 24, Moldova, Belts, Russian Federation
PCT No. PCT/SU90/00242, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO92/08553, PCT Pub. Date May 29, 1992
PCT Filed Nov. 14, 1990, Ser. No. 910,173
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—552 **18 Claims**



1. A method of grading items comprising:
advancing a succession of items, one after the other in a single layer, on a conveyor,
measuring a grading characteristic of each item as the item passes a measuring zone adjacent to the conveyor,
comparing the grading characteristic of each item with a predetermined value;
transferring the items from the conveyor to addressing stations based on the compared grading characteristics of said items,
said grading characteristic of each item being measured by measuring the orthogonal projection of each said item onto the conveyor, said conveyor being formed by successive transverse conveyor elements, each item having an orthogonal projection extending over at least three adjacent conveyor elements,
said transferring of said items from the conveyor being effected by displacing said at least three conveyor elements.

5,311,999
METHOD OF DISTRIBUTING PACKAGES OR THE LIKE
Siegmar Malow; Michael Pausinger; Albert Glade, and Hubert Gitschier, all of Constance, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany
PCT No. PCT/EP90/02234, § 371 Date Aug. 23, 1991, § 102(e) Date Aug. 23, 1991, PCT Pub. No. WO91/09688, PCT Pub. Date Jul. 11, 1991
Continuation of Ser. No. 752,469, Aug. 23, 1991, abandoned. This PCT application Dec. 19, 1990, Ser. No. 126,436
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942932
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—583 **15 Claims**



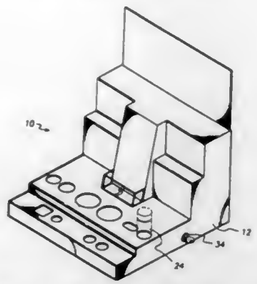
11. An apparatus for recognizing an address on a surface of multisurface packages; comprising
(a) a conveyor for consecutively advancing the packages along a conveying path;
(b) a gap provided in the conveying path over which the packages are moved;
(c) optical scanning means for optically scanning all surfaces of each package; said optical scanning means including means for scanning an underside of each package through said gap; said optical scanning means including means for rough-scanning at least some of the package surfaces;
(d) displaying means for at least approximately simultaneously displaying images of all surfaces of each package; said displaying means being formed of a single monitor having six partial image regions; and
(e) means for fine-scanning a region of a selected image and for obtaining an image of the region with a predetermined resolution.

5,312,000
ANTI-THEFT COSMETIC TESTER DISPLAY STAND AND THE LIKE
Pierre Bass, 921 - 26th St., Santa Monica, Calif. 90403
Filed Dec. 4, 1992, Ser. No. 986,073
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—4 **12 Claims**

1. A product display stand incorporating at least one tester for a particular product lockably mounted therein, comprising:
a support member;
a cover member lockably mounted onto said support member, said cover member having at least one opening therein, dimensioned so as to permit a lower end of said tester to pass therethrough; and
a base member, affixed to said tester, oversized with respect to said opening so as not to be passable through said opening in said cover member;
whereby when said tester and said base member are placed

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on said support and said cover member is lockably mounted to said support, said tester will be locked between said support member and said cover member, thereby preventing said tester from being removed.



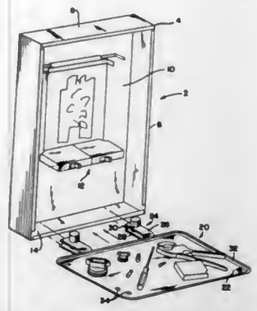
5,312,001
PAINT CHIP DISPLAY ASSEMBLY
Gerald R. Sorensen, Elgin, Ill., assignor to NCM International, Inc., Arlington Heights, Ill.
Filed Feb. 25, 1993, Ser. No. 22,970
Int. Cl.[5] B42F *9/00*
U.S. Cl. 211—50 **13 Claims**



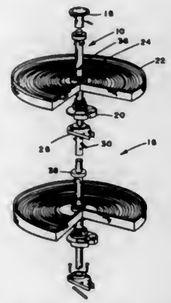
1. A display assembly adapted to hold a plurality of card-like items in a generally predetermined upright position for proper viewing and/or removal comprising:
a generally planar back panel,
a retaining member connected to said back panel by a pivotal hinge means, said retaining member comprising a portion integral with said pivotal hinge means and a pair of arms having free ends and extending from a point adjacent opposite ends of said pivotal hinge portion, said pivotal hinge means and said arms being integral and being hingedly attached to an edge of said generally planar back panel,
receiving means on said arms for connecting the retaining member to the back panel for maintaining the card-like items in said upright position.

5,312,002
UTILITY TRAY
Thomas DiCicco, 50 Williams St., Mercerville, N.J. 08619
Filed Nov. 23, 1992, Ser. No. 980,455
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—88 **6 Claims**

1. Apparatus adapted to be operatively engaged to a circuit breaker panel having a horizontally extending ledge comprising:
(a) a tray having a base and a first side; and
(b) attachment means operatively connected to the tray for engaging the ledge of the circuit breaker panel so that the tray is in substantially the same plane as the ledge and so that the first side of the tray is adjacent the ledge.

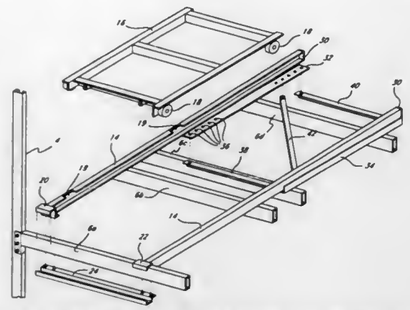


5,312,003
LAZY SUSAN SYSTEM
Georg Domenig, Kernersville, N.C., assignor to Peter Meier, Inc., Kernersville, N.C.
Filed Jan. 25, 1993, Ser. No. 8,658
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—144 **3 Claims**



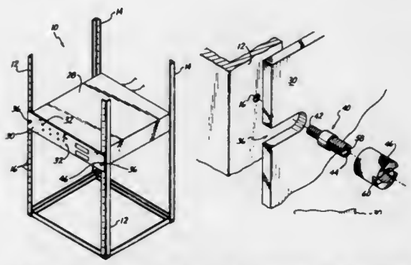
1. An adjustable and alignable lazy susan system having a top and a bottom comprising: a housing defining a cavity having upper and lower ends, the upper end closed by the cabinet top and lower ends closed by the cabinet bottom; a substantially vertical tube positioned within the cavity; an upper shaft-engaging bracket secured to the cabinet top closing the cavity end; one or more rotating shelves releasably secured to the vertical tube; means for positioning the rotatable shelves at preselected locations along the tube; and means for securing the shelves and the rotatable shelf positioning means to avoid a movement and displacement of the rotatable shelves during shipment, the positioning means including a self-supporting positioning plate and a plate securing pin.

5,312,004
PUSH-BACK RETROFIT SYSTEM FOR A STORAGE RACK ASSEMBLY
John V. R. Krummell, 591-102 John K Dr., Long Beach, Calif. 90803, and Kenneth E. Davison, Hermosa Beach, Calif., assignors to John V. R. Krummell, Long Beach, Calif.
Filed Apr. 30, 1992, Ser. No. 876,658
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—151 **12 Claims**



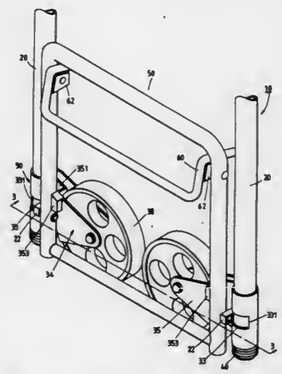
1. An apparatus for retrofitting a storage rack assembly with a push-back system comprising:
rail structures for carrying a push-back cart;
connecting means for attaching said rail structures to said storage rack assembly;
means for inclining said rail structures so that the force of gravity will urge said push-back cart along said rail structures;
structural members, each having a plurality of through holes, attached to rear sections of said rail structures; and
forward and rearward struts attached to said structural members by fasteners passing through selected through holes.

5,312,005
RACK RELEASE MOUNTING ASSEMBLY
Gordon T. Odell, 281 S. Madison Ave., No. 206, Pasadena, Calif. 91101
Filed Jul. 25, 1991, Ser. No. 735,446
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—189 **4 Claims**



1. A fastener means for allowing fastening to and removal from a rack at least one plate having a thickness and having spaces formed in said plate through said thickness, comprising:
a. a rack having a plurality of substantially parallel rails in each of which rails threaded holes are formed, each of said holes being positioned substantially level with a corresponding hole in another of said parallel rails;
b. threaded fastener means having opposite first and second ends defining a length therebetween, for connecting said at least one plate to said rack, said threaded fastener means comprising:
i. a first portion defined by a length depending from the first of said ends along said length of said threaded fastener means, said first portion having threads thereon at a pitch complemental to said threaded holes in said parallel rails receiving said first portion; and,
ii. a second portion defined by a length depending from said second end along said length of said threaded fastener means, said second portion having threads formed at a pitch predetermined to facilitate assembly and disassembly, and said second portion comprising a head indentation depending from said second end, said head indentation being capable of receiving a screwdriver; and,
c. threaded nut means for securing said at least one plate to said rack, said nut means having a thread formed therein at a pitch complemental to said threads of said second portion of said threaded fastener means, said nut means having an outside diameter substantially greater than a diameter of said threaded fastener means, and capable of engaging said plate when said nut means is threaded onto said second portion of said threaded fastener means and said threaded fastener means is positioned through said space of said at least one plate.

5,312,006
FOLDABLE CARRIAGE RACK
Fang-Hoang Lag, No. 461, Jiun Her Street, Taichung, Taiwan
Filed Jun. 2, 1992, Ser. No. 892,028
Int. Cl.[5] B62B *1/04*
U.S. Cl. 211—195 **3 Claims**

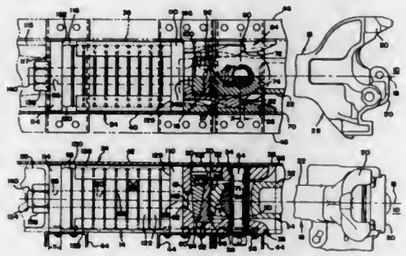


1. A carriage rack, comprising:
(a) two posts spaced apart in a parallel manner and provided at inner sides of bottom ends thereof with pivoting portions facing each other;
(b) two swivel arms, each of which is provided with a cylindrical portion and with inner and outer lugs extending rearwards from said cylindrical portion, said cylindrical portion having an opening of a size located on the side corresponding to the side where said inner lug is situated, said inner lug having an inner wall provided with a recess, a slant and a baffle, said post being fitted over by said swivel arm in such a manner that said pivoting portion of said post extends out of said opening of said cylindrical portion so that said pivoting portion of said post is stopped and retained by two end edges of said opening at the time when said swivel arm makes a turn of 90 degrees;

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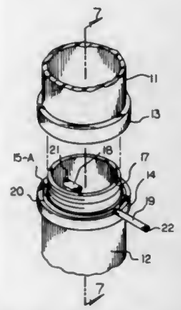
(c) two elastic elements, each of which is fitted over the bottom end of a post;
(d) a luggage holding rod having two upright legs, which are respectively fastened to said pivoting portions of said posts in such manners that said upright legs urge said slants of said inner lugs of said swivel arms so as to permit said inner and outer lugs to swivel by using said cylindrical portions as fulcrums, and that said upright legs are stopped and retained by said baffles of said inner lugs at such time when said two upright legs of said luggage holding rod are perpendicular to said posts; and
(e) a bracket having two ends, which are respectively arranged near abutments between said upright legs of said luggage holding rod and a horizontal segment of said luggage holding rod.

5,312,007
SLACKLESS RAILWAY COUPLER WITH DRAFT/BUFF GEAR
Horst T. Kanfhold; John J. Steffen, both of Aurora; David J. Jarvis, Chicago, all of Ill.; David G. Anderson, Chesterton, Ind., and Ronald G. Butler, Mundelein, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.
Filed Dec. 4, 1992, Ser. No. 986,862
Int. Cl.[5] B61G *7/10*
U.S. Cl. 213—75 R **5 Claims**



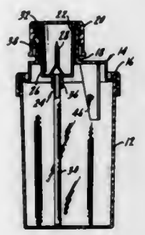
1. An assembly for connecting railway cars, which have a railway-car center sill with a rear positive stop secured to said center sill, a longitudinal axis, and a coupler cavity to receive a coupler mechanism for connecting adjacent railway cars, said assembly comprising:
a pocket casting having an enclosure, a first end, a second end and an aperture at one of said first and second ends for communication through said casting, said pocket casting slidable in said coupler cavity;
at least one sill side casting positioned in said coupler cavity, secured to said center sill and operable to limit sliding movement of said pocket casting in said coupler cavity between buff and draft movements of said shank;
a slack-free coupler having a shank with a butt end and a pin-bearing block;
a mating follower and a wedge mounted in said pocket-casting enclosure against the other of said first and second ends, said shank extending through said pocket-casting aperture to contact said mating follower at said butt-end;
a coupling pin;
said pocket casting defining a first port and a second port, said first and second ports approximately aligned and about transverse to said longitudinal axis;
said shank defining a through-passage with said pin-bearing block positioned therein, which through-passage is alignable with said first and second ports to receive said coupling pin for connecting said shank to said pocket casting;
a draft gear subassembly positioned and operable in said coupler cavity between said slidable pocket casting and said rear positive stop;
means for connecting said pocket casting and draft gear assembly to said rear draft stop to conjoin said slack-free coupler and draft gear subassembly to provide a compressive force preload on said coupler and shank in both the buff and draft directions of railway car travel.

5,312,008
PERSONAL TIME CAPSULE
Bradford L. Davis, P.O. Box 58, Warrensburg, Ill. 62573
Filed May 26, 1993, Ser. No. 72,841
Int. Cl.[5] B65D *6/02*
U.S. Cl. 220—4.21 **2 Claims**



1. A new personal time capsule which comprises:
a hollow, two sectioned cylinder of high strength, non-corrosive, non-biodegradable plastic;
a gasket member adapted to be positioned between the two sections of said time capsule, said gasket member comprising a hollow tube extending around a periphery of one of said two sections and having a portion thereof communicating with an interior of said capsule and further having a second portion thereof external of said capsule and adapted to engage with a means for producing a vacuum within said capsule and within said hollow tube; and,
means to join said two sections together.

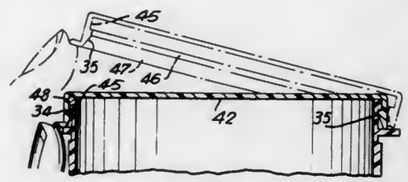
5,312,009
LIQUID SPECIMEN COLLECTOR WITH REMOVABLE EXTRACTION DEVICE
Janet Ratajczak, McHenry; Lawrence G. Ponsi, Wheeling, and Paul H. Hanifl, Barrington Hills, all of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.
Filed Jan. 7, 1993, Ser. No. 73,098
Int. Cl.[5] B65D *55/08*
U.S. Cl. 220—258 **18 Claims**



1. A container for collection of biological fluids, comprising
a. a receptacle for fluids, said receptacle having an open end,
b. a cover formed to sealingly close said open end,

c. a sample port formed in said cover,
d. a cap shaped to sealingly close said sample port,
e. a removable specimen extractor formed to be seated within said sample port, said specimen extractor including
i. a sample cup shaped to receive a pierceable end of a specimen vial,
ii. a hollow, upstanding needle located within said cup and positioned to pierce said pierceable end when said specimen vial is received in said cup, and
iii. an extraction tube extending from said cup and communicating with said needle, said tube, when said extractor is seated with said sample port, extending into said receptacle to facilitate withdrawal of fluid therefrom.

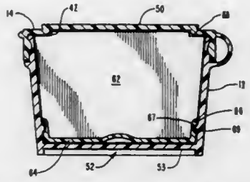
5,312,010
WIDE MOUTH CHILDPROOF CONTAINER
Gustav Johnson, Westfield, N.J., assignor to Lermer Packaging Corp., Garwood, N.J.
Filed May 28, 1993, Ser. No. 68,152
Int. Cl.[5] B65D *41/16, 55/02*
U.S. Cl. 220—306 **3 Claims**



1. An improved child resistant wide mouth container comprising: a container element and a closure element; said container element including a bottom wall and a cylindrical side wall terminating at an upper edge thereof in an open mouth, said side wall having a radially extending closure-engaging flange bordering said mouth at an upper edge of said side wall, and a second radially extending flange positioned below said closure-engaging flange, said second flange being defined by a thickness between upper and lower generally planar surfaces, said second flange defining a gap in the periphery thereof; said closure element including an upper end wall and a cylindrical side wall, said side wall having an inner surface defining an annular recess in a cylindrical area adjacent said end wall selectively engaging said closure engaging flange, and an outer surface; a radially extending tab projecting from said outer surface, said second flange on said container element defining a peripheral edge surface, said radially extending tab being of substantially the same thickness as said second flange and having a peripheral edge surface lying in congruent relation therewith when said closure element is in engaged condition with said container element; whereby said closure element may be disengaged by rotation of said closure element relative to said container element to a position wherein said tab overlies said gap in said second flange to permit manual engagement of said tab.

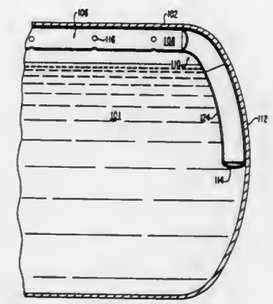
5,312,011
STACKABLE CONTAINER SYSTEM
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah
Filed Aug. 13, 1992, Ser. No. 930,018
Int. Cl.[5] B65D *90/00*
U.S. Cl. 220—528 **4 Claims**

1. In a stackable container system wherein a plurality of containers are securable one to the other when stacked together, each said container comprising:
a generally cylindrical receptacle having an open top, a bottom and at least one sidewall, in which to store items:
a generally circular lid for selectively opening and closing the top of said receptacle, said lid comprising means for engaging said at lest one sidewall in a snap-fit engagement;
means for tethering the lid to the receptacle to provide permanent attachment thereto;
selectively removable means for dividing the interior of said receptacle into at least two separate compartments that are simultaneously accessible and visible, the selectively removable means comprising a substantially cylindrical base member conforming in shape to the cylindrical shape of the receptacle, the base member having a vertical divider wall attached thereto, and the base member with attached vertical divider wall fitting into the cylindrical receptacle, and the base member having means for securing the base member on top of the receptacle bottom with a snap-fit;



a male snap-fit member formed on one of either said lid and the bottom of the receptacle, and a female snap-fit member formed on the other of the lid and the bottom of the receptacle, such that each pair of containers can be stacked together by attachment of a male snap-fit member of one container to a female snap-fit member of another container; and
wherein the receptacle, lid, tethering means and the male and female snap-fit members are comprised of a single, integral molded material and wherein each said container is formed of material that is sufficiently transparent to permit visual inspection of the items without removing the lid and wherein a plurality of said containers are formed from material of differing colors.

5,312,012
VAPOR SPACE WATER HAMMER ELIMINATOR SYSTEM FOR LIQUID TRANSPORT APPARATUSES
Donald L. Zink, Billings, Mont., assignor to Montana Sulphur & Chemical Company, Billings, Mont.
Continuation of Ser. No. 594,169, Oct. 9, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 804,548
Int. Cl.[5] B65D *1/24*
U.S. Cl. 220—563 **36 Claims**



1. A liquid transport apparatus comprising:
a liquid transport vessel having a vessel interior, a vessel top wall, a vessel first end wall, a vessel second end wall, and

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a vapor space in said vessel interior and along said vessel top wall; and

water hammer pressure dissipating tubular piping positioned in said vapor space and extending longitudinally between said vessel first and second end walls, said tubular piping being filled with a compressible fluid, said tubular piping being constructed, configured and positioned so that when said liquid transport vessel is impacted with such severity as to produce water hammer pressure, liquid in said vessel interior enters said tubular piping and compresses said compressible fluid thereby at least substantially dissipating the water hammer pressure in said vessel interior;

wherein said tubular piping has a plurality of small apertures such that said tubular piping serves as part of the vapor space in said liquid transport vessel and so that no differential pressure normally exists between the interior of said tubular piping and said vessel interior beneath said tubular piping with said vessel at rest;

wherein said tubular piping includes at least one rupture member, said rupture member, when said liquid transport vessel is impacted, being caused to rupture by the resulting surge of liquid in said vessel interior, thereby compressing said compressible fluid and dissipating the water hammer pressure in said vessel interior; and

wherein said tubular piping has a piping end generally adjacent said first vessel end wall, and said rupture member is positioned and extends across said piping end.

5,312,013

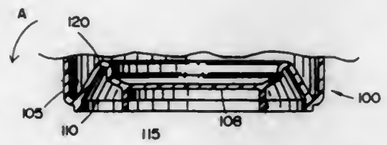
BEVERAGE CONTAINER CONSTRUCTION

John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Nashville, Tenn.

Division of Ser. No. 704,024, May 22, 1991, abandoned. This application Oct. 17, 1991, Ser. No. 778,261

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—625 **2 Claims**



1. A container base construction positionable in a container holder, said container base construction comprising:

a central base member;

an annular ring extending a distance down from said central base member and having straight vertical inner and outer surfaces, a bottom surface of said annular ring defining a lower plane;

a groove member defining a container holder receiving groove extending upwardly above said central base member and disposed radially outside of said annular ring; and

an outer skirt generally outside of said receiving groove and extending generally below said central base member to the lower plane.

5,312,014

BEVERAGE DRINKING DEVICE CAPABLE OF MAKING ICE CREAM FLOATS

Dennis L. Hamlin, Spokane, Wash., assignor to D-N-S Marketing, Inc., Spokane, Wash.

Filed Oct. 6, 1992, Ser. No. 958,022

Int. Cl.[5] A47G *19/22*

U.S. Cl. 220—703 **26 Claims**

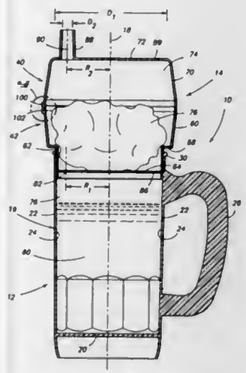
1. A beverage drinking device comprising:

a mug having a body with a cavity formed therein defining an annular interior surface at an opening, said opening having a first cross-sectional area;

a removable mixing cap connectable to and detachable from the mug, the mixing cap covering the mug opening to define a lower chamber in the cavity for containing a liquid, the lower chamber having a first volume, the mixing cap comprising:

detachable interlocking upper and lower sections aligned along a central axis, the upper and lower sections being alternately connected to one another in an assembled state and detached from one another in a disassembled state, the upper and lower sections defining an upper chamber of a second volume when they are connected;

the lower section having an annular sleeve portion provided about the central axis, the annular sleeve having an exterior surface which is complementary in size and shape to insert within and sealingly mate with the interior surface of the mug when the mixing cap is connected to the mug;



the lower section having a floor which separates the upper and lower chambers, the floor having at least one entrance aperture formed therein and spaced a radial distance from the central axis to enable fluid to flow between the upper and lower chambers;

the upper section having an exit aperture of a second cross-sectional area formed therein and spaced a radial distance from the central axis to enable fluid to flow from the upper chamber;

the upper and lower sections being rotatable relative to each other about the central axis to selectively orient the entrance and exit apertures relative to each other; and

the upper and lower sections having indexing means for indicating when the entrance and exit apertures are aligned and when the entrance and exit apertures are not aligned said indexing means located on the exterior of said upper and lower sections.

5,312,015

GATED-LOOP PACKAGING SYSTEM AND MANIPULATING APPARATUS

John R. Gelzer, Dublin, Ohio, assignor to GPAX International, Inc., Columbus, Ohio

Filed Apr. 3, 1992, Ser. No. 862,640

Int. Cl.[5] B65D *73/00*

U.S. Cl. 221—72 **31 Claims**

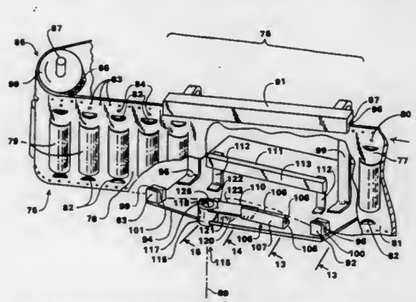
1. A gated-loop tape packaging system for articles comprising

an elongated flexible carrier tape of planar strip-form having

opposed faces and predetermined width having longitudinally extending edges,

a plurality of elongated article-receiving loops carried on said carrier tape on one of its faces in serially disposed, relatively spaced relationship along the longitudinal axis of said carrier tape, each of said loops being of elongated configuration oriented with its longitudinal axis extending transversely to the longitudinal axis of said carrier tape and being open at least at one end to permit passage of an article into or out of said loop through said open end, said loops being positioned on said carrier tape with the open ends thereof spaced a distance inwardly from a respective adjacent longitudinal edge of said carrier tape, and

a plurality of gating elements carried by said carrier tape with one of said gating elements disposed between an open end of each loop and the adjacent longitudinal edge of said carrier tape in blocking relationship to the open end of a respective loop to prevent axial displacement of an article with respect to that loop, said gating elements being located at a position intermediate the axial end of a respective loop and the adjacent longitudinal edge of said carrier tape and of a configuration to project a predetermined distance laterally from the face of said carrier tape whereby bending of the marginal edge portion of said carrier tape about a longitudinal axis with respect to the carrier tape and located intermediate said loop and longitudinal edge of said carrier tape to a predetermined extent of substantially less than at right angles out of its plane and



in a direction away from the face of said carrier tape on which said loops are carried displaces the gating element out of blocking relationship with respect to the associated loop, thereby permitting axial displacement of an article into or out of said loop.

16. A tape-manipulating apparatus for a tape-form article packaging system having an elongated, flat strip carrier tape with longitudinally extending edges and provided with a plurality of elongated article-retaining loops carried on the tape and gating elements carried on the tape in cooperative relationship to the loops for displacement between a position blocking movement of articles into or out of a respective loop and a non-blocking position where they do not block movement of articles, the tape-manipulating apparatus being positioned at an article-transfer station where the packaging system is longitudinally advanced therethrough for enabling entrance or exit of an article with respect to a loop at an article-transfer point located within the article-transfer station and comprising

guide means for mechanically engaging the carrier tape at opposite longitudinal edges and restraining the tape against displacement in the plane of the carrier tape and transversely to the tape's longitudinal axis while the respective portion of the tape is in the article-transfer station,

tape bending means mechanically engageable with the carrier tape for laterally displacing a marginal edge portion of the carrier tape and to displace a gating element toward a position out of blocking relationship to a respective loop while the loop is at the article-transfer point.

5,312,016

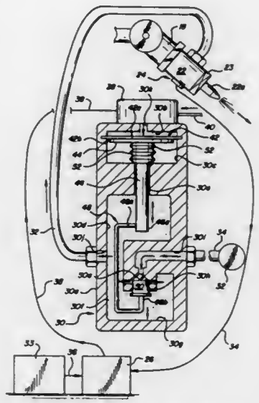
MASTIC APPLICATOR SYSTEM

Thomas J. Brennan, Rochester Hills, and Michael DeFillipi, Grosse Pointe Park, both of Mich., assignors to Johnstone Pump Company, Troy, Mich.

Filed Nov. 4, 1992, Ser. No. 971,218

Int. Cl.[5] B67D *5/08*

U.S. Cl. 222—55 **14 Claims**



12. A mastic applicator system comprising:

a pump;

a regulator;

a nozzle;

means establishing a mastic flow path extending from the pump to the regulator and thence to the nozzle;

a transducer sensing the pressure of the mastic flowing through the nozzle and operative to generate an output signal proportioned to the mastic pressure;

means generating a command signal;

a comparator receiving the output signal and the command signal and operative to generate a control signal which is proportioned to the command signal and which is constantly adjusted in response to a sensed differential between the command signal and the output signal; and

a pneumatic valve receiving the control signal and operative to vary the setting of the regulator in proportion to the control signal;

the regulator defining a flow path through the regulator including a valving member;

the pneumatic valve being operative to vary the setting of the valving member;

the regulator including a large area movable member exposed at one face thereof to the output air pressure of the pneumatic valve and a rod secured at its one end to the large area member and at its other end to the valving member;

the valving member being biased in one direction by the air pressure acting through the rod via the large area member and mastic inlet pressure upstream of the valving member and biased in an opposite direction by mastic outlet pressure downstream of the valving member and a return force acting on an opposite face of the large area member and resisting the movement of the large area member by the air pressure.

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5,312,017

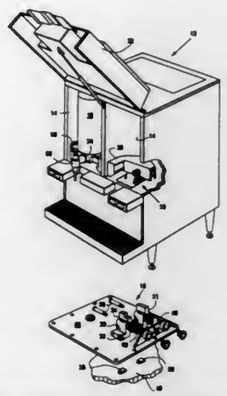
PRODUCT IDENTIFICATION SYSTEM FOR BEVERAGE DISPENSER

Alfred A. Schroeder; Michael T. Romanyszyn, Jr., both of San Antonio, Tex.; Norman P. Wittig, Corry, Pa., and Jack F. Brumley, Houston, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 843,757, Feb. 28, 1992, which is a continuation of Ser. No. 752,406, Aug. 30, 1991, abandoned. This application May 14, 1992, Ser. No. 883,332

Int. Cl.[5] B67D *5/06*

U.S. Cl. 222—23 **5 Claims**



1. Apparatus for automatically identifying a desired product ratio of a product in a concentrate container inserted into a postmix beverage dispenser comprising:

(a) said postmix beverage dispenser;

(b) said beverage dispenser including a concentrate container-receiving chamber;

(c) a product ratio I.D. sensor located in said chamber;

(d) said concentrate container located in said chamber, said container including product ratio indicia thereon;

(e) said dispenser including means for receiving and supporting said container in said chamber in a single orientation of said container;

(f) said product ratio indicia on said container being located on said container in a position such that when said container is in said single orientation in said chamber, said indicia is adjacent to said sensor;

(g) said container including a fill plug and wherein said indicia being on said fill plug; and

(h) said sensor including a pair of Hall effect sensors mounted in said chamber.

5,312,018

CONTAINING AND DISPENSING DEVICE FOR FLOWABLE MATERIAL HAVING RELATIVELY RIGID AND DEFORMABLE MATERIAL CONTAINMENT PORTIONS

Paul D. Evezich, P.O. Box 431, Frederick, Colo. 80530

Continuation of Ser. No. 451,876, Dec. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 226,271, Jul. 29, 1988, Pat. No. 4,909,416. This application Aug. 18, 1992, Ser. No. 931,568

Int. Cl.[5] B65D *37/00*

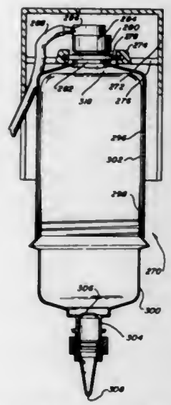
U.S. Cl. 222—95 **17 Claims**

1. A device for containing and repeatedly dispensing a predetermined material comprising:

a deformable material containment portion having an open end and a volume for material containment;

a second material containment portion which is relatively rigid relative to said deformable material containment portion, said second material containment portion having an engagable portion at one end thereof and a material outlet at another end thereof, a material containment volume being defined between said ends, said open end of said deformable material containment portion being connected to said one end of said second material containment portion adjacent to said connecting means thus together defining an initial containment volume for material to be dispensed; and

pressurizing means including wall means for defining a chamber for receiving and housing said deformable material containment portion and having connecting means for



engaging said engagable portion of said second material containment portion so that when engaged said pressurizing means and said second material containment portion comprise an outer body of said device,

said chamber having a fluid inlet for enabling selected flow of fluid from the exterior of said device to said chamber of said pressurizing means between said wall means and said deformable material containment portion so that negative pressure in said chamber is substantially avoided and dispensing of the material from said device is caused by deformation of said deformable material containment portion and movement of said deformable material containment portion into said second material containment portion.

5,312,019

DISPENSER HAVING A REFILLABLE CUP

Ye-Ming Tsao, Rm No. 6-11, 6 Fl., No. 782, Ting Chou Rd., Taipei, Taiwan

Filed May 11, 1993, Ser. No. 59,380

Int. Cl.[5] B67D *5/06*

U.S. Cl. 222—105 **1 Claim**

1. A freshness keeping cup comprising:

a cup body stepped with an upper section and a lower section, said lower section being formed with male threads and a bottom central conic projection, several vent holes being formed around said projection at equal intervals;

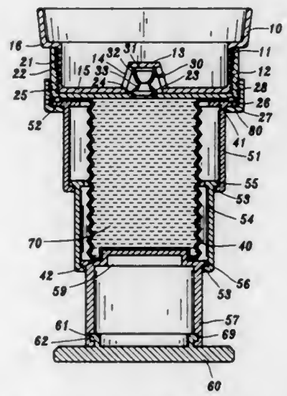
a check valve disposed under said projection and made of rubber, plastic or metal materials, having an upper ring portion disposed under the top of said projection and a connecting portion downwardly tapered from said ring portion and a lower conic base portion, the tip of which is connected with a lower end of said connecting portion, the lower conic base portion being able to move upward to compress and bend said connecting portion;

a U-shaped fixing inner sleeve member having female threads screwed onto the lower section of said cup body with an upper end abutting against a step edge of said cup body and a lower end contacting the outer bottom surface of said cup body, a check valve seat being disposed at a central portion of said inner sleeve member whereby the conic base portion of said check valve can be fitted in said valve seat, a through hole being formed under said valve seat;

a fixing outer sleeve member having female threads screwed onto a lower threaded portion of said inner sleeve member;

a soft bellows member having an upper flange, a bellow body and a bottom portion with an inward recess; and

a slide assembly including an upper slide sleeve, a middle slide sleeve, a lower slide sleeve and a bottom cover, wherein a top flange of said middle slide sleeve is engaged in a bottom flange of said upper slide sleeve and a top flange of said lower slide sleeve is engaged in a bottom flange of said middle slide sleeve, an upward inward projection being formed on the top flange of said lower slide sleeve like a step portion, said recess formed on the bottom portion of said bellows member receives said projec-



tion, engaging grooves being formed on a lower inner portion of said lower slide sleeve for engaging with corresponding engaging hooks of said bottom cover for securing the same, the outer diameter of said bottom cover being slightly larger than that of said upper slide sleeve and said bellows member being disposed within said upper slide sleeve and said middle slide sleeve for containing a liquid, whereby when said bottom cover is pressed upward, the upward inward projection of said lower slide sleeve urges the recess of said bellows member to move upward so that the liquid contained therein starts to flow and forces said conic base portion of the check valve to open upward permitting the liquid to flow through said through hole into said cup body and when the pressure disappears, the check valve closes the vent holes so that said bottom cover can control the amount of liquid entering the cup body for drinking, and when said bottom cover reaches the lower end of said middle slide sleeve, the same is also urged to move upwardly into said upper slide sleeve to compress the liquid into said cup body, the contracted bellows member having a dimension which is equal to that of said upward projection so that the liquid can be totally dispensed outwardly without remaining in said bellows member.

5,312,020

DRINK MACHINE FOR SELECTIVELY PREPARING AND DISPENSING BEVERAGES

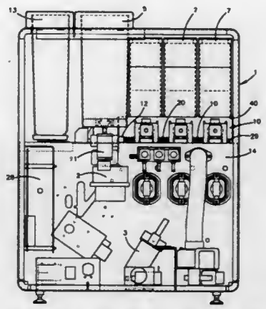
Hanspeter Frei, Oetwil, Switzerland, assignor to CIS Elektrogerate AG, Hinwil, Switzerland

Filed Oct. 26, 1992, Ser. No. 967,682

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137324

Int. Cl.[5] A47J *31/00*

U.S. Cl. 222—129.1 **14 Claims**



1. A drink machine for selectively preparing and dispensing different hot and/or cold drinks prepared by dissolving a beverage powder in hot and/or cold water, said drink machine comprising:

a housing;

a water heating means;

a pump means for feeding water to said water heating means;

a plurality of stock container means for receiving a stock of beverage powder;

at least one mixing device for mixing said beverage powder with water;

each of said plurality of stock container means including feeder means for feeding beverage powder contained in said stock container means to said at least one mixing device;

a common driving motor means for providing a driving force to drive said feeding means of each stock container means;

a plurality of gearing means for transferring the driving force to respective feeding means, each gearing means is associated with a respective one of said feeding means of said beverage powder stock container means;

each of said gearing means having a drive shaft connected to said common driving motor means and a driven shaft for driving said respective feeding means; and

electro-mechanical means for selectively coupling each gearing means to said respective feeding means.

5,312,021

MOTORIZED TOILET TISSUE DISPENSER

Eric C. Nelson, Rte. 1, Box 50, Gates, N.C. 27937

Filed Sep. 15, 1993, Ser. No. 121,192

Int. Cl.[5] B67D *5/06;* **B65H** *16/00*

U.S. Cl. 222—183 **4 Claims**

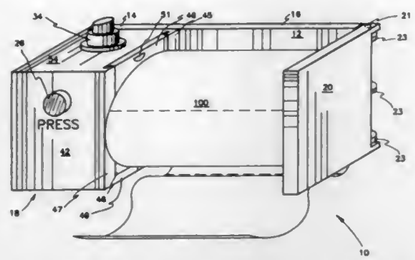
1. A rolled paper product and fluid dispenser comprising:

a mounting plate having opposite first and second ends, a housing affixed to said mounting plate first end, a side wall pivotally attached to and biased against said mounting plate second end, and an idler spindle carried by said side wall;

electric motor drive means within said housing, actuating means controlling operation of said motor drive means, a transfer gear connected to said motor drive means whereby, upon manipulation of said actuating means, a

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roll of paper products mounted between said idler spindle and said drive spindle is unwound to deliver for use a section of said paper product;

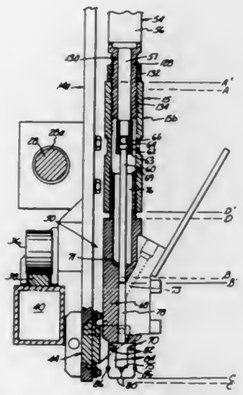


said housing including a receptacle adapted to contain fluid, and pump means communicating with said receptacle and operable to dispense selected amounts of fluid as contained within said receptacle.

5,312,022
COMPENSATING NAIL-DRIVING CHUCK FOR PALLET-MAKING MACHINE

Terrence L. Thompson, Minneapolis, Minn., and Jack W. Gresham, Armuchee, Ga., assignors to Viking Engineering & Development, Incorporated, Fridley, Minn.

Filed Sep. 24, 1992, Ser. No. 950,254
Int. Cl.[5] B27F *7/09*
U.S. Cl. 227—130 **9 Claims**



1. A chuck device for driving nails into boards wherein the chuck device is mounted to a chuck support frame, the chuck device comprising:

nail-driving means for driving nails along a path located on a nail driving axis into boards;

staging means for positioning the nails to be driven by the nail-driving means, the staging means attached to a lower end of the nail-driving means;

drive means for driving both the staging means and the nail-driving means, the drive means mounted to the chuck support frame;

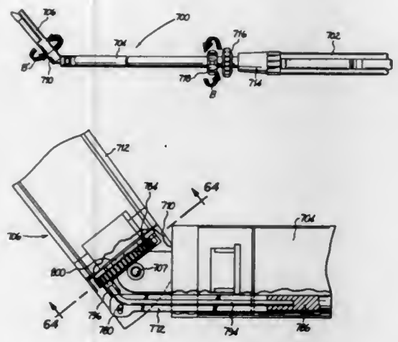
countersink control means for selectively adjusting a distance between a surface of the boards and an upper surface of a head of a driven nail, the countersink control means adjustably engaging the nail-driving means and the drive means; and

means for preventing rotational motion of the staging means about the nail driving axis while the distance between a surface of the boards and an upper surface of a head of a driven nail is being adjusted by the countersink control means, the means for preventing rotational motion engaging the staging means and being mounted to the chuck support frame.

5,312,023
SELF CONTAINED GAS POWERED SURGICAL APPARATUS

David T. Green, Westport; Henry R. Sienkiewicz, Stamford; Richard C. McClure, Monroe; Robert C. Savage, Stratford; Keith L. Milliman, Norwalk; Mitchell J. Palmer, New Milford; Lisa W. Heaton, and Graham W. Bryan, both of Norwalk, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 949,685, Sep. 23, 1992, which is a continuation-in-part of Ser. No. 915,425, Jul. 17, 1992, which is a continuation-in-part of Ser. No. 781,012, Oct. 18, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,533
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—175 **39 Claims**



1. A surgical apparatus for driving surgical fasteners comprising:

a) a frame portion;

b) a body portion extending from said frame portion and defining a longitudinal axis;

c) a fastener applying assembly associated with a distal end portion of said body portion, said fastener applying assembly including a base portion and fastener applying means;

d) first means for effectuating articulation of said fastener applying assembly between a first position generally in alignment with said longitudinal axis of said body portion and a second position angularly disposed with respect to said longitudinal axis of said body portion;

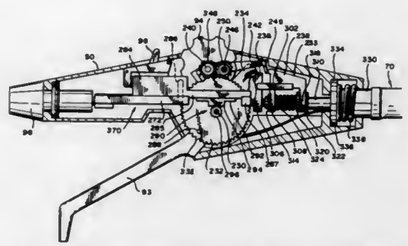
e) second means for effectuating rotation of said fastener applying assembly about said longitudinal axis of said body portion relative to said frame portion; and

f) third means for effectuating independent rotation of said fastener applying means relative to said base portion of said fastener applying assembly.

5,312,024
SURGICAL ANASTOMOSIS STAPLING INSTRUMENT WITH FLEXIBLE SUPPORT SHAFT AND ANVIL ADJUSTING MECHANISM

Richard L. Grant, Cincinnati, Ohio; Michael Lang, North Andover, Mass.; Philip J. Churchill, North Potomac, Md., and W. Thompson Lawrence, Lexington, Mass., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 832,299, Feb. 7, 1992, Pat. No. 5,271,543. This application Jun. 2, 1993, Ser. No. 71,280
Int. Cl.[5] A61B *17/115*
U.S. Cl. 227—179 **7 Claims**



1. A surgical stapling instrument for applying a plurality of surgical staples to tissue, comprising:

a stapling head assembly including a staple holder for receiving a plurality of surgical staples, an anvil for clamping the tissue against said staple holder and a staple driver for engaging and driving the staples from said staple holder into the tissue and against said anvil;

an actuator handle assembly including anvil control means for moving said anvil relative to said staple holder;

a shaft assembly including a longitudinal support shaft with a distal end for mounting said stapling head assembly and a proximal end connected to said actuator handle assembly; and

wherein said anvil control means comprises:

a thumb wheel rotatably mounted on said actuator handle assembly;

a gear wheel on said actuator handle assembly mounted for rotation by said thumb wheel;

a slide mechanism connected to said anvil and slidably mounted for longitudinal movement along said actuator handle assembly;

said gear wheel coupled to said slide mechanism by a first coupling over a first stage of operation of said anvil control means in which tissue is not clamped against the staple holder by the anvil; and

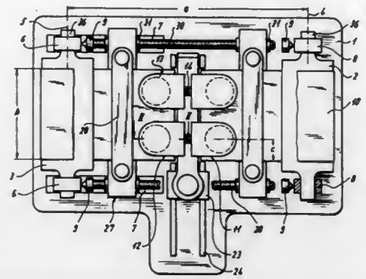
said gear wheel coupled to said slide mechanism by a second coupling over a second stage of operation of said anvil control means in which tissue is clamped against the staple holder by the anvil.

5,312,025
METHOD OF AND DEVICE FOR MANUFACTURING BANDS OF STEEL

Rolf Rottger, Wallenbrücker Str 9, 4520 Melle 7, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 916,564
Int. Cl.[5] B23K *37/00*
U.S. Cl. 228—15.1 **12 Claims**

1. A device for manufacturing loops of steel, comprising a base, two separate drums with the same diameter and with parallel axes mounted on said base, the axis of one drum being stationary and the other axis being transversely variable with respect to the one axis, at least one gripper for each end of a strip and a tensioning mechanism for connecting the grippers in order to apply tension to the strip, wherein the grippers have threaded bores therein and wherein the tensioning mechanism comprises a tensioning shaft with a right-handed thread on one

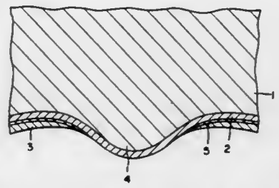


end and a left-handed thread on the other end and wherein the ends of the shaft screw into the threaded bores in the grippers.

5,312,026
WELDED TUBE WITH EXCELLENT CORROSION-RESISTANT INNER SURFACE AND METHOD OF PRODUCING THE SAME

Hiroshi Yamanashi, 138-2, Naka, Mishima-shi, Shizuoka Prefecture, Japan

Filed Dec. 2, 1992, Ser. No. 984,628
Claims priority, application Japan, Dec. 2, 1991, 3-343902
Int. Cl.[5] B21C *37/08*
U.S. Cl. 228—144 **6 Claims**



1. A method of producing a welded tube with an excellent corrosion-resistant inner surface, in which a first plate layer of one metal material selected from Sn, Sn—Zn, Sn—Ni, Ni—P and Ni—B is formed on at least one surface of a steel strip, then a second plate layer of one metal material selected from Ni, Co and alloys based on the metals is formed over the first plate layer, and the thus plated steel strip is formed into a tube by welding with the plated surface being inside and then heat-treated.

5,312,027
PRECLEANING OF SOLDERED CIRCUIT CARDS TO PREVENT WHITE RESIDUE

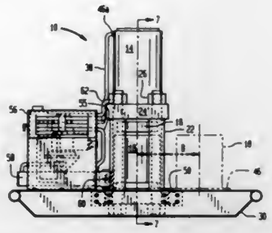
James M. Johns, Anaheim, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 16, 1993, Ser. No. 17,561
Int. Cl.[5] H05K *3/34*
U.S. Cl. 228—201 **15 Claims**

1. A process for preventing formation of a white residue following soldering electrical components on a circuit card employing an aqueous-based flux, wherein the soldered circuit card is exposed to a dilute aqueous basic solution prior to a final water rinse.

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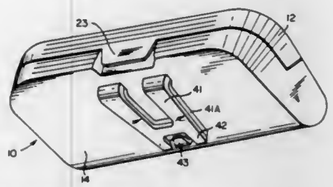
5,312,028
HIGH PRESSURE VISCOUS LIQUID PUMP
James M. Hume, 4950 Porter Rd., St. Augustine, Fla. 32084
Filed Oct. 20, 1992, Ser. No. 963,848
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—326 **6 Claims**



1. An apparatus for pressurizing and discharging a highly viscous liquid for spraying comprising a single stroke high pressure viscous liquid pump, said liquid pump consisting essentially of:
a liquid tank having a bottom and a cylindrical upright wall connected to and upwardly extending from said bottom to define an open upper end of said tank;
said tank supported atop a rigid horizontal base plate of a frame;
an elongated ram slidably positioned for longitudinal movement within an upright pressure cylinder, said pressure cylinder connected to said base plate in axial upright alignment with, and positioned above said tank;
a piston connected to a lower end of said ram, said piston sized for sliding up and down movement within said tank in response to a corresponding movement of said ram;
said ram having an upper retracted position wherein said piston is positioned above said tank open upper end and an extended position wherein said piston is positioned within said tank;
first sealing means positioned around said ram for sealable engagement against an inner wall of said pressure cylinder whereby a pressurized fluid being introduced within said pressure cylinder at an upper end of said ram urges said ram to move downwardly from said retracted position to said extended position with corresponding movement of said piston into said tank;
second sealing means positioned around said piston for sealable engagement against an inner surface of said tank wall and for preventing the viscous liquid within said tank from passing upwardly around said second sealing means in response to downward movement of said piston within said tank;
a liquid outlet connected through said tank wall immediately adjacent said bottom and laterally extending from said tank wall whereby the viscous liquid discharges from said tank under high pressure through said outlet in response to downward urging of said ram.

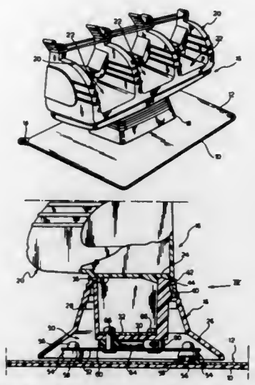
6. A method of high pressure dispensing of a highly viscous liquid comprising the steps of:
A. supporting a liquid tank containing the viscous liquid atop a rigid horizontal base plate of a frame, said tank having a bottom and an upright cylindrical wall connected to and upwardly extending from said bottom to define an open upper end of said tank;
B. introducing a pressurized fluid into an upright pressure cylinder connected to said base plate in axial upright alignment with, and positioned above, said tank said pressurized fluid being introduced above an elongated ram slidably positioned for longitudinal movement within said pressure cylinder;
said ram having a piston connected to a lower end thereof sized for sliding up and down movement within said tank in response to a corresponding movement of said ram;
said ram having an upper retracted position wherein said piston is positioned spaced above said tank open upper end and an extended position wherein said piston is positioned within said tank;
said ram having a first sealing means positioned around said ram for sealable engagement against an inner wall of said pressure cylinder whereby a pressurized fluid being introduced within said pressure cylinder at an upper end of said ram urges said ram to move downwardly from said retracted position to said extended position with corresponding movement of said piston into said tank;
said piston having a second sealing means positioned around said piston for sealable engagement against an inner surface of said tank wall and for preventing the viscous liquid within said tank from passing upwardly around said second sealing means in response to downward movement of said piston within said tank;
said tank having a liquid outlet connected through said tank wall immediately adjacent said bottom and laterally extending from said wall whereby the viscous liquid exits from said tank under high pressure through said outlet in response to fluid pressurization downward urging of said ram;
C. spray dispensing said viscous liquid from a spray nozzle, said spray nozzle connected by a flexible tubing to said liquid outlet.

5,312,029
ARTICLE CASE AND SECURING CLIP
Howard J. Tuber, Cuyahoga Falls, Ohio, assignor to Richard D. Tschudy, New Philadelphia, Ohio, a part interest
Filed Nov. 6, 1992, Ser. No. 972,803
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—252 **16 Claims**



1. An article carrier and clip comprising,
an enclosing case for articles,
said case including a wall having flexible clip means thereon,
said clip means including a major tongue extending at one end from said base in substantially parallel relation to and spaced from the wall and terminating in a free end extending in one direction, and a minor tongue extending at one end from said base in substantially parallel relation to and spaced from the wall and terminating in a free end extending in the opposite direction from said major tongue one end,
said tongues being disposed in substantially coplanar and laterally adjacent relation with said free ends of said tongues extending past each other in said one and opposite directions,
thereby to define an open-ended zone between said tongues and said wall within which an elongated member may be slipped by flexing said major tongue away from said minor tongue whereby a said elongated member is confined and restrained within said zone between said tongues on one side and said wall on the other side.

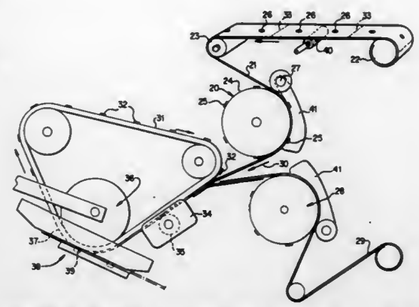
5,312,030
MAGNETICALLY ATTACHED ROOF RACK FOR A MOTOR VEHICLE
Ugo Baravalle, Turin, Italy, assignor to FAPA S.p.A., Beinasco, Italy
Filed Apr. 27, 1993, Ser. No. 52,674
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—324 **10 Claims**



1. A magnetically-attachable roof rack for a motor vehicle, the roof rack comprising in combination a flexible plate formed from a magnetic material, said plate being capable of being fitted to the roof of said vehicle and adapting to the shape thereof, a flexible base plate connected to said flexible plate, a rack unit supported by said base plate, and vibration-damping means between said rack unit and said flexible base plate, wherein said vibration-damping means comprises a semi-articulated flexible coupling connected to said flexible base plate and said rack unit at a plurality of points spaced from the center of said flexible base plate, the rack unit being thereby enabled to oscillate angularly in planes which are vertical relative to said flexible base plate.

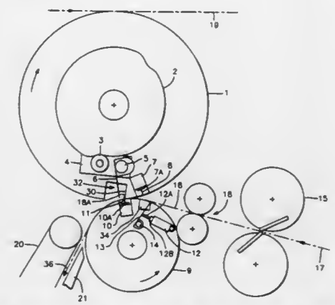
5,312,031
SHEET FEEDER
Brian L. Thelen, Fond du Lac, and Dennis L. Ramaker, Valders, both of Wis., assignors to Nigrelli Systems Inc., Kiel, Wis.
Continuation of Ser. No. 726,924, Jul. 8, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 938,492
Int. Cl.[5] B26F *3/00;* **B65H** *35/10*
U.S. Cl. 225—4 **6 Claims**

5. In a process for applying sheets to be separated from pre-punched web material to packaging equipment,
supplying a web of material having pre-punched holes and pre-scored lines to a staging roller having pins which enter the pre-punched holes,
moving said web from said staging roller to a transport device, said transport device having a pitchline and having pins which also engage the pre-punched holes in said web,
moving said web on said transport device to a fracturing station which separates said web into sheets along said pre-scored lines,
moving said sheets on said transport device from said fracturing station to an accelerating station,



increasing the linear speed of said sheets as said sheets and said transport device move through said accelerating station, and
applying said sheets to a sheet-accepting device.

5,312,032
BAG MACHINE HAVING BURSTING ROLLERS FOR SEPARATING A WEB
Horst Rautenberg, Lienen, and Rudiger Duwendag, Lengerich, both of Fed. Rep. of Germany, assignors to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany
Filed Mar. 10, 1993, Ser. No. 29,660
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1992, 4207588.2; Jun. 22, 1992, 4220308.2
Int. Cl.[5] B65H *35/10, 29/06*
U.S. Cl. 225—100 **3 Claims**



1. An apparatus for attaching strip sections or labels to a passing bag base, said apparatus comprising:
an application drum,
a gripper of said application drum actuatable to open and close,
a second drum running parallel to the application drum,
an insertion knife of said second drum interacting with said gripper of said application drum for inserting a leading end of a strip section or label into said gripper of said application drum,
a gripper of said second drum, and
an insertion knife of said application drum interacting with said gripper of said second drum for inserting the leading end of a strip section or label into said gripper of said second drum,
said insertion knife of said application drum and said insertion knife of said second drum being retractable into said

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application drum and said second drum, respectively, by separate piston cylinder units,

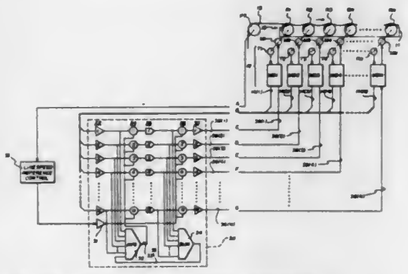
said application drum and said second drum being preceded by a perforating unit for perforating a label web and a holding roller pair for holding the label web so that the label web is torn off from the holding roller pair by the application drum and the second drum rotating at a higher speed of rotation than said holding roller pair.

5,312,033

WEB CONVEYOR DRIVE SYSTEM

Robert L. Walton, Fairport, and Alfred Gooray, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1991, Ser. No. 774,680
Int. Cl.[5] B65H *23/20*; H02P *5/00*
U.S. Cl. 226—108 **3 Claims**



1. A web conveyor drive system comprising:

roller drive apparatus having a plurality of web drive rollers adapted to drive an elongated web by contact with only one surface of the web and having an independent motor drive coupled to each of said drive rollers, each motor drive including means for supplying an output signal representative of its respective motor drive current;

means for supplying a linespeed reference signal for the web being driven by said drive apparatus;

signal averaging means responsive to all of said motor drive current signals for generating an average current signal representative of an average value of all of said motor drive current signals;

a plurality of first signal combining circuits individually responsive to said average current signal and to one of said motor drive current signals for generating difference error signals representative of the differences between said average current signal and each of said motor drive current signals;

a plurality of signal controller means each including a proportional control and an integral control for generating velocity error signals from each of said difference error signals;

a plurality of second signal combining circuits each responsive to said linespeed reference signal and one of said velocity error signals for generating an independent velocity reference signal for each of said motor drives;

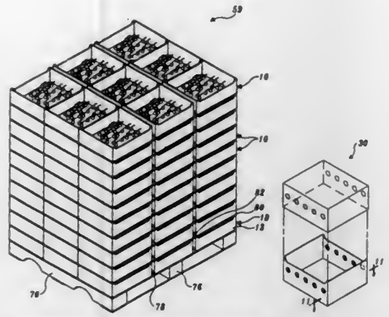
and means for coupling said velocity reference signals to said motor drives to maintain each of said motor drive currents substantially equal to said average motor drive value.

5,312,034

CONTAINER FOR SELECTIVE FRUIT FUMIGATION

Glenn T. Nakagawa, Dinuba, Calif., and John W. Rockom, Seattle, Wash., assignors to Allpak Container, Inc., Renton, Wash.

Division of Ser. No. 883,099, May 15, 1992. This application Feb. 16, 1993, Ser. No. 18,007
Int. Cl.[5] B65D *5/42, 85/34*
U.S. Cl. 229—120 **7 Claims**



1. A fumigation container comprising:

a bottom component having a lower surface and contiguous upwardly projecting walls, wherein:

said bottom component being composed of wood fiber substantially free of contaminants that would bind fumigating gas;

said lower surface and walls being of solid-wall construction, thereby being resistant to the entrapment of fumigating gas; and

first and second sides of said lower surface and walls being coated with a water-impervious layer; and

a top component having an upper surface and contiguous downwardly projecting walls, said top component being sized to closely fit over said bottom component.

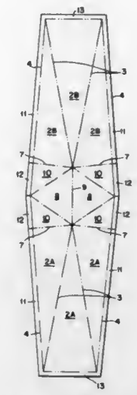
5,312,035

PACKAGING CONTAINER

Richard P. Nold, and Uwe A. Nold, both of Gross-Gerau, Fed. Rep. of Germany, assignors to Real-Pack Entwicklungs und Verpackungstechnik GmbH, Gross-Gerau, Fed. Rep. of Germany

PCT No. PCT/EP89/01496, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO90/07455, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 6, 1989, Ser. No. 691,032
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1988, 3844110
Int. Cl.[5] B65D *5/18*
U.S. Cl. 229—104 **19 Claims**

1. A packaging container formed of a one-piece blank of essentially rigid sheet material, said container comprising first and second side walls; each side wall including a pair of edge strips extending in generally longitudinal directions; each edge strip of said first side wall being pressed together with an edge strip of said second side wall and secured thereto to define a longitudinal edge of said container; each of said first and second side walls defining two bottom edges; said two bottom edges of said first side wall lying in a common plane with said two bottom edges of said second side wall; intermediate triangular panels extending upwardly from respective ones of said bottom edges, with each bottom edge defining a first fold line between one of said intermediate triangular panels and a respective side wall; each of said intermediate triangular panels abutting an inside surface of its respective side wall; a pair of main triangular panels defining a bottom of said container, each main triangular panel being joined along two of its edges with two of said intermediate triangular panels; an third edge of each main triangular panel lying in said common plane and



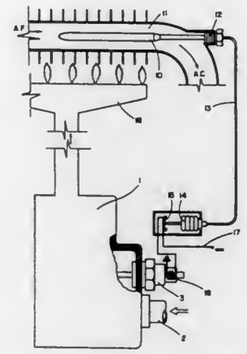
defining a second fold line between said two main triangular panels; each of said main triangular panels being inclined downwardly from a respective one of said longitudinal edges to said second fold line.

5,312,036

INSTANTANEOUS WATER HEATER WHICH INCLUDES SAFETY DEVICES SEPARATELY OR IN COMBINATION TO PREVENT THE EXPLOSION OF THE HEAT EXCHANGER IN THE EVENT OF AN EXCESSIVE HEATING OF THE WATER IN THE HEATING COIL AND TO SHUT-OFF THE FLOW OF GAS TO THE BURNER

Ursus Trotter, San Pablo 3770, Santiago, Chile, assignor to Ursus Trotter, Santiago, Chile

Filed Dec. 20, 1991, Ser. No. 810,417
Claims priority, application Chile, Sep. 13, 1991, 864-91
Int. Cl.[5] F22B *37/42*
U.S. Cl. 236—21 B **15 Claims**



1. A gas control valve for an instantaneous water heater, the water heater including devices for regulating and controlling hot water temperature, devices for lighting a pilot flame, a burner, a heat exchanger and a heating coil, said control valve comprising:

a body,

a settling chamber for separating gas entrained solid particles disposed in a lower portion of said body;

a temperature regulation knob coupled to said body;

a gas flow modulating valve coupled to said regulation knob;

a thermostatic actuator coupled to said modulating valve;

a temperature sensor operatively associated with said thermostatic actuator;

means for preventing explosion of the heat exchanger in event of excess heating of the water in the heating coil; and

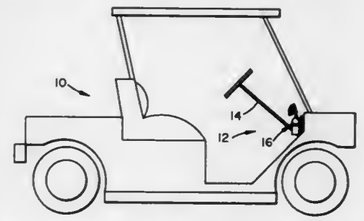
means for interrupting gas flow to the burner when ambient air around the water heater has an oxygen deficiency, said interrupting means being actuated by the pilot flame.

5,312,037

HEATER FOR A GOLF CART OR THE LIKE

John C. Hand, R.R. Box 2022, Columbus, Tex. 78934

Filed Jun. 21, 1993, Ser. No. 78,812
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—12.3 C **13 Claims**



1. A heater for heating the interior of a utility vehicle, the utility vehicle having a dashboard, said heater comprising:

a portable heating source, said portable heating source comprising:

a pressurized tank of a flammable gas;

at least a portion of an exterior surface of said pressurized tank being substantially cylindrical;

burner means for receiving said flammable gas from said pressurized tank and for combusting said flammable gas;

a heat deflector for directing heat released by said combusted gas; and

pressure regulating means for supplying a regulated flow of said pressurized gas to said burner means; and

a heater bracket for securing said portable heating source to the dashboard of the utility vehicle, said heater bracket comprising:

a back plate;

a pair of lateral side plates, one each of said lateral side plates extending outward from a lateral side of said back plate;

a bottom plate, said bottom plate extending outward from a bottom side of said back plate;

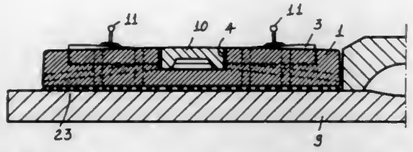
a mounting flange, said mounting flange extending outward from a top side of said bottom plate;

retaining strap means for retaining the portable heating source against said back plate, between said pair of lateral side plates, and on top of said bottom plate; and

releasable latch means for releasably latching said retaining strap means.

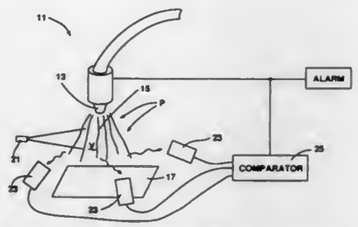
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5,312,038
DRAINAGE SYSTEM FOR A RAILROAD SUPERSTRUCTURE FOR SUPPORTING SLEEPERS
Paolo Merlanti, Via Senato, 8, 20121, and Mario Santini, Corso Matteotti, 10, 20121, both of Milano, Italy
Filed Oct. 22, 1992, Ser. No. 964,768
Claims priority, application Italy, Oct. 23, 1991, MI91-A-02819
Int. Cl.[5] E01B *1/00*
U.S. Cl. 238—7 2 Claims



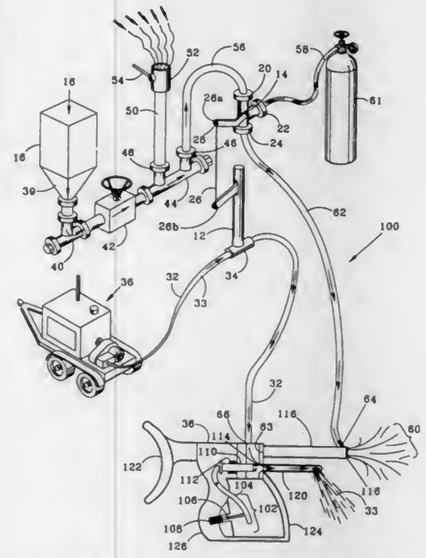
1. A railroad superstructure supporting reinforced concrete framework, comprising a reinforced concrete block having, on a top face thereof, a plurality of evenly spaced parallel recesses provided for receiving each, with a set clearance, a sleeper for supporting rail elements, said sleeper having a height greater than a depth of said recesses, on a middle region of said top face of said block there being provided a channel element, which transversely crosses said recesses, in said block there being moreover provided a plurality of draining channels extending transversely from said channel element and leading to an outside environment.

5,312,039
ELECTRO-OPTIC MONITOR FOR FLUID SPRAY PATTERN
Anthony Sayka, and Allen Page, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jun. 22, 1992, Ser. No. 902,181
Int. Cl.[5] B67D *5/00*; B05B *17/00*
U.S. Cl. 239—1 15 Claims



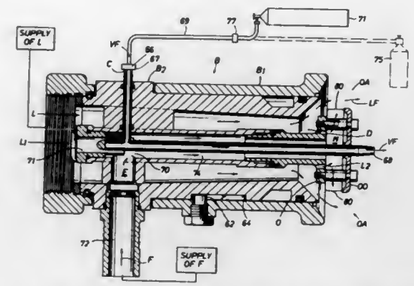
1. A method of monitoring a fluid spray pattern of fluid sprayed from a nozzle, the method comprising the steps of:
illuminating a fluid spray pattern P with a light source such that light emitted by the light source is scattered by fluid in the spray pattern P;
detecting the light scattered by the fluid in the flowing fluid spray pattern P using a plurality of photodetectors positioned adjacent to the volume occupied by the fluid spray pattern P so that each of said photodetectors develops an electrical signal in response to receipt of scattered light prior to impact of said fluid on a surface; and
analyzing the electrical signal issued by each of said photodetectors and comparing the electrical signals with corresponding reference signals that represent a desired fluid spray pattern P_0.

5,312,040
NON-CLOGGING SLURRY NOZZLE APPARATUS AND METHOD
Michael J. Woodward, Houston, Tex., assignor to Aqua-Dyne, Inc., Houston, Tex.
Filed Nov. 13, 1992, Ser. No. 976,332
Int. Cl.[5] B05B *15/02*; B24C *5/02*
U.S. Cl. 239—1 17 Claims



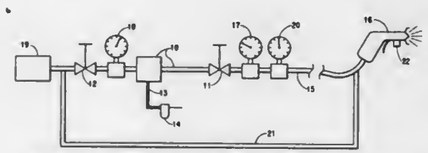
15. A method for preventing an abrasive material blockage in a non-clogging, high pressure slurry nozzle apparatus, comprising the steps of:
directing a high pressure fluid stream through an orifice;
mixing the high pressure fluid stream with an abrasive material to form a mixture;
jetting the mixture from a nozzle outlet;
interrupting the jetting of the mixture by directing the high pressure fluid stream away from the orifice to a dump means;
sensing the interruption in jetting of the mixture and in response thereto engaging an actuator to substitute a supply of compressed gas for the abrasive material; and
jetting the supply of compressed gas automatically, in place of the mixture to prevent blockage and clogging of the nozzle outlet.

5,312,041
DUAL FLUID METHOD AND APPARATUS FOR EXTINGUISHING FIRES
Leslie P. Williams, and Dwight Williams, both of Vidor, Tex., assignors to CCA, Inc., Mauriceville, Tex.
Filed Dec. 22, 1992, Ser. No. 995,150
Int. Cl.[5] A62C *31/07*, *31/12*
U.S. Cl. 239—8 24 Claims



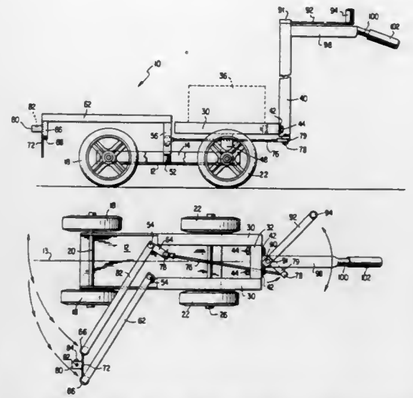
1. A dual fluid method for the extinction of fires comprising discharging toward a fire from a nozzle simultaneously a first gas fluid distinct from and surrounded by a second liquid fluid.

5,312,042
SPRAY APPARATUS COMPRISING A VORTEX TUBE
John C. Larson, Clarkston, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 738,677, Jul. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 707,991, May 23, 1991, which is a continuation of Ser. No. 305,441, Feb. 2, 1989, abandoned. This application Aug. 26, 1993, Ser. No. 110,621
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] B05B *7/16*
U.S. Cl. 239—135 6 Claims



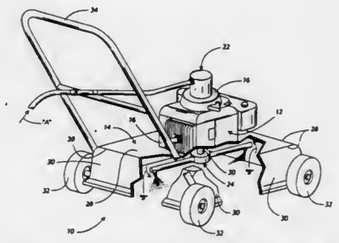
1. An apparatus for spraying a coating material onto a substrate, comprising
(a) a means for supplying compressed air to a vortex tube unit;
(b) a vortex tube unit for receiving the compressed air at a first inlet and for delivering relatively cold air to a cold air conduit and for delivering warm air to a warm air conduit;
(c) first control means in said warm air conduit for adjusting the pressure of the warm air;
(d) second control means in said cold air conduit for adjusting the pressure of the relatively cold air; and
(e) connected with said warm air conduit, a spray means for employing the warm air to atomize the coating material during its application onto the substrate being coated.

5,312,043
PARKING LOT PAINT STRIPING CART
James R. Whitney, P.O. Box 4000, Woodbridge, Va. 22194
Filed Jun. 8, 1993, Ser. No. 73,673
Int. Cl.[5] B05B *13/02*
U.S. Cl. 239—754 4 Claims



1. A paint striping cart for painting lines on a surface, such as between parked cars in a parking lot, the cart including a base on which a plurality of wheels are mounted, a parallelogram linkage having first and second parallel arms, first respective ends of said first and second parallel arms, each having a respective fixed pivot point secured to said base at spaced apart locations on said base, said parallelogram linkage having a forwardmost third arm having two ends, each said forwardmost arm end being pivotally secured to a respective second end of each of said first and second arms, said parallelogram linkage forwardmost arm carrying a paint spray nozzle adapted to discharge paint in a plane, said paint discharge plane being fixed in orientation to a line of travel of the cart to thereby form a painted line of constant width independently of an angular position of said parallel arms of said parallelogram linkage, said first and second parallel arms swingable in a horizontal plane as they rotate about their respective said fixed pivot points.

5,312,044
PRESSURE CLEANING METHOD AND APPARATUS
James O. Eaton, 22 Plantation Dr. NE., Cartersville, Ga. 30120
Filed Dec. 29, 1992, Ser. No. 997,858
Int. Cl.[5] B05B *13/00*
U.S. Cl. 239—225.1 9 Claims



1. A pressure cleaning apparatus for applying fluid under pressure, provided from a source of pressurized fluid, to a

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durable surface, wherein said pressure cleaning apparatus comprises:

an engine including, at least, a crankshaft including, at least, a crankshaft first end and a crankshaft second end, wherein said crankshaft defines a crankshaft passage through said crankshaft from said crankshaft first end to said crankshaft second end;

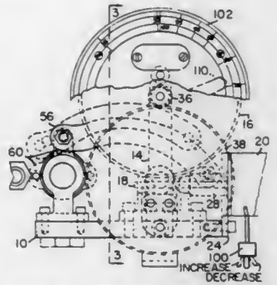
injection means for providing fluid under pressure, from the source of pressurized fluid, into the crankshaft passage at the crankshaft first end, whereby fluid under pressure passes through said crankshaft passage and exits said crankshaft passage at said crankshaft second end; and

distribution means connected to said crankshaft for directing the fluid exiting from said crankshaft passage at said crankshaft second end toward the durable surface.

5,312,045
LIQUID METERING DISTRIBUTOR FOR AGRICULTURAL CHEMICALS

Douglas Johnston, Huntsville, Ala., assignor to John Blue Company, Huntsville, Ala.

Filed Feb. 1, 1993, Ser. No. 11,544
Int. Cl.[5] B05B *12/00*
U.S. Cl. 239—74 **10 Claims**



1. An apparatus for controlling fluid flow supplied from a source to a pump to be sprayed by at least one nozzle onto soil from a moving vehicle at a substantially constant preselected rate substantially independent of pump pressure, comprising:

a valve having a valve body and a valve member, said valve member having a chamfer located along a minor portion of the longitudinal axis of said valve member, said valve body having a fluid inlet, a fluid outlet and a flow passageway connecting said fluid inlet and said fluid outlet, said valve body having a bore for slidably receiving said minor portion of the longitudinal axis of said valve member, said valve body having a valve seat, said chamfer longitudinally overlapping to a variable extent with said valve seat, said chamfer being locatable at a variable rotational distance relative to said valve seat, said valve seat being longitudinally slidable relative to said valve member and said valve member being rotatable relative to said valve seat;

positioning means attached to said valve for sliding said valve body to a longitudinal position relative to said chamfer on said valve member such that the overlap of said chamfer is changeable relative to said fluid outlet of said valve body for varying the flow area through said by-pass valve so as to vary the fluid flow being supplied to the at least one nozzle, said longitudinal position of said valve seat being selectable by a user prior to spraying fluid from the at least one nozzle based upon the cross-sectional area of the at least one nozzle preselected by the user;

rotating means attached to said valve for rotating said valve member in clockwise and counterclockwise directions for varying the flow are through said valve such that the orientation of said chamfer relative to said valve seat is changeable so as to vary the fluid flow being supplied to the at least one nozzle;

actuation means connected to said rotating means for actuating said rotating means, said actuation means actuable by the user from the moving vehicle during spraying;

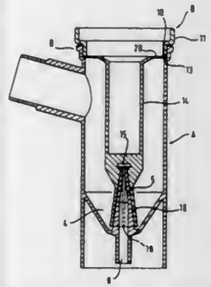
indicating means associated with said positioning means for indicating the relative longitudinal position of said valve seat to said chamfer; and

rotational indicating means associated with said rotating means for indicating the relative rotational position of said valve member to said valve seat such that the relative rotational position of said rotational indicating means indicates the percentage of fluid flow being supplied from the supply source to the pump to the at least one nozzle.

5,312,046
LIQUID ATOMIZER

Martin Knoch, Berg, and Andreas Lintl, Starnberg, both of Fed. Rep. of Germany, assignors to Paul Ritzau Pari Werk GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1992, Ser. No. 948,484
Claims priority, application European Pat. Off., Nov. 7, 1991, 91118993.4
Int. Cl.[5] A61M *11/00*
U.S. Cl. 239—338 **18 Claims**



1. A two-piece liquid atomizer, comprising:

a first piece formed of a first housing section, which includes an inner part of an atomizing nozzle, and a first connector;

a second piece formed of a second housing section, which includes;

an outer part of the atomizing nozzle adapted to engage the inner part in order to form the atomizing nozzle, and

a second connector, adapted to engage the first connector for the connection of the second housing section with the first housing section to form a nebulizer chamber; and

springy means integrally formed with either the first housing section or the second housing section for allowing compensating movement between the inner and outer parts of the atomizing nozzle and the first and second connectors when the first and second housing sections are in their assembled state.

5,312,047
LAWN MOWER WASHER RING

Louis A. Akers, 3026 Edgewood, Alton, Ill. 62002

Filed Nov. 9, 1993, Ser. No. 149,303
Int. Cl.[5] B05B *15/06*
U.S. Cl. 239—276 **18 Claims**

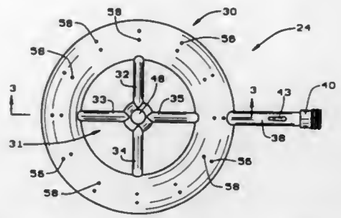
1. A spraying device for cleansing the underside of a rotary mower with water, the spraying device comprising:

an annular conduit having an annular flat portion at one axial end, said annular flat portion adapted to abut the ground;

a support radially inwardly extending from said annular conduit;

a spike retained by said support and adapted to be inserted into the ground to releasably retain said annular flat portion against the ground;

a hose coupler in fluid communication with said annular



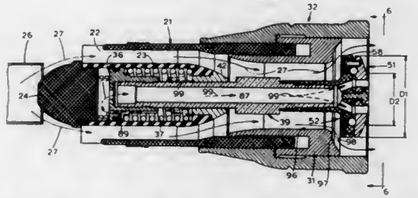
conduit, said hose coupler adapted to be coupled with a water hose carrying pressurized water; and

a plurality of orifices disposed in said annular conduit, said orifices defining an annular spray pattern that directs the water from said annular conduit at an angle defined from a vertical axis of said annular conduit of between 0° and 45° inclusive.

5,312,048
REGULATING NOZZLE WITH ADJUSTABLE EFFECTIVE AREA BAFFLE

Robert W. Steingass, and Stewart G. McMillan, both of Valparaiso, Ind., assignors to Task Force Tips, Inc., Valparaiso, Ind.

Filed Mar. 25, 1993, Ser. No. 36,918
Int. Cl.[5] B05B *1/32*
U.S. Cl. 239—441 **10 Claims**



6. A nozzle for a stream of liquid, said nozzle comprising a tubular body having an inlet end operable to be attached to a liquid supply hose, the liquid having a supply pressure, said body further having an outlet end and a flow passage therethrough from said inlet end to said outlet end, and a pressure regulating mechanism mounted in said body in said flow passage and at said outlet end, said mechanism comprising a baffle mounted for movement on said body and in said flow stream and separated from said body by a gap, biasing means connected between said body and said baffle and acting to reduce the size of said gap, said baffle having an effective area on which said liquid pressure acts to vary the size of said gap, and adjustable means for changing the size of said effective area.

5,312,049
IMPROVED VALVE MECHANISM FOR A NOZZLE

Howard O. Bayler, 16041 Celtic St., Granada Hills, Calif. 91344

Filed Jul. 16, 1992, Ser. No. 914,552
Int. Cl.[5] B05B *1/30*
U.S. Cl. 239—578 **20 Claims**

1. A nozzle comprising

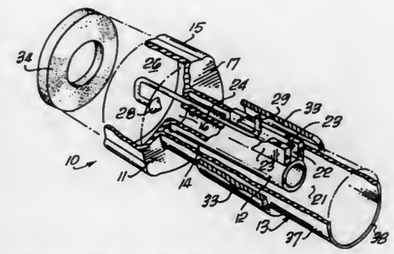
a rear portion, an interior in the rear portion, and a tube having an aperture communicating with such interior,

a flexible barrel spacedly mounted about and longer than said tube so as to provide an annular space about the tube and forming a dispensing chamber in front of said tube,

slot means formed in said barrel,

valve means disposed in said rear portion,

a control member for said valve means being disposed in said



rear portion and extending into the annular space about said tube,

means mounted on said control member projecting through said slot means, and

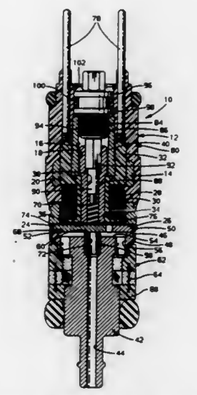
a sleeve manipulatively mounted on said barrel,

said projecting means operatively connected to said sleeve, whereby manipulative motion of said sleeve with respect to said barrel unseats and seats said valve means with respect to said aperture.

5,312,050
ELECTROMAGNETIC FUEL INJECTOR

David R. Schumann, Rochester; Steven L. Good, Canandaigua, both of N.Y.; Paul B. Rissi, Grand Rapids, and Leman F. Reus, Rockford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1993, Ser. No. 55,340
Int. Cl.[5] F02M *51/00*
U.S. Cl. 239—585.1 **4 Claims**



3. An electromagnetic fuel injector comprising a housing, a coil disposed at one end of said housing and a valve seat disposed at a second end to define a fuel chamber therebetween, a center pole piece extending through and below said coil and having an end portion situated within said fuel chamber, an armature/valve member disposed within said fuel chamber, in

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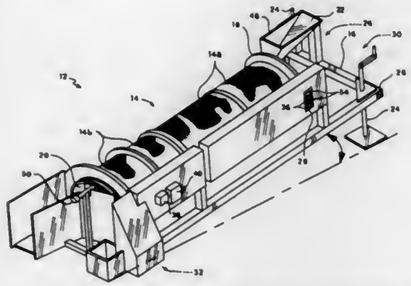
spaced relationship to said end portion of said center pole piece, for reciprocal movement between a valve closed position in which the armature/valve member engages said valve seat to preclude fuel delivery therethrough and a valve open position in which said coil is energized to draw said armature/-valve member off of said valve seat to allow fuel from said chamber to flow therethrough, said center pole piece having an axial bore extending therethrough configured to receive an armature valve return spring, said spring having a first end operable on said armature/valve member and a second end in communication with one end of an adjusting pin, said pin disposed for axial translation within said axial bore of said center pole piece to thereby vary the spring rate of said armature/valve return spring and the dynamic response of said injector upon pulse width energization of said coil, said center pole piece in threaded engagement with said housing and rotatable, through rotation of said adjusting pin, to advance and retract said pole piece relative to said coil and said armature/valve member to thereby vary the spaced relationship of said armature/valve member relative to said end portion of said center pole piece.

5,312,051

FRESH WET CONCRETE RECLAIMER

Mark Preisser, Haven, Kans., assignor to Haahjem North America, Inc., Haven, Kans.

Filed Mar. 31, 1993, Ser. No. 41,320
Int. Cl.[5] B02C *17/02, 23/18*
U.S. Cl. 241—1 **16 Claims**



13. A method of reclaiming fresh concrete, comprising the steps of:

a) introducing fresh concrete into an inclined screen forming a closed geometric shape with two open ends, the inclined screen having a first, relatively fine screen element and a second, relatively coarse screen element, the screen elements being ordered with respect to fresh concrete flowing downwardly across the inclined screen,

b) rotating the screen at a rotational speed, thus causing the fresh concrete to both tumble and to flow downwardly with respect to screen inclination,

c) constraining rotational speed such that the screen element moves past a stationary reference point at a rate between 300 feet (100 meters) and 360 feet (120 meters) per minute,

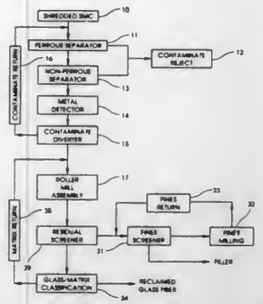
d) discharging water against the fresh concrete, whereby fresh concrete is separated into cement slurry, sand, and gravel components.

5,312,052

METHOD FOR RECLAIMING FIBER REINFORCEMENT FROM A COMPOSITE

Michael D. Dellekamp, 798 S. Mount Comfort Rd., New Palestine, Ind. 46163

Filed Jun. 1, 1992, Ser. No. 891,931
Int. Cl.[5] B02C *19/12, 23/12*
U.S. Cl. 241—24 **11 Claims**



1. A method for reclaiming fiber reinforcement from a cured fiber reinforced plastic waste product, comprising the steps of:

shearing and crushing said waste product using a roller mill having at least one roller pair which imparts a shearing and crushing force to said waste product sufficient to break the bond between fiber reinforcement filaments and plastic resin in the waste product while minimizing breakage of the reinforcement fiber filaments in the waste product; and

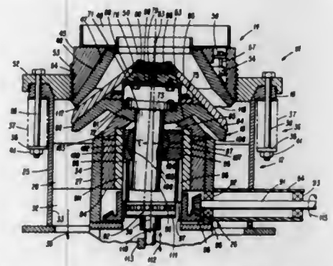
separating the fiber reinforcement filaments from the remainder of the cured fiber reinforced plastic waste product subjected to said shearing and crushing step.

5,312,053

CONE CRUSHER WITH ADJUSTABLE STROKE

William A. Ganser, IV, Eugene, Oreg., assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Jan. 7, 1993, Ser. No. 1,447
Int. Cl.[5] B02C *2/04*
U.S. Cl. 241—30 **16 Claims**



1. A method of crushing materials with a gyratory crusher, the gyratory crusher including a crusher bowl centered on a central vertical crusher axis, a crusher head disposed below the crusher bowl, and a gyratory drive including a bearing for retaining the crusher head at a predetermined angle of deviation with respect to the central vertical crusher axis for gyratory motion of the crusher head at a defined angle of deviation about the central vertical crusher axis, the method comprising the preparatory steps of:

adjusting the position of the bearing within the gyratory crusher and thereby adjusting the defined angle of deviation of the crusher head and a stroke length of gyration of the crusher head of the gyratory crusher; and

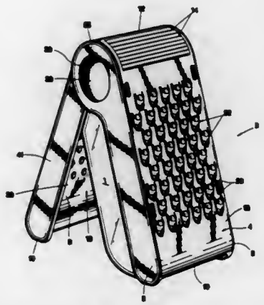
verifying that a minimum desirable opening exists at a closed side between the crusher bowl and the crusher head, and adjusting the opening at the closed side to a minimum desired open setting if the minimum desirable opening does not exist after adjusting the stroke length of gyration of the gyratory crusher.

5,312,054

FOOD GRATER

David L. Feer, Medina, and Rex R. Mast, Orrville, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Jan. 4, 1993, Ser. No. 367
Int. Cl.[5] A47J *43/25*
U.S. Cl. 241—95 **26 Claims**



1. A food grater comprising:

an inverted V-shaped freestanding frame having vertically oriented first and second panel members pivotally joined at upper ends and having divergent lower ends for supporting the frame on a work surface, the frame panel members folding into a mutually parallel orientation for storage and expanding into a freestanding orientation for use;

at least one of the panel members having outwardly directed food grating blade means located on an outward surface of the one panel member to intercept and grate food passing downwardly over the outward surface;

the one panel member having aperture means therethrough from an inside surface to said outward surface, oriented with the blade means to pass grated food fragments from the outward surface to the inside surface; and

the device further comprising a food collection container having an open mouth portion positioned against the inside surface of the one panel member to receive and collect the food fragments.

5,312,055

METHOD FOR THE OPERATION OF A STIRRING BALL MILL AND A STIRRING BALL MILL FOR THE PRACTICE OF THE METHOD

Ulrich Barthelmess, and Ulrich Schindler, both of Niederstotzingen, Fed. Rep. of Germany, assignors to Omya GmbH, Cologne, Fed. Rep. of Germany

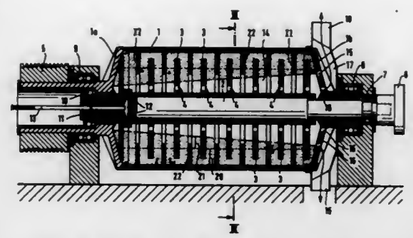
Filed Aug. 24, 1992, Ser. No. 934,422
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4128074
Int. Cl.[5] B02C *17/22, 17/24*
U.S. Cl. 241—172 **5 Claims**

1. A stirring ball mill comprising

a barrel having a generally cylindrical interior surface, the barrel having an inlet at its one end for input of a feed, an outlet means at its other end for withdrawal of a milled feed and gases, and first stirring means comprising annular outer disks on the interior surface of the barrel reaching radially inward and allowing for the passage of feed thereabout;

means for rotating the barrel at supercritical speed; and

a rotatable stirring shaft within the barrel and concentric therewith, the stirring shaft having second stirring means thereon comprising inner disks concentric with the stirring shaft reaching radially outward therefrom, the inner disks having an outer radius less than that of the barrel



leaving an annular space therebetween for passage of feed, and the inner disks having passage openings to allow for the passage therethrough of gases, the passage openings being situated such that when the barrel is rotated at supercritical speed so as to centrifuge the particles therein, the passage openings are within a space within the barrel free of centrifuged particles to allow for the free passage of gases therethrough to said outlet means;

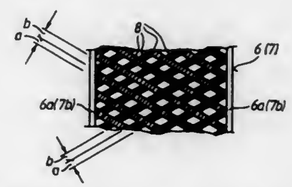
wherein the outer disks project between successive inner disks and the inner radius of the outer disks is less than the outer radius of the inner disks.

5,312,056

ROLL MILL

Gerhard Kästingschäfer, Waderslon; Bernhard Peterwerth, Bad Laer, and Heinz Schröder, Beckum, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

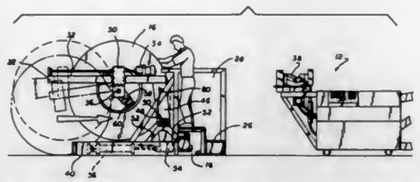
Filed Feb. 25, 1993, Ser. No. 22,172
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1992, 4210395
Int. Cl.[5] B02C *4/08, 4/30;* B23K *9/04;* C22C *38/18*
U.S. Cl. 241—235 **17 Claims**



1. Roll mill for the comminution of brittle material comprising: two grinding rolls mounted to be rotatable in opposite directions and pressed toward one another at high pressure, each of said grinding rolls having a basic roll body and an outer roll shell, each of said roll shells presenting a grinding surface of wear-resistant, chill cast material to which an array of profiled beads of wear-resistant deposit welding material is fixed by welding.

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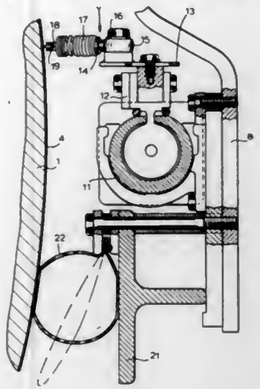
5,312,057
CABLE DISPENSING DEVICE WITH MEANS FOR LIFTING AND CONVEYING REEL AND METHOD
Ronald G. Graham, P.O. Box 524, St. Clair, Mich. 48079
Filed Aug. 13, 1991, Ser. No. 744,390
Int. Cl.[5] B66B *11/04*; B65H *19/30*
U.S. Cl. 242—54 R 12 Claims



1. A cable dispensing apparatus for dispensing a cable from a reel, said cable dispensing apparatus comprising:
a frame adapted to receive said reel therein;
support means disposed adjacent said frame for rotatably supporting said reel, said support means comprising a pair of arms pivotably attached to said frame so as to provide pivotal movement of said reel relative to said frame;
means, mounted to said support to said support means, for traversing said support means, said traversing means adapted to move in a direction toward or away from said frame; and
positioning means for moving said pair of arms toward and away from each other so as to accommodate reels of differing widths;
whereby said reel is rotatably supported by said support means adjacent said frame, said reel being displaceable relative to said frame by said means for traversing so as to position said reel a predetermined distance from said frame.

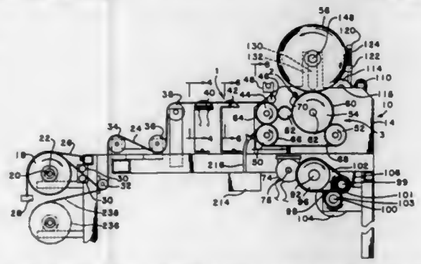
5,312,058
DEVICE FOR CUTTING A WEB OF MATERIAL
Dieter Brandt, Sundsvall, Sweden; Luzian Kies, Düsseldorf, and Heinrich Klingen, Kaarst, both of Fed. Rep. of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Jun. 11, 1992, Ser. No. 860,510
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1990, 4034997.3
Int. Cl.[5] B26D *1/06*, *7/02*
U.S. Cl. 242—56 R 5 Claims

1. A web winding machine, comprising:
a bearing and support cylinder upon which a roll to be wound is supported and fed with a paper or cardboard web to be wound on said roll, said web lying along said cylinder over a stretch leading to said roll;
a lowering platform alongside said cylinder, said platform having a surface spacedly juxtaposable with said stretch upon displacement of said platform into a position to receive and lower said roll when said roll has been wound with said web;
an inflatable clamping hose on said platform interposed between said surface and said stretch and inflatable to clamp said web against said cylinder for separating said web upon removal of said roll from said cylinder; and
a device on said platform for at least weakening said web along a separating line, said device comprising:
a member displaceable across a width of said web,
a freely rotatable supported sharp-edged roller engageable with said stretch along said separating line for at least weakening said web upon being drawn therealong by said member, and
resilient means between said member and said roller for resiliently biasing said roller against said web and said cylinder,



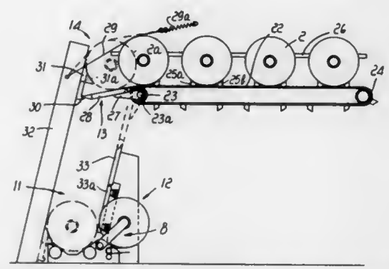
said clamping hose limiting propagation of tension to an oncoming portion of said web upon application of an increased tension to separate said web along said line.

5,312,059
MACHINE FOR REWINDING AND INTERMEDIATELY PROCESSING THIN FLEXIBLE MATERIAL USING A CONVEYOR
Hercules Membrino, 280 Paoli State Rd., Malvern, Pa. 19355
Filed Jan. 26, 1992, Ser. No. 904,606
Related U.S. Application Data continuation-in-part of Ser. No. 779,105, Oct. 18, 1991, U.S. Pat. No. 5,194,062, which is a continuation-in-part of Ser. No. 539,129, Jun. 18, 1990, abandoned.
Int. Cl.[5] B65H *18/16*, *35/02*
U.S. Cl. 242—56.2 34 Claims



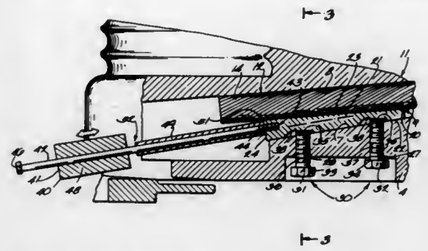
1. A machine for rewinding a web of thin flexible material comprising:
(a) a frame;
(b) a pair of positively-driven primary draw rolls supported relative to the frame for removing the web from a supply roll;
(c) a positively-driven center-rewind spindle onto which the web of material is rewound as a roll supported relative to the frame;
(d) a positively-driven conveyor supported relative to the frame for carrying said web from said primary draw rolls and transferring said web onto said rewind spindle, said conveyor including (1) a transfer drum supported relative to the frame in peripheral contact at a contact point with the roll of material wound onto said spindle so that the web of material is transferred directly at the contact point from the transfer drum onto the roll of material wound on the spindle and (2) a positively-driven, secondary draw roll supported relative to the frame intermediate the primary draw rolls and the transfer drum for delivering the web of material from the primary draw rolls to the transfer drum, said secondary draw roll in peripheral contact at a contact point with said transfer drum to transfer the web from the secondary draw roll directly onto the transfer drum at the contact point between the secondary draw roll and the transfer drum; and,
(e) a control mechanism for controlling synchronous movement of said primary draw rolls and said spindle relative to said conveyor so that the web is carried by the conveyor from the primary draw rolls to the center-rewind spindle with the center-rewind spindle applying only sufficient tension to maintain the web in flat surface contact with the transfer drum as the web is rewound onto the spindle.

5,312,060
DEVICE FOR FEEDING REELS INTO A PACKAGING MACHINE
Armando Neri, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy
Filed May 28, 1991, Ser. No. 706,503
Claims priority, application Italy, Jun. 11, 1990, 3547 A/90
Int. Cl.[5] B65H *19/30*
U.S. Cl. 242—58.6 7 Claims



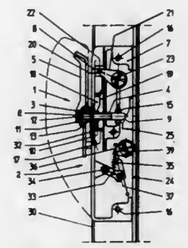
1. Device for feeding reels of tape material into a packaging machine comprising:
a buffer magazine for said reels, along which said reels are advanced after one another;
distribution means for guiding a first one of said reels into a removal position;
transfer means for transferring said reels one after the other from said removal position to an underlying receiving position;
a reel guiding channel for guiding said reels being transferred by said transfer means from said removal position to said receiving position, said reel guiding channel comprising a guide element arranged in front of said buffer magazine;
a device for changing the reel to be unrolled in the packaging machine being arranged at said receiving position;
wherein said distribution means comprises an element for supporting said first reel in said removal position, said element being pivoted at a first end thereof to said buffer magazine for acting as a bridge to support said first reel as it descends from said buffer magazine to said transfer means, and said transfer means comprises an element for bearing said first reel in said removal position, said bearing element being provided with a lower tab for supporting in said removal position a second end of said supporting element which is opposite to said pivoted first end thereof, said bearing element being movable along said guide element of said reel guiding channel.

5,312,061
CLAMPING MECHANISM FOR SECURING A ROPE TO A WINCH DRUM
Stephen J. McCormick, Shorewood, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.
Filed Jan. 13, 1993, Ser. No. 4,121
Int. Cl.[5] B65H *75/28*
U.S. Cl. 242—117 18 Claims



1. A winch mechanism comprising:
a winch drum including first and second walls spaced apart in facing relation to each other to define therebetween a rope end receiving space having opposed open front and rear ends with one of said walls contactable by a rope end that is to be secured to said winch drum;
a clamping wedge member having an axis, a drum side contactable with the other of said winch drum walls, a rope side contactable with the rope end inserted through said front end, and a drive end adjacent said rear end to which a first axial force can be applied for moving said clamping wedge member axially into said space and exerting on the rope end a first lateral clamping force that will urge the rope end against said one of said walls; and
a thrust means mounted on said drum for applying a lateral thrust force against said wedge member transversely of said axis to cause a second lateral clamping force to be exerted against the rope end and toward said one of said walls, said lateral thrust force being independent of the force exerted on said wedge member in response to said first axial force.

5,312,062
DEVICE FOR MONITORING THE THREAD RUN ON A BOBBIN CREEL
Heiner Lieb, Kreuzlingen, Switzerland, assignor to Benninger AG, Uzwil, Switzerland
Filed Apr. 8, 1992, Ser. No. 865,292
Claims priority, application Switzerland, Apr. 24, 1991, 1221/91-2
Int. Cl.[5] B65H *49/00*, *59/22*
U.S. Cl. 242—131.1 5 Claims



1. A device for monitoring and controlling a thread on a warping creel, said device comprising:

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a thread clamp having a fixed portion and a movable clamping pad for firmly clamping a thread (3) against the fixed portion in a closed position of the pad, a pressure peg connected to the clamping pad and extending away from the fixed portion, a spring (4) mounted on the pressure peg and providing a force against the clamping pad for biasing the clamping pad toward said closed position, and

means for adjusting the spring force, said adjusting means comprising a counter bearing (10) for supporting an end of the spring opposite the clamping pad, the counter bearing being movable with respect to the pressure peg, a linearly displaceable slider (17) having a guide element (19) with a sloping surface supporting said counter bearing, and means (21) for sliding the slider so as to displace the guide element and counter bearing and thus vary force applied by said spring to said pad; and

a thread monitor (2) having a spring loaded monitor needle for creating thread tension and means for activating the clamping device to clamp the thread when the thread breaks.

5,312,063

STOPPER APPARATUS FOR A SPINNING REEL

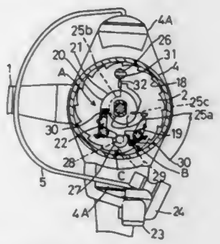
Yasubiro Hitomi, Hashimoto, Japan, assignor to Shimano Inc., Osaka, Japan

Filed May 15, 1992, Ser. No. 883,356

Claims priority, application Japan, May 23, 1991, 3-036669[U]

Int. Cl.[5] A01K *89/02*

U.S. Cl. 242—248 **7 Claims**



1. A spinning reel comprising:

a reel body;

a spool shaft extending forwardly from said reel body;

a spool provided on said spool shaft;

a rotor for winding a fishing line on said spool, said rotor being provided forwardly of said reel body, said rotor having an interior surface;

an anti-reverse mechanism for restricting rotation of said rotor, said anti-reverse mechanism including:

(A) a first stopper for restricting rotation of said rotor at a single position, said first stopper including:

(a) a first engaging portion including a single outwardly directed tooth, wherein said first engaging portion rotates with said rotor; and

(b) a first engaging pawl supported on said reel body, said first engaging pawl being displaceable such that said first engaging pawl and said first engaging portion are selectively engageable and disengageable; and

(B) a second stopper for restricting rotation of said rotor at a plurality of positions, said second stopper including:

(a) a second engaging portion including a plurality of inwardly extending teeth defined on said interior surface of said rotor and surrounding said first engaging portion, and wherein said second engaging portion rotates with said rotor; and

(b) a second engaging pawl supported on said reel body, said second engaging pawl being displaceable such that said second engaging pawl and said second engaging portion are selectively engageable and disengageable; and

switch over means for controlling said first engaging pawl and said second engaging pawl, said switch over means being switchable between first, second and third positions; wherein said first stopper is operable and said second stopper is inoperable, with said second engaging pawl being disengaged from said second engaging portion, when said switch over means is in said first position; wherein said second stopper is operable and said first stopper is inoperable, with said first engaging pawl being disengaged from said first engaging portion, when said switch over means is in said second position; and wherein said first and second stoppers are both inoperable, with said first and second engaging pawls both being disengaged from said first and second engaging portions, when said switch over means is in said third position.

5,312,064

METHOD AND APPARATUS FOR PLATE WINDING OF LONG SHEET

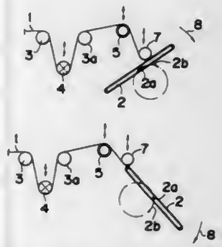
Yuji Uesugi, Osaka; Koji Kunami; Noriyuki Inagaki, both of Hirakata; Junichi Hikino, Matsue, and Shinichi Suzawa, Nita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 22, 1992, Ser. No. 871,986

Claims priority, application Japan, Apr. 30, 1991, 3-098625

Int. Cl.[5] B65H *18/08, 75/06*

U.S. Cl. 242—67.1 R **12 Claims**



4. A method of winding a long sheet around a plate, comprising the steps of:

rotating a plate bobbin on a rotary axis thereof and winding a long sheet on the plate bobbin; and

moving a rotary axis of a nip roll along a repeating movement locus one cycle for each 180 degrees of rotation of the plate bobbin so that the nip roll, disposed approximately parallel to the rotary axis of the plate bobbin, moves continuously in one direction along the surface of the plate bobbin so as to be rotated from above the long sheet such that, while the long sheet is being wound on the plate bobbin, the long sheet is depressed against the plate bobbin by the nip roll, and wherein the maximum length between two end points of the repeating movement locus in approximately one half or less the length of the plate bobbin in the direction in which the long sheet is wound on the plate bobbin.

5,312,065

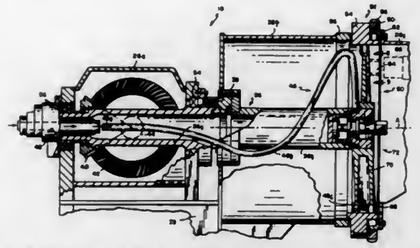
ROD LAYING HEAD WITH FRONT AND TAIL END RING CONTROL

Terence M. Shore, Princeton, and Harold E. Woodrow, Northboro, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Feb. 5, 1992, Ser. No. 831,170

Int. Cl.[5] B21C *47/02;* **B21F** *3/02*

U.S. Cl. 242—82 **37 Claims**



1. A laying head for forming an axially moving elongated product into a series of rings, said laying head comprising:

an elongated tubular support;

means for rotating said support about its longitudinal axis;

a pipe carried by said support for rotation therewith, said pipe having an inlet end aligned with said axis and arranged to receive said product, and having an intermediate portion defining a curved guide path leading from said inlet end to an outlet end arranged to rotate about said axis and from which said product is discharged in the form of a continuous series of rings; and

guide means communicating with said outlet end for defining a helical extension of said guide path, said guide means including a cylindrical shroud surrounding the rotational path of said outlet end and a helical trough having its open side facing said shroud.

5,312,066

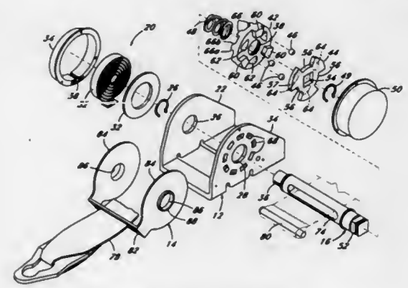
RESTRAINT BELT RETRACTOR

David V. Haston, Glendora, and John A. Churilla, Riverside, both of Calif., assignors to Pacific Scientific Company, Newport Beach, Calif.

Filed Nov. 4, 1991, Ser. No. 787,382

Int. Cl.[5] B60R *22/36*

U.S. Cl. 242—107.40 B **14 Claims**



1. A restraint belt retractor comprising:

a frame having a pair of spaced sidewalls, one of said sidewalls having a ring of spaced locking holes;

a shaft rotatably mounted within the sidewalls, said ring of locking holes being concentric with but spaced radially outwardly from said shaft;

a driving hub fixed to said shaft spaced axially outwardly from said one sidewall;

a locking hub rotatably mounted on said shaft and positioned between said driving hub and said one sidewall, said locking hub having a ring of spaced teeth that extend axially toward said frame locking holes, said locking hub being movable axially from a locked position wherein said hub teeth extend into said frame locking holes into an unlocked position wherein the hub teeth are not in said locking holes;

a spring urging said locking hub into said unlocked position; and

a clutch interengaging said hubs for causing said driving hub to rotate said locking hub during belt unwinding shaft rotation, while at a predetermined rotational acceleration of said shaft moving said locking hub axially on said shaft into said locked position; and

a guide having a pair of side arms rotatably mounted on said shaft and having a portion spaced radially outwardly from said guide sidearms having a hole there through for guiding movement of a belt as it s wound and unwound from said shaft, said guide sidearms including annular flanges which extend axially into holes within the sidewalls of said frame for form bearings for said shaft.

13. A method of assembling a restraint belt retractor comprising positioning side arms of a belt guide adjacent spaced sidewalls of a retractor frame, with an annular portion of each side arm extending axially into a respective hole in each side wall, and with a portion of said guide extending outwardly from said arms to receive and guide a belt, and inserting a belt reel shaft through said annular portions whereby the annular portions serve as bushings rotatably supporting the shaft.

5,312,067

SPINNING REEL

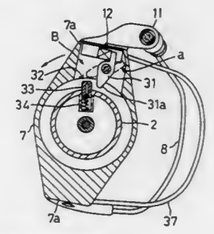
Kenichi Sugawara, and Osamu Yoshikawa, both of Sakai, Japan, assignors to Shimano Inc., Osaka, Japan

Filed Apr. 27, 1992, Ser. No. 874,000

Claims priority, application Japan, May 7, 1991, 3-030922[U]; May 15, 1991, 3-034031[U]

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—232 **6 Claims**



1. A spinning reel comprising:

a reel body;

a rotary frame supported on said reel body, said rotary frame having an axis of rotation and being rotatable about said axis in line retrieving and line releasing directions, said rotary frame having first and second support arms, with said axis of rotation being between said support arms;

a bail arm attached to said first and second support arms, said bail arm being pivotable between line releasing and line retrieving positions;

a toggle urge mechanism for applying an urging force to said bail arm to selectively maintain said bail arm at said line releasing and line retrieving positions; and

switchover means for overcoming said urging force and for pivoting said bail arm from said line releasing position to said line retrieving position responsive to rotation of said

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rotary frame in said line retrieving direction, said switch-over means including:

a drive arm pivotably connected to said rotary frame, said drive arm having first and second ends; means on the rotary frame engageable with said first end of said drive arm for transmitting motion of said drive arm to said bail arm;

a projection connected to said reel body, said projection being engageable with said second end of said drive arm, such that rotation of said rotary frame in said line retrieving position causes said drive arm to be pivoted by said projection, which causes said bail arm to be pivoted from said line releasing position to said line retrieving position; and

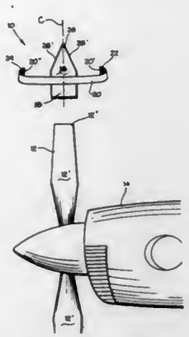
a projection urging mechanism for permitting relative movement between said drive arm and said projection and for thereby permitting disengagement of said drive arm from said projection said relative movement between said drive arm and said projection being other than that which is caused by rotation of said frame with respect to said reel body.

5,312,068

APPARATUS FOR PREVENTING BIRD DROPPINGS ON AN EXTERIOR STRUCTURAL SURFACE OF AN AIRPLANE

Gerald H. Talbert, 2964 Haglar Rd., Concord, N.C. 28025

Filed Aug. 27, 1993, Ser. No. 113,386
Int. Cl.[5] B64D *47/00*
U.S. Cl. 244—1 R **9 Claims**



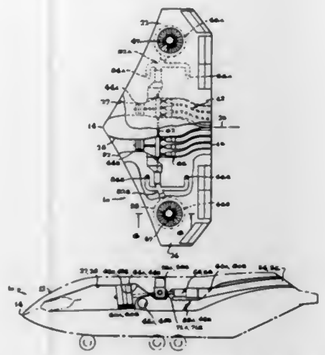
1. In combination, an airplane having a propeller with at least two propeller blades one of which can be selectively positioned in an upwardly extending approximately vertical disposition when at rest, and a device removably attached to the propeller for preventing bird droppings thereon, the device comprising a main body having a base portion removably attached to a top portion of the upwardly extending vertical propeller blade and a peaked portion extending upwardly from the base portion and beyond the top portion of the propeller blade, the peaked portion having an upwardly facing surface which is sufficiently acute with respect to vertical to provide essentially no approximately horizontal surface area on which birds can perch on the main body.

5,312,069

PROPULSION SYSTEM FOR AN AIRCRAFT PROVIDING V/STOL CAPABILITY

Robert S. Bollinger, Newhall, and Leland M. Nicolai, Castaic, both of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Jul. 15, 1992, Ser. No. 913,576
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[5] B64C *29/00*
U.S. Cl. 244—12.3 **6 Claims**



1. A propulsion system for powering an aircraft in both vertical and horizontal flight modes comprising:

first and second gas-driven ducted lift fans mounted to the aircraft for providing thrust in the vertical flight mode;

first and second shaft-driven ducted cruise fans having inlet and bypass air ducts, said first and second ducted cruise fans mounted in the aircraft for providing thrust in the horizontal flight mode and providing supercharged air in all flight modes;

first and second gas transfer ducts, each one thereof coupling one of said air bypass ducts of said first and second ducted fans, respectively;

first and second shaft-driven turbo compressors coupled to said first and second gas transfer ducts, respectively;

first and second high-pressure feed ducts coupling said first and second turbo compressors to said first and second ducted lift fans respectively;

first and second sets of turboshaft engines mounted in the aircraft coupled to said bypass air ducts for receiving supercharged air therefrom, with each one of said sets comprising a plurality of turboshaft engines, each one of said turboshaft engine including an output shaft and having an optimal power output sufficient for powering one of said first and second ducted cruise fans in the horizontal flight mode, each of said sets having a sufficient number of said turboshaft engines to provide an optimal power output for powering one of said first and second turbo compressors and one of said ducted cruise fans in the vertical flight mode, such that sufficient gas is provided to drive one of said ducted lift fans;

a shafting system mounted on the aircraft for coupling all of said turboshaft engines to said first and second ducted cruise fans and said first and second turbo compressors;

a first decoupling system connected to said shafting system for decoupling said first and second turbo compressors from said first and second sets of turboshaft engines; and

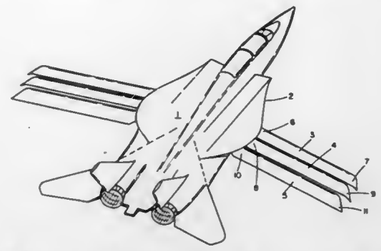
a second decoupling system connected to said shafting system for individually decoupling each of said turboshaft engines therefrom.

5,312,070

SEGMENTED VARIABLE SWEEP WING AIRCRAFT

Aldo Arena, Smithtown, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 2, 1992, Ser. No. 862,318
Int. Cl.[5] B64C *3/38*
U.S. Cl. 244—46 **17 Claims**



1. A segmented variable sweep wing for an aircraft having a fuselage, said wing comprising

a plurality of wing segments each having a root area and a tip area spaced from said root area; and

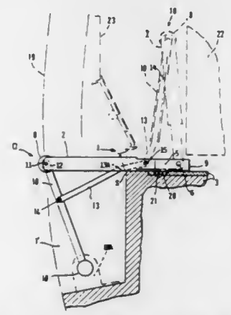
structural means movably affixing said wing segments directly to said fuselage adjacent each other at their root areas for conjoint movement of said wing segments to a power lift position wherein said wing segments are substantially perpendicular to said fuselage in a substantially horizontal plane and spaced from each other and for conjoint movement of said wing segments to a cruise position wherein said wing segments are swept back at an angle with said fuselage in a substantially horizontal plane and substantially in abutment with each other thereby forming a substantially unitary continuous surface airfoil.

5,312,071

DEVICE FOR PROTECTING A DOOR SILL, ESPECIALLY IN A LOADING OPENING OF AN AIRCRAFT

Wilfried Eilenstein-Wiegmann, Stuhr, and Guenter Vogg, Bremen, both of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 39,814
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1992, 4210302
Int. Cl.[5] B64C *1/22*
U.S. Cl. 244—137.1 **11 Claims**



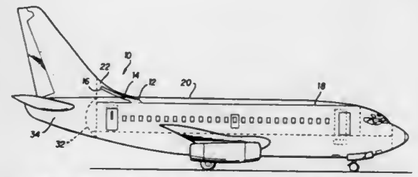
1. A device for covering and protecting a door sill of an opening leading into an aircraft body, comprising a cover plate, at least one hinge connecting an inner first edge of said cover plate to a floor of the aircraft, and a support linkage for supporting an outward second edge of said cover plate, said support linkage including a support section (**10**), a bracing section (**13**), a first journal (**11**) connecting said outward second edge of said cover plate to said support section, a second journal (**15**) connecting said bracing section to said cover plate, and a third journal (**14**) connecting said bracing section (**13**) to said support section (**10**), said support section (**10**) comprising a foot (**18**) for releasably cooperating with a holding member (**18A**) secured to said aircraft body, and wherein a spacing is provided between said second journal (**15**) and said at least one hinge, said spacing being just sufficient to permit folding said support linkage toward a back side of said cover plate when said cover plate is in a stowed position.

5,312,072

MINIMUM AREA SMOKE EVACUATION NOZZLE

Thor I. Eklund, Haddonfield, N.J., assignor to The United States of America as represented by the Secretary of Transportation, Washington, D.C.

Filed Aug. 9, 1990, Ser. No. 564,514
Int. Cl.[5] B64D *13/00*
U.S. Cl. 244—118.5 **13 Claims**



1. In an airplane having a cabin ceiling, a fuselage pressure hull, and a vertical stabilizer, the improvement which comprises a smoke evacuation nozzle which maintains sonic flow at its throat at a nozzle pressure ratio of less than 2.

5,312,073

METHOD FOR CONTROLLING THE PITCH ATTITUDE OF A SATELLITE BY MEANS OF SOLAR RADIATION PRESSURE AND SATELLITE, IN PARTICULAR AN ELECTRIC PROPULSION SATELLITE, SUITABLE FOR IMPLEMENTATION OF THE METHOD

Patrick Flament, Le Cannet; Michel Perdu, Frejus; Jean Portier, Cannes, and Pierre Brunet, Auribeau S/Siagne, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

PCT No. PCT/FR91/00938, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO92/09479, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 916,153
Claims priority, application France, Nov. 30, 1990, 90 15050
Int. Cl.[5] B64G *1/24*
U.S. Cl. 244—168 **32 Claims**

1. An attitude control system for a satellite, said attitude control system comprising:

a satellite having attitude stabilizing means for controlling said attitude about a pitch, yaw and roll axis while said satellite is in a geostationary orbit;

an onboard computer mounted to said satellite, said attitude stabilizing means being in communication with said onboard computer;

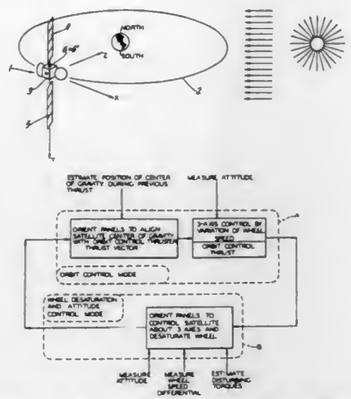
at least one surface member extending from said satellite in a first direction away from said satellite, said at least one surface member adapted to be exposed to solar radiation;

orbit control means mounted to said satellite for applying to said satellite thrusts along said pitch, yaw and roll axis; said orbit control means further comprising thruster means symmetrically spaced about said pitch and yaw

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axis; said thruster means being inclined at a predetermined angle at least with respect to said pitch axis such that a resultant force vector of said thrusts generated by said thruster means is in a first resultant force direction; and

moving means mounted to said satellite for moving said at lest one surface member with respect to said satellite

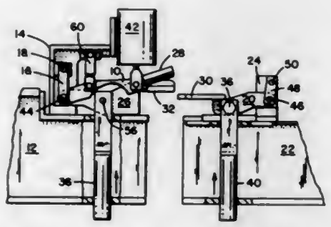


whereby the movement of said at least one surface member causes the center of gravity of said satellite to shift from a first position to a second position such that said first resultant force direction of the vector generated by said thruster means acts through aid second position of said center of gravity.

5,312,074
SAFETY MECHANISM FOR TRACK SYSTEM

Glen R. Keith, Gray, and Steven J. Hrivnak, Kingsport, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 22, 1993, Ser. No. 7,693
Int. Cl.[5] E01B *7/20*
U.S. Cl. 246—430 **2 Claims**



2. In a rail system having main and spur tracks adapted to be moved in and out of cooperative alignment, the improvement of means for moving pins into a cooperating position to stop movement of an object moving on said track except when said tracks are in substantial alignment comprising

a) an actuating lever pivotally mounted on said main track,

b) means for moving said actuating lever from a first position to a second position,

c) a first follower lever pivotally mounted on said spur track having a surface for engaging said actuating lever as it is moved from said first position to said second position only when said tracks are aligned, thereby moving said first follower lever from a first position to a second position,

d) a second follower lever pivotally mounted on said main track positioned to be rotated by movement of said first follower lever to thereby move from a first position to a second position,

e) said first follower lever having a first pin connected thereto adapted to be in said cooperating position with said spur track and said second follower lever having a second pin connected thereto adapted to be in said cooperating position with said main track,

f) whereby when said actuating lever is moved from said first to said second position and said main track is aligned with said spur track, both said first follower lever and said second follower lever are moved from their respective first positions to their respective second positions to move said first pin and said second pin out of the cooperating positions with said spur track and main track, respectively.

5,312,075
RAILROAD FROG

Stephen R. Kuhn, Richton Park, Ill., assignor to ABC Rail Corporation, Chicago, Ill.

Filed Dec. 13, 1991, Ser. No. 806,377
Int. Cl.[5] E01B *7/10*
U.S. Cl. 246—455 **16 Claims**



1. A frog assembly having a toe end and a heel end adapted to be inserted at the intersection of a mainline rail and a turnout rail which comprises:

a base plate;

a longitudinally extending manganese insert with a heel end having a frog point commencing at the intersection of the mainline and turnout line gage lines and a heel extension having a first side and a second side connected to said frog point and a toe end having a first manganese wing and a second manganese wing which extend along each side of said frog point to define a wheel flangeway therebetween mounted on said base plate;

wherein said manganese insert point has a top surface which defines a mainline running surface and a turnout line running surface for railroad car wheels and a pair of side surfaces;

a first wing rail which has a mainline wheel running surface section, a first manganese wing receiving section which receives said first manganese wing and a first guard rail section mounted on said base plate and a second wing rail which has a turnout wheel running surface section, a second manganese wing receiving section which receives said second manganese wing and a second guard rail section mounted on said base plate;

wherein said first manganese wing provides a first transition surface between said first wing rail wheel running surface section and said mainline running surface on said point and said second manganese wing provides a second transition surface between said second wing rail wheel running surface section and said turnout line running surface on said point and wherein said first and second wing rail guard sections extend along and parallel to the heel of said insert such that a wheel flangeway is defined between each of said insert side surfaces and an adjacent wing rail guard section;

a first heel rail mounted on said base plate and attached to the first side of said heel extension to abut said turnout line running surface on said point and a second heel rail mounted on said base plate and attached to the second side

of said heel extension to abut said main line running surface on said point;

wherein said first heel rail cooperates with said first wing rail guard section to define a wheel flangeway therebetween and said second heel rail cooperates with said second wing rail guard section to define a wheel flangeway therebetween;

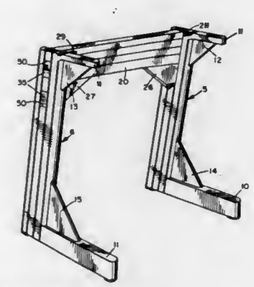
a ramp adapted to receive a false flange on a railroad car wheel formed in the top surface of the head of the first wing rail parallel to the mainline wheel running surface of the first wing rail which ramp extends upwardly from approximately 0.375 inches below the rail top surface at one end of said wing receiving section to said rail top surface approximately one half the distance to the point of frog; and

a ramp adapted to receive a false flange on a railroad car wheel formed in the top surface of the head of the second wing rail parallel to the turnout line wheel running surface of the second wing rail which ramp extends upwardly from approximately 0.375 inches below the rail top surface approximately one half the distance to the point of frog.

5,312,076
REFLEX SUPPORT FASTENER FOR KEYBOARD STANDS

Vladymir Rogov, 6162 Nancy Ridge Dr., #101, San Diego, Calif. 92121

Filed May 8, 1992, Ser. No. 880,679
Int. Cl.[5] F16M *11/24*
U.S. Cl. 248—165 **12 Claims**



1. A keyboard stand comprising:

a pair of legs having proximal and distal ends, said legs being substantially hollow and formed of a rigid, flexible material; and

at least one pair of support arms extending horizontally in the same direction from the proximal ends of said legs; and

a keyboard bridge extending horizontally between and connecting said legs;

said connection being made by a plug and socket reflex fastener;

said plug having first and second end walls extending in the same direction from either end of at least one sidewall;

said plug side wall having one or more depressions formed therein, said depression having first and second side walls and a face extending between said side walls;

said depression side walls extending upwardly from said face at equal angles thereto; and,

a socket, said socket being a void in a component of said load-bearing structure defined by first and second end walls bounding either end of a pair of side walls, at least one of said side walls of said socket having one or more engagement ridges formed therein, said engagement ridges corresponding in size, position and number to said depressions in said plug;

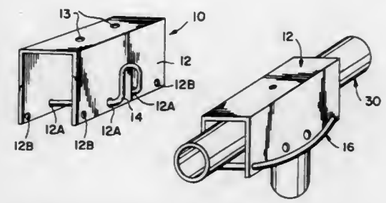
said engagement ridges further having first and second sidewalls and a face extending between said side walls; and,

said first and second side walls of said engagement ridges extending downwardly from said face at complementary angles, wherein the angle of extension of said first depression side wall is complementary to the angle of extension of said first ridge side wall.

5,312,077
MOUNTING DEVICE

Manuel Gutierrez, 1273 Meadow Sweet Rd., Golden, Colo. 80401

Filed May 3, 1993, Ser. No. 56,421
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—214 **13 Claims**



1. A mounting device comprising:

(a) a channel body member having spaced-apart, parallel sides and a top member connecting said parallel sides together; wherein said top member is planar and is perpendicular to said sides;

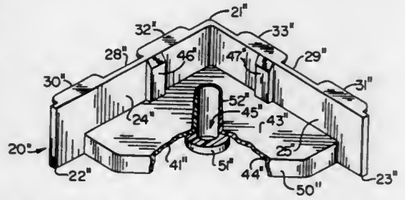
(b) key means having a plurality of elongated prongs for insertion through said registering openings in said parallel sides; and

(c) retention means for retaining said prongs in said openings.

5,312,078
CABINET CORNER BRACE

Thomas R. Marsh, Winston-Salem, N.C., assignor to Tenn-Tex, Inc., Wallburg, N.C.

Continuation of Ser. No. 710,801, Jun. 5, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,270
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—220.1 **10 Claims**



1. A corner brace useful in the manufacture of cabinetry, comprising:

an angle member having a pair of arm members oriented substantially perpendicularly to one another, each of said arm members having a flat planar front portion and a flat planar back portion; each of said arm members further having a flat planar top edge portion oriented substantially parallel with one another;

a pair of lip members, one of said lip members connected to each of said arm members, with said lip member connected to each of said respective arm member back portions adjacent said top edge portion and extending laterally outward from said back portion;

a shelf member interconnecting each of said arm member

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front portions at a position spaced beneath said arm member top edge portions, said shelf member having a bottom portion and a flat planar top portion oriented parallel with said arm member top edge portions, said shelf member further having an outer edge portion interconnecting said arm members, said shelf member having an opening formed therein between said top portion and said bottom portion; and

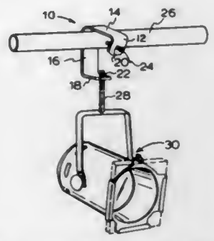
an elongate spacing member connected to said shelf member top portion and extending perpendicularly outward therefrom, said spacing member having a length equal to the distance between said shelf member top portion and said arm member top edge portions.

5,312,079

UNIVERSAL C-CLAMP FOR STAGE ACCESSORIES

William D. Little, Jr., P.O. Box 541204, Dallas, Tex. 75354-1204

Filed Feb. 3, 1993, Ser. No. 12,652
Int. Cl.[5] F21L *15/08*
U.S. Cl. 248—230 **11 Claims**



1. A clamp for mounting stage accessories, said clamp comprising:

a body member having first, second, third and fourth body portions, said body member having a first acute angle between said first and said second body portions, and having a second acute angle between said second and said third body portions, and having an approximately right angle between said third and said fourth body portions, and said member also having a first threaded hole in said first body portion, and with said first acute angle being greater than said second acute angle and with said approximately right angle being greater than either of said acute angles; and

a tightening bolt disposed in said first threaded hole in said first body portion for engaging a pipe against the second and third body portions, whereby the tightening bolt can securely fasten the clamp onto pipes of various sizes.

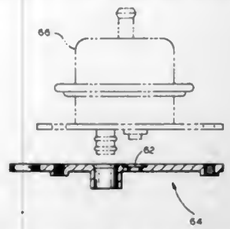
5,312,080

FUEL REGULATOR MOUNTING PLATE AND FORMING PROCESS

Richard J. Mazur, Sylvania, Ohio; Robert L. Arno, Morenci, Mich., and Dennis J. Duden, Swanton, Ohio, assignors to Walbro Corporation, Cass City, Mich.

Filed Mar. 12, 1992, Ser. No. 850,986
Int. Cl.[5] F16M *13/00*; **B21D** *28/00*
U.S. Cl. 248—300 **7 Claims**

1. A mounting plate for a fixture with an insertable connector, said mounting plate comprising: a sheet metal plate having a thickness T, an integrally formed extruded tubular nipple member projecting from one side of said plate, said nipple member having a projecting axial length equivalent to at least



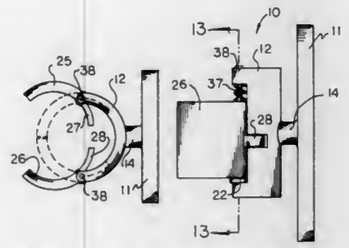
2T measured from said one side and said nipple member is located within 0.26T of another element formed in said plate.

5,312,081

HINGED DOOR QUICK ACCESS DIP NET HOLDER

Gordon C. Martin, 1737 Kirkton, Troy, Mich. 48083

Filed Nov. 30, 1992, Ser. No. 982,904
Int. Cl.[5] F16L *3/10*
U.S. Cl. 248—316.3 **2 Claims**



1. A dip net quick access holder apparatus, comprising,

a mounting plate, the mounting plate including a positioning rod fixedly mounted to the mounting plate projecting therefrom, and

a semi-cylindrical housing fixedly mounted on the positioning rod, the housing oriented symmetrically about an axis, and wherein the housing includes a housing first side parallel to and coextensive with a housing second side, the housing first side includes a housing first boss at an upper distal end of the first side, and a housing second boss mounted to an upper distal end of the second side, and a housing third boss spaced from the housing first boss, with the housing third boss at a lower distal end of the first side, and a housing fourth boss fixedly mounted to a lower distal end of the housing second side spaced from the housing second boss, and

a first arcuate door plate mounted between the first boss and the third boss, and

a second arcuate door plate mounted between the second boss and the fourth boss, and

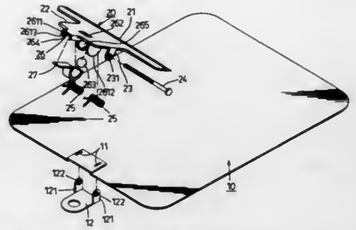
the housing first side includes a first slot, with the housing second side having a second slot, wherein the first slot and the second slot are arranged in an annularly aligned relationship medially intersecting the first side and the second side, and wherein the first door plate includes a first door plate first side and a first door plate second side, the second door plate includes a second door plate first side and a second door plate second side, the first door plate first side includes a first door alignment leg projecting from the first door plate first side, and the second door plate first side includes a second door plate alignment leg projecting therefrom, wherein the first door plate alignment leg is received within the first slot, and the second door plate alignment leg is received within the second slot for alignment of the first door plate and the second door plate relative to the housing, and support means on the first side and the second side of the housing for pivotally supporting the first and second arcuate door plates, respectively, on the housing.

5,312,082

CLIPBOARD HAVING A WHISTLE INTEGRALLY FORMED THEREWITH

Shih-Ho Chang, No.2-12, Chang-Lu Rd., Changhua City, Taiwan

Filed Mar. 29, 1993, Ser. No. 38,699
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—452 **3 Claims**



1. A clipboard including a backing board having a first end portion; a clip member mounted pivotally on said first end portion of said backing board, said clip member having a pressing end and a retaining end; and a torsional spring unit which is disposed between said backing board and said clip member and which has two ends abutting respectively against said clip member and said backing board so as to bias said retaining end of said clip member to abut against said backing board, wherein the improvement comprises:

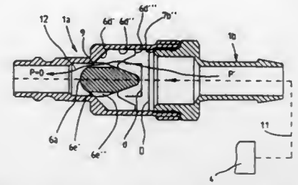
a whistle including: a first housing part which is formed integrally with said clip member and which has two opposed walls that extend vertically outward from said clip member and that are spaced apart from each other, each of said opposed walls having a rectangular wall portion that extends from said pressing end toward said retaining end and a generally circular wall portion that is connected to one end of said rectangular wall portion, the other end of each of said rectangular wall portions projecting outward from said pressing end of said clip member, said clip member having an extension which projects outward from said pressing end of said clip member, said clip member having an extension which projects outward from said pressing end thereof and which extends between said other ends of said rectangular wall portions, said first housing part further having a sound slit which is formed through said clip member and which is disposed between said generally circular wall portions adjacent to said rectangular wall portions; a second housing part having a rectangular plate and a curved plate connected to one end of said rectangular plate, said second housing part being connected securely to said first housing part so that said generally circular wall portions of said first housing part and said curved plate of said second housing part cooperatively define an air space thereamong; and a sound ball disposed movably in said air space.

5,312,083

ARRANGEMENT IN A MEDIA-CONDUCTING UNIT

Thure Ekman, Slalomvägen 12, 541 33 Sköde, Sweden

Filed May 6, 1993, Ser. No. 57,772
Claims priority, application Sweden, May 7, 1992, 9201440-6
Int. Cl.[5] F16K *21/02*
U.S. Cl. 251—149.1 **20 Claims**



1. A device in fluid-conducting unit for use in a supply line for carrying fluid with pressure from a source of said fluid to a tool comprising:

a) a coupling member having first and second open ends and a fluid passageway extending between said open ends, said fluid passageway having inner walls defining first and second sections, said second section having a larger diameter than said first section;

b) a sloped surface connecting the walls of said first section with the wall of said second section;

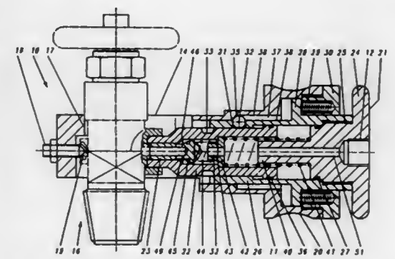
c) a convergingly-shaped hub body mounted within said second section for longitudinal movement therein between a first position of said hub body at said second end for providing a large fluid exhaust area and a second position at said first end for providing a reduced exhaust area, said convergingly-shaped hub body being provided with a first end adjacent to engage said sloped surface and a plurality of spaced-apart wings projecting from said hub body to the inner walls of said second section, said wings interacting with said sloped surface at their front edges and having a longitudinally extending elongate outer surface for engaging said inner wall of said second section.

5,312,084

SUPPLY FITTING FOR GAS CYLINDER VALVES, PARTICULARLY OF ACETYLENE CYLINDERS

Erwin Weh, Illertissen, Fed. Rep. of Germany, assignor to WEH GmbH, Verbindungstechnik, Illertissen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,483
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 9115142[U]
Int. Cl.[5] F16L *29/00*
U.S. Cl. 251—148 **25 Claims**



1. A supply fitting for gas cylinder valves, particularly of acetylene cylinders, consisting of

a housing provided with a supply inlet and a portion for

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engaging and retaining a gas cylinder valve, which portion is formed with a supply outlet,

a piston sleeve, which is movably mounted and sealed in the housing and displaceable against the force of a spring and comprises a valve member, which is formed with a through passage and is biased by a spring to its sealing position and is adapted to open a supply passage through the housing after the supply fitting has been attached to a gas cylinder valve, and

means for holding the piston sleeve in position before and after the supply fitting has been attached to a gas cylinder valve.

5,312,085

CONTROL VALVE

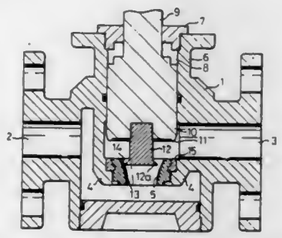
Ikuo Yokoyama, and Yasunori Kuroki, both of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Nobeoka, Japan

PCT No. PCT/JP92/00642, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO93/23690, PCT Pub. Date Nov. 25, 1993

PCT Filed May 20, 1992, Ser. No. 962,584

Int. Cl.[5] F16K *47/08*

U.S. Cl. 251—121 **6 Claims**



1. A control valve comprising a valve body having, inside thereof, an inlet passage, an outlet passage, a partition disposed between the inlet passage and the outlet passage that curves the flow direction, and an opening portion provided on the partition and communicating the inlet passage and the outlet passage; and a shutoff valve disposed opposite the opening portion; wherein the opening portion increases in diameter and curves toward the shutoff valve side; a control plug is arranged on and projected from the lower end of the shutoff valve; said control plug being located on the large diameter side of the opening portion, is coaxial with the axis of the opening portion, and has a flange portion defining an orifice between the inner surface of the opening portion and the flange portion; the shutoff valve is movable up and down and allows the lower end thereof to abut against a valve seat portion formed on the periphery of the opening portion.

5,312,086

TAPERED PLUG VALVE

Keith J. Hollingworth, Telford, England, assignor to BTR Plc, London, England

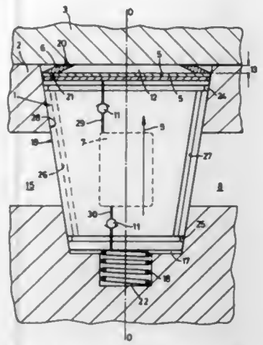
Filed Mar. 19, 1993, Ser. No. 34,764

Claims priority, applicatioo United Kingdom, Apr. 7, 1992, 9207576.1

Int. Cl.[5] F16K *5/02*

U.S. Cl. 251—309 **6 Claims**

1. A tapered plug valve comprising a body having a passageway therethrough for flow of fluid, a tapered bore intercepting said passageway, a tapered plug rotatably mounted in the bore, adapted to block said passageway in a closed position of the valve, said plug having a port adapted to be in communication with said passageway in an open position of the valve, spacing means to limit the amount of movement of the plug along the rotational axis thereof away from said tapered bore, and biasing means capable of applying a force to urge the plug towards the tapered bore, which force is only created after the



plug has moved a predetermined distance from the tapered bore.

5,312,087

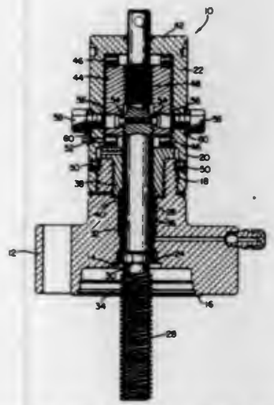
LOW TORQUE BACK SEATING STEM FOR GATE VALVE

Taylor L. Jones, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 12, 1993, Ser. No. 91,091

Int. Cl.[5] F16K *41/14*

U.S. Cl. 251—330 **10 Claims**



1. A low torque gate valve back seating stem assembly comprising:

a bonnet body having a central bore and a back seating surface at one end;

a stem rotatably received in said central bore and having a first, threaded end adapted to engage a threaded gate lifting nut, a second end adapted to transmit torque for rotating said stem, and an intermediate threaded section;

a back seating shoulder on said stem for contacting said back seating surface and forming a seal therewith when said stem is positioned in a back seating position;

a bonnet cap having a closed end and an open end, said open end adapted to fit over said bonnet body at the other end of said bonnet body;

said bonnet cap having a through hole at said closed end adapted to rotatably receive said second end of said stem;

a bearing ring rotatably received within said bonnet cap and adapted to be rotatably fixed thereto;

said bearing ring having a threaded bore therethrough for receiving said stem intermediate threaded section;

means for fixing said stem relative to said bearing ring during normal gate opening and closing operations; and

means for permitting axial and rotational displacement of said stem relative to said bearing ring to effect back seating.

5,312,088

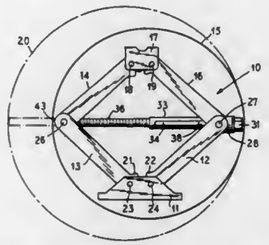
SCREW DESIGNS FOR A SCISSORS JACK

Darryl L. Engel, LaOtto, Ind., assignor to Universal Tool & Stamping Co., Inc., Butler, Ind.

Division of Ser. No. 32,096, Mar. 17, 1993. This application May 21, 1993, Ser. No. 64,463

Int. Cl.[5] B66F *3/12*

U.S. Cl. 254—126 **3 Claims**



1. A scissors jack which can be stored in a minimum diameter of a circular space comprising, a base member, first and second lower channel members pivotally attached to said base member, the lower ends of said first and second lower channel members formed with gear teeth which mesh together, a load supporting cap, first and second upper channel members pivotally attached to said cap, a threaded trunnion formed with pivot pin portions which pivotally connects the upper end of said first lower channel member to the lower end of said first upper channel member, a plain trunnion formed with pivot pin portions which pivotally connects the upper end of said second lower channel member to the lower end of said second upper channel member, a threaded screw with one end threadedly received through said threaded trunnion, a shaft which has a length which terminates between the plain and threaded trunnions and which extends through said plain trunnion and formed with a hollow end portion which extends into the region between said plain trunnion and said threaded trunnion and into which one end of said threaded screw is slidably received, means for limiting the slidable relative motion between said hollow end portion and said threaded screw and for preventing rotational movement between said threaded screw and said hollow end portion so that said jack can be stored in a minimum diameter of a circular space.

5,312,089

HANDRAIL ASSEMBLY

Frank Venegas, Jr., 4165 Homestead, Howell, Mich. 48843, assignor to Frank Venegas, Jr., Howell, Mich.

Filed Aug. 28, 1992, Ser. No. 938,207

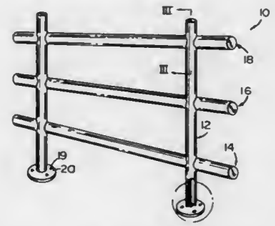
Int. Cl.[5] E04H *17/14*

U.S. Cl. 256—65 **2 Claims**

1. A knockdown handrail assembly comprising:

at least one vertically oriented support stanchion having a hollow interior, said stanchion including a tubular plastic sheath and a tubular metal post defining an open upper end, said tubular plastic sheath having an inside dimension and an outside dimension, said tubular metal post having an outside dimension less than or equal to said inside dimension of said tubular plastic sheath, said tubular plastic sheath having at least one aperture thorough both sides of said tubular plastic sheath, said tubular metal post having at least one aperture through both sides of said tubular metal post, said tubular metal post being located in said tubular plastic sheath such that said apertures in said tubular plastic sheath and said tubular metal post align with each other, said stanchion further including a base at a lower end thereof and a receiving cup on said base, said receiving cup opening into said metal post;

a top horizontal rail having a top plastic pipe and a top metal pipe, said top plastic pipe having an inside dimension and an outside dimension, said top metal pipe having an outside dimension less than or equal to said inside dimension of said top plastic pipe, said top plastic pipe having at least one aperture through both sides of said top plastic pipe, said top metal pipe having at least one aperture through both sides of said top metal pipe, said top metal pipe being located in said top plastic pipe such that said apertures in said respective pipes align with each other, said top horizontal rail extending through said aperture of said stanchion whereby said aligned apertures of said top horizontal rail are vertically oriented within said stanchion after placement of said rail in said stanchion;



a retaining rod positioned within said stanchion, said retaining rod having an upper end and a lower end, said retaining rod being removably fitted into said aligned apertures of said horizontal rail with said lower end disposed within said receiving cup, whereby said retaining rod maintains said top horizontal rail in position in said stanchion and remains accessible from outside said rail assembly through said upper end and said hollow interior of said stanchion for easy removal of said retaining rod after placement of said retaining rod in said stanchion and fitting of said retaining rod into said aligned apertures and without removal of said top horizontal rail;

an end plate fixed to said upper end of said retaining rod, said end plate dimensioned to fit the interior of said stanchion; and

an end cap disposed within and covering the open upper end of said stanchion.

5,312,090

APPARATUS AND METHOD FOR CONTROLLING A STOPPER ROD OF A BOTTOM POURING VESSEL

William W. Seaton, Dexter; Richard A. Gillette, West Branch, and Mark T. Salgat, Pinconning, all of Mich., assignors to CMI International, Southfield, Mich.

Filed Dec. 14, 1992, Ser. No. 992,262

Int. Cl.[5] B22D *41/20*

U.S. Cl. 266—45 **27 Claims**

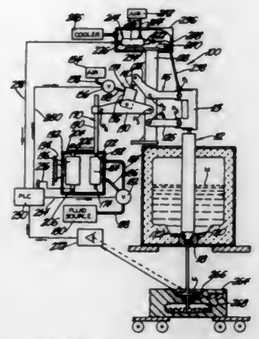
1. An apparatus for controlling molten metal discharge through a nozzle of a bottom pouring vessel, said apparatus comprising:

a stopper rod (**112**);

linkage means (**116**) supporting said stopper rod (**112**) for axial movement relative to the nozzle;

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primary actuating means (132) coupled to said stopper rod (112) by said linkage means (116) for raising and lowering said stopper rod (112) to positions relative to the nozzle in response to moving said actuating means (132) to corresponding positions for regulating the flow of molten metal through the nozzle into an underling casting mold;



and stopper rod feedback control means (214) for sensing the actual position of said stopper rod (112) with respect to the nozzle and irrespective of the position of said actuating means (132) and controlling movement of said actuating means (132) for conforming the actual stopper rod position with a target reference position of said feedback control means (214) to compensate for any backlash present in said linkage means (116).

5,312,091

METHOD AND DEVICE FOR DEBURRING ESPECIALLY A STEEL STRIP CUT INTO SLABS

Erwin Vogrin, Pfastatt, France, assignor to Sollac, Puteaux and Innovation Process Vogrin, Mulhouse, both of France

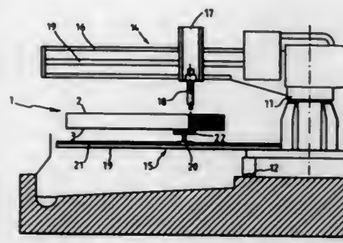
PCT No. PCT/FR92/00260, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO92/16331, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 20, 1992, Ser. No. 952,702

Claims priority, application France, Mar. 25, 1991, 91 03584

Int. Cl.[5] B23K *7/06*

U.S. Cl. 266—51 **16 Claims**



1. Method for deburring a steel strip being cut into slabs by an oxygen cutting torch, comprising the steps of:

applying a blast of an oxygen cutting torch perpendicular to one principal face of the strip to cut the strip at a cutting zone; and

directing a blast of a fluid which is inert with respect to the blast from the torch onto an other principal face of the strip, which other principal face is opposite to said one principal face, said blast of inert fluid being directed to intersect said cutting zone.

5,312,092

GAS PURGING PLUG

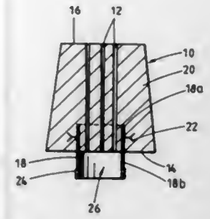
Jens Decker, Bad Honnef, Fed. Rep. of Germany, and Andreas Batton, Radenthein, Austria, assignors to Radex-Heraklith Industriebeteiligungs Aktiengesellschaft, Vienna, Austria

Filed Jun. 26, 1992, Ser. No. 904,715

Claims priority, application Fed. Rep. of Germany, Jnn. 28, 1991, 4121329

Int. Cl.[5] C21C *5/48*

U.S. Cl. 266—220 **11 Claims**



11. Gas purging plug of a refractory matrix material, for metallurgical vessels including a lower bottom, and upper end face and a circumferential wall between said bottom and said end face, with a gas connection pipe which has an upper end and which projects from below said bottom of the gas purging plug and extends in the direction of said end face and the upper end of said gas connection pipe being connected to a gas permeable section within said refractory matrix material which runs up to the end face of the gas purging plug, wherein the upper end of said gas connection pipe is located completely within the gas permeable section of said refractory matrix material and including means for a gas-tight connection to a gas distribution chamber or a gas feed line at a lower end of the gas connection pipe outside the refractory matrix material of the gas purging plug.

5,312,093

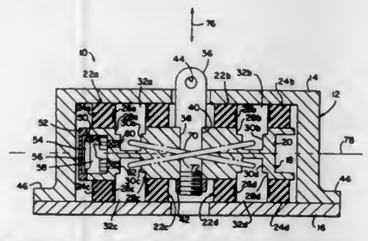
VIBRATION ISOLATOR WITH TWO PAIRS OF FLUID CHAMBERS WITH DIAGONAL FLUID COMMUNICATION

Gary T. Smith, Canyon Country, and Edwin L. Banks, Lake View Ter., both of Calif., assignors to Applied Power Inc., Butler, Wis.

Filed Jan. 28, 1992, Ser. No. 826,712

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.11 **10 Claims**



1. An elasto-hydraulic vibration isolator comprising:

a frame;

a core movable in an axial direction relative to the frame;

means defining at least two sets of variable volume fluid-filled chambers between said core and said frame, at least two of said chambers being on a first side of said core and at least two of said chambers being on a second side of the core, said second side being opposite of said first side in said axial direction, and each said set including at least one chamber on each of said first and second sides; and

fluid track means directly communicating chambers on the first side with chambers on the second side to place the chambers of each set in direct communication with one another and to isolate the sets from direct communication with one another;

wherein said means defining said variable volume fluid-filled chambers includes an elastomeric body defining said chambers, and further including a tubular ring shaped reinforcing member positioned coaxially with each chamber.

5,312,094

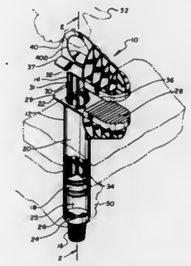
VACUUM CLAMP

Robert D. Zera, 3101 Spruce La., Minnetonka, Minn. 55305

Filed Jan. 21, 1993, Ser. No. 7,262

Int. Cl.[5] B25B *1/00, 11/00;* **B23Q** *3/08*

U.S. Cl. 269—3 **11 Claims**



1. A vacuum operated clamp comprising

a) a vacuum cylinder comprising

i) a cylinder body having a proximal end and a distal end, said distal end being closed:

ii) an aperture at the distal end of the cylinder body controlled by a control valve;

iii) a lower flange extending outwardly from the proximal end of the cylinder body, the lower flange having a top side and an underside;

iv) a cylinder piston having proximal and distal ends, and including an upper flange extending outwardly from its proximal end, the upper flange having a top side and an underside, said cylinder piston being constructed and arranged to sealingly mate with said cylinder body to thereby pull a vacuum when moved up out of said cylinder;

v) a gripping means extending outwardly from the top side of the upper flange, said gripping means comprising a finger loop; and

b) a clamping means comprising an upper clamping surface and a lower clamping surface, the upper clamping surface being mounted on the proximal end of piston rod and a lower clamping surface being mounted on the proximal end of the cylinder body, the upper clamping surface extending downwardly from the underside of the upper flange and the lower clamping surface extending upwardly from the top side of the lower flange, such that the upper and lower clamping surfaces face each other.

5,312,095

JOIST HANGAR INSTALLATION TOOL

Robert J. Rennie, 2517 Huntington La., Redondo Beach, Calif. 90278

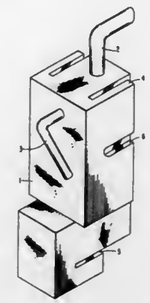
Filed Mar. 8, 1993, Ser. No. 27,396

Int. Cl.[5] B25B *5/14*

U.S. Cl. 269—41 **1 Claim**

1. An adjustable tool for the installation of joist hangers to the supporting structure of a building, comprising the combination of,

(a) a body of the same nominal width as the joist to be installed, and of a height no more than that of the smallest joist to be installed, said body having bottom and side flanges attached to the rear of said body and extending forward towards the face of said body only far enough to engage the bottom and side flanges of a joist hanger, allowing the face of said body to touch the supporting structure at the point of installation with a joist hanger engaged, and said body also having slots in said side flanges so arranged to allow barbs on a joist hanger to enter, and said body also having a vertical hole centrally located from the sides of said body to allow a vertical rod to enter, and said body also having a horizontal intersecting threaded hole extending rearward perpendicularly from the vertical hole to accept a set screw, and



(b) a vertical rod with a 90 degree bend at the top to extend forward over the top of the supporting structure, the vertical leg of said rod extending downwards through said vertical hole in said body, and

(c) a set screw means received in said horizontal threaded hole to secure said vertical rod to said body.

5,312,096

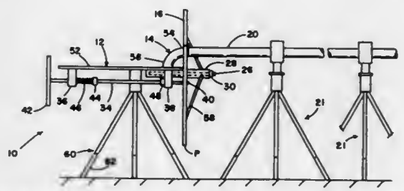
WELDING JIG FOR PIPES

Thomas E. Jasper, 4719 Peachridge, N.W., Grand Rapids, Mich. 49504

Filed Mar. 9, 1993, Ser. No. 28,352

Int. Cl.[5] B25B *1/20*

U.S. Cl. 269—43 **21 Claims**



1. A welding jig for welding large diameter pipe fittings and pipes together, comprising:

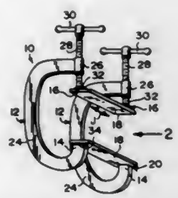
a first support plate shaped to abuttingly support one end of a pipe fitting thereon, said first support plate including an edge;

a second support plate rotatably connected to said first support plate, said second support plate being oriented perpendicularly to said first support plate and being located proximate said edge of said first support plate so that portions of said second support plate extend above and below said first plate so that portions of said second sup-

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port plate extend above and below said first plate, said second support plate including a template-shaped perimeter including segments thereof shaped to support thereon one end of one of a plurality of differently sized pipe fittings, said second support plate being rotatable so that a selected one of said segments can be positioned to support one end of a particular pipe fitting with the other end of the particular pipe fitting resting on said first support plate, whereby the particular pipe fitting can be supported in a predetermined and square position relative to a pipe and independent from the pipe, thus facilitating welding the particular pipe fitting to the pipe.

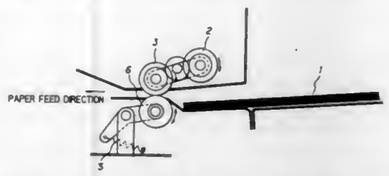
5,312,097
DOUBLE C CLAMP DEVICE
Terry R. Womack, Rte. 1 Box 575 Z, Forest City, N.C. 28043
Filed Dec. 21, 1992, Ser. No. 993,440
Int. Cl.[5] B25B *1/00*
U.S. Cl. 269—139 **6 Claims**



1. A double C-clamp device which comprises:
a) a pair of C-clamps, each having a fixed jaw and a moveable jaw and including:
i) a C-shaped frame having said fixed jaw at a first end and an internally threaded collar at a second end;
ii) an operating screw mating with said internally threaded collar;
iii) a transverse handle on an outer end of said operating screw for turning said operating screw; and
iv) a swivel head formed on an inner end of said operating screw having said moveable jaw thereon which swivel head simultaneously permits limited side ways translational displacement of the jaw with respect to said swivel head and rotation of the swivel head with respect to the jaw;
b) a pair of clamp bars; and
c) means for attaching said first clamp bar transversely between said fixed jaws and said second clamp bar transversely between said moveable jaws of said C-clamps, so that said C-clamps which are in a stationary spaced apart relationship can cause saic clamp bars to come towards each other to contact a work piece.

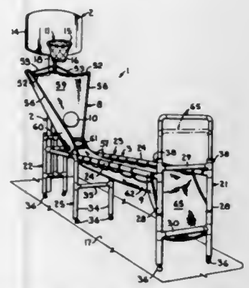
5,312,098
PAPER FEEDING DEVICE OF FRICTIONALLY SEPARATING ROLLER MECHANISM
Tatsuya Inoue, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 2, 1993, Ser. No. 25,098
Claims priority, application Japan, Mar. 3, 1992, 4-80253
Int. Cl.[5] B65H *3/52*
U.S. Cl. 271—122 **1 Claim**

1. A paper feeding device comprising:
a pick-up roller being pressed onto a surface of a sheet stack for delivering with frictional force a sheet into a nip defined between a paper feed roller and a reverse roller;
said paper feed roller sending out with friction the sheet delivered by said pick-up roller in its rotational direction; and
said reverse roller being driven by said feed roller when it is in direct contact with the paper feed roller or a sheet of paper is fed into the nip, and pushing back the lower sheet by its frictional force with the sheet when two or more sheets piled are fed into the nip,
being characterized in that said paper feed roller and reverse



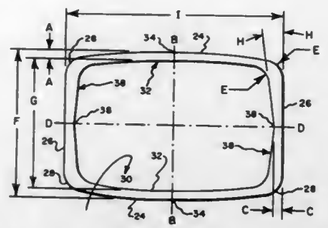
roller are made with polynorbornene rubber, and the difference of the rubber thickness t_1 of the paper feed roller and the rubber thickness t_2 of the reverse roller, that is, the value (t_1-t_2) is 0.5 mm or more.

5,312,099
BALL RETURN APPARATUS FOR BASKETBALL GOAL
Dan H. Oliver, Sr., 1031 SE. 43rd, Topeka, Kans. 66609
Filed Jan. 11, 1993, Ser. No. 2,812
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—1.5 A **20 Claims**



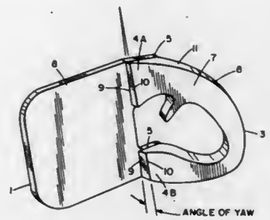
15. A basketball training apparatus for use with a conventional basketball goal assembly including hoop bracket means and comprising:
(a) an elongated chute frame having a front end and a back end;
(b) back frame means pivotally connected to said back end of said chute frame to enable pivoting said chute frame relative to said back frame, said back frame supporting said back end above a court surface;
(c) a front frame connected to said front end of said chute frame and supporting said front end above said court surface;
(d) a back standard upstanding from said back frame;
(e) lateral support arms connected to said back standard and extending laterally from opposite sides thereof;
(f) an elongated ball return chute member having a back end connected to said lateral support arms and said chute frame and extending toward said front frame; and
(g) hook means positioned at a top end of said back standard, said hook means being adapted for removable connection to said hoop bracket means.

5,312,100
HOCKEY STICK HANDLE WITH DETACHABLE BLADE AND METHOD OF MANUFACTURE
Anthony Ilacqua, Rochester, and Martin P. Schooping, Hamlin, both of N.Y., assignors to Brimms Inc., Tonawanda, N.Y.
Filed Apr. 20, 1993, Ser. No. 48,223
Int. Cl.[5] A63B *59/14*
U.S. Cl. 273—67 A **3 Claims**



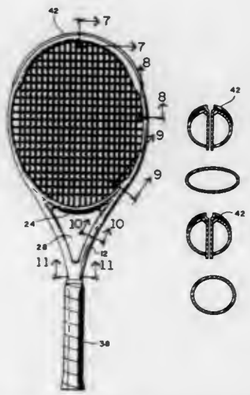
1. A hollow, elongated handle means serving as a game stick, the handle means having a uniform cross-sectional configuration substantially throughout its length and comprising a pair of opposed first walls having non-planar outer faces and a pair of opposed second walls having generally planar outer faces, wherein the first walls are broader than the second walls with the first walls and the second walls being joined by rounded corner portions to define a substantially rectangular cross-section, and wherein the handle means defines a hollow area with the first walls comprising non-planar inner faces similar to the shape of the non-planar outer faces to provide the opposed first walls with a generally uniform wall thickness extending to and joining with the corner portions, wherein the corner portions have a wall thickness greater than the generally uniform wall thickness of the opposed first walls and with the wall thickness of the corner portions joined to the opposed second walls by a gradually decreasing taper along the inner surface of the second walls to a midpoint of the second walls such that the second walls have a non-uniform cross-section extending from the corner portions to the wall thickness at the midpoint of the second walls, which midpoint wall thickness is less than the wall thickness of the corner portions.

5,312,101
TABLE TENNIS PADDLE
Don W. McDaniel, P.O. Box 988, Lemon Grove, Calif. 91946, assignor to Donald W. McDaniel, Lemon Grove, Calif.
Filed Jun. 1, 1992, Ser. No. 890,853
Int. Cl.[5] A63B *59/04*
U.S. Cl. 273—76 **6 Claims**



1. A paddle for use in racquet sports, particularly table tennis, comprising:
a substantially flat blade;
a handle which lies in a distinctly different, but intersecting plane between 0° and 45° to the plane of the blade;
the handle contained within this plane extends outward and downward from the upper attachment to the blade at an angle between 0° and 90°;
the handle is tilted above or below its midline horizontal plane at an angle greater than 0° up to or at 20°;
the plane of attachment of the handle to the blade lies between the lines of intersection of the planes containing the two parallel sides of the handle with the blade;
the playing surface of the blade extends only forward from the terminal end attachments of the handle, thus allowing for the same surface area on both sides of the blade;
the handle having two curvatures along the inner gripping surface separated by an extension of said surface.

5,312,102
VARIABLE INERTIA HEAD RACKET
Patrick Stennett, Springfield, Mass., assignor to Lisco, Inc., Del.
Filed Feb. 4, 1993, Ser. No. 13,528
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 C **4 Claims**



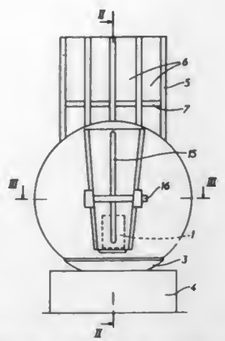
1. A tennis racket comprising a head formed as a closed loop at the upper end, a handle for being gripped by a player at the lower end and coupling beams therebetween, the head being formed with varied inertial cross-sectional configurations around its periphery with a nearly circular cross-sectional configuration at the upper edge of the head and the lower edge of the head and with oval wide-beam cross-sectional configurations at the sides of the head between the 2 and 5 o'clock positions and the 7 and 10 o'clock positions for generating a stiffness that is about 70% of the stiffness at the upper edge of the head and the lower edge of the head which have nearly circular cross-sectional configurations and strings in a plane secured in the head.

5,312,103
APPARATUS FOR ARBITRARY DRAWING OF PLANAR OBJECTS
Clotaire R. G. Chatean, 8, Allée des Sapins, 94420 Le Plessis Trevise, France
Filed Feb. 18, 1993, Ser. No. 19,433
Claims priority, application France, Feb. 20, 1992, 92 01917
Int. Cl.[5] A63B *71/00*; A63F *1/18*
U.S. Cl. 273—144 A **22 Claims**

1. Apparatus for arbitrary drawing of planar objects comprising:
a receptacle in which an air current can be created;
means for introducing planar objects into said receptacle, said planar objects comprising two opposite faces each having a reproduction of a picture;

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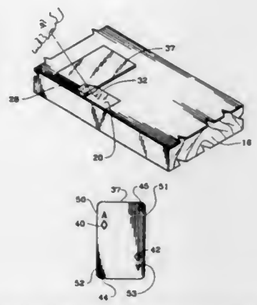
means for capturing a planar object in an arbitrary manner, said means for capturing including, on a front portion of said receptacle, a first groove having a trapezoidal section



whose width decreases from an upper portion to a lower portion; and

means for extracting a captured planar object from said receptacle.

5,312,104
CARD READER FOR BLACKJACK TABLE
Arthur C. Miller, Las Vegas, Nev., assignor to Tech Art, Inc., Las Vegas, Nev.
Continuation-in-part of Ser. No. 446,205, Dec. 4, 1989, Pat. No. 5,039,102. This application May 31, 1991, Ser. No. 709,363
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] A63F *1/06*
U.S. Cl. 273—148 R **33 Claims**



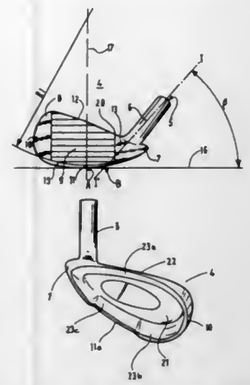
1. A device for reading a mark placed on selected cards of a deck of specialized playing cards in a game of blackjack to indicate to a dealer that the dealer has been dealt "21", comprising:

(a) a housing having a means for receiving a playing card when such card is disposed face down in a blackjack table;

(b) means for reading a mark on the card while the card is disposed adjacent said means for receiving; and

(c) means for indicating when the dealer has been dealt "21", said indicating means being connected to said means for reading.

5,312,105
GOLF CLUB
Roger Cleveland, Los Angeles, Calif., assignor to Roger Cleveland Golf Company, Inc., Paramount, Calif.
Filed Dec. 1, 1992, Ser. No. 983,721
Claims priority, application France, Jun. 11, 1992, 92 07309
Int. Cl.[5] A63B *53/02, 53/04*
U.S. Cl. 273—167 G **20 Claims**



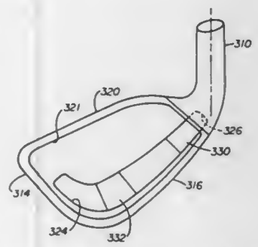
1. An iron or wood type golf club head comprising:

a sloping front face having a grooved striking zone for impacting a golf ball, a toe, and a heel, said face comprising in addition to said striking zone a wide zone adjacent said toe and a narrow zone adjacent said heel, and at its base a lower, leading edge; and

an integral hosel segment including a bore for receiving a shaft;

wherein said hosel extends from said narrow zone between said heel portion and said striking zone, and the axis of said hosel bore is spaced from the tip end of said heel by a distance of at least 8 mm.

5,312,106
COMPOSITE WEIGHTED GOLF CLUB HEADS
Don R. Cook, 9623 Earhart, South Lyon, Mich. 48178
Filed Oct. 14, 1992, Ser. No. 960,917
Int. Cl.[5] A63B *53/08*
U.S. Cl. 273—169 **5 Claims**



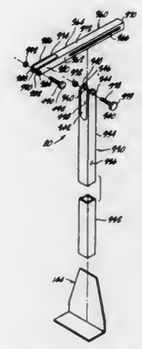
1. A golf club head comprising a metal hosel and metal body, a toe end on the body and spaced from the hosel,

a striking face on the club head, said striking face substantially formed of a molded fiber reinforced resin adhered to the metal body,

an L-shaped depression having a short end and a long end, the L-shaped depression formed in the metal body and extending beneath the striking face with the short end of the L at the toe end of the striking face,

selectable weighting means placed in the depression to balance the club head and form a "sweet line" along the striking face of the club head, said weighting means positioned by plugs in the depression.

5,312,107
GOLF CLUB SWING TRAINING AND EXERCISE DEVICE
Ned Gvoich, Beamsville, and John S. Moroz, Dundas, both of Canada, assignors to Kordun, Ltd., Studio City, Calif.
Filed May 13, 1993, Ser. No. 30,628
Int. Cl.[5] A63B *21/24, 21/22*
U.S. Cl. 273—186.1 **27 Claims**



1. An exercise device adapted for use by a person, comprising:

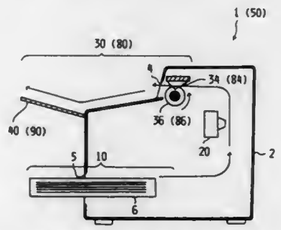
a first ring having a predetermined diameter, an inner surface, and an outer surface;

a second ring concentric to the first ring and rotatably retained by the first ring;

means for providing isokinetic resistance to rotation of the second ring;

whereby a person applying torque in a first direction of rotation causes rotation of the second ring in the first direction of rotation against the isokinetic resistance.

5,312,108
PAPER DISCHARGE DEVICE
Takayuki Hayashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 24, 1993, Ser. No. 21,552
Claims priority, application Japan, Apr. 10, 1992, 4-30751
Int. Cl.[5] B65H *29/70*
U.S. Cl. 271—188 **22 Claims**



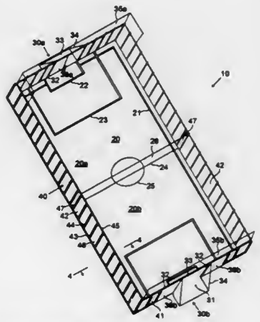
1. A paper discharge device for a print device, the print device ejecting a sheet of paper along a curved path leading to the paper discharge device, the curved path curving the sheet about a transverse dimension of the sheet, a center of curvature of the transverse curve located on a first side of the sheet, the paper discharge device comprising:

a rotational shaft;

at least three paper discharge rollers positioned axially along the rotational shaft, a diameter of at least one inner paper discharge roller being greater than a diameter of at least two outer paper discharge rollers; and

a plurality of ribs attached to a rib panel pressing the sheet against the paper discharge rollers, the plurality of ribs and the paper discharge rollers seizing the sheet, wherein the sheet, as it is discharged from the print device, is curved by the paper discharge device about a longitudinal dimension of the sheet, a center of curvature of the longitudinal curve located on the first side of the sheet.

5,312,109
SOCCER COURT
David G. Cagle, 29 W. 12th St., New York, N.Y. 10011
Filed Jun. 21, 1991, Ser. No. 719,022
Int. Cl.[5] A63B *71/02*
U.S. Cl. 273—411 **38 Claims**



1. A soccer court comprising:

a substantially rectangular playing area approximately 76 to 92 feet long and 32 to 44 feet wide, said playing area covered with material selected from grass and artificial turf;

side and end walls enclosing said playing area, wherein said walls comprise a plurality of vertical rigid transparent panels extending from proximate the horizontal surface of the playing area to a height of approximately 6 to 8 feet, said panels permitting an unobstructed view of the playing area, and supports for rigidly mounting said panels;

a goal opening disposed in each end wall;

and a goal net disposed behind each of said goal openings and outside said playing area.

5,312,110
BOARD GAME APPARATUS
Mark D. Youwanes, 3330 W. Greenway Rd., Apt 1088, Phoenix, Ariz. 85023
Filed Sep. 24, 1992, Ser. No. 950,180
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—260 **2 Claims**

1. A board game apparatus, comprising,

a game board, the game board having a matrix of spaces, wherein the game board includes a game board first end spaced from and parallel to a game board second end, and a game board first side spaced from and parallel to a game board second side, with a predetermined number of rows of said spaces directed between the first end and the second end,

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and

a plurality of columns equal to said predetermined number directed between the first side and second side in a parallel relationship, wherein the columns orthogonally intersect the rows,

and

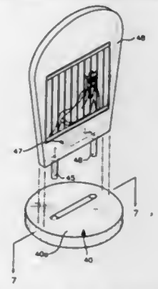
the first team of tokens positioned adjacent the game board first end, and a second team of tokens positioned adjacent the second end, the first team of tokens having soldier tokens, knight tokens, a giant token, and a captured king token, with the second team of tokens having a second team plurality of soldier tokens, second team knight tokens, a second team giant token, and a second team captured king token, with the soldier tokens movable orthogonally between the first end and the second end, and orthogonally between the first side and the second side, and diagonally relative to the first end and the second end and the first side and the second side relative to the spaces,

and

the knight token movable orthogonally relative to the first side and the second side and orthogonally relative to the first end and the second end of the game board and diagonally relative to the first side and the second side and the first end and the second end relative to the spaces,

and

the captured king token maintained in one of said rows adjacent the first end of the first team, and the second



team having the second team captured king token positioned in one of said rows adjacent the second end,

and

each of the tokens includes a token base, the token base having a token blade, wherein the token blade is translucent and the token base includes a token base cavity, the token base cavity having an illumination bulb mounted therewithin, and a first socket and a second socket in electrical communication with the illumination bulb, the first socket mounted to a first tube, the second socket mounted to a second tube, with the first tube having a first axle mounted through the first tube permitting pivoting of the first socket, and the second socket axle mounted through the second tube permitting pivoting of the second socket, and the token blade having a lower distal end received within the token base, and the lower distal end having a first electrode and a second electrode, and a battery mounted within the token blade between the first electrode and the second electrode, wherein the first electrode and the second electrode are received within a respective first socket and second socket, wherein the first socket and the second socket are coaxially aligned with the first electrode and the second electrode respectively in the first position permitting illumination of the illumination bulb, with the first socket and the second socket pivoted and displaced relative to the first electrode and the second electrode in a second position effecting discontinuance of communication of the battery with the illumination bulb.

5,312,111

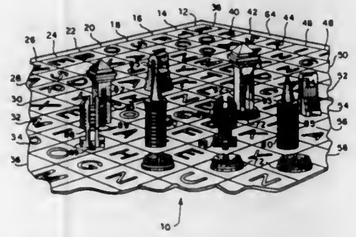
Patent Not Issued For This Number

5,312,112

WORD FORMING BOARD GAME INCLUDING ELEMENTS OF CONFLICT

Gene D. Cohen, 1915 Biltmore St. NW., Washington, D.C. 20009

Division of Ser. No. 981,121, Nov. 24, 1992, Pat. No. 5,230,515.
This application Jul. 26, 1993, Ser. No. 95,533
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—272 **11 Claims**



1. A board game apparatus comprising:

a game board including a rectangular matrix of lettered spaces;

a first group and a second group of player position markers, with said player position markers of said first group having a different color than said player position markers of said second group to provide for differentiation by a first player and a second player;

each said group of player position markers comprising a plurality of different types of player position markers with each of said different types of player position markers having a different shape and form, with each said group of player position markers having like numbers and kinds of said different types of player position markers, at least some of said player position markers include means providing for the cooperating lateral interfit of said player position markers with one another; and

a scoresheet, whereby

said first group of player position markers is placed upon a number of said lettered spaces of said game board in a starting array and said second group of player position markers is placed upon said number of said lettered spaces of said game board and opposite said first group of player position markers, said player position markers are alternatingly moved by the players to specific said lettered spaces of said game board to form words by means of letters of the alphabet within said lettered spaces, and points accrued by means of said moved player position markers are recorded upon said scoresheet.

5,312,113

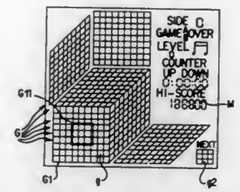
VIDEO PUZZLE CUBE GAME

Chen Ta-Hsien, F.4, No. 111-24, Sec.4, San Ho Road, San Chung City, and Yang Hsiu-Yu, F.4, No. 39, Alley 95, Chih Yuan 2nd Rd., Taipei, both of Taiwan

Filed Nov. 24, 1992, Ser. No. 980,840
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—434 **15 Claims**

1. A video puzzle cube game comprising a game machine having a display screen and a plurality of control keys, controlled program means controlled by said keys for showing a hexahedron pattern, a menu and a field on said display screen, said hexahedron pattern having six sides, each side being divided into nine equal divisions, each division being divided into six blanks respectively filled with or for filling with either of

six different unit squares, each of a different predetermined pattern, alternatively given by said program through said field, by means of the control of said keys, said pattern having an



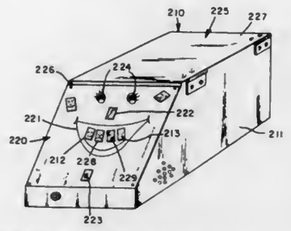
operative side wherein said unit squares are used to fill blanks and said program further being controlled by said keys to change the operative side of said pattern available for filling.

5,312,114

APPARATUS AND METHOD FOR ENHANCING DECISION-MAKING

Warren M. Lipson, 9701 Yoakum Dr., Beverly Hills, Calif. 90210

Filed Nov. 30, 1992, Ser. No. 983,460
Int. Cl.[5] A63F *9/22; G09B 7/00*
U.S. Cl. 273—434 **8 Claims**



1. An apparatus for enhancing decision making using left to right to left hemisphere guidance, said apparatus comprising:

a. a housing;

b. two buttons coupled to said housing wherein said two buttons are designated by a pair of opposite words from a group of pairs of opposite words consisting of positive and negative, good and bad, yes and no, know and do not know, accept and reject, right and wrong, like and dislike, should and should not, will and will not, can and can not, good and bad and good or bad, success and failure, this and that;

c. a first recording medium with an instruction to a user to think about a subject until an issue related to the subject comes to his mind, then to make a choice from alternatives of the issue whereby the user presses one of said two buttons to designate his choice of one of the alternatives of the issue;

d. a second recording medium with an instruction to the user to look inside his head and ask himself if he is right while he is inclined to a new discovery;

e. a third recording medium with an instruction to the user to see a picture of the subject in his head and while he is daydreaming the picture to listen for thoughts in his mind about how he is right, then to listen for thoughts in his mind about the other side of the issue, then with both sides of the issue in this mind to listen for changes over a period of time;

f. a fourth recording medium with an instruction to the user to verbalize at least one of his conclusions; and

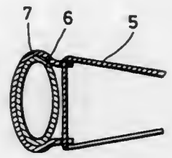
g. a voice playback device coupled to said housing, said voice playback device receives said first, second, third and fourth recording media in order to playback said instructions thereof.

5,312,115

RACKET

Chao-I Wu, Taichung Hsien, Taiwan, assignor to Jan Feng Sports Products Corp., Taichung Hsien, Taiwan

Filed Apr. 6, 1993, Ser. No. 43,542
Int. Cl.[5] A63B *51/10*
U.S. Cl. 273—73 D **7 Claims**



1. A racket having a head section, a handle and a racket throat frame for coupling said handle to said head section, comprising:

(a) a closed contour head frame having a network of string elements extending in mutually orthogonal directions within said closed contour head frame;

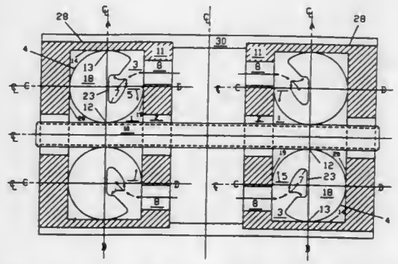
(b) a first longitudinally extending flexible protective covering defining a plurality of pairs of transversely opposed flange sections having respective transversely aligned string holes formed therethrough, each of said pairs of said transversely opposed flange sections being longitudinally spaced apart from a next consecutive pair of said transversely opposed flange sections by a predetermined gap length, said first longitudinally extending flexible protective covering being formed around a cross-sectional wall section of said closed contour head frame for alignment of respective string holes of a respective pair of flanges, said flanges extending within said closed contour of said head frame for passing a string element through said aligned string holes, said string element passing therethrough being displaced from an inner wall of said closed contour head frame.

5,312,116

SELF-ADJUSTING O-RING SEAL PRODUCT TO RETAIN INTERNAL BEARING LUBRICANTS AND PNEUMATIC PRESSURES

Lawrence D. Quaglia, 917 Quincy Ave., Bronx, N.Y. 10465, assignor to Lawrence D. Quaglia, Bronx, N.Y.

Filed Jun. 21, 1991, Ser. No. 719,035
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—27 **21 Claims**



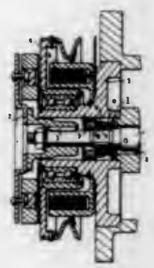
1. An elastomeric O-Ring for creating a seal with a shaft comprising:

an essentially sold elastomeric O-Ring with a circular central

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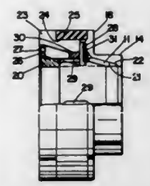
opening for receiving a circular shaft that has a center line that it can rotate about or reciprocate along;
said O-Ring having a minor diameter formed by central opening and a major diameter furthermost from said central opening and a major width thereinbetween;
a first axis perpendicular to said central opening and essentially bisecting said O-Ring;
a second axis through a cross-section of said O-Ring perpendicular to said first axis and essentially bisecting said O-Ring cross-section major width;
an essentially continuous enlarged chamber within said O-Ring predominantly on one side of said first axis;
a channel extending between said enlarged chamber and the outside of said O-Ring on said one side of said first axis;
said enlarge chamber and said channel forming a flexible section in said O-Ring on said one side that increases the sealing surface area of said O-Ring in contact with said shaft in response to pressure increase within said enlarged chamber and channel.

5,312,117
MECHANICAL SEAL
Akira Takenaka, and Tatsuhiko Fukuoka, both of Aichi, Japan, assignors to Taiho Kogyo Co., Ltd. and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan
Continuation of Ser. No. 642,633, Aug. 20, 1984, abandoned, which is a continuation of Ser. No. 123,624, Feb. 22, 1980, abandoned, which is a continuation of Ser. No. 895,072, Apr. 10, 1978, abandoned. This application Jun. 8, 1992, Ser. No. 894,930
Claims priority, application Japan, Apr. 12, 1977, 52-41838; Mar. 3, 1978, 53-24137; Mar. 3, 1978, 53-24138
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—96.1 **6 Claims**



1. A mechanical seal for preventing a pressurized fluid at one end of a rotary shaft from leaking to the atmosphere at the other end of the rotary shaft, comprising:
a) a stationarily mounted sealing ring receiving said rotary shaft therethrough and having an annular sliding contact surface;
b) a follower ring mounted to rotate with said rotary shaft and having an annular sliding contact surface in sliding contact with said sliding contact surface of said sealing ring;
c) a region radially outside of said sliding contact surfaces constituting a high pressure region containing said pressurized fluid to be sealed, and a region radially inside of said sliding contact surfaces constituting an atmospheric region;
d) at least one of said sliding contact surfaces having formed therein a plurality of fine grooves, all of said fine grooves extending across a substantial percentage of the width of said at least one sliding contact surface and each having a closed outer end terminating radially short of an outer periphery of said at least one sliding contact surface in a manner so as to leave a groove-free annular region adjacent said outer periphery; and
e) inner ends of said grooves being disposed so as to inwardly communicate with an inner periphery of said at least one sliding contact surface, said grooves having a width in a range of 0.2 to 0.6 mm, said inner periphery defining a center point, and said grooves being arranged at a predetermined angle with respect to lines extending radially from said center point, said radial lines each defining a reference angle of 0°, and each groove forming an angle with respect to a respective one of said radial lines, at points of intersection with said inner periphery, within a range of forward 5° to rearward 90°; where:
"forward" designates an inclination of said grooves in the direction of rotation of said rotary shaft, and "rearward" designates an inclination of said grooves in the direction opposite the direction of rotation of said rotary shaft.

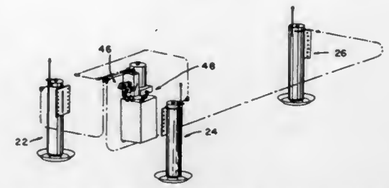
5,312,118
QUICK MOUNTING DEVICE WITH A CENTERING EFFECT FOR MOUNTING A VEHICLE WHEEL ON THE AXLE OF A BALANCING MACHINE
Horst Wakotsch, Schulze-Delitzsch-Str. 21, 3006 Burgwedel 1, Fed. Rep. of Germany
Filed Mar. 11, 1993, Ser. No. 29,891
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1992, 9205071[U]
Int. Cl.[5] G01M *1/02*
U.S. Cl. 279—2.03 **7 Claims**



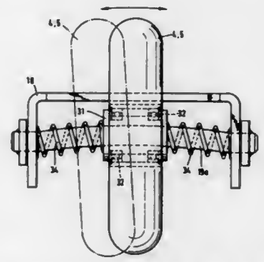
1. A quick mounting device having a centering effect for mounting a motor vehicle wheel on the axle of a balancing machine, a flange mounted permanently on the axle for friction engagement of the rim of the motor vehicle wheel, chucking devices for tightening the rim against the flange, a conical arrangement having an outside part with a cylindrical outside face for engagement in the centering hole of the motor vehicle wheel and a conical inside face and an inside part having an internal bore for placement of the inside part on the axle of the balancing machine and having a conical outside face shaped so it is complementary to the conical inside face of the outside part and resting against the latter, whereby the inside part of the conical arrangement is placed under tension in the direction of the centering hole by spring means, and a radial flange with a contact face for coming in contact with the rim of the motor vehicle wheel extending from the cylindrical outside face of the outside part of the conical arrangement, characterized in that the outside part (**13**) is formed by separate segments (**23**) held on the inside part (**11**) by resilient means that apply a tension force to the segments.

5,312,119
VEHICLE LEVELING SYSTEM WITH SAFETY INTERLOCK
Robert H. Schneider, and Jon D. Jacobs, both of Beaver Dam, Wis., assignors to Versa Technologies, Inc., Racine, Wis.
Continuation of Ser. No. 782,977, Oct. 24, 1991, Pat. No. 5,176,391. This application Nov. 20, 1992, Ser. No. 979,172
Int. Cl.[5] B60S *9/12*
U.S. Cl. 280—6.1 **5 Claims**

1. A vehicle leveling system for use with a vehicle having an engine, a parking brake movable between an engaged position and a disengaged position and an automatic transmission movable to an inoperative position during leveling of the vehicle, comprising:
a plurality of extendable and retractable jacks;
jack operating means for extending the jacks to level the vehicle and for retracting the jacks;
means for providing a first signal when the parking brake is moved to its disengaged position and for operating the jack operating means in response thereto to retract the jacks; and
means for providing a second signal when the vehicle transmission is moved out of its inoperative position when the engine is operating and for operating the jack operating means in response thereto to retract the jacks.

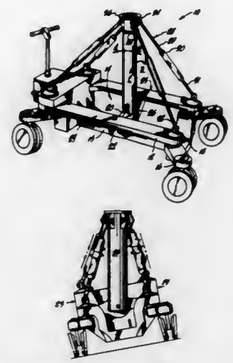


5,312,120
ROLLER-SKI
Georg Wiegner, 3/c Block 2, 16 La Salle Road, Kowloon, Hong Kong
Continuation of Ser. No. 790,363, Nov. 12, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 1,948
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, 4036526; Jul. 18, 1991, 4123822
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 **1 Claim**



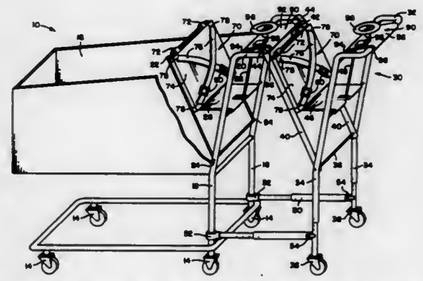
1. A sport equipment comprising a pair of short ski-like rollers for attachment to the shod feet of a user, each of said rollers comprising a support as a base for the shoe of the user, a shoe holder (**6**) for holding the user's shoe in place on said support, a front wheel and a rear wheel mounted for rotation on a pair of axes (**2, 3**) in said support, a brake system consisting of a friction brake for each of said wheels and a manual brake operating mechanism, said axes (**2, 3**) for attaching the wheels (**4, 5**) and the wheels themselves being disposed within the support (**1**), at least one of said axes (**2, 3**) being constructed as a spiral gliding axis (**19***a*), on which a wheel (**4**) is mounted on bearings (**32**) on a slipping sleeve (**31**), said spiral gliding axis (**19***a*) capable of being made inoperative by a catch.

5,312,121
CRANE ARM DOLLY
Leonard T. Chapman, North Hollywood, Calif., assignor to Leonard Studio Equipment, Inc., North Hollywood, Calif.
Filed Dec. 24, 1992, Ser. No. 995,370
Int. Cl.[5] B62B *3/10*
U.S. Cl. 280—47.11 **5 Claims**



1. A crane arm dolly comprising:
a dolly chassis;
a cross bar connected to the dolly chassis and pivotable in a front to back direction relative to the dolly chassis;
a post connected to the cross bar and pivotable in a side to side direction relative to the dolly chassis; and
a plurality of post support rods extending from the dolly chassis a top portion of the post.

5,312,122
SHOPPING CART ATTACHMENTS
Raymond A. Doty, 32 Maple Ave., Hudson, N.Y. 12534
Filed Dec. 31, 1992, Ser. No. 999,093
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—33.992 **4 Claims**

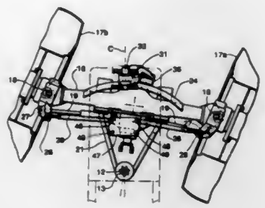


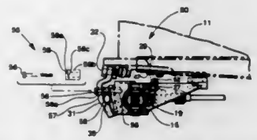
1. In a shopping cart having a child seat and an adjacent, transversely disposed handlebar, a protective attachment for preventing a child disposed within said child seat from contacting said handlebar, comprising:
a unitary, inverted V-shape panel including first and second substantially planar, obtusely oriented panel sections, said first panel section substantially covering said handlebar and extending downwardly therefrom into said child seat, said second panel section extending downwardly from said first panel into said child seat, said first panel section including a substantially tubular, arcuate, transverse end

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section for removably securing said protective attachment over and around said handlebar.

5,312,123
COMPOUND STEER CONVERSION APPARATUS
Joseph C. Hurlburt, Lancaster, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.
Filed Nov. 12, 1992, Ser. No. 974,640
Int. Cl.[5] B62D *1/00*
U.S. Cl. 280—97 **15 Claims**

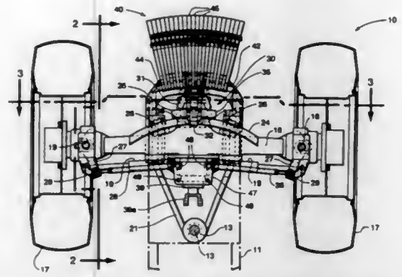




1. A method of converting a steering mechanism from a compound steering mechanism, in which an axle pivotally mounting a pair of opposing steerable wheels is laterally movable relative to a chassis from which said axle is supported by a pivotable linkage in response to a pivoting of the steerable wheels which are operatively connected to said chassis, to a conventionally operating steering mechanism, in which the steering of said chassis is accomplished solely through the pivotal movement of said wheels relative to said axle, comprising the steps of:
locking said axle against the chassis to prevent relative pivotal movement through therebetween; and
removing the operative connection between said wheels and said chassis to eliminate the actuation of the pivotal movement of said axle relative to said chassis and interconnecting said steerable wheels to allow pivotal movement thereof relative to said axle in a conventional simple steering operation.

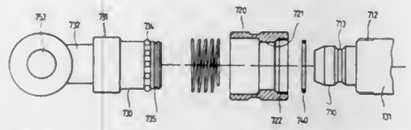
5,312,124
STEERABLE AXLE SUPPORT LINKAGE
Gilbert W. Linde, Lancaster, and Joseph C. Hurlburt, Paradise, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.
Filed Nov. 12, 1992, Ser. No. 974,652
Int. Cl.[5] B62D *1/00*
U.S. Cl. 280—97 **21 Claims**

1. A linkage for connecting a steerable axle to a vehicle chassis comprising:
a first pivot joint carried by said vehicle chassis to define a generally vertically extending first pivot axis, said steerable axle being connected to said vehicle chassis at said first pivot joint for movement relative thereto about said first pivot axis; and
a carrier mechanism having associated therewith a four-bar linkage pivotally interconnecting the vehicle chassis and the steerable axle by a plurality of pivot axes, each of said



pivot axes being aligned with and passing through the center of said first pivot joint.

5,312,125
COLLAPSABLE COMPACT BICYCLE
Shu Tsáo, Suite 1, 11F, 95-8 Chang Ping Road Sec. 1, Taichung, Taiwan
Filed Mar. 11, 1992, Ser. No. 849,182
Int. Cl.[5] B62K *15/00*
U.S. Cl. 280—287 **14 Claims**

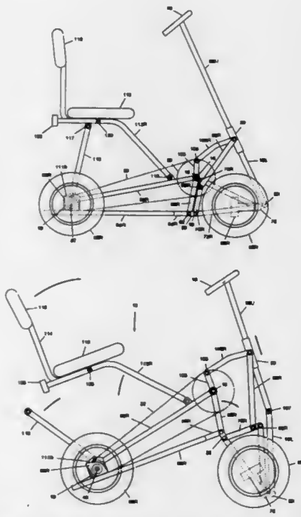


1. A bicycle comprising a frame, a front wheel and a rear wheel attached with said frame, and a drivetrain for transmitting torque to said rear wheel, wherein said frame includes:
a movable structure to which said rear wheel is rotatably attached;
a pivoting means for pivotably connecting a lower portion of said movable structure to a first fixed portion of said frame comprising;
a) a pair of pivot rings provided on the lower portion of said movable structure;
b) a bracket element on said frame positioned between the pivot rings wherein a crank axle of said drivetrain is positioned therethrough, the pivot rings being rotatably attached to the bracket element by a bearing sleeve positioned in the pivot rings and the bracket element, with the bearing sleeve being fixed to the bracket element and having flanged outer ends rotatably positioning the pivot rings therebetween; and
a connecting means for releasably connecting an upper portion of said movable structure to a second fixed portion of said frame.

5,312,126
PORTABLE GOLF CART AND RIDING APPARATUS
Douglas B. Shortt, and Mark J. Lumbard, both of Calgary, Canada, assignors to Pro-Lite Manufacturing, Inc., Calgary, Canada
Filed Apr. 27, 1993, Ser. No. 52,911
Int. Cl.[5] B62M *1/00*
U.S. Cl. 280—287 **8 Claims**

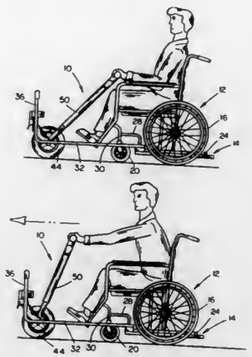
1. A portable riding apparatus for a person comprising:
a central rigid framework having a front and rear portion and a lower portion, the front and lower portions meeting

at a first pivot point, a rear axle and wheel set being attached to the rear portion of the central framework;
a front rigid framework incorporating a front wheel set and having a base portion having a rear end, the rear end being pivotally connected to the first pivot point on the central rigid framework whereby the front rigid framework is rotatable in relation to the central rigid framework from a first position forward of the central rigid framework to a second position diametrically opposed to the first position in which the base portion of the front rigid framework is adjacent and parallel to the lower portion of the central rigid framework;
a seat framework attached to the central rigid framework, the seat framework having a seat and a support for supporting the seat in extended position in relation to the central framework;
a steering mechanism including a steering column pivotally attached to the front rigid framework and having a central pivot point;
a sleeve slidably disposed about the steering column;



first and second supports each having a sleeve end and a framework end, the first and second supports being pivotally connected to the sleeve at their respective sleeve ends, the first and second supports being pivotally connected at their respective framework ends to the front rigid framework and to the second rigid framework respectively;
the respective framework ends of the first and second supports being separated from each other and the central pivot point being enclosed by the sleeve when the front rigid framework is in the first position relative to the central rigid framework;
whereby the sleeve and the first and second supports form a sliding support for the steering column and upon folding of the front rigid framework about the central rigid framework the central pivot point of the steering mechanism slides out of the sleeve, permitting the steering column to fold about the central rigid framework; and
drive means for enabling a rider to cause the apparatus to move.

5,312,127
ALL-TERRAIN WHEELCHAIR
Stuart G. Oxford, 13616 N. 78 St., Omaha, Nebr. 68122
Continuation-in-part of Ser. No. 594,343, Oct. 9, 1990, Pat. No. 5,149,118, which is a continuation-in-part of Ser. No. 439,612, Nov. 20, 1989, Pat. No. 5,020,818, which is a continuation-in-part of Ser. No. 263,417, Oct. 27, 1988, Pat. No. 4,892,323. This application Mar. 14, 1991, Ser. No. 669,507
Int. Cl.[5] B62M *1/16*; A61G *5/02*
U.S. Cl. 280—304.1 **3 Claims**



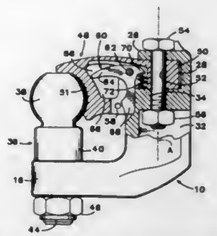
1. In combination with a wheelchair including a frame, a pair of rear wheels operatively mounted on the frame, a pair of front wheels operatively rotatably mounted on the frame, a seat on said frame between the rear wheels and a foot rest positioned at the forward end of the frame, comprising,
an all terrain attachment secured to the frame of the wheelchair and extending forwardly therefrom,
said attachment comprising a pair of elongated frame members having rearward and forward ends,
the rearward ends of said frame members being secured to the wheelchair frame,
a fork pivotally mounted on the forward end of said frame members,
a drive rotatably mounted on said fork means,
a ratchet means operatively connected to said drive wheel operable between an engaged position for rotating the drive wheel in a first direction, and a disengaged position permitting free rotation of said drive wheel, and am elongated actuating arm having a lower end operably connected to said ratchet means and an upper end extending upwardly therefrom, said actuating arm connected for pivotal reciprocating movement in a forward direction wherein the arm engages said ratchet means with the drive wheel, and a rearward direction wherein the arm disengages the ratchet means from the drive wheel, whereby the person sitting on the wheelchair seat may propel said drive wheel and the wheelchair by selectively reciprocating said actuating arm means.

5,312,128
DUAL USE TRAILER COUPLING
Rocky A. Blacklaw, Mulino, Oreg., assignor to Premier Equipment, Inc., Portland, Oreg.
Filed Feb. 14, 1992, Ser. No. 837,022
Int. Cl.[5] F16C *11/06*
U.S. Cl. 280—512 **6 Claims**

1. A trailer coupling for receiving both a drawbar eye and a spherical cavity coupler comprising:
(a) a body;
(b) means for attaching said body to a towing vehicle;
(c) said body including a rearwardly projecting arm;

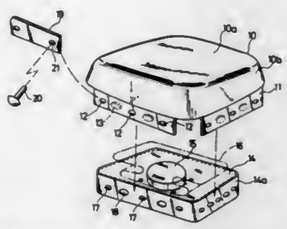
VOL 1162 ISS 3 MY 17 1994 UMI

(d) a coupler-receiving element that extends upwardly from said arm, said coupler-receiving element including a lower cylindrical neck that receives a drawbar eye and an upper spherical ball that receives a spherical cavity coupler;
(e) a latch pivotally mounted to said body for movement about a vertical axis between a closed position where it



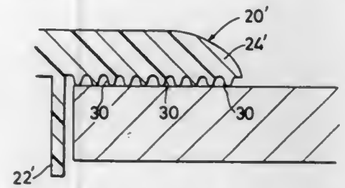
engages said coupler-receiving element and prevents displacement of the drawbar eye from said cylindrical neck and an open position where it is DISPLACER from said coupler-receiving element to permit a spherical cavity coupler to be placed on said spherical ball; and
(f) wherein said latch includes means for holding said drawbar eye snugly against said arm.

5,312,129
CONNECTION STRUCTURE FOR AIR BAG COVER AND HOUSING
Eiji Ogawa, Fujisawa, Japan, assignor to NSK Ltd., Japan
Filed Mar. 25, 1992, Ser. No. 857,432
Claims priority, application Japan, Mar. 28, 1991, 3-026518[U]
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **12 Claims**



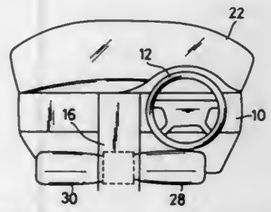
1. A connection structure for an air bag cover and a housing, said bag cover being fitted on a peripheral wall of said housing, comprising:
a protective strip arranged on an outer wall of the air bag cover;
a plurality of fastening means arranged along an edge portion of an opening of the air bag cover and extending through the housing, the air bag cover and the protective strip thereby connecting the housing, the air bag cover and the protective strip;
a plurality of connecting means, each of said connecting means comprising a projection, which is disposed substantially on an imaginary line extending between centers of each two adjacent ones of said fastening means and extends from one of the air bag cover, the housing and the protective strip toward the adjacent one of the remaining two of the air bag cover, the housing and the protective strip, and a receiving portion provided in the adjacent one of the remaining two of the air bag cover, the housing and the protective strip so that the projection can be brought into engagement with the receiving portion.

5,312,130
LID OF AN AIR BAG DEVICE FOR USE IN A PASSENGER'S SEAT
Yoshiyuki Baba, Shiga, Japan, assignor to Takata Corporation, Japan
Filed Dec. 1, 1992, Ser. No. 983,710
Claims priority, application Japan, Dec. 17, 1991, 3-333415
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **6 Claims**



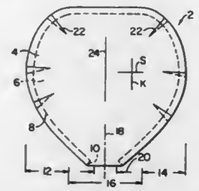
1. A lid covering an opening in an instrument panel of an automobile for attaching an air bag device for use in a passenger's seat comprising,
an extended portion for covering a front surface of a peripheral edge of said opening in said instrument panel, and
a multiplicity of protrusions disposed on an inner surface of said extended portion which covers the front surface of the peripheral edge of the opening, said protrusions having top ends and being arranged along a length of said extended portion in spaced intervals,
said protrusions contacting at the top ends thereof with the front surface of the peripheral edge of the opening so as to inhibit contact of the entire inner surface of said extended portion with said front surface to thereby allow sliding contact between said extended portion and said front surface without occurrence of abnormal sound during sliding contact therebetween.

5,312,131
AIR BAG DEVICE FOR A KNEE OF AN OCCUPANT
Motonobu Kitagawa; Akira Kokeguchi; Misao Kamiyama, and Tadayuki Atoh, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Jan. 14, 1993, Ser. No. 4,267
Claims priority, application Japan, Feb. 5, 1992, 4-020047
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 A **3 Claims**



1. An air bag device for a knee of an occupant, comprising:
a console box of a vehicle arranged at a widthwise center portion of the vehicle,
a retainer arranged at a center of the console box,
a first air bag provided within said console box at a side of a righthand seat and being inflatable into a first zone in front of said righthand seat;
a second air bag provided within said console box at a side of a lefthand seat and being inflatable into a second zone in front of said lefthand seat;
one gas generator mounted on said retainer for injecting gases into both said first and second air bags;
a first module cover attached to said retainer and covering said first air bag; and
a second module cover attached to said retainer and covering said second air bag,
wherein said first module cover faces a first opening which is formed in a righthand side of the console box, and said second module cover faces a second opening which is formed in a lefthand side of the console box.

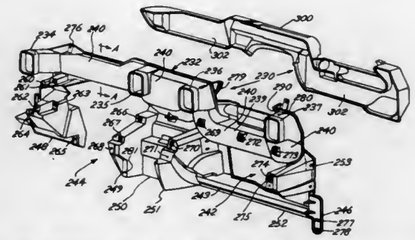
5,312,132
GAS CUSHION AND METHOD AND APPARATUS FOR ITS MANUFACTURE
Jean-Francois Pillet, En Loup, CH-1429 Glez, Switzerland
PCT No. PCT/CH91/00008, § 371 Date Nov. 5, 1991, § 102(e) Date Nov. 5, 1991, PCT Pub. No. WO91/11345, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 10, 1991, Ser. No. 768,520
Claims priority, application Switzerland, Jan. 26, 1990, 263/90
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 R **23 Claims**



1. A gas cushion, in particular for the safety system of a vehicle, having two overlying fabric blanks woven out of a set of weft threads and a set of warp threads, said blanks having a center axis and being joined with one another at their peripheries by means of mutual interweaving at a seam, said blanks each having at least two side regions located on opposite sides of and spaced from said center axis and each having at least one center region located between its two side regions, said side regions extending parallel to the threads of one of said sets of threads, characterized in that each of said fabric blanks is shrunk in its said side regions to a greater degree than in its said center region.

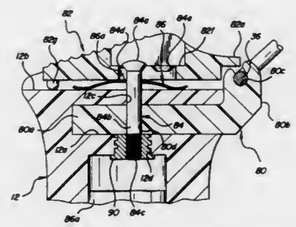
5,312,133
CROSS VEHICULAR ASSEMBLY INCLUDING KNEE BOLSTERS
Thomas W. Pietila, Brighton; Gerald A. Heath, Canton, and James H. Zimmerman, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 17, 1992, Ser. No. 992,361
Int. Cl.[5] B60R *21/045*
U.S. Cl. 280—752 **20 Claims**

1. A multifunctional cross vehicular assembly for bolstering one or more knees of one or more occupants in the event of a collision, said assembly being adapted for use in a motorized vehicle having a body including a cowl adjacent a windshield and having a compartment for said occupants, said assembly comprising:
knee bolster means for absorbing kinetic energy from said one or more knees in the event said one or more knees impact said knee bolster means;
instrument panel means for carrying said knee bolster means;
reinforcement means fabricated from plastic for transferring force from said knee bolster means without absorbing substantial kinetic energy from said one or more knees;
duct means fabricated from plastic extending across more than half the entire width of said compartment of said vehicle between said cowl and said instrument panel for defining ducts of an air distribution system and for transferring force from said reinforcement means without absorbing substantial kinetic energy from said one or more knees;
first fastening means for fastening said instrument panel to said duct means;
second fastening means for fastening said reinforcement means to said duct means; and



third fastening means for fastening said duct means to said body, whereby the position of the knee bolster means relative to said body is stabilized by the transfer of force through the reinforcement means and the duct means to said body while kinetic energy from said one or more knees is absorbed by said knee bolster means to cushion and limit movement of said one or more knees in the event of a collision.

5,312,134
SKI GLOVE/GRIP INTERLOCK SYSTEM
David P. Goode, 1997 Long Lake Shore Dr., Bloomfield Hills, Mich. 48302, and Frank E. Vogel, 136 Walnut, Apt. 1, Rochester, Mich. 48307
Continuation-in-part of Ser. No. 795,136, Nov. 20, 1991. This application Oct. 5, 1992, Ser. No. 956,302
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—822 **11 Claims**



1. In a ski glove/pole grip combination, the pole having a grip with top, bottom and side surfaces, an improved ski glove/grip interlock system comprising:
first interlock means mounted on the ski pole grip;
second interlock means on the ski glove for releasable engaging connection to the first means; and
lock means on the ski pole grip associated with the first interlock means and selectively operable between a first position in which the second interlock means on the ski glove can be releasably engaged and disengaged with the first interlock means on the grip, and a second position in which the second interlock means on the glove cannot be disengaged from the interlock means on the grip, the lock means movable between the first and second positions in a

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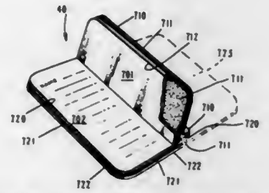
first direction, the lock means locked into and released from the first and second positions in a second direction.

5,312,135
BRAKING AND STABILIZING SYSTEM FOR ROLLER BLADES
James P. Karabees, P.O. Box 113, Chilmark, Mass. 02535
Filed Jul. 1, 1992, Ser. No. 907,702
Int. Cl.[5] A63C *17/28*
U.S. Cl. 280—826 **3 Claims**



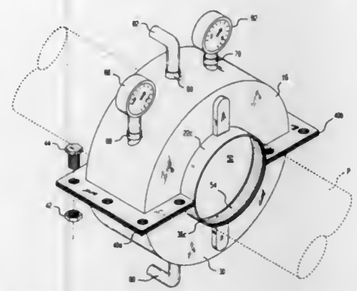
1. A combination balance beam and braking system usable by a roller blade skater to maintain balance while skating and augment braking when it is desired to stop comprising
an elongated balance beam having opposite ends of like symmetrical configuration and adapted to be manually held by the skater while skating with the opposite end thereof elevated relative to a skating surface and disposed on opposite sides of the skater,
a roller on each end of said balance beam adapted to be biased against the skating surface, and
lever means pivoted on said balance beam and controllable by said skater for braking rotation of each of said rollers, the weight of said rollers and lever means being orientated symmetrically on said balance beam whereby said balance beam is capable of use by a skater to maintain balance while skating.

5,312,136
IDENTIFICATION TAG
Carl A. Capozzola, 1611 S. Catalina Ave., Suite 300, Redondo Beach, Calif. 90277
Filed Aug. 27, 1992, Ser. No. 937,630
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—75 **2 Claims**



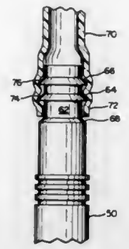
1. An improved identification tag arrangement comprising, in combination:
an overlay fabricated of clear sheet material;
a transparent adhesive layer applied to one side of said overlay;
a first peel off layer smaller than said overlay and applied to said transparent adhesive layer thereby creating an exposed area of said adhesive layer;
a tag fabricated of sheet material having a first side which will accept identification data;
an adhesive layer applied to the second side of said tag;
a second peel off layer applied to the second side of said tag;
a second peel off layer applied to said adhesive layer of said tag;
the device being assembled by applying said exposed area of said adhesive layer, on said overlay, to said tag along a preselected edge of said tag to that said overlay is stacked above said tag;
whereupon the user, under the condition of adding data to said tag may remove said first peel off layer and press the remainder of said overlay on top of said tag creating a protected notational strip, and then the user may remove said second peel off layer to expose said adhesive layer and mount said protected notational strip within the user's shoe by means of said adhesive layer.

5,312,137
SAFETY SHIELD
Gerard J. Nee, West Caldwell, N.J., assignor to Ramco Manufacturing Company, Inc., Roselle Park, N.J.
Continuation-in-part of Ser. No. 500,064, Mar. 27, 1990, abandoned. This application Oct. 16, 1991, Ser. No. 778,341
Int. Cl.[5] F16L *55/168*
U.S. Cl. 285—14 **8 Claims**



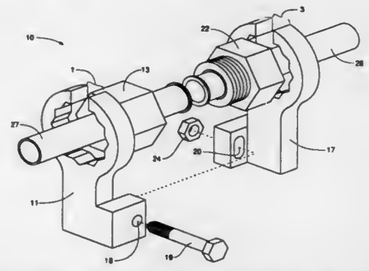
1. A safety shield for capturing a corrosive fluid escaping from a joint in a pipe, comprising
first and second shroud members formed from a corrosion resistant material,
connecting means for releasably joining said first and second shroud members together along a joining region to form an enclosed chamber in assembled position about said pipe joint,
corrosion resistant gasket means arranged between said first and second shroud members to render said joining region vapor tight in said assembled position,
at least one aperture in said enclosed chamber sized and shaped for mating engagement around said pipe,
corrosion resistant sealing means for forming a vapor-tight seal between said pipe and said at least one aperture, said corrosion resistant sealing means and said corrosion resistant gasket means coacting to render said enclosed chamber vapor tight in said assembled position, and
outlet means for discharging any said fluid accumulated in said chamber, wherein said corrosive fluid includes a liquid and a vapor, and said outlet means includes a first discharge port for discharging said liquid from said chamber, and a second discharge port for discharging said vapor from said chamber.

5,312,138
DRAIN HOSE ASSEMBLY FOR AN AUTOMATIC WASHER
John L. Patera; Cindy K. Williams, both of St. Joseph Township, Berrien County, Mich., and Lawrence N. Mears, Solon, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jul. 17, 1992, Ser. No. 914,346
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—12 **10 Claims**



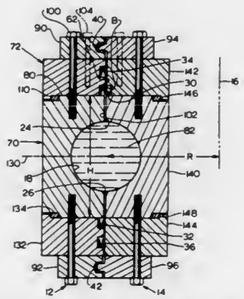
1. A drain hose assembly for an automatic washer comprising:
a flexible corrugated plastic drain hose having a first end interconnectable with said automatic washer, said drain hose further having a second end having two annular barbs externally disposed thereon;
a tubular elastomeric nozzle having a third end interconnectable with said second end, said nozzle further having a fourth end comprising a discharge end for said drain hose assembly, said third end having two annular channels internally disposed therein having a profile for engaging said two annular barbs; and
said second end and said third end being sized such that upon insertion of said second end into said third end resilient interference sealing contact occurs between said second end and said third end only between the outer annular periphery of said two barbs and said two annular channels such that said second end and said fourth end are sealably and rotatably engaged.

5,312,139
FLUID LINE NUT LOCKING DEVICE
Ernest E. Marks, and Willard L. Hofer, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Aug. 27, 1993, Ser. No. 113,447
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 **17 Claims**



1. A detachable, nut locking device to hold and secure typical connecting nuts used on standard fluid transmission line end adapter means to join and seal together separate fluid transmission lines, said device comprising:
A. a pair of typical wrenches, each of standard design, each having a front and rear face and each configured to closely circumscribe, grip and hold an appropriate, typical connecting nut on a fluid transmission line end point adapter of known, commercial design;
B. said pair of wrenches, each having a shortened handle integral thereto, with an integral ear, having a front face and a rear parallel face, extending in an L-shape from the end of the handle, normal to and with said faces parallel to the long axis of the handle and outwardly from the front face of said wrench;
C. said ears on said wrench handles each having suitable and generally matching openings extending therethrough from front face to rear face, to permit removable introduction and passage of a suitable standard nut and bolt fastening means;
D. a suitable standard bolt type fastener, of known design, with at least one threaded end and a matching threaded nut removably attachable thereto, to be used to draw together and hold said ears on said pair of said wrenches;
E. said wrenches being each removably placed on the appropriate separate fluid transmission line end adapter means, behind the appropriately sized connecting nut attached thereto, and before the lines are joined, with the respective ears facing each other, said fluid transmission lines are then joined, with an appropriate seal, of known design, placed therebetween, said connecting nuts tightened to near their optimum torque, using conventional tightening means; and
F. said pair of wrenches are then appropriately positioned on the connecting nuts and said standard bolt type fastener is inserted through the openings in the ears on the wrench handles, a nut attached thereto and tightened to hold and secure the connecting nuts and the seal from loosening and leaking during the operation and use of the fluid transmission lines.

5,312,140
FLUID SWIVEL STRUCTURE
Jack Pollack, Camarillo, Calif., assignor to Imodco, Inc., Calabasa Hills, Calif.
Filed Nov. 20, 1992, Ser. No. 979,173
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—93 **20 Claims**



1. A high pressure fluid swivel with inner and outer structures and at least one bearing rotatably connecting said structures to hold them together and enable them to rotate with respect to each other about an axis, said structures forming an annular chamber between them and at least one gap passage between them extending from at least one side of said chamber, and said swivel has at least one redial pressure seal along said gap passage which has opposite sides bearing respectively

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against said inner structure and said outer structure, characterized by:

a first of said structures includes a first body forming part of said chamber and having a first end with said gap passage extending to said body first end, said first structure also including a first seal ring which bears against one side of said pressure seal to seal thereto and which forms one side of the gap passage portion lying immediately downstream of said pressure seal, said first structure also including a connecting device that connects said seal abutting ring to said body end but which allows said seal abutting ring to shift with respect to said body end in a radial direction with respect to said axis to enable differential expansion of said body and said seal abutting ring when there is a large change in fluid pressure in said annular chamber.

5,312,141

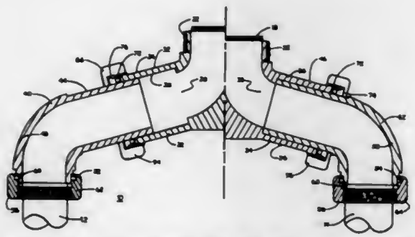
ADAPTER FOR DISCHARGE LINES

James Hannity, Tacoma, Wash., assignor to R. G. Andrew, Tacoma, Wash.

Continuation of Ser. No. 97,602, Sep. 8, 1987, abandoned, which is a continuation of Ser. No. 506,199, Jun. 29, 1983, abandoned. This application Jul. 6, 1990, Ser. No. 549,393

Int. Cl.[5] F16L *27/00*

U.S. Cl. 285—302 **6 Claims**



1. An adapter for coupling with discharge lines of varying distance between the discharge lines comprising:

a coupler with an orifice

a pair of hollow necks affixed to the coupler;

a housing extending from each neck;

a pair of curved pipes wherein the curved pipes are curved at an angle such that when the curved pipes are inserted within the respective housing, the planes defined by outlets of the curved pipes at the opposite end of the curved pipes inserted within the housings lie in the same plane and are capable of being attached to outside lines;

a cylindrical extension from the curved pipes, said cylindrical extensions having a mating diameter with the housings capable of sliding within and without the housings;

a "O" ring positioned within the circumference of the forward edge of the housing capable of interfacing with cylindrical extension;

a gripping ring surrounding said cylindrical extension, said gripping ring having a tapered circumference;

a drive ring having an interior tapered circumference capable of abutting the tapered outer circumference of the gripping ring; and

a locking ring capable of holding the drive ring and gripping ring in a secure position about the cylindrical extension of the curved pipes; and

a means of affixing the locking ring to the neck; and

a means of attaching the pair of curved pipes to discharge lines.

5,312,142

CONNECTOR FOR CONNECTING A SECTION OF CORRUGATED CONDUIT TO ANOTHER COMPONENT

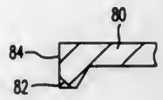
William Nattel, Montreal, and Alain Michaud, St. Luc, both of Canada, assignors to Commander Electrical Materials, Inc., Saint-Jean-sur-Richelieu, Canada

Division of Ser. No. 489,140, Mar. 5, 1990, Pat. No. 5,200,209. This application Jan. 11, 1993, Ser. No. 2,552

Claims priority, application Canada, Sep. 29, 1989, 6150110

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—304 **8 Claims**



1. A connector for connecting a section of corrugated conduit to another component, the corrugated conduit being of the type having longitudinally spaced-apart circular rib members, said connector being of the type molded about a core member and comprising:

a generally cylindrical body-portion having an extremity defining a conduit entry end;

a resilient finger mounted to said body-portion, said resilient finger including a locking tongue extending radially with respect to said body-portion for engagement with a rib member of said section of corrugated conduit;

a first camming surface on said tongue to communicate a yielding motion to said resilient finger as a result of a sliding contact between said tongue and said rib member moving in a first direction during insertion of said corrugated conduit into said conduit entry end;

a second camming surface on said tongue to communicate a yielding motion to said resilient finger as a result of a sliding contact between said tongue and a member moving in a second direction; and

at least one locking surface on said tongue engaging said rib member and locking said section of corrugated conduit to said body-portion.

5,312,143

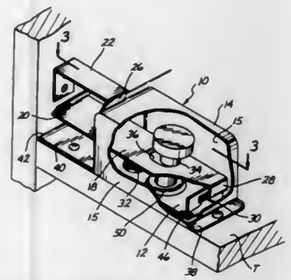
EARTHQUAKE SAFETY CABINET LATCH

Almar W. Buckner, 3656 Las Flores Canyon Rd., Malibu, Calif. 90265

Filed Nov. 19, 1992, Ser. No. 979,162

Int. Cl.[5] E05C *3/12*

U.S. Cl. 292—230 **16 Claims**



1. A tremor actuated mechanism comprising:

a base for mounting to a first surface;

an arm having an end hinged to said base and an opposite free end;

spring means urging said arm towards an elevated position relative to said base;

trip means normally restraining said arm in a retracted position against said urging;

said trip means being arranged and configured to move out of restraining relationship with said arm in response to disturbance of the first surface thereby to release said arm for movement towards said elevated position.

5,312,144

MAGNETIC RETAINING DEVICE FOR ELECTRONIC APPARATUS

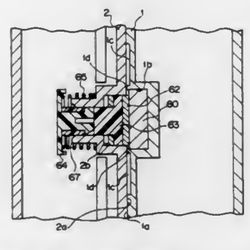
Norihiro Yoshida; Yukio Saito; Tomoyuki Nagamine; Takumi Kawamura, and Masaki Okuyama, all of Inagi, Japan, assignors to Fujitsu Isotec Limited, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,641

Claims priority, application Japan, Jan. 29, 1991, 3-008910

Int. Cl.[5] E05C *17/56*

U.S. Cl. 292—251.5 **21 Claims**



1. A retaining device, comprising:

first and second cases pivotally connected along respective lateral edges thereof for being selectively pivoted between open and closed positions relatively to each other;

a magnet positioned in a recess formed in a surface of the first case so that at least when the first and second cases are in the open position, the magnet cannot damage a magnetic recording medium located within the proximity of the surface of the first case;

a magnetic member provided on the second case in a position complementary to the position of the magnet in the first case, at least one of the magnet and the magnetic member being movable to an operating position when the first and second cases are in the closed position so as to be mutually attracted and thereby to produce a magnetic force which assists in maintaining the first and second cases in the closed position; and

a further magnetic member provided on the surface of said first case, said magnet being selectively brought into contact with and separated from the further magnetic member and the further magnetic member being positioned so that when the magnet is in contact with the further magnetic member and the first and second cases are in the closed position, the further magnetic member is disposed generally intermediate the magnet and the magnetic member.

5,312,145

MOTOR VEHICLE BODY PROTECTION APPARATUS AND METHOD OF MAKING

Robert A. McNeil, 4400 Memorial Dr. No. 1200, Houston, Tex. 77007

Filed Mar. 9, 1993, Ser. No. 28,462

Int. Cl.[5] B60R *19/42*

U.S. Cl. 293—128 **14 Claims**

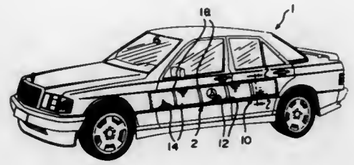
1. Apparatus for protecting motor vehicle bodies, said apparatus, when deployed, having a length, a width which is less than the length, and a thickness, said apparatus comprising:

a first layer of magnetic sheet,

a second layer of impact absorptive material bonded to said first layer,

wherein the first layer and the second layer are about the same size,

a cover material encasing said first layer and said second layer, and



a plurality of lines of cross stitching penetrating through the first layer, the second layer, and the cover material, said lines of cross stitching extending across the width of the apparatus generally perpendicular to the length to form folding hinges and to divide the apparatus into panels, said apparatus being characterized in that it is foldable for storage.

5,312,146

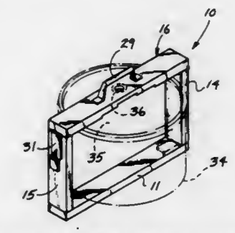
CROCK POT SECURITY BAND

Joseph M. Monte Calvo, 1337 Niblock N.W., Warren, Ohio 44485

Filed Mar. 1, 1993, Ser. No. 24,090

Int. Cl.[5] A47J *45/00*

U.S. Cl. 294—27.1 **3 Claims**



1. A crock pot security band for selectively securing a crock pot therewithin, wherein the security band comprises,

a rigid base plate having a base plate first end spaced from a base plate second end, and

a first guard plate and second guard plate, the first guard plate having a first guard plate first end and a first guard plate second end, the second guard plate having a second guard plate first end and a second guard plate second end, with the first guard plate first end fixedly and orthogonally mounted to the base plate at the base plate first end, and the second guard plate fixedly and orthogonally mounted to the base plate at the second guard plate first end, with the first guard plate and the second guard plate arranged in a parallel coextensive relationship relative to one another, and

a lock plate, the lock plate having a lock plate first end and a lock plate second end, the lock plate first end including a lock plate hinge, with the lock plate hinge mounted to the first guard plate second end, the lock plate second end having a lock plate latch means for selectively securing the lock plate to the second guard plate, and

the latch means includes a first latch plate hingedly mounted to the lock plate second end, and a second latch plate

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fixedly mounted to the second guard plate adjacent the second guard plate second end, with the second latch plate having a latch plate loop arranged for projection through the first latch plate, and a lock member directed through the latch plate loop upon projection of the latch plate loop through the first latch plate, and

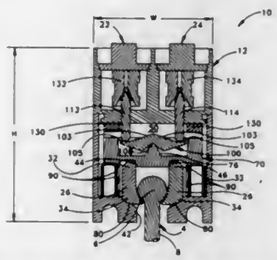
the lock plate includes a lock plate top wall and a lock plate stepped bottom wall, wherein the stepped bottom wall includes a first bottom wall arranged in a parallel facing relationship relative to the base plate, and a second bottom wall medially of the first bottom wall recessed relative to the first bottom wall oriented between the first bottom wall and the top wall, and a third bottom wall recessed relative to the second bottom wall medially of the second bottom wall oriented between the second bottom wall and the top wall, with the third bottom wall including an opening orthogonally directed from the third bottom wall through the top wall, and a U-shaped handle extending over the third bottom wall opening mounted to the latch plate top wall.

5,312,147

ELECTROMECHANICAL HIGH LOAD SEPARATION APPARATUS WITH A SMOOTH RELEASE

Edward Rudoy, Woodland Hills, and Leslie Kerek, Los Angeles, both of Calif., assignors to G & H Technology, Inc., Camarillo, Calif.

Filed Aug. 9, 1993, Ser. No. 103,575
Int. Cl.[5] B66C *1/34*
U.S. Cl. 294—82.3 **20 Claims**



9. A load separation device for attaching to an external structure, the load separation device comprising:

a. a housing having a top end and a bottom end with an opening extending into a hollow chamber;

b. an attachment element having a first end and a second end, the second end inserted through said opening of said housing and extending out from said housing for attaching to said external structure;

c. at least one retaining segment located inside said hollow chamber adjacent to said bottom end, the at least one retaining segment having a top portion and a bottom portion, the bottom portion of the at least one retaining segment engaging with said first end of said attachment element;

d. a locking sleeve biased by a spring means and placed over said top portion of said at least one retaining segment for retaining said attachment element, and when said top portion of said at least one retaining segment is not engaged with the locking sleeve, said top portion of said at least one retaining segment can move inwardly for smoothly releasing said attachment element; and

e. at least one non-explosive actuator assembly mounted on said top end of said housing for resisting or allowing said locking sleeve to move upwardly;

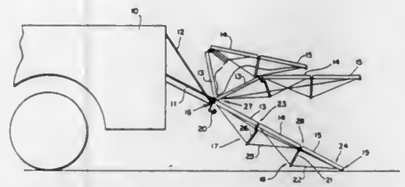
f. whereby when said at least one non-explosive actuator assembly is not actuated, said locking sleeve will not move upwardly to release said attachment element, and when said at least one non-explosive actuator assembly is actuated, said locking sleeve will move upwardly to release said attachment element.

5,312,148

RAMP

Alfred W. Morgan, P.O. Box 497, Ipswich, Qld. 4305, Australia

Filed Sep. 22, 1992, Ser. No. 948,436
Claims priority, applicatioo Australia, Apr. 23, 1992, 2042; Jul. 21, 1992, 3663
Int. Cl.[5] B60P *1/44*
U.S. Cl. 296—61 **13 Claims**



1. A collapsible ramp for connection to a vehicle tailgate, which ramp comprises:

three wings interconnected by hinges so that they can be unfolded to a deployed position to extend the length of the vehicle tailgate substantially four fold;

one of said wings being hingedly connected to the tailgate so that the wings can be collapsed into a flat pack against the tailgate;

each pair of wings having one or more struts therebetween, each strut being pivotally mounted on a respective one of the hinges between the wings so as to permit collapse into the flat pack; and

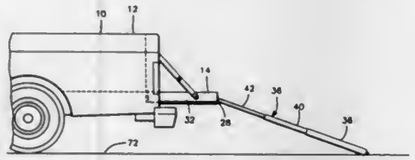
a plurality of cables, each stretched over one of the struts and affixed at either end to the wings, to support the wings, in their deployed position, against loads thereon.

5,312,149

TAILGATE ENCLOSED TELESCOPIC RAMP STRUCTURE

Frank J. Boone, Owensboro, Ky., assignor to Better Ideas, Inc., Owensboro, Ky.

Filed Sep. 20, 1993, Ser. No. 123,239
Int. Cl.[5] B62D *33/03*
U.S. Cl. 296—61 **6 Claims**



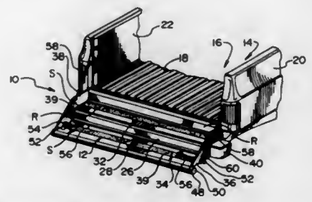
1. In combination with a vehicle load bed having front and rear end portions and a hollow tailgate including an upper free margin and lower base margin and pivotally supported from said load bed rear end portion for swinging about an axis closely adjacent and paralleling said lower margin and extending transversely of said load bed between a first upstanding position closing the rear end portion of said load bed and a second horizontal rearwardly projecting position forming a rearward extension of the rear end portion of said load bed, said free margin including at least one elongated slot formed in and extending along said free margin, a ramp structure, said ramp structure including wide and narrow ramp sections and at least one intermediate ramp section with said wide, intermediate and narrow ramp sections being progressively smaller in width and thickness from said wide ramp section to said narrow ramp section and telescopically engaged with each other for substantially full telescopic engagement of said intermediate and narrow ramp sections within said wide section and limited extension of said intermediate and narrow sections relative to said wide section, said ramp sections including outer and inner ends, said inner end of said narrow section and said free margin including coacting abutment structure preventing outward extension of said inner end of said narrow section relative to said free margin, said wide section, when said sections are retracted relative to each other, being retractable at least substantially fully within said slot, the narrower and thinner ramp section defining a cross sectional area appreciably less than the cross sectional area of said slot, whereby said narrow section, when extended to its limit position relative to said slot, may be angulated rearwardly and downwardly relative to the free margin of said tailgate independent of binding with the opposite longitudinal sides of said slot.

5,312,150

PICKUP TRUCK TAILGATE WITH STAIR

LeVerne Quam, Box 184, Sinai, S. Dak. 57061

Filed Jun. 1, 1993, Ser. No. 69,538
Int. Cl.[5] B60R *3/02*
U.S. Cl. 296—62 **20 Claims**



1. A pickup truck tailgate, including:

a sheet material wall having first and second opposite surfaces, upper and lower edges and opposite sides, wherein the first surface functions as a truck bed rear wall surface and the second surface functions as an exterior tailgate surface;

a mount on the lower edge of the sheet material wall for mounting the tailgate to the bed of the vehicle for pivotal motion between open and closed positions;

a latch for latching the tailgate to the bed of the vehicle when the tailgate is in the closed position; and

a stair including at least two steps in the sheet material wall extending between the opposite sides of the wall.

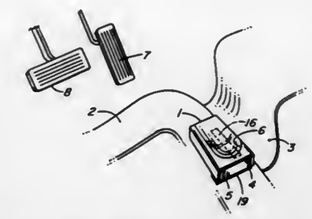
5,312,151

BOOT PROTECTOR

John Krahn, c/o Paul D. Gornall, Barrister & Solicitor, 960 - 355 Burrard St., Vancouver, B.C., V6C 2G8, Canada

Filed Mar. 5, 1993, Ser. No. 26,879
Int. Cl.[5] B60N *3/06*
U.S. Cl. 296—75 **1 Claim**

1. A device for detachable placement on the floor of a vehicle to elevate and orient the boot heel of a vehicle driver's footwear, comprising a main body having an extended contoured depression adapted to receive the boot heel and keep it from from slipping backwards or sideways from a central hump of the vehicle, the extended contoured depression being defined by a portion of the front top edge of the main body, by an adjacent portion of a vehicle hump side top edge of the main body, and by a contour ridge that extends on the top surface of the main body from the front top edge back toward the back area of the main body and thence extends in a curve toward and eventually joining with the vehicle hump side top edge of the main body, in which the vehicle hump side portion of the main body is thinner than an opposite side portion of the main body, and in which the main body has a bottom surface to which is affixed a side strip and a back end strip of mechanically adhesive material, adapted to detachably engage with complementary strips of mechanically adhesive material affixed to the floor of the vehicle.

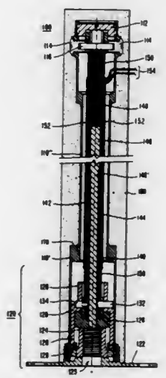


5,312,152

SHAPE MEMORY METAL ACTUATED SEPARATION DEVICE

William H. Woebkenberg, Jr., Hatfield, and Dominick A. DeAngelis, Newtown Square, both of Pa., assignors to Martin Marietta Corporation, Princeton, N.J.

Filed Oct. 23, 1991, Ser. No. 781,473
Int. Cl.[5] B25J *15/00*; F03G *7/06*
U.S. Cl. 294—86.4 **20 Claims**



1. An apparatus for releasably grasping a workpiece having graspable features thereon comprising:

a mounting;

a segmented grasping device having grasping features thereon and having a plurality of segments thereof mounted in movable relationship for moving together for grasping the features of the workpiece and for moving apart for releasing the workpiece;

engaging means movable between first and second positions in relation to said segmented grasping device for respectively engaging the segments of said grasping device together when in said first position and disengaging said segments when in said second position;

a member having a predetermined deformation from an undeformed state, said member being affixed at one location thereon to said mounting and at another location thereon to said engaging means, said member being formed of a material that returns substantially to its unde-

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formed state when heated to a predetermined temperature; and

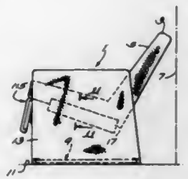
means for heating said member to said predetermined temperature for causing said member to return toward said undeformed state, said return toward said undeformed state tending to move said engaging means from one of said first and second positions to the other thereof.

5,312,153

RECLINE LIFT WALL HUGGER CHAIR

Jhy-hong Lin, Milwaukee, Wis., assignor to Ortho-Kinetics, Inc., Waukesha, Wis.

Filed Jul. 23, 1990, Ser. No. 557,395
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—89 **29 Claims**



1. A recline lift wall hugger chair comprising:

a. a base;

b. a seat with a backrest rigidly attached thereto, the backrest having a top portion that is locatable at a predetermined distance from a vertical wall;

c. linkage means for pivotally connecting the seat and backrest to the base; and

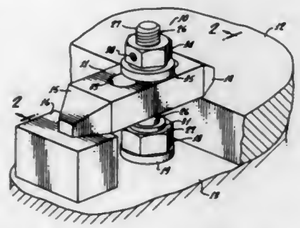
d. a linear actuator for selectively moving the linkage means between an upright position whereat the top portion of the backrest is located at the predetermined distance from the vertical wall, a reclined position whereat the backrest top portion is located at a distance grater than the predetermined distance from the wall, and a lift position wherein the seat and backrest are tilted forwardly and upwardly to assist the occupant of the chair from a seated position to a standing position.

5,312,154

APPARATUS FOR HOLDING DOWN WORKPIECES TO BE MACHINED

Darrel Woodall, 1260 N. La Loma Cir., Anaheim, Calif. 92806

Filed Feb. 1, 1993, Ser. No. 11,950
Int. Cl.[5] B23Q *3/02*
U.S. Cl. 269—93 **16 Claims**



1. Apparatus for holding down a workpiece on a workpiece support, comprising:

a connector adapted to be connected to a workpiece support,

said connector having one component of a quick-connect coupling element,

a stud having a threaded upper portion,

said stud having at the lower end thereof the other component of said quick-connect coupling element,

a nut threadedly mounted on said threaded upper portion of said stud, and

a clamp disposed between said nut and said quick-connect coupling element when said one and said other components thereof are in mated condition,

said clamp having a portion that seats on a portion of a workpiece when a workpiece is resting on said workpiece support,

there being no apparatus associated with said claim portion and which is adapted to vary the pressure on said workpiece portion when said clamp portion is stationary,

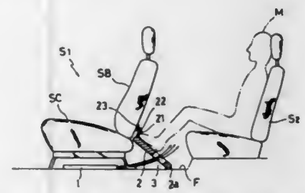
said nut being adapted to tighten on said clamp, and force said clamp portion into tight pressure engagement with said workpiece portion, in response to turning of said nut when said one and said other components of said quick-connect coupling element are in mated condition.

5,312,155

STRUCTURE OF FOOTREST IN VEHICLE SEAT

Hiroaki Akima, and Tetsuo Ikeda, both of Akishima, Japan, assignors to Tachi-S Co., Ltd., Akishima, Japan

Filed Jun. 5, 1992, Ser. No. 894,090
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—180.13 **7 Claims**



1. A structure of a footrest and a vehicle seat comprising:

an air blower fixed on a floor of a vehicle under the vehicle seat, said air blower being adapted to supply a hot or cold air toward a back side of said vehicle seat;

a footrest body provided movably on a back wall of said vehicle seat;

an opening perforated in said footrest body;

a link means arranged between said footrest body and said back wall of said seat;

said footrest body being displaceable via said link means between a user position where said footrest body bridges over a spacing between said back wall of said seat and said floor of said vehicle, with one free end of said footrest body being contacted with said floor, and a non-use position where said footrest body stands upright on said link means, extending along said seat back wall;

wherein, when said footrest body is located at said use position, said opening permits said hot or cold air to flow therethrough from said air blower toward said back side of said seat.

5,312,156

CHILD RESTRAINT SEAT INCLUDING AUTOMATIC PIVOT HINGE

Edward R. Heussner, Warren; Jeffrey L. Goins, Sr., New Haven, and Peter R. McCulloch, Grosse Pointe Woods, all of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Oct. 13, 1992, Ser. No. 959,570
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—238 **8 Claims**

1. A child restraint seat for disposition in the backrest cushion of an adult passenger seat for restraining a child in a vehicle comprising:

an adult passenger seat having a generally horizontal seat portion and a generally upright backrest portion, said backrest portion including a front face for supporting a passenger's back;

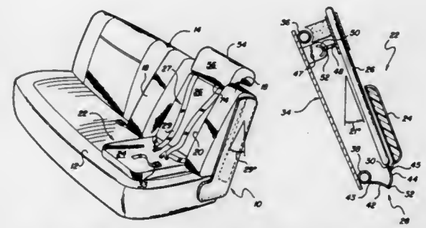
a cavity recessed in said front face of said adult backrest portion for receiving said child restraint seat;

a child seat portion having a first end pivotally coupled to said adult passenger seat and pivotal between a folded position recessed in said cavity forming at least a portion of said face of said adult backrest portion and an unfolded use position extending downwardly to a generally horizontal position against said adult seat portion;

a child backrest portion disposed in said cavity and pivotally connected to said adult backrest portion for providing pivotal rotation of said child backrest between a first position generally parallel with said adult backrest and a second inclined position tilted outwardly to a predetermined child backrest angle, said child backrest portion including an upper end and a lower end;

hinge means interconnecting said first end of said child seat portion and said lower end of said child backrest portion for automatically pivoting said child backrest portion from said first position to said second inclined position in response to pivotal rotation of said child seat portion from said folded position recessed in said cavity to said unfolded use position against said adult seat portion thus enabling a child to be positioned on the seat in an optimum inclined seating position;

pivot means spaced below said upper end of said child backrest portion for pivotally coupling said child backrest portion and said adult backrest portion and for extending said lower end of said child backrest outwardly away from said adult backrest while retracting said upper end of said child backrest into said cavity and towards said adult backrest upon said automatic pivotal movement of said child backrest from said first position to said inclined position.



5,312,157

LIFT SEAT

Emanuel Logan, Jr., 6524 Smokehouse Ct., Columbia, Md. 21045

Continuation-in-part of Ser. No. 702,387, Feb. 20, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 926,430
Int. Cl.[5] A47C *1/08*
U.S. Cl. 297—250.1 **25 Claims**

1. A lift seat for moving a person from an initial raised position to a subsequent lowered position for sitting and thereafter back to the initial raised position to facilitate standing, the lift seat comprising:

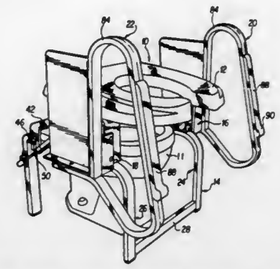
a frame;

a seating surface upon which the person sits and applies a force due to the weight of the person;

a four-bar linkage for supporting the seating surface on the frame, the four-bar linkage having a lower link, an upper link, a front link, and a rear link, with the front and rear links pivoted to the upper and lower links, the lower link being secured to the frame and the upper link being attached to the seating surface; the four bar linkage being shiftable between expanded and collapsed condition corresponding to the raised and lowered positions, respectively of the seat;

armrest means for supporting the individual using the seat, movement of the armrest means initiating operation of the seat, the armrest means being secured to one of the links pivoted to the upper and lower links; and

spring means coupled to the four-bar linkage and frame for resisting lowering of the seating surface from the raised to the lowered position and for storing energy provided by the weight of the person sitting on the seat for subsequently lifting the person from the lowered to the raised position.

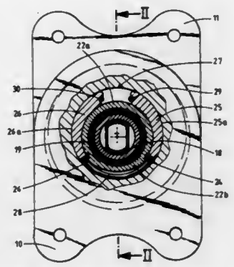


5,312,158

HINGE JOINT FOR USE IN THE SEATS OF MOTOR VEHICLES AND THE LIKE

Werner Wittig, Winnweiler, and Karin Becker, Rockenhausen, both of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH. & Co., Remscheid, Fed. Rep. of Germany

Filed Jun. 16, 1992, Ser. No. 897,997
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4119980
Int. Cl.[5] B60N *2/22*
U.S. Cl. 297—362 **19 Claims**



1. A hinge joint for changing the position of a back rest relative to the body supporting portion of a seat, comprising: a first component; a second component; a pintle having an axis and pivotally connecting said second component with said first component, said pintle comprising a motion transmitting member; two substantially wedge shaped sections extending circumferentially of and surrounding portions of said motion transmitting member; means for biasing said sections away from each other against an internal surface of one of said first and second components; a bearing provided within and engaging said motion transmitting member and surrounding and engaging a portion of one of said first and second components;

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and a transmission for pivoting said second component relative to said first component between a plurality of different positions, said transmission including means for releasably holding said second component in a selected position.

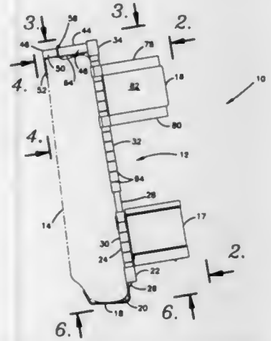
5,312,159
SEAT BELT SASH
Fiona Essa, 930 Haves St. #4, San Francisco, Calif. 94117, and Eric Flick, 1135 Cole St., San Francisco, Calif. 94117
Filed Nov. 2, 1992, Ser. No. 970,030
Int. Cl.[5] B60R *22/00*
U.S. Cl. 297—482 **10 Claims**



1. The combination of a vehicle passive restraint system including a shoulder strap with a seat belt guide and a decorative sash to display any desired message thereon, said decorative sash comprising:
a front surface, a rear surface and an elongated central message portion;
first and second means for securing said decorative sash to said shoulder strap;
said first means for securing said decorative sash comprising a pressure-sensitive adhesive over the entire rear surface and a peel-off backing strip over the entire adhesive coated rear surface of said sash;
said second means for securing said decorative sash to said shoulder strap comprising a plurality of tabs integral with and extending outwardly from said elongated central portion at predetermined spaced locations thereof;
wherein upon peeling off said backing strip, and applying pressure to the frontal area of said decorative sash said first securing means is effected and by bending said tabs rearward in overlapping fashion said second securing means is effected securely attaching said sash to the shoulder strap of a seat belt;
said decorative sash having a width which is less than the width of said shoulder strap and a thickness which allows free passage of both the shoulder strap and the decorative sash through the seat belt guide.

5,312,160
VEHICLE SEAT MOUNTED HEADREST AND UTILITY CONSOLE
Larry A. Davis, 8308 Wood St., Kansas City, Kans. 66212, and Dale R. Langner, Overland Park, Kans., assignors to Larry A. Davis, Kansas City, Kans.
Filed Nov. 12, 1991, Ser. No. 789,942
Int. Cl.[5] A47C *1/10*
U.S. Cl. 297—397 **18 Claims**

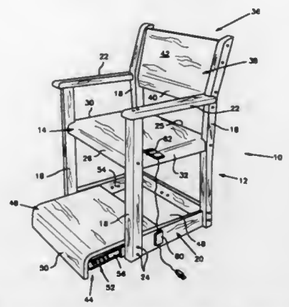
1. In combination, a support adapted to mount to a back of a seat, the seat back generally defining a rectangular plane, and a lateral head rest, said support comprising:
a bracket adapted to extend substantially normal to the plane and abut against a first horizontally extending end of the plane;
leg means adapted to extend substantially normal to the plane and engage a second horizontally extending end of the plane;
means, extending between and substantially perpendicular to said bracket and said leg means, allowing relative movement of said bracket and said leg means in a direction substantially perpendicular to said ends and parallel to the plane, comprising
two struts extending outwardly from said bracket and having free ends, said struts adapted to extend substantially parallel to the plane toward the second end;
two sleeves extending outwardly from said leg means and having free ends, said sleeve adapted to extend substantially parallel to the plane toward the first end, and each being telescopically received by an associated one of said struts; and
means for releasible fixing said means allowing relative movement and thus fixing the position of said bracket with respect to said leg means, comprising two means for fixing, each associated with one of said sleeves,
and said lateral head rest comprising:



a cushioned member including a substantially vertical face extending outwardly from the plane and having a vertical extent much less than that of said extending means, and adapted to provide lateral support to a user's head when the user is setting upon the seat with the user's back supported by the plane; and
clip means mounted on said cushioned member and adapted to releasible retain said cushioned member on said means extending between said bracket and said compression means at one of several possible positions along said direction, and wherein said clip means comprises a pivot clip having first and second clasps, each of said clasps having an inner periphery substantially corresponding to an outer periphery of an associated one of said sleeves, being slightly resilient, and having a portion thereof removed whereby said associated sleeve may be removably received within said inner periphery of said clasp.

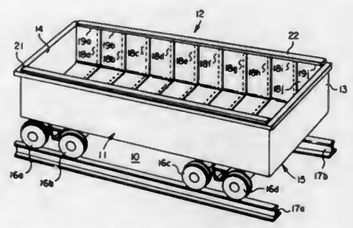
5,312,161
CHAIR FOR THE ELDERLY
Suzanne P. Mars, 23649 Duffield Rd., Shaker Hts., Ohio 44122
Continuation of Ser. No. 509,814, Apr. 17, 1990, abandoned.
This application Dec. 27, 1991, Ser. No. 815,550
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.2 **7 Claims**

1. A chair especially adapted for providing added comfort and support to an elderly person, the chair comprising:
a seat member disposed at a vertical elevation of about 20–21 inches above the surface on which the chair is resting;
arm rests being disposed laterally of the seat member, the arm rests disposed at a vertical elevation of about 28–29 inches above the surface on which the chair is resting;
support means for supporting the seat member and the arm rests, the support means including a base frame defining a hollow cavity;
foot support means for supporting the feet of the elderly person, the foot support means being disposed at a vertical elevation of about 4–5 inches above the surface on which the chair is resting, the foot support means being slidable in a horizontal plane relative to the base frame, and the foot support means having the capacity to be selectively stored in the hollow cavity of the base frame when the foot support means is not in use; and



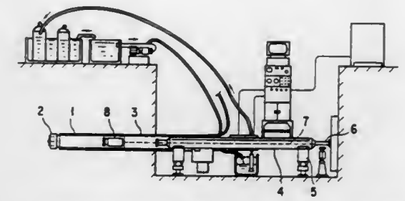
back rest means for supporting the back of the elderly person, the back rest means including a first section and a second section, wherein the first and second sections are integrally connected, and wherein the first and second sections, in combination, are configured to define a shape substantially similar to the contour of the lumbar area of the elderly person's back.

5,312,162
PARTICULATE HANDLERS
Ronald G. Baebel, Dallas, Tex., assignor to Ultra Polymer Sciences, Inc., Dallas, Tex.
Filed Aug. 2, 1991, Ser. No. 741,241
Int. Cl.[5] B60P *1/00*
U.S. Cl. 298—1 B **20 Claims**



1. An improved particulate vessel having a bottom portion and a pair of opposed side walls extending from said bottom portion defining sides of said vessel, each of said side walls having upper extremities, and a plurality of sheets of intentionally stretchable non-stick material, each of said sheets having two opposite ends, one of said opposite ends of each of said sheets being attached to the upper extremity of a first one of said pair of opposed side walls and the other of said opposite ends of each of said sheets being affixed to the upper extremity of the other of said pair of opposed side walls, said sheets being disposed in partly overlapping positions thereby to normally cover only predetermined surfaces less than the entire interior of said vessel.

5,312,163
SYSTEM FOR AIDING OPERATION OF EXCAVATING TYPE UNDERGROUND ADVANCING MACHINE
Tadayuki Hanamoto, and Norio Takahashi, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan
PCT No. PCT/JP91/00940, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/01140, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 12, 1991, Ser. No. 965,271
Claims priority, application Japan, Jul. 13, 1990, 2-184098
Int. Cl.[5] E21D *9/10, 9/06*
U.S. Cl. 299—1.8 **8 Claims**



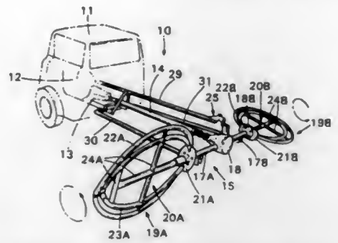
1. A system for aiding operation of an excavating type underground advancing machine comprising:
a rocking actuator for controlling orientation;
an excavation cutter provided at the front face of a cutter drum positioned at the tip end;
a first sensor group for monitoring a position error magnitude and angular deflection magnitude relative to a construction planning line, and an operation magnitude of said rocking actuator;
a second sensor for monitoring a fluid pressure for a cutter torque;
wherein the system further comprising:
an automatic measurement portion for obtaining output signals of said sensors group and said cutter torque pressure sensor;
an automatic adjustment portion for adjusting said signals as input values for fuzzy inference;
a rocking magnitude control aiding portion for outputting an optimal rocking magnitude of said orientation controlling actuator for the next advancing pitch based on the adjusted input values of said first sensor group through fuzzy inference;
a cutter torque control aiding portion for outputting a control information for the excavating cutter torque based on the adjusted input value from said second sensor for cutter torque pressure control through the fuzzy inference; and
a display output device for displaying the outputs of said both system portions.

5,312,164
VEHICLE PROPELLING MEMBER AND ASSEMBLY
Bruce M. Nichols, Miriwinni, Australia, assignor to Snowmist Pty Ltd., Queensland, Australia
PCT No. PCT/AU91/00085, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/13772, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 12, 1991, Ser. No. 920,440
Claims priority, application Australia, Mar. 12, 1990, PJ9068
Int. Cl.[5] B60B *19/00*
U.S. Cl. 301—5.1 **14 Claims**

1. A vehicle propelling assembly to propel a vehicle in a given direction, the assembly comprising first and second ground engaging propelling members on opposite sides of the assembly, the propelling members being rotatable about a rotation axis extending transversely to the given direction, each propelling member having a curved ground engaging contact surface which extends along a plane, the plane having an elon-

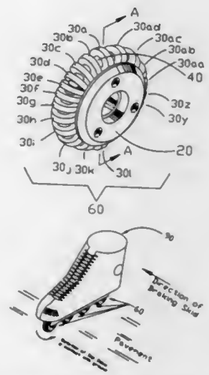
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gated axis aligned axially with the rotation axis and being rotatable around the rotation axis, the planes along which each



ground engaging contact surface extends intersecting each other at an angle greater than 0°.

5,312,165
COMBINATION BRAKE AND WHEEL SYSTEM FOR IN-LINE ROLLER SKATES AND THE LIKE
Gary J. Spletter, Winthrop, Mass., assignor to FPD Technology, Inc., Sudbury, Mass.
Filed Nov. 13, 1992, Ser. No. 976,384
Int. Cl.[5] B60B *19/00*
U.S. Cl. 301—5.23 **20 Claims**

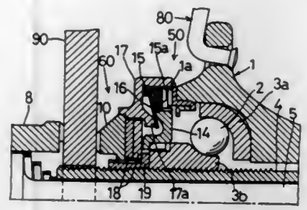


1. A wheel assembly for use on an in-line skate, the wheel assembly comprising:

(a) a radially arranged support structure defining an outer periphery defining a groove, and an attachment means for mounting said radially arranged support structure on the frame of an in-line skate or the like,

(b) transverse rolling means mounted in said groove for enabling rolling of said wheel assembly at a right angle to the direction of rotation of said radially arranged support structure, said rolling means being placed and retained within the groove of said support structure and contacting the interior surface of said groove so that, when a skater directs the skate in an orientation transverse to the skater's direction of travel, the transverse rolling means and the interior surface of said groove cooperate to brake the skater.

5,312,166
QUICK RELEASE MECHANISM HAVING A TIGHTENING FORCE INDICATOR
Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Aug. 10, 1992, Ser. No. 926,705
Int. Cl.[5] B60B *27/02*
U.S. Cl. 301—110.5 **10 Claims**



1. A quick release mechanism for tightening an object such as a bicycle component, comprising:

a tightening rod extending axially;

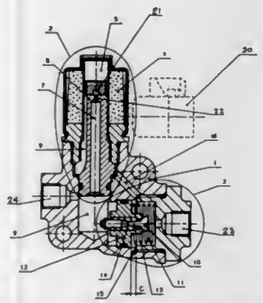
first clamp means mounted on one end of said tightening rod, and second clamp means mounted on the other end thereof, said first and second clamp means being axially movable relative to each other between a tightening position and a release position;

a control lever mounted on said tightening rod for moving said clamp means between said tightening position and said release position; and

indicating means including displaceable pressure detecting means for detecting the tightening force applied to said object from said first and second clamp means; and

a shift member that is shifted by a displacement of said displaceable pressure detecting means, said indicating means generating a warning signal when the tightening force is below a predetermined value.

5,312,167
BYPASS VALVE-DELAY VALVE ASSEMBLY FOR BRAKING SYSTEMS
Alberto Giorgetti; Luigi Cavestro, and Roberto Lavezzi, all of Curno, Italy, assignors to Brembo S.p.A., Bergamo, Italy
Filed Jul. 31, 1992, Ser. No. 923,303
Claims priority, application Italy, Sep. 5, 1991, BG91A000031
Int. Cl.[5] B60T *13/74*
U.S. Cl. 303—3 **6 Claims**



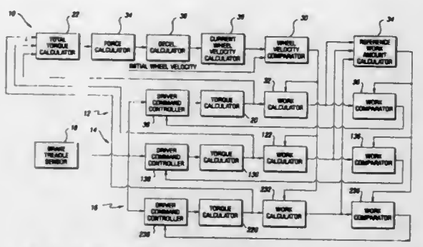
1. A bypass-delay valve assembly for an electric-hydraulic braking system of an electrically drive vehicle having a brake pedal which generates an electrical signal and controls hydraulic pressure through a master cylinder in the electric-hydraulic braking system when depressed and wherein the system includes a hydraulically operated friction brake having a braking clearance, said bypass-delay valve assembly comprising:

a unitary valve body having an entry chamber communicating with the master cylinder and an exit chamber communicating with the hydraulically operated friction brake;

a bypass section in the valve body including a fixed core having a central duct, a movable core coaxial with said fixed core and having a ball shut valve for shutting said central duct, a solenoid for moving said movable core activated by an electrical signal generated by the brake pedal, so that when activated the solenoid moves the movable core to close the central duct of the fixed core by means of the ball shut valve;

a delay section in the valve body including a movable piston disposed between said entry and exit chambers, biasing means biasing said piston towards said entry chamber, shoulder means disposed between said movable piston and said exit chamber for limiting the maximum stroke of said piston, and a delay valve with biasing means arranged in said piston for modulated communication between said entry and exit chambers.

5,312,168
METHOD AND APPARATUS FOR EQUALIZING VEHICLE BRAKE WEAR
Michael T. Breen, Garden City, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 31, 1993, Ser. No. 114,761
Int. Cl.[5] B60T *13/68, 10/00, 13/00*
U.S. Cl. 303—9.61 **9 Claims**



1. An apparatus for equalizing brake wear between braking sites of a vehicle, the vehicle having a brake treadle and a plurality of braking sites, each braking site having a plurality of braked wheels of known brake radius disposed on at least one axle, the apparatus comprising:

brake treadle sensing means for determining brake treadle displacement and for generating a driver demand signal representative of the brake treadle displacement;

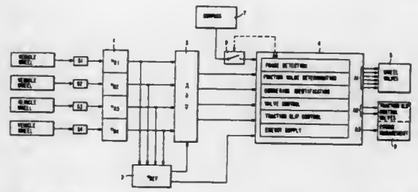
torque calculating means for each of the plurality of braking sites for calculating, as a function of the brake treadle displacement represented by the driver demand signal and of the brake radius, torque applied to the at least one axle at each of the plurality of braking sites and for generating a torque-per-site signal representative of the torque applied to the at least one axle;

work calculating means for each of the plurality of braking sites for calculating, as a function of braking site torque represented by the torque-per-site signal, of wheel velocity and of time, the amount of work performed at each of the plurality of braking sites and for generating a work-per-site signal representative thereof;

work comparing means for each of the plurality of braking sites for comparing the work-per-site signal with a reference work signal and for generating an error signal representative of any difference therebetween; and

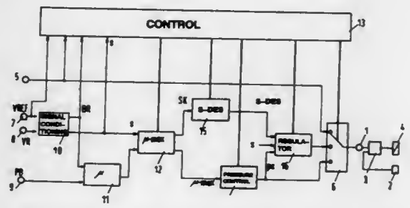
controlling means for each of the plurality of braking sites for modifying the driver demand signal to increase the work done by a braking site if the amount of work performed at that site is less than the amount of work represented by the reference work signal.

5,312,169
CIRCUIT CONFIGURATION FOR AN AUTOMOTIVE VEHICLE WITH ANTI-LOCK CONTROL AND/OR TRACTION SLIP CONTROL
Gunther Buschmann, Griesheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 673,431, Mar. 22, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 990,983
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1990, 4009355
Int. Cl.[5] B60T *8/32, 8/60, 17/00;* **G01P** *3/00*
U.S. Cl. 303—100 **16 Claims**



1. A circuit configuration for an automotive vehicle having vehicle wheels each having a rotational behavior with anti-lock control and traction slip control, including sensors for gathering information on the rotational behavior of the vehicle wheels and on driving behavior of the vehicle, and evaluation circuits for receiving and evaluating the information and for generating braking pressure control signals and traction torque control signals, characterized int hat said configuration further comprises a compass operative to generate output signals to the evaluation circuits to effect control of said rotational and driving behavior as a function thereof.

5,312,170
ANTI-LOCK BRAKE SYSTEM
Andreas Erban, Bietigheim-Bissingen; Harald Michi, Ölbronn-Dürrn; Matthias Volkert, Ludwigsburg, and Chi-Thuan Cao, Korntal-Münchingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE91/00830, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO92/07741, PCT Pub. Date May 14, 1992
PCT Filed Oct. 25, 1991, Ser. No. 867,112
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1990, 4034814
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—103 **18 Claims**



1. Anti-lock brake system for a vehicle wheel, comprising: means for determining a wheel speed VR and a brake pressure PB at a wheel brake of a vehicle wheel; means, responsive to

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the wheel speed VR and a reference speed VRef, for forming slip actual values S and wheel deceleration values BR; a slip regulator means for using the slip actual values S to regulate the brake pressure PB at the wheel brake; control means for causing regulating phases and brake pressure control phases to alternate; means for continuously determining a friction coefficient μ from the brake pressure PB and the wheel deceleration values BR; means for determining during each regulating phase a maximum value μmax of the friction coefficient and the slip value SK when the maximum value of the friction coefficient is reached; means for using the slip value SK during each regulating phase to form a somewhat smaller slip setpoint value Sdes. which is specified as the slip setpoint value for the slip regulator means in the following regulating phase; and said control means is responsive to the wheel slip S rising during the regulating phases above a predetermined value SB, for switching the system over tc a brake pressure control phase, during which said control means controls a pressure control means to initially introduce a reduced brake pressure Pmin and then to introduce an increased brake pressure PS relative to Pmin after the slip S has fallen below the below SB, and for subsequently brining the slip regulator into effect with the new setpoint slip Sdes. when the slip S becomes smaller than SK.

5,312,171

DRIVE-SLIP CONTROL SYSTEM

Jochen Schäfer, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

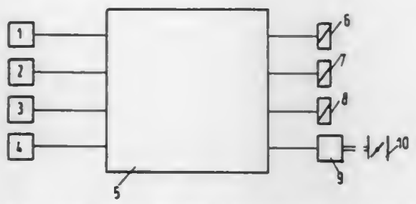
PCT No. PCT/DE91/00821, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO92/07744, PCT Pub. Date May 14, 1992

PCT Filed Oct. 22, 1991, Ser. No. 867,207

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1990, 4034816

Int. Cl.[5] B60T *8/76*

U.S. Cl. 303—103 **15 Claims**



8. In a method for controlling a drive-slip control system for a wheeled vehicle including reducing a speed of a driven wheel if the speed of the driven wheel exceeds by a redetermined first amount a reference speed obtained by filtering an unfiltered speed of a non-driven wheel; the improvement comprising increasing the reference speed if the unfiltered speed of the non-driven wheel is smaller by at least a second amount than the reference speed.

5,312,172

BRAKE CONTROL SYSTEM

Hiroaki Takeuchi, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 26, 1993, Ser. No. 23,631

Claims priority, application Japan, Feb. 28, 1992, 4-043489

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.1 **8 Claims**

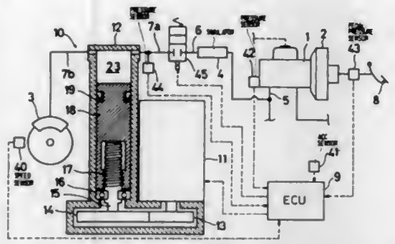
1. A brake control system for automatically controlling a wheel cylinder pressure comprising:

a master cylinder for generating an operating fluid pressure in accordance with a brake pedal pressure applied by a brake pedal operatively connected to said master cylinder;

a wheel cylinder adapted to be mounted on a wheel;

wheel cylinder pressure control means operatively connected between said master cylinder and said wheel cylinder;

simulation means operatively connected between said wheel pressure control means and said master cylinder for applying a reaction force to said brake pedal and including a



cut-off valve for disconnecting said master cylinder from said wheel cylinder pressure control means;

pressure sensor means for sensing brake pedal pressure;

speed sensor means for sensing speed of rotation of said wheel; and

control means for controlling said wheel pressure control means in accordance with one of said brake pedal pressure and said speed of rotation of said wheel.

5,312,173

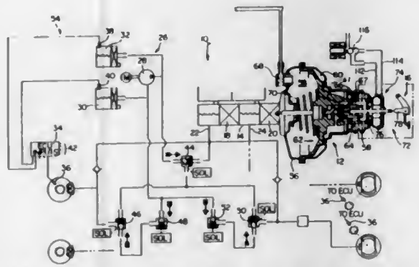
CONTROL VALVE ACTUATOR

Louis P. Rossigno, Granger, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed May 28, 1993, Ser. No. 68,881

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.3 **6 Claims**



1. In a brake system having a vacuum booster with a control valve responsive to a first input signal from an input member in a first mode of operation and a second input signal from a controller in a second mode of operation for developing an operational pressure differential between a control fluid and a source of vacuum fluid across a movable wall in said vacuum brake booster to create an output force for pressurizing fluid in a master cylinder to effect a brake application, said second input signal being derived from differences in the rotational spin of the drive wheels of a vehicle, said controller in said second mode of operation selectively supplying pressurized fluid to effect braking of said drive wheels to absorb a portion of an operational torque applied thereto and thereby synchronize the rotational spin of said drive wheels, said input member being characterized by a housing formed by securing a front shell to a rear shell, said front shell having a first axial opening therein, an annular projection extending therefrom and a first

radical opening, said rear shell having a second axial opening therein and a second radical opening, said rear shell having a second axial opening therein and a second movable wall in said vacuum booster, said annular projection having a plurality of slots therein through which control fluid is communicated to said control valve for developing said operational pressure differential across said movable wall, an input rod sealingly and slidably located in said first and second axial openings in said front shell and rear shell, respectively, said input rod being connected to said control valve and an operator pedal assembly, and diaphragm means located between said front and rear shells to separate said first radial opening in said front shell from said second radial opening in the rear shell, said diaphragm means sealingly engaging said input rod, said controller being connected to said control fluid and said source of vacuum, said controller in said first mode of operation allowing said vacuum to be communicated to said diaphragm means through said first and second radical openings to allow resilient means to urge said diaphragm means toward said rear shell and allow said input rod to provide said control valve with an input force and in a second mode of operation allowing control fluid to communicate with said second radial opening to create an actuation pressure differential across said diaphragm means, said actuation pressure differential acting on and independently moving said input rod after overcoming said resilient means to activate said control valve and thereafter allow said control fluid to create said operational pressure differential for moving said movable wall in the vacuum booster to effect a brake application.

5,312,174

SLIP-CONTROLLED BRAKE SYSTEM, ESPECIALLY FOR USE WITH AUTOMOTIVE VEHICLES

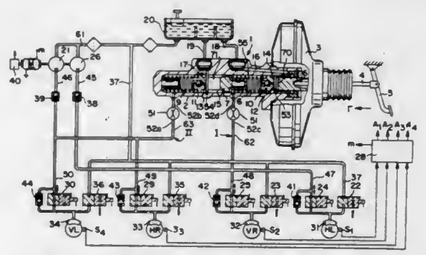
Hans J. Beilfuss, Hofheim/Ts.; Frank Goehring, Frankfurt am Main, both of Fed. Rep. of Germany, and Michael Vogt, Rochester Hills, Mich., assignors to Alfred Teves GmbH, Fed. Rep. of Germany

Division of Ser. No. 635,162, Dec. 21, 1990, Pat. No. 5,209,554. This application Feb. 12, 1993, Ser. No. 17,461

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1989, 3913352; May 6, 1989, 3914953

Int. Cl.[5] B60T *8/32, 8/44, 8/48, 13/12*

U.S. Cl. 303—116.1 **9 Claims**



1. A slip-controlled brake system for automotive vehicles, having wheels and wheel brakes, said system comprising a pedal-actuated brake pressure generator supported by auxiliary force and accommodating a master cylinder connected to which, through pressure fluid conduits, are the wheel brakes, exhibiting hydraulic auxiliary pressure pumps and wheel sensors and electronic circuits for determining wheel rotational behavior and for generating electric brake pressure control signals for controlling electromagnetically actuatable pressure fluid inlet valves and outlet valves provided in the pressure fluid conduits for slip control purposes, characterized in that located in the pressure fluid conduits between the master cylinder and the inlet and outlet valves are pressure pulsation attenuators, each including two high pressure elastomeric tubular sections with a diaphragm member integrated between, which are deformable in response to hydraulic pressure fluctuations for attenuating pressure fluctuations from the hydraulic auxiliary pressure pumps and from the inlet valves and the outlet valves.

5,312,175

BRAKE FLUID PRESSURE CONTROL APPARATUS

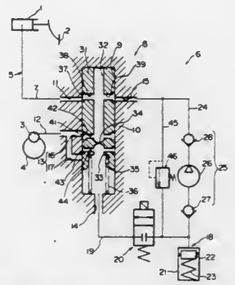
Hiromi Ando; Kunihiro Matsunaga; Kenji Sano, and Satoru Suga, all of Yamanashi, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jun. 26, 1992, Ser. No. 904,988

Claims priority, application Japan, Jul. 3, 1991, 3-163118; Nov. 7, 1991, 3-291772; Dec. 16, 1991, 3-332296; Mar. 5, 1992, 4-48917; Mar. 5, 1992, 4-48918

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—117.1 **19 Claims**



1. A brake fluid pressure control apparatus to be provided on a brake fluid pressure control circuit for antiskid control of wheeled vehicles, the brake fluid pressure control circuit including a brake pedal for initiating braking of the wheels, a master cylinder for providing brake fluid pressure to the circuit, and wheel cylinders for providing brake fluid pressure to brakes of the wheels, the brake fluid pressure control apparatus comprising:

a first valve which opens when brake fluid pressure decreases, and closes when brake fluid pressure increases;

a reservoir for receiving brake fluid;

a pump having an intake side for taking in brake fluid from said reservoir, and an outlet side for discharging brake fluid;

a flow control means communicating with the master cylinder, the wheel cylinders, the reservoir, and the pump, said flow control means controlling the fluid flow so that the fluid pressure of said wheel cylinders undergo pressure decrease and pressure increase; said flow control means comprising:

a casing comprising:

a master cylinder communication port communicating to said master cylinder;

a wheel cylinder communication port communicating to said wheel cylinders;

a reservoir communication port communicating with the intake side of said pump and said reservoir via said first valve; and

a pump communication port which connects to the discharge side of said pump;

a spool, providing as a movable element inside of said casing;

said spool having an interior orifice on an interior portion thereof,

a spring which provides force to said spool in one direction,

wherein said spool is in a motionless state in which force is provided in one direction by said spring, connects

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said master cylinder communication port and said wheel cylinder communication port;

and during brake fluid pressure decrease, moves by means of a difference in pressure generated on body sides by means of the opening of said first valve restricts the communication between said master cylinder communication port and said wheel cylinder communication port, connects said wheel cylinder communication port and said reservoir communication port, and restricts the communication between said pump communication port and said master cylinder communication port;

said spool which, during brake fluid pressure decrease, when said first valve is in the open state, supplies brake fluid discharged from said pump from said pump communication port to said reservoir communication port via said interior orifice at roughly a fixed flow amount;

and said spool during brake fluid pressure increase, when said first valve returns to a closed condition, supplies brake fluid discharged from said pump from said communication port to said wheel cylinder communication port a roughly a fixed flow amount via said interior orifice;

a first bypass channel which joins the intake side and discharge side of said pump in a bypass manner; and

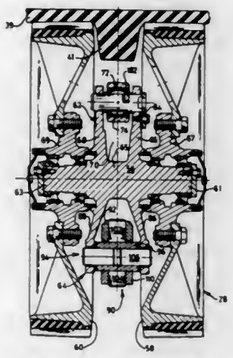
a relief valve provided in said first bypass channel, which, in the case when brake fluid pressure between the discharge side of said pump and said flow control means exceeds a predetermined pressure, controls the flow amount of brake fluid to said flow control means by means of allowing surplus brake fluid pressure to escape to the intake side of said pump.

5,312,176

SELF-ALIGNING IDLER WHEEL ASSEMBLY

Elmer R. Crabb, Aurora, Ill., assignor to Catepillar Inc., Peoria, Ill.

Filed Sep. 25, 1992, Ser. No. 950,543
Int. Cl.[5] B62D *55/15*
U.S. Cl. 305—21 **20 Claims**



1. A self-aligning idler wheel assembly for a vehicle having a roller frame and an endless elastomeric belt which encircles the idler wheel assembly and which supports and propels the vehicle, said idler wheel assembly comprising:

a spindle having first and second spaced apart shaft portions and a middle portion having first and second radially extending flange portions;

first and second plates rotatably connected to respective first and second shaft portions;

first and second wheels connected to respective first and second plates; and

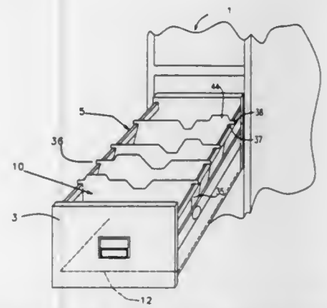
first and second self-aligning mechanisms connected to respective first and second flange portions.

5,312,177

OVERSIZE FILING SYSTEM

J. Scott Coulter, Elko, Nev., assignor to Xcel Industrial Group, Inc., Elko, Nev.

Filed Apr. 28, 1992, Ser. No. 875,240
Int. Cl.[5] A47B *63/00*
U.S. Cl. 312—184 **13 Claims**



1. A removable filing system adaptor for accommodating oversized documents, and adapted to be inserted into a filing cabinet drawer within a filing cabinet, said drawer having a given overall drawer height and said filing cabinet defining a clearance orifice for receiving said drawer, said clearance orifice having a clearance height greater than said drawer height, said filing cabinet drawer having a pair of parallel hanging file side rails for supporting hanging files and having a generally horizontally oriented drawer bottom, said filing system adaptor, comprising:

(a) a base member configured and dimensioned to lie on said drawer bottom and a plurality of slots disposed in a row, said slots being defined by said base member and disposed in alignment with each other said slots being configured, dimensioned and positioned to engage a respective slot-engageable locating means; and

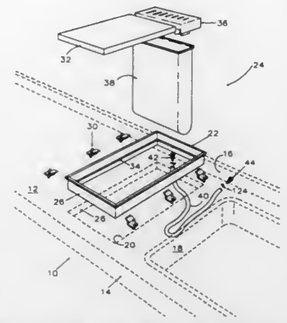
(b) a plurality of generally oversized divider members, dimensioned to be greater in height than said drawer height to support in a non-vertical position documents substantially taller than a standard sized document in a conventional, standard letter size or legal size filing cabinet drawer when said divider members are oriented at a non-vertical position, said divider members each having a top edge and a bottom edge, a pair of tabs extending laterally from each of said divider members to rest on said parallel side rails, and each of said divider members having said slot-engageable locating means depending from said bottom edge to engage its respective divider member on said base member while each of said divider members rest in an upright position or in an inclined position, each said slot-engageable locating means being adapted to engage its respective one of said slots.

5,312,178

KNIFE RACK AND CUTTING BOARD

Donald G. King, 241 Dickson Park Crescent, Mississauga, Ontario, Canada L5B 1Y5

Filed Jan. 6, 1992, Ser. No. 817,084
Claims priority, application United Kingdom, Jul. 12, 1989, 8915956
Int. Cl.[5] A47B *96/18*
U.S. Cl. 312—140.4 **21 Claims**



1. An improvement in apparatus for mounting a cutting board in a countertop, said apparatus being adapted to fit into an opening in said countertop for supporting said cutting board, said apparatus including a flange portion overlapping the countertop adjacent said opening, characterized by a depending leg portion connected to said flange portion, a ledge extending from said depending leg portion, said ledge extending inwardly relative to said opening, and an upstanding ridge projecting from said ledge for supporting the underside of the cutting board when placed thereon, a knife scabbard adjacent said cutting board and supported on said ledge, said knife scabbard having individual slots of varying lengths to receive knives of varying blade widths, further characterized by a gap between the edge of said cutting board and said depending leg portion to permit draining of liquids from said cutting board onto said ledge, and a drainage coupling connected to said ledge for draining said liquids away from said ledge area.

5,312,179

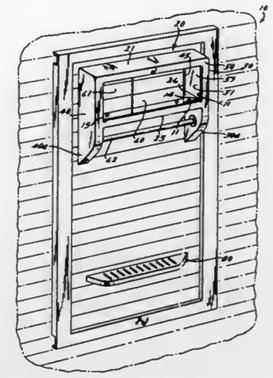
CABINET SURROUND

Michael J. Schlaud, Columbiaville, and David L. Carrol, Imlay City, both of Mich., assignors to Trayco, Inc., Lapeer, Mich.

Continuation of Ser. No. 742,972, Aug. 9, 1991, abandoned. This application Sep. 1, 1993, Ser. No. 115,373
Int. Cl.[5] A47B *67/02*
U.S. Cl. 312—242 **8 Claims**

1. An improved vacuum formed plastic surround panel for bathtubs and showers having a cabinet formed integrally therewith, said cabinet comprising a back wall having an interior surface, a top wall having an interior surface, a bottom wall having an interior surface, a first side wall having an interior surface, a second side wall having an interior surface, and an open front adapted to be closed by horizontally sliding doors, the improvement comprising:

a single substantially U-shaped top guide channel adapted to receive the tops of sliding doors vacuum formed integrally in said interior surface of said top wall; a single substantially U-shaped bottom guide channel adapted to receive the bottoms of sliding doors vacuum formed integrally in said interior surface of said bottom wall; a first single side channel connecting said top guide channel and said bottom guide channel vacuum formed integrally in said interior surface of said first side wall, said first side channel adapted to receive the side edges of sliding doors; and a second single side channel connecting said top guide channel and said bottom guide channel vacuum formed integrally in said interior surface of said second side wall,



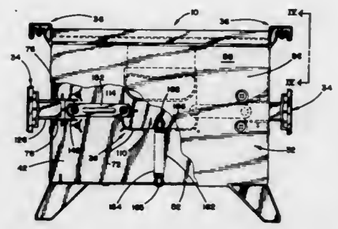
said second side channel adapted to receive the side edges of sliding doors.

5,312,180

FILE DRAWER COMPRESSOR

Gregory A. Tieder, Kentwood; Russell T. Holdredge, Alto, and Kim A. Keith, Kentwood, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 9, 1992, Ser. No. 959,330
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—348.3 **32 Claims**



1. A file compressor for use in drawers of the type having a pair of parallel, spaced apart walls defining upper lateral edges, said file compressor comprising:

a housing having front and back surfaces and spaced, lateral sides;

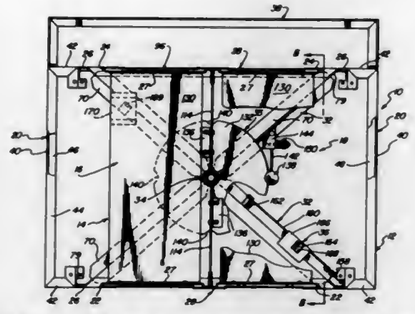
suspension means joined to said housing for slideably suspending said housing from the upper lateral edges of a drawer for continuous movement therealong, said suspension means defining a plurality of transversely spaced slots permitting the compressor to be used with different width drawers;

a bumper supported by said housing and extending outwardly from one of the lateral sides of said housing, said bumper being moveable from an extended position at which it frictionally engages one of the walls of the drawer to a retracted position spaced from the wall of the drawer so that the housing is slideable within the drawer; and

actuator means within the housing and operatively connected to said bumper for moving said bumper to said retracted position and for resiliently biasing said bumper to said extended position.

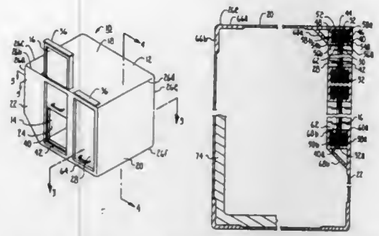
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,181
ROTARY FILE AND STORAGE CABINET
Walter E. Hudnall, R.R. #2 Box 173, Nowata, Okla. 74048
Filed Nov. 2, 1992, Ser. No. 970,052
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—249.2 26 Claims



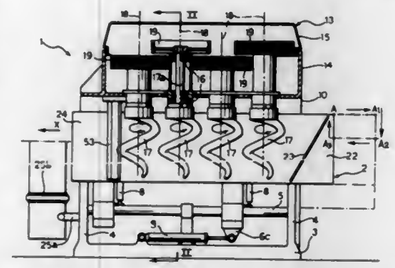
1. In a rotary file and storage cabinet having a cabinet housing defined by a canopy mounted on two oppositely positioned side walls and two oppositely disposed access openings, said cabinet housing being fixedly mounted to a base member, and a rotor file assembly being rotatably mounted within said cabinet housing, said rotor file assembly having a pair of oppositely disposed closure doors which define a pair of file or storage sections that are positionable to provide access thereto through said access openings of said cabinet housing, the improvement comprising:
a rotor file assembly having a rotary support means mounted on said base member of said cabinet housing, wherein said rotary support means is defined by a vertical axis assembly which is mounted at one end to said canopy and affixed at the opposite end to said base member;
means for vertically positioning said axis assembly at the upper end thereof and centrally within said cabinet housing;
means for fixedly securing said rotary support means to said base member, whereby said axis assembly is prevented from rotating within said cabinet housing;
a file assembly rotatably mounted and supported on said axis assembly;
bearing means mounted on said axis assembly so as to be interposed between said axis assembly and said rotor assembly, whereby said rotor assembly is selectively rotatable about said axis assembly; wherein said axis assembly comprises:
a centrally disposed pole member having a bearing mount formed with a bearing support flange and located in the upper end of said pole member, said bearing means being mounted thereon;
a positioning pin secured to said bearing mount so as to extend upwardly through a retainer means, said retainer means being attached to said canopy; and
hold-down means centrally secured in said base member, the lower end of said pole member being fixedly attached therein;
a frame structure defined by said file assembly, whereby said closure doors are mounted thereon;
positioning means mounted to said base member so as to be located between said frame structure and said base member; and
locking means mounted within said cabinet housing and arranged to lockingly engage said frame structure when said closure doors are positioned in a closed mode.

5,312,182
HARDENED AIRCRAFT UNIT LOAD DEVICE
Paul F. Mlakar, and Joseph L. Smith, both of Vicksburg, Miss., assignors to Jaycor, San Diego, Calif.
Filed Dec. 26, 1991, Ser. No. 816,309
Int. Cl.[5] A47B *96/00*
U.S. Cl. 312—409 25 Claims



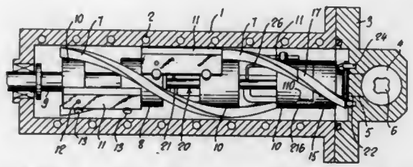
1. A hardened unit load carrying device which comprises:
a container for holding said load, said container being formed with an opening defining a channel means;
a door having an edge;
a flanged gripping means formed on said door along a portion of said edge; and
said channel means consisting of interlocking means bordering said opening for slidably receiving at least part of said gripping means of said door in an interlocking fashion, to cover said opening with said door and enclose said load in said container;
wherein said gripping means and said interlocking means interlock with increased force in response to an explosive blast within said container to resist rupturing said device.

5,312,183
KNEADING MACHINE FOR FOOD PRODUCTS AND A METHOD OF KNEADING WHICH CAN BE PERFORMED BY THE MACHINE
Amabile Drocco, Alba, Italy, assignor to Sancassiano SpA, Italy
Filed Jul. 19, 1991, Ser. No. 732,560
Claims priority, application Italy, Jul. 30, 1990, 67608 A/90
Int. Cl.[5] B01F *7/00*
U.S. Cl. 366—97 14 Claims



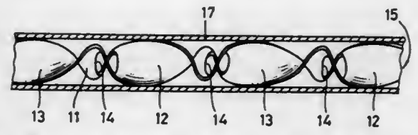
1. A kneading machine for forming a continuous elongated mass of a mixture of food products, particularly of dough, comprising:
a container for the product to be kneaded, constituted by a horizontal channel-shaped element along which the mixture being formed is advanced and which has an input end for admitting the product to be kneaded and an output end for discharging the mixture produced;
a plurality of helical kneading tools arranged in the channel-shaped element so that the product advancing along the channel-shaped element encounters them in succession, each helical kneading tool having a cylindrical envelope with a vertical axis which intersects orthogonally a central axis of a duct defined by the channel-shaped element, the cylindrical envelopes of the respective kneading tools being in contact with each other and with the walls of the channel-shaped element;
drive means for rotating each helical kneading tool around its vertical axis; and
auxiliary drive means for imparting a cyclic movement to said channel-shaped element relative to the kneading tools, while keeping said channel-shaped element horizontal, said cyclic movement including a first stage of horizontal movement against the flow of the product, a second descending stage, a third stage of horizontal movement with the flow of the product, and a fourth stage in which it ascends again.

5,312,184
ICE-CREAM STIRRING DEVICE WITH STIRRING BLADES AND SCRAPING VANES
Gino Cocchi, Bolonga, Italy, assignor to Carpigiani S.r.l., Anzola Emilia, Italy
PCT No. PCT/EP92/00467, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/15201, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 3, 1992, Ser. No. 949,626
Claims priority, application Italy, Mar. 8, 1991, GE91A000047
Int. Cl.[5] A23G *9/12, 9/22*
U.S. Cl. 366—302 23 Claims



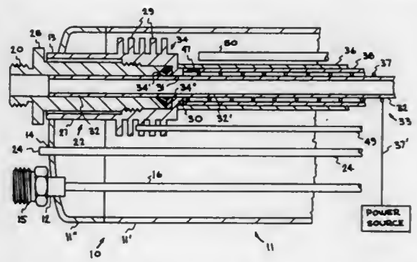
1. A stirring device for a machine used for the manufacture of ice cream, which machine includes a whipping cylinder having a horizontal axis about which an operating shaft rotates and a means for extracting of the ice cream at a head side of the whipping cylinder, said stirring device comprising:
a peripheral stirrer which is rotated about the axis of the whipping cylinder inside of the whipping cylinder, said stirrer including
a hub which is integral with the operating shaft so as to rotate therewith,
two stirring blades of helical shape supported on said hub, said stirring blades being arranged diametrically opposite to one another and extending over a majority of an entire length of the whipping cylinder at a slight distance from an internal wall of the whipping cylinder,
at least one support bush spaced from said hub toward the head side and connected to said stirring blades, said support bush having a hollow adjacent to the head side,
a plurality of scraping vanes, each said scraping vane including a radially external side,
a vane support means for supporting said vanes on said hub and said support bush between said two stirring blades and said vanes being distributed longitudinally over the length of the whipping cylinder in an angularly staggered and longitudinally staggered relationship, such that said radially external side of each said scraping vane interacts with the internal wall of the whipping cylinder, and
a stirring/scraping head adjacent the head side of the whipping cylinder, said head including an insertion prolongation having a radial anti-rotation extension extending longitudinally away from the head side, said head being received in a portion of said support bush such that said anti-rotation extension is engaged in said hollow of said support bush.

5,312,185
MOTIONLESS MIXER AND METHOD FOR MANUFACTURING THE SAME
Hisao Kojima, 3-53-21, Shioiri-cho, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, and Akio Tsubota, 128, Yamabuki-cho, Shinjuku-ku, Tokyo, both of Japan
Filed Dec. 27, 1990, Ser. No. 634,387
Claims priority, application Japan, Dec. 28, 1989, 1-341645
Int. Cl.[5] B01F *5/06;* F15D *1/02*
U.S. Cl. 366—339 4 Claims



1. A motionless mixer for mixing a plurality of fluids, comprising:
a tubular member defining an inside space through which the fluid flow; and
a blade member disposed in said tubular member to divide the inside space of said tubular member into a plurality of fluid paths, said blade member having alternately arranged in a lengthwise direction of said tubular member a plurality of first blade sections which are spirally twisted in a clockwise direction, a plurality of second blade sections which are spirally twisted in a counterclockwise direction and a boundary portion between each first and second blade section, and a hole formed in the center of each of said boundary portions between each of said first and second blade sections.

5,312,186
HIGH TEMPERATURE PROBE
Raymond A. Swan, Fremont, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Nov. 4, 1992, Ser. No. 971,111
Int. Cl.[5] G01K *1/12*
U.S. Cl. 374—143 20 Claims

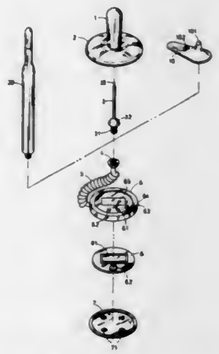


1. A high temperature probe for sampling a fluid such as effluents, emissions, etc., comprising:
a casing constituting a cooling jacket;
a sample inlet assembly mounted in said casing and including a hollow inlet member therein and cooling fins located at one end and on the exterior thereof, said inlet assembly being adapted to be connected to an inlet nozzle located at

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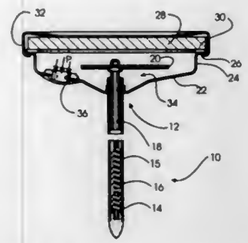
an end opposite from said cooling fins and positioned to receive a fluid to be sampled;
a sample heating assembly including said hollow member;
a seal assembly positioned within said sample inlet assembly, around said hollow inlet member, and located within said cooling fins of said sample inlet assembly so as to be in spaced relation with said inlet nozzle;
means for directing coolant through said casing and around said cooling fins;
means extending through said casing for connection to means determining pressure differential of fluid being sampled; and
a plurality of thermocouple means located in at least various areas within said casing for determining temperature.

5,312,187
SAFETY PIN WITH ATTACHED MULTI-FUNCTION THERMOMETER
Kuen-Hwang Chiu, No. 4, Lane 27, Sec. 6, Foo-An Road, Tai-nan, Taiwan
Filed Feb. 22, 1993, Ser. No. 20,830
Int. Cl.[5] G01K *1/16, 13/00*
U.S. Cl. 374—151 **14 Claims**



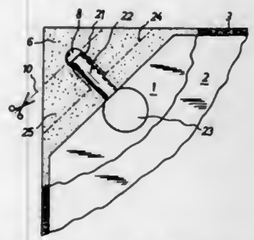
1. A multi-function thermometer, of which the main components comprise: a hollow thermoelectric member with a base wherein the base has a through-hole, a heat sensor rod with a heat sensor tip at the upper end as well as a threaded collar and retaining plate, respectively, onto the lower end, and the heat sensor rod is inserted into the through-hole in the thermoelectric member base section, with the threaded collar secured against the underside of the through-hole and the retaining plate secured against the lower interior surface of the thermoelectric member; a threaded seat that is convex in shape and connected via a coiled conductor to the threaded collar and, the threaded seat is fastened against the underside of the thermoelectric member base section; an upper cover and a base plate that both enclose an integrated circuit board, and the upper cover has an appropriately placed opening for the insert of the coiled conductor through the upper cover and down to the integrated circuit board, and the upper cover also has a transparent bezel which is aligned with a liquid crystal display that is on the integrated circuit board, and the temperature read by the heat sensor tip is transferred through the coiled conductor and the integrated circuit board to the liquid crystal display, the temperature in numerical representation is viewed through the transparent bezel, furthermore, the integrated circuit board is also capable of processing a range of different electronic signals which are transferred to the liquid crystal display and shown or transferred through the coiled conductor and outputted, mounted on the underside of the base plate is a spring-loaded safety pin and a protruding clasp, and the clasp has an internally formed winding yet contiguous channel consisting of an entry-exit slot and a securing slot which permits the tip of the spring-loaded safety pin to be pushed into the entry-exit slot and guided into the securing slot after being pierced through the clothing of an infant.

5,312,188
TEMPERATURE SENSING APPARATUS
John B. Ashe, Asheville, N.C., assignor to Figgie International Inc., Willoughby, Ohio
Filed Apr. 5, 1993, Ser. No. 42,980
Int. Cl.[5] G01K *5/62, 1/14*
U.S. Cl. 374—155 **15 Claims**



1. An apparatus for indicating a condition of an environment, comprising:
a body enclosing a chamber, said body including a wall having an opening therethrough, said wall having an interior surface and an exterior surface;
means in said chamber for indicating the condition of the environment; and,
a valve mounted in said opening, said valve including an interior lip portion overlying said interior surface adjacent said opening, an exterior lip portion overlying said exterior surface adjacent said opening, and a resilient membrane portion separating said chamber from said environment and having a slit therethrough, wherein pressure in said chamber is relievable through said slit.

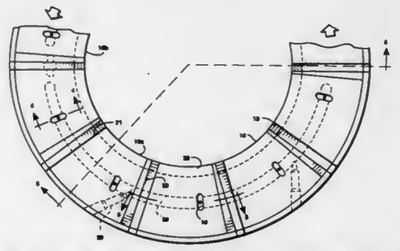
5,312,189
BAG MADE OF FOIL MATERIAL AND A METHOD OF PRODUCING SUCH A BAG
Rudolf Aeschbach, and Martin Wiesmann, both of Schweiz, Switzerland, assignors to Cellpack AG, Switzerland
Filed May 15, 1992, Ser. No. 884,522
Claims priority, application Fed. Rep. of Germany, May 16, 1991, 4115923
Int. Cl.[5] B65D *33/38*
U.S. Cl. 383—207 **4 Claims**



1. A generally rectangular collapsible bag made of thin flexible foil material and having a sealed pouring channel at one corner thereof which corner can be severed to permit expelling the contents of the bag comprising:

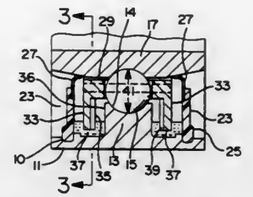
two flat flexible side walls interconnected at their edges by a peripheral seam to provide a filling space therebetween,
a pouring channel structure located at said one corner of the bag comprising:
a downstream end remote from said filling space and an upstream end near said filling space,
a preshaped recess formed in said side walls to provide a hollow space having a cylindrical portion terminating in a bulge portion at the upstream end thereof,
a seam extending across said one corner surrounding the cylindrical portion of said recess joining segments of said peripheral seam adjacent said one corner,
said bulge ballooning radially from said cylindrical portion and projecting beyond the confines of said corner seam into said filling space,
a reinforcing tube disposed in said cylindrical portion of said hollow space communicating freely with said bulge portion,
whereby, when said one corner is severed said preshaped bulge portion of said pouring channel prevents collapse of said flat walls adjacent the upstream end of said tube so that the contents of the bag will flow freely from said filling space into said bulge portion and through said tube.

5,312,190
LOAD SENSING THRUST PLATE
John H. Vohr, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 9, 1993, Ser. No. 73,422
Int. Cl.[5] F16C *17/06*
U.S. Cl. 384—306 **16 Claims**



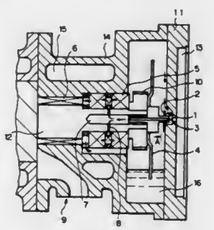
1. Apparatus for sensing the average thrust load oil a tapered land thrust bearing when loaded by a thrust runner rotatable about an axis comprising:
a thrust bearing plate having a plurality of thrust pads spaced from one another in a circumferential direction about said plate for disposition in opposition to the thrust runner, each thrust pad having a thrust bearing surface tapered in a circumferential direction toward the thrust runner and in the direction of rotation of the thrust runner;
means carried by said thrust bearing plate for supplying lubricant to the tapered thrust bearing surfaces; and
a port opening through the thrust bearing surface of at least one pad for communication with the lubricant along the thrust bearing surface thereof, said port being sized and located for measuring a pressure proportional to the average pressure of the lubricant along the tapered thrust bearing surface of said one pad in one of radial and circumferential directions.

5,312,191
LUBRICATION MECHANISM FOR ANTI-FRICTION BEARINGS
James O. Gallant, Dighton, Mass., assignor to S W Industries, Southborough, Mass.
Continuation of Ser. No. 856,442, Mar. 24, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,490
Int. Cl.[5] F16C *33/66*
U.S. Cl. 384—468 **15 Claims**



1. A bearing assembly comprising an inner race, an outer race, a plurality of rolling anti-friction elements disposed between said inner and outer races, and impeller means disposed between said inner and outer races adjacent to said rolling elements, said impeller means extending radially outwardly beyond said rolling elements for directing lubricant from a location alongside said outer race to a location adjacent said inner race.

5,312,192
BEARING LUBRICATING STRUCTURE FOR ROTARY MACHINERY
Noburu Shimuzu, and Yasuhiro Niimura, both of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed May 28, 1993, Ser. No. 68,173
Claims priority, application Japan, Jun. 4, 1992, 4-170074
Int. Cl.[5] F16C *33/66*
U.S. Cl. 384—471 **9 Claims**



1. A bearing lubricating structure for rotary machinery having a rotor rotatably supported by a bearing in a casing, an oil reservoir provided in a lower part of a bearing chamber accommodating said bearing, and an oil disk attached to an end of a rotating shaft of said rotor and immersed in lubricating oil in said oil reservoir so as to supply said bearing with lubricating oil splashed by said oil disk, said bearing lubricating structure comprising:
a guide groove for collecting lubricating oil flowing down an inner wall of a cover attached to an end of said casing;
a suction nozzle inserted into said guide groove to suck lubricating oil collected in said guide groove;
a lubricant passage extending through the inside of said rotating shaft to supply said bearing with lubricating oil sucked through said suction nozzle; and
an oiling nozzle communicated with said lubricant passage and performing a pumping action induced by the rotation of said shaft.

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5,312,193

CONTROL DEVICE FOR A MATRIX PRINTER

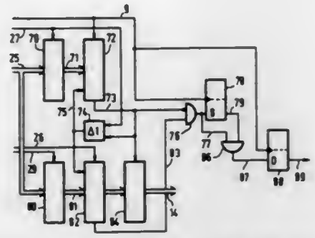
Horst Kringe, Netphen; Reinhold Winter, Wilnsdorf; Martin Crevecoeur, Kreuztal-Ferndorf, and Hartmut Korn, Siegen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 549,344, Jul. 6, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 18,902

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1989, 3922616; Mar. 9, 1990, 4007537

Int. Cl.[5] B41J *02/25*

U.S. Cl. 400—121 **18 Claims**



1. A control device for selectively controlling the mechanical printing elements of a matrix printer, which elements are arranged in a printing head moving along a print line to generate the characters to be printed by means of print dots, which dots are arranged in at least one predetermined printing raster, said control device comprising:

a control unit which generates a print signal for each printing element individually when said printing element reaches a position which lies a certain printing path before an envisaged printing location on an information carrier, characterized in that at least those printing elements whose arrangement in the printing head corresponds to a column of the printing raster are connected to a delay device which is controlled by the print signal to start a control signal for the direct mechanical triggering of the associated printing element after a delay time which is dependent on the speed of the printing head, wherein the delay device comprises a shift register and the print signal writes a first binary value into a stage of the shift register and which is derived from a correction value dependent on the printing head speed, the contents of the shift register are then shifted further by means of shift pulses and the arrival of the first binary value at a given stage in the shift register starts the control signal, and wherein the shift pulses are derived from position pulses generated during the movement of the printing head and the delay time is independent of which printing element is selected.

5,312,194

PRINTING HEAD FOR PRINTER

Tsutomu Ikehata, Sakado, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,600

Claims priority, application Japan, Nov. 30, 1990, 2-126550[U]

Int. Cl.[5] B41J *2/00*

U.S. Cl. 400—124 **6 Claims**

1. A printing head for a printer, comprising:

a plurality of armatures arranged radially, each of said plurality of armatures being supported to swingably move in a stroke;

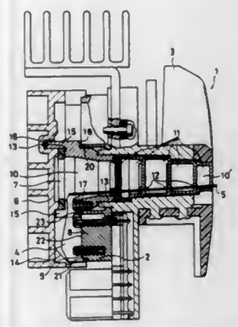
a drive section including a plurality of drive units with armature support surfaces each supporting a respective one of said plurality of armatures, wherein each of said plurality of drive units swings a respective one of said plurality of armatures;

a plurality of needles engaged respectively with inner ends of said plurality of armatures and slidably moveable to project in a first direction in response to said strokes of said armatures;

an armature stopper for limiting strokes of the respective armatures in a second direction opposite to said first direction; and

an intermediate member having a plurality of guide portions for respectively guiding said armatures in sliding directions of said needles,

wherein said intermediate member is formed to have a first step arranged at an outer surface of said intermediate member, said first step being in a plane that is substantially



orthogonal to said first and second directions of movement of said needles and is coplanar with said armature support surfaces of said drive section, said first step determining a first limit of motion of said armature in said first direction, and

a second step arranged at an inner surface of the intermediate member, said second step being in a plane that is substantially orthogonal to said first and second directions of movement of said needles, said armature stopper being abutted against said second step, said second step determining a second limit of motion of said armature in said second direction.

5,312,195

ELECTROMAGNETIC DRIVE MECHANISM FOR THE PRINTING PIN OF A PRINT HEAD

Dieter Grandke, Kaufungen; Heinrich Hoffmann, Paderborn; Detlef Prahl, Bühl; Ralf Reinkemeier, Rietberg, and Rolf Roeschlein, Paderborn, all of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Fed. Rep. of Germany

PCT No. PCT/EP90/00193, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/09286, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 6, 1990, Ser. No. 741,463

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 3904056

Int. Cl.[5] B41J *9/00*

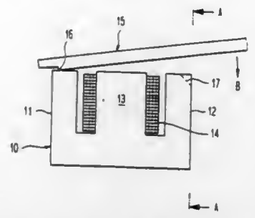
U.S. Cl. 400—157.2 **9 Claims**

1. An electromagnetic drive mechanism for a printing pin in a dot matrix printhead, comprising:

an E-shaped magnetic frame having a pair of outer limbs, and a center limb carrying an electric field coil; and,

an elongate cutout blade opposing said limbs and having a width greater over its entire length than that of said limbs, said blade having one end thereof pivotally mounted on one end of said magnetic frame, the other end of said blade extending over said magnetic frame and acting on said pin,

the average length of a magnetic flux path formed by the center limb and one of the outer limbs being less than 30 mm, and the inductance of the resulting magnetic circuit being less than 3 mH,



said blade having a magnetically effective cross-section 10 to 50% less than the magnetically effective cross-section of said outer limbs.

5,312,196

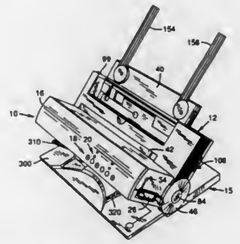
PORTABLE PRINTER AND SHEET FEEDER

Ng Lian Hock, Singapore, Singapore; James J. Girard, Boise, Id.; Lee G. Keen; James L. K. Chan, both of Singapore, Singapore, and Chuin K. Lim, Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 887,517, May 19, 1992. This application Oct. 7, 1992, Ser. No. 957,962

Int. Cl.[5] B41J *11/58, 29/00*

U.S. Cl. 400—624 **61 Claims**



1. A portable printer comprising:

a printing unit having a paper entrance slot, said printing unit being operable either in a first mode in which it is connected to an automatic sheet feeder or in a second mode in which it is separated from said sheet feeder and a user hand feeds paper to the printer;

an automatic sheet feeder connectable to said printing unit for feeding print media to said entrance slot during operation in said first mode;

means for rotating said printing unit and said sheet feeder about a substantially common axis for configuring said printer into different operating positions when said printer is in said first mode; and

means for separating said printing unit from said frame for operating the printing unit in said second mode.

5,312,197

INTER-DIGITAL SURGICAL SCRUB BRUSH FOR REDUCING SKIN TRAUMA

Daniel J. Abramson, 7671 San Mateo Dr., East, Boca Raton, Fla. 33433

Filed May 24, 1993, Ser. No. 66,501

Int. Cl.[5] A46B *5/02, 9/02, 11/00*

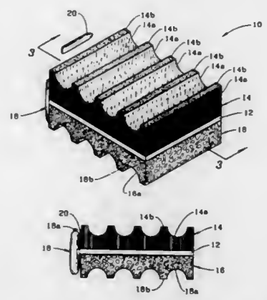
U.S. Cl. 401—6 **1 Claim**

1. A scrub brush, especially useful for surgeons and other hospital personnel who participate in numerous surgical activities to permit simultaneous cleaning of the forearms, hands, fingers, and inter-digital areas on a hand to produce an aseptic condition on the skin of the person while reducing skin trauma, comprising:

a rigid, flat, thin support member, substantially hand sized and rectangular in shape, said support member having a first, planar surface and a second planar surface, said second planar surface disposed opposite said first planar surface;

a plurality of bristles orthogonally attached to said first planar surface, said bristles covering substantially the entire area of said first planar surface and having a plurality of semi-circular shallow parallel channels, substantially sized to accommodate at least four fingers of a human hand, wherein each of said four fingers may be positioned against the bristles and be simultaneously received in the channels, said bristles further including raised flat portions separating said channels for contacting the inter-digital and web areas of a human hand while the fingers are mounted in said channels;

a soft, resilient poly-foam hand and skin cleaning pad



mounted on said second planar surface, said pad substantially covering the entire area of said second planar surface, said resilient pad including four semi-circular shallow parallel channels sized to simultaneously receive and contact the fingers of a human hand, said pad further including raised flat portions separating said finger receiving channels and having a height and width enabling contact with the inter-digital and web areas of a human hand while four fingers are simultaneously placed in said channels, said pad further being securely attached to said second planar surface, whereby one of said plurality of bristles and said pad can be selected for scrubbing the hand surfaces and the inter-digital areas to reduce trauma on the skin;

at least one transparent chamber removeably attached to an end of said support member, said chamber holding a skin protection composition for aiding in the reduction of skin trauma; and

a removeably mounted fingernail cleaner oblong in shape mounted in a space on said support member for cleaning beneath a fingernail.

5,312,198

JACK EXTENSION TUBE

James Kiefer, Grand Rapids, Mich., assignor to RAN Enterprises, Inc., Grand Rapids, Mich.

Filed Dec. 29, 1992, Ser. No. 998,560

Int. Cl.[5] B21D *53/24, 39/00;* **B23P** *11/00, 17/00*

U.S. Cl. 403—43 **17 Claims**

1. A jack extension tube for vehicles, comprising:

an elongated tube having a first section and a second section spaced from said first section;

a threaded member retained in said first section, said threaded member including threads adapted to be engaged

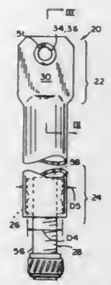
VOL 1162 ISS 3 MY 17 1994 UMI

longitudinally from one end of said tube by a jack screw and further including an irregular outer surface, said first section of said elongated tube closely engaging said irregular outer surface to frictionally immovably retain said threaded member therein;

said second section including sidewalls with material defining a pair of aligned, opposing apertures adapted to receive a fastener, said pair of apertures defining a direction transverse to the longitudinal direction of said tube, said material defining said apertures being extruded in the transverse direction so as to form opposing flanges defining enlarged cylindrically-shaped surfaces that provide an enlarged work-hardened bearing surface which increases the wear resistance and fatigue resistance of the second section when a fastener is received therein.

12. A jack extension tube for vehicles, comprising:

an elongated tube having a first section and a second section spaced from said first section;



a threaded member retained in said first section, said threaded member including threads adapted to be engaged longitudinally from one end of said tube by a jack screw;

said second section including material defining a pair of aligned, opposing apertures adapted to receive a fastener, said pair of apertures defining a direction transverse to the longitudinal direction of said tube, said material defining said apertures being extruded in the transverse direction so as to form opposing flanges defining enlarged cylindrically-shaped surfaces that provide an enlarged work-hardened bearing surface which increases the wear resistance and fatigue resistance of the second section when a fastener is received therein; and

a jack screw operably threadably extending into said threaded member, said jack screw including an exposed end defining a gear and an opposite end configured so that said jack screw is retained in said threaded member and cannot be fully unscrewed from said threaded member.

5,312,199

SELF-ALIGNING JOINT FOR LINKAGES

Joseph E. Smith, Jr., 24 Newhall Rd., Hilton Head, S.C. 29928

Filed Nov. 6, 1992, Ser. No. 972,635

Int. Cl.[5] F16C *11/00*; F16D *1/12*

U.S. Cl. 403—79 **18 Claims**

8. A joint comprising:

a stem;

a clevis on one end of said stem defining a pair of spaced arms;

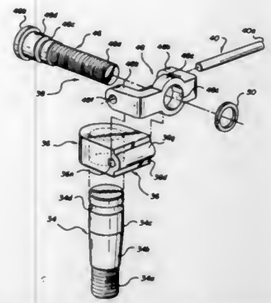
a stud;

a body member positioned between said clevis arms and defining a socket mounting one end of said stud for rotation about the axis of the stud; and

means mounting said body member for angulation about an axis perpendicular to the axes of said stud and said stem;

said mounting means comprising an axle pin mounted at its opposite ends in said arms and passing through said body member to mount the body member for angulation about the axis of the pin;

said stud including a circumferential groove proximate said one end of said stud and positioned in said socket; and



said axle pin including an intermediate portion positioned in said stud groove.

5,312,200

BALL JOINT WITH SEALING CUFF FOR MOTOR VEHICLES

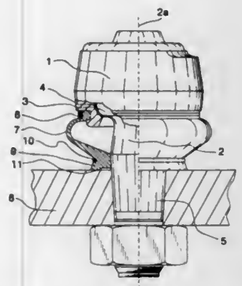
Herr R. Buhl, Bohmte, and Herr W. Kleiner, Wagenfeld, both of Fed. Rep. of Germany, assignors to Lemforder Metallwaren AG, Lemforde, Fed. Rep. of Germany

Filed Sep. 13, 1990, Ser. No. 582,433

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1989, 3930740

Int. Cl.[5] F16C *11/06*

U.S. Cl. 403—134 **12 Claims**



1. A ball joint for motor vehicles, comprising:

a housing having an outer circumference, said outer circumference including an annular groove; a joint ball positioned in said housing, said joint ball including a ball pivot extending therefrom; a sealing cuff formed of an elastically deformable material, said sealing cuff including an end which is fastened in said annular grove about the outer circumference of said housing and said sealing cuff including another end with an edge profile surrounding said ball pivot, sealingly in a positive locking manner with respect to an axial direction; rotational positive-locking means for positively connecting said sealing cuff to said ball pivot, and including an inner non circularly shaped annular surface portion of said sealing cuff edge profile and an outer non circularly shaped peripheral surface portion of said ball pivot which engage each other for preventing relative rotational movement and for preventing relative axial movement, said sealing cuff including rotary elasticity means for compensating for a maximum rotary and swivelling movement of said ball pivot with respect to said housing.

5,312,201

CONNECTING FITTING

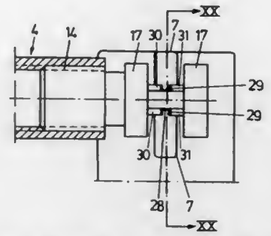
Klaus Brüstle, Höchst, and Andreas Töfferl, Hard, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Division of Ser. No. 694,945, May 2, 1991, Pat. No. 5,207,526. This application Nov. 30, 1992, Ser. No. 983,131

Claims priority, application Austria, May 7, 1990, A 1021/90

Int. Cl.[5] F16B *12/22*

U.S. Cl. 403—199 **12 Claims**



1. A connecting fitting for fastening a rear end of a rail of a drawer to a rear wall or side wall of the drawer, said fitting comprising:

a supporting member to be fastened to the rear wall or side wall of the drawer, said supporting member having therethrough a receiving opening and an open-ended slot, said slot opening into said receiving opening and having a width smaller than the size of said receiving opening, said supporting member having at least one projection extending into said slot, such that said slot widens into said receiving opening, said receiving opening having a non-circular cross section;

a securing element for connecting the rear end of the rail to said supporting member, said securing element including a first portion to be fastened to the rear end of the rail and a second portion dimensioned to fit in said slot, said second portion having therein at least one groove complementary to said projection, said groove being limited by opposite side protrusions, such that said second portion may be inserted in a direction transverse to axially of said receiving opening through said slot into said receiving opening with said projection sliding through said groove between said protrusions, to thereby suspend said securing element from said supporting member; and

said second portion of said securing element having a non-circular cross section complementary to that of said receiving opening, thereby forming means for releasably retaining said second portion of said securing element within said receiving opening.

5,312,202

ACCESS COVER ASSEMBLY

John R. Newton, Cumbria, United Kingdom, assignor to 3-D Composits LTD, Cumbria, United Kingdom

Filed Sep. 25, 1992, Ser. No. 951,201

Int. Cl.[5] E02D *29/14*

U.S. Cl. 404—25 **11 Claims**

1. An access cover assembly having a cover member and an annular frame member, said assembly characterized by;

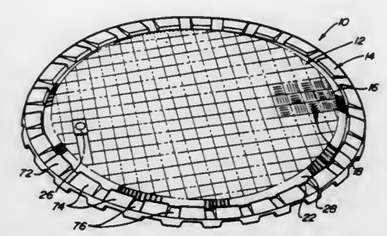
said cover member having a substantially circular outer peripheral edge with a central axis extending transverse to the plane containing the peripheral edge;

said cover member having a plurality of downwardly facing flat surfaces circumferentially spaced about a center vertical axis of said cover with said flat surfaces being canted such that a respective inner peripheral edge of a respective surface is positioned below a respective outer peripheral edge of said respective surface, each of said canted flat surfaces adjoining another canted flat surface at an angled edge;

a respective substantially vertical and flat wall section extending upwardly from a respective outer peripheral edge of each canted flat surface;

said frame member having a center aperture and an upwardly facing frusto-conical surface about said center aperture which extends outwardly and upwardly;

said frame member having a plurality of substantially vertical and flat wall sections extending downwardly from an



inner periphery of said upwardly facing frusto-conical section and positioned to allow said vertical and flat wall sections of said cover member to be locked within said center aperture at predetermined rotated positions about said central axis; and

said inner periphery of said upwardly facing frusto-conical section being shaped such that upon engagement of the angled edges of the cover member with said inner periphery, such as occurs when the cover member is placed in the frame member in a position other than one of said predetermined positions, the cover rotates towards one of said predetermined positions wherein said cover member drops into and is fully seated in said frame member and locked against further relative rotation with respect to said frame member.

5,312,203

ENDLESS RUBBER BELT VULCANIZING APPARATUS

Shinichi Kaji; Hirotaka Hatai, and Yoshio Morishita, all of Kobe, Japan, assignors to Bando Kagaku Kabushiki Kaisha, Kobe, Japan

Filed Aug. 10, 1992, Ser. No. 926,412

Claims priority, application Japan, Aug. 21, 1991, 3-235405

Int. Cl.[5] B29C *35/02*; B29D *29/00*

U.S. Cl. 425—28.1 **2 Claims**

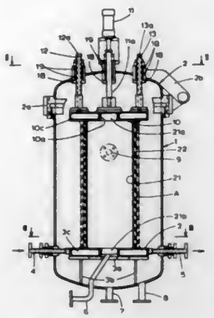
1. A vulcanizing apparatus for an endless molding used in the manufacture of endless rubber belts, said vulcanizing apparatus comprising a sealable vulcanizing vessel having an access cover on one end thereof, a mold for insertion into the vulcanizing vessel, said mold having a length and an interior space and an external circumference, a steam supply and exhaust piping connected to said vulcanizing vessel for supplying and exhausting steam to and from a space around said mold in the vulcanizing vessel and the interior space of said mold,

a rubber sleeve having a length to cover said molding which is formed over the external circumference of said mold, said sleeve being longer than the length of said mold so that both ends of said sleeve when placed in covering position on said molding protrude from both ends of said mold,

a ring-shaped holding seat provided int eh lower part of said vulcanizing vessel and one end of said mold being posi-

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tioned on said holding seat, said access cover having an inner surface and a ring-shaped pressing seat provided on said inner surface of said access cover and engaging the other end of said mold and said sleeve, extending means connected to said access cover and said pressing seat such



that said pressing seat can be extended and retracted as required, and

the interior of said pressing seat comprises a cooling jacket for a cooling medium which is circulated inside said pressing seat.

5,312,204

FLOATING BARRIER APPARATUS

Kip B. Goans, Harvey, La., assignor to Oil Stop, Inc., Harvey, La.

Continuation-in-part of Ser. No. 752,002, Aug. 29, 1991, Pat. No. 5,195,844, which is a continuation of Ser. No. 638,704, Jan. 8, 1991, abandoned, which is a continuation of Ser. No. 424,158, Oct. 19, 1989, Pat. No. 5,022,785. This application Aug. 24, 1992, Ser. No. 933,721

Int. Cl.[5] E02B *15/04*

U.S. Cl. 405—68 **46 Claims**



11. An inflatable float boom for confining material floatable on a liquid surface comprising:

a) a first elongated collapsible tube formed of fluid impervious material, said first tube defining a flat, reelable configuration when collapsed;

b) a second elongated collapsible tube formed of fluid impervious material and defining a flat, reelable configuration when collapsed, said second tube being disposed within said first tube;

c) valve means connected to said second collapsible tube for inflating said second collapsible tube; and,

d) zipper means forming a part of said first collapsible tube for providing access to said valve means, said zipper means being resealable and capable of withstanding the pressurization of said first collapsible tube.

5,312,205

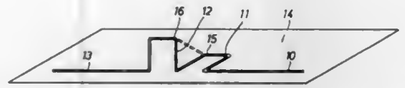
PIPELINE TO REDUCE LOSS FROM BREACH

Moye Wicks, III, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 29, 1993, Ser. No. 38,411

Int. Cl.[5] F16L *1/04*

U.S. Cl. 405—74 **6 Claims**



1. A method to reduce loss of oil into a body of water through which it is to be transported, the method comprising the steps of:

providing a subsea pipeline for transporting oil; and

providing within the pipeline a plurality of traps, each trap comprising at least two elevation changes in alternating directions and each elevation change being of a magnitude of at least one pipe diameter thereby limiting the loss of oil being transported through the pipeline which may occur from a breach between two adjacent traps.

5,312,206

HIGH LIFT TEMPORARY ROOF SUPPORT FOR MINES

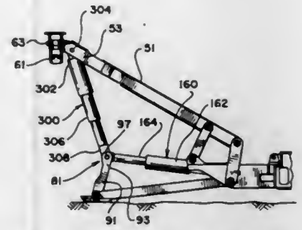
Paul M. Gaskins, Bristol, Tenn., assignor to Long-Airdox Company, Oak Hill, W. Va.

Continuation-in-part of Ser. No. 796,986, Nov. 25, 1991, Pat. No. 5,156,497. This application Feb. 3, 1992, Ser. No. 829,673

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] E21D *19/00, 20/00*

U.S. Cl. 405—291 **10 Claims**



1. In a mobile roof bolter having a rear frame, a center frame in front of the rear frame, pivotably connected to the rear frame, and a front frame in front of the center frame, pivotably connected to the center frame, the improvement comprising:

(a) a temporary roof support in front of the front frame, extending along a longitudinal axis, pivotably attached to the front frame, said temporary roof support comprising:

i. a main support frame pivotably connected to the front frame, extending along said axis;

ii. a main support beam extending along said axis having a front end and a back end, said back end terminating above said main support frame, said main support beam adapted for raising and lowering above said main support frame, in a vertical plane extending along said axis;

iii. a cross beam in a plane extending transverse to said axis, pivotably attached to said front end of said main support beam, for supporting a mine roof;

iv. a ground-contact beam extending along said axis, below said main support beam, having a front end and a back end, said back end pivotably connected to said main support frame, said ground-contact beam adapted for raising and lowering said front end below said main support frame, in said vertical plane;

v. telescopically extendable scissors pivot means extending between said front end of said main support beam and said front end of said ground-contact beam, for moving between an open and closed position, to raise and lower said front end of said main support beam and said front end of said ground-contact beam in relation to each other;

vi. primary support cylinder means in said vertical plane, extending between said main support frame and said scissors pivot means,, for opening and closing said scissors pivot means;

vii. leveling pivot means connecting said back end of said main support beam and said main support frame, for permitting said back end of said main support beam to raise and lower in said vertical plane in relation to said main support frame, when said scissors pivot means opens and closes, whereby said cross beam raises and lowers vertically in a plane transverse to said axis; and

viii. means for pivoting said temporary roof support up and down in relation to the front frame about a horizontal axis transverse to said longitudinal axis.

5,312,207

CYLINDRICAL BIT

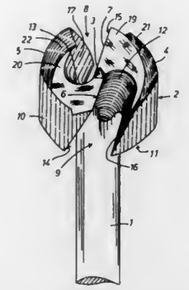
Thomas Pomp, Remscheid, Fed. Rep. of Germany, assignor to Famag-Werkzeugfabrik Friedr. Aug. Mühylhoff, Remscheid, Fed. Rep. of Germany

Filed May 7, 1992, Ser. No. 879,362

Claims priority, application Fed. Rep. of Germany, May 8, 1991, 4115030

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—212 **7 Claims**



1. Cylindrical bit machined in one piece from solid material, the cylindrical bit comprising a drill head supported on a shank, said drill head including a centering tip and two circumferential cutters, two main cutting edges extending substantially radially, and two chip channels associated with the main cutting edges, said chip channels opening in a direction of a circumferential surface and a rear face of said drill head, wherein a bottom surface of the respective chip channels is rounded in an arcuate fashion and respectively blends continuously with a chip surface of the respective main cutting edges and with a respective chip channel side wall disposed opposite to the respective chip surfaces, and wherein free surfaces of the respective main respective cutting edges are flat as far as inner walls of the successive circumferential cutters as viewed in a rotational direction of the cylindrical bit, with the respective inner walls sloping continuously in a direction toward a longitudinal center axis of the shank.

5,312,208

BURNISHING DRILL

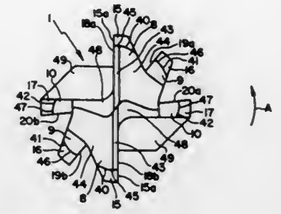
Kiyotaka Shiga; Nobuya Matsushita; Akio Fukui; Tsunehisa Yamashita, and Manabu Shimizu, all of Toyota, Japan, assignors to Fuji Seiko Corporation, Toyota, Japan

Filed Aug. 18, 1992, Ser. No. 931,323

Claims priority, application Japan, Apr. 28, 1992, 4-110118

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—224 **11 Claims**



1. A burnishing drill, comprising:

a shank;

a drill body having a longitudinal axis and being arranged to be rotated about said longitudinal axis, said drill body being connected at a rearward end thereof to said shank, and including;

a first pair of cutting edges formed at a leading end of said drill body and extending radially outward with respect to said longitudinal axis as it slants rearwardly toward said shank with a first cutting angle with respect to said longitudinal axis, said longitudinal axis and said first pair of cutting edges lying substantially in a first plane;

a second pair of cutting edges formed adjacent to said leading end of said body and being disposed in a second plane intersecting the first plane, said second pair of cutting edges having its maximum external diameter being larger than the maximum external diameter of said first pair of cutting edges and extending radially outward with respect to the longitudinal axis as it slants rearwardly toward said shank with a second cutting angle β to said longitudinal axis within a range of 5° to 30°; and

a third pair of cutting edges formed adjacent to said leading end of said drill body at a position axially nearer to said leading end than said second pair of cutting edges and being disposed in a third plane intersecting the first plane, said third pair of cutting edges having its maximum external diameter being larger than the maximum external diameter of said first pair of cutting edges and extending radially outward with respect to the longitudinal axis as it slants rearwardly toward said shank with a third cutting angle γ to said longitudinal axis within a range of 5° to 30°.

5,312,209

DRILL

Stefan Lindblom, Gavle, Sweden, assignor to Sandvik, AB, Sweden

Filed Dec. 10, 1992, Ser. No. 988,793

Claims priority, application Sweden, Dec. 16, 1991, 9103713-5

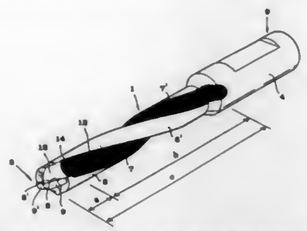
Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—230 **19 Claims**

1. Drill comprising a substantially solid shank with a first, tip-forming end having one or more cutting edges for cutting or machining of workpieces for making holes in the workpieces, an opposite second end of the shank and a number of flutes corresponding to the number of cutting edges, said flutes extending from the tip end towards the other end, said flutes being provided for forming and conveying chips from the corresponding cutting edge, said flutes having a first, chip-forming zone extending for a predetermined length from the first end and having one of a predetermined width or cross-sec-

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tional area, a second, chip-conveying zone with one of a larger width or cross-sectional area than the first zone, the connection between the first and second zones being a distinct step,



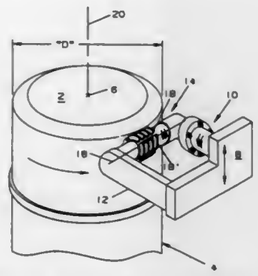
the chips after being formed in the first zone being capable of dilating in the second zone for reducing the friction-increasing force with which the chips tend to press against internal walls of the flutes and an inner wall of a hole during drilling.

5,312,210

APPARATUS FOR MACHINING TEETH

Terri L. Lovekamp, Cerro Gordo, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 3, 1992, Ser. No. 939,778
Int. Cl.[5] B23F *5/22*
U.S. Cl. 409—11 **3 Claims**



1. Apparatus for hobbing a cylindrical blank and defining spaced apart teeth extending substantially parallel to an axis passing through the center of the blank, comprising:

first means for holding the cylindrical blank and rotating said blank about its center at a preselected speed during cutting operations;

second means for holding and bringing a multiplicity of different metal working tools into contact with said blank and moving said tools in a multiplicity of directions and at a multiplicity of speeds relative to said blank;

a generating tool having an axis and a plurality of curved interrupted, spaced apart cutting teeth of a construction sufficient for cutting teeth in the blank parallel to the blank axis.

said generating tool having both ends supported by the second means and rotatable thereby about the tool axis at a preselected speed during cutting; and

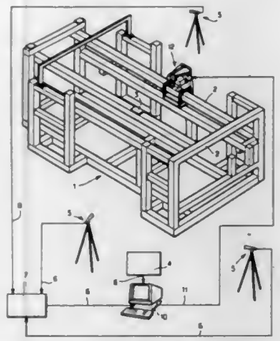
means for linearly moving said generating tool only in a direction parallel to said blank axis during cutting.

5,312,211

METHOD AND SYSTEM FOR EMBODYING A PLANE REFERENCE SURFACE DEFINED BY A SPECIFIC EQUATION ON AN ASSEMBLING FRAME OF A STRUCTURE FROM A ROUGH SURFACE

Georges J. Rodriguez, Gignac, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Apr. 23, 1991, Ser. No. 689,532
Claims priority, application France, May 4, 1990, 90 05650
Int. Cl.[5] B23C *1/20*
U.S. Cl. 409—79 **11 Claims**



1. A method for causing a rough surface on a girder of a frame structure being assembled to be machined to a plane reference surface defined by a specific equation, said method comprising the steps of:

(a) storing data relating to the equation characteristic of said reference surface in a memory means;

(b) using an optical sighting means to measure data characteristic of the position and orientation of said rough surface and using said data to calculate an equation which characterizes said rough surface;

(c) comparing the data relating to the equations of said reference surface and said rough surface in an information processing unit;

(d) positioning a mobile machining device mounted and moved on said girder of the structure frame being assembled close to said rough surface; and

(e) correcting said rough surface with the aid of said machining device to progressively make the equations characteristic of the rough surface and the reference surface coincide with each other, said machining device being controlled by specific orders according to said comparison of the respective equations characteristic of the rough and reference surfaces, said orders being provided by said information processing unit.

5,312,212

AXIALLY COMPLIANT TOOL HOLDER

John R. Naumec, Willimantic, Conn., assignor to United Technologies Corporation, Hartford, Conn.

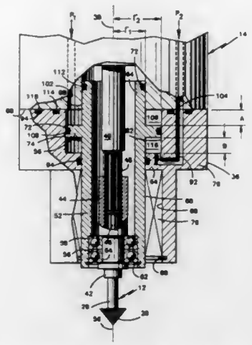
Filed Sep. 28, 1992, Ser. No. 952,429
Int. Cl.[5] B23C *3/12*
U.S. Cl. 409—138 **19 Claims**

1. A device for holding a tool in operable relationship to a programmable position controller such that the tool engages an object being worked upon, the controller including an arm, means to position the arm, a tool support frame disposed on the arm and having a longitudinal axis, a drive shaft, drive means disposed on the arm to impart rotational motion to the drive shaft, the device including:

a tool shaft assembly in operable relationship with the drive shaft such that rotational force is transformed from the drive shaft to the tool shaft assembly and such that longitudinal motion of the tool shaft assembly relative to the drive shaft is permitted within a range of compliance defined by axial limits;

means to engage the tool shaft assembly with the tool; and

force applying means adapted to position the tool shaft assembly within the axial limits and to provide an axially directed work force to the tool;



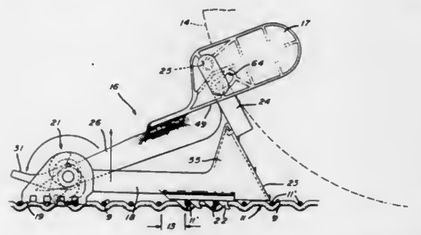
wherein the relative longitudinal motion provides axial compliance to the tool to accommodate differences between the programmed positioning of the tool and the surface of the object being worked upon, and wherein the force applying means maintains a work force throughout the range of axial compliance.

5,312,213

WHEEL CHOCKING SYSTEM FOR ARRESTING ROAD VEHICLES DURING TRANSPORTATION

Robert B. Winsor, Montreal, Canada, assignor to Holden America Inc., Montreal, Canada

Division of Ser. No. 843,122, Feb. 28, 1992. This application Dec. 17, 1992, Ser. No. 932,189
Int. Cl.[5] B60P *7/08, 3/077*; B60T *3/00*
U.S. Cl. 410—9 **9 Claims**



1. A grating member for use in combination with a wheel chocking system for restraining road vehicles being transported in a transport vehicle, said transport vehicle having a longitudinal axis and a support surface supporting said grating member to which a disengageable wheel chock having arresting studs, clamping teeth, and hooking fingers may be secured thereto to permit incremental disengageable wheel chock adjustability both longitudinally and laterally, said grating member comprising:

an elongated rectangular deck section having a substantially planar upper support structure formed from connected, equidistantly spaced, perpendicular first and second sets of parallel rods defining therebetween rectangular openings for receiving said disengageable wheel chock,

said first set of parallel rods containing upwardly formed portions between each of said second set of parallel rods, said upwardly formed portions defining a portion of said upper support structure such that said upper support structure is substantially free of trip hazards and further provides lateral engagement surfaces for said arresting studs and said clamping teeth to prevent lateral movement of said disengageable wheel chock relative to said grating,

said first set of parallel rods further disposed to support said second set of parallel rods relative said vehicle support surface providing a space to provide said clamping teeth and said hooking fingers an engagement clearance to engage a portion of said second set of parallel rods,

and said second set of parallel rods further providing longitudinal engagement surfaces for said arresting studs to prevent longitudinal movement of said disengageable wheel chock relative said grating, and

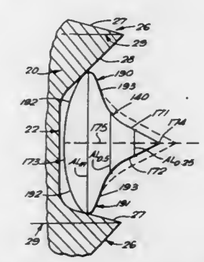
said deck section being capable of being hingedly secured in spaced parallel relationship relative to additional deck sections along the longitudinal axis of said transport vehicle and being dimensioned to accommodate the wheels of a vehicle and permitting said disengageable wheel chock to be secured thereto adjacent said wheels to restrain said wheels and said transported vehicle from moving longitudinally relative to said grating member and said support surface.

5,312,214

SECURING DEVICES

Reginald F. Morton, Liskeard, England, assignor to Multiclip Company Limited, Surrey, United Kingdom

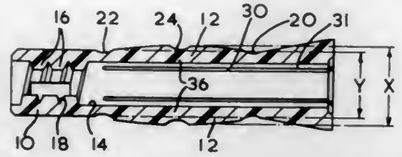
Filed Jun. 15, 1993, Ser. No. 76,632
Claims priority, application United Kingdom, Sep. 4, 1992, 9218789; Apr. 19, 1993, 9308020
Int. Cl.[5] F16B *13/04, 35/04*
U.S. Cl. 411—17 **13 Claims**



1. A spiral member for increasing the resistance to pull-out of a screw made of hard material received in a hole in a body of screw-receiving material which is of softer material than the screw, the spiral member being cylindrical or being tapered towards one end and being turned inwardly at one end or at its narrow end when it is tapered to afford a drive pin adapted to be engaged by an insertion tool insertable down the inside of the spiral member so that the spiral member can be screwed into the hole from its bottom end, characterised in that the spiral member is made of material whose hardness is less than that of the screw and greater than the hardness of the screw receiving material and in that the cross-section of the spiral member is generally triangular in shape, having a base surface which faces the axis of the spiral member and side surfaces which face outwardly from the axis and join at an apex, which may be sharp or somewhat blunted or rounded, the base surface being curved and extending out in wings or protuberances beyond the side surfaces, the side surfaces being straight or curved and the wings being rounded.

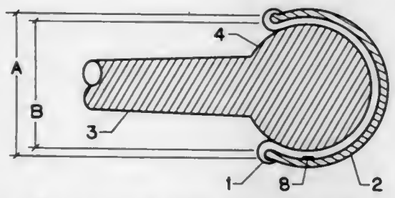
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,215
UNIVERSAL PLUG
Robert P. Anquetin, Etrechy, France, assignor to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 26,703, Mar. 5, 1993, abandoned. This application Aug. 13, 1993, Ser. No. 106,329
Claims priority, application United Kingdom, Mar. 10, 1992, 9205192.9
Int. Cl.[5] F16B 13/04
U.S. Cl. 411—38 6 Claims



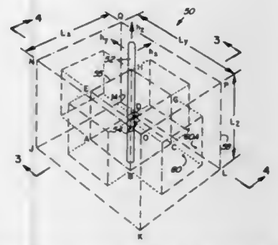
1. A plug for use in securing a screw in a previously formed hole in a workpiece comprising
a head portion having an enlarged flange adapted to engage the workpiece and a cylindrical portion
a cylindrical tail portion of substantially the same external diameter as the cylindrical portion of the head portion
four legs interconnecting the tail portion and the head portion
a substantially uniform bore extending through the head portion and the four legs to the tail portion
characterized in that
the tail portion being provided with screw engaging projections having a central bore of lesser diameter than the substantially uniform bore
the four legs being identical with each other in shape and each comprising
a first flexing portion of reduced thickness adjacent the cylindrical portion of the head portion
a second flexing portion of reduced thickness adjacent the cylindrical tail portion
a third flexing portion of reduced thickness approximately mid way between the first and the second flexing portions
the thickness of the leg increasing radially of the plug and decreasing transversely of the radial direction between the first flexing portion and the third flexing portion and between the second flexing portion and the third flexing portion, the overall outer diameter of a central portion of the four legs being slightly greater than the outer diameter of the cylindrical portion of the head portion.

5,312,216
ARITFICIAL JOINT PROSTHESIS
John M. Hogg, 122 King William, San Antonio, Tex. 78204
Continuation-in-part of Ser. No. 723,426, Jun. 28, 1991, abandoned. This application Mar. 26, 1992, Ser. No. 858,225
Int. Cl.[5] A61F 2/32
U.S. Cl. 623—22 2 Claims



1. Artificial joints comprising an implantable ball and socket prosthesis consisting of an outer cup shaped metal shell having an outer surface configured to engage a natural cotyloid cavity and a cup shaped inner surface for receipt of a complimentary shaped bearing element; an artificial cartilage to be affixed to the inner surface serving as the bearing element, the force required for popout separation is to be predetermined by the experts: a sensor means disposed in the bearing element, said sensor means including an activating means which activates when the bearing element wears to a point that the force of the joint ball head makes contact with the sensor means to activate the activating means whereby once the activating means is activated said sensor means emits and electronic signal which may be picked up by a receiver.

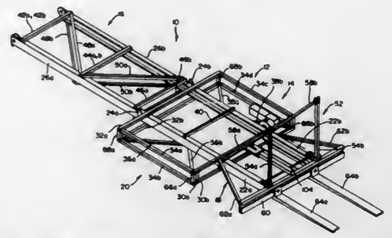
5,312,217
RESOLVED MOTION VELOCITY CONTROL
Peter D. Lawrence, Vancouver, Canada; Réal N. Frenette, Sagamihara, Japan, and Danley C. K. Chan, Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada
Filed Jun. 15, 1992, Ser. No. 898,338
Int. Cl.[5] B25J 13/02
U.S. Cl. 414—4 16 Claims



9. A control system for controlling the movement of an end point of an articulated arm in x, y and z directions comprising a resolved motion control means including a manual controller, said control means imposing a predetermined first ratio of desired end point velocity component in the x, y and z direction to manual controller displacement component in the corresponding x, y or z direction to all said components of desired endpoint velocity provided total movement of said controller in said x, y and z directions does not exceed a preselected displacement in any one of said x, y and z directions so that said end point moves in a direction corresponding to the direction of movement of said manual controller when said end point is within a preselected work space, said control means changing said ratio of desired end point velocity to manual controller displacement in at least one of said x, y or z directions for a given component of displacement of said controller when said manual controller is moved beyond said preselected displacement of said manual controller in said at least one direction to a second ratio of desired end point velocity to manual controller displacement higher than said first ratio.

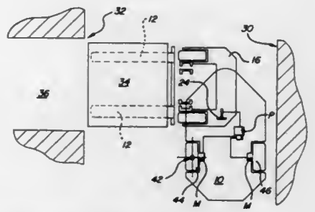
5,312,218
FOLDING APPARATUS FOR POSITIONING OBJECTS INTO STRUCTURES
Rodger D. Pratt, 5436 106th NE., Kirkland, Wash. 98033, and Michael J. Sparling, 14011 117th Pl. NE., Kirkland, Wash. 98034
Filed Jun. 9, 1992, Ser. No. 895,740
Int. Cl.[5] B66C 1/22
U.S. Cl. 414—10 18 Claims

9. Apparatus for supporting and lifting an object comprising:
a. a folding frame having a head section and a tail section, said head section mounted to said tail section so as to allow said frame to be in a first position wherein said tail section is positioned over said head section prior to the use of said apparatus, said head section mounted to said tail section so as to allow said frame to open into a section position wherein said head section and said tail section are co-planar during use of said apparatus;
b. fork means directed outwardly from said head section for receiving and supporting objects thereon;



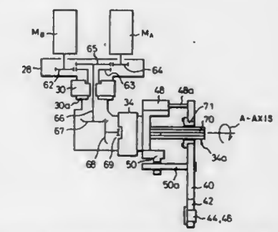
c. leveling means mounted on said frame for leveling said frame in a horizontal direction when said fork means receives and supports objects thereon; and
d. lifting means connected to said frame for lifting said frame and object.

5,312,219
NARROW AISLE LIFT TRUCK
Frederick L. Brown, Bellheath, United Kingdom, assignor to Translift Material Handling Limited, United Kingdom
PCT No. PCT/GB90/01050, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/01938, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 6, 1990, Ser. No. 820,886
Claims priority, application United Kingdom, Jul. 29, 1989, 8917414
Int. Cl.[5] B66F 9/10; B62D 53/02
U.S. Cl. 414—633 4 Claims



1. A forklift truck construction comprising:
an articulated body having a back section, a front section, and a pivot connection interconnecting said sections for enabling said front section to pivot relative to said back section, said front section including a mast having forks for elevating a load;
a pair of rear wheels mounted on said back section for rotation about a first common axis;
a pair of forward wheels mounted on said front section for rotation about a second common axis;
propulsion means including a pair of reversible independent drive motors one of which is operatively coupled to one of said rear wheels and the other of which is operatively coupled to the other of said rear wheels, said drive motors being operable to rotate said rear wheels to propel said truck in forward and rearward directions;
steering means for pivoting said front section relative to said back section to position said front section in any selected one of a number of different angular positions relative to said back section defining an associated turn angle therebetween for steering said truck;
and control means operatively coupled to said propulsion means and said steering means and responsive to changes in said turn angle for controlling rotational direction and speed of each of said rear wheels in relation to one another for steerably maneuvering said back section in relation to said front section as a function of said turn angle to supplement the steering capabilities of said steering means and thereby enhance the overall maneuverability of said truck.

5,312,220
INDUSTRIAL ROBOT WITH WORKPIECE HANDLING MEANS FOR ATTACHING A WORKPIECE TO AND REMOVING A WORKPIECE FROM A MACHINE TOOL
Nobutoshi Torii, Hachioji, and Ryo Nihei, Yamanashi, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP91/01530, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/08582, PCT Pub. Date May 29, 1992
PCT Filed Nov. 7, 1991, Ser. No. 867,102
Claims priority, application Japan, Nov. 15, 1990, 2-307271
Int. Cl.[5] B25J 9/02
U.S. Cl. 414—736 4 Claims

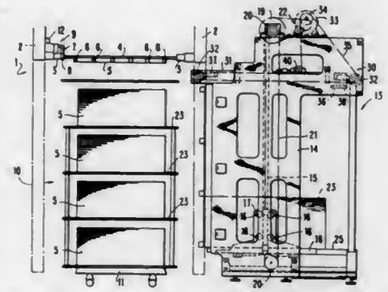


1. An industrial robot provided with a workpiece handling means for attaching a workpiece to and removing a workpiece from a chucking device of a machine tool according to instructions prestored by teaching in a robot controller, said robot comprising:
a robot body means including a casing provided with a base means to be attached to a predetermined part of said machine tool, and two built-in rotation drive means;
a first rotational output shaft projecting from the robot body means and connected to one of said two rotation drive means;
a rotational transmission shaft connected to the other rotation drive means and extended through said first rotational output shaft;
a second rotational output shaft interlocked with said rotational transmission shaft by a gear mechanism and extended perpendicularly to said first rotational output shaft;
a robot shoulder means holding said second rotational output shaft, connected to said first rotational output shaft and capable of stopping at a predetermined workpiece handling position, a standby position away from said workpiece handling position, and an optional position between said workpiece handling position and said standby position;
a suspended robot arm means having a base end connected to said second rotational output shaft to be able to move linearly in a predetermined range along an axis of said second rotational output shaft within said robot shoulder means; and
a plurality of workpiece gripping robot hand means attached to a front end of said robot arm means, and capable of being alternately located at a position opposite to said chucking device of said machine tool by a rotational action of said second rotational output shaft when said

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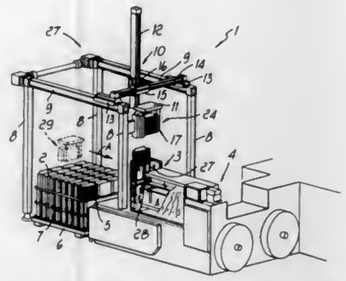
robot shoulder means is located at said workpiece handling position.

5,312,221
PILE BOARD INSERTING METHOD AND A PILE BOARD INSERTING MACHINE FOR CARRYING OUT THE SAME
Shigeo Furukawa, Chiba, and Hiromitsu Numauchi, Toride, both of Japan, assignors to Komori Corporation, Tokyo, Japan
Division of Ser. No. 686,181, Apr. 16, 1991, Pat. No. 5,240,370. This application Mar. 3, 1993, Ser. No. 25,888
Claims priority, application Japan, Jun. 1, 1990, 2-141587; Jun. 7, 1990, 2-147444
Int. Cl.[5] B65G *59/02*
U.S. Cl. 414—786 **2 Claims**



1. A pile board inserting method comprising series of steps of:
lifting pile boards supported on support brackets capable of supporting pile boards during their upward movement and of escaping pile boards during their downward movement by raising lifting bars holding the support brackets to locate a top pile board among those supported on the support brackets at a pile board inserting position;
inserting the top pile board located at the pile board inserting position into a sheet piling unit of a printing press by pile board inserting means;
generating an alarm by pile board depletion warning means upon a decrease of a number of the pile board supported on the support brackets to a predetermined number during a operation for successively locating the pile boards supported on the support brackets at the pile board inserting position by raising the lifting bars;
stopping the printing press by stopping means if a duration of the alarm exceeds a predetermined time;
continuing the upward movement of the lifting bars if a stack of pile boards is placed at a storage position and the alarm is stopped by an operator before an elapse of the predetermined time after the generation of the alarm;
lowering the lifting bars after the bottom pile board has been inserted into the sheet piling unit and the arrival of the lifting bars at the uppermost position has been detected by upper limit position detecting means;
detecting an arrival of the lifting bars at a lowermost position by lower limit position detecting means after the support brackets have escaped the bottom pile board among those stacked at the storage position;
raising the lifting bars after the lower limit position detecting means has detected the arrival of the lifting bars at the lowermost position and an automatic start switch has been operated, to locate the pile boards supported on the support brackets successively at the pile inserting position; and
sequentially repeating the foregoing steps.

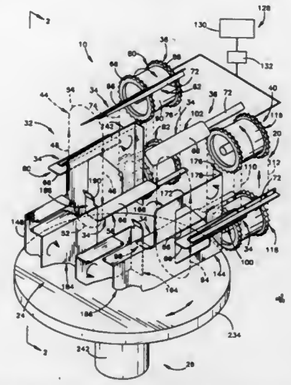
5,312,222
PROCESS AND DEVICE FOR ALIGNING STACKS OF CUTOUTS IN A PACKAGING MACHINE
Armando Neri, Bologna; Mino Cesari, Granarolo Dell'Emilia, and Maurizio Rosa, Bologna, all of Italy, assignors to G.D. S.p.A., Bologna, Italy
Continuation of Ser. No. 913,091, Jul. 14, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,160
Claims priority, application Italy, Jol. 22, 1991, 91A000269
Int. Cl.[5] B65G *61/03*
U.S. Cl. 414—788 **7 Claims**



1. Process for compacting stacks of cutouts in a packaging machine, comprising the steps of:
selectively gripping a stack of cutouts arrange din an orderly manner on supporting means by means of a grip element supported by a head of a removal and transfer unit which can move vertically and horizontally above said supporting means;
removing said stack of cutouts from said supporting means;
transferring said stack of cutouts to a compacting station fixedly mounted in a position above a station for feeding said packaging machine;
inserting said stack of cutouts in said compacting station equipped with an abutment element with inclined surfaces which has an inlet shaped complementarily to one end of said cutouts;
opening said grip element, so as to leave said stack resting on adapted supporting means;
advancing said head in a pushing direction, so as to act on said stack by means of pusher elements with inclined surfaces which are rigidly associated with said head, and making said head slide until said end of the cutouts is inserted in said inlet of the abutment element;
compacting said stack of cutouts by pushing action of said inclined surfaces of said pusher elements towards said inclined surfaces of said abutment element, the inclined surfaces of said pusher elements and of said abutment element being convergent towards said pushing direction of said head;
actuating said grip element for clamping said compacted stack; and
transferring said stack of cutouts to said station for feeding said packaging machine.

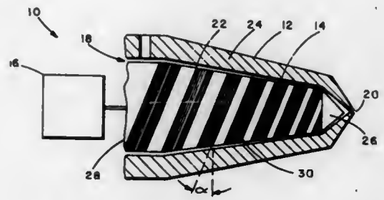
5,312,223
APPARATUS FOR STACKING SIGNATURES
Stephen R. Kleinhen, Eaton, Ohio, assignor to AM International, Inc., Chicago, Ill.
Filed Mar. 19, 1993, Ser. No. 34,360
Int. Cl.[5] B65B *35/50*
U.S. Cl. 414—788.3 **59 Claims**

1. An apparatus for use in stacking signatures, said apparatus comprising first and second pluralities of longitudinally extending signature support elements having longitudinal axes extending transversely to a vertical plane, first drive means for moving said first plurality of signature support elements along a first circuitous path, second drive means for moving said second plurality of signature support elements along a second circuitous path which is separate from the first circuitous path, said first and second drive means being disposed on a first side of the vertical plane, each signature support element of said first and second pluralities of signature support elements extending through the vertical plane and having surface means



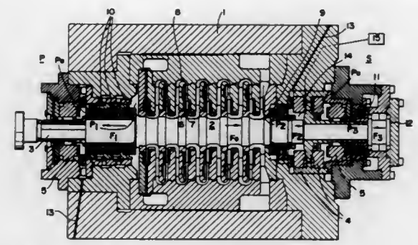
for engaging a lower side of a stack of signatures to support the stack of signatures with the stack of signatures entirely disposed on the second side of the vertical plane, and jogger means disposed on the second side of the vertical plane for jogging the stack of signatures while the stack of signatures is supported by one of the signature support elements of said first plurality of signature support elements and by one of the signature support elements of said second plurality of signature support elements.

5,312,224
CONICAL LOGARITHMIC SPIRAL VISCOSITY PUMP
John S. Batchelder, Somers; Shawn A. Hall, Pleasantville, and Robert R. Jackson, Millbrook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 12, 1993, Ser. No. 30,984
Int. Cl.[5] F04D *3/00;* **B23P** *15/00*
U.S. Cl. 415—73 **20 Claims**



1. A viscosity pump comprising:
a housing having a pump chamber and an outlet, the chamber having a section with a general conical shape, the outlet being located at a narrow end of the section; and
an impeller rotatably located in the chamber, the impeller having a generally conical section with at least one logarithmic spiral groove along an exterior of the conical section.

5,312,225
AXIALLY THRUST-COMPENSATED TURBO MACHINE
Heinrich Lorenzen, Untersiggenthal, Switzerland, assignor to Sulzer Escher Wyss AG, Zurich, Switzerland
Filed Sep. 1, 1992, Ser. No. 937,730
Claims priority, application Switzerland, Sep. 4, 1991, 02595/91
Int. Cl.[5] F01D *3/02*
U.S. Cl. 415—105 **10 Claims**



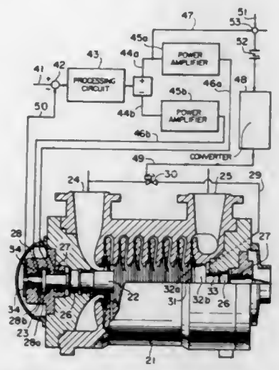
1. A turbo machine comprising:
a rotor comprising a shaft having a suction side and a pressure side;
a housing extending around said rotor along at least a portion of the length of said rotor;
first and second magnetic bearings mounted at said housing and supporting opposite respective axial portions of said shaft, said first and second magnetic bearings having respective bearing chambers with interiors;
a third magnetic bearing mounted at said housing, adjacent said first magnetic bearing, between said first and second magnetic bearings, for supporting said shaft against axial force;
seals for sealing said shaft from the interiors of said bearing chambers of said housing at said suction side and at said pressure side, comprising an arrangement for absorbing an initially produced axial force generated by a pressure difference between the suction side and the pressure side acting upon said rotor;
said seals comprise first and second dry gas seals, which act outwardly, each against said respective suction side and pressure side bearing chambers of said first and second magnetic bearings, respectively;
a further dry gas seal provided on an end of said shaft at said suction side of said housing and acting inversely relative to said first dry gas seal, wherein said further dry gas seal and at least a portion of said end of said shaft are acted upon by a seal gas pressure such that over an impingement face of said shaft end, a compensating axial force is generated which at least substantially compensates for said initially produced axial force generated by the pressure difference between the suction side and the pressure side acting upon said rotor.

5,312,226
TURBO COMPRESSOR AND METHOD OF CONTROLLING THE SAME
Haruo Miura, and Kazuo Takeda, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 9, 1992, Ser. No. 959,090
Claims priority, application Japan, Oct. 14, 1991, 3-264513
Int. Cl.[5] F01D *3/04*
U.S. Cl. 415—106 **5 Claims**

1. A turbo compressor comprising:
a rotor having a plurality of impellers arranged in an axial direction;
a magnetic thrust bearing for supporting said rotor against a thrust force acting on said rotor, said magnetic thrust bearing including a pair of thrust bearing portions pro-

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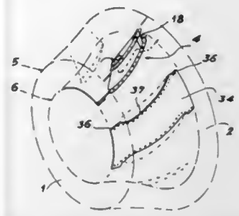
vided on opposite sides of a thrust collar provided on the rotor;
a balancing drum provided at one end side of said rotor;
a balancing chamber formed at an outer position of the compressor relative to said balancing drum;
a thrust balancing line connecting said balancing chamber to a suction line of the compressor;
a control valve provided in said thrust balancing line and operable to regulate a rate at which gas flows through said thrust balancing line to control a pressure in said balancing chamber so that a thrust force acting on said balancing drum is regulated, an opening of said control valve is controlled so that a control current for one of the thrust bearing portions at an inner position in the compressor is greater than a control current for the other thrust bearing portion at an outer position in the compressor;



a rotor position detection sensor for detecting an axial displacement of said rotor;
comparison means for comparing a signal from said rotor position detection sensor with a reference position signal;
signal processing means for converting a deviation signal form said comparison means into a control signal for controlling said magnetic thrust bearing;
amplification means for amplifying the control signal form said signal processing means into a control current for producing a desired magnetic force in said magnetic thrust bearing; and
further comparison means for comparing the control signal for the magnetic thrust bearing portion at the inner position in the compressor with a reference inner magnetic thrust bearing portion signal, the opening of said control valve being controlled on the basis of the deviation signal from said further comparison means.

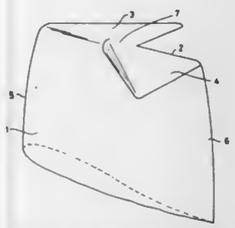
5,312,227
TURBINE CASING DELIMITING AN ANNULAR GAS FLOW STREAM DIVIDED BY RADIAL ARMS
Roland M. E. Grateau, Viry Chatillon; Alain J. E. Guibert, Savigny le Temple; Alain J. C. Henn, Le Mee sur Seine; Patrick Kapala, Claye; Jean-Pierre L. Mareix, Avon; Florence J. A. Monchois, Melun, and Michel M. Ribault, Athis Mons, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France
Filed Dec. 14, 1992, Ser. No. 990,182
Claims priority, application France, Dec. 18, 1991, 91 15692
Int. Cl.[5] F01D *1/02*
U.S. Cl. 415—209.3 **14 Claims**

1. A turbine casing, comprising:
two concentric circumferential walls defining an annular gas flow stream;
a plurality of radial arms connected to the walls along first juncture lines and extending between the two walls, wherein the walls comprise plates connected at second juncture lines;
a juncture member provided at at least some of the second



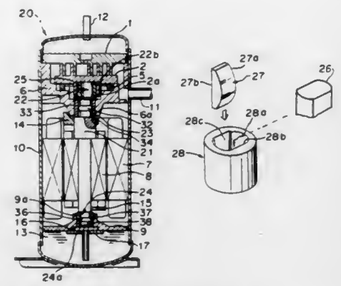
juncture lines, which includes two overlapping edges of either two of the plates, either one of the plates and one of the arms, wherein a border is secured to one of the edges and wherein the other of the edges is retained between the border and said one of the edges.

5,312,228
SHIP'S PROPELLER
Karel De Jong, Groningen; Jacob De Vries, Hoogezand, and Johan A. Sparenberg, Paterswolde, all of Netherlands, assignors to Stichting Voor De Technische Wetenschappen, Groningen, Netherlands
PCT No. PCT/NL89/00083, § 371 Date Feb. 26, 1992, § 102(e) Date Feb. 26, 1992, PCT Pub. No. WO91/07313, PCT Pub. Date May 30, 1991
PCT Filed Nov. 15, 1989, Ser. No. 836,013
Int. Cl.[5] B63H *1/16*
U.S. Cl. 416—191 **4 Claims**



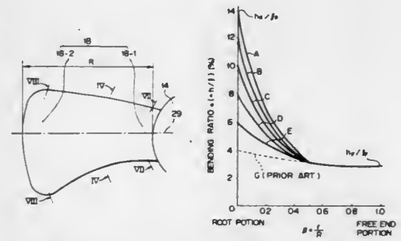
1. Ship's propeller having a propeller blade having a leading edge and a trailing edge and a free end, and end plates at said free end extending transversely of the blade on both sides of the blade, the line of attachment to the blade of each of the end plates having a chord length less than the chord length of the blade end and the lines of attachment of the end plates overlapping each other partly, one end plate extending to the blade leading edge and the other end plate extending to the blade trailing edge.

5,312,229
SCROLL TYPE COMPRESSOR HAVING CURVED BEARING SURFACES
Fumiaki Sano; Masahiko Oide; Toshiyuki Nakamura; Hiroshi Ogawa; Norihide Kobayashi; Yoshinori Shirafuji; Takashi Yamamoto, and Keiji Sakaibo, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 834,220, Feb. 12, 1992, Pat. No. 5,222,881.
This application Apr. 7, 1993, Ser. No. 43,806
Claims priority, application Japan, Mar. 4, 1991, 3-37055; Aug. 27, 1991, 3-214997
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.1 **2 Claims**



1. A scroll type compressor comprising:
a main frame;
sub frame;
bushings rotatably mounted in said main frame and said sub frame;
a crankshaft rotatably mounted in said main frame and said sub frame via said bushings, said crankshaft having an eccentric shaft portion formed thereon, wherein the main frame and sub frame are mutually spaced along the axis of the crankshaft;
a fixed scroll;
an orbiting scroll cooperable with the fixed scroll to compress gas, said orbiting scroll being drivingly mounted on said eccentric shaft portion;
an electric motor mounted between said main frame and said sub frame and having a rotor coupled to said crankshaft for driving said crankshaft;
upper and lower balance weights placed at opposite ends of said rotor for balancing orbiting movement of said orbiting scroll;
a pin connected between at least one of the bushings and the crankshaft for rotatably coupling the at least one of the bushings to the crankshaft; and
a barrel shaped band portion presenting a convex surface in at least one of a respective force direction of a compressive load generated in a compression chamber formed between the orbiting scroll and the fixed scroll, and a reactive force direction of a centrifugal load generated by a revolution movement of the orbiting scroll and rotary movements of the upper and lower balance weights, the barrel shaped band portion being formed on said crankshaft to engage at least one of the bushings through a minute gap.
2. A scroll type compressor comprising:
a rotatable crankshaft having an eccentric shaft portion formed thereon;
a fixed scroll;
an orbiting scroll cooperable with said fixed scroll to compress gas; and
bearing means rotatably connecting said orbiting scroll to said eccentric shaft portion so as to orbitally drive said orbiting scroll, wherein said bearing means comprises:
a) a bushing having an outer periphery fitted in said orbiting scroll, and
b) a non-rotatable connection between said bushing and said eccentric shaft portion, said non-rotatable connection including a portion curved in the direction of the axis of rotation of the crankshaft;
wherein the bushing is engaged with the eccentric shaft portion and rotatably mounted in orbiting scroll, and wherein the eccentric shaft portion has two flat surfaces formed on its peripheral surface at opposite sides with respect to the center thereof, the bushing having an inner peripheral surface engageable with the eccentric shaft portion, the inner peripheral surface having a flat surface formed thereon at a location corresponding to one of the eccentric shaft portion flat surfaces and a curved surface formed thereon at a location corresponding to the other eccentric shaft portion flat surface, the curved surface being curved along an axial direction.

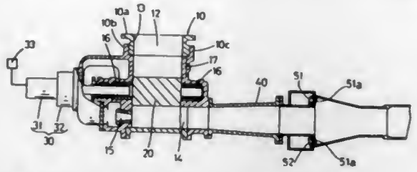
5,312,230
FAN DEVICE CAPABLE OF REDUCING THE STAGNANT FLOW AT THE ROOT AREA OF FAN BLADES
Siniti Oda, Okazaki; Shuji Komoda, Chiryu, and Yoshihiko Sonoda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Dec. 16, 1992, Ser. No. 991,190
Claims priority, application Japan, Dec. 20, 1991, 3-338667
Int. Cl.[5] F04D *29/38*
U.S. Cl. 416—234 **9 Claims**



1. A fan device adapted so as to be connected to a source of rotational movement that imparts rotational movement to the fan device, said fan device comprising:
a boss having an axis of rotation and a circumferential wall about said axis, the boss adapted for connection to the source of rotational movement so that the fan device rotates about the axis; and
a plurality of radially extending, circumferentially spaced blades connected to said circumferential wall of said boss, each blade having a root portion connected to the boss and a free end portion, each of said blades having an arc shaped cross section transverse to a radial extension of said blade, in a predetermined bending ratio of height of the arc to length of a chord of the arc;
the blade being divided into, along said radial extension, a first region away from the boss and a second region proximate the boss, the arc shape of the cross section being such that the value of said bending ratio at the first region increases from the free end portion at a substantially constant changing rate, and at the second region increases toward the root portion at a variable changing rate that is larger than the constant rate and increases as the arc shape of the cross section approaches said root portion.

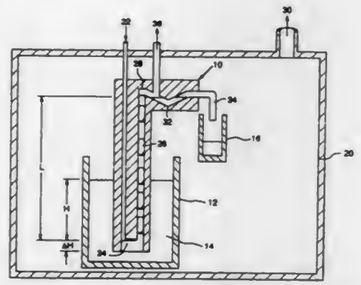
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,231
SLURRY CONVEYOR DEVICE
Kozaburo Nitta, Osaka, Japan, assignor to Engineering Corporation, Osaka, Japan
Filed Aug. 4, 1992, Ser. No. 925,373
Int. Cl.[5] F04B *23/08*; B65G *53/46*
U.S. Cl. 417—86 **11 Claims**



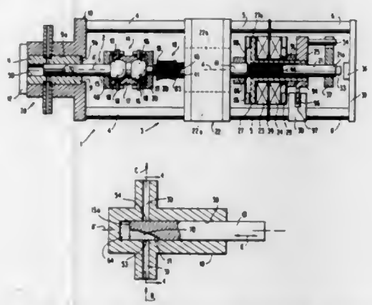
1. A slurry conveyor device comprising:
a casing incorporating a circular cross-section rotor chamber;
a rotor which fits inside said rotor chamber in said casing and which is caused to rotate by a drive means; and
a plurality of blades which extend radially from a rotating center section of said rotor and which form moving chambers inside said rotor chamber which rotate along with said rotor, wherein alternate moving chambers between said blades of said rotor are filled with rubber, said casing having an intake port which connects with said moving chambers at a slurry intake point, a discharge port which connects with said moving chambers at a slurry discharge point, and an air supply port which connects with said moving chambers at the slurry discharge point.

5,312,232
PUMP FOR MOLTEN METAL OR OTHER FLUID
James A. Horton, and Donald L. Brown, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 27, 1993, Ser. No. 67,910
Int. Cl.[5] F04F *1/18*
U.S. Cl. 417—108 **7 Claims**



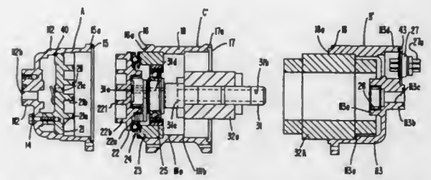
1. A pump for pumping a fluid supplied by a fluid source, which is at subatmosphere conditions, from an inlet to an outlet, the pump comprising:
a pump housing having an inlet at one end, the inlet being open to and in contact with the source of the fluid;
a channel within the pump housing through which gas may be injected into the inlet, the channel having one end open to the pump housing inlet and another end open to the outside of the housing;
a pump tube having two ends through which the fluid may be pumped within the housing, the pump tube being isolated from the channel and having a first end open to the inlet and a second end isolated from the pump outlet; and
a trap having two ends which isolates the pump tube from the pump outlet and in which the pumped fluid accumulates, the trap being connected at one end to the second end of the pump tube and at the other end to the outlet, said pump and said source being located within a chamber maintained at subatmospheric pressure.

5,312,233
LINEAR LIQUID DISPENSING PUMP FOR DISPENSING LIQUID IN NANOLITER VOLUMES
Mark N. Tanny, Brownsville; Raymond A. LeBlanc; Douglas S. Bensley, both of Springfield; Vernon W. Zeitz, N. Springfield, and John E. Barney, Springfield, all of Vt., assignors to Ivek Corporation, North Springfield, Vt.
Continuation of Ser. No. 841,146, Feb. 25, 1992, abandoned.
This application Feb. 25, 1993, Ser. No. 22,832
Int. Cl.[5] F04B *9/02, 7/06*
U.S. Cl. 417—316 **39 Claims**



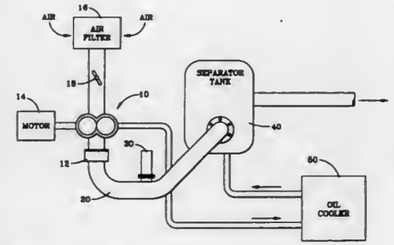
26. Linear liquid dispensing pumping apparatus for dispensing liquid in a nanoliter volumes comprising:
a rotary/reciprocating liquid dispensing pump, said pump comprising:
a relatively stationary pump housing having means defining a smooth elongated cylindrical bore sealable closed at one end of said housing, a cylindrical piston having an outside diameter slightly less than that of said bore and sealably, slidably and rotatably mounted in said cylindrical bore and defining with said housing at said sealed end, a sealed pumping chamber,
at least two circumferentially spaced, ports within said housing opening to said bore at longitudinally aligned, circumferentially spaced positions, means for supplying a liquid to be dispensed to one of said ports, said other of said at least two ports acting to discharge liquid from said pumping chamber, said cylindrical piston including in an axial end face proximate to the pumping chamber a narrow radial slot extending longitudinally away from the pumping chamber and opening to the outer periphery of the piston and selectively alignable with said two ports, said apparatus further comprising:
a frame coupled to said pump, axially aligned therewith and projecting to one side of said pump, a motor, carried by said frame, said motor including a relatively fixed stator and a hollow tubular rotor coaxial with said pump piston including an integral hollow tubular rotor shaft, and axially aligned therewith, a lead screw positioned coaxially within said motor hollow tubular rotor shaft, threadably engaged therewith, and axially aligned with said pump piston, an electromagnetic clutch/braking mechanism carried by said frame to one side of said motor, concentrically surrounding said lead screw for selectively operatably coupling said lead screw to said motor tubular rotor shaft, a flexible coupling connecting an end of said lead screw proximate to said pump to said slidably and rotatably mounted piston, an anti-backlash assembly operatively coupling said motor rotor to said lead screw, means for driving said motor tubular rotor shaft, and means for energizing said electromagnetic clutch/braking mechanism to effect selective, controlled rotation of said cylindrical piston and axial reciprocation thereof bidirectionally for delivery of a liquid to be dispensed in nanoliter amounts to said other of said at least two ports.

5,312,234
SCROLL COMPRESSOR FORMED OF THREE SUB-ASSEMBLIES
Yuji Yoshii, Takasaki, Japan, assignor to Sanden Corporation, Isesaki, Japan
Division of Ser. No. 966,399, Oct. 26, 1992, Pat. No. 5,247,738.
This application Jun. 3, 1993, Ser. No. 70,770
Claims priority, application Japan, Oct. 24, 1991, 3-278104
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.1 **1 Claim**



1. A fluid compressor comprising a compression mechanism and a drive mechanism hermetically sealed within a housing, said fluid compressor assembled by a method comprising the steps of:
(a) forming a first sub-assembly by attaching to a first housing member one or more components of a compression mechanism,
wherein said compression mechanism includes as components a fixed scroll having a first circular end plate with a centrally located valved discharge port and a first spiral element which extends outward from a surface of the first circular end plate and terminates with a first seal element; and
an orbiting scroll having a second circular end plate and a second spiral element which extends outward from a surface on the second circular end plate and terminates with a second seal element,
wherein the first and second spiral element interfit with an angular and radial offset and the first seal element mates with the surface of the second circular plate and the second seal element mates with the surface of the first circular end plate forming at least one fluid pocket which, when the fluid compressor is operating, travels centrally with decreasing volume between the scroll plates and discharges fluid through the valved discharge port of the fixed scroll into a discharge chamber accessible to the exterior of the fluid compressor through an axial hole in the housing member,
(b) forming a second sub-assembly by attaching to a second housing member one or more components of said compression mechanism and one or more components of a drive mechanism,
wherein said drive mechanism includes as components a drive shaft operably connected to a motor and rotatably supported at each end by bearings, said motor comprising a rotor fixedly surrounding the drive shaft and a stator which surrounds the rotor with a radial air gap;
a pin member which extends from and is integral with one end of the drive shaft and is operably connected to the second circular end plate whereby rotation of the drive shaft brings about rotation of the second circular end plate; and
a rotation preventing mechanism so that the orbiting scroll only orbits during rotation of the drive shaft;
(c) forming a third sub-assembly by attaching to a third housing member the remaining components of the compression mechanism and the remaining components of the drive mechanism, and
(d) assembling the first, second and third sub-assemblies by hermetically connecting and sealing the first housing member to the second housing member, and the second housing member to the third housing member such that said stator is fixedly secured between said second and third sub-assemblies, whereby components of the compression mechanism and the components of the drive mechanism within each housing member operably interconnect to form the fluid compressor.

5,312,235
APPARATUS FOR REDUCING PRESSURE PULSATIONS
Paul McHugh, Redfern, Australia, assignor to Northern Research & Engineering Corporation, Woburn, Mass.
Filed Sep. 24, 1993, Ser. No. 126,480
Int. Cl.[5] F01C *13/00*
U.S. Cl. 418—181 **3 Claims**



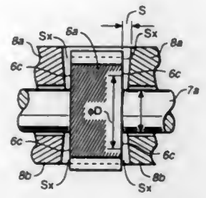
1. In combination:
a screw compressor;
a tank;
a conduit connecting the discharge of the screw compressor to the inlet of the tank; and
a compensation means for reducing the pulse amplitude of pressure pulses in the conduit, the compensation means comprising a chamber attached to the conduit;
the discharge of the screw compressor containing primary pressure pulsations, the primary pressure pulsations being reflected back to the discharge of the screw compressor as reflected pressure pulsations, the primary pressure pulsations also being reflected back from the chamber to the discharge of the screw compressor as compensating pressure pulsations, the compensating pressure pulsations combining with the reflected pressure pulsations so that the combined pressure pulsations arrive at the discharge of the screw compressor out of phase with the primary pressure pulsations thereby reducing the pulse amplitude of the pressure pulses.

5,312,236
GEAR PUMP FOR NON-NEWTONIAN FLUID
Katsuji Kishimoto, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan
Filed Apr. 6, 1993, Ser. No. 43,262
Claims priority, application Japan, May 27, 1992, 4-135172
Int. Cl.[5] F01C *1/18*
U.S. Cl. 418—206 **12 Claims**

1. In a gear pump comprising a pair of gear means with intermeshing teeth and side surfaces for force-feeding a non-Newtonian fluid, each of said gears being flanked by flanking

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members having inner surfaces opposite said side surfaces to form gaps therebetween the improvement wherein said gaps



have width which increases radially such that the kinematic viscosity is substantially uniform throughout said gaps.

5,312,237

AUXILIARY SUPPORT FOR ROAD VEHICLE TIRES

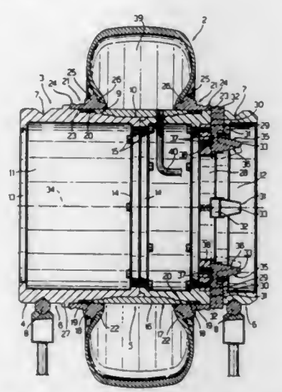
Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 966,792

Claims priority, application Italy, Oct. 31, 1991, T091A 000824

Int. Cl.[5] B29C *35/02*

U.S. Cl. 425—58 **5 Claims**



1. An auxiliary support for a road vehicle tire comprising a drum having a substantially cylindrical outer surface; two annular elements fitted in a sliding and fluidtight manner to said outer surface, said outer surface comprising an intermediate portion and two end portions; first and second stop means for confining said annular elements within said intermediate portion of said outer surface; each annular element having an outer surface mating in a fluidtight manner with a respective bead portion of a tire; at least one of said stop means being releasable from one of said annular elements; and said end portions of said outer surface defining rolling surfaces for said drum.

5,312,238

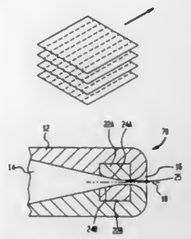
APPARATUS FOR EXTRUDING MATERIALS THAT EXHIBIT ANISOTROPIC PROPERTIES BY MEANS OF RECIPROCATING DIE SURFACES

Arthur Bross, and Thomas J. Walsh, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1992, Ser. No. 904,742

Int. Cl.[5] A21C *3/00;* **B29C** *47/00;* **B44C** *1/22;* **C23F** *1/00*

U.S. Cl. 425—131.1 **5 Claims**



1. An apparatus for extruding a polymer, such as a liquid crystal polymer, a ceramic, or composite material that is comprised of molecules or fibrils that exhibit anisotropic properties due to molecular to fibril orientation along a single axis as result of the extrusion process, comprising in combination:

a housing defining a passageway for the material to be extruded,

said passageway having a section leading to a throat opening,

said section directing the flow of material to be extruded along a flow axis;

said throat opening having a rectangular cross-section perpendicular to said flow axis;

two movable die members disposed opposite one another to form a gap through which material is extruded;

said die members each being movable in a translational, reciprocating movement along a shear axis perpendicular to said flow axis; and

means for moving said movable die members.

5,312,239

DEVICE FOR FORMING BLISTERS

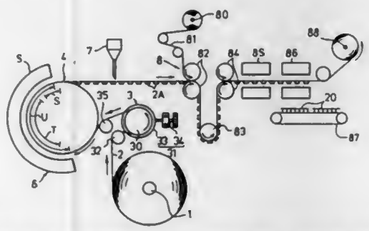
Kouzaburo Matuzawa, Tokyo, and Atsushi Fujii, Himeji, both of Japan, assignors to Matsuzawa Co., Ltd. and Idemitsu Petrochemical Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 749,493, Aug. 15, 1991, Pat. No. 5,192,484, which is a continuation of Ser. No. 406,727, Sep. 13, 1989, abandoned. This application Nov. 20, 1992, Ser. No. 979,594

Claims priority, application Japan, Sep. 14, 1988, 63-231578

Int. Cl.[5] B29C *51/10, 51/22, 51/42*

U.S. Cl. 425—214 **1 Claim**



1. A device for forming blisters comprising: a rotary forming drum around which a polypropylene web material is wound,

said rotary forming drum having an outer peripheral surface which comprises a forming section for forming blisters and a nonforming area, said forming section having a plurality of cavities provided therein with suction holes in said cavities connecting said cavities to a vacuum source, said nonforming area having a plurality of suction holes provided therein connecting said nonforming area to a vacuum source; a supply means for supplying the web material to the rotary forming drum; a heating means for heating the web material wound around the rotary forming drum, said heating means being provided adjacent the outer periphery of the rotary forming drum and extending over about half the periphery thereof; and a tension-applying mechanism for applying a tension of 5 kg/215 mm to 50 kg/215 mm to said web extending between said rotary forming drum and said supply means, said tension-applying mechanism comprising a rubber roll in contact with said polypropylene web material, a ring affixed to the outer periphery of the rubber roll and a braking rod for braking the rubber roll by engaging with the ring.

5,312,240

APPARATUS FOR FORMING A COSMETIC STICK

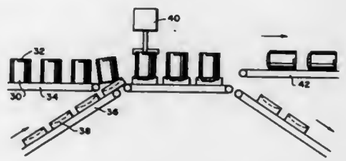
Peter A. Divone, Sr., New City, N.Y.; Angelo C. Piro, Jr., Swedesboro, N.J., and Jesus A. Urbaez, Waterbury, Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Division of Ser. No. 803,265, Dec. 5, 1991, Pat. No. 5,229,059.

This application Apr. 21, 1993, Ser. No. 50,923

Int. Cl.[5] B29C *39/06, 59/00*

U.S. Cl. 425—385 **2 Claims**



1. An apparatus for shaping an end of a solid cosmetic stick comprising:

(i) means for transporting a package body having a cavity for receiving a solid cosmetic stick, the cavity extending in a direction defined by a longitudinal axis and having an open terminal end, the body including a means for moving the cosmetic stick along the longitudinal axis;

(ii) a heated means for molding an end of the solidified cosmetic stick, the heated means being a heated cap having a mold cavity defining a selected shape and which remains with the package body as a cap therefor after cooling of the stick;

(iii) means for positioning the heated molding means to contact the package body;

(iv) a means for actuating the moving means to elevate the solidified cosmetic stick above the open terminal end of the package body to expose the stick and so as to allow contact between the stick and the heated molding means for purposes of shaping the stick; and

(v) a means for transporting the package body with the molded stick end away from the means for positioning the heated molding means.

5,312,241

HOT RUNNER NOZZLE HAVING LATERAL ELECTRODE TERMINALS

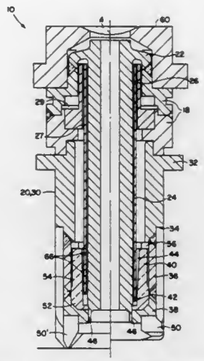
Herbert Günther, Allendorf/Eder, Fed. Rep. of Germany, assignor to Dipl.-Ing. Herbert Gunther Gesellschaft mbh, Perchtoldsdorf, Austria

Filed Aug. 17, 1992, Ser. No. 930,896

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127036

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—549 **9 Claims**



1. A hot runner nozzle for use in an injection molding machine, said machine having a casing comprised of a mold cavity plate and a mold insert, said nozzle comprising a flow tube, a broad flange body connected to and surrounding an upper portion of said flow tube, said broad flange body provided with electrode terminals, a slender shaft connected to said broad flange body and surrounding a middle portion of said flow tube, a thermally separating body connected to said slender shaft, a high-strength foot portion connected to said thermally separating body, at least one nozzle tip heat-conductingly attached to said foot portion and directed outwardly at an angle to the axis of said flow tube, said thermally separating body and said high-strength foot portion surrounding a lower portion of said flow tube and heating means enclosing said flow tube for heating said runner nozzle.

5,312,242

INJECTION MOLDING NOZZLE WITH THERMOCOUPLE TUBE

Jobst U. Gellert, 7A Prince St., Georgetown, Ontario, Canada L7G 2X1

Filed Mar. 2, 1993, Ser. No. 25,123

Int. Cl.[5] B29C *45/20*

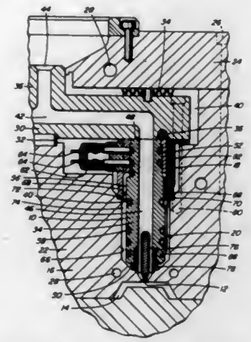
U.S. Cl. 425—549 **6 Claims**

1. In an injection molding nozzle to be mounted in a well in a cooled mold, the nozzle having a rear end, a forward end, a rear collar portion adjacent the rear end, and a central portion extending forwardly from the rear collar portion, the central portion having a generally cylindrical outer surface and the rear collar portion being larger in diameter than the central portion, the nozzle having a melt channel extending therethrough to convey melt from an inlet at the rear end towards at least one gate extending through the mold to a cavity, the nozzle having an integral electrical heating element with a spiral portion extending around at least a portion of the melt channel, the nozzle having a cylindrical locating flange extending a predetermined distance forwardly from the rear collar portion around the central portion, the locating flange having an inner surface spaced from the outer surface of the central portion by an insulative space having a predetermined width,

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the rear collar portion of the nozzle having a thermocouple bore extending therethrough from the rear end to the insulative space between the central portion and the locating flange, having the improvement wherein;

the nozzle comprises a hollow thermocouple tube extending from the thermocouple bore a predetermined distance forwardly along the inner surface of the locating flange to removably receive a thermocouple element extending into the insulative space, the thermocouple tube being spaced a



predetermined distance from the outer surface of the central portion of the nozzle

whereby in the event of a leak of pressurized melt into the insulative space around the central portion of the nozzle, the contact of the hollow thermocouple tube with the locating flange cools the melt which flows into the thermocouple tube around the thermocouple element sufficiently to freeze said melt and prevent leakage through the thermocouple tube.

5,312,243

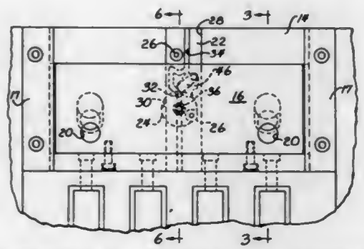
SLIDE RETAINER FOR AN INJECTION MOLD

James E. Mertz, 735 Concord St., Algonquin, Ill. 60102-2134

Filed Apr. 1, 1992, Ser. No. 861,656

Int. Cl.[5] B29C *45/44*

U.S. Cl. 425—577 **10 Claims**



1. A slide retainer for an injection mold tool, said tool having a base plate and a slide, the slide retainer including a channel insert having a channel defined therein, and a cylindrical insert having a track pin rigidly affixed thereto; means for rigidly mounting the channel insert to the base plate; means for mounting the cylindrical insert for rotational movement to the slide in opposing relationship to the channel insert whereby the track pin extends from the cylindrical insert into the channel of the channel insert; the channel defining first and second track pin regions corresponding to first slide extended and second slide retracted positions, respectively; the second track pin region including means for releasibly blocking movement of the track pin and slide therefrom; means for releasing the track pin from the blocking means whereby the slide may return to the first mold position.

5,312,244

BURNER WITH GRILLE AND HEATING INSTALLATION FITTED WITH SUCH A BURNER

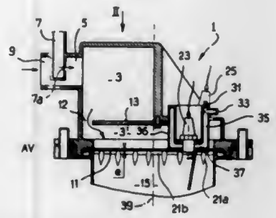
Bernard Marchand, Paris, and Philippe Morand, Livry Gargan, both of France, assignors to Gaz de France, Paris, France

Filed Dec. 17, 1992, Ser. No. 993,242

Claims priority, application France, Dec. 20, 1991, 91 15888

Int. Cl.[5] F23Q *9/00*

U.S. Cl. 431—285 **9 Claims**



1. A gas burner comprising:

means forming a first chamber into which a first supply of air and combustible gas is introduced for mixing;

means forming a second chamber located adjacent to the first chamber and sealed off therefrom for receiving a second supply of air and combustible gas that becomes mixed therein;

means for supplying separate mixtures of air and combustible gas to the first and second chambers;

means forming a third chamber located opposite the first and second chambers for combusting mixed air and combustible gas passed from either the first or second chambers;

a first flame stabilizing porous plate, separating the first and third chambers;

a second flame stabilizing porous plate separating the second and third chambers, the first and second plates located in near coplanar adjacent relation;

electrical ignition means located in the second chamber and extending through the second plate into the third chamber, the ignition means having a spark gap disposed in the third chamber for igniting the air and combustible gas mixture passed from the second chamber, through the second plate, to the third chamber, and subsequently igniting the air and combustible gas mixture passed from the first chamber, through the first plate, to the third chamber.

5,312,245

PARTICULATE TRAP FOR VERTICAL FURNACE

James P. Brannen; Richard R. Hansotte, Jr., both of Richmond, and Dieter K. Neff, Cambridge, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,542

Int. Cl.[5] F27B *15/00*; F27D *3/00*

U.S. Cl. 432—95 **20 Claims**

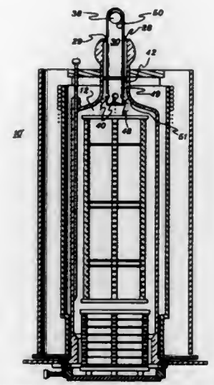
1. A contaminant trap for a vertical furnace having a process chamber with an exhaust port near an upper end of the chamber through which exhaust by-products from the process chamber may be evacuated, said contaminant trap comprising:

an enclosure having a lower portion and an upper portion that together define an interior duct;

means for attaching said enclosure to said exhaust port of said chamber such that when attached to said exhaust port, exhaust by-products in the process chamber may not be evacuated through said exhaust port around said enclosure;

said enclosure having an input opening extending therein through which exhaust by-products may pass from said process chamber into said interior duct;

said enclosure also having an output opening through which exhaust by-products in said interior duct may be evacuated; and



wherein when said enclosure is attached to said exhaust port, said lower portion of said enclosure collects particulate resulting from deposition of exhaust by-products within said interior duct of said enclosure, thereby preventing said particulate from becoming contaminant within the process chamber of the vertical furnace.

5,312,246

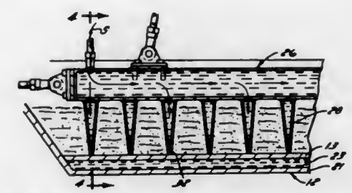
HEATING AND CONVEYING APPARATUS

J. Donald Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Aug. 20, 1992, Ser. No. 932,762

Int. Cl.[5] F27B *9/18*

U.S. Cl. 432—139 **13 Claims**



1. An apparatus for heating and conveying a granular material, comprising

an elongate trough,

an elongate framework mounting a plurality of longitudinally spaced apart and transversely directed, depending blades,

means mounting said framework so as to be aligned above said trough and for movement along a closed path of travel which includes

(a) a forward longitudinal stroke wherein said blades are disposed in said trough,

(b) a lifting stroke wherein said blades are lifted from said trough,

(c) a return longitudinal stroke wherein said blades are disposed above said trough, and

(d) a downward stroke wherein said blades are returned into said trough,

means for heating the interiors of said blades, and

drive means for repeatedly moving said framework through said closed path of travel, whereby a granular material in said trough is sequentially moved along said trough and is heated by contact with the heated blades during movement of said framework along said forward longitudinal stroke of said path of travel.

5,312,247

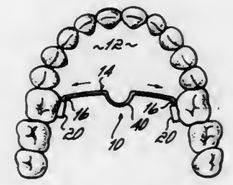
TRANSPALATAL ORTHODONTIC APPLIANCE OF SUPERELASTIC OR SHAPE-MEMORY ALLOY

Rohit C. L. Sachdeva, Plano, Tex., and Farrokh Farzin-Nia, Inglewood, Calif., assignors to Ormco Corporation, Glendora, Calif.

Filed May 21, 1992, Ser. No. 887,362

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—7 **29 Claims**



1. A transpalatal orthodontic appliance comprising:

a transpalatal force-supplying member of shape-memory or superelastic alloy having a substantially longitudinal axis and including a pair of terminal ends for connection to corresponding opposed teeth in a dental arch of a patient, said member having a predetermined activation temperature and a predetermined configuration, said member transforming to said predetermined configuration upon activation, wherein said member comprises means for exerting during transformation substantially constant corrective forces on said teeth in a dental arch along said longitudinal axis of said member.

5,312,248

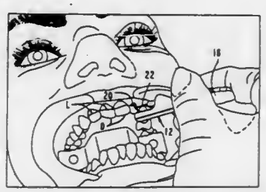
BRACKET MARKING GAUGE

Farnaz Zandkarimi, 1107 Via Alta, Burbank, Calif. 91501

Filed Apr. 5, 1993, Ser. No. 42,641

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—3 **11 Claims**



1. A device for use in marking a patient's tooth with an easily visible and removable mark at a precise distance from the occlusal surface of the tooth, comprising a body having a forward portion and a handle portion, said forward portion including:

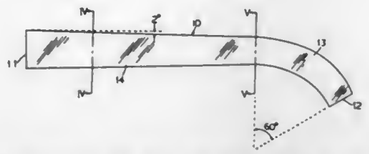
(a) a first portion defining a locating surface engagable by the occlusal surface of the tooth, and

(b) a second portion including marking means for marking the surface of the tooth at a fixed distance from the occlusal surface of the tooth, said marking means comprising a

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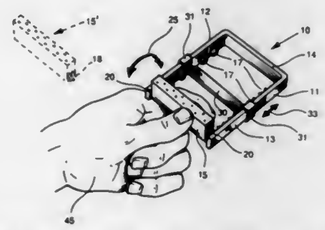
marking element that will inscribe on the surface of the tooth an easily discernible, readily removable mark.

5,312,249
UNBREAKABLE DISPOSABLE PHOTOCURING GUIDE
John Kennedy, 23 Mollison Court, Guelph, Ontario, Canada N1C 1A7
Filed Oct. 5, 1992, Ser. No. 956,380
Int. Cl.[5] A61C *1/00, 3/00*
U.S. Cl. 433—29 **1 Claim**



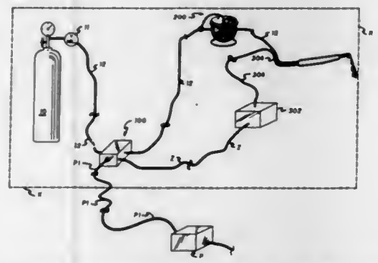
1. A method of making a disposable dental curing guide comprising,
moulding a rod member with a amorphous homopolymer material having a low refractive characteristics, said rod member having a larger cross sectional dimension at one end than a second end, and having peripheral surfaces tapering towards said second end, an arcuate bend formed in the proximity of said second end, said one end and said second end having a substantially flat end surface,
cleaning said rod member to eliminate any contamination and foreign particles on all surfaces thereof, placing said rod member in a disposable container,
sealing said container,
sterilizing said rod member sealed in said container by subjecting said container with said rod member sealed therein to radiation sterilization.

5,312,250
DENTAL TOOL HOLDER
Alan G. Ellman, and Jon C. Garito, both of 1135 Railroad Ave., Hewlett, N.Y. 11577
Filed Dec. 2, 1992, Ser. No. 984,886
Int. Cl.[5] A61G *15/00*
U.S. Cl. 433—77 **6 Claims**



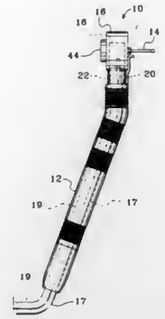
1. A holder for electrosurgical electrodes having bendable ends comprising:
(a) a frame member having an open top and bottom, said frame member comprising a rectangular member of resilient material having sides and at one side portion thereof means for supporting a tool holding member and comprising a rotary latch member,
(b) a tool holding member, said tool holding member being rotatably mounted at said means for supporting on said frame member in such manner that it can occupy a plurality of discrete positions, said tool holding member having plural means for removably receiving and holding plural tools,
(c) said frame member being configured to stably support said tool holding member when holding tools and when occupying a plurality of positions relative to the plane of the frame member,
(d) said holder being constituted of high temperature resistant materials such that it can withstand high temperature autoclaving and of chemically resistant material such that it can withstand chemical sterilization,
(e) a retainer bracket slideably mounted on said rectangular member sides and comprising one narrow element extending across said rectangular member along only the frame bottom.

5,312,251
DENTAL IMPLEMENT
Paul C. Jackson, 1903 Knollton Rd., Lutherville, Md. 21093
Filed Jun. 18, 1993, Ser. No. 77,741
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—88 **11 Claims**



1. A dental implement for use with a conventional dentist's airflow control means comprising:
means to retain medical grade nitrogen under pressure;
a primary tube means to contain and direct a flow of said nitrogen, said primary tube means defining a nitrogen flow direction downstream of said retaining means;
control means to vary the volume of said nitrogen flow, said control means being in communication with said retaining means through said tube means, and said control means further including attachment means configured to be engaged with a conventional dentist's airflow control;
means to entrain granules of aluminum oxide within said nitrogen flow, said entraining means being downstream of said control means and being in communication with said retaining means and said control means through said primary tube means, said entraining means further including a mixing chamber, a mixing chamber top, said mixing chamber containing aluminum oxide granules, a secondary tube means connected to said primary tube means at a first end and connected to said mixing chamber top and extending therethrough at a second end, and a flexible tube portion connected at said second end of said secondary tube means, said flexible portion extending a sufficient distance into said mixing chamber such that said aluminum oxide granules contained therein are agitated when said nitrogen flow passes through said secondary tube means; and
a handpiece means for directing said flow of nitrogen and said entrained aluminum oxide onto a predetermined location within a patient's oral cavity for the purpose of preparing a tooth for receiving a filling or a composite restoration, said handpiece means including a means for light transmission onto the predetermined area.

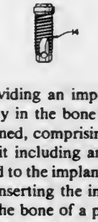
5,312,252
TURBINE FOR A DENTAL HANDPIECE
Phillip G. Abbott, Blount County, Tenn., assignor to Abbott Research Corporation, Maryville, Tenn.
Filed Jun. 10, 1993, Ser. No. 75,050
Int. Cl.[5] A61C *1/05*
U.S. Cl. 433—132 **8 Claims**



1. A turbine for a dental handpiece for selectively rotating a tool member, said turbine comprising:
a rotor housing fabricated of a ceramic material, said rotor housing defining a rotor chamber and being provided with an inlet port for placing said rotor chamber in fluid communication with a source of pressurized fluid whereby pressurized fluid is selectively supplied to said rotor chamber, and with an outlet port for exhausting said pressurized fluid from said rotor chamber, said rotor housing being provided with a rotor shaft opening communicating with said rotor chamber; and
a rotor member rotatably mounted in said rotor chamber of said rotor housing, said rotor member being fabricated of a ceramic material, said rotor member including a shaft portion defining a first end portion received through said rotor shaft opening of said rotor housing for engaging and supporting said tool member, said rotor member also including a rotor disk carrying a plurality of blade members, said rotor disk being rotatably positioned within said rotor chamber so as to be selectively rotated by the flow of said pressurized fluid between said inlet port and said outlet port of said rotor housing.

5,312,253
DENTAL IMPLANT POST AND PROSTHESIS CONSTRUCTION
Paul R. Chalifoux, Wellesley, Mass., assignor to Wellesley Research Associates, Inc., Wellesley, Mass.
Continuation of Ser. No. 814,507, Dec. 30, 1991, Pat. No. 5,197,881. This application Jun. 10, 1992, Ser. No. 896,602
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **33 Claims**

1. A dental system for insertion into a bore of a jaw bone of a patient which comprises:
a dental implant adapted to fit in a bore of said jaw bone, said dental implant having a central hole extending from a top surface of said implant through a portion of the vertical height of said implant,
at least one wing extending in a direction selected from the group consisting of (a) into said implant central hole, (b) upward from the top surface of said implant and (c) into said implant central hole and at least one wing extending upward from the top surface of said implant,
a dental post having a stem section shaped to fit into said central hole and having at least one slot to fit over a wing of said implant,



and means for positioning said at least on slot onto said at least one wing, said at least one slot and said at least one wing being shaped to prevent rotation of said post in at least one direction after said positioning.

5,312,254
STERILE APPLICATION OF IMPLANTS IN BONE
Joel L. Rosenlicht, 59 Minnechaug Dr., Glastonbury, Conn. 06033
Filed Mar. 26, 1993, Ser. No. 37,773
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **12 Claims**



1. A method of providing an implant secured to a reconstruction site in a cavity in the bone of a patient, to which a prosthesis may be fastened, comprising:
providing a sterile kit including an implant, an impression transfer pin secured to the implant and capable of use as an insertion tool for inserting the implant into a cavity provided therefor in the bone of a patient, a screw retaining the transfer pin to the implant, and a carrier for handling the aforementioned parts while beginning the process of inserting the implant into the bone;
using the carrier, starting the implant into the cavity;
dislodging the carrier from the other ones of said parts and removing the carrier from said site;
inserting the implant into its intended position in the bone, selectively utilizing an additional tool as necessary;
taking an impression of the site so as to permit preparing a model of the site;
loosening said screw and removing said screw and said pin from said implant and from said site; and
fastening a healing abutment to said implant.

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5,312,255

SCREW IMPLANT FOR A JAWBONE

Ernst Bauer, Eleonorenring 14, 6040 Bad Nauheim, Fed. Rep. of Germany

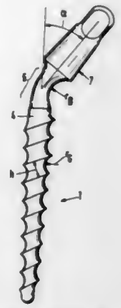
Continuation-in-part of Ser. No. 436,594, Nov. 15, 1989, Pat. No. 5,074,790. This application Dec. 23, 1991, Ser. No. 813,193

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1989, 3918309

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—174 16 Claims



1. A screw implant for a jawbone comprising a threaded conical implant body adapted to be screwed into a jawbone,

an attachment defining an implant neck and a conical implant post to accept a replacement tooth or substructure, and,

an implant shoulder being formed at the upper end of said implant body, said shoulder extending into said implant neck and defining a bending zone,

said implant post comprising a coupling area adapted to be actuated by a screwing, bending, or straightening tool,

said screw implant being defined by a single piece of a metallic material and said bending zone including means for bending by the action of said bending tool in the implanted state.

5,312,256

DENTAL IMPLANT FOR VERTICAL PENETRATION, ADAPTED TO DIFFERENT DEGREES OF HARDNESS OF THE BONE

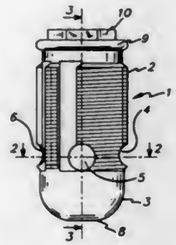
Gerard Scortecci, 10, rue du Soleil, 06000 Nice, France

Filed Oct. 13, 1992, Ser. No. 959,621

Claims priority, application France, Oct. 10, 1991, 91 12717

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—174 7 Claims



1. A dental implant adapted to be anchored in a jawbone comprising a cylindrical body with a rounded apical end provided with formations permitting internal bony regeneration for firmly securing the implant, and a basal end forming a polygonal nut, wherein the cylindrical body comprises an alternating succession of flat parts and screw-threaded parts extending lengthwise of the body of the implant, said screw-threaded parts having external helicoidal threading for increasing the contact surface of the implant with the jawbone; said screw-threaded parts being disposed at the periphery of circular sectors of the cylindrical body and said flat parts being provided by the bottoms of longitudinal grooves wherein at least one of said screw-threaded parts is wide for self-tapping and/or retention in already-tapped bone and at least one of said screw-threaded parts is narrow and serves as a guide rail during impacting.

5,312,257

COLOR-CODED TRAINING METHOD

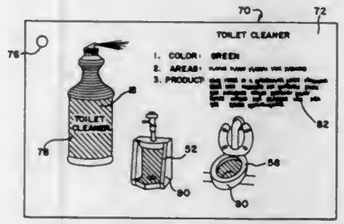
Diana J. Tarvin, Bloomington, and Ronald E. Goerne, Normal, both of Ill., assignors to 1-2-3 Training Systems, Inc, Bloomington, Ill.

Division of Ser. No. 594,726, Oct. 9, 1990, Pat. No. 5,145,377. This application Jun. 8, 1992, Ser. No. 895,096

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—219 20 Claims



1. A flash card for associating one of a plurality of different colors with one of a plurality of different objects and with at least one of a plurality of corresponding operations, comprising:

a card having a front surface and a rear surface, said front surface including a representation of said object and a representation of said corresponding operation, said representation of said object and said representation of said operation being designated with the same color of said plurality of colors so that an individual may associate a particular one of the colors with a particular one of the objects as well as with a corresponding one of said operations to learn the proper object for performing a designated operation as well as a physical location in which said operations are to be performed.

5,312,258

DRY LAND SNOWBOARD TRAINING DEVICE

John D. Giorgio, Phoenix, Ariz., assignor to Sam J. Mulay, Addison, Ill., a part interest

Filed Nov. 13, 1992, Ser. No. 976,052

Int. Cl.[5] A63B *69/18*

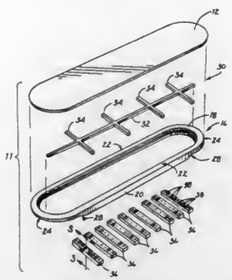
U.S. Cl. 434—253 22 Claims

1. A dry land snowboard apparatus for simulating the balance and movement of a snowboard on a non-snow surface comprising:

a substantially oblong shaped footboard having a top surface and a bottom surface;

a frame member mounted to said bottom surface of said footboard, said frame member having a perimeter which substantially corresponds to the shape of said footboard;

a support brace mounted inside of said frame member; and



a plurality of roller assemblies mounted to said frame member for enabling omnidirectional movement of said footboard along the non-snow surface.

5,312,259

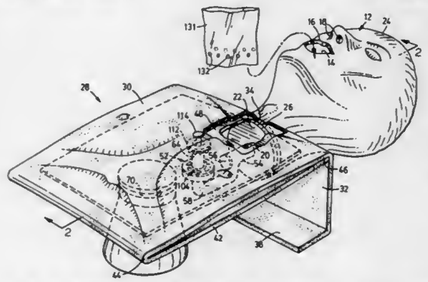
CPR MANNEQUIN

Stephen Flynn, 255 Chartwell Road, Oakville, Ontario, Canada L6J 3Z7

Filed Apr. 19, 1993, Ser. No. 47,670

Int. Cl.[5] G09B *23/30*

U.S. Cl. 434—265 4 Claims



1. A CPR mannequin for practising cardiopulmonary resuscitation of a human comprising:

a simulated human head and neck portion with an air passage extending from a mouth opening to a neck opening in an end of the neck remote from the head,

an inflatable simulated human chest portion secured to the neck and having a flexible wall member simulating a chest which rises and fall with inflation and deflation of the chest portion, said inflatable chest portion having an air capacity representative of the lung capacity of a human adult, and

a further air passage connecting the air passage in the neck to the inflatable chest portion to enable air to be blown through the mouth opening and through the air passage in the head and neck portion and through the further air passage into the chest portion to inflate the chest portion and cause the flexible chest wall member to rise,

said inflatable chest portion comprising a releasable retainer which operates before release to reduce the air capacity of the chest portion to a volume representative of the lung capacity of a human child, said releasable retainer being released by air pressure caused by continued blowing of air into the mouth opening when the chest portion has been inflated to an extent representative of the lung capacity of a human child.

5,312,260

Patent Not Issued For This Number

5,312,261

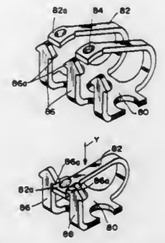
PROGRAMMABLE INPUT-OUTPUT ELECTRICAL CONNECTOR

Rodger W. Burke, Lisle; Jerry A. Long, Elgin; Paul A. Reisdorf, LaGrange, and Stephen A. Sampson, Downers Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 16, 1993, Ser. No. 17,582

Int. Cl.[5] H01R *29/00*

U.S. Cl. 439—52 3 Claims



1. In a programmable input-output electrical connector for electrically coupling a plurality of conductors with an electronic component having a plurality of circuits, the connector including a dielectric housing and a programming multi-contact bus mounted in the housing, the bus having a plurality of spring contacts normally biased into engagement with respective circuits on the electronic component, the spring contacts being individually selectively movable to inoperative positions out of engagement with the circuits, wherein the improvement comprises latch means operatively associated with the spring contacts for positively holding each spring contact individually in its inoperative position, and wherein said latch means comprise a complementary interengaging latch device between each spring contact and the connector housing.

5,312,262

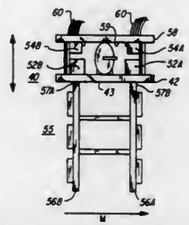
DECOUPLING TOOL MECHANISM FOR ELECTRICAL CONNECTORS

Jeff L. Bublitz, Satellite Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 23, 1992, Ser. No. 995,442

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—160 23 Claims



1. A mechanical assembly comprising;

(a) a circuit board card having at least one circuit board with at least one connector and a shoulder portion about the connector, the card adapted to be mateable at an interface to at least one connector of a receptacle;

(b) a separate plate neither mechanically attached to nor molded from the card and the receptacle, the plate posi-

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tioned about the interface of the card connector and the receptacle connector, having an upper surface portion adapted to abut against the receptacle and a lower surface to abut against the shoulder portion of the card;

(c) a rod, having first and second ends, rotatably supported by the upper surface of the plate;

(d) a rotatable arm attached to the rod between the first and second ends; and

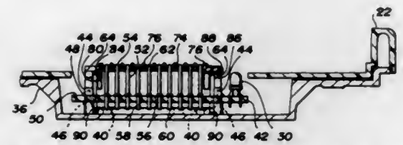
(e) a lever handle connected to one end of the rod for providing a rotational force to the arm to urge the board and the receptacle apart.

5,312,263

REMOVABLE RADIO BEZEL CONNECTOR

Thomas A. Zapalski, Canton, and Daniel C. Nagy, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 12, 1993, Ser. No. 105,237
Int. Cl.[5] H01R *13/648, 13/447*
U.S. Cl. 439—181 **20 Claims**



1. A bezel connector for repeatedly disabling an electronic circuit in a device having a grounded housing mounted to a vehicle, the bezel connector comprising:

a support member mounted to the housing;

a connector circuit board adapted to be electrically connected to the electronic circuit and mounted with respect to the support member;

a plurality of connector pins extending from the connector circuit board and spaced from each other, the connector pins being made of an electrically conductive material sufficiently rigid to resist bending thereof;

a cover member movably mounted with respect to the support member and the connector circuit board and having an electrically conductive portion, the electrically conductive portion being sufficiently exposed outside the device for discharging engagement with any potential static charge, the cover member being provided with a plurality of openings, each opening reciprocally receiving one end of a respective connector pin in a sufficiently guiding and selectively shielding relationship therewith, to continuously space the electrically conductive portion from the connector pins and to selectively shield the ends of the connector pins; and

electrically conductive means electrically connecting the housing to the electrically conductive portion of the cover member for grounding any static charge engaging the conductive portion and biasingly engaging the cover member for selectively moving the cover member away from the connector circuit board for shielding the ends of the connector pins when the electronic circuit is disabled.

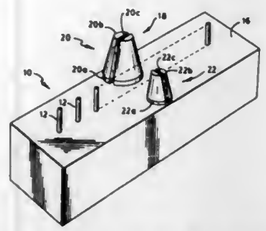
5,312,264

ARTICLE LOCATING AND CENTERING MEANS

Ronald E. Thomas, and K. Troy Alwine, both of Warren, Pa., assignors to GTE Products Corp., Danvers, Mass.

Filed Nov. 4, 1991, Ser. No. 787,359
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—247 **4 Claims**

1. An article for mounting upon a substrate, said article including a mounting plane having locating and centering means thereon, said locating and centering means comprising: first and second spaced apart, depending lugs, each of said lugs tapering from a first diameter proximal said mounting plane to a second diameter, narrower than said first diameter, distal said mounting plane; said first lug having a longitudinal slot extending its length in a given direction and said second lug having a longitudinal slot extending its length in a direction orthogonal to said given direction.

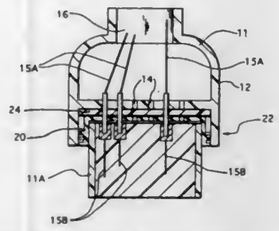


5,312,265

ELECTRICAL CONNECTOR SUITABLE FOR USE WITH VARIABLE NUMBERS OF ELECTRICAL CONDUCTORS

Jean E. Fiori, and Michael R. Strong, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 10, 1992, Ser. No. 926,443
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—271 **3 Claims**



1. An electrical connector accommodating a variable number of electrical conductors constituting a first set of conductors, where said connector comprises

a housing having interior and exterior surfaces and formed from an electrically insulating material, said housing comprising (1) an aperture for entry of a mating connector containing a second set of conductors intended to connect with corresponding members of said first set, and (2) a number of parallel conductor passages for said first set of conductors, said passages being opposed with respect to said aperture,

a layer of a penetrable, non-self-healing material adhered to the surface of said housing containing said passages and covering all of said passages, and

a gasket comprising a layer of cured elastomer located adjacent to the interior surface of said housing opposing said aperture, where said gasket contains an array of holes aligned with said passages and forms a seal against at least one surface of said mating connector, and

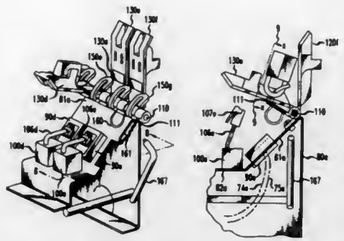
where said layer is continuous and uninterrupted prior to entry of said first set of conductors into said passages.

5,312,266

TAMPERPROOF INTERCONNECTION APPARATUS

Bassel H. Daoud, Parsiappany Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 9, 1992, Ser. No. 987,938
Int. Cl.[5] H01R *13/447*
U.S. Cl. 439—304 **5 Claims**



1. A building entrance protector unit comprising support means comprising a network section and a subscriber section, a plurality of electrical conductor means extending in said unit from said network section to said subscriber section and connectable in said network section to corresponding first electrical wires from a telephone network, a plurality of protector devices coupled in said network section with said plurality of conductor means to reduce their capacity to conduct voltage surges appearing on said first wires, a plurality of terminals disposed in said subscriber section and connectable to second electric wires from telephone stations of subscribers, a plurality of electrical connectors electrically coupled in said subscriber station with said plurality of conductor means and terminals to provide interruptible electrical connections between ones of said first wires and corresponding ones of said terminals, a plurality of access control means in said subscriber section which respectively correspond to said connectors, and of which each access control means is independently selectably movable by hand between first and second positions at which, respectively, said access control means impedes and freely permits access to the corresponding connector, a plurality of fastening means which respectively correspond to said plurality of access control means, and to each of which fastening means is attachable a padlock by closing of said padlock on that means, each of said fastening means having an enabled condition and a disabled condition in which, respectively, said fastening means with a padlock thereon locks its corresponding access control means in its first position, and said fastening means with or without said padlock is incapable of so doing, and in which said unit further comprises override means having control means therefor in said network section and selectably operable by actuation of said control means to change each said fastening means between said enabled and disabled condition therefor, said unit still further comprising means selectably effective when each of said fastening means is in said disabled condition to permit removal from that fastening means of a padlock closed thereon while that padlock remains closed.

5,312,267

SOCKET FOR THE USE OF ELECTRIC PART

Noriyuki Matsuoka, Yokohama, and Masanori Egawa, Sendai, both of Japan, assignors to Yamaichi Electric Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,461
Claims priority, application Japan, Apr. 30, 1991, 3-126697
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—331 **2 Claims**

1. A socket for receiving an electric part, comprising:

a socket body of synthetic resin material;

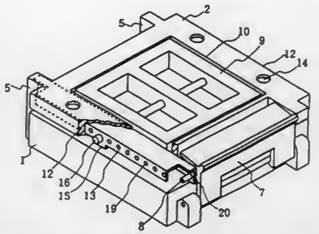
a presser cover of a synthetic resin material;

hinge means hingedly connecting one end of said presser cover to one end of said socket body;

said presser cover having a synthetic resin frame defining an opening therethrough at a position corresponding to a portion where an electric part is to be placed on said socket body;

metal frames embedded only in parts of said synthetic resin frame and extending from said one end having said hinge means thereon towards a free end of said synthetic resin frame, said synthetic resin frame having at least one hole therein extending from a surface of said synthetic resin frame to at least one of said metal frames and through which said at least one metal frame is exposed to said surface of said synthetic resin frame; and

a presser member positioned within said opening in said presser cover and having a shaft on which said presser member is mounted, said shaft extending into said synthetic resin frame and being supported in said metal frames.

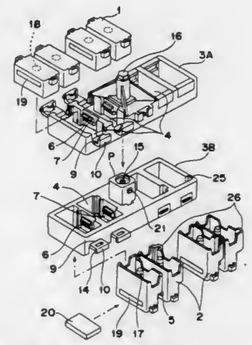


5,312,268

MULTI-ELECTRODE CONNECTOR

Tatsuya Sumida, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 841,620, Feb. 25, 1992, abandoned.
This application Apr. 21, 1993, Ser. No. 49,653
Claims priority, application Japan, Feb. 28, 1991, 3-57899
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—364 **6 Claims**



1. A multi-electrode connector, comprising;

a plurality of male unit connectors having retaining portions formed thereon;

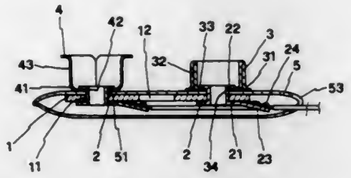
a plurality of female unit connectors having retaining portions formed thereon;

a first connector frame having windows formed therein, said male unit connectors being individually received and retained in said first connector frame;

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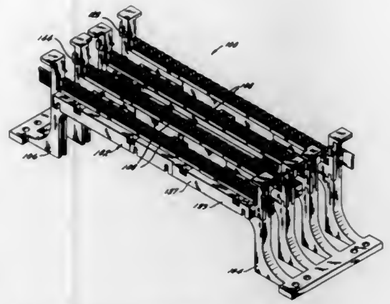
a second connector frame having windows formed therein, said female unit connectors being individually received and retained in said second connector frame;
lid-like retaining pieces provided at a side of each of said connector windows so as to be engaged with said retaining portions when said male unit connectors and said female unit connectors are respectively received in said windows; and
a mechanical forcible fitting mechanism coupled to said first and second connector frames so as to maintain a connected state between said female unit connectors and said male unit connectors.

5,312,269
BATTERY SNAP
Steve H. S. Hwang, 5F, No. 3-1, Lane 191, Young Ho Rd., Chung Ho City, Taipei Hsien, Taiwan
Filed Apr. 20, 1993, Ser. No. 49,990
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—500 **1 Claim**



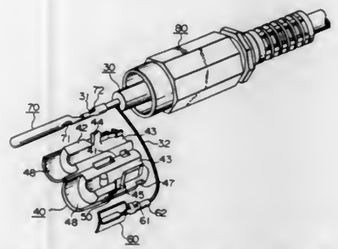
1. A battery snap comprising:
a plate made from a non-conductive material in a flat shape, having two terminal holes spaced according to the pitch between the socket and plug terminals on either end of the battery to be connected;
two conductive rivets, each conductive rivet comprising a cylindrical rivet body upstanding from a flat head thereof at the center, and a horizontal extension strip with symmetrical wing leaves at one side for fastening the conductor of a respective electric wire , the rivet body of each rivet being received in a respective terminal hole of said plate;
a cylindrical plug fastened to the cylindrical rivet body of one of said two conductive rivets for connecting the socket terminal of the battery, said cylindrical plug comprising an outward horizontal flange and an inward horizontal flange respectively extended from a hollow cylindrical plug body thereof at the bottom, and a center through hole through the inward horizontal flange through which the cylindrical rivet body is inserted and then hammered down to form another head;
a cylindrical socket fastened to the cylindrical rivet body of the other one of said two conductive rivets for connecting the plug terminal of the battery, said cylindrical socket comprising a center through hole through which the cylindrical rivet body is inserted and then hammered down to form another head, and petaled border portion around a socket body thereof at the top; and
an insulative covering comprised of an upper portion and a lower portion peripherally sealed to hold said insulative plate and said conductive rivets on the inside and having a wire hole for inserting the electric wires, said upper portion having terminal holes through which the cylindrical rivet body of either conductive rivet passes.

5,312,270
WIRING BLOCK HAVING DETACHABLE LEG ASSEMBLIES
John A. Slemon, Woodbury, and Howard Reynolds, Plainville, both of Conn., assignors to The Slemon Company, Watertown, Conn.
Filed Aug. 25, 1992, Ser. No. 934,923
Int. Cl.[5] H01R *9/24*
U.S. Cl. 439—532 **22 Claims**



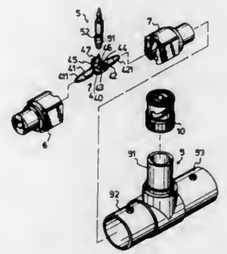
1. A wiring block comprising:
at least one wiring strip, said wiring strip including,
(1) a generally rectangular member having first and second pairs of opposing surfaces, and
(2) a plurality of spaced apart teeth extending normally upward from one of said first surfaces, said teeth defining a plurality of wire retaining slots, said teeth having a channel in opposing sides thereof, said adjacent channels defining a plurality of openings;
a base having first and second pairs of opposing surfaces, said base having opposing ends, said at least one wiring strip removably disposed on one of said first surfaces; and
leg means removably attached to said base at each of said ends.

5,312,271
PIN PLUG
Hiroichi Matsumoto, and Masaki Matsukawa, both of Tokyo, Japan, assignors to SDK Company, Ltd., Tokyo, Japan
Filed Nov. 3, 1992, Ser. No. 971,180
Claims priority, application Japan, Aug. 10, 1992, 4-070333[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—578 **3 Claims**



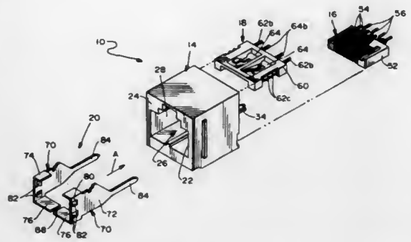
1. A pin plug for connecting a cable having a first conductor and a second conductor, comprising:
a substantially cylindrical insulator body having a through hole formed therein and a cylindrical sleeve portion formed integrally with and extending from a tip end portion of said insulator body, said cylindrical insulator body comprising a first lateral portion and a second lateral portion, said insulator body being made of rigid resin;
said insulator body including an opening formed in a part of the circumference of said sleeve portion and said insulator body;
a metal center pin fixed in said through hole, a first end of said center pin projecting beyond said sleeve portion, a second end thereof being conductively connected to said second conductor;
a flexible metal contact piece conductively connected to said first conductor; said flexible metal contact piece being mounted in said opening so as to be substantially on the circumference of said sleeve portion and so as to be radially moveable relative to said sleeve portion; and
a non-rigid resin cover engaged with the outside of the insulator body, the sleeve portion and the contact piece.

5,312,272
BNC T-TYPE ADAPTER
Yang-Chuan Lai, No. 44, Lane 627, Sec. 5, Chung-Hsin Rd., San-Chung City, Taipei Hsien, Taiwan
Filed Jun. 10, 1993, Ser. No. 74,660
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—582 **9 Claims**



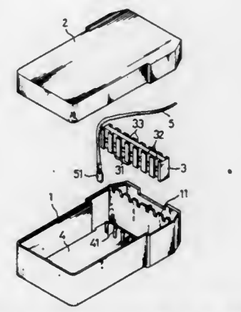
1. A BNC T-type adapter including
a T-shaped hollow housing with a common branch and left and right branches that extend from two sides of said common branch and that are communicated with said common branch, said common branch having a twist-lock member secured thereon,
an internal conductor disposed in said housing and including a vertical conductor that extends into said common branch and a horizontal conductor that is connected to said vertical conductor and that has left and right parts which extend respectively into said left and right branches, and
two insulator units sleeved respectively around said left and right parts to position properly said horizontal conductor within said housing,
wherein the improvements comprise:
said horizontal conductor further having a plate-like intermediate part provided with a retaining projection that protrudes upwardly therefrom and a pair of rectangular plates that project upwardly from two sides thereof, each of said rectangular plates being formed with an inwardly and downwardly inclining resilient fin; and
said vertical conductor having an intermediate section that is clamped between said resilient fins and a lower end that engages said retaining projection.

5,312,273
SHIELDED MODULAR JACK
Marcel D. Andre, Vert Saint Denis; Christophe Bouchan, Longjumeau, and Pascal Grandclaude, Suresnes, all of France, assignors to Molex Incorporated, Lisle, Ill.
Filed Jul. 6, 1993, Ser. No. 88,300
Claims priority, application European Pat. Off., Aug. 11, 1992, 92113642.0
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—607 **9 Claims**



1. In a shielded modular jack for interfacing a modular plug with a printed circuit board, the plug having an external conductive shield thereon, and the jack including a dielectric housing having a plug-receiving cavity, a plurality of terminals mounted on the housing with resilient cantilevered contact arms extending into the cavity for engaging respective contacts of the plug when the plug is inserted into the cavity, wherein the improvement comprises an electrically conductive shield means including at least a pair of electrical isolated shield portions each having a board contact projecting beyond the housing for contacting a circuit trace on the printed circuit board and a shield wall disposed in the plug-receiving cavity of the housing for electrically contacting the shield on the plug when the plug is inserted into the cavity, whereby insertion of the plug into the cavity electrically couples the shield portions and, thereby, establishes electrical continuity between the circuit traces on the printed circuit board.

5,312,274
CONTROLLER OF DECORATIVE LIGHT SETS
Shuan-Guan Tsao, No. 61-10, Ta-Tsuo, Ta-Tsuo Li, Chunan, Miaoli, Taiwan
Filed Jan. 22, 1993, Ser. No. 8,351
Int. Cl.[5] H01R *17/00*
U.S. Cl. 439—660 **2 Claims**



1. A controller for decorative light sets comprising:
(a) a box member forming an open internal chamber for

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placement of an IC board having a plurality of vertically directed conductors extending therefrom;

(b) a substantially planar stand member located within said internal chamber of said box member between said plurality of conductors and an end wall of said box member, said stand member having a plurality of transversely extending notches formed within an upper surface thereof for insertion therein of a plurality of electric wires;

(c) a cover member for engagement with an upper section of said box member for closing said box member and forming a closed internal chamber; and,

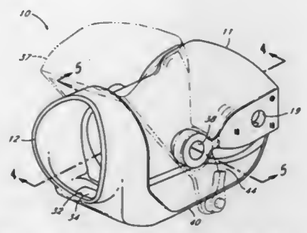
(d) a connector member insertable within said box internal chamber for positional location between said plurality of conductors and said stand member, said connector member having a plurality of vertically directed sets of flutes extending in a transverse direction, each of said sets of said flutes having an upper flute portion and a lower flute portion divided by a connector lug member extending from a side surface of said connector member, said electric wires passing within at least one of said notches and within at least an upper flute portion, over said connector lug member and into said lower flute portion, terminating in a metal terminal of said electric wires for contact with at least one of said conductors.

5,312,275

JET BOAT DIVERTER NOZZLE WITH BUILT-IN RIDE PLATE

Frank Place, 3107 Sunnywood Dr., Fullerton, Calif. 92635

Filed Jan. 11, 1993, Ser. No. 2,810
Int. Cl.[5] B63H *11/00*
U.S. Cl. 440—41 **6 Claims**



1. A diverter nozzle assembly for use on jet boats, said diverter nozzle assembly having an entrance end and an exit end, said diverter nozzle assembly comprising:

a generally cylindrical diverter nozzle having a generally cylindrical inner surface portion having an inside diameter and an outer surface and a side wall, a nozzle entrance end and a nozzle exit end, said inner surface forming a water stream directing path and said inner surface having a central axis;

a collar at the nozzle entrance end of said generally cylindrical nozzle, said collar having a generally cylindrical inner surface and an outer surface, a forward edge and a nozzle edge, the generally cylindrical collar inner surface having a larger inside diameter than the inside diameter of the generally cylindrical inner surface portion of the diverter nozzle and the collar inner surface communicating with the inner surface of said generally cylindrical diverter nozzle, said collar including means for attachment to a jet boat pump outlet;

a reversing chamber at the exit end of said generally cylindrical diverter nozzle, said reversing chamber having an inner surface, an outer surface, a top, a bottom and a right side and a left side, the inner surface of said reversing chamber extending outwardly from the inner surface of said generally cylindrical diverter nozzle, said reversing chamber having a reversing passage having an inlet at the inner surface and at the bottom of the reversing chamber and said reversing passage having an outlet at the outer surface of the reversing chamber and at the bottom thereof, and said reversing passage outlet having a forward edge and an exit edge; and

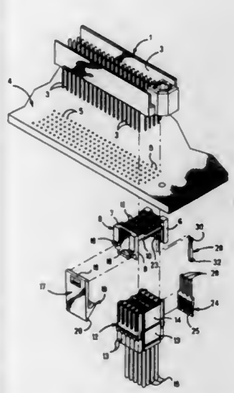
a ride plate extending from the forward edge of said reversing passage outlet to the forward edge of the collar, said ride plate having a flat portion which is generally horizontal when the central axis of said generally cylindrical portion of said diverter nozzle is horizontal and said flat planar portion curving upwardly to the forward edge of the collar and said flat planar portion extending rearwardly and said ride plate extending to a line of intersection with said forward edge of said reversing passage outlet, whereby the ride plate provides a quicker planing action to the boat to which it is attached and virtually eliminates drag from the reversing passage.

5,312,276

CONNECTOR POLARIZING STRUCTURE

Robert J. Hnatuck, and John R. Shuey, both of Mechanicsburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 19, 1993, Ser. No. 35,132
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—681 **14 Claims**



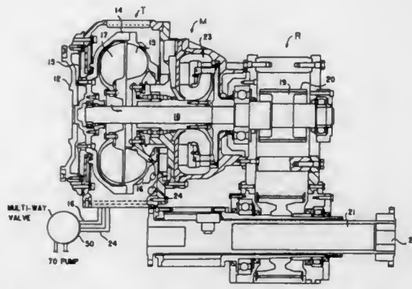
1. An electrical connector assembly comprising: a header with side walls and a bottom through which conductive pins extend, keying elements in at least one of the walls of the header, at least one electrical connector for connection to some of the pins, at least one external key on the connector being received by the keying elements to align the connector for connection with selected pins, the key being removable for replacement by another key, a combination of removable fingers of the key comprising; multiple fingers on the key linked together on a clip, each of the fingers being constructed to be removable from the clip, at least one finger remaining on the key following removal of at least a second finger from the clip, the remaining finger being received by the keying elements, at least one plug mounted to one of the keying elements in place of the second finger that is absent from the clip, and latches on the connector latching the clip removably to the connector, whereby the clip is removable from the connector for replacement by another clip.

5,312,277

METHOD AND APPARATUS FOR POWER TRANSMISSION TO A SURFACE DRIVING PROPELLER MECHANISM AND USE OF A TURBINE BETWEEN THE DRIVING ENGINE AND PROPELLER MECHANISM

Jorgen Selmer, Nesoya, Norway, assignor to CPS Drive, Nesoya, Norway

PCT No. PCT/SE90/00823, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/08946, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 12, 1990, Ser. No. 861,790
Claims priority, application Sweden, Dec. 13, 1989, 8904200-6
Int. Cl.[5] B63H *23/26*
U.S. Cl. 440—75 **11 Claims**



1. A device for transmitting power in a planing boat comprising:

a motor having a supercharging assembly such that said motor has a maximum output at speeds in excess of a supercharging speed at which said supercharging assembly of said motor is actuated;

a gear with a surface water-driving planing-type propeller mechanism mounted on an input shaft which is driven by said motor;

a turbine coupling mounted between said motor and said gear which said turbine coupling can be filled with a fluid to a variable extent from 0 to 100%, said turbine coupling including a pump portion driven by said motor and a turbine portion connected to said input shaft of said gear and variably coupled to said pump portion by the amount of fluid filling said turbine coupling;

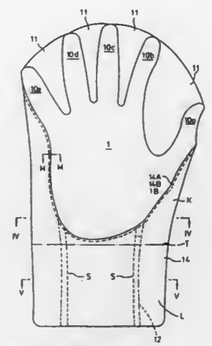
a fluid means for emptying said turbine coupling of the fluid when said motor is started so that said turbine portion is substantially disconnected from said pump portion and hence said motor is at least almost fully disconnected from said gear and so that the started motor is accelerated to a first speed in excess of the supercharging speed and for filling said turbine coupling quickly with the fluid while said motor is run at the first speed so that said pump portion is coupled to said turbine portion and hence said motor at the first speed to drive said propeller mechanism, such that the boat is accelerated with the driven propeller mechanism by a substantially maximum motor output until a minimum planing speed is exceeded and thereafter at least one of the first speed of said motor or the filling of said turbine coupling with the fluid is reduced while still maintaining at least the minimum planing speed of the boat.

5,312,278

SWIMMING GLOVE

Wu R. Jen, No. 32, Alley 118, Lane 174, Sec. 2, Ta Kuan Road, Pan Chiao Taipei, Taiwan

Continuation-in-part of Ser. No. 950,287, Sep. 24, 1992, abandoned. This application Sep. 15, 1993, Ser. No. 120,786
Int. Cl.[5] A63B *31/10*
U.S. Cl. 441—57 **1 Claim**



1. A swimming glove, comprising:

a glove body to fit a hand of a wearer of said swimming glove;

five finger sheaths extending from one end of said glove body;

webs joining adjacent ones of said five finger sheaths;

a sleeve extending from an opposite end of said glove body, said sleeve having a length corresponding to a front half part of a forearm of said wearer to fit said front half part of the forearm;

said glove body, said five finger sheaths, said webs, and said sleeve being made with a woven fabric into one unit;

a blade extending bilaterally outward from said sleeve, said glove body, a first finger sheath and a fifth finger sheath, said blade being curved inward toward a rowing direction and having a first area fixedly joined to said first finger sheath, said fifth finger sheath and said glove body; said blade further having a second area fixedly joined to a forward side of said sleeve, said first area of said blade having a thickness smaller than said second area of said blade, said blade being made of a flexible material having a stiffness greater than said woven fabric;

said blade have two longitudinal connecting lines along said sleeve, to enable outer parts of said second area of said blade to turn toward the rowing direction of the hand upon each return stroke, said connecting lines being formed by making cuts at a proper depth on a back side of said blade opposite to the rowing direction of the hand.

5,312,279

VACUUM FLUORESCENT DISPLAY AND MANUFACTURING METHOD THEREOF

Cheol-hyeon Jang, Pusan, Rep. of Korea, assignor to Samusung Electron Devices Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Jan. 9, 1992, Ser. No. 818,353
Claims priority, application Rep. of Korea, Oct. 12, 1991, 91-17995; Oct. 12, 1991, 91-17996
Int. Cl.[5] H01J *9/18*
U.S. Cl. 445—24 **1 Claim**

1. A method for manufacturing a vacuum fluorescent display comprising the steps of:

forming a plurality of signal lines on a substrate;

arranging a connector for each signal line along one edge of said substrate;

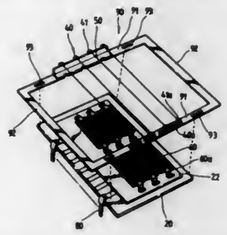
VOL 1162 ISS 3 MY 17 1994 UMI

forming a segment in a predetermined pattern and electrically connecting said segment to a corresponding one of said plurality signal lines;

fixing a grid having fixing means on each end over said substrate on which said segment is formed, using a conductive adhesive, so that said grid is spaced from said segment by a predetermined height while being electrically connected to a corresponding one of said plurality of signal lines;

coupling a pin lead to one edge of said substrate where each of said connectors of said signal lines are provided, for electrically connecting said pin lead with said segment and grid, and completing the formation of a first functional layer on said substrate;

manufacturing a pair of stands for supporting a filament which supplies thermoelectrons at a regular interval, said pair of stands being positioned over said grid;



forming a hollowed-out rectangular stationary base composed of at least a pair of parallel setters which support said stands as a medium for fixing said stands and are long enough to extend beyond sides of said substrate, and spacing strips shorter than said width between the other sides of said substrate for maintaining the interval between said setters;

fixing said stands to said setters of said base;

completing a second functional layer including said filament by welding said filament to said stands;

securing said base to said substrate by fixing said second functional layer to a first functional layer of said substrate, such that said filament extends crossing said signal lines, and said spacing strips are positioned on the outer portion of said substrate; and

removing said spacing strips for allowing said setters extending outwardly from said substrate to serve as a lead for said filament, and completing the formation of both functional layers on said substrate.

5,312,280

CAROUSEL-BORNE CRT PARTICLE-PURGING SYSTEM

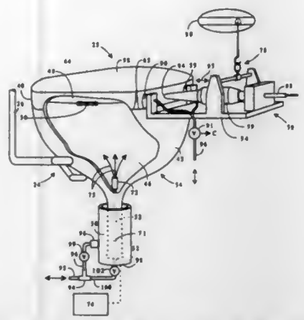
Anthony A. Kloba, Lombard, and Gerald T. Syster, West Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 7, 1993, Ser. No. 44,313
Int. Cl.[5] H01J *9/20*
U.S. Cl. 445—59 **15 Claims**

1. A carousel-borne CRT particle-purging system for dislodging particles from within the envelope of a CRT carried on a conveyer, comprising:

a) a vibrator for imparting vibration to the envelope;

b) releasable attachment means for releasably attaching the vibrator to the envelope; and



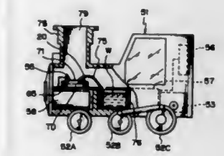
c) means for traversing the vibrator on the conveyor in operative conjunction with the envelope.

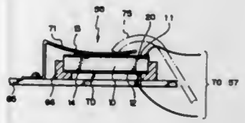
5,312,281

ULTRASONIC WAVE NEBULIZER

Minoru Takahashi; Makoto Ono, both of Chiba, and Asako Yamamichi, Kanagawa, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,690
Claims priority, application Japan, Dec. 10, 1991, 3-109577[U]; Feb. 29, 1992, 4-019361[U]; Apr. 1, 1992, 4-108616
Int. Cl.[5] A63H *19/14, 17/26;* **B05B** *1/08*
U.S. Cl. 446—25 **11 Claims**





1. An ultrasonic wave nebulizer comprising;

a piezoelectric vibrator having a pair of electrodes on respective surfaces of the vibrator and defining an operation surface on one of the surfaces,

a holder for holding said vibrator,

a thin plate member having a plurality of small holes having at least a portion located close to said operation surface so that an essential gap space is provided between said portion of the plate member and the operation surface of the vibrator and thin liquid film is provided in said gap space through capillarity,

supply means for supplying liquid to said gap space,

a high frequency generator for exciting said vibrator,

connecting means for connecting said generator to said electrodes of the vibrstor,

said vibrator vibrating in the thickness direction of the vibrator upon being excited with high frequency power between said electrodes to convert said thin liquid film to mist, WHEREIN THE IMPROVEMENT COMPRISES:

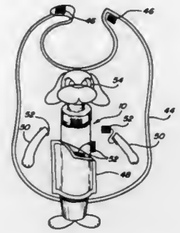
said high frequency generator exciting said vibrator intermittently with a predetermined duty ratio.

5,312,282

BABY BOTTLE AND BIB STRUCTURE

Lynn Cooper, 219 Willis, Royal Oak, Mich. 48067

Filed Apr. 23, 1992, Ser. No. 872,452
Int. Cl.[5] A63H *3/33, 33/00*
U.S. Cl. 446—27 **5 Claims**



1. A baby bottle structure forming a doll for use by a baby comprising:

central housing forming the body portion of said doll;

top portion removably attached to an end of said central portion and forming the head of said doll;

base portion removably attached to an end of said central portion opposite said top portion, said base portion forming the feet of said doll;

means for supporting said doll about a baby;

said support means comprising:

a bib;

a receptacle removably attached to said bib and supporting said bottle on said bib, said receptacle forming clothing for said doll; and

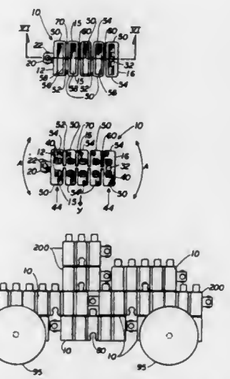
at least one rattle removably attached to said support means and forming at least one arm of said doll.

5,312,283

FLEXIBLE TOY CONSTRUCTION BLOCKS

Ronald L. Lyman, 235 Cascade Falls Dr., Folsom, Calif. 95630

Filed Dec. 13, 1991, Ser. No. 808,180
Int. Cl.[5] A63H *33/08*
U.S. Cl. 446—95 **25 Claims**



1. A flexible toy building block having a top surface, a bottom surface, a first front end and a second rear end comprising in combination:

means for vertically stacking said building block to a similar building block,

means for horizontally connecting said building block to a similar building block, and

means for flexing said building block including means to pivot said first end into and out of a parallel orientation with said second end;

whereby a versatile building block is created which can be combined with other similar blocks in a multitude of unique and original ways, providing a medium for exercising creativity and improving various developmental skills of a user;

wherein said building block has side surfaces which include mounts therein, and wherein said building block includes an axle with wheels thereon, said mounts supporting said axle and restricting said axle from translation while allowing said axle and said wheels to rotate;

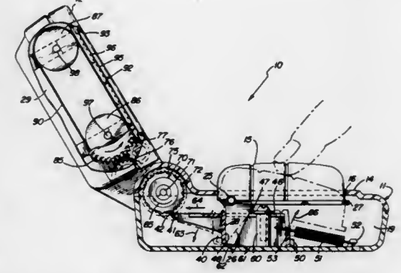
whereby said building block may be supported above a flat surface and moved thereon through rotation of said wheels fastened to said axle.

5,312,284

INCREMENTALLY MOVED CYLINDRICAL LENS DISPLAY SYSTEM FOR TOY

David E. Grober, Huntington Beach, and Raymond J. Gross, Culver City, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Feb. 5, 1993, Ser. No. 14,290
Int. Cl.[5] A63H *33/30*
U.S. Cl. 446—143 **11 Claims**



1. A toy display system comprising:

a housing defining a viewing aperture and keyboard surface;

a cylindrical lens array covering said viewing aperture defining a lens spacing;

a depressible key supported upon said keyboard surface;

a movable segmented image display having segment spacing corresponding to said lens spacing producing an image viewable through said viewing aperture and said cylindrical lens array; and

incremental coupling means coupling said depressible key to said movable image display to incrementally move said image in response each depression of said key through an incremental distance equal to said lens spacing.

5,312,285

DESCENDING BALL GAME APPARATUS

Frederick M. Rieber, Rehoboth, Mass., and Joseph P. Sejnowski, Cumberland, R.I., assignors to Playskool, Inc., Del.

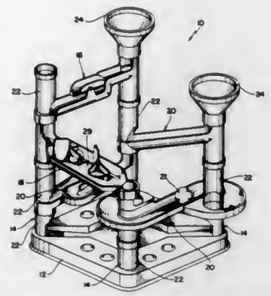
Filed Sep. 4, 1992, Ser. No. 940,480
Int. Cl.[5] A63H *29/08;* **A63F** *9/14;* **A63B** *67/14;* **A63D** *3/00*
U.S. Cl. 446—168 **15 Claims**

1. In a descending ball game apparatus of a type which includes a ball and a plurality of downwardly sloped channel

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members which are interconnected by a plurality of substantially vertical columns, wherein the channel members and the columns cooperate to define at least one downwardly extending continuous path for guiding the ball in its downward travel, the improvement comprising:

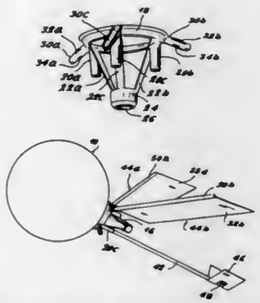
at least one of said channel members comprising a channel portion having a bottom wall and opposing sidewalls, and further including at least two gates, each of which comprises a substantially vertical, fixed wall extending upwardly from said bottom wall, sequential gates being positioned adjacent opposite sidewalls of said channel



portion, said gates being operative for alternately deflecting said ball back and forth from one sidewall of said channel portion to the opposing sidewall of said channel portion; and

at least one of said channel members comprising a continuous channel portion having an upper level channel segment which is joined with a lower level channel segment, and a pivoting ramp positioned therebetween said ramp being operative for receiving a ball descending along said upper level channel segment and pivoting downwardly as said ball descends along said ramp to deliver said ball into said lower level channel segment.

5,312,286
FLYING TOY
Jean-Paul Domen, 13 rue Ganneron, 75018 Paris, France
Continuation of Ser. No. 868,456, Apr. 14, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,632
Claims priority, application France, Apr. 30, 1991, 91 05318
Int. Cl.[5] A63H *27/26, 3/06*
U.S. Cl. 446—187 **15 Claims**



1. An air ejection nozzle adapted for use with a toy balloon having a highly extensible elastic wall and a base provided with an inflation appendix;

said nozzle having an exterior and a thrust axis and comprising a wide inlet edge and a narrow outlet throat;

said inlet edge adapted to bear against a balloon base;

said outlet throat being adapted to receive a folded portion of an appendix of a toy balloon;

said nozzle becoming a closure means for a toy balloon when said balloon is installed with said nozzle, inflated and then rotated relative to said nozzle;

said nozzle further comprising at least one generally cylindrical mounting means disposed upon said nozzle exterior between said inlet edge and said outlet throat, said mounting means displaced from said thrust axis;

said mounting means being adapted to securely hold aside said thrust axis, a relatively rigid, lightweight, long and thin cylindrical member in a direction substantially parallel to said thrust axis.

5,312,287
TOY WITH ELECTROMAGNET SIMULATING INJURY
Gary Chuang, 19, Alley 46, Lane 1, Tung An Street, Ho Mei Shen, Changhua, Taiwan
Filed Oct. 16, 1992, Ser. No. 961,843
Int. Cl.[5] A63H *3/00, 33/26, 3/28, 3/02*
U.S. Cl. 446—295 **2 Claims**



1. A simulation toy comprising:

a) a toy having an outside surface and a slot formed therein;

b) an electromagnet disposed within the slot, the electromagnet including a red-colored iron plate, a permanent magnet attached to the iron plate a reciprocating rod, a rubber cushion covering the reciprocating rod, a wire coil for reciprocating the reciprocating rod to push the permanent magnet away from the toy;

c) a control circuit including a first transistor, a first output terminal connected to the wire coil through the first transistor, a second transistor, a speaker, a second output terminal connected to the speaker through the second transistor, a snap switch, a power supply, and an input terminal connected to the power supply through the snap switch; and

d) wherein the snap switch is triggered when the toy is struck or falls, thereby causing the control circuit to drive the reciprocating rod in pushing the permanent magnet away from the toy and simultaneously activating the speaker to make a sound.

5,312,288
STEERING SYSTEM FOR TOY VEHICLE
Larry C. Williams, 7731 Rutland, Detroit, Mich. 48228
Filed Mar. 27, 1992, Ser. No. 858,843
Int. Cl.[5] A63H *17/36*
U.S. Cl. 446—468 **12 Claims**

1. A toy vehicle comprising:

an elongated base supporting a pair of wheels at a front longitudinal position, and at least one wheel at a rear longitudinal position, said wheels at said front longitudinal position being steerable;

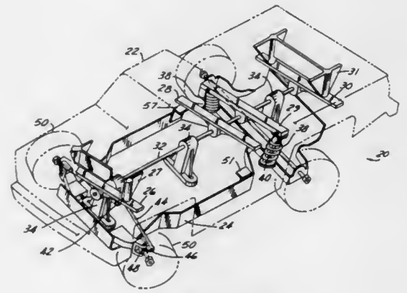
a plurality of support bearings spaced longitudinally along and mounted to said elongated base, each of said support bearings having an upwardly positioned portion with an aperture;

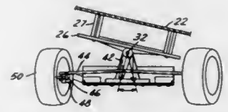
an elongated shaft member, said elongated shaft member extending along a longitudinal axis through said support bearing apertures and being rotatably mounted thereto, said elongated shaft member being free to rotate about said longitudinal axis through at least a limited rotational extent;

a lever attached to said elongated shaft member at said front longitudinal position such that said lever and said elongated shaft member rotate together;

a steering mechanism for each of said wheels at said front longitudinal position, said steering mechanism being connected to said lever;

a plurality of plates spaced along said longitudinal axis, each of said plates having a downwardly positioned portion with an aperture that is aligned with said support bearing apertures, and through which said elongated shaft member extends and is mounted thereon such that said plural-





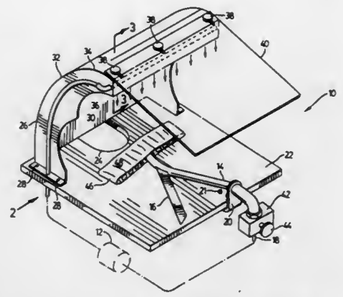
ity of plates and said elongated shaft member rotate together relative to said elongated base;

at least one coil spring disposed between said elongated base and one of said plates whereby said coil spring exerts a biasing force against said one plate which biases said elongated shaft member to bias said lever toward a neutral position vertically downwardly from said elongated shaft member such that said wheels at said front longitudinal position are centered to cause the vehicle to move in a straight path; and

a cab positioned above said elongated base, said cab being connected to said plurality of plates,

said cab being positioned vertically above said elongated shaft member when said lever is in said neutral position such that when said cab is rotated downwardly to the right of said longitudinal axis, said lever rotates upwardly and to the left of said longitudinal axis such that said wheels are moved to cause the vehicle to turn in a corresponding direction, and said cab, when rotated downwardly to the left of said longitudinal axis, said lever rotates upwardly to the right of said longitudinal axis such that said wheels are moved to cause the vehicle to turn in an opposite direction.

5,312,289
DEVICE FOR REMOVING MEMBRANES FROM MEAT PRODUCTS
Joe Zahra, Brampton; Cam Beatty; Grant Denison, both of Mississauga; Brent Cator, Oakville; Linda O'Hara; Zelia Roque, both of Mississauga; Ansel Lorde, Scarborough, and David Bacon, Etobicoke, all of Canada, assignors to Cardinal Meat Specialists Limited, Mississauga, Ontario, Canada
Filed Nov. 2, 1992, Ser. No. 970,216
Int. Cl.[5] A22B *5/16*
U.S. Cl. 452—131 **18 Claims**



1. A device for removing membranes from meat products, said device comprising:

a source of pressurized fluid;

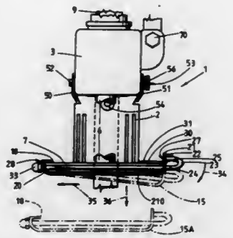
a fixed upstanding nozzle means;

a conduit means connecting the nozzle means to the source of pressurized fluid: and

a blade means connected behind the nozzle means and having a leading edge extending away from the nozzle means;

wherein the nozzle means directs fluid under the membrane to separate an edge of the same from the meat product, and said blade means facilitates said separation of said membrane from said meat product.

5,312,290
TENDERIZER
Daniel S. Paulus, 1120 chaussée de Ninove, 1080 Bruxelles, Belgium
Filed Sep. 10, 1992, Ser. No. 942,903
Claims priority, application Belgium, Sep. 10, 1991, 09100840
Int. Cl.[5] A22C *9/00*
U.S. Cl. 452—141 **10 Claims**



1. A tenderizer, especially for tenderizing butchers' meat, comprising:

a tray for receiving a piece of meat to be tenderized,

a movable device (8) having support means (5) for a grid (4) which immobilizes and holds the piece of meat on the tray during tenderizing, and

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tenderizing knives (2) for interacting with the grid (4) and mounted on a movable support (3),

wherein the movable device (8) and the grid (4) associated therewith are arranged so that only a face of the grid (4) turned towards the tray comes into contact with the piece of meat to be tenderized and the grid (4) is removably mounted on the support means (5) associated with said movable device (8) by linking means (23) arranged on a side of the grid (4) turned away from the tray, said linking means being directly actuable by hand to fix the grid (4) to the support means (5) or to separate the grid from the support means (5).

5,312,291

METHOD AND DEVICE FOR FILLETING THE BODY OF A SLAUGHTERED BIRD

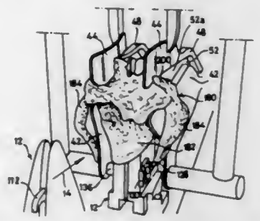
Adrianus J. van den Nieuwelaar, Gemert, and Petrus C. H. Janssen, Wilbertoord, both of Netherlands, assignors to Stork PMT B.V., Boxmeer, Netherlands

Filed Jan. 8, 1993, Ser. No. 2,472

Claims priority, application Netherlands, Jan. 10, 1992, 9200037

Int. Cl.[5] A22C *21/00*

U.S. Cl. 452—165 **28 Claims**



1. A method for filleting the body of a slaughtered bird or a part thereof, comprising the following steps: making incisions in the shoulder joints while the connection between the muscles to be filleted and their wing bones remains essentially intact;

tearing away a fillet from the ribs by exerting a pressure force on the wing bone near the point of attachment of the muscle, which force is directed essentially away from the ribs; and

breaking the connection between fillet and wing bone.

5,312,292

AUTOMATIC ANIMAL PROCESSING

Russel J. Rankin, Clean Mountain; David J. de Chastel, deceased, late of Virginia by Ann de Chastel, executrix ; Graeme L. Wescombe, Manly West; David T. Kerr, Beenleigh; Phillip R. Boyce, Tingalpa; Raymond M. White, Capalaba; Robert W. Tritchler, Manly, and John W. Buhot, Coorparoo, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organisation, Campbell and Meat Research Corporation, Sydney, both of Australia

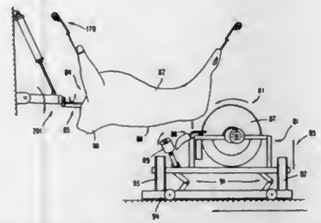
Division of Ser. No. 885,939, May 20, 1992, Pat. No. 5,195,923, which is a division of Ser. No. 724,666, Jul. 2, 1991, Pat. No. 5,139,457, which is a division of Ser. No. 566,386, Aug. 23, 1990, Pat. No. 5,062,820. This application Jan. 21, 1993, Ser. No. 7,301

Claims priority, application Australia, Dec. 23, 1987, P16045

Int. Cl.[5] A22B *5/20*

U.S. Cl. 452—160 **11 Claims**

1. An apparatus for automatically processing an animal carcass so as to carry out a splitting operation on the carcass, the apparatus comprising carcass support means for supporting a carcass after removal of the viscera and for restraining the carcass against lateral movement, splitting support means selectively movable lengthwise along the carcass, an opposed pair of spine tracking means carried by the splitting support means and for engaging with the carcass at opposite sides of and in close proximity to the spine of the carcass to straddle the spine and therefore to locate and restrain the spine against lateral movement and for moving along and following the spine along its length, cutting means mounted to the splitting support means for cutting the carcass along the spine to split the carcass, the cutting means being operative to cut the carcass generally at the location of the tracking means whereby the cutting action of the cutting means occurs where the tracking means is restraining the spine against lateral movement, the splitting support means comprising a trolley movable along a track located lengthwise relative to the carcass, the splitting support means further including a cutting support mounting



the cutting means, the cutting support being movable relative to the trolley towards and away from the carcass so as to vary the height of the cutting means relative to the trolley and relative to the carcass so as to be capable of maintaining an operative position relative to the carcass, the spine tracking means being mounted for floating movement along the spine so as to follow the contour of the spine along the length thereof, the splitting support means including feedback means responsive to the floating movement of the spine tracking means and operative to control the height of the cutting support and hence of the cutting means to thereby maintain the desired height of the cutting means relative to the carcass throughout the length of the spine.

5,312,293

HEAD WASHING APPARATUS

Russel J. Rankin, Clear Mountain; Phillip R. Boyce, Murrarrie; Raymond M. White, Capalaba; John W. Buhot, Coorparoo; Darryl J. Heidke, Morningside; Andrew M. Leiner, Sunnybank; Andrew L. Finney, Marsden, and Matthew Aquilini, Mt. Gravatt, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organisation, Campbell and Meat Research Corporation, Sydney, both of Australia

PCT No. PCT/AU90/00522, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992, PCT Pub. No. WO91/06219, PCT Pub. Date May 16, 1991

PCT Filed Oct. 29, 1990, Ser. No. 854,987

Claims priority, application Australia, Nov. 3, 1989, PJ 7234

Int. Cl.[5] A22B *5/00*; A22C *17/08*

U.S. Cl. 452—173 **13 Claims**

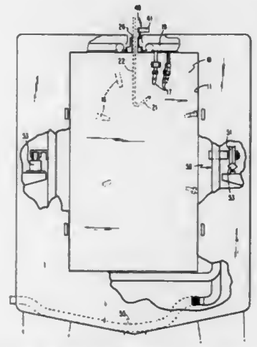
1. A head washing apparatus for washing an animal head at a head washing station, the head washing apparatus including:

a head support which supports the animal head so that the head is in a position with the muzzle directed generally upwardly;

conveyor means operatively associated with the head support and operative to convey the head support and an animal head supported thereby to the head washing station and operative to convey the head support and the animal head supported thereby away from the head washing station after a head washing operation, the conveyor means comprising an overhead conveyor line and said head support comprising a support hook having a shank, the shank being coupled to the conveyor line so that the hook hangs downwardly from the conveyor line, the conveyor line being movable so as to advance the support hook and the animal head supported thereby to the head washing station and to convey the hook and the animal head away from the head washing station after the head washing operation, the head support including a support bracket which is coupled to the conveyor line, the support hook being mounted at its upper end to the support bracket, the shank of the hook being rotatable about its axis so that the animal head supported by the hook can be rotated about the vertical axis of the shank;

a plurality of nozzles arranged for directing water under pressure in a plurality of directions onto the animal head at the head washing station so that water is directed under pressure into generally upwardly opening orifices including the mouth and nostrils of the animal head so that the water flushes the nasal and mouth cavities and the water flushes through those cavities and associated passages and drains from the lower portion of the head; and

head turning means for turning the head support and thereby turning the animal head relative to the nozzles so that water is directed onto the head and into the orifices by the nozzles while the head is in different orientations relative to the nozzles, the head turning means comprising deflecting tabs which are mounted by the head support, the head turning means further including co-operating guides ar-



ranged so that as the head support is advanced, each of the deflecting tabs encounters a respective one of the guides and causes the hook to rotate about the vertical axis of the shank as the respective tab engages the co-operating guide is aligned with that guide, the deflecting tabs comprising a first and a second tab mounted to the shank of the support hook adjacent to the upper end of the shank, the first tab projecting from the shank in one plane and the second tab projecting from the shank at an angle to the first tab in top plan view, the two tabs being located at different heights along the shank, said guides comprising respective opposed guides located at the height of the respective tab, the guides having flared opening mouths into which the respective tab passes as the conveyor means advances the support hook so that the tab enters the space between the respective opposed guides, whereby the first tab, if it is not already in a position aligned to the path of travel, encounters and enters the associated facing guides so that the first tab is twisted and the hook on which the animal head is mounted is also twisted to a particular orientation, the first guide terminating after a distance and the second guide at the second height commencing a short distance downstream from the termination of the first guide whereby the second tab enters the second deflecting guide and turns the hook so that the animal head will adopt a known orientation regardless of the initial orientation of the head.

5,312,294

METHOD AND DEVICE FOR MAINTAINING A CLEAN ATMOSPHERE AT CONTROLLED TEMPERATURE AT A WORKSTATION

François Meline, Paris, France, assignor to Societe Generale Pour Les Techniques Nouvelles SGN, En Yvelines, France

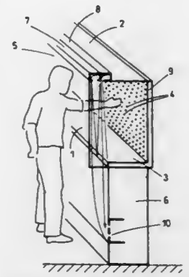
PCT No. PCT/FR90/00700, § 371 Date Mar. 30, 1992, § 102(e) Date Mar. 30, 1992, PCT Pub. No. WO91/05210, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 1, 1990, Ser. No. 852,152

Claims priority, application France, Oct. 2, 1989, 89 12861

Int. Cl.[5] F24F *9/00*

U.S. Cl. 454—60 **15 Claims**



1. A method of maintaining a clean atmosphere at controlled temperature at a workstation (1), said workstation (1) being accessible from a zone containing contaminants through at least one opening (5), said opening having a width and a length, which comprises generating a curtain of gas at the level of said opening (5) by means of a slow jet and a fast jet, the slow jet having an inner cone of range equal to the width of said opening (5), said slow jet having a flow rate, said fast jet having an external face, an internal face and a flow rate, said internal face being in contact with the slow jet, said flow rate of said fast jet being induced by said internal face and being equal to the injection flow rate of said slow jet, said slow jet and said fast jet covering the entire length of said opening (5), said fast jet being situated at the level of said opening (5) on the workstation side (1), said slow jet and fast jet being directed approximately in parallel to the opening (5) whereby at least said external face of the fast jet reaches up to said opening (5), and generating a stream of clean gas on the workstation (1) under a controlled temperature, in a direction opposite to the entry of said contaminants, said stream of clean gas sweeping uniformly over said workstation (1), the flowrate of said stream being at least equal to the flowrate induced by said external face of the fast jet.

5,312,295

SUBTERRANEAN TRANSFORMER ENCLOSURE VENT

James E. Young, 1265 Thiel Rd., Hayward, Calif. 94544

Filed Aug. 23, 1993, Ser. No. 110,732

Int. Cl.[5] F24F *7/00*

U.S. Cl. 454—48 **7 Claims**

1. In a subterranean transformer enclosure having at least two ceiling joists for supporting a metal air vent plate, a vent guard for preventing liquids and solids from passing down through the guard and for enabling air to pass through the guard, said vent guard comprising:

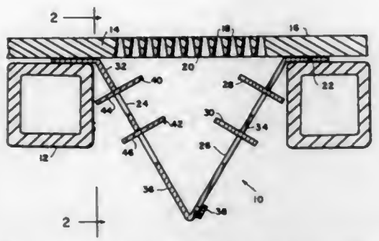
a non-conductive structure having two side walls joined at an apex in a generally "V" cross sectional configuration with interior surfaces and exterior surfaces, said structure being suspendable from between the two ceiling joists;

at least one slot in said side walls above said apex and parallel therewith; and

a roof within the interior of said structure and covering said

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slot, said roof being inclined to form a pool between said roof and a side wall of said structure, said roof extending over said slot so that liquids gathered in said pool will overflow into said apex;

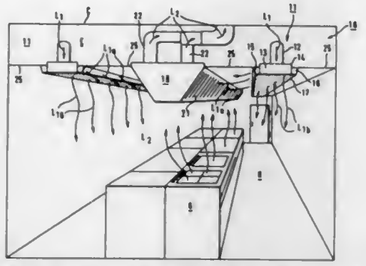


said vent plate having a plurality of holes therethrough in an area over said vent guard.

5,312,296
FALSE-CEILING CONSTRUCTION AND METHOD FOR THE FLOW OF AIR IN CONNECTION WITH A FALSE-CEILING CONSTRUCTION

Erkki Aalto, Kausala; Teuvo Peiliinen, Viliihde, and Pekka Kyllönen, Lahti, all of Finland, assignors to Halton OY, Finland

PCT No. PCT/FI91/00030, § 371 Date Sep. 25, 1991, § 102(e) Date Sep. 25, 1991, PCT Pub. No. WO91/11272, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 30, 1991, Ser. No. 768,860
Claims priority, application Finland, Jan. 31, 1990, 900496
Int. Cl.[5] F24F *7/10*
U.S. Cl. 454—66 **5 Claims**

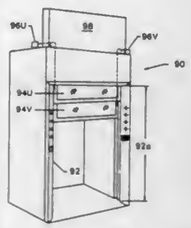


1. False-ceiling construction (10), which is intended in particular for institutional kitchens and which false-ceiling construction is composed of modular units, which comprise at least an intake air unit (11) and an exhaust air unit (18) and, in the area between them, a false-ceiling plate (25), and which false-ceiling construction is formed underneath a ceiling (C) proper in a room, a free space (E) remaining between the false-ceiling construction (10) and the ceiling (C) proper of the room, which false-ceiling construction (10) comprises an intake air duct (12) for the flow (L_1) of fresh air to be passed into the room, said duct (12) being connected to a box (14) which defines the intake air chamber in the intake air unit, and from which intake air chamber (13) in the intake air unit (11) at least one flow opening (15, 16) is opened for the flow of fresh air entering into the room, and that the false-ceiling construction comprises an exhaust air unit (18), which comprises a box-shaped frame (23), which defines an exhaust air chamber (19) in its interior, an opening for the exhaust air flow (L_2) being opened from the room space into the exhaust air chamber (19), which opening includes fat filters (21) in its connection, and which exhaust air chamber (19) is fitted to be placed in the false-ceiling construction above the food-making means placed in the room space, and that the false-ceiling construction (10) comprises the false-ceiling plate (25) to be installed in a modular way, at least one false-ceiling plate (25) being fitted in the area between the intake air unit (11) and the exhaust air unit (18), and that the false-ceiling construction is supported by means of a support construction (27) on the ceiling (C) proper of the room space, characterized in that the false-ceiling construction (10) includes a first flow opening (15) structured and arranged to pass fresh air therethrough from the intake air chamber (13) in the intake air unit (11) to the room space (H), such that a trap-air jet (L_{1a}) flows parallel to the plane (T) of the false-ceiling plate 25 or as slightly inclined in relation to said plane towards the exhaust air opening (20), placed on the exhaust air chamber (19), for the exhaust air flow (L_2), whereby, by means of the trap-air jet (L_{1a}), contaminated air and/or excessive heat or excessive humidity (L_3) rising from the sources of impurities in the room space is attracted towards the exhaust air unit (18) and removed from the room space (H), and in this way gathering of impurities and/or excessive heat and/or excessive humidity in the area between the intake air unit (11) and the exhaust air unit (18) at the proximity of the false-ceiling plate (25) of the false-ceiling construction is prevented, the box (14), which defines said intake air chamber, is provided with a second flow opening (16) at its bottom for guiding an air flow (L_{1b}) directly downwards, said second flow opening (16) including a perforated plate (17) for the purpose of guiding the air flow (L_{1b}) at a low velocity into a working zone of personnel working in the kitchen, whereby a detrimental sensation of draft in the working zone is avoided.

5,312,297
AIR FLOW CONTROL EQUIPMENT IN CHEMICAL LABORATORY BUILDINGS

Joseph C. Dieckert, Bryan, and Swiki A. Anderson, College Station, both of Tex., assignors to Accu*Aire Systems, Inc., Bryan, Tex.

Division of Ser. No. 748,793, Aug. 22, 1991, Pat. No. 5,205,783. This application Mar. 9, 1993, Ser. No. 28,347
Int. Cl.[5] F24F *7/00*
U.S. Cl. 454—238 **13 Claims**

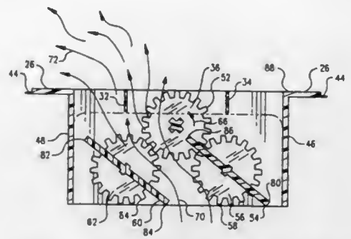


1. Apparatus for controlling the flow of exhaust of a fume hood of the type having an exhaust passage and a front opening and having a pair of sashes each of which has a height, measured vertically, that is less than the height of said front opening and the combined heights of the sashes being sufficient for the sashes to form an obstruction for all of the height of the front opening, said sashes being vertically adjustable through respective ranges along mutually overlapping paths for obstructing all or any desired vertical fraction of said front opening, said apparatus including sash-height signal means for providing signals representing the heights of said sashes and sash-position signal means for providing signals representing the vertically adjusted positions of said sashes, and output signal means responsive to said sash-height signal means and to said sash-position signal means for developing an output signal that varies in accordance with that portion of said front opening that is unobstructed by said sashes.

5,312,298
FLOOR VENT

Leroy Myers, Gig Harbor, Wash., assignor to Vent Air, Inc., Vancouver, Wash.

Filed Jul. 24, 1992, Ser. No. 919,770
Int. Cl.[5] F24F *13/15*
U.S. Cl. 454—290 **12 Claims**



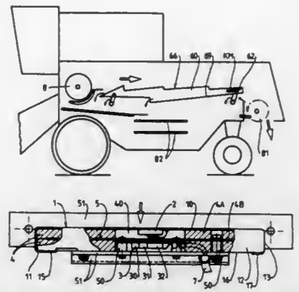
1. A vent for regulating the passage of air, adapted to be mounted in a floor or wall opening, comprising:
a housing member, said housing having opposing sidewalls and left and right end walls;
a grille portion, said grille portion including a plurality of grilles adapted for passage of air through gaps therebetween;
a first and a second louver, said first and second louvers pivotally mounted between said left and right end walls, said first and second louvers each further comprising integrally molded gear members said louvers adapted to deflect the flow of air impinging thereon; and
a thumbwheel gear pivotally mounted between said left and right end walls, said thumbwheel gear adapted to rotatably engage said gear member of said first louver and said gear member of said second louver, said thumbwheel manually adjustable to rotating said first and second louvers between a forwardly closed position and a rearwardly closed position, and wherein said first and second louvers may be positioned in an open position intermediate between said forwardly closed and said rearwardly closed positions.

5,312,299
GRAIN FLOW MEASURING DEVICE, IN PARTICULAR FOR HARVESTERS

Willi Behnke, Steinhagen, and Norbert Diekhans, Gutersloh, both of Fed. Rep. of Germany, assignors to Claas oHG beschränkt haftende offene Handelsgesellschaft, Harsewinkel, Fed. Rep. of Germany

Filed Oct. 9, 1992, Ser. No. 958,707
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1991, 4133976
Int. Cl.[5] A01F *12/00*
U.S. Cl. 460—5 **17 Claims**

1. A grain flow measuring device for placement in a grain flow of a grain harvester, said measuring device comprising;
a sensor plate (1)
a peizoelectric oscillation sensor (2),
said peizolectric oscillation sensor (2) located and engaged at a center of one side of said sensor plate (1),
an opposite side of said sensor plate located in a grain flow path as an impact surface (10),
an amplifier device (3) in said measuring device and spaced from and connected to an input of said oscillation sensor (2),
wherein, an entire edge area of said sensor plate (1) has folded-over edges (11, 12, 13, 14),
each of said folded-over edges having a doubly folded-over edge forming with said sensor plate and said folded-over edges, a box-like frame,

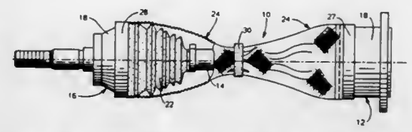


a soft foam damper material inserted within said frame and a retainer plate (5) seated in said soft damper material spaced apart from said frame.

5,312,300
PROTECTIVE COVER FOR UNIVERSAL JOINT SEAL BOOT

Michael McGregor, Saginaw; Marshall C. Davidson, Bay City, and Donovan J. Zollinger, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

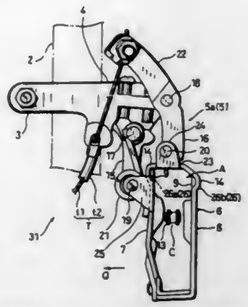
Filed Sep. 2, 1992, Ser. No. 939,750
Int. Cl.[5] F16D *3/84*; F16J *15/52*
U.S. Cl. 464—175 **4 Claims**



1. In a drive shaft assembly (2) for an independently suspended, driven vehicle wheel having an inboard universal joint (12) that is attached to one end of a drive shaft (14) for connection to a power source and an outboard universal joint that is attached to the other end of the drive shaft (14) for connecting the drive shaft assembly (10) to a vehicle wheel,
each universal joint having an inner joint member that is attached to the drive shaft (14), an outer joint member (18) and drive elements disposed within the outer joint member that transfer torque between the inner and outer joint members while allowing the inner and outer joint members to angulate with respect to each other,
each universal joint further having a flexible seal boot (22) that has a large diameter end that is clamped to a round open end of the outer joint member (18) and a small diameter end that is clamped to the drive shaft,
the improvement comprising;
a protective cover (24) for protecting the flexible seal boots (22) that is in the form of a seamless woven cylindrical sleeve that has an cuff at each end that is folded over and double stitched to the sleeve end to provide reinforced end bands (26) that attach the sleeve to the respective outer joint members (18) of the universal joints (12, 16) at the opposite ends of the drive shaft assembly (10) so that the protective cover envelopes the flexible seal boots of both universal joints.

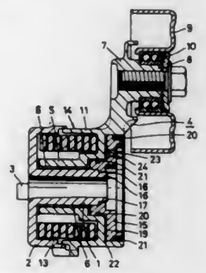
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,301
BICYCLE FRONT DERAILLEUR
Jun Kobayashi, Minamikawachi, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan
Filed Nov. 23, 1992, Ser. No. 980,212
Claims priority, application Japan, Nov. 29, 1991, 3-98775
Int. Cl.[5] B62M *9/16;* **F16H** *7/18, 61/00*
U.S. Cl. 474—80 **12 Claims**



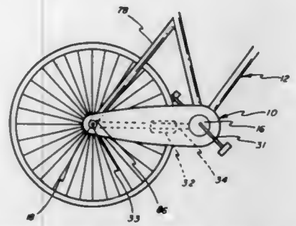
1. A combination of bicycle parts comprising a chain and a front derailleur, the chain assuming a plurality of normal positions and an abnormal position above all of the normal positions, the front derailleur comprising:
- a movable member including inner and outer guide plates connected to each other by a top connecting portion and opposed to each other to define a guide space through which a chain runs, the movable member being moved laterally of a bicycle for shifting the chain; wherein
- the movable member is provided with catch preventive means located adjacent the top connecting portion for preventing the chain from being caught by a chain entering edge of the movable member when the chain enters the guide space at an abnormal position above the normal positions close to the top connecting portion.

5,312,302
AUTO-TENSIONER
Yoshiya Yamamoto, Kusatsu, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Apr. 13, 1993, Ser. No. 47,577
Claims priority, application Japan, Apr. 23, 1992, 4-33746[U]
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—135 **1 Claim**



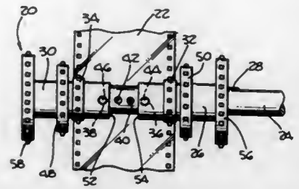
1. An auto-tensioner comprising:
- a fixed shaft extending along a center axis and having a tip portion with an end face;
- a rocker member supported in a freely swinging manner around the fixed shaft and having an inner peripheral surface concentric with the fixed shaft;
- a pivot shaft extending from the rocker member parallel to the fixed shaft;
- a tension pulley supported in a freely rotatable manner on the pivot shaft;
- a spring means connected to the fixed shaft and the rocker member for resiliently forcing the tension pulley;
- a damper plate having an inner peripheral portion secured around the tip portion of the fixed shaft for defining first and second circular holes and an outer peripheral portion provided in a sliding relationship with the inner peripheral surface of the rocker member and having a center axis coaxial with the fixed shaft;
- a clearance space provided between the damper plate and the rocker member;
- a sealing material for closing off the clearance space; and
- a viscous fluid enclosed in the clearance space;
- a first cylindrical surface section formed on the tip portion of the fixed shaft and coaxial with the center axis of the fixed shaft;
- a second cylindrical surface section formed on the tip portion of the fixed shaft closer to the end face and having a center axis with an amount of eccentricity with respect to the center axis of the fixed shaft;
- the first circular hole being externally fitted onto the first cylindrical surface section and coaxial with the center axis of the outer peripheral portion of the damper plate; and
- the second circular hole being externally fitted onto the second cylindrical surface section and coaxial with the second cylindrical surface section.

5,312,303
EASILY MOUNTED FULLY ENCLOSED CHAINGUARD
Robert A. Hinschlager, Mendon, Ohio, assignor to Huffy Corporation, Dayton, Ohio
Filed Jan. 28, 1993, Ser. No. 10,330
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—144 **20 Claims**



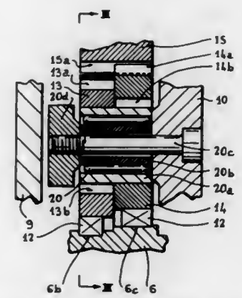
1. A chainguard for fully enclosing a bicycle chain on a bicycle having a front sprocket and a rear sprocket, said chainguard comprising:
- an inside cover having a top half and a bottom half for positioning adjacent to the front sprocket, said top half and bottom half extending from the front sprocket to a location adjacent to a back face of the rear sprocket and being movable toward each other to surround a crank housing adjacent to the front sprocket; and
- an outside cover for positioning adjacent to the front sprocket and extending to a location adjacent to a front face of the rear sprocket, said outside cover being movable into engagement with said top and bottom halves of said inside cover such that the bicycle chain is fully enclosed from the front sprocket to the rear sprocket.

5,312,304
CONVERTIBLE SPROCKET FOR MOTION PICTURE FILM
Richard Vetter, Pacific Palisades, Calif., assignor to United Artists Entertainment, Los Angeles, Calif.
Filed Nov. 18, 1992, Ser. No. 978,250
Int. Cl.[5] F16H *55/12;* **B41J** *11/27*
U.S. Cl. 474—160 **18 Claims**



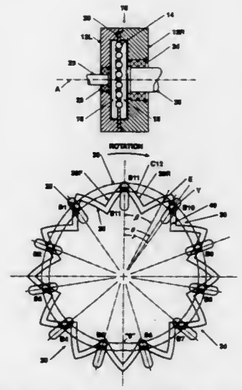
1. A convertible sprocket for film and web media for accommodating different media formats, the sprocket comprising:
- a first sprocket wheel support;
- a first sprocket wheel having a first dimension and supported by the first sprocket wheel support;
- a second sprocket wheel support co-axial with the first sprocket support;
- a second sprocket wheel having a second dimension different from the first dimension and supported by the second sprocket wheel support and wherein the second sprocket wheel is axially movable relative to the first sprocket wheel support so that the first sprocket wheel engages the medium when the second sprocket wheel is in a first position relative to the first sprocket support and the second sprocket wheel engages the medium when the second sprocket wheel is in a second position relative to the first sprocket support; and
- a third sprocket wheel supported by the second sprocket wheel support for accommodating a third medium format.

5,312,305
SPEED REDUCER OF THE CYCLOIDAL TYPE FOR ROBOTS AND OTHER INDUSTRIAL MANIPULATORS
Joseph Palau, Duingt, France, assignor to S.A. des Etablissements Staubli, Faverges, France
Filed Nov. 16, 1992, Ser. No. 977,020
Claims priority, application France, Nov. 21, 1991, 91 14609
Int. Cl.[5] F16H *1/32*
U.S. Cl. 475—162 **3 Claims**



1. In a speed reducer of the cycloidal type for industrial manipulators which reducer includes a frame supporting a fixed ring member having a first plurality of annularly spaced teeth, a rotatable input shaft, means for rotatably engaging the input shaft to at least one eccentric means which surrounds the input shaft, cam means having inner and outer surfaces, the cam means being driven by the eccentric means and having a second plurality of teeth on the outer surface thereof which are engagable with the teeth of the fixed ring member, the first plurality of teeth being greater in number than the second plurality of teeth, a rotatable drive plate including an output means, actuation means carried by the drive plate for drivingly connecting said drive plate to the cam means, and the actuation means being receivable within an opening in the cam means, the improvement comprising, said actuation means including pin means which is mounted with clearance within a cylindrical member, securing means for securing said pin means with respect to said cylindrical member, and said pin means being self-centered relative to said cylindrical member as said pin means is secured by said securing means.

5,312,306
SPEED CONVERTER
Frank A. Folino, Westin, Mass., assignor to Synkinetics, Inc., Lexington, Mass.
Filed Mar. 14, 1991, Ser. No. 670,263
Int. Cl.[5] F16H *13/08*
U.S. Cl. 475—196 **17 Claims**

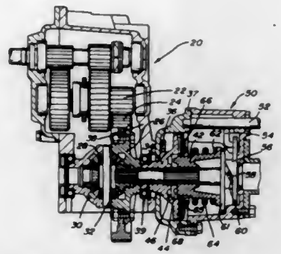


1. Apparatus for converting angular velocity and rotary motive force of an input drive device to angular velocity and rotary motive force of an output driven device, said input and output devices disposed to be coupled together by and to interact via a plurality of interacting elements, said apparatus comprising
- a conjugate pair of devices rotatable about a common axis, a first device of said pair being an input device having drive cam means for supply of angular velocity and rotary motive force to a second device of said pair, said second device being an output driven device having a driven cam means for receipt of said angular velocity and rotary motive force from said drive cam means,
- means for translating, said translating means including a retainer having a plurality of radial slots, each said slot adapted to receive therein an assigned one of a plurality of interacting elements, a majority of said interacting elements comprising in-motion interacting elements and being put in oscillatory motion in said slots by said drive cam means, said retainer being located between said conjugate pair about said common axis, and
- said drive cam means cooperating with said translating means and said driven cam means for transmitting said angular velocity and rotary motive force of said input device substantially equally and simultaneously through all said oscillating in-motion interacting elements, for

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obtaining said angular velocity and rotary motive force of said output driven device.

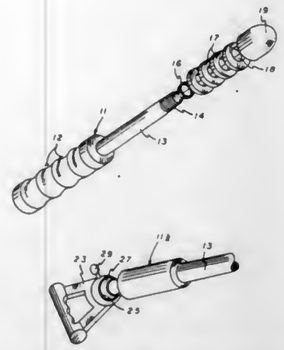
5,312,307
DIFFERENTIAL WITH GRADUAL DIRECT CONNECTION
Howard W. Reaser, Columbia City, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Dec. 30, 1992, Ser. No. 998,334
Int. Cl.[5] F16H *1/445*
U.S. Cl. 475—241 **13 Claims**



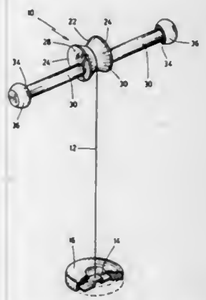
1. A differential comprising:
a drive source;
a shaft connected for rotation by said drive source through differential gears such that said shaft is adapted to rotate at different speeds than said drive source;
a direct connection coupler to directly connect said shaft for rotation with said drive source, said coupler sliding along said shaft and rotating with said shaft; and
a friction disk coupling to frictionally connect said shaft to said drive source prior to direct connection, said friction disk coupling being actuated by movement of said direct connection coupler, said friction disk coupling including a friction disk having a friction surface generally perpendicular to said shaft, said friction disk being positioned radially outwardly of and being removable from said direct connection coupler.

5,312,308
FOREARM EXERCISE APPARATUS
James H. Hamilton, 4264 Sunnyslope Rd. SW., Port Orchard, Wash. 98366, and Barbara J. Butt, 5258 Ethel St., Brighton, Mich. 48116
Filed Jun. 1, 1993, Ser. No. 69,754
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—44 **2 Claims**

1. A forearm exercise apparatus, comprising,
an elongate handle having a handle first end spaced from a handle second end, with the handle symmetrically oriented about a predetermined axis, with a rigid shaft fixedly mounted to the first end concentrically oriented relative to the axis, the rigid shaft having a rigid shaft externally threaded free end, and
a head cap, the head cap including an internally threaded socket arranged for mounting upon the free end, and
at least one weight ring having a central bore receiving the rigid shaft therethrough between the handle first end and the head cap, and
positioning means oriented between the weight ring and the handle first end to orient the at least one weight ring in adjacency to the head cap, and
a coil spring member extending between the at least one weight ring and the handle first end, and
the handle second end includes a pivot sphere and a handle plate, the handle plate having a handle plate socket receiving the pivot sphere therewithin, and a fastener directed into the socket in engagement with the pivot sphere to permit orientation of the handle plate relative to the pivot sphere.

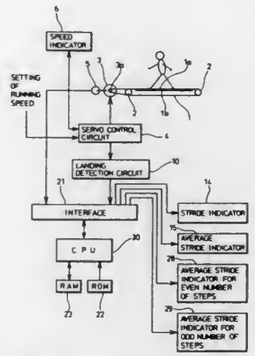


5,312,309
WRIST EXERCISER
Charles L. Fox, 163 Markville Road, Unionville, Ontario, Canada L3R 4V7
Filed Mar. 8, 1993, Ser. No. 28,073
Int. Cl.[5] A63B *23/14*
U.S. Cl. 482—45 **5 Claims**



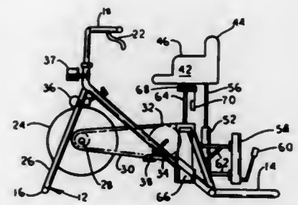
1. A wrist exercising device for suspending between the hands of a user comprising:
an elongated flexible member for supporting a load;
a reel having a peripheral surface onto which said flexible member is windable through a plurality of turns, said reel having a pair of opposed ends;
a pair of generally cylindrical handles respectively disposed on said ends of said reel, said handles having a common axis defining the axis of rotation of said device, rotation of said handles about said axis serving to rotate said reel and wind said flexible member on said peripheral surface to raise said weight, the improvement wherein said peripheral surface is eccentric in relation to said common axis, having a first portion of minimum eccentricity and a second portion of maximum eccentricity diametrically opposed thereto, with portions of said surface intermediate said first and second portions having intermediate eccentricity, whereby the effort necessary to raise said load varies with the rotation of said handles about their common axis to pass through either a maximum or a minimum value for any 180° interval of rotation and wherein said reel has a central axis of rotational symmetry parallel to said common axis and offset therefrom.

5,312,310
TREADMILL
Masaharu Shimizu, and Harutoshi Terasawa, both of Tokyo, Japan, assignors to Nihon Kohden Corporation, Yokyo, Japan
Continuation of Ser. No. 853,972, Mar. 20, 1992, Pat. No. 5,209,710. This application May 10, 1993, Ser. No. 59,710
Claims priority, application Japan, Mar. 28, 1991, 3-26491
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] A63B *23/00*
U.S. Cl. 482—54 **9 Claims**



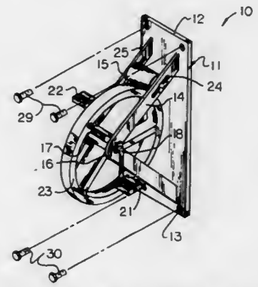
2. A treadmill comprising:
a belt provided with a running surface and rotated in a predetermined direction at a set running speed;
landing detection means for detecting foot landings on said running surface;
timer means for measuring the landing time distance between detected landing times;
average stride calculating means for calculating an average stride from the running speed of said running surface, the measured landing time distance and a predetermined number of steps; and
output means for outputting the calculated average stride.

5,312,311
EXERCISE BICYCLE
William G. Pearson, 207 S. Franklin St., Box 513, Cochranton, Pa. 16314
Filed Oct. 5, 1992, Ser. No. 956,383
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—57 **2 Claims**



2. An exercise bicycle having a frame, a motor, a front wheel, handle bars, pedals and a seat all supported on said frame;
a hydraulic cylinder connected to said seat having adjusting means adapted to move said sat to selected positions for convenience in use in mounting and in dismounting;
said seat being rotatable through three hundred and sixty degrees; and,
a locking means on said seat to lock said seat in selected positions;
said motor being connected to said front wheel for driving said pedals to exercise an invalid's legs;
said seat being of a large padded seat having a high back rest and padded arm rests for comfort and safety;
said seat having a shoulder strap comprising VELCRO-type material;
slide-in foot supports made of VELCRO-type material safety straps on said pedals; and,
said handle bars having hand grip straps made of said VELCRO-type material.

5,312,312
WALL MOUNTED EXERCISE CYCLE APPARATUS
Geraldine Fernandez, and John L. Fernandez, both of 10 Watch Hill Dr., Fishkill, N.Y. 12524
Filed Feb. 16, 1993, Ser. No. 18,147
Int. Cl.[5] A63B *22/06*
U.S. Cl. 482—60 **4 Claims**



1. A wall mounted exercise cycle apparatus, comprising,
a mounting plate, the mounting plate having a first end spaced from a second end, and a first side spaced from a second side, and a first V-shaped brace and a second V-shaped brace fixedly mounted to the mounting plate, with the first brace and the second brace arranged in a parallel coextensive relationship relative to one another, and the first V-shaped brace and the second V-shaped brace extending from the first end towards the second end, the first brace having a first brace apex, the second brace having a second brace apex spaced from the mounting plate a predetermined spacing, and a crank shaft rotatably directed through the first brace apex and the second brace apex orthogonally oriented relative to the first brace and the second brace.
the crank shaft having a first rod fixedly and orthogonally mounted to a first end of the crank shaft, and a second rod fixedly and orthogonally mounted to the second end of the crank shaft, with the first rod having a first pedal, the second rod having a second pedal, and the crank shaft having a wheel member fixedly mounted to the crank shaft between the first brace and the second brace, and the wheel member having a diameter less than the predetermined spacing; wherein the first side and the second side of the mounting plate are arranged in a parallel relationship relative to one another, and a first adapter plate fixedly mounted to the mounting plate adjacent the first end, and a second adapter plate fixedly mounted to the

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mounting plate (adjacent) the second end, with the first adapter plate having a first tube adjacent to the first side, and a second tube (adjacent) to the second side, the second adapter plate having a third tube (adjacent) to the first side, and a fourth tube adjacent to the second side, with the first tube and the third tube coaxially aligned, and the second tube and the fourth tube are coaxially aligned, and a floor mounted support plate, with the floor mounting tube fixedly and orthogonally mounted to the floor mounted support plate, with the first mounting tube and the second mounting tube arranged in a parallel coextensive relationship relative to one another, and the first mounting tube received through the first tube and the third tube, and the second mounting tube received through the second tube and the fourth tube, wherein the first tube, the second tube, the third tube, and the fourth tube each include a tube fastener directed therethrough wherein said tube fastener of said first tube and said third tube engages the first mounting tube and the tube fastener of the second tube and the fourth tube engages the second mounting tube.

5,312,313

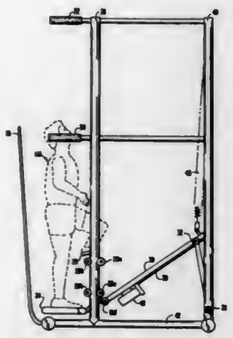
DEVICE TO PREVENT BINDING OF A GUIDANCE SYSTEM FOR AN UPPER BODY EXERCISE APPARATUS

Fred H. Holmes, Gore, Okla.; Robert L. Rawls, Woodinville, and James A. Duncan, Renton, both of Wash., assignors to Stairmaster Sports Medical Products, Inc., Kirkland, Wash.

Continuation-in-part of Ser. No. 685,364, Apr. 15, 1991. This application Mar. 31, 1992, Ser. No. 860,722

Int. Cl.[5] **A63B** *21/00*

U.S. Cl. 482—95 **22 Claims**



1. Chin-up/dip exercise apparatus comprising:

an exerciser lifting support for supporting an exerciser, said exerciser having a weight;

a guidance system by which the exerciser lifting support is movably coupled to said frame, providing linear movement in a first direction;

at least a first handle coupled to said frame for grasping by the user during a chin-up/dip exercise;

a force source coupled to said exerciser support to supply a force to said exerciser support, said force having at least a first component in said first direction; and

wherein said lifting support is horizontally spaced a first distance from said guidance system for using the weight of said exerciser, place on said lifting support to provide tracking loading on said guidance system.

5,312,314

EXERCISE YOKE

Paul B. Stephan, 15222 Warwick Cir., Westminster, Calif. 92683; Joe E. Pryor, 715 Panisen Cir., Compton, Calif. 90220, and Montel Williams, c/o Trump Park 100 Central Park S. Apt. 151, New York, N.Y. 10019

Filed Jan. 6, 1993, Ser. No. 1,310

Int. Cl.[5] **A63B** *23/02, 21/06*

U.S. Cl. 482—110 **42 Claims**



1. An apparatus for use in the performance of exercises, said apparatus comprising:

a yoke for supporting said tube on the users neck;

said yoke further comprising:

an arcuate portion;

a straight right leg extending from a right end of the arcuate portion and having a length greater than half the length of the arcuate portion;

a straight left leg extending from a left end of the arcuate portion and having a length greater than half the length of the arcuate portion;

a left extension extending away from said yoke for holding the user's shoulders in a neutral position when grasped by a user; and

a right extension extending away from said yoke in a direction opposite to said left extension and parallel thereto for holding the user's shoulders in a neutral position when grasped by a user.

5,312,315

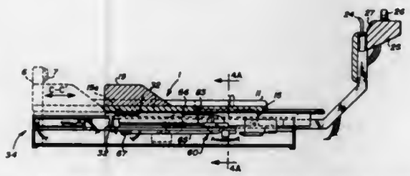
PNEUMATIC VARIABLE RESISTANCE REHABILITATION/THERAPY APPARATUS

Donald G. Mortensen, San Jose, and Gary S. Fanton, Portola Valley, both of Calif., assignors to Core Outpatient Services, Santa Clara, Calif.

Filed Dec. 21, 1990, Ser. No. 631,637

Int. Cl.[5] **A63B** *21/008, 101/00, 103/00*

U.S. Cl. 482—113 **22 Claims**



1. A pneumatic physical therapy and rehabilitation device for balanced strengthening of muscle groups of an operator/-patient in controlled manner, which muscle groups are related to injured, weak, or post-operative joints including associated ligaments and tissue, said device comprising in operative combination:

a) an elongated frame having a longitudinal axis, a top, and a bottom, said bottom including means for resting said frame on the floor;

i) said frame having a first foot end, and a second head end spaced therefrom along said longitudinal axis;

b) a carriage assembly having a patient supporting bed surface, a first foot end, and a second head end;

i) said carriage assembly is disposed reciprocatingly supported by said frame;

c) means for low friction reciprocating movement of said carriage with respect to said frame, said movement being generally parallel to the longitudinal axis of said frame from a first rest position adjacent said first foot end of said frame to a second extended position adjacent said second head end of said frame;

i) the composition of one reciprocating movement of said carriage being defined as an exercise cycle;

ii) said exercise cycle having a first working stroke in a first direction and a second return stroke in the opposite direction;

d) a rest assembly disposed spaced from said second head end of said frame;

i) said rest assembly having a rest member for contact by an extremity of an operator/patient positioned on said carriage;

e) means for adjustably securing said rest assembly to said frame in a selected fixed position during use;

f) pneumatic means for applying progressive resistance against the reciprocating motion of said carriage with respect to said frame member during said working stroke such that when an operator/patient initially exerts force with respect to said rest member causing said carriage to move in said working stroke, said progressive resistance smoothly and continuously increases to a maximum resistance;

g) means for control of the movement of said carriage during said return stroke to permit said progressive resistance to smoothly and continuously decrease back to its original level and to provide substantial reduction in shock stop upon operator/patient release of pressure on said rest member;

h) said pneumatic resistance means including an initial volume, V_{fi}, greater than a final volume, V_{ff}, and the volume ratio V_{ff}/V_{fi} being greater than about 0.5;

i) means for preselecting the level of said progressive resistance in any desired incremental amount between essentially zero resistance up to a rehabilitative physiological challenge level; and

j) said pneumatic resistance means operates independently from said return stoke control means, said pneumatically resistance means in combination with said return stroke control means closely replicate the physiological function of the affected muscle groups for active rehabilitation of at least one extremity.

5,312,316

MACHINE FOR FORMING CARDBOARD BOXES

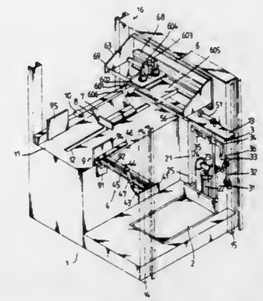
Bor-Yih Wu, No. 67, Fuh Shing Street, Ren Der, Tainan, Taiwan

Filed May 7, 1993, Ser. No. 58,402

Int. Cl.[5] **B31B** *3/80, 3/52*

U.S. Cl. 493—123 **2 Claims**

1. A machine for forming cardboard boxes principally consisting of (a) a housing, which is square with an open interior, equipped with a table of specific height on the left half of said housing, a chamber on the right side of said table, a rectangular separating plate placed at a specific location on the rear of said housing, a rectangular cover plate on the rear upper part of said housing, two supporting columns on the right and left sides, a track on the table, a push plate on said track (the push plate being situated outside of said track, while the bottom of said push plate being secured to a strut-less cylinder), a press setting cylinder anchor placed at a specific site on the right side of said table, a press setting cylinder and straight sliding rod secured on the right side of said press setting cylinder anchor, with their front ends being inserted through said press setting cylinder anchor and bound to a press setting plate, a limiting plate placed at a position opposite from said press setting plate, an adhesive sprayer placed behind said limiting plate, and a side cover-forming plate with a shape of " " placed at an appropriate position behind said adhesive sprayer, (b) a supply tray situated in said chamber, with the rear of said supply tray being placed on two straight sliding rods, the upper and lower parts thereof being bound to said rectangular separating plate and the bottom of said housing respectively, thereby governing the position of the elevating supply tray, an elevating cylinder being anchored between said two straight sliding rods, the top of said elevating cylinder being equipped with an elevating axle, each of the two ends of said elevating axle being equipped with an elevating gear, said elevating gear being equipped with a chain, and said chain being bound to the rear of said supply tray, (c) a four-joint tie bar folding assembly situated on the right front supporting column of said housing, with a rocker arm anchor being secured at a specific location on said supporting column, said rocker arm anchor being equipped with a four-joint tie bar anchor and front folding cylinder anchor, two connecting rods being connected to said four-joint tie bar anchor by means of pivot joints, the front of said two connecting rods being connected to a front rocker arm by means of pivot joints in such a way that said two connecting rods are parallel, the front of a front folding cylinder being connected to a specific site on said connecting rod by means of a pivot joint, and the bottom of said front folding



cylinder being connected to said front folding cylinder anchor by means of a pivot joint, thereby forming said four-joint tie bar folding assembly, (d) a box-forming suction cup rocker arm assembly situated on the right rear supporting column of said housing, with a box-forming cylinder anchor being placed at a specific site on said supporting column, the bottom of a box-forming cylinder being bound to said box-forming cylinder anchor, the front of said box-forming cylinder being equipped with a U-shaped piece, the arm of a box-forming suction cup rocker being curved, exhibiting a 90° angle, the horizontal part of said arm being equipped with several suction cups and the perpendicular part of said arm being equipped with a bearing, said bearing, which functions as the fulcrum of said box-forming suction cup rocker arm, being placed on a rocker arm anchor secured onto said supporting rod, and a connecting rod on one end of said bearing being at an angle with the perpendicular part of said arm and connected to the U-shaped piece equipped on the front of said box-forming cylinder by means of a pivot joint, (e) a rocker arm tie bar folding assembly situated on the upper side of said rectangular separating plate, with a rear folding cylinder anchor being placed at a specified site on said rectangular separating plate, a rear folding cylinder being placed at a horizontal configuration, the bottom thereof being secured onto said rear folding cylinder anchor and the front thereof being equipped with a U-shaped piece, connecting to a folding rocker arm connecting rod by means of a pivot joint and forming an angle with said rod, the shaft of said folding rocker arm connecting rod being inserted into the lower side of

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said rectangular separating plate through a rocker arm centering sleeve bound to said rectangular separating plate, and the end of said shaft in the lower side of said rectangular separating plate being equipped with a rear folding rocker arm in such a manner that said rear folding rocker arm and said front folding rocker arm are at the same height, and (f) an adjustable press plate assembly situated on the rear upper part of said housing, with the upper and lower ends of two straight sliding rods pertaining to the adjustable press plate assembly being bound to the rectangular cover plate and rectangular separating plate respectively, thereby governing the up-down position of said adjustable press plate assembly, a strut-less cylinder and two transverse sliding rods being placed at specific positions of said adjustable press plate assembly, a sliding plate pertaining to a press plate being placed on the two transverse sliding rods and the rear of said sliding plate being bound to the bottom of said strut-less cylinder, the top of said sliding plate being equipped with an elevating cylinder and two elevating sliding rods and the lower parts of said components being inserted through said sliding plate and bound to said press plate, the left side of said press plate being bent downward at an angle of 90° at a specific location and the lower side of said left side of the press plate being equipped with an incline plate with a certain incline angle, the right lower side of said press plate being equipped with a push plate and the right side of said push plate being bent downward in a perpendicular manner, and said push plate being capable of being adjusted sideways to accommodate boxes of different sizes.

5,312,317

APPARATUS FOR DETACHING PIECES OF TUBE PROVIDED WITH TRANSVERSE WELD SEAMS FROM A WEB AND FOR STACKING THE SAME

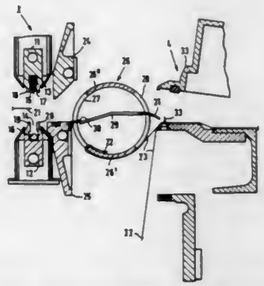
Hans-Ludwig Voss, Tecklenberg; Andreas Schroedter, Ladbergen, and Uwe Koehn, Osnabruck, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 982,662

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 4139183; Apr. 30, 1992, 4214365

Int. Cl.[5] B31B *23/96, 23/98*

U.S. Cl. 493—194 **8 Claims**



1. Apparatus for providing transverse weld seams in, and for detaching sections of, an intermittently moving tubular or semi-tubular web of thermoplastic synthetic resin and for stacking the detached sections, comprising:

a transverse welding and transverse detaching station (2) for detaching sections provided with bottom weld seams and any leading head weld seams from the web,

a stacking station (4) comprising means for depositing and retaining the detached sections,

a drum (26) disposed between the transverse welding and transverse detaching station (2) and the stacking station (4), a cylindrical surface thereof comprising at least two wall parts,

means for rotating said drum about a transverse axis thereof, incrementally in step with welding through an angular increment which amounts to a fraction of a revolution corresponding to the number of parts of the cylindrical wall (360°/number of parts),

a sheet metal guide (29) arranged generally in a horizontal plane within the drum, and

means for pushing the web across the sheet metal guide,

wherein, in step with depositing the detached sections in the stacking station, the web is pushed through gaps between the wall parts of the drum between the transverse welding and transverse detaching station and the stacking station, across a surface of the sheet metal guide.

5,312,318

PACKAGING METHOD AND MEANS

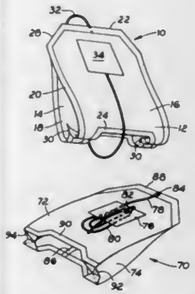
Geoffrey W. Vernon, Kenilworth; James Goodwin, Coventry; Michael J. Cahill, Kenilworth, all of Great Britain, and William M. Buckley, East Sheen, England, assignors to Thomas J. Lipton Co., Division of Conopco Inc., Englewood Cliffs, N.J.

Division of Ser. No. 673,050, Mar. 21, 1991, Pat. No. 5,135,762. This application Jul. 30, 1992, Ser. No. 922,598

Claims priority, application United Kingdom, Mar. 21, 1990, 9006388; Nov. 30, 1990, 9026122

Int. Cl.[5] B31B *1/64*

U.S. Cl. 493—194 **17 Claims**



1. A method of producing twin compartment packets, comprising the steps of dividing each of a pair of tubular webs along its length into a series of discrete compartments, locating said tubular webs in overlapping relationship with their compartments in register, joining the webs at the divisions between the compartments and, after said joining of the webs, severing the interconnected pairs of compartments from the webs as separate twin-compartment packets.

5,312,319

CENTRIFUGE HAVING A SINGLE SWING ARM FOR RETAINING A STATOR TUBE

James R. Salter, The Woodlands, Tex., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 875,323, Apr. 29, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 80,133

Int. Cl.[5] B04B *7/06*

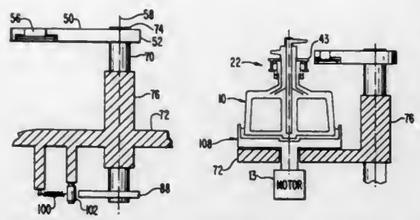
U.S. Cl. 494—12 **23 Claims**

1. An apparatus for holding a stator of a vessel rotatable about an axis of rotation during a centrifuge operation, the apparatus comprising:

a swing arm pivotable about a pivot axis and having a first end and a second end, the second end having an engagement portion configured to engage the stator of a rotating vessel;

support means connected to the first end of the swing arm and having an axis spaced from and substantially parallel to the axis of rotation, the support means for supporting the swing arm in a manner permitting the swing arm to pivot toward and away from the stator;

holding means, located on the swing arm and pivotable therewith, for cooperation with the stator to hold the stator against rotation when the swing arm is in a predetermined angular position, and for maintaining the stator in a fixed position relative to the swing arm during a centrifuge operation; and



spring biased means for resisting pivotal movement of the swing arm in response to a predetermined rotational force about the pivot axis applied to the swing arm, the spring biased resisting means including means for responding to a rotational force about the pivot axis which is greater than the predetermined rotational force to permit pivotal movement of the swing arm.

5,312,320

APPARATUS FOR PERFORMING OPHTHALMOLOGICAL SURGERY

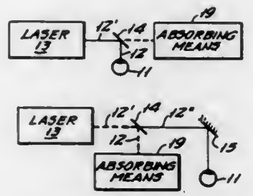
Francis A. L'Esperance, Jr., Englewood, N.J., assignor to VISX, Incorporated, Sunnyvale, Calif.

Continuation of Ser. No. 60,164, Jun. 10, 1987, which is a division of Ser. No. 891,169, Jul. 31, 1986, which is a continuation-in-part of Ser. No. 780,335, Sep. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 740,276, Jun. 3, 1985, abandoned, which is a continuation of Ser. No. 552,983, Nov. 17, 1983, abandoned. This application Mar. 23, 1989, Ser. No. 327,988

The portion of the term of this patent subsequent to Nov. 18, 2009, has been disclaimed.

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—5 **36 Claims**



1. Apparatus for operation upon the external surface of the cornea of an eye of a patient, comprising laser means producing on a central axis a circular output beam having a predetermined flux-density distribution in the ultraviolet portion of the electromagnetic spectrum, optical means including precharacterized beam-splitter means positioned in said beam for dividing laser radiation into a reflected-component beam and into a transmitted-component beam, the precharacterization of said beam-splitter means being such that in the reflected-component beam flux-density distribution is a circumferentially uniform decreasing function of radius about the central axis of said reflected-component beam without materially changing spatial and temporal coherence of said reflected-component beam, whereby when the axis of said reflected-component beam is aligned with the optical center of an eye, a myopia-correcting curvature change may be effected in the anterior surface of the cornea.

5,312,321

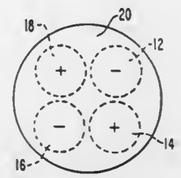
METHOD AND APPARATUS FOR SUPPRESSING NEURON ACTION POTENTIAL FIRINGS

Robert R. Holcomb, Hackleburg, Ala., assignor to Holcomb Technology, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 503,318, Apr. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 171,837, Mar. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 939,950, Dec. 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 934,568, Nov. 21, 1986, abandoned. This application May 11, 1992, Ser. No. 880,872

Int. Cl.[5] A61B *17/52*

U.S. Cl. 600—9 **14 Claims**



1. A method of suppressing action potentials of a neuron, comprising the steps of:

assembling an octapolar group of magnetic bodies having two positive circular magnetic poles and two negative circular magnetic poles of approximately equal strength substantially in a first plane;

orienting said two positive poles and said two negative poles of said group of magnetic bodies in said first plane to define the four vertices of a rectangular shape with said two positive poles defining two diagonal vertices and said two negative poles defining opposite vertices of said rectangular shape;

fixing said orientation of said group of magnetic bodies in a housing such that the magnetic bodies are sufficiently close that the magnetic induction produced by each of said poles has a significant magnitude at the location of each of the other of said poles; and

selectively placing said housing at a distance from the neuron such that said group of magnetic bodies generates a biologically effective magnetic field at the neuron.

5,312,322

THREE POINT EXTENSION SPLINT TO TREAT FLEXION CONTRACTURES ABOUT LIMB SYNOVIAL HINGE JOINTS

Joseph M. Santana, Ramona, Calif., assignor to The United States of America as represented by The Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1992, Ser. No. 970,312

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—20 **12 Claims**

1. A device for correcting flexion contractures about synovial hinge joints of an extremity comprising:

a proximal contact means for contacting the proximal portion of an extremity above the flexion crease of a synovial joint,

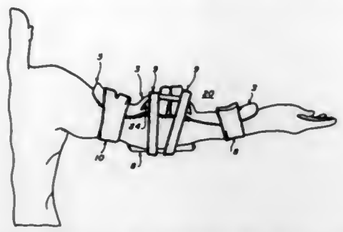
a distal contact means for contacting the distal portion of an extremity below the flexion crease of a synovial joint,

a springy, resilient bridge joining the proximal and distal extremity contact means forming an anterior assembly,

a posterior assembly cupping means to protect the bony prominence of the synovial joint, and

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an adjustable, releasable, strapping means joining the springy, resilient bridge to the cupping means to produce a downward, and outward force in the proximal contact means and distal contact means dependant on the amount



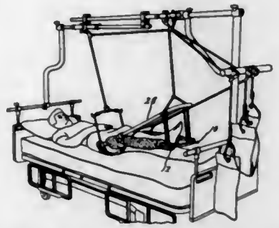
of force exerted by the strapping means thereby causing a myofascial release by stretching the major muscles and tendons parallel to the long axis of the limb while the superficial tissues are stretched in the opposite direction by contact with the proximal and distal contact means.

5,312,323

DISPOSABLE THIGH SUPPORT RING

Thomas S. McAninch, Detroit, Mich., assignor to Detroit Receiving Hospital & University Health Center, Detroit, Mich.

Filed Feb. 13, 1992, Ser. No. 835,617
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—32 **8 Claims**



1. A disposable thigh support ring for a leg splint, said leg splint having an elongated U-shaped section, said disposable support ring intended for one time only use in conjunction with said U-shaped section and adapted so as to be readily removable from and attachable to said U-shaped section, said disposable thigh support ring comprising:

a rigid ring member being substantially rectangular in shape, curved generally into a C-shape, said ring member having an inside surface disposed toward a patient's thigh and an opposing outside surface;

means for pivotally and removably fastening said ring member to said U-shaped section of said splint, said means for fastening comprising an outwardly projecting male threaded protrusion adapted to threadedly engage a female threaded cap screw, said male threaded protrusion being flush with said inside surface of said ring; and

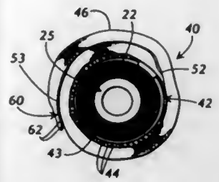
pad means permanently bonded to substantially all surfaces of said ring member to prevent contact of a patient's thigh region with said ring member, said pad means including a first layer comprising a sheet of foam permanently bonded to substantially all surfaces of said rigid ring member in a manner so as to prevent bunching and a second layer of sheepskin pile permanently bonded about said foam, said pad means further having at least one aperture formed therethrough to accommodate said male threaded protrusion.

5,312,324

NASAL DRESSING SYSTEM

Charles D. Walthour, 5203 Acorn Trail, Dallas, Ga. 30132

Filed Sep. 15, 1992, Ser. No. 944,962
Int. Cl.[5] A62B *7/10*; A61F *13/00, 15/00*; A61L *15/00*
U.S. Cl. 602—74 **28 Claims**



1. A nasal dressing apparatus for attachment to a patient's head to absorb drainage from a patient's nose, said nasal dressing apparatus comprising:

an absorbent dressing; and

a strap means for extending completely around the patient's head to secure said absorbent dressing under the patient's nose,

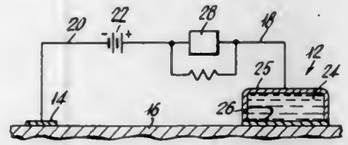
wherein said absorbent dressing is wrapped all the way around at least a lengthwise portion of said strap means so as to surround said strap means to better secure said absorbent dressing under the patient's nose after said absorbent dressing has begun to absorb drainage.

5,312,325

PULSATING TRANSDERMAL DRUG DELIVERY SYSTEM

Dan Sibalis, 268 Hallock Rd., Stony Brook, N.Y. 11790

Division of Ser. No. 323,109, Mar. 13, 1989, abandoned, which is a division of Ser. No. 55,518, May 28, 1987, abandoned. This application Oct. 4, 1990, Ser. No. 598,803
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **7 Claims**



1. An electrolytic transdermal patch for delivering to the bloodstream of a patient different types of drugs comprising:

(a) means defining a reservoir for containing a drug of said types of drugs and positioned in use in contact with the skin of the patient;

(b) an electrical source of power;

(c) an electrical circuit having an electrode positioned in use in contact with the skin of the patient and electrically connecting the electrode, power source and said reservoir,

(d) pulsation means in said electrical circuit for causing periodic variation of current applied to said reservoir by said source of power in a pulsed mode in synchronization with a natural rhythmical variation of response to a drug by the patient when said drug is foreign to the body of the patient,

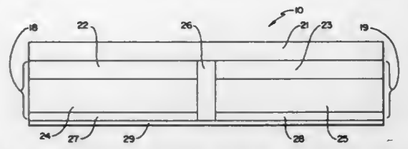
(e) and in pulsed mode in rhythms similar to the natural delivery of the body compounds released by the natural activity of the body of a patient for simulating the activity of naturally released compounds, or in pulsed mode rhythms applied more often than the natural activity rhythms of the body for inhibiting the release of the body compounds when the type drug is similar to a body compound.

5,312,326

IONTOPHORETIC DRUG DELIVERY APPARATUS

Robert M. Myers, Stanford; Ronald P. Haak, San Jose, and Richard W. Plue, San Francisco, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Jun. 2, 1992, Ser. No. 889,950
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **19 Claims**



1. An electrically-powered iontophoretic agent delivery apparatus having an electronic circuit means, the apparatus comprising:

a substantially non-conductive, flexible substrate having opposing first and second surfaces, and;

a substantially planar, electrically conductive pathway disposed on one of the opposing surfaces, the pathway including a source of electrical power and an output means which are electrically connected, the output means being coupled to an electrode, and;

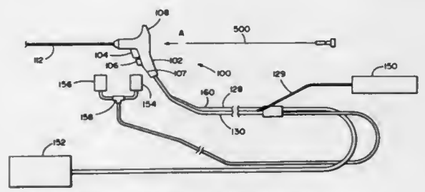
means for connecting said output means to said electrode without penetrating said substrate whereby electrical and physical connection is achieved between the conductive pathway and the electrode in the absence of conductive pathway stress due to folding of the pathway and conductive conduit extending through said substrate.

5,312,327

CAUTERY OVERRIDE SAFETY SYSTEMS ENDOSCOPIC ELECTROSURGICAL SUCTION-IRRIGATION INSTRUMENT

Thomas O. Bales, Miami; Dana W. Ryan, Davie, and Matthew S. Solar, Cooper City, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Oct. 9, 1992, Ser. No. 959,243
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—21 **22 Claims**



1. An endoscopic instrument, comprising:

a) a cannula;

b) an irrigation conduit in fluid communication with said cannula;

c) irrigation valve means for regulating fluid flow in said irrigation conduit;

d) actuator means coupled to said valve means;

e) an electrocautery probe coupled to a source of current; and

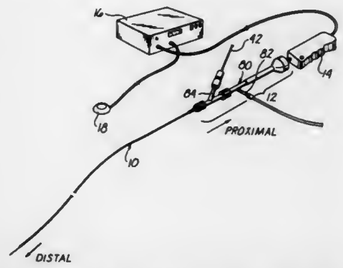
f) an electrical switch means coupled to said source of current and to at least one of said irrigation valve means and said actuator means, wherein said electrical switch means is switched when said actuator means is activated to permit fluid flow, and when switched, said electrical switch means causes flow of cautery current from said source of current to said electrocautery probe to be stopped.

5,312,328

ULTRA-SOUND CATHETER FOR REMOVING OBSTRUCTIONS FROM TUBULAR ANATOMICAL STRUCTURES SUCH AS BLOOD VESSELS

Henry Nita, Lake Forest; Douglas H. Geaswein, Mission Viejo, and James D. Passafaro, Santa Ana, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 878,795, May 5, 1992, Pat. No. 5,267,954, which is a continuation-in-part of Ser. No. 787,292, Nov. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 640,190, Jan. 11, 1991, Pat. No. 5,364,115. This application Jul. 9, 1992, Ser. No. 911,546
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **14 Claims**



1. An ultrasonic catheter for removing obstructions from tubular anatomical structures such as blood vessels, said ultrasonic catheter comprising:

an elongated flexible catheter body having a proximal end, a distal end and at least one lumen extending longitudinally therethrough;

an ultrasound transmission member extending longitudinally through said lumen of said catheter, said ultrasound transmission member having a proximal end connectable to a separate ultrasound generating device and a distal end terminating adjacent the distal end of said catheter body;

a sonic connector assembly being positioned on the proximal end of said ultrasound transmission member to facilitate connection of said ultrasound transmission member to a separate ultrasound transducer, said sonic connector assembly comprising;

(i) a frontal member positionable on said ultrasound transmission member and having a threaded region formed thereon;

(ii) a proximal member positionable on said ultrasound transmission member and having a first threaded region formed thereon and rotatably engageable with the threaded region of said frontal member component, said proximal member further including a stem provided with a series of threads thereby forming a second threaded region, said stem configured to receive a correspondingly threaded bore of the horn of a separate ultrasound transducer;

(iii) first means positionable between said proximal member and said bore of said transducer horn;

(iv) second means positionable between said frontal member and said proximal member;

(v) said first means being sized and configured relative to said proximal member and said transducer horn, and said second means being sized, configured and constructed relative to said frontal member and said proximal member, such that said first and second means will

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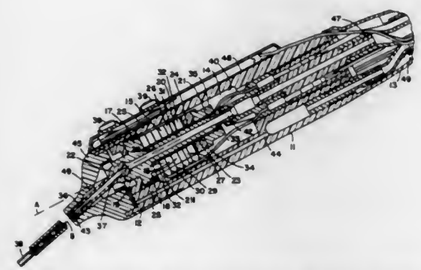
become inwardly compressed against said ultrasound transmission member when said frontal member component and said proximal member are connected to one another and when said proximal member and said bore of said transducer horn are connected to one another by rotatable threaded connection.

5,312,329

PIEZO ULTRASONIC AND ELECTROSURGICAL HANDPIECE

Michael A. Beaty; Arlan J. Reschke, both of Boulder; Robert B. Stoddard, Lonisville; Joo P. Page, Broomfield; Bandele Jeffrey-Coker, Westminster; Michael Ollchney, Boulder, all of Colo., and Emery S. Rose, New York, N.Y., assignors to Valleylab Inc., Boulder, Colo.

Filed Apr. 7, 1993, Ser. No. 44,430
Int. Cl.[5] A61B *17/32*
U.S. Cl. 604—22 **26 Claims**



1. A piezo ultrasonic and electrosurgical handpiece comprising:

a housing being elongated along its axis and having a distal end and a proximal end and a passage therethrough;

a piezo transducer having a plurality of elements supported within the housing and mounted along a plane generally transverse to the axis of the housing and the passage therealong;

a retainer for the piezo elements, the retainer having a distal portion, intermediate portion and a proximal portion, the distal portion having a fastener positioned near the distal end of the housing, the proximal portion having an extended mandrel in the form of a shoulder bolt with proximally disposed threads, the intermediate portion attached to the housing with provisions for locating the retainer axial with respect thereto with decoupling therebetween;

the piezo elements and a feedback crystal arranged in a stack of components, each component having a centrally located hole and an energy input and a reference output positioned axially apart from one another, the stack assembled on the shoulder bolt and positioned with the holes thereabout;

an insulating sleeve disposed about the shoulder and sandwiched between the central openings of the stack and the shoulder of the bolt;

a pair of insulators disposed about the retainer with the stack positioned between the insulators as a sandwich, one of the pair of insulators between the plane and the stack and the other insulator adjacent the threads and against the stack so an ultrasonic drive energy connected in circuit with the energy input of the elements, feedback signal and reference output in the stack are insulated by the sleeve and pair from the shoulder bolt;

a washer located against the insulator and about the threads in position to apply axial but not torsional loads on the insulator and stack therebeneath;

a clamping nut proximally located on the threads to hold the washer axially against the components on the shoulder bolt, the clamping nut including means for receiving an electrical source of electrosurgical energy, and

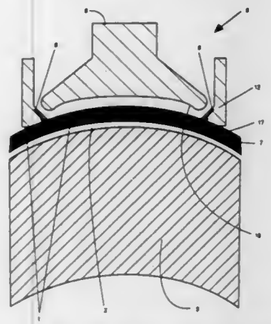
electrical connections to the stack isolated from the clamping nut, the electrical connections including means for driving piezo elements, for receiving current flow through the piezo elements and for transmitting signals from the feedback crystal to cause controlled axial reciprocatory motion to be transmitted to the distal end of the retainer for conveyance to the fastener thereat and the plane of the retainer arranged at a node point of the axial reciprocatory motion.

5,312,330

MEDICAL TREATMENT OF THE EYE INVOLVING REMOVAL OF THE EPITHELIUM

Peter J. Klopotek, Framingham, Mass., assignor to Summit Technology, Inc., Waltham, Mass.

Filed May 20, 1992, Ser. No. 886,375
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—49 **7 Claims**



1. A method of removing the epithelium from a selected area of the eye comprising the steps of:

(a) cutting the epithelium in the direction of its thickness in a peripheral pattern circumscribing the selected area of epithelium to be removed,

(b) producing a fluid jet having sufficient force to effectively wedge said epithelium free form the relatively hard underlying layer to which said epithelium is biologically attached,

(c) directing said jet through said cut pattern in the epithelium in the manner that the fluid progresses inwardly from said peripheral pattern between the epithelium and the relatively hard underlying layer to which said epithelium is biologically attached to effectively wedge said epithelium, by force of the fluid, free from said underlying layer.

5,312,331

METHOD AND APPARATUS FOR TALC PLEURODESIS

Dennis J. Knoepfler, 1383 Whitaker La., Amelia, Ohio 45102

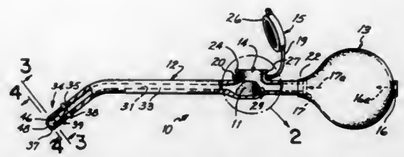
Filed Apr. 15, 1993, Ser. No. 47,320
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—49 **8 Claims**

1. An apparatus for applying powdered talc in a chest cavity comprising:

an elongated tube having a first end and a second end opposite said first end and a talc chamber means intermediate said first and second ends, said talc chamber means containing powdered talc for performing a pleurodesis procedure on a patient;

means at said second end to force air from said second end to said first end; and,

a constriction formed in an outlet chamber means at said first end which prevents said powdered talc from flowing out of said first end except when pressurized air is forced through said tube, said constriction being formed by a plug centrally disposed in said outlet chamber means said plug including spaced axial ridges on an outer surface thereof which define a plurality of restricted pathways between said outer surface of said plug and an inner wall of said outlet chamber means.

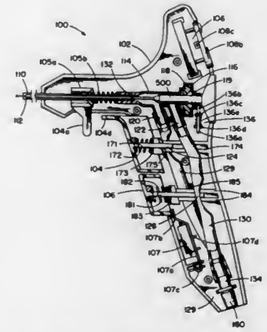


5,312,332

ENDOSCOPIC SURGICAL METHODS UTILIZING A SUCTION-IRRIGATION INSTRUMENT WITH A PORT FOR ENDOSCOPIC MANIPULATING INSTRUMENTS

Thomas O. Bales, Miami; Charles R. Slater, Fort Lauderdale, and Kevin W. Smith, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation of Ser. No. 959,278, Oct. 9, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 51,000
Int. Cl.[5] A61B *17/00*
U.S. Cl. 604—49 **10 Claims**



1. Method of endoscopic surgery comprising the steps of:

a) incising a patient and inserting a trocar tube through the incision;

b) inserting a cannula of a first endoscopic instrument through the trocar tube, said first endoscopic instrument having a fluid chamber at a proximal end of said cannula, automatic valve means at a proximal end of said fluid chamber, an irrigation tube and a suction tube in fluid communication with said fluid chamber, wherein said cannula, said fluid chamber, and said irrigation tube constitute a first fluid flow path, and said cannula, said fluid chamber and said suction tube constitute a second fluid flow path;

c) inserting an end effector of a second endoscopic tool through said valve means and through said fluid chamber and said cannula so that said end effector extends beyond said cannula and so that a proximal portion of said endoscopic tool extends proximal said automatic valve means; and

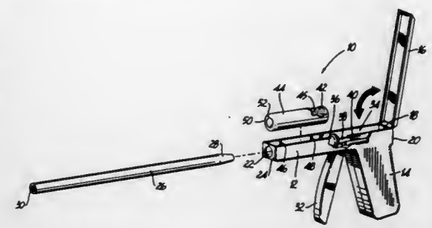
d) removing said second endoscopic tool, wherein said valve means automatically closes to prevent fluid leakage at said proximal end of said first endoscopic instrument.

5,312,333

ENDOSCOPIC MATERIAL DELIVERY DEVICE

Robert Churinetz, West Haven, and Jeffrey S. White, Ridgefield, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Apr. 3, 1992, Ser. No. 863,195
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—57 **18 Claims**



1. An endoscopic device for delivering a quantity of material comprising:

a handle portion;

an elongated endoscopic portion having a proximal end extending from said handle portion and a distal end, said endoscopic portion having a passageway extending therethrough configured to emit material only from said distal end;

material containment means disposed within said handle portion for storing at least a particulate material to be delivered and a pressurized propellant for propelling said particulate material from said material containment means, said material containment means including seal means communicating with a proximal end of said passageway for permitting the propulsion of said particulate material therefrom; and

actuation means operably connected to said material containment means for causing said seal means to open and permit a quantity of said particulate material to be propelled from said material containment means, through said passageway, out of said distal end of said endoscopic portion.

5,312,334

PERISTALTIC PUMP APPARATUS HAVING AN IMPROVED MISLOADED IV TUBE DETECTING CIRCUIT

Keita Hara, Kashihara, Japan; Alan G. Bettisch, Buffalo Grove, Ill.; Joseph B. Matthews, Grayslake, Ill., and Thomas Callaghan, Algonquin, Ill., assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1993, Ser. No. 1,112
Claims priority, application Japan, Jan. 6, 1992, 4-000173
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—65 **5 Claims**

1. A peristaltic pumping apparatus comprising:

a body having a wall portion and a door for allowing access to said wall portion in its open position and impeding access to said wall portion in its closed position;

a propelling means provided at said wall portion for propelling a fluid contained in a tube placed on said propelling means with a peristaltic pumping action when said door is closed;

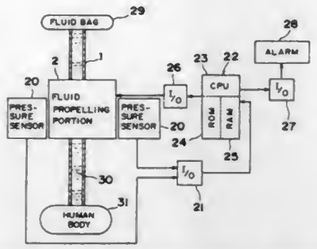
a detecting means for detecting misloading of said tube, said detecting means having:

(a) a sensing means provided in the vicinity of said propelling means for sensing a pressure applied to said sensing

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means, and including a variable resistive element whose resistance varies in accordance with a magnitude of the applied pressure and a resistor connected in parallel with said variable resistive element and having a resistance of a predetermined value;

(b) a comparing means for receiving output from said sensing means and comparing a resistance of said sensing



means with the resistance of said resistor and with a specified value which is smaller than the resistance of said resistor; and

(c) a judging means for making a decision based on comparison results as to whether said tube is properly loaded or misloaded or whether said sensing means is in an inoperative state such as a damaged or unpowered state.

5,312,335

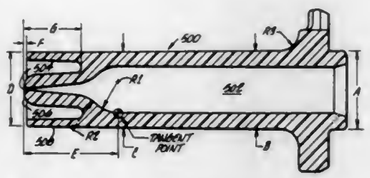
NEEDLELESS HYPODERMIC INJECTION DEVICE

Charles M. McKinnon, Laguna Niguel, Calif.; Takaaki Nakagawa, Tigard, and Carl E. Wilcox, Portland, both of Oreg., assignors to Bioject Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 547,898, Jul. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 434,250, Nov. 9, 1989, Pat. No. 5,064,413. This application Jun. 13, 1991, Ser. No. 714,892

Int. Cl.[5] A61M *5/30*

U.S. Cl. 604—72 **11 Claims**



1. A needleless injection system comprising: a needleless injection device; an ampule having:

an ampule body containing an injectant chamber;

a tubular shroud attached to the ampule body;

a nozzle section attached to the ampule body concentric with the shroud, the nozzle section having a nozzle opening leading into the injectant chamber;

a Luer fitting on the nozzle section and substantially within the shroud, the Luer fitting having a minimum diameter of approximately 0.15 inch adjacent to the nozzle opening and tapering linearly outwardly to larger diameters towards the injectant chamber;

a plunger slidably displaceable into the injectant chamber; and

means for attaching the ampule to the injection device.

5,312,336

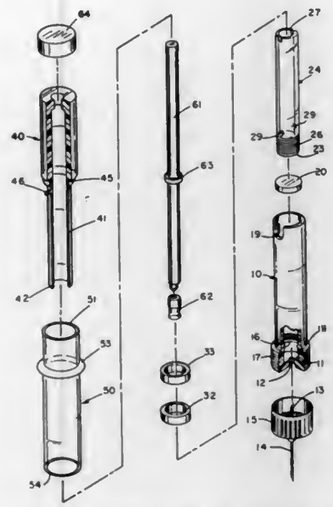
COMPONENT MIXING SYRINGE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Apr. 14, 1993, Ser. No. 47,125

Int. Cl.[5] A61M *37/00, 5/00*

U.S. Cl. 604—89 **9 Claims**



1. A component mixing syringe for use in mixing a first liquid component with a second component prior to use, said syringe comprising:

a first housing having a seal end and a second end;

a septum located at said seal end of said first housing;

a second housing received within said first housing and forming an annular space therewith, said second housing having a first end in sealing engagement with said seal end of said first housing, and a second end, and at least one aperture therethrough adjacent said first end to provide fluid communication between said annular volume and the interior of said second housing;

first and second sealing bands slidably received about said second housing and mutually spaced therealong, both of said sealing bands being initially positioned above said aperture to form an annular volume for the first liquid component;

a band driving sleeve slidably received about said second housing and located partially within said first housing, said band driving sleeve having a first end positioned adjacent the upper one of said mutually spaced bands, and a second end;

a plunger having a seal end received within said second housing to form an enclosed volume for the second component; and

means for enabling said band driving sleeve to be translated toward said seal end of said first housing to drive said upper one of said mutually spaced sealing bands toward said aperture, thereby causing said first liquid component to force the lower one of said sealing bands to slide below said aperture permitting said first liquid component to mix with the second component within the interior of said second housing.

5,312,337

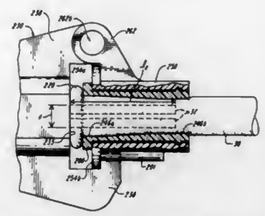
CATHETER ATTACHMENT DEVICE

J. Christopher Flaherty, Topsfield; William J. Gorman, S. Hamilton; Paul V. Fenton, Jr.; Kelly A. Moynihan, both of Marblehead; Andrew M. Mailloux, Lawrence, all of Mass., and Thomas M. Young, Traverse City, Mich., assignors to Strato Medical Corporation, Beverly, Mass.

Continuation-in-part of Ser. No. 595,172, Oct. 10, 1990, Pat. No. 5,129,891. This application Jun. 8, 1992, Ser. No. 894,823

Int. Cl.[5] A61M *11/00, 5/32, 25/00;* **F16L** *27/00*

U.S. Cl. 604—93 **13 Claims**



1. Connector apparatus for coupling an end of a resilient tube about the exterior of a tubular extension of a fluid transfer device, said tube having a nominal inner diameter d' and having a wall thickness t when positioned about the exterior of said tubular extension, said extension extending along a port axis and having an outer diameter d, and an length at least equal to l_2, where d is greater than or equal to d', said connector apparatus comprising:

A. a rigid tubular sleeve having an interior wall and extending along a reference axis from a first end to a second end, said sleeve having a first inner diameter D_{s1} at said first end, where D_{s1} is equal to at least about d +2t, and a second inner diameter D_{s2} at an intermediate point a distance l_1 from said first end, where l_1 is less than or equal to l_2 along said reference axis between said first and second end, where D_{s2} is less than D_{s1} and greater than d, and

B. a rigid body part disposed about said tubular sleeve and associated capture means for capturing said sleeve within said body part,

whereby said sleeve is freely rotatable about said reference axis with respect to said body part,

wherein said body part further includes twist lock means at said first end, responsive to coaxial alignment of said port axis and said reference axis and to subsequent rotation of said body part about said reference axis and said port axis, for selectively engaging said body part to said fluid transfer device having said tubular extension, when said sleeve is coaxial with and positioned about said tubular extension.

5,312,338

ROTATION TOOL FOR MEDICAL GUIDEWIRE

Arlin D. Nelson, and Fred P. Lampropoulos, both of Salt Lake City, Utah, assignors to Merit Medical Systems, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 984,227, Nov. 30, 1992, Pat. No. 5,219,332. This application Mar. 11, 1993, Ser. No. 30,600

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

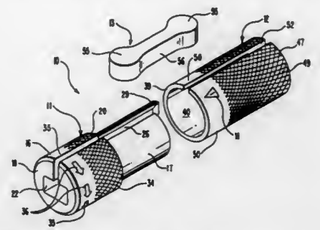
Int. Cl.[5] A61M *37/00, 5/178;* **A61B** *6/00, 5/00*

U.S. Cl. 604—95 **16 Claims**

1. A device for selective attachment to or detachment from a catheter guidewire or the like, and for selectively gripping the guidewire when attached to permit either longitudinal or rotational manipulation of the guidewire for purposes of steering the guidewire through a vessel, comprising:

a tubular housing means for receiving and retaining the guidewire comprising a longitudinal passageway therethrough and a radial slot extending from an outer surface to the passageway along the full length of said housing means, and further comprising first and second rotatably connected members which are rotatably operative such that when the members are rotated into a first position of alignment relative to each other the guidewire is adapted to be inserted into the passageway by slipping the guidewire through the slot, and such that when the members are rotated into a second position of alignment relative to each other the guidewire is secured both longitudinally and rotationally relative to the housing means;

retention and gripping means situated within said passageway and having one end anchored in the first member and



another end anchored in the second member such that said retention and gripping means will urge and hold the first and second members together under compressive force, and said retention and gripping means securing the guidewire both longitudinally and rotationally relative to said housing means when the members are rotated into the second position;

means for irreversibly securing the first and second rotatable members together; and

stop means for aligning said first and second members at said first position and for limiting rotation of the members to a single direction relative to one another.

5,312,339

ENDOPROSTHESIS CATHETER

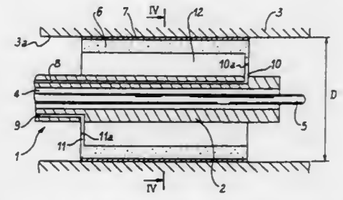
Georges Boussignac, 1 Avenue de Provence, and Jean-Claude Labrune, 2, Avenue de Guyenne, both of 92160 Antony, France

Filed Apr. 8, 1991, Ser. No. 682,591

Claims priority, application Japan, Apr. 13, 1990, 90 04840

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—96 **10 Claims**

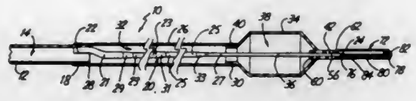


1. Catheter for a morphological duct comprising an inflatable sleeve having an external wall and an internal wall, said sleeve surrounding the distal end of said catheter and connected thereto by a first flexible connection, said first flexible connection being itself connected to the proximal end of said catheter by at least one inflating conduit which can be connected to an inflating device and said inflatable sleeve may take on either a deflated state in which its internal wall is applied against said distal end of said catheter, or an inflated state in which its external wall bears against the internal wall of said morphological duct, forming an annular space between the

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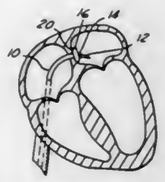
internal wall of said inflatable sleeve and said distal end of said catheter, wherein said inflating device feeds inflating fluid capable of making said sleeve rigid in its inflated state and said first flexible connection is breakable.

5,312,340
BALLOON DILATATION CATHETER HAVING DUAL SEALING PLUGS
Peter T. Keith, Fridley, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Mar. 17, 1992, Ser. No. 852,546
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **16 Claims**



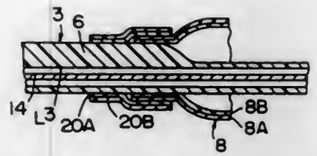
1. A catheter comprising:
a tube having a through passage extending from a proximal end to a distal end;
a guiding member having a proximal end and a distal end, with the guiding member extending distally beyond the distal end of the tube;
an inflatable balloon member extending around a section of the guiding member and having an interior in fluid communication with the through passage of the tube, the balloon member including a proximal end sealably connected to the distal end of the tube and a distal end extending coaxially about a portion of the guiding member so as to allow rotational movement of the guiding member relative to the balloon member; and
a sealing means associated with the guiding member and cooperable with the distal end of the balloon member to substantially restrict the flow of fluid through the distal end of the balloon member, the sealing means including a first sealing plug secured tot he guiding member immediately, proximally of the distal end of the balloon member, and a second sealing plug secured to the guiding member immediately, distally of the distal end of the balloon member.

5,312,341
RETAINING APPARATUS AND PROCEDURE FOR TRANSSEPTAL CATHETERIZATION
Zoltan Turi, West Bloomfield, Mich., assignor to Wayne State University, Detroit, Mich.
Filed Aug. 14, 1992, Ser. No. 930,340
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—96 **24 Claims**



1. A cardiac transseptal sheath for a transseptal catheterization procedure which involves positioning the sheath across a septum between a right atrium and a left atrium of a heart, said sheath having a main lumen and having selectively deployable retaining means for retaining a distal tip of said sheath in relation to the septum during the catheterization procedure, said sheath having a curved distal end to facilitate emplacement in the left atrium and passage therethrough of devices for diagnostic or therapeutic purposes.

5,312,342
CO-EXTRUDED MEDICAL BALLOON
James C. Wang, Norton; George T. Roberts, Weston, and Brian A. Pederson, Sr., South Attleboro, all of Mass., assignors to Boston Scientific Corp., Watertown, Mass.
Division of Ser. No. 691,999, Apr. 26, 1991, Pat. No. 5,195,969.
This application Feb. 4, 1993, Ser. No. 13,566
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **15 Claims**



1. A medical balloon for attachment to a catheter shaft, said balloon having ends spaced from each other by a central body portion, at least one of said ends being attachable to said shaft, said central body portion being inflatable from one diameter to a larger diameter, said balloon comprising;
a plurality of co-extruded and coextensive layers of polymeric materials, said layers being bonded to each other, one of said layers being a base structural layer, said layers providing the combined advantages of more than one layer of material making up said balloon.

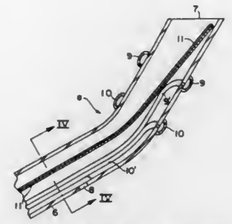
5,312,343
DEVICE FOR SEGMENTAL PERFUSION AND ASPIRATION OF COLON AND RECTUM
Michael Krog, Engelbrektsgatan 4, S-803 24 Gävle; Roger Hällgren, Dragontorpsvägen 9, S-740 22 Bälinge; Lars Knutson, Upsala, and Yngve Raab, Cellovägen 124 E, S-756 54 Uppsala, all of Sweden, assignors to Michael Krog, Gävle; Roger Hällgren, Bälinge and Yngve Raab, Upsala, all of Sweden
PCT No. PCT/SE90/00773, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO91/08013, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 23, 1990, Ser. No. 867,205
Claims priority, application Sweden, Nov. 24, 1989, 89-03980-4
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 **8 Claims**



1. A device for segmental perfusion/aspiration of intestinal segments comprising;
a catheter (1) having a wall forming a large central channel (10),

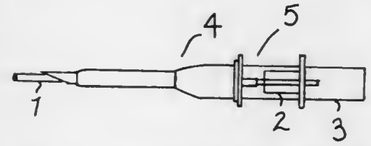
said large central channel (10) sized for passage of an endoscope therethrough,
a plurality of parallel smaller channels (11-21) in said wall having diameters smaller than a diameter of said central channel,
said plurality of smaller channels each having a first end terminating at a hole on an outer surface of said wall,
a plurality of intestinal segment-deliminating balloons which pairwise delimit said segments, said plurality of balloons sealingly engaged along a length of said catheter and around a circumference thereof,
a number of holes of said plurality of holes communicating with an interior of said plurality of segment-deliminating balloons to permit inflation thereof through a corresponding number of said plurality of parallel smaller channels,
a remainder of said plurality of holes providing aspiration and perfusion of fluid from and to different segments of an intestine delimited by pairs of said plurality of segment-deliminating balloons and release of a marking substance to selected segments of said different segments through a corresponding number of said plurality of parallel smaller channels,
said device being sufficiently stiff for introduction through an anal orifice and having an inflatable anchoring device (2) engaged on an end of said catheter to firmly fix said end on two sides of said anal orifice after inflation,
wherein said device produces at least two of said different segments delimited by said intestinal segment-deliminating balloons, and
wherein said anchoring device is formed by two balloons (3, 4).

5,312,344
ARTERIAL PERFUSION CANNULA FOR EXTRACORPOREAL CIRCULATION AND OTHER USES
Roberto R. Grinfeld, and Liliana R. Grinfeld, both of Gascon 626, Capital, Argentina
Continuation of Ser. No. 737,358, Jul. 29, 1991. This application Aug. 9, 1993, Ser. No. 103,557
Claims priority, application Argentina, Feb. 25, 1991, 319116
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—101 **5 Claims**



1. Arterial perfusion cannula, for effecting extracorporeal circulation, wherein one part is inserted into the aortic vessel, and the other part is connected to a cardiopulmonary machine, comprising: a single multi-channel catheter having a tubular body end region and including at least separate and independent first, second and third pathways each of which having corresponding at least one first, second and third openings in said tubular body end region; wherein the first and second pathways define separate non-communicating passages within said catheter; the third pathway comprising a further independent passage in said catheter channelizing a fluid with the corresponding third opening of said third pathway feeding at least one inflatable balloon which is located between the first and second openings, as an arterial occlusive element operative to be adjustable against the internal vessel walls; with the sole openings in the tubular body end region being the first, second and third openings; wherein the first pathway has its sole opening to the tubular body end region in the at least one first opening downstream of said balloon, and the second pathway has its sole opening to the tubular body end region in the at least one second opening upstream of said balloon; and wherein the first pathway and at least one corresponding first opening are of a size suitable for infusion of oxygenated blood from a cardiopulmonary machine for the whole organism in sufficient amounts to maintain circulation.

5,312,345
ANTI-NEEDLE STICK PROTECTIVE INNER BLUNT TUBULAR STYLET FOR INTRAVENOUS THERAPY
Richard D. Cole, 311 Oleander Dr., San Jacinto, Calif. 92582
Filed Mar. 11, 1992, Ser. No. 848,878
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **1 Claim**



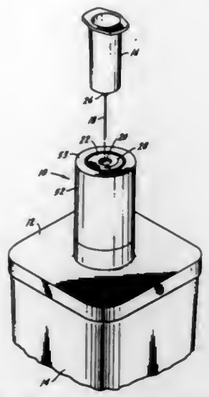
1. A safety device used to prevent accidental needle sticks upon withdrawal of sharp intravenous puncture devices comprising:
(a) a hollow tubular stylet with two blunt ends of which first end protrudes beyond a tip of said sharp intravenous puncture device, such as a needle stylet, to obscure said tip when inserted into said intravenous puncture device,
(b) a clear plastic cylindrical hub to which said hollow tubular stylet is permanently bonded on second end and is designed to allow easy and secure fitting to all conventional sized medical syringes tips and male connectors of existing commonly used intravenous therapy tubing by either friction fit of Luer lock connection and
(c) barbed friction catches which are molded on said hub to form a permanent component of said hub and secures the safety device within the intravenous puncture device.

5,312,346
NEEDLE REMOVING DEVICE
Sang I. Han, Northbrook, Ill., assignor to Han Medical Designs, Inc., Northbrook, Ill.
Filed Feb. 16, 1993, Ser. No. 17,805
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **19 Claims**

1. An apparatus for removing a needle with a threaded collar from a syringe body, the needle being attached to the syringe body with the threaded collar, the apparatus comprising:
a base member having an upper end and a lower end,
a tube member for receiving the needle, the tube member being disposed within the base member, means for moving the tube member upward and downward within the base member, the tube member including an upper end and a lower end,
the upper end of the tube member including means for engaging the collar of the needle upon the application of a downward force on the syringe body when the needle is inserted into the upper end of the tube member,
the base member including means for twisting the collar upon application of the downward force on the syringe body when the needle is inserted through the upper end of the tube member,
the collar of the needle being twisted off the syringe body by the means for engaging and the means for twisting the

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collar upon arrival of the collar of the needle and upper end of the tube member at the lower end of the base

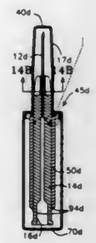


member due to the application of the downward force on the syringe body.

5,312,347
HYPODERMIC NEEDLE SHIELD

Barbara J. Osborne, 4184 SE. Centerboard La., Stuart, Fla. 34997, and Richard W. Slawson, 211 S. Beach Rd., Hobe Sound, Fla. 33455

Continuation-in-part of Ser. No. 843,354, Feb. 27, 1992, abandoned. This application Feb. 23, 1993, Ser. No. 21,218
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **20 Claims**

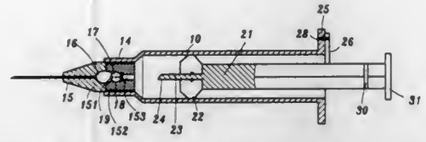


1. A needle and cover assembly comprising a needle hub, said hub having proximal and distal ends, inlet means at the proximal end of the hub for receiving medication from medication-supplying means, a needle anchored to the hub, said needle having an exposable portion extending outwardly from the distal end of the hub coaxially therewith to the tip of the needle, the hub having a cap-receiving portion associated with its distal end, a cover cap removably and replaceably supported on said cap-receiving portion of the hub in covering relationship with said exposable portion of the needle, and a needle shield mounted on the hub, said shield being movable in the longitudinal direction, upon removal of the cover cap from the hub, from a retracted position nearer to said proximal end of the hub, in which retracted position said exposable portion of the needle is exposed, to an advanced position further from said proximal end, in which advanced position the needle shield surrounds said exposable portion of the needle.

5,312,348
SINGLE-USAGE DISPOSABLE HYPODERMIC SYRINGE

Ten S. Sans, 2F, No. 17, Alley 13, Lane 2, Chung-San Rd., Sec. 2,, Chung-Ho City, Taipei, Taiwan

Filed Jul. 30, 1993, Ser. No. 124,414
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **6 Claims**

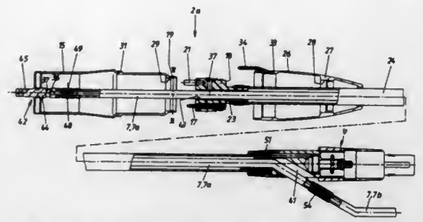


1. A single-usage disposable hypodermic syringe comprising a needle cannula, a needle locking base, a barrel, a plunger and a finger flange wherein:
a tubular housing encloses from the tip of the needle cannula to the rear end of the barrel and snaps at an appropriate location, the front of the tubular housing is a cone shape and the rear end of which is a finger flange; an empty space is reserved inside the needle locking base, a ball plug is fixed inside the empty space in an appropriate position, from where the internal space of the barrel is connected to through a channel which is smaller in diameter than the ball plug, the needle locking base is securely mounted on a connecting base which is located in the tapered end of the barrel; a channel opening, which joins with the empty space, is opened at the center of the ball plug, said empty space is linked to the channel of the needle cannula, a rubber plug located at the front end of the plunger, is connected to a projected member in a direction pointing to the needle cannula, as the plunger is pushed forward, the projected member also advances and is driven into the channel, the projected member continues to move inside the channel until the dosage of medication is finished, at this time the projected member is in contact with the ball plug and blocks the channel opening, no more medication can be injected accordingly, the empty space is appropriately designed such that the ball plug seals off the channel to the needle cannula and therefore the syringe can no longer be reused, the shape of the rubber plug is preferably made to match the upper part of the barrel and snap onto the plunger, the projected member of the plunger ensures that the rubber plug is secured with the plunger, the rubber plug is made to be able to slide smoothly inside the plunger; to avoid the plunger from being mistakenly used, such as the plug being pushed first and the plunger loses its primary function, a projecting plate is mounted on a pivot on the edge of the finger flange, the projecting plate is a small square plate having a sharp end pointing at the barrel, the length of the projecting plate is able to shield the plunger partially but does not affect its forward movement, the plunger is made to have a "Y" shape and in the rear portion of the plunger a triangular plate is installed, when the syringe is new, the projecting plate is facing toward the center of the plunger, the projecting plate is restricted by the triangular plate and cannot move forward during injection, only when the projecting plate is rotated that the syringe is able to accept medication, the tubular housing is used to cover up the needle cannula and the syringe is ready to be disposed.

5,312,349
MEDICAL TREATMENT DEVICE, IN PARTICULAR FOR SURGICAL PURPOSES

Gerd Löhn, Biberach an der Riss, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,365
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, 4138673
Int. Cl.[5] A61F *7/12;* **H05B** *7/12*
U.S. Cl. 604—113 **14 Claims**

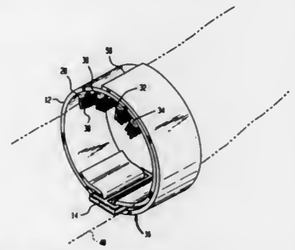


1. A medical treatment device, in particular for surgical purposes, comprising at least one treatment instrument consisting of a handpiece; a control unit; a flexible supply line connecting said handpiece to said control unit, said handpiece including a rear handpiece portion and a front handpiece portion which are releasably interconnected, said rear handpiece portion being connected with the supply line; a source for a treatment agent being operatively associated with said control unit; a treatment agent line being connectable to said source, said treatment agent line including a hose extending at least in part through the supply line to the rear end of the handpiece, said treatment agent line including a hose section which extends at a radial play of movement within the supply line towards the rear handpiece portion; a plug-in spigot having said hose section connected thereto, said spigot being releasably plugged into an axial plug-in socket formed in the rear handpiece portion; an axial channel section of the spigot extending from the hose section and being connected to the treatment agent line so as to be drawable with the hose section towards the front of the handpiece out of the rear handpiece portion.

5,312,350
VEIN SPOTTER

Andrew Jacobs, 22 Hickory Rd., Short Hills, N.J. 07078

Filed Nov. 30, 1992, Ser. No. 983,240
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—116 **15 Claims**

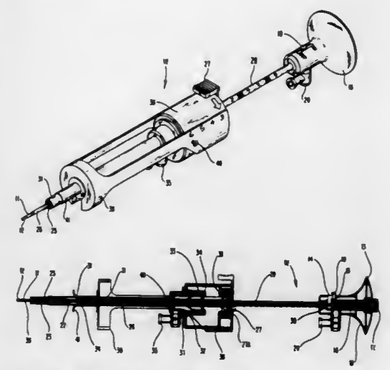


1. A vein spotter comprising:
a flexible band, having a length dimension, a width dimension, a first surface and a second surface;
a plurality of protrusion members, said protrusion members mounted on said first surface of said flexible band and disposed in a spaced relationship, each of said protrusion members comprising a base portion and a plurality of finger portions, each projecting from said base portion;
said finger portions are each generally cylindrical in configuration, and each of said finger portions has a rounded projecting end, and said finger portions on each protrusion member form a closely spaced array with the finger portions being substantially parallel to each other;
length adjusting means including a buckle member attached to said flexible band and capable of forming said flexible band into a loop of adjustable size, and coacting hook and pile fastener means mounted on said second surface of said flexible band with said buckle member mounted on said first end and with said buckle member proportioned to accept said second end of said flexible band, said protrusion members inwardly directed relative to said loop for the purpose of encircling a human limb and causing said protrusion members to bear against said limb thereby causing superficial veins to distend and become visible;
each of said protrusion members capable of displacement relative to the adjacent protrusion members to enable accommodation of superficial veins between adjacent protrusion members.

5,312,351
COMBINED PNEUMO-NEEDLE AND TROCAR APPARATUS

Carmen J. Gerrone, 110 Dunkard Church Rd., Stockton, N.J. 08559

Filed Jan. 29, 1993, Ser. No. 10,769
Int. Cl.[5] A61M *5/00, 25/00*
U.S. Cl. 604—117 **14 Claims**

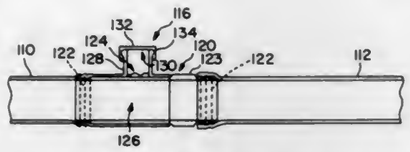


1. A surgical apparatus comprising:
a pneumo-needle having a shaft and a long axis and a first and second end, a cutting tip located at said first end of said shaft, and a central channel running through said shaft;
an obturator means located within said channel of said pneumo-needle;
a single cycle lock means for locking said obturator means with respect to said cutting tip of said pneumo-needle;
graduator means attached to said shaft of said pneumo-needle for setting and gauging the depth of penetration of said pneumo-needle;
a knob means located at said second end of said pneumo-needle shaft;
a trocar having a tip, a central channel and a long axis running through said central channel, wherein said pneumo-needle is located within said central channel of said trocar so that said cutting tip of said pneumo-needle emerges from said tip of said trocar;

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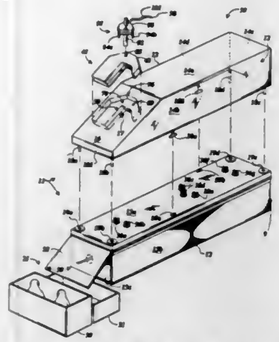
a cannula surrounding said trocar, said cannula having a lumen therethrough;
a cannula housing;
a first seal means located within said cannula housing for sealing said cannula lumen, such that said first seal means prevents leakage of insufflation gas from the abdominal cavity when said cannula is introduced into said abdominal cavity;
a reducer housing attached to said cannula and surrounding said pneumo-needle;
stabilizer means including a releasable latch means attachable to said reducer housing for setting and gauging the depth of penetration of said cannula, said stabilizer means including a stabilizer lock which engages the interior of a wound to prevent the premature withdrawal of said cannula from said wound; and,
a second seal means located within said reducer housing and attached to said reducer housing for sealing the interior of said reducer housing with respect to said cannula, said second seal means comprising at least one duckbill valve.

5,312,352
BUBBLE-FREE CONNECTOR FOR LIQUID CARRYING TUBING
Boris Leschinsky, Waldwick; Robert B. Schock, Sparta; Robert L. Wilcox, Wanaque, and Clifford E. Schwartz, Maplewood, all of N.J., assignors to Datascope Investment Corp., Montvale, N.J.
Filed Jan. 19, 1993, Ser. No. 5,334
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—122 **34 Claims**



1. A system for connecting two liquid carrying tubes, including means for permitting escape of a gas bubble therefrom, the system comprising:
a first tube having an axis, a lumen therethrough, an open end, and a bubble elimination port formed in a wall of said first tube, axially displaced from the open end of said first tube and in fluid communication with the lumen of said first tube;
a second tube having a lumen therethrough and an open end;
means for connecting the first and second tubes in a first position, with the open ends of the first and second tubes forming a fluid-tight connection, the lumen of said first tube and the lumen of said second tube forming a continuous fluid circuit, and the bubble eliminated port being open to the continuous fluid circuit to permit escape of said gas bubble from the continuous fluid circuit; and
means for connecting the first and second tubes in a second position, the lumen of said first tube and the lumen of said second tube forming a continuous fluid-tight circuit, and the bubble elimination port being closed by said second tube.

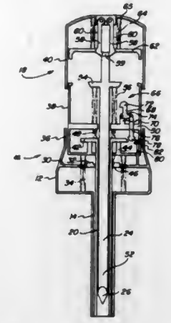
5,312,353
MODULAR POULTRY AUTOMATIC VACCINE INJECTION AND SPRAY APPARATUS
Gregory D. Boggess, 3812 Woodlane Cir., Gainesville, Ga. 30506; Joseph H. Johnson, Gainesville, Ga.; Richard M. Kight, Stone Mountain, Ga.; John D. Mason, Decatur, Ga., and Roger D. Luke, Stone Mountain, Ga.
Filed Mar. 24, 1993, Ser. No. 36,462
Int. Cl.[5] A61M *5/20*; **A61D** *7/00*
U.S. Cl. 604—144 **30 Claims**



1. An automatic injection apparatus for injecting vaccine and the like into poultry comprising:
a modular casing construction including a lower housing and an upper housing adapted to mount on said lower housing;
said upper housing including at least one syringe, a hypodermic needle for injecting vaccine into the poultry and a drive means for extending the needle into the poultry and compressing said syringe;
said lower housing containing components for actuating the drive means of said upper housing,
so that the upper housing can be removed from the lower housing and one of the housings exchanged with a duplicate housing.

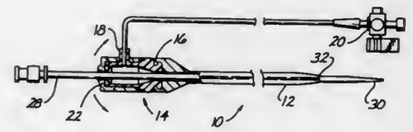
5,312,354
SAFETY TROCAR INSTRUMENT HAVING A RETRACTABLE POINT ACTUATED BY A TRIGGER SLEEVE
William J. Allen, Stratford, and Jeffrey A. Stein, Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Nov. 4, 1991, Ser. No. 787,182
Int. Cl.[5] A61M *5/20*
U.S. Cl. 604—157 **21 Claims**

1. A safety trocar instrument for piercing a wall of an anatomical cavity, having an interior, to provide communication with the interior of the cavity, said trocar instrument comprising:
(a) a tubular cannula having a distal end;
(b) an elaborate trocar, having a sharp piercing point terminating in an extreme end, mountable for axial reciprocal movement within said cannula between a withdrawn rest position in which said point is received within and shielded by the distal end of said cannula and a projecting position in which said point is exposed beyond the distal end of said cannula;
(c) means for biasing said trocar to its withdrawn rest position;
(d) latch means for latching said trocar in the projecting position in opposition to said biasing means;
(e) trip means for tripping said latching means to unlatch said trocar and thereby permitting said trocar to be moved to its withdrawn rest position by said biasing means;
(f) mechanical trigger means mounted within said instrument, having a counterforce sensing portion locatable between the extreme end of said trocar point and the distal end of said cannula, said sensing portion sensing a counterforce exerted by the wall of the cavity after it has begun to



be pierced by said trocar point and sensing relief of such counterforce when said sensing portion has pierced the wall of the cavity, said trigger means being mechanically coupleable to said trip means to cause said trip means to trip said latch means in response to sensing relief of such counterforce; and
(g) plunger means for manually moving said trocar from the withdrawn rest position to the projecting position.

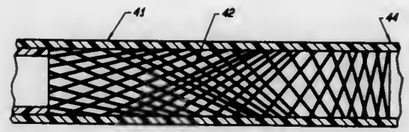
5,312,355
SPLITTABLE HEMOSTATIC VALVE AND SHEATH AND THE METHOD FOR USING THE SAME
Hongpyo Lee, Rancho Palos Verdes, Calif., assignor to H L Medical Inventions, Inc., Rancho Palos Verdes, Calif.
Continuation-in-part of Ser. No. 727,191, Jul. 9, 1991, Pat. No. 5,125,904. This application Jun. 26, 1992, Ser. No. 905,045
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—160 **33 Claims**



1. A sheath assembly for use with a lead or catheter comprising:
an introducer sheath;
a hemostatic valve coupled to said introducer sheath, said hemostatic valve and introducer sheath being arranged and configured to permit introduction of at least one lead or catheter therethrough;
means for permitting removal of said hemostatic valve and introducer sheath from said lead or catheter disposed therethrough without requiring said introducer sheath and hemostatic valve to be removed from an end of said lead or catheter,
wherein said means for permitting removal of said hemostatic valve comprises a two-part body, said two-part body being made in two separate body portions, said body portions defining means for sealing said body portions together when said two body parts are joined with each other to form said hemostatic valve,
whereby said assembly may remain in a vein throughout an operation with the advantage of free lead exchange and easier lead manipulation without substantial bleeding, risk of air embolism, clotting or repeated sheath insertion causing related trauma from lead exchange,

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5,312,356
CATHETER WITH LOW-FRICTION DISTAL SEGMENT
Erik T. Engelson, Mountain View, and Ivan Sepetka, Redwood City, both of Calif., assignors to Target Therapeutics, Fremont, Calif.
Continuation-in-part of Ser. No. 355,500, May 22, 1989, Pat. No. 4,955,862. This application May 22, 1990, Ser. No. 527,200
The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.
Int. Cl.[5] A61M *5/178, 5/32, 25/00*
U.S. Cl. 604—164 **15 Claims**



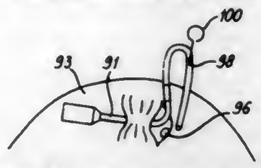
1. A catheter device, comprising:
an elongated guidewire having a proximal and a distal end; and
an elongated polymeric tubular member having an internal diameter of no greater than about 40 mils through which internal diameter the guidewire is positioned, the tubular member being comprised of a first section towards a proximal end of the tubular member, which first section has an internal tubular wall portion of a first material, has substantially less flexibility relative to a second section at least 5 cm long which is positioned toward a distal end of the tubular member, the second section being sufficiently flexible to allow a high degree of bending as compared to the degree of bending possible with the first section, the second section of the tubular member having a braided sleeve internal tubular wall portion which braided sleeve comprises a material different from and that is more lubricious than the internal wall surface of the first material and further is constructed so as to deflect the distal end of the guidewire in axial direction of the second segment of the tubular member.

5,312,357
CATHETER
Arnold Buijs, and Michael W. C. M. Nieuwesteeg, both of Eindhoven, Netherlands, assignors to Drager Medical Electonic B.V., Best, Netherlands
Filed Nov. 3, 1992, Ser. No. 971,078
Claims priority, application European Pat. Off., Nov. 4, 1991, 91202871.9
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—164 **10 Claims**

1. Catheter to be used in the skull area consisting of an elongated tube having a closed distal end and having a connecting part arranged at a rear end, said catheter characterized in that the tube has an opening at a predetermined distance from said distal end, said opening having dimensions sufficient for allowing insertion of an elongated manipulating needle into the tube such that a distal point of said needle contacts the closed distal end of the catheter, said needle having a desired length and being used to locate said catheter in said skull, said

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needle being removed through said opening after said catheter is located, and said predetermined distance being larger than a



maximum length of the catheter introduced into the skull and shorter than the length of the manipulating needle.

5,312,358

Patent Not Issued For This Number

5,312,359

INTRAVENOUS CANNULA INSERTION ASSEMBLY WITH PROTECTIVE SHIELD

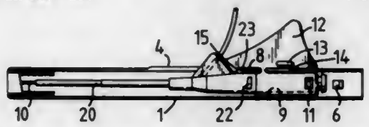
Henry G. Wallace, c/o H. G. Wallace Ltd., Whitehall Road, Colchester, Essex C02 8JH, United Kingdom

Filed Dec. 1, 1992, Ser. No. 983,692

Claims priority, application United Kingdom, Dec. 3, 1991, 9125697; Feb. 28, 1992, 9204357; Jul. 27, 1992, 9215899

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—164 **7 Claims**



1. An intravenous cannula insertion assembly comprising:

a cannula and cannula hub;

an elongate needle protector, said protector comprising a slotted tube;

a needle and needle hub, said needle hub and said cannula hub operatively inter-engageable within said protector, said needle hub and said cannula hub being extensible together from the protector to allow intravenous insertion of the cannula, said protector further having retraction prevention means for preventing retraction of the cannula hub after it has been fully extended; and

interlocking means for interlocking the cannula hub with the needle hub both during extension and when fully extended until positively released from each other by a primary release means, said primary release means extending through said slot to allow the needle hub and cannula hub to be slidable within said protector, said primary release means being operable only when the cannula hub and the needle hub are in the extended position.

5,312,360

TENSION GUIDE AND DILATOR

Robert S. Behl, Palo Alto, Calif., assignor to Innerdyne Medical, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 616,122, Nov. 20, 1990, abandoned. This application Mar. 18, 1993, Ser. No. 33,455

Int. Cl.[5] A61M *5/178*

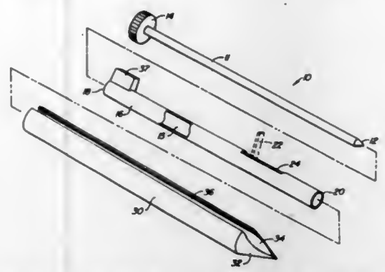
U.S. Cl. 604—164 **30 Claims**

1. A method for enlarging a percutaneous penetration through tissue into a body cavity, said method comprising:

introducing an elongate guide member into the body cavity through a penetration;

applying sufficient tension to the guide member in order to inhibit buckling and misalignment of the guide member;

advancing a dilation member toward the body cavity over the guide member from outside the penetration and through the penetration while tension is being applied,



wherein said dilation member enlarges the tissue penetration.

5,312,361

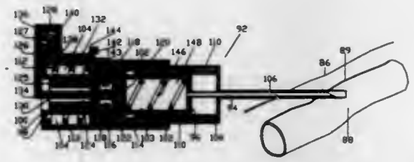
AUTOMATIC CANNULATION DEVICE

Filiberto P. Zadini, 16814 Rayen St., Sepulveda, Calif. 91343, and Giorgio C. Zadini, 2237 Hilltop La., Camarillo, Calif. 93012

Continuation-in-part of Ser. No. 834,161, Feb. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,157, Sep. 13, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 929,182

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—165 **84 Claims**



1. An intravascular catheter placement device for insertion of an intravascular catheter into the interior of a blood vessel comprising:

an intravascular catheter;

a hollow needle, said catheter being concentric to said hollow needle;

means self initialed and for self-propelled advancement of said intravascular catheter into the interior of a blood vessel.

5,312,362

SEAL FOR A CANNULA ASSEMBLY

Lanis P. Pfolsgraf, Oconomowoc, and Gene T. Kyburz, Pardeeville, both of Wis., assignors to Owens Precision Systems, Inc., Oak Creek, Wis.

Filed Feb. 4, 1993, Ser. No. 13,763

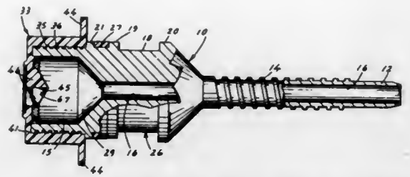
Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—167 **12 Claims**

1. In a self-sealing cannula assembly for insufflatory surgical procedures, and wherein said cannula assembly comprises a cannula having an elongated sleeve defining a cannula passage for receiving surgical instruments therethrough and for penetrating into an operative body cavity to facilitate insertion and withdrawal of a surgical instrument while retaining said cannula in situ and while retaining gag pressure in said body cavity notwithstanding withdrawal of said surgical instrument, said cannula having a cuplike portion of enlarged cross-section disposed at its rearward end, said cuplike portion having an

open-ended entrance defined by a marginal end surface for receiving the surgical instruments, the improvement comprising,

an elastomeric cap having an endwall for enclosing said open-ended entrance of said cuplike section, said elastomeric cup having a centrally located, inwardly projecting



convex area and having an inner circumference substantially conforming to the outer circumference of said cuplike portion of the cannula, said elastomeric cap further being self-retaining for seating engagement and securement with the outer circumference of said cuplike portion of the cannula to provide a gaseous seal.

5,312,363

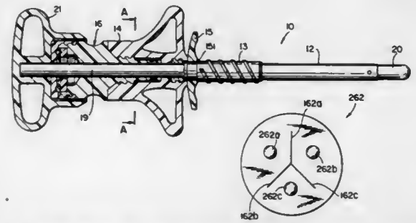
LOW FRICTION SLIT VALVE

Dana Wm. Ryan, Davie, and Thomas O. Bales, Miami, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Jul. 13, 1993, Ser. No. 91,236

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—167 **20 Claims**



1. An automatic fluid valve permitting insertion of a surgical instrument therethrough, said automatic fluid valve comprising:

a) an elastomeric member having a center and at least one slit intersecting said center, said slit permitting said surgical instrument to be inserted therethrough; and

b) a plurality of raised surgical instrument engaging protrusions on a proximal surface of said elastomeric member, said protrusions being spaced away from said at least one slit.

5,312,364

INTRAOSSEOUS INFUSION DEVICE

Michael W. Jacobs, Surrey, Canada, assignor to Pyng, Delta, Canada

Filed Aug. 6, 1993, Ser. No. 103,428

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—180 **11 Claims**

1. An intraosseous infusion device for delivering a liquid to the bone marrow of a patient's bone, the device comprising:

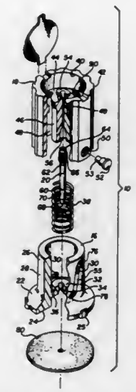
a base having a lower surface configured for placement against the skin of the patient, adjacent to the patient's bone, wherein an opening extends through the base, emerging in its lower surface;

an upper frame mounted to the base;

an elongated needle having a lower end, an upper end and a bore extending therebetween, the lower end of the needle having a tip suitable for puncturing the patient's skin and a port communicating with the bore of the needle, the upper end of the needle fixedly mounted to the upper frame; and

a fitting for receiving liquid to be delivered to the patient's bone marrow and for supplying the liquid to the bore at the upper end of the needle;

wherein one of the base and the upper frame has a cam surface and the other of the base and the upper frame has



a cam follower that engages the cam surface, the cam surface and the cam follower disposed relative to each other such that the upper frame is movable in a longitudinal direction between a retracted position wherein the needle tip does not extend below the lower surface of the base and an extended position wherein the needle tip does extend below the lower surface of the base; and

wherein the cam surface is configured to cause the upper frame to rotate relative to the base as the upper frame moves longitudinally between the retracted and extended positions.

5,312,365

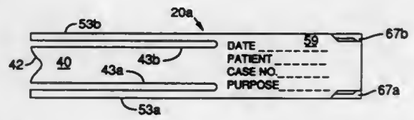
DISPOSABLE SELF-SHIELDING HYPODERMIC SYRINGE

John R. Firth, 5256 SW. Humphrey Blvd., Portland, Oreg. 97221; Anthony R. Perez, 1133 New Ave., Alhambra, Calif. 91801, and Ronald A. Meyer, 947 Bayfield Ave., San Dimas, Calif. 91773

Division of Ser. No. 581,734, Sep. 12, 1990, Pat. No. 5,108,378, which is a continuation-in-part of Ser. No. 521,243, May 9, 1990, abandoned. This application Apr. 28, 1992, Ser. No. 875,053

Int. Cl.[5] A61M *3/00*

U.S. Cl. 604—189 **6 Claims**



1. A medical fixture for collecting, holding and transferring fluid, including a needle, a body, and a protector case, wherein said protector case has upper and lower surfaces thereon, and slidably contains said body, the improvement comprising

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said protector case has on said lower surface thereof a data recording area, and

said body having finger gripping means on an upper surface projecting through said protector case for retracting said body within said protector case.

5,312,366

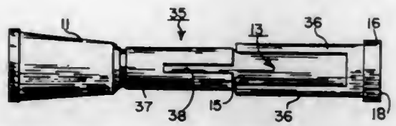
SHIELDED CANNULA ASSEMBLY

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J.

Continuation-in-part of Ser. No. 976,464, Nov. 16, 1992. This application Mar. 3, 1993, Ser. No. 25,887

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **14 Claims**



1. A shielded cannula assembly comprising

a housing;

a hollow cannula mounted in and extended from said housing, said cannula having a lumen for passage of a fluid therethrough;

a tubular shield extending from said housing in an exposed manner relative to the surrounding environment, said shield having a resilient longitudinally collapsible tubular portion concentrically about said cannula and a transverse wall at a distal end to form a sealed chamber with said tubular portion to contain said cannula therein in a sterile condition, said wall being made of a material to permit penetration of said needle therethrough in response to longitudinal collapsing of said tubular portion and resealing of said wall in response to expansion of said tubular portion and withdrawal of said cannula therefrom; and

means for selectively preventing longitudinal collapsing of said tubular portion.

5,312,367

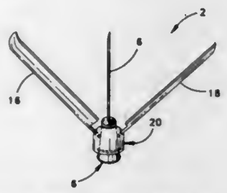
NEEDLE COVER ASSEMBLY FOR SYRINGES

Rasa N. Nathan, 214 N. Elm Dr., Beverly Hills, Calif. 90210

Filed May 20, 1993, Ser. No. 63,946

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **6 Claims**



1. A needle cover assembly, comprising:

a. a hypodermic needle having a proximal end and a distal end with a tip;

b. a hollow hub member having a proximal end, a distal end and a circumferential exterior sidewall, the proximal end connectable to a syringe, and the distal end connected to said proximal end of said hypodermic needle;

c. a protruding flange integrally molded to said circumferential exterior sidewall of said hollow hub member at a location adjacent to said proximal end;

d. an elongated cover member having a first half and an opposite unequal second half, each half having a proximal end and a distal end, the distal end of the first half being arc shaped, the distal end of the second half being complementary to the arc shaped distal end of the first half, to form a hollow chamber enclosing said hypodermic needle, the proximal ends of said halves hingeably attached to said exterior sidewall of said hollow hub member;

e. said first half of said elongated cover member having a greater arc than said unequal second half of said elongated cover member such that the distal end of said first half covers the tip of said hypodermic needle when in the closed position; and

f. a rotatable collar member having a top rim, a bottom rim and a circumferential sidewall with a first recess notch and an opposite second recess notch located at the top rim, the circumferential sidewall having an exterior surface and an interior surface with a locking groove located adjacent to the bottom rim for tightly engaging with said protruding flange of said hollow hub member, where the rotatable collar member is adapted securely to said circumferential exterior sidewall of said hollow hub member;

g. whereby when rotating said rotatable collar member, said unequal halves of said elongated cover member are allowed to open into said recess notches of said rotatable collar member to expose said hypodermic needle, and when said rotatable collar member is rotated back, said unequal halves of said elongated cover member are forced back together to cover said hypodermic needle.

5,312,368

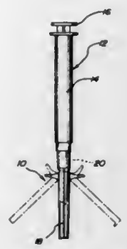
PROTECTIVE SHIELD FOR HYPODERMIC SYRINGE

Don A. Haynes, Okemos, Mich., assignor to Haynes-Miller, Inc., Okemos, Mich.

Filed May 21, 1993, Ser. No. 65,807

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **6 Claims**



1. A shield for protecting the needle of a syringe, said shield comprising:

a connector for connecting the shield to the base of needle, said connector being generally annular and adapted to slip fit over the base of the needle;

a pair of protective arms hingedly mounted upon said connector;

biasing means normally biasing said arms to a closed position wherein said arms are adjacent to one another to form an enclosure for enclosing said needle of said syringe, said protective arms being manually displaceable with respect to one another against the bias of said biasing means to expose said needle;

said protective arm and said connector being integrally formed as a one-piece unit, and said biasing means being defined by a notch formed between said protective arm and said connector, also as part of said one-piece unit, to form a resilient hinge between said protective arms and said connector.

5,312,369

SAFETY HOOD FOR HYPODERMIC NEEDLES

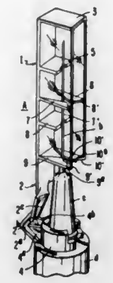
Carlos E. Arcusin, and Ruben A. Makuc, both of San Nicolas 274, Buenos Aires, Argentina

Continuation of Ser. No. 802,143, Dec. 3, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 97,592

Claims priority, application Argentina, Dec. 4, 1990, 318.520

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **9 Claims**



1. A safety hood for hypodermic needles, comprising an elongated body having a U-shaped cross-section formed to surround and enclose a needle and two ends spaced from one another in a direction of elongation, one of said ends being closed; means for preventing undesired withdrawal of a needle from said hood, provided in said body; and a pivot member provided on another of said ends, said pivot member being connected to said body and connectable to the needle and including a springy flip-flop element formed so that said body can be turned in a direction transverse to its direction of elongation between a first position in which said body surrounds and closes the needle and a second position in which said body is turned away from the needle and exposes the needle, said pivot member having a first solid portion and a second portion having lateral arms and a central angular arm which together form a flip-flop spring with said arms resiliently joined to said solid portion.

5,312,370

COMBINED SYRINGE AND NEEDLE SHIELD

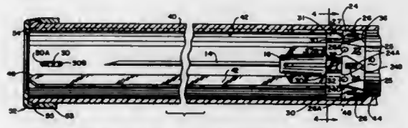
Daniel A. Talonn, University City, and Alan B. Ranford, St. Lonis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 802,026, Jan. 21, 1992, Pat. No. 5,217,437, which is a division of Ser. No. 471,995, Jan. 29, 1990, Pat. No. 5,088,988, which is a continuation-in-part of Ser. No. 212,528, Jun. 28, 1988, Pat. No. 5,053,018. This application Jan. 8, 1993, Ser. No. 2,309

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **20 Claims**



1. A needle protecting device particularly adapted for use on a medical device having an elongate and tubular barrel section having distal and proximal end portions and an elongate needle assembly thereon, the needle assembly having a distal end portion thereon, the needle protecting device comprising:

a collar member mounted on the distal end of the barrel section; and

a tubular shield coaxially mounted about said collar member and being axially movable over said collar member and the barrel section of the medical device wherein said shield includes distal and proximal end portions and is movable between a retracted position wherein the distal needle portion is exposed in use and a first extended position wherein the distal needle end portion is protected in use and said shield including an end cap mounted on said distal end portion of said shield and said end cap includes an end wall with an aperture therein and a side wall wherein said side wall includes an outer diameter which is greater than the outer diameter of said distal end portion of said shield and the distal needle portion extends through said aperture in said retracted position of said shield.

5,312,371

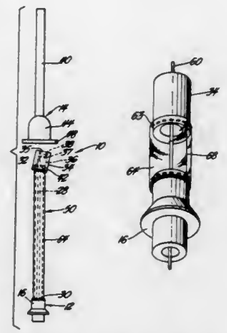
METHOD OF MAKING A NEEDLE SLEEVE ASSEMBLY

Mitchell P. Dombrowski, 102 Merriweather, Grosse Point Farms, Mich. 48236, and Robert A. Welch, 9573 Winterset Cir., Plymouth, Mich. 48170

Filed Jul. 27, 1993, Ser. No. 97,562

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **11 Claims**



1. A method of forming self-capping intravenous needle assemblies (10) adapted to receive a catheter assembly (14) releasibly connected to the needle assembly (10), the method including the steps of:

aligning the passageways (24, 35) of a hub portion (16) and a cap (34) of the needle assembly (12) longitudinally with one another,

securing a sheet of material (62) to and extending between the hub portion (16) and cap (34),

sealing the edges of the sheet of material extending between the hub portion (16) and cap (34) producing an enclosed sleeve (64),

extending a needle (28) through the passageways of the hub portion (16) and cap (34), and moving the cap (34) and hub portion (16) adjacent one another to fold the sleeve (64) therebetween for storing until use of the needle assembly.

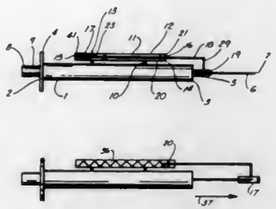
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,372

SAFETY SYRINGE SYSTEM

Lawrence G. DeHarde, 2916 Davterive Dr., and Michael H. DeHarde, 2100 Montesquieu St., both of Chalmette, La. 70043

Continuation-in-part of Ser. No. 801,669, Dec. 2, 1991, Pat. No. 5,215,534. This application May 13, 1993, Ser. No. 61,702
The portion of the term of this patent subsequent to Jun. 10, 2010, has been disclaimed.
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **9 Claims**



1. A safety system for preventing accidental needle stick or infection for use in conjunction with an instrument having a needle, comprising:

an instrument having a body comprising first and second ends, inner and outer walls, and a longitudinal axis, a needle having a base and tip, with the base of the needle being in communication with the second end of the body of the instrument;

a protective cover having inner and outer walls, and first and second ends having needle entrance and egress apertures, respectively, said protective cover being configured to longitudinally envelope the base of the needle in a storage position, and engage and cap the needle tip in an protected configuration after the instrument has been utilized;

biased activation means for urging said protective cover from the storage position to said unreusable configuration upon the pressing of a activation piece, said said biased activation means anchored to and longitudinally aligned with the body of the instrument, said biased activation means further comprising

a housing having first and second ends;

inner and outer walls forming a cavity therethrough;

an aperture formed generally at or near said first end of said walls of said housing;

a locking barrier formed about said inner walls generally near said second end;

said biased activation means further comprising a shaft having

first and second ends;

a body configured to communicate with said inner walls of said housing;

a transversely configured activation piece, situated generally near said first end of said shaft, said activation piece configured to communicate with said aperture formed at or near said first end walls of said housing; and

a locking member situated in proximity to said first end of said shaft, said locking member being configured to communicate with said locking barrier of said housing, locking said shaft in position once said locking member has passed through said locking barrier;

bias means associated with said protective cover for urging said shaft in a direction longitudinally aligned with the needle, said bias means being initiated with the application of force on said activation piece of said shaft;

communication means for connecting said shaft to said protective cover, said communication means transmitting said bias means from said shaft to said protective cover; and

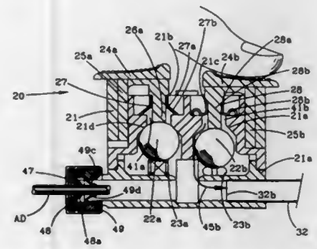
a cap locking hatch having first and second ends, said first end being configured to pliantly communicate with said protective cover in proximity to said second end, said cap locking hatch being configured to form a barrier juxtaposed to the needle tip and said egress aperture of said protective cover upon said needle tip being withdrawn into said protective cover.

5,312,373

SURGICAL ENDOSCOPIC CANNULA WITH POSITIVE TOUCH

Michael W. Freitas, Irving, Tex., assignor to Dexide, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 656,951, Feb. 19, 1991, Pat. No. 5,125,910. This application Jan. 16, 1992, Ser. No. 821,085
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—249 **7 Claims**



1. A positive touch surgical endoscopic cannula assembly comprising:

an elongate tubular housing having a first open end for introduction into a body cavity during surgery, and a second open end;

a valve actuator assembly carried on said tubular housing through said second open end, said valve actuator assembly including an actuator housing;

at least one valve chamber within said actuator housing;

a spherical valve head member moveable between first and second positions housed within said at least one valve chamber;

a valve seat defined in said at least one valve chamber for selective sealing receipt of said valve head in said first position;

biasing means in said chamber for urging said valve head toward said first position;

a manually operable valve head controller carried on said actuator housing for overcoming the bias of said biasing means and moving the valve head toward said second position;

a conically shaped flexible force resistor means having a normal non-inverted state and a partially inverted state, and being spaced in said at least one valve chamber between said housing and said valve head controller, said resistor means resisting movement of said controller in one direction when in said normal state, and being at least partially inverted in the response to movement of said valve head controller and movement of said valve head toward said second position, whereby movement of said resistor to said partially inverted state terminates resistance upon movement of said valve head controller;

a fluid passageway including said at least one valve chamber and extending within said actuator housing and through said elongate tubular housing;

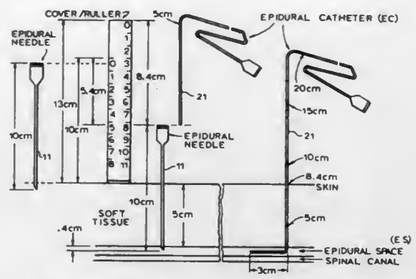
and a port disposed through said actuator housing and in fluid communication with said at least one chamber for receiving a fluid transmitting means for directing fluid into or out of said tubular housing through said chamber.

5,312,374

DEVICE FOR ADMINISTRATION OF EPIDURAL ANESTHESIA

Simon Gurmarnik, 38 Garrison Rd., #1, Brooklyne, Mass. 02146

Filed Mar. 31, 1993, Ser. No. 40,833
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 **2 Claims**



1. A device for administering epidural anesthesia, comprising

an epidural needle unit for localizing an epidural space and including an epidural needle and a needle cover removably attached to said needle, said needle being introducable through soft tissues into the epidural space;

an epidural catheter insertable into the epidural space through said epidural needle to determine a required epidural catheter length for introducing said epidural catheter into the epidural space when said epidural needle is removed; and

means for measuring the required length of the epidural catheter when the latter is inserted into said epidural needle, said measuring means including two scales provided on said needle cover and including a shorter scale provided on one side of said needle cover and having a length substantially corresponding to a length of said epidural needle and a longer scale provided on another side of said needle cover and being longer than said shorter scale by a length corresponding to a required length of said epidural catheter inside the epidural space, so that when said epidural needle is inserted in the epidural space and said needle cover is placed against a skin parallel to said epidural needle, then when said epidural catheter is placed parallel to said needle cover extending from a hub of said epidural needle along said longer scale, its length between the hub of said epidural needle and a beginning of said longer scale corresponds to a required length of said epidural catheter to be inserted into a patient, said shorter scale having a length of substantially 10 cm, while said longer scale has a length of substantially 13 cm.

5,312,375

SET FOR SPINAL ANESTHESIA

Simon Gurmarnik, 38 Garrison Rd., #1, Brooklyne, Mass. 02146

Filed Jun. 28, 1993, Ser. No. 82,775
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 **8 Claims**

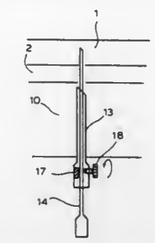
1. A set for spinal anesthesia, comprising

a hollow introducer needle;

a spinal needle introducable through said introducer needle into subarachnoid space;

a stylet extendable through said spinal needle; and

means for immovably fixing said spinal needle and said introducer needle with one another when said spinal needle enters the subarachnoid space, said spinal needle being freely movable inside said introducer needle between a plurality of locations, said means for immovably fixing said spinal needle and said introducer needle engaging said



spinal needle and said introducer nedle transversely to their direction of elongation in any of said plurality of positions and therefore fixing said spinal needle and said introducer needle in any of said plurality of positions.

5,312,376

CATHETER WITH CLEAR NEEDLE SHAFT

Anthony Van Heugten, Tampa, Fla., assignor to Critikon, Inc., Tampa, Fla.

Filed Oct. 29, 1992, Ser. No. 968,117
Int. Cl.[5] A61M *5/32, 5/178*
U.S. Cl. 604—272 **12 Claims**



1. A surgical device for insertion into a body cavity of a patient comprising:

a hollow needle, said needle having a sharpened metal tip portion and a shaft portion positioned behind said tip portion, said shaft portion being transparent,

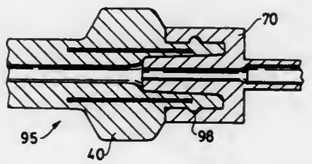
wherein said tip portion pierces said patient to insert said needle into said patient and blood flows from said patient into said shaft portion so that blood can be observed in said shaft portion of said needle.

5,312,377

TAPERED LUER CONNECTOR

Michael J. Dalton, 9432 Monticello Ave., Evanston, Ill. 60203

Filed Mar. 29, 1993, Ser. No. 38,273
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **20 Claims**

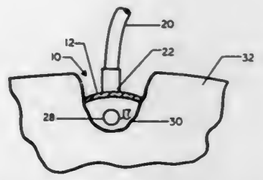


1. A two-member set for joining two fluid conduits comprising a first fluid conduit which terminates in an axially-hol-

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lowed, conical male luer nozzle member encircled by a coaxial cylindrical skirt which carries internally one part of a two-part mating means, and a second fluid conduit which terminates in an axially and conically-hollowed, complementary female luer socket member having a socket wall which carries externally the other part of said two-part mating means, at least one of said members being thread-less and comprised of soft, resilient, elastomeric rubber having a glass transition temperature lower than about 25 degrees C, where by said soft, resilient, elastomeric member inherently conforms itself, when the members are joined, to the mating means carried by the other member of the set.

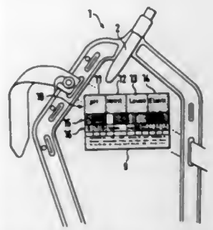
5,312,378
CURVED TRANSPARENT SURGICAL SHIELD
Krishna M. Jain, 8405 Plover, Kalamazoo, Mich. 49002
Filed Jun. 11, 1991, Ser. No. 713,690
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—317 **10 Claims**



1. A shield for use with a suction catheter within a surgical field during vascular surgery, said shield comprising:
an elongated transparent plate, said plate being transversely curved about at least a single axis to form a concave surface and a convex surface defining a channel open at opposite ends thereof and dimensioned to receive a portion of a vein therewithin with the vein extending outwardly of the channel at said opposite ends and with said concave surface closely spaced from said vein after placement of the shield within the surgical field, and having an aperture extending therethrough,
and a sleeve surrounding the aperture and extending from one of the concave and convex surfaces for receiving a suction catheter in tight engagement whereby to inhibit splatter of blood and other fluids out of the surgical field during aspiration by the suction catheter during vascular surgery.

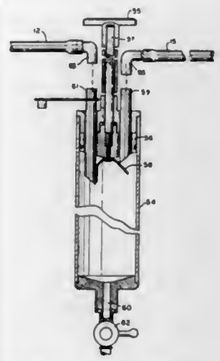
5,312,379
DEVICE FOR COLLECTING UNCONTROLLABLY RELEASED URINE
Martin Rahe, Drosselweg 67, D04971 Hullhorst, Fed. Rep. of Germany
Filed May 22, 1991, Ser. No. 671,854
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834725; Sep. 22, 1989, 3931659
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—318 **8 Claims**

1. An incontinent urine collection device comprising (1) an introducing tube having means for connection to a body for receiving uncontrollably released urine therefrom; (2) a flexible, transparent urine-collecting bag connected to the tube to receive urine therefrom; (3) indicator means disposed in said bag for exposure to urine and having indicator substances to measure various values indicative of impending or existing germinal infections, said indicator means being disposed on a surface of a card disposed in said bag; and (4) means for diffusing urine to the indicator means slowly so that the urine passed represents a mixture of first, midstream and residual urine, but preventing the diffusion of the indicator substances from the card so that the indicator means values can be read accurately,



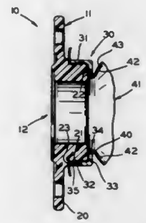
said urine passing means comprising a membrane mounted on the surface of the card.

5,312,380
ENDOTHELIAL CELL PROCUREMENT AND DEPOSITION KIT
Paul G. Alchas, Wayne; Frank A. Augello, Cedar Knolls, both of N.J.; Christopher J. Brooks, Glen Cove, N.Y.; Tony A. Cutshall, Boonton; Joseph A. DiPisa, Jr., Wyckoff, both of N.J.; Stuart K. Williams, Wilmington, Del.; Jonathan B. Gabel, Clifton, N.J.; Paul J. Mulhauser, New York, N.Y.; Wes Prais, Hewitt, N.J.; Bruce E. Jarrell, Philadelphia, and Deborah G. Rose, Warrington, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa. and Becton Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 690,689, Apr. 24, 1991, abandoned, which is a division of Ser. No. 356,431, May 24, 1989, Pat. No. 5,035,708, which is a continuation-in-part of Ser. No. 244,496, Sep. 12, 1988, abandoned, which is a division of Ser. No. 742,086, Jun. 6, 1985, Pat. No. 4,820,626. This application Sep. 25, 1992, Ser. No. 951,353
Int. Cl.[5] A61J *1/00*; A61M *1/00*
U.S. Cl. 604—319 **5 Claims**



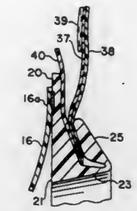
1. A fat collection device, comprising:
a chamber having a top and a bottom;
a stopper means for sealing the chamber, capable of being slidably raised and lowered with respect to said chamber;
an inlet tube extending in sliding engagement through said stopper into said chamber;
a vacuum inlet tube extending in sliding engagement through said stopper means into said chamber;
a plunger means connected to said stopper means for lowering and raising said stopper means relative to the chamber, the inlet tube and the vacuum inlet tube;
a diaphragm means affixed to said stopper means for sealing said chamber during fat transfer, said diaphragm means being deflected by said inlet tube and said vacuum inlet tube when said stopper means is in a raised position and closing off both said inlet tube and said vacuum inlet tube when the stopper means is in a lowered position, thereby facilitating fat transfer from the chamber; and
an outlet disposed at the bottom of the chamber, said outlet including a valve for regulating the transfer of fat from the chamber.

5,312,381
OSTOMY POUCH COUPLING HAVING CONTINUOUS HELICAL THREADS
James P. Brooks, 3404 Brantford Rd., Toledo, Ohio 43606
Filed Mar. 5, 1993, Ser. No. 27,020
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—338 **6 Claims**



1. An ostomy coupling apparatus generally including a faceplate surrounding a stoma, an ostomy pouch for collecting digestive system drainage, and a coupling for securing the pouch to the faceplate, the improvement comprising:
a) a faceplate made from a resilient and deformable material, having an aperture extending through the center thereof for communication with the stoma and including a first surface provided with means for sealably contacting said faceplate against the patient's skin surrounding the stoma, and an outwardly facing helically threaded neck extending from a second surface of said faceplate opposite the first surface and coaxial with the aperture, the threaded neck including an annular shoulder generally located where the threaded neck and said faceplate are joined and a top surface at the distal portion of the neck opposite said faceplate; and
b) a screw coupling, including a cylindrical wall having continuous helical threads formed on an inwardly facing surface thereof adapted to engage the threaded neck of said faceplate, a bottom surface located at the end of the cylindrical wall to engage the shoulder on the neck of said faceplate, and a lip extending radially inwardly from the end of the wall opposite the bottom surface to engage the top surface at the distal portion of the neck; whereby the ostomy pouch, having an inner surface and an aperture collar adapted for connecting to said faceplate, may be secured to the faceplate by positioning the aperture collar of the pouch such that the inner surface is adjacent the threaded neck of said faceplate, and thereafter rotatably engaging the inwardly facing continuous helical threads of said screw coupling over the threaded neck of said faceplate, and such that the inner surface of the ostomy pouch is sealed by the engagement of the collar of the ostomy pouch between the top surface of the neck and the lip of the screw coupling, between the helical threads of said screw coupling and the helical threads of the neck, and between the bottom surface of said screw coupling and the shoulder of said faceplate and said continuous helical threads of said screw coupling continue at least 360 degrees around the cylindrical wall.

5,312,382
TWO-PIECE OSTOMY APPLIANCE WITH FACEPLATE BISTABLE COUPLING RING
Michael Metz, Chicago, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Filed Jun. 3, 1993, Ser. No. 70,894
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—338 **12 Claims**



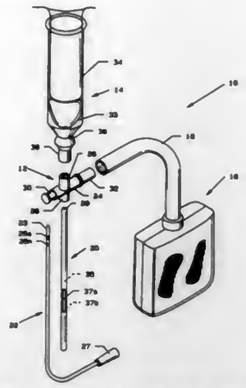
1. A faceplate for a two-piece collection system comprising
a thin, flexible adhesive panel for adhesive attachment to a skin surface;
a coupling ring formed of flexible, semi-rigid polymeric material;
and attachment means for joining said coupling member to said panel;
said coupling ring having an annular base defining a central opening and a contact face surrounding said opening; an annular collar extending from said base adjacent to and concentric with said opening, and a bistable annular latching member joined to said collar along an annular hinge line, said latching member providing a contact surface and being pivotal about said hinge line between a stable, substantially untensioned first state wherein said member projects generally axially away from said collar and a stable, tensioned second state wherein said member extends reversely towards said base with said contact surface of said latching member positioned for tight engagement with said base's contact face;
said latching member including a free end portion; said free end portion, when said member is in said second state, being under hoop stress and having an outside diameter greater than when said member is in said untentioned first state;
said latching member also passing through intermediate states as it is shifted between said first and second states; said free end portion having an outside diameter in said tensioned second state smaller than said outside diameter of said free end portion in said intermediate states.

5,312,383
PENILE CATHETER SYSTEM
Thomas P. Kubalak, Plymouth, Minn., assignor to Mentor Corporation, Minneapolis, Minn.
Filed Dec. 8, 1992, Ser. No. 987,204
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—350 **11 Claims**

1. A penile catheter system, comprising:
a. a condom portion dimensioned to be fitted on and extend along the shaft of the penis;
b. urine valve means in fluid communication with said condom portion, said urine valve means having a first port and a second port and means for allowing fluid flow to only one of said ports at any one given time; and,

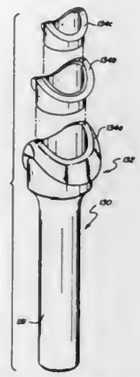
VOL 1162 ISS 3 MY 17 1994 UMI

c. a portion of said condom portion engages about said penis and terminates in a bellows portion extending beyond said



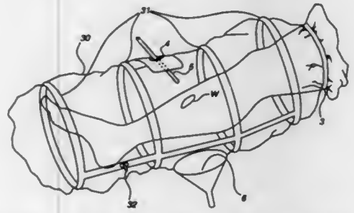
penis, said bellows portion terminating in a tubular portion dimensioned so as to receive said urine valve means.

5,312,384
INCONTINENCE DEVICE AND APPLICATOR
John E. Temple, 523 Wilkinson, Chelsea, Mich. 48118
Continuation-in-part of Ser. No. 778,989, Nov. 7, 1991, which is a continuation-in-part of Ser. No. 98,073, Sep. 18, 1987, Pat. No. 4,850,986. This application Jun. 29, 1992, Ser. No. 907,754
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—355 **7 Claims**



1. An applicator for use with an incontinence device, aid applicator comprising:
an elongated handle; and
a head configured to conform to the shape of an external anal area of a patient and attached to said handle, said head being adapted to fit within an incontinence device including a thin walled bag extending to an opening in an upper end thereof surrounded by an area adapted to attach adhesively to external tissue surrounding an anal sphincter of said patient for bringing an attachment area of said device to bear against said external tissue for adhesive attachment thereto, said head including:
an oval, ring-shaped bearing surface for bearing against said external tissue;
means for adjusting the size of said bearing surface such that said incontinence device may be adapted for use on patients displaying a wide range of anatomical variation, said means including a plurality of concentric rings, each of said plurality of rings having a tubular stem and a lip projecting radially outward from an end of said stem, said concentric rings being disposed in nesting fashion such that the lip of the innermost of said concentric rings is supported by the lip of a ring radially adjacent said innermost ring so that at least said innermost ring may be removed from said applicator head.

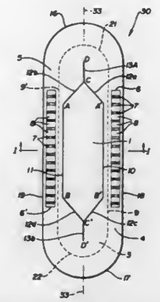
5,312,385
DEVICE FOR PROTECTED PULSE IRRIGATION
Richard J. Greco, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.
Filed Oct. 9, 1991, Ser. No. 775,301
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—356 **1 Claim**



1. An enclosure system for use during pulse irrigation of a wound on a body part of a patient to isolate contaminated irrigation materials from persons in proximity to the patient, comprising:
a. a collapsible enclosure of sufficient size to encompass the body part upon which the wound is located, said enclosure having at least one opening for insertion of the body part, said enclosure further being constructed of an impervious material of sufficient strength to withstand pressures used during pulse irrigation;
b. at least one means disposed upon said enclosure for inserting a pulse irrigation nozzle in a substantially non-leaking manner;
c. at least one outlet port to allow drainage of contaminated irrigation materials; and
d. a support means for supporting said enclosure away from the patient's body port, said support means comprising inflatable ribbing disposed upon said enclosure.

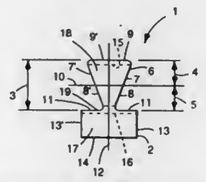
5,312,386
DISPOSABLE SANITARY PAD
Mauro F. C. Correa, Sao Paulo, and Rosana R. D. Neves, Sao Jose Dos Campos, both of Brazil, assignors to Johnson & Johnson, New Brunswick, N.J.
Continuation of Ser. No. 852,358, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 706,141, May 29, 1991, abandoned, which is a continuation of Ser. No. 477,288, Feb. 8, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,477
Claims priority, application Brazil, Feb. 15, 1989, 8900666
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—379 **19 Claims**

1. A disposable sanitary pad comprising:
(a) an absorbing element comprising longitudinal and transverse centerlines, first and second longitudinal edges, first and second transverse ends, and a body facing side; and
(b) first and second compression lines formed in said absorbing element, each of said lines comprising:
(i) a central segment extending substantially longitudinally so that a central portion of said body facing side is disposed between said central segments, said lines formed by compression on said body facing side so that pressure against said longitudinal edges by a user's thighs causes said body facing side of said central portion to assume a convex shape so as to protrude toward a user's body; and
(ii) each of said first and second compression lines having a first end segment connected to said central segment, said first end segments extending both toward each



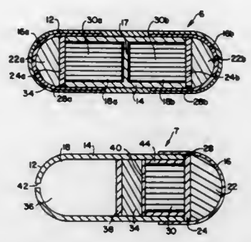
other and toward said first transverse end so as to form an acute angle with said longitudinal centerline, whereby at least a first portion of fluid deposited proximate said transverse centerline is wicked along said compression lines toward a portion of said absorbing element disposed along said longitudinal centerline and proximate said first transverse end;
wherein said first end segment of said first compression line is connected to said first end segment of said second compression line.

5,312,387
ROUNDED CORNER FASTENING TAB DIAPER CLOSURE
Steven J. Rossini, Hugo, and Roland R. Midgley, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 11, 1993, Ser. No. 16,744
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—389 **13 Claims**



1. A diaper fastening tab comprised of a rectangular manufacturer's bond end and a free end having a fastening surface, the manufacturer's bond end having a width x wherein the improvement comprises a free end formed into a distal half and a proximal half, adjacent the manufacturer's bond end, the proximal half having a minimum width y, and the distal half having a maximum width x-y, where x-y is greater than y, the distal half having a shape such that at a transverse line separating the distal half from the proximal half, the distal half side edge is an inverted mirror image of the adjacent proximal half side edge wherein said diaper fastening tab is attached to an absorbent article.

5,312,388
OSMOTIC DEVICE FOR DELAYED DELIVERY OF AGENT
Patrick S.-L. Wong, 2030 Cornell St., Palo Alto, Calif. 94306; Felix Theeuwes, 1634 Fallen Leaf La., Los Altos, Calif. 94022, and Steven D. Larsen, 11732 Betlen Dr., Dublin, Calif. 94568
Continuation-in-part of Ser. No. 648,270, Jan. 30, 1991, abandoned. This application Jan. 31, 1992, Ser. No. 830,160
Int. Cl.[5] A61K *9/22*
U.S. Cl. 604—892.1 **14 Claims**



1. A fluid-imbibing delivery device for dispensing a first active agent to a fluid environment of use over a predetermined prolonged period of time and dispensing a second active agent to the fluid environment after an initial delayed period of time, the device comprising:
(a) a housing comprising at least a first wall section and a second wall section, the first and second wall section (as seen in FIG. 1) being in slidably telescoping arrangement with each other, the first wall section having an open end adapted to fit within the fluid environment;
(b) a first active agent delivery chamber within a first portion of the housing defined by the first wall section, the first active agent delivery chamber comprising
(i) at least one first active agent formulation,
(ii) a first expansion means, and
(iii) an exit means;
(c) a second active agent delivery chamber within a second portion of the housing defined by the first wall section, the second active agent delivery chamber having an open end defined by the open end of the first wall section and comprising at least one second active agent formulation; and
(d) an expansion chamber within a portion of the housing defined by the second wall section, the expansion chamber comprising
(i) a second expansion means for separating apart the first and second wall sections, and
(ii) a push plate adjacent the open end of the first wall section and the second active agent delivery chamber.

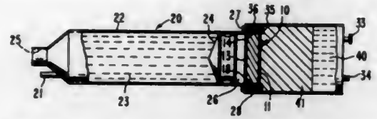
5,312,389
OSMOTICALLY DRIVEN SYRINGE WITH PROGRAMMABLE AGENT DELIVERY
Felix Theeuwes, 1634 Fallen Leaf La., and Su Il Yum, 1021 Runnymead Ct., both of Los Altos, Calif. 94022
Continuation of Ser. No. 605,593, Oct. 29, 1990, Pat. No. 5,151,093. This application Apr. 3, 1992, Ser. No. 863,649
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[5] A61K *9/22*
U.S. Cl. 604—892.1 **31 Claims**

1. An osmotic engine for driving a device adapted to dispense a beneficial agent, the engine comprising a shaped wall surrounding a means for forming a driving fluid and a passageway through the wall for delivering the driving fluid from the engine, at least a portion of the wall being comprised of a material that is permeable to an external liquid, the wall having a sufficient degree of impermeability to an osmotically active material in the engine to generate an osmotic pressure differen-

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tial across the wall when the wall is exposed to the external liquid;

wherein the means for forming a driving fluid comprises an osmotic solute which is soluble in the external liquid, whereby the external liquid permeates through the wall portion and forms a saturated solution of the solute, the saturated solution being a first driving fluid which is pumped from the engine and through the passageway at a



first rate over a first period of time and subsequently the external liquid permeates through the wall portion and forms a subsaturated solution of the solute, the unsaturated solution being a second driving fluid which is pumped from the engine and through the passageway at a second rate over a second period of time which follows the first period of time, the second rate being unequal to the first rate.

5,312,390

OSMOTIC DEVICE WITH DELAYED ACTIVATION OF DRUG DELIVERY

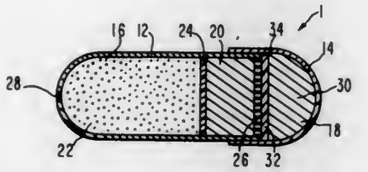
Patrick S.-L. Wong, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 819,417, Jan. 10, 1992, Pat. No. 5,223,265. This application Jan. 14, 1993, Ser. No. 4,340

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—892.1 **16 Claims**



1. A fluid-imbibing delivery device for dispensing an active agent to a fluid environment of use over a predetermined prolonged period of time of from about 1 hour to about 48 hours after an initial, preset delayed startup of delivery, which device maintains its integrity in the fluid environment, wherein the device comprises:

(a) a first housing and a second housing, the first and second housings being in reversibly sliding telescoping arrangement with each other, the first housing being impermeable in at least a portion and having an end adapted to fit within the second housing and the second housing being semipermeable in at least a portion;

(b) an active agent delivery chamber within the first housing comprising

(i) at least one active agent formulation,

(ii) a first fluid-activated expansion means selected from osmagents, osmopolymers or mixtures of osmagents with osmopolymers for expelling the active agent formulation from the delivery device,

(iii) an exit means, and

(iv) a fluid-passage means selected from the group consisting of a screen, a microporous membrane, a semipermeable composition and combinations of these; and

(c) an expansion chamber within the second housing, the expansion chamber comprising

(i) a second fluid-activated expansion means selected from osmagents, osmopolymers or mixtures of osmagents with osmopolymers for separating apart the first and second housings, and

(ii) a push plate adjacent the telescoping end of the first housing.

5,312,391

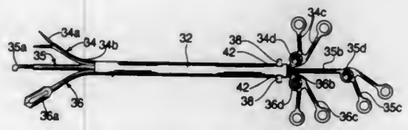
LAPAROSCOPIC INSTRUMENT ASSEMBLY

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Jul. 29, 1992, Ser. No. 922,165

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—1 **22 Claims**



1. A laparoscopic instrument assembly comprising:

a rigid sleeve having an outer diameter smaller than an inner diameter of a laparoscopic cannula, whereby a distal end portion of the instrument assembly may be inserted into a patient's abdomen through the laparoscopic cannula during a laparoscopic procedure;

a plurality of laparoscopic instrument shafts inserted inside said sleeve, at least one of said shafts being slidably mounted to said sleeve for sliding motion relative thereto;

locking means on said sleeve and said one of said shafts for alternately locking said one of said shafts in a retracted neutral position and an extended use position;

a plurality of surgical tips operatively connected to respective ones of said shafts at distal ends thereof; and

actuator means connected to at least a given one of said shafts at a proximal end of said sleeve for actuating a respective one of said surgical tips.

5,312,392

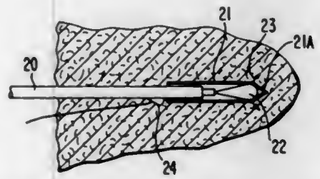
INTERSTITIAL LASER COAGULATION TREATMENT FOR BENIGN PROSTATIC HYPERPLASIA

Alfons Hofstetter, Unterhaching; Rolf Muschter, Starnberg; Stefan Hessel, Munich, and Frank Frank, Ebersbert, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm AG, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 936,408

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—2 **13 Claims**



1. A method of treating benign prostatic hyperplasia, comprising the steps of:

inserting a diffusing light guide into a prostate lobe; and

providing laser power to the diffusing light guide in order to necrose surrounding tissue.

5,312,393

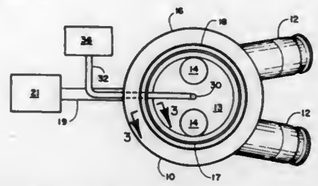
RING LIGHTING SYSTEM FOR MICROSURGERY

Douglas Mastel, 2843 Sanco Rd., Ste. V, Rapid City, S. Dak. 57702-9368

Filed Dec. 31, 1992, Ser. No. 999,151

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—4 **14 Claims**



1. A lighting system for use in microsurgery which comprises:

a toroidal housing adapted to be fastened to a microscope having an objective lens, said housing surrounding the microscope objective lens;

at least one ring shaped light source mounted on said housing and adapted to direct light away in one direction from the plane in which said toroidal housing lies;

means for controlling intensity of illumination produced by said ring shaped light source;

a center light source positioned at approximately the center of said ring shaped light source and adapted direct light away from the plane of said housing in said one direction; and

means for controlling intensity of illumination produced by said center light source.

5,312,394

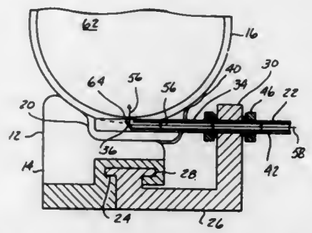
APPARATUS AND METHOD FOR SURGICALLY PERFORMING A FILTERING OPERATION ON AN EYE FOR GLAUCOMA

Hugh Beckman, 1972 Sherwood Glen, Bloomfield Hills, Mich. 48302

Filed Apr. 29, 1991, Ser. No. 693,962

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—6 **14 Claims**



1. An apparatus for surgically performing a filtering operation on an eye for treatment of glaucoma comprising:

a jig having a base positionable on the eye and a mounting arm connected to and extending above said base; and

means for surgically performing the filtering operation on the eye, said surgical filtering means slideably attached to said mounting arm and comprising an oscillating blade having an arcuate profile for supporting a section of the eye during dissection of the eye by said blade, exposing underlying ocular tissue thereby, wherein said jig has an arcuate cut-out corresponding to said blade profile for receiving said dissected section.

5,312,395

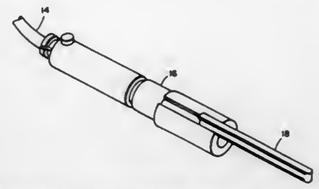
METHOD OF TREATING PIGMENTED LESIONS USING PULSED IRRADIATION

Oon T. Tan, Boston; James C. Hsia, Andover, and Horace Furumoto, Wellesley, all of Mass., assignors to Boston University and Candela Laser Corp., both of Mass.

Continuation of Ser. No. 493,309, Mar. 14, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 933,873

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—9 **11 Claims**



1. A method of treating melanin-based pigmented lesions in human skin comprising irradiating an epidermis with laser radiation of wavelength between 345 and 600 nm, fluence of 1 to 10 J/cm^2 and pulse duration of less than 1 μsec.

5,312,396

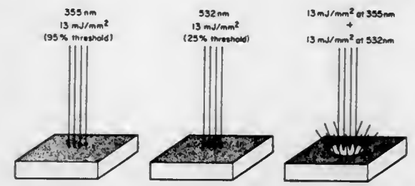
PULSED LASER SYSTEM FOR THE SURGICAL REMOVAL OF TISSUE

Michael S. Feld, Waban; Irving Itzkan, Boston; Douglas Albagli; Joseph A. Izatt, both of Cambridge; Gary B. Hayes, Leominster, and Richard Rava, Waltham, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 578,645, Sep. 6, 1990, abandoned. This application Jan. 22, 1991, Ser. No. 644,202

Int. Cl.[5] A61B *17/36*; A61N *3/00*

U.S. Cl. 606—11 **20 Claims**



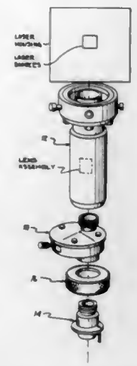
1. A method of removing material from a surgical site comprising:

irradiating a portion of material with a first pulse of light having a first wavelength and pulse duration to prepare the material without creating a plasma and without removal of material by the first pulse of light; and

irradiating the portion with a second pulse of light having a second wavelength longer than the first wavelength and within a selected period following the first pulse to remove the portion of material from the surgical site, a depth of propagation of the second pulse within the material being substantially reduced by the first pulse during the selected period.

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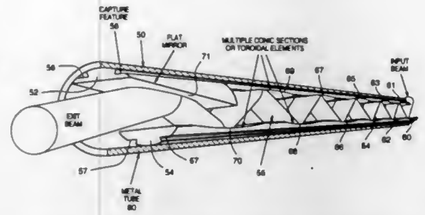
5,312,397
LENS EXCHANGER FOR A SURGICAL LASER SYSTEM AND METHOD THEREFOR
Ioan Cosmescu, 14449 N. 22nd St., Phoenix, Ariz. 85022
Continuation-in-part of Ser. No. 448,329, Dec. 11, 1989, Pat. No. 5,114,422, and Ser. No. 527,140, May 22, 1990, Pat. No. 5,066,294. This application Sep. 23, 1991, Ser. No. 763,562
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—14 **21 Claims**



1. A laser surgical system comprising, in combination:
a laser housing;
laser cutting means consisting of a single laser cutting beam for cutting tissue during surgery enclosed in said laser housing;
laser aiming means coupled to said laser cutting means for aiming said laser cutting means and enclosed in said laser housing with said laser cutting means;
coupler means having a fixed lens assembly located therein and coupled to said laser housing to position and focus said laser cutting means and said laser aiming means;
lens exchanger apparatus means comprises a single rotatable plate coupled to said coupler means for selectively rotating at least one of at least two lenses in said coupler means, said at least two lenses being removably coupled to said single rotatable plate; and
surgical tool means coupled to said lens exchanger apparatus means.

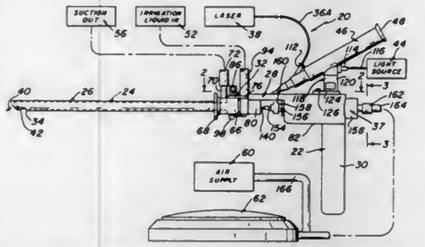
5,312,398
APPARATUS FOR DELIVERING A LASER BEAM
James L. Hobart, Los Altos Hills, and David Trost, San Francisco, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.
Filed Apr. 13, 1992, Ser. No. 867,895
Int. Cl.[5] A61B *17/36, 17/24*
U.S. Cl. 606—14 **10 Claims**

1. A beam delivery apparatus, including:
an endoscope having a channel extending therethrough, wherein the channel has an input end and an output end and a central longitudinal axis; and
a set of beam focusing mirrors fixedly mounted along the channel, for successively refocusing a laser beam as the beam propagates along the channel from the input end to the output end, wherein the set of beam focusing mirrors includes a pair of reflective strips attached to opposite sides of the channel, wherein each of the strips has a longitudinal axis oriented substantially parallel to the



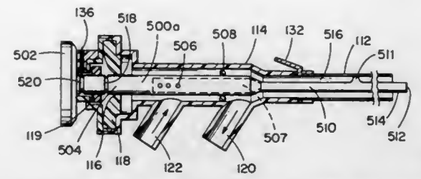
central longitudinal axis, and wherein the surface of each strip defines at least one focusing mirror.

5,312,399
LASER RESECTOSCOPE WITH MECHANICAL CUTTING MEANS AND LASER COAGULATING MEANS
Said I. Hakky, 8547 Merrimoor Blvd., East, Largo, Fla. 34647-3145, and Perry B. Hudson, 2225 Park St., North, St. Petersburg, Fla. 33710
Filed Sep. 29, 1992, Ser. No. 961,766
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 **48 Claims**



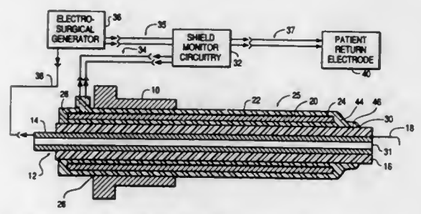
1. A surgical apparatus for coagulating and removing tissue of a living being, said apparatus being an elongated member having a distal end portion for introduction into said being adjacent said tissue, laser directing means located at said distal end portion directing a laser beam from laser beam producing means coupled to said apparatus into said tissue for coagulating a portion of said tissue while preserving the cellular architecture thereof, thin planar rotatable cutting blade means located at said distal end portion for removing at least a portion of said coagulated tissue by cutting away particles of said portion of said coagulated tissue, and conduit means coupled to said rotatable cutting means for carrying said particles to means for retrieving said particles, said rotatable cutting means being operable to engage and cut said coagulated tissue to produce said particles, with the cellular architecture of said retrieved particles being sufficiently preserved for histological examination.

5,312,400
CAUTERY PROBES FOR ENDOSCOPIC ELECTROSURGICAL SUCTION-IRRIGATION INSTRUMENT
Thomas O. Bales, Miami; Dana W. Ryan, Davie, and Matthew S. Solar, Cooper City, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.
Filed Oct. 9, 1992, Ser. No. 959,247
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—41 **19 Claims**



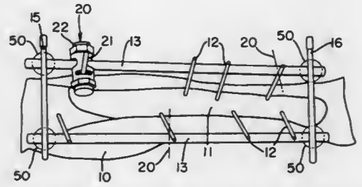
1. A removable cautery probe for use with an endoscopic instrument having a proximal probe receiving opening and an electrical contact located within said endoscopic instrument, said probe comprising:
a) an insulated handle;
b) a conductive probe means having a proximal end mounted in said insulated handle, a distal cautery surface, and an electrical contact surface at a location between said proximal end of said conductive probe and said distal cautery surface, said electrical contact surface adapted to contact the electrical contact in the endoscopic instrument when said cautery probe is inserted through the proximal probe receiving opening in the endoscopic instrument and extended therethrough; and
c) an insulating cover for said conductive probe means, said insulating cover substantially covering said conductive probe means from said insulated handle up to but not at said electrical contact surface, and substantially covering said probe means from a point beyond said electrical contact surface, up to but not at said distal cautery surface,
wherein said removable cautery probe is entirely removable from the endoscopic instrument by pulling said insulated handle out of the proximal probe receiving opening of the endoscopic instrument.

5,312,401
ELECTROSURGICAL APPARATUS FOR LAPAROSCOPIC AND LIKE PROCEDURES
David W. Newton, Boulder; Roger C. Odell, Louisville, and Don R. Boyle, Boulder, all of Colo., assignors to Electroscope, Inc., Boulder, Colo.
Filed Jul. 10, 1991, Ser. No. 727,946
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—46 **42 Claims**



1. An electrosurgical apparatus comprising:
a handpiece having a tubular passage extending therethrough, the handpiece having a proximal end and a distal end;
a tubular conductive shield having an inner surface and an outer surface and being removably insertable through the handpiece passage to an inserted position, said shield having a layer of electrical insulation disposed at least over the outer surface thereof;
an active electrode probe having a tip and being adapted for connection to an electrosurgical generator and extending through the tubular conductive shield for effecting at the tip thereof an electrosurgical procedure where, when the tubular shield is in the inserted position thereof, the shield surrounds the active probe from at least (a) a proximal point prior to the proximal end of the handpiece to (b) a distal point distal to the distal end of the handpiece and in proximity to the tip of the active probe;
at least one layer of electrical insulation disposed between the active probe and the tubular shield; and
an electrical terminal connected to the shield and adapted for connecting the shield to a reference potential;
whereby any current which flows in said shield from said active probe is conducted to said reference potential to thus lessen a risk of patient injury due to an abnormal condition.

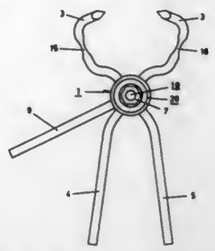
5,312,402
CONNECTION DEVICE
Johannes F. Schläpfer, Glarus, and Martin Hess, Holstein, both of Switzerland, assignors to Synthes (U.S.A.), Paoli, Pa.
Filed Apr. 16, 1992, Ser. No. 868,978
Claims priority, application Switzerland, Apr. 16, 1991, 01 124/91-4
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—53 **21 Claims**



1. A connection device for the adjustable connection of a first support rod with either a bone screw or a second support rod in a surgical fixation system, said connection device comprising:
(a) an external component having a cylindrical hole with a central axis;
(b) a cylindrical internal component having a central axis adapted to be slidingly positioned in said cylindrical hole with its central axis aligned with the central axis of said hole, said internal component having a first slot and at least one through opening, said through opening being transverse to said central axis of said internal component and the central axis of said hole for receiving said support rod or bone screw; and
(c) loading means for loading said connection device by causing relative sliding motion of said components;
whereby said support rod or bone screw can be locked in place, when inserted in said through opening, by means of the loading means causing the components to slide axially in relation to each other and the flexible deformation of said internal component through its first slot occurring when said internal component is slid against the inserted support rod or bone screw by said loading means and thereby pressed against the external component.

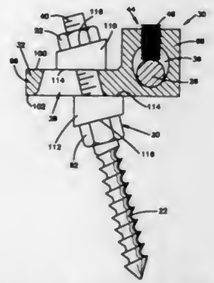
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,403
EXTERNAL FIXATION DEVICE
Robert Frigg, Davos, Switzerland, assignor to Synthes (U.S.A.), Paoli, Pa.
Continuation-in-part of Ser. No. 695,390, May 3, 1991, abandoned. This application Jul. 21, 1992, Ser. No. 917,780
Int. Cl.[5] A61B *17/56*; A61F *5/00*
U.S. Cl. 606—54 **16 Claims**



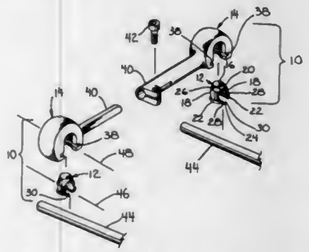
1. Pincers for gripping bones for surgical purposes comprising:
at least two jaws;
a lockable hinge pivotally joining said jaws to one another, said hinge constituting a swivel joint having a swivel pin component and a bore component, whereby said swivel pin component and said bore component are rotatively but not linearly movable with respect to each other;
at least two legs, connected to said hinge for pivoting said jaws relative to one another; and
a removable locking device at said hinge for fixing the pivotal positive of the swivel pin component and the bore component relative to one another.

5,312,404
SPINAL COLUMN RETAINING APPARATUS
Marc A. Asher, Leawood, Kans.; Walter E. Strippgen, Golden, Colo.; Charles F. Heinig, Ware Neck, Va., and William L. Carson, Columbia, Mo., assignors to AcroMed Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 557,587, Jul. 24, 1990, Pat. No. 5,129,900. This application Feb. 20, 1992, Ser. No. 839,243
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—61 **5 Claims**



1. An apparatus for use in retaining spinal elements in a desired spatial relationship, said apparatus comprising a fastener having a first end portion with thread means for engaging a spinal element and a second end portion, a longitudinal member which is positionable along the spinal column, and connector means for interconnecting said longitudinal member and said fastener, said connector means including a connector member having first surface means for defining a first opening through which said longitudinal member extends, said first opening having a central axis which extends along at least a portion of said longitudinal member, first clamp means for holding said longitudinal member and connector member against movement relative to each other, said connector member having second surface means for defining an oblong second opening through which said second end portion of said fastener extends, said oblong second opening having a longitudinal axis extending perpendicular to the central axis of said first opening, said connector member being movable relative to said fastener through a range of movement along the longitudinal axis of said oblong second opening, means for positioning said fastener with the axis of said fastener at an angle to the longitudinal axis of said oblong second opening, and second clamp means for holding said fastener and connector member against movement relative to each other.

5,312,405
SPINAL ROD COUPLER
Joseph R. Korotko, Fort Wayne, and Randall N. Allard, Plymouth, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Jul. 6, 1992, Ser. No. 909,509
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—61 **2 Claims**

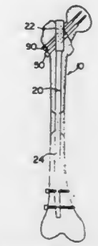


1. A coupler for connection to a spinal rod, said coupler comprising a yoke means including an opening for accommodating the spinal rod, the opening of the yoke means defining an axis a body means including an opening for accommodating the yoke means in compressing engagement with the spinal rod, the opening of the body defining an axis, wherein the body means accommodates the yoke means such that the axis of the opening of the yoke means is non-parallel to the axis of the body means, said yoke means includes a generally U-shaped body having a pair of integral legs, each of the legs including a lip extending outwardly therefrom generally transverse to the legs, the body means being generally C-shaped and including a pair of slots in communication with the opening of said body means, each slot accommodating a lip of the yoke means in an interference fit to retain the yoke means within the opening of the body means.

5,312,406
METHOD OF TREATING AN INTERTROCHANTERIC FRACTURE
David L. Brumfield, Nesbit, Miss., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.
Division of Ser. No. 697,155, May 8, 1991, Pat. No. 5,167,663, which is a continuation of Ser. No. 337,191, Apr. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 947,656, Dec. 30, 1986, Pat. No. 4,827,917. This application Dec. 1, 1992, Ser. No. 983,831
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—64 **9 Claims**

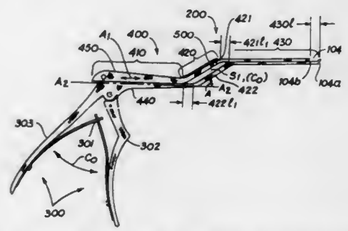
1. A method of treating an intertrochanteric fracture of a patient's femur that is located generally between the head of the femur and the intramedullary canal, comprising the steps of:

a) inserting an elongated intramedullary rod having a longitudinal axis into the patient's femur, wherein the rod has a distal stem portion, a head having a first smooth opening extending therethrough in an angled direction relative to the longitudinal axis of said rod such that when said rod is in position within the intramedullary canal of the femur, the opening is positioned to intersect the longitudinal axis of the rod, and the axis of said opening is directed toward the head of the femur;
b) positioning the rod so that the axis of the smooth opening extends across the fracture and into the head of the femur;
c) inserting a first screw through said first opening in said head and including first and second end portions;



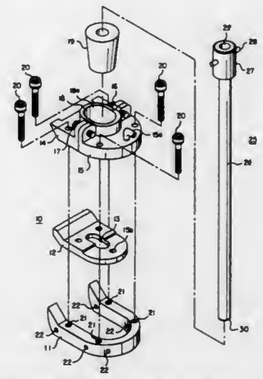
d) said first screw having a threaded surface formed at the first end adapted in use to engage bone tissue of the head of the femur;
e) compressing the fracture using the bone screw while maintaining continuous sliding contact between the bone screw and the rod at the smooth opening;
f) wherein said threaded section is spaced from the first opening during use for maintaining continuous sliding contact between said head of said rod and the first screw, to permit sliding compression of the selected fracture; and
g) wherein in step "f" the cross section of the smooth opening closely conforms to the cross section of the screw so that the smooth opening rigidly affixes the screw in a single angular position relative to the rod, along said axis.

5,312,407
RONGEUR APPARATUS HAVING AN OFFSET BAYONET AND METHOD OF USE WITH MICROSCOPE DURING MICROSURGERY
L. Philip Carter, 2701 E. Camino Pablo, Tucson, Ariz. 85718
Filed Dec. 28, 1992, Ser. No. 997,033
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—79 **7 Claims**



1. A rongeur-type surgical instrument apparatus having a hand grip member,
a composite shank member mechanically coupled to said hand grip member, said composite shank member having a proximate shank portion and a distal shank portion,
said proximate shank portion being disposed adjacent said hand grip member,
said composite shank member comprises a stationary shank member and a movable shank member,
said distal shank portion comprising a bite-end member which includes a punch cutting tip at an extreme distal end of said movable shank member and a footplate at an extreme distal end of said stationary shank member, said punch cutting tip and said footplate defining a punch travel region, said apparatus comprising:
an offset bayonet portion formed between said proximate shank portion and said distal shank portion, said offset bayonet portion being defined by a first angled shank portion of said stationary shank member, and a second angled shank portion of said movable shank member, each stationary and movable shank portion having a shank extension portion whose length substantially equates to a distance defined by said punch travel region to facilitate back and forth travel of said movable shank portion, a respective shank extension portion associated with said stationary shank portion being a portion of said proximate shank portion, and a respective shank extension portion associated with said movable shank portion being a portion of said distal shank portion, said offset bayonet portion being formed for effecting unimpeded microscopic visualization of an operating field during use of said surgical instrument in conjunction with an operating microscope.

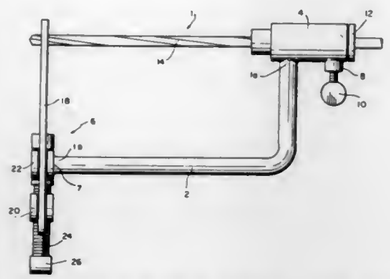
5,312,408
APPARATUS AND MEHTOD OF CUTTING AND SUCTIONING THE MEDULLARY CANAL OF LONG BONES PRIOR TO INSERTION OF AN ENDOPROSTHESIS
Byron L. Brown, 2315 Hendricks, Fort Smith, Ark. 72903
Filed Oct. 21, 1992, Ser. No. 964,493
Int. Cl.[5] A61B *17/00*; A61F *2/32*
U.S. Cl. 606—80 **20 Claims**



1. An apparatus for enlarging the medullary canal prior to the insertion of a prosthetic device, comprising:
a guide assembly for mounting on a femur, including a base plate adapted to be secured to the femur and a ceiling plate attached to said base plate;
a gasket mounted between said base plate and said ceiling plate to form a seal therebetween;
a bone cutter extending through the guide assembly;
a suction housing attached to said bone cutter;
a coupling shaft in said suction housing attached to said bone cutter allowing said cutter to rotate during bone removal; and
a cylindrical plug through which said bone cutter extends.

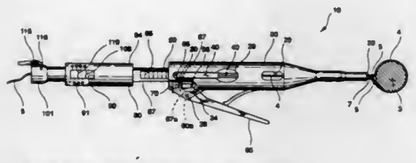
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5,312,409
DRILL ALIGNMENT GUIDE
Robert E. McLaughlin; Gwo-Jaw Wang, both of Department of Orthopaedics and Rehabilitation University of Va. Medical Center, P.O. Box 159, and Colin McLaurin, Department of Rehab. Engineering, University of Virginia Medical Center, P.O. Box 346, all of Charlottesville, Va. 22908
Filed Jun. 1, 1992, Ser. No. 890,780
Int. Cl.[5] A61F *5/00, 2/32*
U.S. Cl. 606—86 **12 Claims**



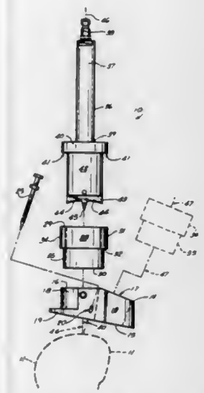
1. An alignment apparatus for guiding a cutting element along a predetermined path, said apparatus comprising:
means for removing cement from an intramedullary canal of a bone, said means comprising:
a frame for guiding the cutting element along the predetermined path,
an adjustable clamp assembly, connected to said frame, for clamping the bone such that the intramedullary canal of the clamped bone is disposed along the predetermined path, said adjustable clamp assembly including a pair of pivotable jaws having a pair of slots, respectively, and a cam follower connected to the slots of said pivotable jaws, wherein the slot of each of said pair of pivotable jaws is disposed at one end thereof.

5,312,410
SURGICAL CABLE TENSIONER
David F. Miller, Eads, Tenn., and Leroy C. Bayliss, Sherwood, Ohio, assignors to Danek Medical, Inc., Memphis, Tenn.
Filed Dec. 7, 1992, Ser. No. 987,004
Int. Cl.[5] A61F *5/00, 2/32*
U.S. Cl. 606—86 **37 Claims**



1. A surgical cable tensioner comprising:
a housing leaving a distal end for reference to a point on a surgical cable, and a passageway sized to receive surgical cable therethrough;
a ratchet member movably connected to said housing;
means, mounted on said ratchet member, for gripping surgical cable;
a cable route being defined between said distal end of said housing and said gripping means;
an extendable cable distance being defined by the distance along said cable route between said distal end of said housing and said gripping means;
manual means, attached to said housing, for ratcheting said ratchet member to extend said cable distance; and
means, attached to said housing, for locking said ratchet member against movement with respect to said housing in a direction that shortens said cable distance.

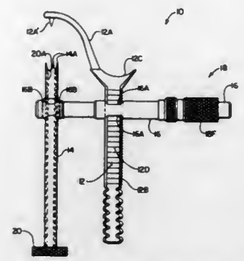
5,312,411
UNI-COMPARTMENTAL FEMORAL KNEE INSTRUMENTS AND PROSTHESIS
John K. Steele; Thomas A. Carls, both of Memphis; David L. Evans, Bartlett; Carol D. Taylor, Memphis, all of Tenn.; Philippe Cartier, Paris, France; James Andrews, Birmingham, Ala., and William Kennedy, Sarasota, Fla., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.
Filed Oct. 27, 1992, Ser. No. 967,161
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—88 **13 Claims**



1. A surgical instrument for shaping the distal femur of a patient to receive a unicondylar prosthetic component, comprising:
a) a cutting guide body having a peripheral sidewall, a bottom surface for abutting the patient's distal femur during use, and a top surface for receiving a bone cutting reamer;
b) means for affixing the guide body to the distal femur in a desired position;
c) a pair of cylindrically shaped openings in the guide body surrounded by the peripheral side wall of the guide body, said openings extending between the upper and lower surfaces of the guide body;
d) each of the openings providing a central axis, and the respective axes of the openings forming an acute angle;
e) a bone cutting reamer that registers in a selected opening of the guide body, wherein the opening positions the reamer for shaping the distal femur of a patient; and
f) wherein a portion of the openings is overlapping so that the cuts formed by the reamer when placed sequentially in the openings are overlapping cuts.

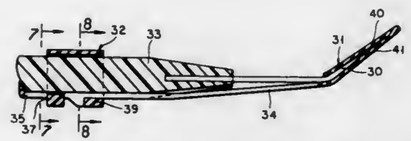
5,312,412
FIXATION ALIGNMENT GUIDE FOR SURGICAL USE
Terry L. Whipple, 9009 Norwick Rd., Richmond, Va. 23229
Filed Feb. 3, 1993, Ser. No. 12,994
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—96 **13 Claims**

1. A device for inserting rigid shafts into opposed segments of a fractured bone the device comprising:
an axially movable shaft having an arm extending outwardly therefrom said arm being adapted to engage a fractured bone at a first surface location;
a tubular guide operatively aligned with said bone engagement arm and having a proximal end and a distal end wherein said proximal end comprises means for engaging the fractured bone at a second surface location substantially opposite said first bone surface location;
an elongated guide support for engaging said tubular guide between the proximal and distal ends of said tubular guide and defining an aperture therethrough for adjustably receiving said axially movable shaft therein; and



securement means operatively associated with said guide support for securing said axially movable shaft at a desired distance from said engagement means of said tubular guide in order to fixedly engage the fractured bone therebetween;
whereby rigid shafts may be inserted through said tubular guide and implanted into opposed segments of the fractured bone, and
wherein said elongate guide support includes one or more apertures therethrough located adjacent and parallel to said tubular guide, said apertures defining a smaller diameter passageway than said tubular guide and allowing for selective insertion of guide wires into the fractured bone.

5,312,413
INSTRUMENTATION FOR OPHTHALMIC SURGERY AND METHOD OF USING THE SAME
Alexander M. Eaton, 910 Constitution Dr., Durham, N.C. 27705, and Jaime Santamaria, 73 Water St., Perth Amboy, N.J. 08861
Continuation-in-part of Ser. No. 731,444, Jul. 17, 1991, abandoned. This application Feb. 10, 1992, Ser. No. 834,142
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—107 **53 Claims**



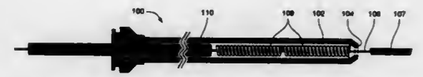
1. In combination, an elongate handle mounting a bladed surgical implement at the end of a longitudinal stem which offsets the implement beyond an end of the handle, said implement being at angular offset with respect to said stem, a sheath of pliant material having a through passage which envelops the implement, an elongate tie element connected to said sheath and extending to a point of longitudinally guided location at said handle, and said sheath having opposed closely spaced relatively wide panels with such frictional engagement to opposite surfaces of the blade of said implement as to permit sheathed-implement insertion along a surgically prepared tunnel, prior to retraction of said sheath to thereby expose said implement for its part in a surgical procedure wherein the operative use of said implement is to occur only after sheath-piloted insertional passage through at least a predetermined portion of the prepared tunnel, one of said relatively wide panels being transversely slitted at longitudinally spaced locations, thereby facilitating sheath retraction from the blade of said implement and sheath negotiation of the angular offset which connects the implement to said stem.

5,312,414
INTRAOCULAR LENS INSERTION SYSTEM
Vladimir Feingold, Laguna Niguel, Calif., assignor to Staar Surgical Company, Monrovia, Calif.
Filed Sep. 30, 1992, Ser. No. 953,251
Int. Cl.[5] A61F *2/16*
U.S. Cl. 606—107 **25 Claims**



1. A surgical device for implantation of a deformable intraocular lens into the eye through a relatively small incision made in the ocular tissue, comprising:
a holder having a receiver at one end of said holder;
a moveable plunger disposed within said holder;
a lens holder having a nozzle portion with a tip for insertion through the incision in the ocular tissue, said lens holder having said nozzle portion is removably disposed as a unit within said receiver of said holder,
whereby a lens to be implanted is loaded into said lens holder, said lens holder is inserted into said receiver of said holder, and said plunger is actuated to implant said lens from said lens holder through said nozzle portion into the eye.

5,312,415
ASSEMBLY FOR PLACEMENT OF EMBOLIC COILS USING FRICTIONAL PLACEMENT
Thomas J. Palermo, San Jose, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.
Filed Sep. 22, 1992, Ser. No. 949,095
Int. Cl.[5] A61B *17/00;* **A61M** *29/00*
U.S. Cl. 606—108 **7 Claims**



1. A detachable pusher-coil assembly for use in occulding a selected site within a vessel comprising;
(a) a catheter sheath having a proximal end and a distal end, the distal end having a constricted distal tip, the constricted distal tip having an interior shape to frictionally engage but allow controlled passage of one or more separate embolic coils;
(b) a guidewire extending from the proximal end to the distal end of the catheter sheath and within the catheter sheath, said guidewire having a tip, said guidewire tip having an outer diameter which approximates an inner diameter of said one or more separate embolic coils, said guidewire tip

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for frictionally engaging an interior of said one or more embolic coils;

(c) a plurality of said separate embolic coils situated on said guidewire, each said separate embolic coil having an outer diameter sufficiently large to frictionally engage the constricted distal tip of the catheter sheath;

(d) a pusher sheath situated within the inside diameter of the catheter sheath proximal to the plurality of separate embolic coils and in which the guidewire passes therethrough, the pusher sheath having a diameter sufficient to be moved axially toward the distal end of the catheter sheath and thereby push said separate embolic coils through the distal end of the catheter sheath.

5,312,416

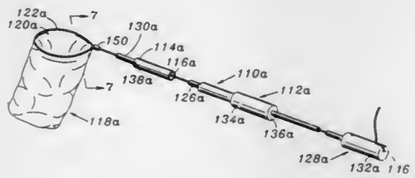
METHOD AND SYSTEM FOR ENCLOSING, MANIPULATING, DEBULKING AND REMOVING TISSUE THROUGH MINIMAL ACCESS INCISIONS

Edmund E. Spaeth, Orange; Alexander S. Borsanyi, Newport Beach, and Thomas L. Hursman, Diamond Bar, all of Calif., assignors to Endomedix Corporation, Irvine, Calif.

Filed Oct. 18, 1991, Ser. No. 779,443

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—114 **41 Claims**



1. A system for deploying and retrieving a flexible non-porous tissue containment sac within a body cavity, said system comprising:

a tubular introducer having a distal end, a proximal end and a hollow lumen extending longitudinally therethrough;

a rigid shaft member having a distal end and a proximal end, the distal end of said rigid shaft member being positioned with the lumen of said introducer;

a flexible non-porous containment sac positioned on the distal end of said shaft, said sac having an aperture formed therein and a rim member associated with said aperture to cause said aperture to assume an open configuration;

said rim member having first and second rim member portions, said first rim member portion being connected to said second rim member portion by way of a spring such that said spring will urge said first and second rim member portions in divergent directions to thereby bias said aperture in an open configuration;

said shaft member being alternately moveable within the lumen of said introducer between:

a first initial position wherein said containment sac is fully withdrawn into and contained within the lumen of said introducer;

a second position wherein said containment sac is fully deployed out of and beyond the distal end of said introducer; and

a third position wherein the aperture of said containment sac is retracted into the introducer, thereby substantially closing said aperture and preventing leakage from said containment sac.

5,312,417

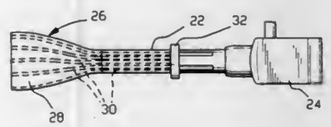
LAPAROSCOPIC CANNULA ASSEMBLY AND ASSOCIATED METHOD

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Jul. 29, 1992, Ser. No. 921,511

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—114 **17 Claims**



1. A trocar sleeve device for use in laparoscopic surgery, comprising:

a rigid tubular member provided at a proximal end with a permanently attached insufflation port component;

expandable resilient receiver means, connected to said tubular member at a distal end thereof opposite said proximal end and having when relaxed a substantially cylindrical configuration aligned with and extending distally from said tubular member, for expanding from said cylindrical configuration to an expanded pocket to receive a severed organ or organ part, thereby facilitating removal of the severed organ from a patient's abdomen during a laparoscopic surgical procedure; and

means attached to said receiver means for maintaining said receiver means in said cylindrical configuration in the absence of external forces on said receiver means.

5,312,418

INSTRUMENT FOR LITHOTRIPSY

Ludwig Bonnet, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, A Corporation of the Federal Republic of Germany, Knittlingen, United Kingdom

Filed Apr. 21, 1993, Ser. No. 51,043

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4214148

Int. Cl.[5] A61B *8/00*

U.S. Cl. 606—128 **7 Claims**



1. A lithotripsy instrument, comprising: an endoscope having a shaft with a channel therein for accommodating a probe, said endoscope having a distal end and a proximal end; a rinsing and probing attachment connected to the proximal end of the endoscope, said rinsing and probing attachment having a probe introduction valve and an auxiliary instrument introduction valve; a guide element having a channel therein for guiding and supporting the probe, a proximal end and a distal end, the distal end of said guide element being releasably attached to said rinsing and probing attachment so that the channel of the guide element is aligned with the channel in the endoscope shaft, said guide element further having a slot which extends from the distal end of said guide element toward the proximal end thereof, said slot forming recess in said guide element so as to permit accessibility to and actuation of the probe introduction valve, the auxiliary instrument introduction valve being arranged to project outwardly from the recess; and, drive means for vibrating the probe.

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DEPILATION APPARATUS WITH TWISTING ACTION

Andreas J. Garenfeld; Rob Klasen, and Marinus J. J. Dona, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

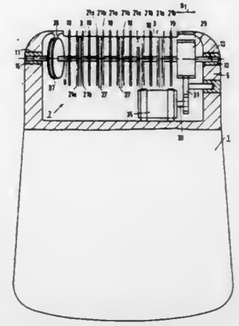
Filed Dec. 18, 1992, Ser. No. 993,265

Claims priority, application European Pat. Off., Dec. 23, 1991, 91203380.0

Int. Cl.[5] A45D *26/00*; A22C *21/02*

U.S. Cl. 606—133 **17 Claims**

1. A depilation apparatus provided with a depilation member having pinching elements for consecutively holding hairs which grow from the skin clamped in and pulling said hairs from the skin, wherein the depilation apparatus is provided with means for twisting the hairs about their longitudinal axes before the depilation member pulls the hairs from the skin, said pinching elements being rotatable relative to a housing and, being displaceable from a catching to a pinching position; and



wherein said means for twisting the hairs comprises a depilation member having at least one of the group of (i) means for effecting different rotation speeds of the pinching elements at least temporarily while in the pinching position, (ii) means for effecting slideable movement of pinching surfaces of said pinching elements relative to one another in the pinching position, and (iii) means for effecting flexibility in the axial direction in at least one of the pinching elements while in the pinching position.

5,312,420

SURGICAL APPARATUS FOR REMOVING FASTENERS

Kenneth E. Toso, Portchester, N.Y., and Michael Castro, Seymour, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,301

Int. Cl.[5] A61B *17/06*

U.S. Cl. 606—138 **28 Claims**



1. A surgical apparatus for removing from the body a fastener having a pair of legs joined by a backspan, the apparatus comprising:

first and second elongated members having proximal and distal ends;

first and second contacting members having proximal and distal end portions, said first contacting member proximal end portion being pivotally pinned to said first elongated member distal end and said second contacting member proximal end portion being pivotally pinned to said second elongated member distal end; and

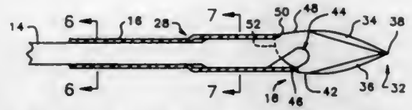
a pin passing through each said contacting members, said pin defining a common pivot point for said contacting members, wherein when said elongated members are forced towards each other, the proximal end portions of said contacting members are caused to move towards each other and the distal end portions of said contacting members are caused to move away from each other.

5,312,421

Patent Not Issued For This Number

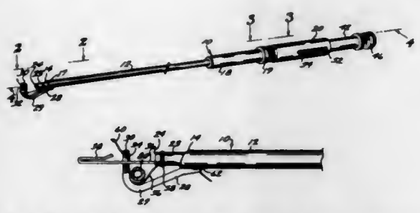
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,422
ENDOSCOPIC SUTURING NEEDLE
A. Frank Trott, Largo, Fla., assignor to Linvatec Corporation, Largo, Fla.
Filed Jul. 16, 1992, Ser. No. 914,810
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—144 **19 Claims**



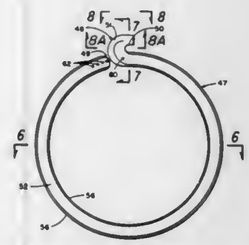
1. An apparatus for endoscopic suturing, comprising:
a handle;
an elongated tubular housing extending from said handle;
needle means movably mounted and extending through and beyond said housing for penetration into body tissue and for selective retention of a suture intermediate of its ends against said housing while said handle is moved with respect to the body tissue;
said needle means being movable with respect to said housing and further comprising a distal segment, said distal segment having a larger profile than said housing, whereupon said housing acts as a travel stop when said needle means is retracted toward said housing.

5,312,423
APPARATUS AND METHOD FOR LAPARAOSCOPIC LIGATION
Robert F. Rosenbluth, Laguna Niguel, and Rodney A. Brenneman, Mission Viejo, both of Calif., assignors to Advanced Surgical Intervention, Inc., San Clemente, Calif.
Filed Oct. 1, 1992, Ser. No. 955,353
Int. Cl.[5] A61B *17/00*
U.S. Cl. 206—148 **41 Claims**



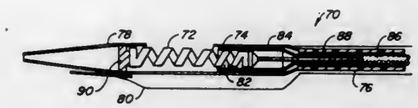
1. A ligation device for tying a suture around a selected bodily vessel or duct, in combination with a suture having a tag end and a standing part with a loop formed therein, the device comprising:
an elongate hollow tube extending axially between a proximal portion and a distal end;
first means, attached to the elongate hollow tube near its distal end, for isolating and engaging a selected vessel or duct, and for releasably holding the tag end of the suture;
second means, disposed within the elongate hollow tube for axial movement therein between a first axial position and a second axial position, for holding the loop formed in the standing part of the suture when in the first axial position and releasing the loop when in the second axial position;
first actuation means for selectively moving the second means from the first position to the second position;
third means, disposed within the second means for axial movement therein between a first axial position and a second axial position, for grasping the tag end of the suture directly from the first means when in the second axial position and when the tag end is held by the first means, and for pulling the tag end around the selected vessel or duct and toward the proximal portion of the tube as the third means moves to its first axial position; and
second actuation means for selectively moving the third means between its first and second axial positions;
whereby the movement of the third means from its second position to its first position carries the tag end of the suture into the second means and within the loop held on the second means, and whereby the movement of the second means from its first position to its second position releases the loop onto the tag end of the suture to form a knot in the suture that is tightened around the vessel or duct by the further movement of the third means toward its first position.

5,312,424
CONREAL CURVATURE ADJUSTMENT RING
Lauren G. Kilmer, and Alvin E. Reynolds, both of Tulsa, Okla., assignors to Keravision, Inc., Santa Clara, Calif.
Continuation of Ser. No. 566,687, Aug. 13, 1990, abandoned, which is a division of Ser. No. 357,700, May 26, 1989, Pat. No. 4,961,744, which is a continuation of Ser. No. 62,790, Jun. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 336,919, Jan. 4, 1982, Pat. No. 4,452,235, and a continuation-in-part of Ser. No. 579,480, Feb. 13, 1984, Pat. No. 4,671,276, and a continuation-in-part of Ser. No. 10,400, Feb. 3, 1987, Pat. No. 4,766,895. This application Jul. 24, 1992, Ser. No. 919,499
The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—151 **1 Claim**



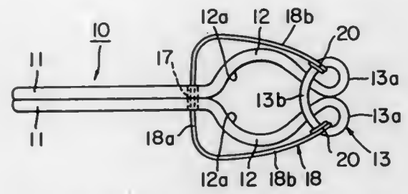
1. A curvature adjusting ring for insertion into the cornea of an eye comprising a forward end and a rearward end, means on said forward end to dissect a circular pathway in said cornea to receive said adjusting ring, and said adjusting ring having a cross-sectional shape comprising a nonequilateral hexagon with opposing parallel longer sides, wherein the longer sides of the hexagon define a top surface and a bottom surface of the curvature adjusting ring, wherein the bottom surface is at an angle N which substantially corresponds to the slope of the anterior surface of said cornea, and means to interconnect the ends of said ring.

5,312,425
ATHERECTOMY DEVICE HAVING HELICAL BLADE AND BLADE GUIDE
Michael Evans, Palo Alto, and Richard L. Mueller, Mountain View, both of Calif., assignors to Devices for Vascular Intervention, Inc., Redwood City, Calif.
Division of Ser. No. 971,697, Nov. 4, 1992, Pat. No. 5,226,909, which is a continuation of Ser. No. 726,626, Jun. 28, 1991, abandoned, which is a continuation of Ser. No. 405,906, Sep. 12, 1989, abandoned. This application Apr. 7, 1993, Ser. No. 44,131
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—155 **15 Claims**



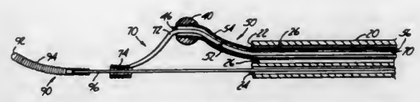
1. An atherectomy catheter comprising:
a catheter body having a lumen extending between proximal and distal ends thereof;
a cylindrical housing secured to the distal end of the catheter body, said housing having a substantially open interior and an axially-aligned, elongate aperture on one side thereof;
a first helical cutting blade disposed within the housing adjacent the elongate aperture;
means for rotating the first helical cutting blade;
a circular cutting blade disposed within the housing; and
means for rotating and advancing the circular cutting blade over the helical cutting blade, whereby the helical cutting blade acts as a guide for the circular cutting blade.

5,312,426
SURGICAL CLIP
Hiromu Segawa, Fujinomiya, and Satoshi Sasaoka, Tokyo, both of Japan, assignors to Mizubo Ika Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 12, 1993, Ser. No. 31,232
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—158 **5 Claims**



1. A surgical clip for clamping a blood vessel comprising:
a pair of opposing clamping arms for clamping a blood vessel therebetween, said arms lying in a common plane and having distal ends and proximal ends, respectively;
a pair of opposing engagement portions extending from said proximal ends of the clamping arms away from the same, respectively, said engagement portions lying in said plane and being of an inwardly concave arcuate shape so that the engagement portions define therebetween a space to receive engagement protrusions of forceps therein;
a resilient portion integrally connecting ends of said engagement portions, remote from said clamping arms, for urging, via said engagement portions, said clamping arms in mutual abutting contact for clamping the blood vessel; and
wire means slidably passed through said clamping arms across the same adjacent to said proximal ends, said wire means being connected to said resilient portion.

5,312,427
DEVICE AND METHOD FOR DIRECTIONAL ROTATIONAL ATHERECTOMY
Leonid Shturman, Minneapolis, Minn., assignor to Shturman Cardiology Systems, Inc., Minnetonka, Minn.
Filed Oct. 16, 1992, Ser. No. 962,634
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **32 Claims**



1. A directional rotational atherectomy device, comprising:
an elongated catheter having at least first and second lumens, and a distal end;
a guide wire receivable in the first lumen of the catheter and extending distally therefrom;
a flexible, elongated drive shaft having proximal and distal ends and a central lumen, the drive shaft being receivable in the second lumen of the catheter and being longitudinally movable therein;
means operatively connected to the proximal end of the drive shaft for rotating the drive shaft;
an abrasive burr carried by the drive shaft, the burr including a central lumen generally coaxial with the drive shaft lumen; and
a positioning wire receivable in the drive shaft lumen, the positioning wire having a distal end and means for slidably securing the distal end of the positioning wire about the guide wire distally of the distal end of the catheter so that the positioning wire can be moved proximal and distally with respect to the guide wire, the positioning wire further including a distal burr-positioning segment having a predetermined shape, the drive shaft and burr being movable longitudinally with respect to the positioning wire and the catheter to selectively locate the burr along the predetermined shape of such distal burr-positioning segment;
at least the proximal portion of the burr-positioning segment of the positioning wire being retractable into and advanceable out of the catheter, the predetermined shape of the distal burr-positioning segment of the positioning wire being curved so that when the burr is positioned along such curve and such proximal portion of the burr-positioning segment is retracted into the catheter, the burr will be drawn to a position close to the guide wire, and when the proximal portion of the curved burr-positioning segment of the positioning wire is advanced out of the catheter the predetermined curved shape of the distal burr-positioning segment spaces the burr laterally further away from the guide wire,

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5,312,428
CORNEAL PUNCH AND METHOD OF USE
David M. Lieberman, 300 E. 51st St., Apt. 18B, New York, N.Y. 10022
Filed Oct. 10, 1991, Ser. No. 774,413
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—166 **5 Claims**

1. A corneal punch for cutting a portion of a cornea of an eye, said corneal punch comprising:
a support stand having a base portion and an arm portion extending upwardly from said base portion, said base portion defining a recess therein, said base portion having a first pin mounted thereon whereby said first pin extends

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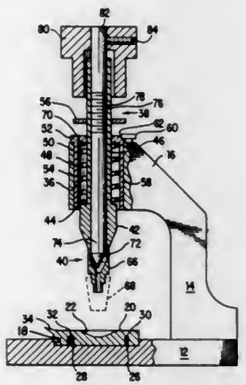
upwardly from said recess defined in said base portion, said first pin having a first diameter, said base portion having a second pin mounted thereon whereby said second pin extends upwardly from said recess defined in said base portion, said second pin having a second diameter different than said first diameter, said arm portion defining a vertical channel therethrough, said vertical channel being disposed above said recess defined in said base portion;

a piston assembly movably mounted through said vertical channel defined through said arm portion, said piston assembly having a proximal end portion proximal said base portion, said proximal end portion having a means for holding a butting blade disposed thereon;

a means for rotationally locking said piston assembly relative to said arm portion and said base portion, whereby said piston assembly can move axially through said vertical channel defined through said arm portion without rotating relative to said arm portion and said base portion;

a cutting blade mounted on said means for holding a cutting blade; and

a cutting block configured to fit within said recess defined in said base portion, said cutting block having an upper surface and a lower surface, said lower surface defining a



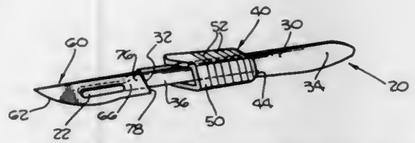
first recess therein configured to receive and engage said first pin, said lower surface defining a second recess therein configured to receive and engage said second pin, said upper surface of said cutting block defining an aspheric recess therein, said aspheric recess being disposed substantially coaxially to said vertical channel defined through said arm portion when said cutting block is disposed within said recess defined in said base portion and when said first pin and said second pin are disposed within said first recess and said second recess formed on said lower surface of said cutting block, respectively, said aspheric recess being constructed to receive said portion of a cornea of an eye, said upper surface of said cutting block having at least one mark placed thereon, whereby said portion of a cornea of an eye can be placed on said cutting block at a preselected spatial orientation relative to said at least one mark, whereby said portion of a cornea of an eye and said cutting block can be placed on said support stand at a preselected spatial orientation through the use of said first pin and said second pin, and whereby said portion of a cornea of an eye, said cutting block, said support stand, and said piston assembly are maintained in a single rotational orientation throughout operation of said corneal punch.

5,312,429

SCALPEL HANDLE AND BLADE RELEASE ASSEMBLY

William L. Noack, Saugus, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.

Filed Jul. 27, 1992, Ser. No. 920,004
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **4 Claims**



1. A blade handle and release assembly adapted for use with a detachable surgical blade wherein said blade has a keyed slot with a wide portion and a narrow portion and wherein said blade has a rearward portion with a rear edge, said assembly comprising:

a blade handle having a proximal end and a distal end with a blade mounting tang on said proximal end and a grip on said distal end; and

a blade release slide element mounted on said grip for slidably engaging said blade and discharging said blade from said blade mounting tang via a one handed manipulation thereof;

said blade mounting tang having an upraised portion contoured for complemental engagement with said keyed slot and a recessed portion adjacent to said grip for receiving said rearward portion of said blade;

said grip having a forward section adjacent to said blade mounting tang with a reduced cross-sectional area having dimensions such that a portion of said rear edge of said blade protrudes latitudinally beyond the perimeter of said forward section and having a stop for holding said blade release means in a fixed position on said blade handle prior to initiation of the blade disengagement procedure;

said forward section having an abutment surface adjacent to said recessed portion of said blade mounting tang which is complimentary contoured to abut a non-protruding portion of said rear edge of said blade;

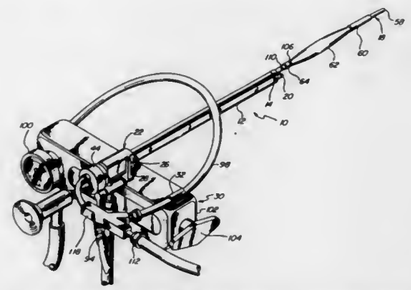
said blade release slide element having a configuration such that said blade release slide element is slidably mountable over said forward section of said grip and having a blade engaging and release ramp for engaging said protruding portion of said rear edge and discharging said blade from said handle in response to a digitally activated sliding movement of said blade release slide element toward said proximal end of said blade handle, said blade engaging and release ramp inclining from said proximal end of said handle to said distal end of said handle as said blade mounting tang extends upwardly from said recessed portion of said blade mounting tang to said upraised portion of said blade mounting tang.

5,312,430

BALLOON DILATION CATHETER

Robert F. Rosenbluth, 24161 Cherry Hills Pl., Laguna Niguel, Calif. 92677; Jay A. Lenker, 996 Coast View Dr., Laguna Beach, Calif. 92651; George R. Greene, 3108 Sumatra Pl., Costa Mesa, Calif. 92626, and Barry M. Calvarese, 2492 Manchester Ave., Cardiff, Calif. 92007

Continuation of Ser. No. 360,088, Jun. 1, 1989, Pat. No. 5,030,227, and a continuation-in-part of Ser. No. 535,999, Jun. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 427,924, Oct. 25, 1989, abandoned, which is a continuation of Ser. No. 229,155, Aug. 5, 1988, abandoned, which is a continuation of Ser. No. 939,754, Sep. 9, 1986, Pat. No. 4,762,128, said Ser. No. 360,088, is a continuation-in-part of Ser. No. 201,686, Jun. 2, 1988, Pat. No. 5,007,898. This application Jun. 28, 1991, Ser. No. 722,899
The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.
Int. Cl.[5] A61M *5/00*
U.S. Cl. 606—192 **11 Claims**



1. An intraluminal dilation apparatus for restoring patency to a collapsed portion of the urethra, comprising:

an axially elongate dilation catheter having an expandable region thereon;

a radially outwardly expandable, axially elongate support structure for radially outwardly dilation the urethra, said support structure being removably, coaxially disposed about said expandable region;

non-radiological locating means substantially parallel to the urethra for ascertaining the position of said support structure within the urethra under direct vision;

said catheter being adapted for insertion into the urethra and being axially moveable so as to permit positioning of said support structure within the obstruted urethra.

5,312,431

OCCLUSIVE CUFF

James A. McEwen, Richmond, Canada, assignor to Abatis Medical Technologies Limited, Limerick, Ireland

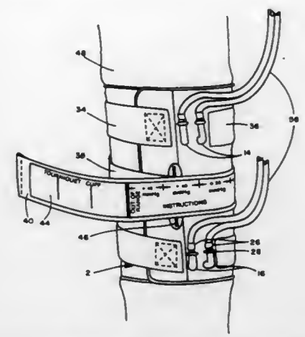
Filed Sep. 30, 1991, Ser. No. 767,812
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—202 **3 Claims**

1. An overlapping occlusive cuff having secondary safety securing means for improved safety, comprising:

a) an inflatable bladder for encircling a limb, wherein the length of the bladder is selected to be sufficient for the bladder to encircle the limb at a desired location and have portions that overlap circumferentially around the limb;

b) bladder securing means for securing the overlapping bladder in a substantially circumferential direction around the limb with the bladder inflated to a pressure sufficient to occlude flow in blood vessels in the limb encircled by the bladder; and

c) secondary safety securing means superimposed over the overlapped portions of the bladder and superimposed over the bladder securing means, the secondary safety securing means extending in a substantially circumferential direction for securing the overlapping bladder in a substantially circumferential direction around the limb



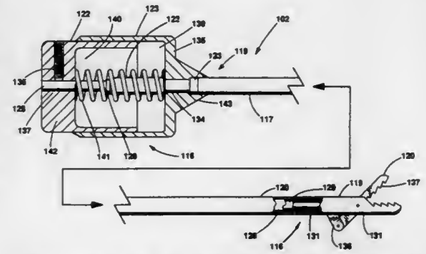
independently of the bladder securing means such that the bladder remains overlapped and secured in a substantially circumferential direction if the bladder securing means is ineffective while the bladder is inflated.

5,312,432

PERCUTANEOUSLY INSERTABLE, NEEDLE-SIZED TISSUE RETRACTOR AND SYSTEM

Edward D. Pingleton, and Paul G. Thomson, both of Fillmore, Ind., assignors to Vance Products Inc., Spencer, Ind.

Filed May 1, 1992, Ser. No. 877,644
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—205 **5 Claims**



1. A percutaneously insertable tissue retractor comprising:

an outer cannula having a passage extending longitudinally therethrough, a proximal end and a distal end;

an inner rod having a proximal end and a distal end and passing through said passage of said outer cannula;

a tissue grasper positioned about said distal ends of said outer cannula and said inner rod and having open and closed positions, both of said outer cannula and said grasper in said closed position being sized for insertion through a needle-sized trocar sheath having an outside diameter in a range of 10 to 22 gauge;

an enclosure connected to said proximal end of said outer cannula and having a cavity therein, a piston slidably positioned in said cavity and connected to said proximal end of said inner rod, and first and second states for operation of said grasper between said open and closed positions, respectively;

a first retaining tube positioned on said outer cannula in said cavity of said enclosure; and

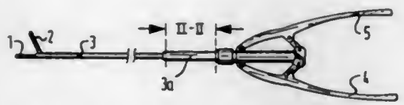
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a second retaining tube on said outer cannula outside of said cavity of said enclosure.

5,312,433
SURGICAL FORCEPS

Manfred Boebel, Oetisheim, and Dieter Metsch, Kraichtal/-Bahnbrücken, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,185
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131176
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—205 **5 Claims**

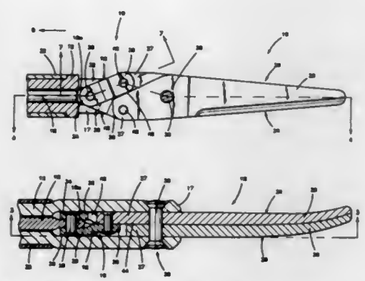


1. Surgical forceps comprising a hollow shaft, a forceps mouth having two mouth parts at the distal end of the shaft, at least one of the mouth parts being movably actuatable against the other by means of a handle at the proximal end of the shaft, an axially displaceable actuating rod riding in the hollow shaft, wherein the force exerted by actuating the handle is transferred to the movable mouth part by means of the axially displaceable rod, and overload protection means in a section of the shaft for limiting the closing force of the mouth parts to a preset value when an overload state occurs with danger of breaking the forceps mouth, wherein at least one section of the rod inside the shaft is connected to a first blocking element which upon reaching the overload state is laterally deflected by said one section toward a second blocking element on the inner wall of the shaft and brought into positive engagement with said second blocking element, thereby blocking further actuation of the handle.

5,312,434
MEDICAL INSTRUMENT

Lawrence Crainich, Ceda Industrial Park, Charlestown, N.H. 03603

Filed Dec. 21, 1992, Ser. No. 993,630
Int. Cl.[5] A61B *17/42*
U.S. Cl. 606—207 **16 Claims**

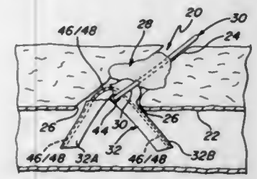


1. A medical instrument, comprising:
an elongated tube having a first end and a second end;
jaw means, mounted to the first end of the elongated tube and having two jaw elements pivotally mounted to each other at a pivot point, each jaw element having an operative end and a linkage end, the operative end and the linkage end extending from the pivot point, the operative end and the linkage end of each jaw element being arranged in a substantially coplaner fashion;
an actuating rod for opening and closing the jaw means, the actuating rod having a longitudinal axis and a thickness and being movably disposed within the elongated tube;
linkage means for linking the actuating rod with the jaw means, comprising two link elements, each link element having a first end defined in a first plane and pivotally linked to the actuating rod and a second end defined in a second plane and pivotally linked to the linkage end of a respective jaw element, the first plane of the first end and the second plane of the second end of each link element being offset relative to one another in a direction substantially perpendicular to the longitudinal axis of the actuating rod so as to compensate for the thickness of the actuating rod and provide proper alignment of each link element between the actuating rod and a respective jaw element; and
handle means mounted to the second end of the elongated tube and operably connected to the actuating rod so as to actuate the actuating rod whereby the handle means can be used to actuate the jaw means.

5,312,435
FAIL PREDICTABLE, REINFORCED ANCHOR FOR HEMOSTATIC PUNCTURE CLOSURE

John Nash, Dowingtown, and Douglas Evans, Devon, both of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Filed May 17, 1993, Ser. No. 64,192
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—213 **16 Claims**



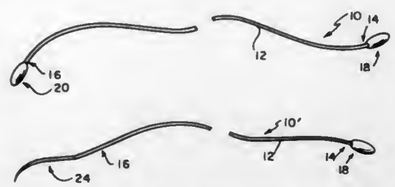
1. A closure for sealing a percutaneous puncture in a vessel or lumen of a living being, said puncture comprising a tract extending through tissue overlying the vessel, said closure comprises anchoring means, sealing means, and filament means, said closure being arranged to be inserted into the puncture tract and through the puncture in said vessel or lumen so that said anchoring means is within said vessel or lumen, said sealing means is within said puncture tract, and said filament means connecting said anchoring means and said sealing means, said anchoring means being a generally elongated member formed of a first resorbable material and including reinforcing means of a second resorbable material which has a higher tensile strength than said first material, said reinforcing means extending along substantially the length of said anchoring means and fixedly secured thereto to prevent said anchoring means from breaking apart and separating from said closure.

5,312,436
SUTURE FOR USE IN ENDOSCOPIC SURGERY

William R. Coffey, 7754 N. Whittier Pl., Indianapolis, Ind. 46250; Arthur C. Coffey, 5934 Crittenden Ave., Indianapolis, Ind. 46220, and Christopher D. Coffey, 6020 Crestview, Indianapolis, Ind. 46202

Filed Mar. 11, 1993, Ser. No. 29,526
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—228 **9 Claims**

1. A suture for use in MIS surgery and tying internally in a body cavity using graspers extending through trocars in the body wall, said suture comprising a length of suture material suitable for fastening body tissue within the body cavity, said length having opposite end portions, and gripping means at-



tached to at least one of said end portions, said gripping means being formed and shaped to facilitate engagement and movement by graspers, said gripping means comprising a soft, sponge-like body attached to said length end.

5,312,437
ABSORBABLE COATING COMPOSITION AND SUTURE COATED THEREWITH

Matthew E. Hermes, Easton; Donald S. Kaplan, Weston; Nagabhushanam Totakura, Norwalk, and Steven L. Bennett, Milford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

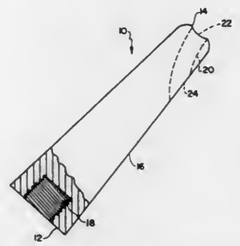
Filed Jun. 12, 1992, Ser. No. 896,856
Int. Cl.[5] A61L *17/00*
U.S. Cl. 606—230 **36 Claims**

1. A suture coated with a coating composition comprising the product obtained by reacting a mixture of poly(oxypropylene) glycol and lactide/glycolide copolymer.

5,312,438
SUTURE ANCHOR AND METHOD OF USE

Lanny L. Johnson, 4528 Hagndorn, East Lansing, Mich. 48823, assignor to Lanny L. Johnson, Okemos, Mich.

Filed May 3, 1993, Ser. No. 55,310
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—232 **13 Claims**

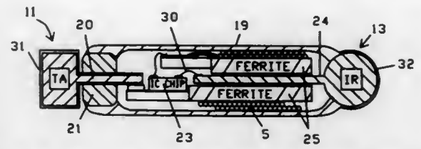


1. A suture anchor comprising:
(a) a substantially frusto-conical device having first and second axial ends and a side surface extending therebetween, said first axial end having a diameter larger than said second axial end; and
(b) a passage within said device for allowing suture to be threaded therethrough, said passage extending from said second axial end to said side surface.

5,312,439
IMPLANTABLE DEVICE HAVING AN ELECTROLYTIC STORAGE ELECTRODE

Gerald E. Loeb, 90 Bagot Street, Kingston, Ontario, Canada K7L 3E5

Filed Dec. 12, 1991, Ser. No. 806,584
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—2 **38 Claims**

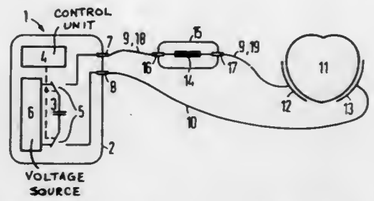


36. In an implantable device, internal electrical circuitry, said device further comprising capacitor means for storing electrical energy, said capacitor means comprising an electrolytic, capacitive electrode, said electrode adapted to be disposed at least partially in body fluids and wherein said capacitor means is connected to provide at least a portion of the electrical energy utilized by said implantable device.

5,312,440
IMPLANTABLE DEFIBRILLATOR ARRANGEMENT

Jakub Hirschberg, Taeby, and Hans Anderson, Voellingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

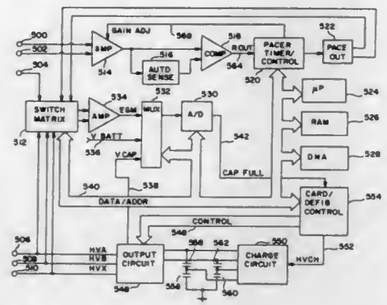
Filed Mar. 24, 1992, Ser. No. 856,682
Claims priority, application Japan, Mar. 28, 1991, 4110404
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 **9 Claims**



1. An implantable defibrillator system comprising:
a first housing for in vivo implantation in a patient;
at least two leads, each terminating in an electrode, for in vivo implantation in the region of the heart of said patient;
a capacitor and a voltage source contained in said first housing;
switching means contained in said first housing for selectively connecting said capacitor to said voltage source to charge said capacitor and for connecting said capacitor across said electrodes of said leads for supplying a defibrillation pulse via a current path including said leads to said heart; and
a second housing mechanically connected to one of said leads, for in vivo implantation in said patient, containing an inductance electrically connected in said current path.

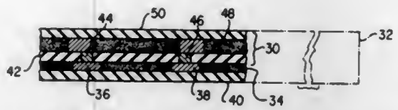
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,441
METHOD AND APPARATUS FOR DISCRIMINATION OF VENTRICULAR TACHYCARDIA FROM SUPRAVENTRICULAR TACHYCARDIA AND FOR TREATMENT THEREOF
Steven J. Mader; John R. Lisowski, both of Minneapolis; Walter H. Olson, North Oaks, all of Minn., and Kenneth P. Huberty, Lutz, Fla., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 13, 1992, Ser. No. 867,931
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—5 **10 Claims**



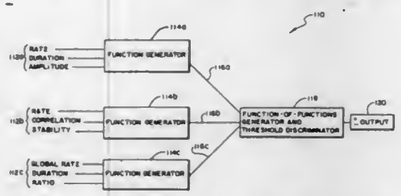
1. A cardioverter, comprising:
treatment means for delivering a therapy to a patient's heart to treat ventricular tachycardia; means for sensing electrical signals from the ventricle of said patient's heart;
detection means, coupled to said sensing means for detecting the occurrence of a depolarization of the ventricle of said patient's heart and for issuing an R-wave signal indicative thereof;
digitizing means for converting said electrical signals from the ventricle of said patient's heart to digital signals indicative of the magnitude of said electrical signals and for storing said digital signals sequentially;
windowing means responsive to said R-wave signal for defining a time window extending from a point in time prior to said R-wave signal until a point in time following said R-wave signal; and
analysis means responsive to said R-wave signal for analyzing the said digital signals stored in the said time window defined in response to the occurrence of said R-wave signal, said analysis means in turn comprising:
difference measuring means for sequentially scanning through the said digital signals stored during a said time window in a first direction and for measuring the difference between individual ones of said stored digital signals and others of said stored digital signals to determine whether said measured differences exceed a predetermined threshold;
counting means for counting the number of sequential ones of said difference measurements exceeding said predetermined threshold and for generating an endpoint signal each time said number of said difference measurements exceeding said predetermined threshold reaches a predetermined count;
width measurement means responsive to said counting means for measuring an interval between a first said endpoint signal to occur during said scanning and a last said endpoint signal to occur during said scanning to provide an R-wave width measurement; and
ventricular tachycardia detection means responsive to said width measurement for detecting the occurrence of a ventricular tachycardia and for triggering delivery of said therapy.

5,312,442
ENERGY DISSIPATION RESISTOR FOR IMPLANTABLE DEFIBRILLATION CIRCUITRY
Michael O'Phelan, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.
Filed May 5, 1992, Ser. No. 878,537
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 **6 Claims**



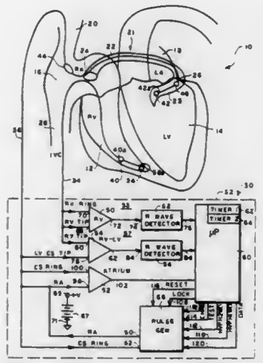
1. A defibrillator circuit board having an integrally formed energy dissipation resistor for implantable defibrillation circuitry, said circuit board comprising:
an elongate resistive path formed of electrically resistive foil and formed into a resistive path layer;
first and second layers of electrically insulating material on opposite sides of said resistive path layer;
at least two electrically conductive contacts providing at least two electrically conductive paths through said second layer of electrically insulating material to electrically connect with said resistive path;
a layer of electrically conductive circuit lines adjacent to said second layer of electrically insulating material, said circuit lines including means for connecting said elongate resistive path to a remainder of said implantable defibrillation circuitry, at least two of said circuit lines being electrically connected to said at least two electrically conductive contacts; and
a third layer of electrically insulating material adjacent said layer of electrically conductive circuit lines.

5,312,443
ARRHYTHMIA-DETECTION CRITERIA PROCESS FOR A CARDIOVERTER/DEFIBRILLATOR
Theodore P. Adams, Edina; Mark W. Kroll, Minnetonka, and Charles G. Supino, Arden Hills; all of Minn., assignors to Angelon Corporation, Plymouth, Minn.
Filed Feb. 20, 1992, Ser. No. 837,952
Int. Cl.[5] A61B *5/04*
U.S. Cl. 607—5 **18 Claims**



1. An improved arrhythmia-detection criteria process for detecting a tachycardia/fibrillation cardiac arrhythmia in a human patient by a cardioverter defibrillator device connected to at least two implanted electrodes located in the human patient that can selectively deliver cardioversion/defibrillation cardiac arrhythmia-correcting electrical intervention therapy comprised of one or more electrical pulses of greater than about 0.1 Joules, the process including the device-implemented steps of: (a) continually receiving a plurality of cardiac variables representing sensed values in the human patient, (b) evaluating the plurality of cardiac variables to determine whether a tachycardia/ fibrillation cardiac arrhythmia is present, and (c) if such an arrhythmia is present, determining an appropriate therapy to be delivered to treat the arrhythmia, the improvement comprising the device-implemented sub-steps of follows:
(b1) using one or more chosen mathematical algebraic functions relating two or more of the cardiac variables to generate a threshold criterion that is at least a threshold curve; and
(b2) using the threshold curve to define a boundary above which a tachycardia/fibrillation cardiac arrhythmia is deemed to be present.

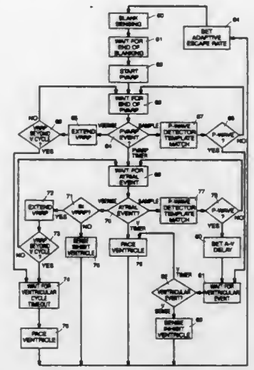
5,312,444
CROSSPOINT SWITCH WITH IMPROVED DISCHARGE CONTROL FOR USE IN AN IMPLANTABLE DEFIBRILLATOR
Joseph M. Bocek, Seattle, and Paul E. de Coriolis, Bellevue, both of Wash., assignors to InControl, Inc., Redmond, Wash.
Continuation-in-part of Ser. No. 902,998, Jun. 22, 1992, Pat. No. 5,251,624. This application Jul. 13, 1993, Ser. No. 91,213
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 **46 Claims**



1. A pulse generator for use in a defibrillator for providing cardioverting electrical energy to the heart through lead means, said pulse generator including a storage capacitor having a positive terminal and a negative terminal for providing said cardioverting electrical energy, and charging means for charging said storage capacitor, the improvement comprising:
coupling means for selectively coupling said storage capacitor to said lead means with a first polarity for applying a first portion of said cardioverting electrical energy through said lead means to the heart during a first cardioverting phase, and with a second polarity reversed from said first polarity for applying a second portion of said cardioverting electrical energy through said lead means to the heart during a second cardioverting phase; and
master switch means for selectively decoupling said storage capacitor from said lead means between said first and second cardioverting phases.

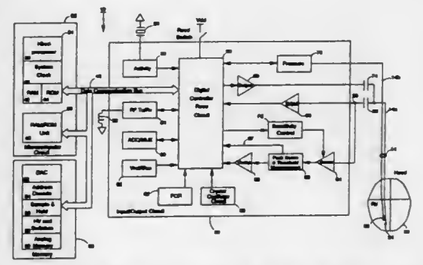
5,312,445
IMPLANTABLE CARDIAC STIMULATING APPARATUS AND METHOD EMPLOYING DETECTION OF P-WAVES FROM SIGNALS SENSED IN THE VENTRICLE
Tibor A. Nappholz, Englewood; Saul E. Greenhut, Aurora, and Albert K. Dawson, Denver, all of Colo., assignors to Telectronics Pacing Systems, Inc., Lane Cove, Australia
Filed Feb. 3, 1992, Ser. No. 830,395
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—9 **21 Claims**

1. A cardiac stimulating apparatus for implantation in a patient, comprising:
a first electrode for implantation in the patient's body other than in the patient's atrium;
a second electrode for implantation in the patient's ventricle and adapted for interengagement and electrical coupling with tissue of the patient's ventricle;
means, coupled to said electrodes, for generating and transmitting stimulation pulses through said second electrode to the tissue of the ventricle;



means, coupled to said electrodes, for sensing from the tissue of the patient's ventricle intrinsic cardiac electrical energy in such tissue and detecting therefrom the occurrence of P-waves; and
control means, having timing means therein, for controlling said generating and transmitting means to provide a stimulation pulse to said second electrode for provision to the tissue of the ventricle, in response to said sensing means detecting the occurrence of a P-wave in the intrinsic electrical activity in the tissue of the patient's ventricle.

5,312,446
COMPRESSED STORAGE OF DATA IN CARDIAC PACEMAKERS
Jean M. Holschbach, Circle Pines; Lucy M. Nichols, Maple Grove, and David L. Thompson, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 26, 1992, Ser. No. 935,953
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—9 **19 Claims**



1. In a medical device encased in a housing and adapted for implantation within a patient's body having a monitoring system for recording electrical signals, said electrical signals having a level which varies over time as a function of a physio-

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logic parameter of said patient, said monitoring system including means for sensing said electrical signal levels and means for periodically sampling said electrical signal at a periodic sample rate having predetermined intervals, the improvement comprising;

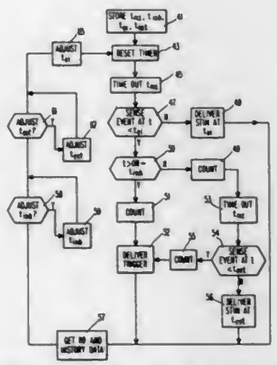
means for defining an analog voltage level indicative of said electrical signals, means for storing said analog voltage level, means for durably maintaining said analog voltage level and means for retrieving said voltage level.

5,312,447

PACEMAKER WITH IMPROVED INHIBIT AND TRIGGER CONTROL

Malcolm J. S. Begemann, Velp, Netherlands, assignor to Vitatron Medical, B.V., Netherlands

Filed Sep. 24, 1992, Ser. No. 950,479
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—9 **17 Claims**



1. A pacemaker for pacing at least one chamber of a patient's heart, having a pace generator for generating pace pulses, sense means for sensing signals from said chamber, and control means for normally timing out a normal escape interval following a last event for timing the generation of a pace pulse, comprising:

inhibit means for defining a scheduled inhibit time range, and including response means for responding to a first sensed event within said inhibit time range by extending said escape interval to a longer interval, and

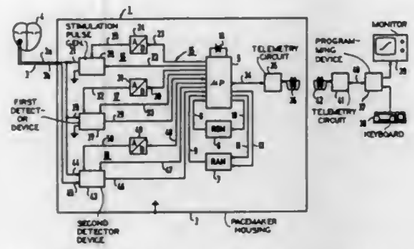
trigger means for defining a scheduled trigger time range between said inhibit range and the end of said normal escape interval, said trigger means further having means for controlling said pace generator to generate a trigger pulse at the time of any signal sensed during said trigger range.

5,312,448

MEDICAL APPLIANCE FOR STIMULATING TISSUE CONTRACTIONS

Kurt Högnelid; Hans Strandberg, both of Sundybyberg, and Nils Holmström, Järfälla, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP90/01516, § 371 Date Apr. 9, 1992, § 102(e) Date Apr. 9, 1992, PCT Pub. No. WO91/03272, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 7, 1990, Ser. No. 838,307
Claims priority, application European Pat. Off., Sep. 7, 1989, 89116557.3
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—13 **9 Claims**



1. A medical appliance adapted for in vivo implantation in an organism comprising:

means for electrically stimulating tissue contractions in said organism having a terminal carrying a stimulation potential and a terminal carrying a reference potential;

means for detecting stimulated tissue contractions having an input side with two terminals, said means for detecting forming a signal corresponding to the potential difference between said two terminals;

means for applying said reference potential to said organism;

a bipolar electrode having two contact parts adapted for in vivo contact with tissue to be stimulated; and

means, for the purpose of stimulating a tissue contraction, for connecting said terminal carrying said stimulation potential to at least one of said two contact parts of said bipolar electrode and for connecting said terminal carrying said reference potential to said means for applying said reference potential, and following stimulation, for connecting one of said two terminals of said means for detecting to one of said two contact parts of said electrode and for connecting the other of said two terminals of said means for detecting to the other of said two contact parts of said electrode.

5,312,449

IMPLANTABLE MEDICAL APPARATUS FOR STIMULATING A HEART

Indra Nigam, Santa Clarita, Calif., assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 23, 1992, Ser. No. 824,404
Claims priority, application Sweden, Jan. 25, 1991, 9100229
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—14 **12 Claims**

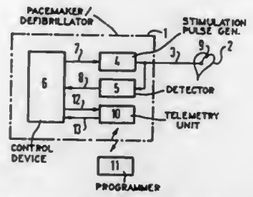
1. An implantable medical device for stimulating a heart comprising:

stimulation pulse generator means for generating and delivering stimulation pulses in vivo to cardiac tissue;

activatable detector means for, when activated, detecting spontaneous cardiac events;

control means connected to said stimulation pulse generator means and to said detector means for inducing or terminating a tachyarrhythmia by causing said stimulation pulse generator means, following a time interval after the detection of a spontaneous cardiac event by said detector means, to deliver a sequence of a predetermined number of stimulation pulses with said time interval between each pulse, and said control means activating said detector means during delivery of said sequence;

said control means including time counter means for beginning a time count upon the detection of each spontaneous cardiac event by said detector means and said control means causing said stimulation pulse generator means to



deliver a stimulation pulse when said time counter means reaches a time count equal to said interval;

means for resetting said time counter means upon the detection of another spontaneous cardiac event during said time interval by said detector means and upon the delivery of a stimulation pulse by said stimulation pulse generator means; and

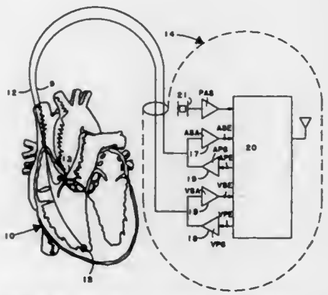
said control means including means for limiting the duration of said pulse sequence.

5,312,450

PACEMAKER FOR TERMINATING PACEMAKER-MEDIATED TACHYCARDIA

H. Toby Markowitz, Roseville, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 1, 1992, Ser. No. 877,575
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—14 **17 Claims**



1. A pacer for pacing a patient's heart comprising:

atrial sensing means for generating an atrial sensed event in response to a depolarization of atrial tissue;

AV delay timer means for defining an AV delay interval, said AV delay timer means coupled to said atrial sensing means, said AV delay interval initiated by the occurrence of an atrial sensed event;

ventricular pace stimulator means coupled to said AV delay timer means for generating a ventricular pacing stimulus at the conclusion of said AV delay interval;

post ventricular atrial refractory period (PVARP) means coupled to said ventricular pacing stimulator means for defining a first predefined post ventricular atrial refractory period extending for a first predefined interval after the generation of said ventricular pacing stimulus;

retrograde sense window timing means for defining a retrograde sense window after said PVARP;

retrograde sensed event counter means for counting atrial sensed events occurring during retrograde sense windows defining a retrograde sense count;

post ventricular atrial refractory period extension means for defining an extended PVARP in response to a predetermined count of said retrograde sensed event counter means, said extended PVARP including said first predefined interval plus an extension;

retrograde sense window disable means for defining a disable time interval during which possible extended PVARPs are inhibited, said retrograde sense window disable means coupled to said retrograde sense counter means and invoked immediately following an initiation of an extended PVARP when said counter means reaches said predetermined count of said retrograde sensed event counter; and

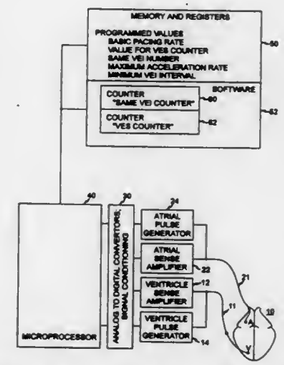
means for resetting said retrograde sense count after said predetermined count has been reached.

5,312,451

APPARATUS AND METHODS FOR CONTROLLING A CARDIAC PACEMAKER IN THE EVENT OF A VENTRICULAR EXTRASYSTOLE

Marcel Limousin, Montrouge; Remy Nitzsche, Beynes, and Nicolas Rosset, Montrouge, all of, assignors to ELA Medical, Montrouge, France

Filed Dec. 29, 1992, Ser. No. 997,080
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—15 **44 Claims**



23. Apparatus for controlling a cardiac pacemaker comprising:

means for monitoring atrial and ventricular electrical cardiac activity including detected and stimulated atrial and ventricular events and ventricular extrasystoles;

means for stimulating the atrium and the ventricle;

means for controlling the stimulating means for controllably stimulating separately the atrium and ventricle, said controlling means being responsive to the monitoring means and having a basic pacing rate; and

means for determining the occurrence of a ventricular extrasystole and identifying non-frequent and frequent ventricular extrasystoles;

wherein the controlling means responds to a sensed occurrence of a ventricular extrasystole by applying a pacing control algorithm including an atrial pacing rate and a ventricular pacing rate, and further comprising:

means for stimulating the atrium and controlling the

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atrium at a faster pacing rate than the ventricle during some cardiac cycles,

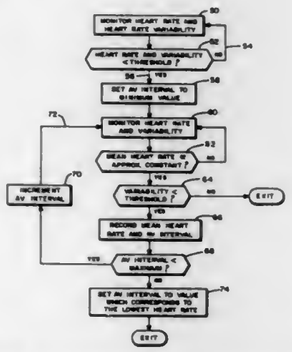
means for synchronously controlling the ventricle during a period that is a multiple of a programmed number of cardiac cycles, and subsequent to the programmed number of cycles, slowing the ventricular pacing rate until one of the basic pacing rate is reached and a sinus event is detected.

5,312,452

CARDIAC RHYTHM MANAGEMENT DEVICE WITH AUTOMATIC OPTIMIZATION OF PERFORMANCE RELATED PACING PARAMETERS

Rodney W. Salo, Fridley, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Nov. 3, 1992, Ser. No. 970,892
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—17 **6 Claims**



1. A cardiac pacemaker comprising;

(a) means for sensing atrial and ventricular depolarization signals;

(b) a variable frequency pulse generator having a control input and an output;

(c) means for coupling said output to at least one ventricle;

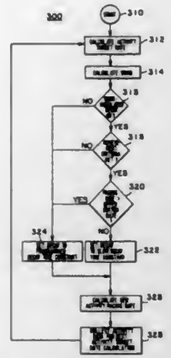
(d) control means coupled to said control input of said variable frequency pulse generator and to said means for sensing atrial and ventricular depolarization signals, said control means including a microprocessor having a memory for storing state information therein, said microprocessor being programmed to periodically compute heart rate and variations in said heart rate and incrementally adjust an A-V delay interval between the sensing of an atrial depolarization signal and a next ensuing output from said variable frequency pulse generator from a lower limit toward an upper limit only when said heart rate is determined to be stable and variations in said heart rate are determined to be below a predetermined threshold and to store for each incremental adjustment of A-V interval that A-V interval and a corresponding steady state mean heart rate value; and means responsive to said A-V interval reaching said upper limit for reading out from said memory the state information consisting of the stored A-V interval value corresponding to the lowest stored value of mean heart rate, said control means then using that A-V interval value in controlling operation of said variable frequency pulse generator.

5,312,453

RATE RESPONSIVE CARDIAC PACEMAKER AND METHOD FOR WORK-MODULATING PACING RATE DECELERATION

Michael B. Shelton, Minneapolis; William J. Combs, Eden Prairie; Tommy D. Bennett, Shoreview; Michael R. Tollinger, Andover, and Kenneth M. Riff, Plymouth, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 11, 1992, Ser. No. 880,877
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—19 **5 Claims**



1. A method of operating a rate-responsive cardiac pacemaker, wherein said pacemaker is responsive to a change in a patient's level of activity to vary a pacing delivery rate, comprising the steps of:

(a) detecting when said patient's level of activity over time exceeds a predetermined level;

(b) quantifying said excess of detected patient level of activity;

(c) associating at least one work value with said quantification;

(d) increasing the pacing delivery rate in response to said work value;

(e) detecting when said patient's level of activity returns to said predetermined level; and

(f) decreasing the pacing delivery rate along a deceleration curve that is modulated according to said at least one work value.

5,312,454

APPARATUS AND METHOD OF AUTOMATICALLY ADJUSTING A SENSOR SIGNAL COMPARATOR THRESHOLD FOR AN OXYGEN SENSING PACEMAKER

Glenn M. Roline, Anoka, and Dennis A. Brumwell, Bloomington, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 14, 1992, Ser. No. 947,859
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—22 **7 Claims**

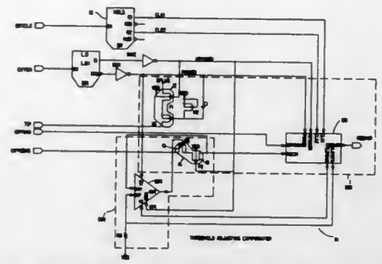
1. A rate responsive cardiac pacemaker which varies its pacing rate at controlled intervals as a function of a sensed physiologic parameter for use with a cardiac pacing electrode for applying said pacing pulses to the heart, comprising:

(a) sensor means for measuring said physiologic parameter and for generating a sensor signal indicative thereof;

(b) power supply means for supplying a power signal to excite said sensor means, wherein said sensor means modulates said power signal supplied to said sensor means such that said modulated power signal comprises said sensor signal, said sensor signal being duty-cycle modulated between a first amplitude for a first time period and a second amplitude for a second time period, said second amplitude being greater than said first amplitude;

(c) monitoring means for monitoring said modulated sensor signal and for determining the relative durations of said first and second signal amplitudes, said monitoring means including signal comparator means having a signal threshold value between said first and second signal amplitudes, said signal comparator means for comparing said modulated signal amplitudes with said threshold value and providing a demodulated signal representative of such measured physiological parameter, said comparator means further including means for measuring at least one of said first and second amplitudes and for automatically adjusting said threshold value as a function of at least one of said first and second amplitudes; and

(d) rate responsive means for varying said cardiac pacing rate as a function of said demodulated signal.

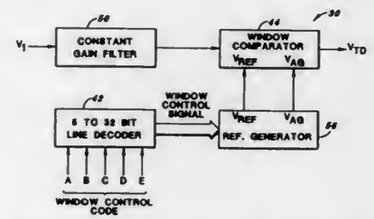


5,312,455

PROGRAMMABLE WINDOW REFERENCE GENERATOR FOR USE IN AN IMPLANTABLE CARDIAC PACEMAKER

Ali E. Zadeh, Sierra Madre, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed May 26, 1993, Ser. No. 67,371
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—26 **23 Claims**



1. An implantable cardiac pacer for delivering electrical therapy to a heart, said cardiac pacer comprising:

a first connection point through which an input electrogram signal can be received by said cardiac pacer, and a second connection point through which a therapeutic output electrical signal can be delivered by said cardiac pacer;

a pace amplifier coupled to the second connection point so as to deliver the therapeutic output signal to the second connection point;

a pacing controller, coupled to the pace amplifier, that initiates the therapeutic output signal; and

a sense amplifier coupled between the pacing controller and the first connection point so as to receive the input electrogram signal from the first connection point, said sense amplifier having a sensitivity that determines when a trigger signal is generated as a function of whether a particular waveform present in the input electrogram signal, said trigger signal being provided to the pacing controller, said sense amplifier including:

a filter circuit coupled to the first connection point, said filter circuit amplifying the input electrogram signal in accordance with a prescribed gain to produce an amplifier electrogram signal;

a window comparator circuit coupled between the filter circuit and the pacing controller that receives the amplified electrogram signal, compares it with a reference voltage, and generates the trigger signal whenever the amplitude of the amplified electrogram signal exceeds the reference voltage; and

a programmable threshold reference generator circuit coupled to the window comparator circuit, said programmable threshold reference generator circuit including circuitry for generating said reference voltage as a function of a programmed control signal;

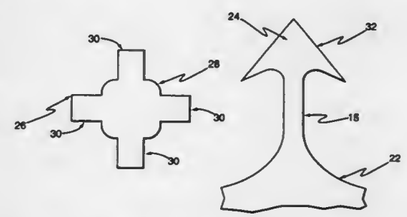
whereby the sensitivity of said sense amplifier may be programmably adjusted by said programmed control signal.

5,312,456

MICROMECHANICAL BARB AND METHOD FOR MAKING THE SAME

Michael L. Reed, and Lee E. Weiss, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Jan. 31, 1991, Ser. No. 648,275
Int. Cl.[5] F16B *15/06*
U.S. Cl. 411—456 **25 Claims**



1. A micromechanical barb for linking with an object comprising:

a base;

a support which extends from the base; and

a head which is disposed upon the support and which mates with the object such that a locking connection is formed therebetween, said head having a central portion which is connected to the support and an extremity portion which extends from the central portion, said central portion having a top surface with a pointed shape to facilitate penetrating a surface of the object by piercing, the support and the head having a combined length less than 5 millimeters, the head, base and the support being made of a substantially rigid material.

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5,312,457

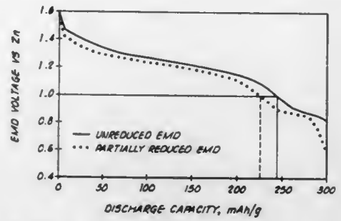
USE OF HYDROQUINONE TO PRECONDITION MANGANESE DIOXIDE FOR USE IN RECHARGEABLE ELECTROCHEMICAL CELLS

Terry N. Andersen, Edmond; Janet M. Berry, and Joseph M. Derby, both of Oklahoma City, all of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jul. 1, 1992, Ser. No. 907,286

Int. Cl.[5] H01M *4/50, 6/18;* **C01G** *45/02*

U.S. Cl. 29—623.1 **16 Claims**



1. A method of forming a rechargeable alkaline electrochemical cell containing a cathode having manganese dioxide as its active ingredient comprising:

preconditioning manganese dioxide by contacting unreduced manganese dioxide with a solution of hydroquinone in an environment having a pH greater than or equal to 5 that is essentially free of dissolved oxygen, said solution of hydroquinone having a concentration of hydroquinone and being used in an amount, and said contacting step being carried out for a period of time and by means, sufficient to partially reduce said unreduced manganese dioxide in a substantially uniform manner such that a portion of said manganese dioxide is converted to MnOOH and a uniformly partially reduced manganese dioxide product generally represented by the formula MnO_x is produced wherein x is between 1.80 and 1.92;

separating said hydroquinone from said partially reduced manganese dioxide product such that said partially reduced manganese dioxide product is substantially hydroquinone-free;

forming a cathode using said preconditioned manganese dioxide; and

combining said cathode with an anode and an electrolyte to form the cell.

5,312,458

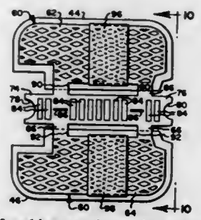
INTERNAL ELECTRODE AND ASSEMBLY METHOD FOR ELECTROCHEMICAL CELLS

Barry C. Muffoletto, Alden, and Raymond J. Kuwik, Lancaster, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Division of Ser. No. 757,252, Sep. 10, 1991, Pat. No. 5,250,373. This application Oct. 5, 1993, Ser. No. 131,664

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—623.1 **8 Claims**



7. A method of making an electrode assembly for an alkali metal/oxyhalide electrochemical cell having a conductive casing, an alkali metal anode, a liquid cathode/electrolyte in operative contact with said anode, and a cathode current collector, wherein one of said anode or said cathode current collector is in two parts, said method comprising the steps of:

a) providing an electrode in the form of a unitary body having a pair of wing-like sections joined by an intermediate section; and

b) joining said anode or said cathode current collector parts to corresponding ones of said electrode wing sections so as to be in contact with and carried thereby and spaced apart by said web section so that said web section can be placed in contact with said conductive casing to provide a case negative or positive electrical configuration depending upon whether said anode or said cathode current collector parts are joined to said electrode sections.

5,312,459

ADDITIVE FOR LIQUEFIED-GAS FUELS

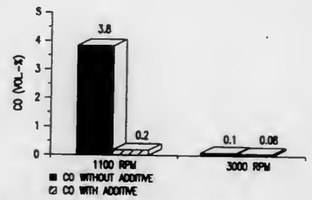
Friedrich A. Sprugel, Solalindenstrasse 36b, D-8000 Munchen 82, and Werner Angerer, Keltenstrasse 21, D-8029 Sauerlach, both of Fed. Rep. of Germany

Continuation of Ser. No. 556,729, Jul. 25, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 928,668

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1989, 3924596

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—334 **12 Claims**



1. A method of imparting corrosion-resistent properties to a liquefied gaseous hydrocarbon fuel comprising adding to the fuel at 50 to 400 ppm, an additive comprising:

a) 30–60 volume percent of at least one nitrogen-containing solvent selected from the group consisting of formamide derivatives, thioformamide derivatives, N-alkyl-pyrrolidone derivatives with one or two carbon atoms in the alkyl residue, acetamide derivatives, secondary N-alkanolamines, tertiary N-alkanolamines each of 1–4 carbon atoms in the alkyl residue and nitro paraffins of 1–8 carbon atoms,

b) 30–60 volume percent of at least one nitrogen-containing dispersing agent selected from the group consisting of morpholine, morpholine derivatives, thiomorpholine, thiomorpholine derivatives and cyclohexylamine,

c) 0.5–10 volume percent of a nitrogen-containing corrosion inhibiting agent selected from the class consisting of primary, secondary and tertiary C_{6-14}-alkylamines and C_{3-6}-alkylenediamines and

d) 0.5–10 volume percent of at least one oxidation inhibitor, wherein the sum of ingredients a, b, c and d is 100 volume percent.

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5,312,460

FUEL COMPOSITIONS CONTAINING SUBSTANTIALLY STRAIGHT CHAIN ALKYLPHENYL POLY (OXYPROPYLENE) AMINO CARBAMATES

Thomas F. Buckley, III, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 337,250, Apr. 13, 1989, abandoned, which is a continuation of Ser. No. 69,342, Jul. 2, 1987, abandoned. This application Nov. 17, 1992, Ser. No. 978,295
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—387 **16 Claims**

1. A fuel composition comprising a hydrocarbon boiling in the gasoline or diesel range and from about 30 to about 5,000 part per million of an alkylphenyl poly(oxypropylene) aminocarbamate having at least one basic nitrogen and an average molecular weight of about 1,000 to 2,500, wherein the alkyl group of said alkylphenyl poly(oxypropylene) aminocarbamate is derived from a substantially straight-chain C_{20} to C_{28} olefin mixture and wherein the aminocarbamate group of said alkylphenyl poly(oxypropylene) aminocarbamate is derived from a polyalkylene polyamine selected from the group consisting of ethylene diamine, propylene diamine, diethylene triamine and dipropylene triamine.

5,312,461

DIHYDROCARBYL SUBSTITUTED PHENYLENEDIAMINE-DERIVED PHENOLIC PRODUCTS AS ANTIOXIDANTS

L. Oscar Farng, Lawrenceville, and Andrew G. Horodysky, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Divisioo of Ser. No. 571,348, Aug. 23, 1990, Pat. No. 5,207,939. This application Apr. 29, 1993, Ser. No. 54,919
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—415 **18 Claims**

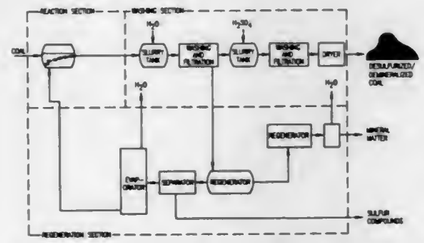
1. A fuel composition comprising a fuel and an antioxidant amount of a reaction product of a hydrocarbyl-substituted phenylenediamine, in which the hydrocarbyl substituents contain from 4 to 60 carbon atoms, a carbonyl compound and a di-hydrocarbyl-substituted hindered phenol whereby the reaction product has improved fuel solubility properties.

5,312,462

MOIST CAUSTIC LEACHING OF COAL

Michael A. Nowak, Elizabeth, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 748,373, Aug. 22, 1991, abandoned. This application Oct. 2, 1992, Ser. No. 956,933
Int. Cl.[5] C10L *10/00*
U.S. Cl. 44—624 **10 Claims**



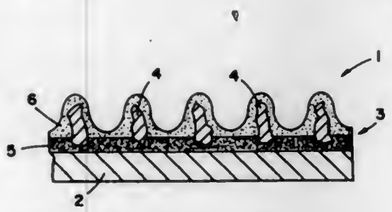
1. A process for reducing the sulfur and ash content of coal, comprising introducing particulate coal into a closed heated reaction chamber having an inert atmosphere, introducing moist caustic wherein the caustic is 50 mole percent NaOH and 50 mole percent KOH and wherein the weight ratio of caustic to coal is about 5 to 1, said moist caustic having a water content in the range of from about 15% by weight to about 35% by weight into the reaction chamber in contact with the coal and maintaining the coal and moist caustic at a temperature not less than about 300° C., transporting the coal and moist caustic to a slurry tank, adding water to the coal and caustic mixture to form an aqueous slurry and thereafter washing said coal with water to remove caustic from the coal and to produce an aqueous caustic solution, evaporating water from the aqueous caustic solution until the caustic has water present in the range of from about 15% by weight to about 35% by weight and reintroducing the moist caustic to the closed reaction chamber, adding sufficient acid to the washed coal slurry to neutralize any remaining caustic present on the coal, washing and thereafter drying the neutralized coal slurry to produce desulfurized coal having not less than about 90% by weight of the sulfur present in the coal feed removed with at least about 80% by weight of the organic sulfur present in the coal feed removed and having an ash content of less than about 2% by weight.

5,312,463

ABRASIVE GRAIN COMPRISING CALCIUM OXIDE AND/OR STRONTIUM OXIDE

Dwight D. Erickson, Oakdale, and William P. Wood, Golden Valley, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 14, 1992, Ser. No. 989,760
Int. Cl.[5] C09C *1/68*
U.S. Cl. 51—309 **22 Claims**



1. A ceramic abrasive grain comprising:
(a) an alpha alumina matrix; and
(b) at least 0.07 percent by weight of one of calcium oxide, strontium oxide, or a combination thereof, based on the total weight of said ceramic abrasive grain, in the form of a crystalline reaction product(s) with aluminum oxide and rare earth oxide selected from the group consisting of praseodymium oxide, samarium oxide, europium oxide, holmium oxide, lanthanum oxide, gadolinium oxide, dysprosium oxide, cerium oxide, neodymium oxide, erbium oxide, and mixtures thereof; said crystalline reaction product(s) comprising a phase(s) within said alpha alumina. matrix,
said ceramic abrasive grain having a hardness of at least 17 GPa.

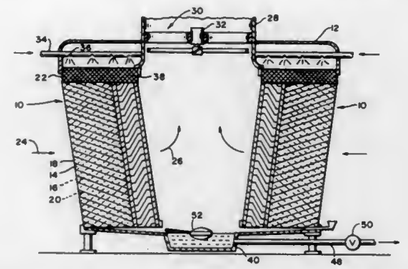
5,312,464

CROSS-FLOW FILM FILL MEDIA WITH DRIFT ELIMINATOR

George A. Gay, Califon, N.J., assignor to Munters Corporation, Fort Myers, Fla.

Filed May 25, 1993, Ser. No. 66,210
Int. Cl.[5] B01F *3/04*
U.S. Cl. 55—257.2 **13 Claims**

1. A gas and liquid contact body for use in a gas and liquid contact apparatus in which gas and liquid flow in cross-flow relationship to one another comprising a contact body having opposed edge portions and including first and second sets of corrugated sheets having corrugations formed therein disposed in a direction transversely of the horizontal plane of the contact body, the sheets of the first set being disposed alternately with the sheets of the second set with the corrugations of the first set crossing the corrugations of the second set, said sheets having first and second opposed edges in the direction of gas flow and said corrugations defining passageways in said body between the edges of said sheets, the sheets in said first set being narrower, edge to edge, than the sheets of said second



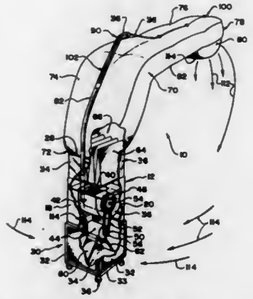
set, thereby to define a space between each said second sheets at one edge of the contact body, and a separate sheet having undulations formed therein positioned in each of said spaces, said undulations being inclined oppositely from the inclinations of the corrugations of the first sheets to restrict moisture droplets from leaving said contact body through said one edge thereof.

5,312,465

FILTRATION APPARATUS WITH BAG-LIKE PLENUM CHAMBER

Raine Riutta, 1727 Island Avenue, Vancouver, British Columbia, Canada V5P 2S5

Filed Mar. 12, 1993, Ser. No. 31,110
Int. Cl.[5] B01D *50/00*
U.S. Cl. 55—320 **20 Claims**



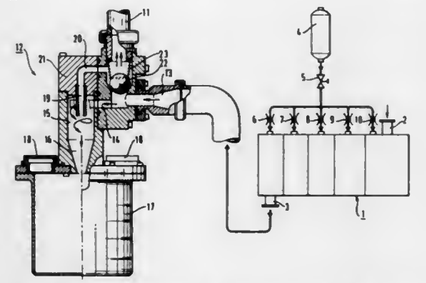
1. An air filtering apparatus, comprising
a fan body having a top, a bottom, an air intake, an air outlet, a fan within the body for drawing air into the intake and forcing it out of the outlet, and at least one air filter between the intake and the outlet; and
a plenum chamber connected to the fan body about the air outlet, the plenum chamber being a flexible bag of a sheet-like material which is inflated by air forced out of the outlet of the fan body, at least a portion of the plenum chamber being an air diffuser for air exiting the apparatus, the diffuser being more permeable than said at least one filter.

5,312,466

PUMPING INSTALLATION FOR PUMPING OUT AN ENCLOSURE CONTAINING GASES WHICH ARE MIXED WITH SOLID PARTICLES OR WHICH GENERATE SOLID CONDENSATES OR PARTICLES

Eric Taberlet, Annecy le Vieux, and Albert Cacard, Groisy, both of France, assignors to Alcatel Cit, Paris, France

Filed May 21, 1993, Ser. No. 64,579
Claims priority, application France, May 22, 1992, 92 06296
Int. Cl.[5] B01D *45/12*
U.S. Cl. 55—429 **2 Claims**



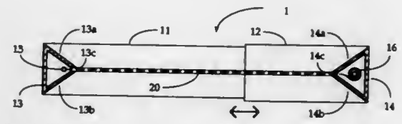
1. In a pumping installation for pumping out an enclosure containing gases which are mixed with solid particles or which generate solid condensates or particles, said installation including a pump equipped with a feed system for supplying an inert purge gas, the pump having an exhaust orifice connected to an evacuation duct, the improvement wherein a static particle-separator is connected in series between the exhaust orifice and said evacuation duct with the complete exhaust flow of said pump exhausting through said exhaust orifice passing through said static particle-separator and solely forming the driving flow of the static particle-separator to prevent particles from being deposited in the evacuation duct whose cross-sectional area decreases over time with such deposition.

5,312,467

AIR FILTER ASSEMBLY

Michael Wolfe, 101 W. 90th St., New York, N.Y. 10024

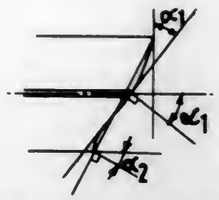
Filed Oct. 23, 1992, Ser. No. 965,764
Int. Cl.[5] B01D *46/10, 53/04*
U.S. Cl. 55—493 **9 Claims**



1. An air filter asssembly comprising:
a frame assembly; and
a woven filtering medium comprising woven microfilament strands of a diameter of at most 30 microns, said strands being spaced apart by at most 20 microns, and filtering medium disposed in the frame assembly, said filtering medium having at least 16% of its surface area open;
wherein said filtering medium is non-entraining and reduces the passage of pollen and dust particles through said air filter, while allowing the free passage of air through said air filter.

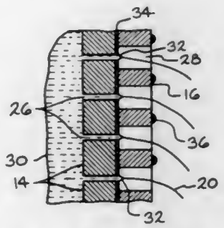
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5,312,468
OPTICAL FIBER CLEAVAGE METHOD
Huan B. Yin, Mennecy, and Robert J. Ferina, Jr., Vincennes, both of France, assignors to Radiall, Rosny-sous-Bois, France
Filed Sep. 3, 1992, Ser. No. 939,138
Claims priority, application France, Sep. 6, 1991, 91 11061
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—2 6 Claims



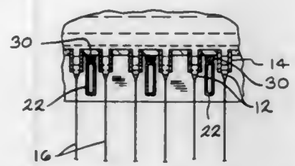
1. A method for cleaving an optical fiber having a substantially round cross section and a longitudinal axis, the cleaving being carried out along a plane that is at an oblique angle relative to the longitudinal axis of the optical fiber, comprising
(i) disposing a segment of said optical fiber along its longitudinal axis between first and second supports spaced from each other by a predetermined distance,
(ii) displacing said first support relative to the position of said second support which is maintained in its original position, said displacement taking place in a direction substantially perpendicular to the longitudinal axis,
(iii) notching said optical fiber by contacting said optical fiber with notching means between said first and second supports, by relative movement between said optical fiber and said notching means, said notching being carried out before, during, or after said displacing of said first support.

5,312,469
CENTRIFUGING WITH PROTECTED FIBERFORMING CONES
Robert L. Houston, Newark, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Mar. 25, 1992, Ser. No. 857,535
Int. Cl.[5] C03B *37/04*
U.S. Cl. 65—6 22 Claims



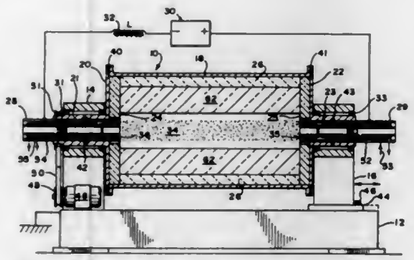
1. The method of centrifuging fibers from molten material comprising rotating a spinner having a peripheral wall comprised of an inner layer and an outer layer, supplying molten material to the spinner, passing the molten material through orifices in the inner layer, passing the molten material through cavities extending through the outer layer, the cavities generally corresponding to the orifices, forming fiberforming cones where the orifices join the cavities, forming fibers from the cones without contact between the material and the sides of the cavities and, intercepting the fibers outside the cavities with relatively cool fluid, the fluid being sufficiently cool to prevent complete attenuation of the fibers in the absence of passing the molten material through the cavities.

5,312,470
APPARATUS FOR PRODUCING GLASS FIBERS
Frank O'Brien-Bernini, Granville, and Jay W. Hinze, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Feb. 22, 1993, Ser. No. 20,955
Int. Cl.[5] C03B *37/02*
U.S. Cl. 65—12 22 Claims



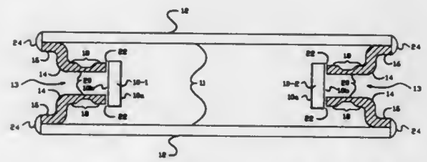
1. Apparatus for producing continuous filaments for streams of molten inorganic material comprising:
feeder means having a discharge wall having orifices adapted to define the streams;
attenuation means for mechanically drawing the molten streams into continuous filaments, the filaments advancing along a path;
heat transfer means extending between the orifices adapted to remove heat from the molten streams, the heat transfer members being in direct contact with and adjacent to the discharge wall to act as a support member to support the discharge wall, the heat transfer members including outwardly disposed surfaces having bonded thereto a coating of crystallographically stabilized zirconia.

5,312,471
METHOD AND APPARATUS FOR THE MANUFACTURE OF LARGE OPTICAL GRADE SI02 GLASS PREFORMS
Lothar Jung, 1355 Plymouth Rd., Bridgewater, N.J. 08807
Filed Dec. 2, 1991, Ser. No. 800,941
Int. Cl.[5] C03B *19/04, 20/00*
U.S. Cl. 65—18.2 11 Claims



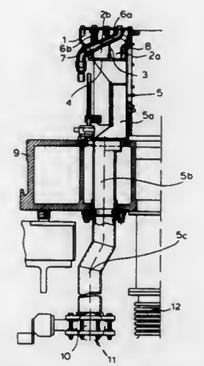
1. A process for producing an optical quality SiO_2 glass ingot comprising:
rotating a cylindrical horizontal furnace about its central axis, said furnace having spaced electrodes extending along said central axis into the furnace interior;
establishing a gas plasma arc between said electrodes to heat the furnace;
feeding SiO_2 into said furnace and melting said SiO_2, within said furnace at a temperature of at least 2400° C. to form a hollow cylindrical melt by centrifugal force generated by said rotating, while controlling the rate of said feeding to provide a rate of decrease of the inner radius of said cylindrical melt no greater than the escape rate toward the inner cylindrical surface of said melt at said temperature for the smallest bubble compatible with the desired optical quality of the glass ingot product, said rate of said feeding being decreased in proportion to the rate of change of surface area of the inner surface of the hollow cylindrical melt.
9. Apparatus for producing an optical grade SiO_2 glass ingot, said apparatus comprising:
a cylindrical furnace housing closed by a flange at each end to define a sealed furnace interior;
a loose granular refractory lining the interior surface of said furnace housing and held in place by centrifugal force generated by rotation of said cylindrical furnace housing;
means for rotating said furnace housing about its central longitudinal axis with said axis approximately horizontal;
a pair of electrodes, said electrodes having axial bores and extending through said flanges into said furnace interior;
power supply means for supplying power to said electrodes to establish a plasma arc therebetween; and
means for introducing a SiO_2 feed through a bore of one of said electrodes for melting by said plasma arc and for controlling the rate of said feed to decrease in proportion to rate of change of surface area of the inner surface of a hollow cylindrical melt formed by melting the feed and to provide a rate of decrease of the inner radius of said cylindrical melt no greater than the escape rate toward the inner cylindrical surface of said melt of the smallest bubble compatible with the desired optical quality of the glass ingot product.

5,312,472
METHOD FOR MANUFACTURING RESONANT CAVITY FOR LASER
William A. Shull, Aptos, Calif., assignor to Spectra-Physics Lasers, Inc., Mountain View, Calif.
Filed Sep. 23, 1992, Ser. No. 950,415
Int. Cl.[5] C03B *27/02*; C03C *25/02*
U.S. Cl. 65—43 32 Claims



1. A method for affixing the optics of a laser to the laser tube, comprising:
(a) providing a substrate seat;
(b) coupling a substrate to the seat;
(c) after the step of coupling, coating the substrate with a multilayer thin film coating; and
(d) after the step of coating, securing the substrate seat to the laser tube.

5,312,473
COOLING SYSTEM FOR AT LEAST ONE MOLD OF AN INDIVIDUAL SECTION TYPE MACHINE FOR PRODUCING HOLLOW GLASS ARTICLES
Norbert Emrath, Essen, Fed. Rep. of Germany, assignor to Ruhrglas GmbH, Essen, Fed. Rep. of Germany
PCT No. PCT/EP92/00626, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/17411, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 21, 1992, Ser. No. 949,834
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 4109985
Int. Cl.[5] C03B *9/38, 11/12*
U.S. Cl. 65—267 3 Claims



1. An individual-section type machine for producing hollow glass articles, comprising:
means forming a machine bed;
a connecting casing spaced above said bed and open at an upper side to communicate with at least one mold for producing a hollow glass article, to admit cooling air to said mold;
a vacuum pipe running through said casing and communicating at an upper end with said mold;
a substantially vertical pipe segment extending through said machine bed directly below said casing and communicating therewith;
a cooling air supply below said bed; and
means extending downwardly from said substantially vertical pipe segment for directly connecting said supply to said segment.

5,312,474
PLANT ACTIVATOR AND MYCELIAL FERTILIZER AND METHOD
Ryusuke Iijima, 2817-62, Kosugaya cho, Sakaeku, Yokohama City, 247, Kanagawa, Japan
Continuation of Ser. No. 702,565, May 20, 1991, abandoned.
This application Jul. 8, 1992, Ser. No. 910,471
Claims priority, application Japan, Oct. 4, 1990, 2-268067; Oct. 31, 1990, 2-296801
Int. Cl.[5] C05F *7/00, 11/08*
U.S. Cl. 71—6 6 Claims

1. A composition for restoring feeble plants consisting essentially of:
(a) 80–97 parts by weight of purified pyrolignous acid characterized by a light blue yellow or substantially clear appearance, a pH of 2.6–3.8, a specific gravity of 1.010–1.019, an organic acid content of 2.50%–5.50% by weight, and less than 0.15% by weight of dissolved tar; and

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(b) 3–20 parts by weight of monosaccharide containing glucose in an amount from 3–20% by weight.

3. A mycelial fertilizer, consisting essentially of:

(a) 80–97 parts by weight of purified pyrolignous acid characterized by a light blue yellow or substantially clear appearance, a pH of 2.6–3.8, a specific gravity of 1.010–1.019, an organic acid content of 2.50–5.50% by weight, and less than 0.15% by weight of dissolved tar;

(b) 3–20 parts by weight of monosaccharide containing glucose;

(c) thermoactinomyces;

(d) a porous carrier characterized by a pH from 7.5 and 9, and 5.

(e) an organic substance having less than 15% carbon and a water content of 25%–60%.

5,312,475

SINTERED MATERIAL

Charles G. Purnell, and Paritosh Maulik, both of Coventry, United Kingdom, assignors to Brico Engineering Ltd., West Midland, United Kingdom

Filed Sep. 16, 1991, Ser. No. 760,130
Int. Cl.[5] C22C *29/00*
U.S. Cl. 75—231 **24 Claims**

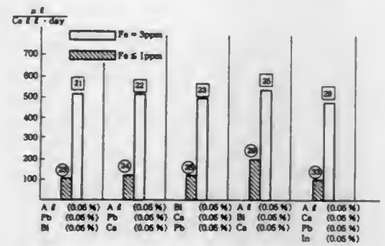
1. A sintered ferrous material which has a porous molybdenum/chrominum martensitic matrix formed from a single alloy having a composition expressed in weight percent consisting essentially of 8–12 chromium, 0.5–3 molybdenum, up to 1.5 vanadium, 0.2–1.5 carbon, other impurities 2 max, and the balance iron, the matrix having sub-microscopic molybdenum-rich carbides less than 1 micron in size substantially uniformly distributed therein.

5,312,476

ZINC ALLOY POWDER FOR ALKALINE CELL AND METHOD FOR PRODUCTION OF THE SAME

Toyohide Uemura; Tomotaka Motomura; Tomiko Yamaguchi, all of Takehara; Junichi Asaoka, and Shuji Tsuchida, both of Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 701,215, May 16, 1991, Pat. No. 5,108,494. This application Feb. 18, 1992, Ser. No. 838,880
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] H01M *4/42*; C22C *18/00*
U.S. Cl. 75—347 **10 Claims**



4. The method to produce a non-amalgamated zinc alloy powder for use in an alkaline cell, having an iron content of not more than 1 ppm as an inevitably accidental impurity, which consists of melting an electrolytic deposit zinc obtained by electrolysis and containing iron in an amount of 1 ppm or less, together with elements in such amounts in one of the following compositions (1) to (3),

(1) 0.01 to 0.5% by weight of bismuth, 0.01 to 0.5% by weight of indium and not less than 0.005% by weight to less than 0.01% by weight of calcium,

(2) not less than 0.005% by weight to less than 0.01% by weight of calcium, 0.01 to 0.5% by weight of bismuth, 0 to 0.5% by weight of aluminum, and

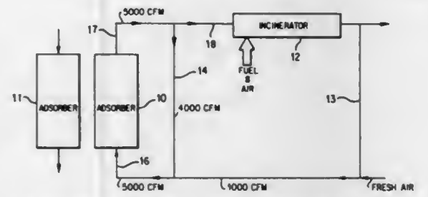
(3) 0.01 to 0.5% by weight of lead, 0.01 to 0.5% by weight of indium, 0 to less than 0.01% by weight of calcium, 0.01 to 0.5% by weight of aluminum, and directly atomizing the formed melt.

5,312,477

ADSORPTION/REGENERATION PROCESS

James G. Minor, Winston Salem, N.C., assignor to M & W Industries, Rural Hall, N.C.

Filed Feb. 23, 1993, Ser. No. 47,550
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—99 **17 Claims**



1. A process for removal of contaminants from a fluid stream comprising:

adsorbing said contaminants with an adsorbent, forming a contaminant-laden adsorbent;

contacting said contaminant-laden adsorbent with a heated regeneration fluid, forming a contaminant-laden regeneration fluid;

incinerating a first portion of said contaminant-laden regeneration fluid, forming products of combustion;

mixing at least a primary portion of said products of combustion with a remaining portion of said contaminant-laden regeneration fluid forming a primary mixture of said remaining portion of said contaminant-laden regeneration fluid and said primary portion of said products of combustion;

recirculating said primary mixture of said remaining portion of said contaminant-laden regeneration fluid and said primary portion of said products of combustion through said adsorbent, increasing the concentration of contaminants in said primary mixture and forming a recirculated primary mixture; and

incinerating at least a portion of said recirculated primary mixture.

5,312,478

SYSTEM FOR MANAGING INFORMATION IN A THREE DIMENSIONAL WORKSPACE

David P. Reed, Wellesley; Carolyn J. Boettner, Cambridge, and Hugh S. Tucker, Mansfield, all of Mass., assignors to Lotus Development Corporation, Cambridge, Mass.

Filed Apr. 11, 1990, Ser. No. 508,117
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—148 **17 Claims**

8. An information management system comprising:

a display screen; and

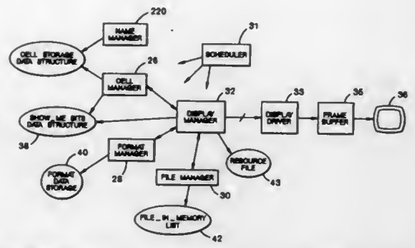
a computer programmed to comprise:

means for generating a plurality of worksheets, wherein each worksheet of said plurality of worksheets comprises an array of cells for storing information and has associated with it a corresponding different set of visual presentation features;

means for enabling a user to generate for each worksheet of said plurality of worksheets a corresponding different set of visual presentation features;

means for displaying a selected one said plurality of worksheets on the display screen, wherein the set of visual presentation features of the selected worksheet determines the appearance of that worksheet when it is displayed on said display screen;

means for organizing said plurality of worksheets into a sequence of worksheets in a workspace, wherein the order of the worksheets in said sequence of worksheets is user selectable; and



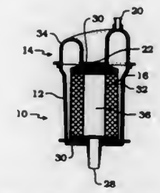
means for imposing a preselected set of visual presentation features on said selected group of worksheets within said sequence of worksheets, wherein when said preselected set of visual presentation features is imposed on said group, each worksheet of said group automatically inherits the preselected set of visual presentation features as its own.

5,312,479

INVERTED DOME ARTERIAL FILTER

Martin J. Weinstein, Salisbury, Mass., and Alfred P. Intoccia, Nashua, N.H., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 23, 1993, Ser. No. 52,787
Int. Cl.[5] B01D *19/00*
U.S. Cl. 96—178 **24 Claims**



1. A filter for filtering fluids, comprising:

a housing defining a toroidal channel, a central indentation, and a filter element chamber;

a fluid inlet in fluid flow communication with the toroidal channel;

a gas outlet aperture in gas flow communication with the toroidal channel;

a filter element supported within the filter element chamber by the central indentation of the housing; and

a fluid outlet in fluid flow communication with the filter element chamber.

5,312,480

GOLD(I) MERCAPTOCARBOXYLIC ACID ESTERS, METHOD OF THEIR PREPARATION AND USE

Marion Lotze, Hammerabach, and Hans Mehner, Frankfurt, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 807,210, Dec. 16, 1991, Pat. No. 5,235,079. This application Apr. 5, 1993, Ser. No. 42,631
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1990, 4040446
Int. Cl.[5] C23C *18/42*
U.S. Cl. 106—1.13 **7 Claims**

1. A gold decorating composition for gilding solid bases, said composition comprising a gold(I) mercaptocarboxylic acid ester of the formula

$$Au-S-X-\underset{\underset{O}{\|}}{C}-O-Z \qquad (I)$$

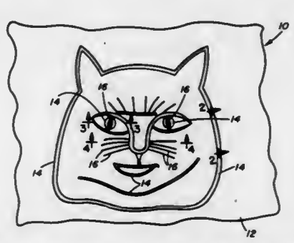
in which X is an alkylene group and Z an alkyl group, wherein X is a C_1- to C_3 alkylene group and Z is selected from the group consisting of tricyclo(5,2,1,$0^{2,6}$)decane-8- or -9-yl and tricyclo (5,2,1,$0^{2,6}$)decyl-3- or -4-methyl; a fluxing agent, an organic carrier medium comprising resins and solvents, and optionally at least one member selected from the group consisting of soluble noble-metal compounds, gold powder, and glass frit.

5,312,481

DIMENSIONAL NON-FABRIC PAINT AND ART-AND-CRAFT STRUCTURE PRODUCED THEREWITH

Marcia Greiner, 8328 Pawnee La., Niwot, Colo. 80503-8632

Filed Feb. 8, 1993, Ser. No. 15,354
Int. Cl.[5] C08H *1/00*; C08L *89/00*
U.S. Cl. 106—157 **16 Claims**



1. A dimensional non-permanent non-fabric paint, comprising:

a flowable liquid containable in a flexible bottle and dispensable in a string-shaped flow from the bottle, said liquid being a mixture of:

(a) flour, in a percentage by volume range of 32 to 36;

(b) salt, in a percentage by volume range of 32 to 36;

(c) water, in a percentage by volume range of 24.5 to 27.5; and

(d) colorant, in a percentage by volume range of 5.5 to 6.5.

5,312,482

WATER REDUCIBLE ARTISTS' OIL PAINTS COMPOSITIONS

Godfrey Chambers, Toms River; Wayne M. Hoyte, Parlin, both of N.J., and George J. Stegmeir, New York, N.Y., assignors to M. Grumbacher, Inc., Cranbury, N.J.

Filed Aug. 21, 1992, Ser. No. 933,995
Int. Cl.[5] C09D *5/06, 191/00*
U.S. Cl. 106—243 **18 Claims**

17. A water-reducible, high tinctorial strength oil paint,

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capable of maintaining a stable suspension of coloring pigment during storage, the oil paint comprising i) from about 0.5 to about 40 parts by weight of a pigment, ii) from about 20 to about 30 parts by wt. of a base gel, iii) from about 2 to about 10 parts of an amine soap, iv) from about 25 to about 50 parts of a drying oil, and v) at least about 8% by wt. of the drying oil of an emulsifier having an HLB value in the range of at least 8 and selected from the group consisting of nonionic and mixed nonionic-anionic emulsifiers.

5,312,483

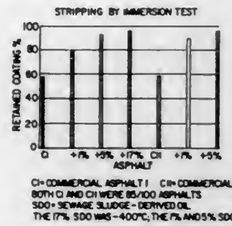
ADHESION OF ASPHALT TO AGGREGATES

Henry Sawatzky, Ottawa; Floyd I. Clelland, Renfrew, and Brian A. Farnand, Nepean, all of Canada, assignors to Her Majesty The Queen in Right of Canada As Represented By the Minister of Energy, Mines and Resources, Canada

Continuation of Ser. No. 641,861, Jan. 16, 1991, abandoned. This application Dec. 27, 1991, Ser. No. 815,835

Int. Cl.[5] C09D *195/00*

U.S. Cl. 106—284.4 **11 Claims**



1. A bituminous coating compositions consisting essentially of: an asphalt selected from the group consisting of bitumen, asphalt and crude residuum containing asphaltenes; and an effective amount, from about 0.1% to about 8% by weight, of a nitrogen-containing, adhesion-improving, anti-stripping agent comprising sewage sludge-derived oil, or a fraction thereof, said sewage sludge-derived oil comprising a mixture of saturated aliphatic hydrocarbons, monoaromatic hydrocarbons, diaromatic hydrocarbons, polyaromatic hydrocarbons, polar compounds and basic, pyridine-soluble compounds having the following elemental composition: nitrogen, about 3.4% to about 5% by weight; oxygen, about 5.8% to about 6.9% by weight; sulfur, about 0.3% to about 0.8% by weight; hydrogen, about 9.7% to about 10.4% by weight; and carbon, about 76.9% to about 79.8% by weight.

5,312,484

TIO_2-CONTAINING COMPOSITE PIGMENT PRODUCTS

Adam F. Kaliski, East Windsor, N.J., assignor to Industrial Progress, Inc., East Windsor, N.J.

Continuation-in-part of Ser. No. 743,916, Aug. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 420,472, Oct. 12, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 811,603

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—446 **14 Claims**

1. Composite pigment products comprising from 4.5% up to 50%, by weight, of at least one particulate titanium dioxide; from 5% to 95%, by weight, of at least one low-refractive-index pigmentary extender; and from 0.5% to 10%, by weight, as determined by ashing, of an in-situ synthesized complex functional microgel cement, wherein the constituents of said microgel cements are:

(a) from 0.5% to 10%, in relation to the total mass of said composite pigment, of a transient, chemically reactive subcolloidal hydrosol formed of

(1) at least one reagent selected from the group consisting of alkali-metal silicates and quaternary ammonium silicates; and

(2) at least one reagent selected from the group consisting of alkali-metal aluminates and alkali-metal zincates, the ratio of the reagents of (1) to the reagents of (2) being from 1:10 to 10:1, by weight;

cross-linked by

(b) at least one gel-setting agent selected from the group consisting of bivalent and multivalent inorganic salts in an amount of from 0.5% to 10%, by weight, in relation to the total mass to said composite pigment, and, optionally, at least one organic, cationically active chemical compound with two or more reactive groups in each molecule in an amount of from 0.001% to 0.5%, by weight, in relation to the total mass of said composite pigment, the ratio of said gel-setting agents to said chemically reactive, subcolloidal hydrosol ranging from 1:10 to 10:1 by weight.

5,312,485

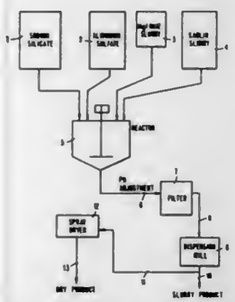
PRECIPITATED ENCAPSULATED PAPER PIGMENTS AND METHODS

Satish K. Wason, Bel Air, and Michael C. Withiam, Elkton, both of Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 759,806, Sep. 16, 1991, Pat. No. 5,219,660, which is a continuation of Ser. No. 228,584, Aug. 5, 1988, abandoned. This application Apr. 15, 1993, Ser. No. 46,312

Int. Cl.[5] C09C *1/02*

U.S. Cl. 106—467 **19 Claims**



1. A method for the preparation of a composite product comprising a substantially inert mineral nucleus coated with a substantially continuous uniform coating comprising discreet particles of an active paper pigment substantially all of the particles having a diameter less than one micron which process comprises performing some of the coating pigment to form a slurry of coating pigment under alkaline conditions, adding a slurry of mineral nucleus to the alkaline pigment slurry, and then continuing formation of said coating pigment in the presence of the mineral nucleus, always maintaining alkaline conditions.

5,312,486

WATER-CONTAINING, HARDENABLE FOAM COMPOSITIONS WITH INORGANIC COMPONENTS AND PROCESS FOR THEIR PREPARATION

Frank Meyer, Bogenstrasse 10, 4300 Essen 15; Hans Mehesch, Frillendorfer Höhe 38, 4300 Essen 1; Wolfgang Cornely, Lohstrasse 30, 4390 Gladbeck; Martin Fischer, Siepenstrasse 4, 4200 Oberhausen; Birgit Riecks, Bentheimer Strasse 4, 4300 Essen 1, and Karlheinz Neuschäffer, Böttnerstrasse 6, 5653 Leichlingen, all of Fed. Rep. of Germany

Continuation of Ser. No. 499,393, Jun. 11, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 859,644

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744210

Int. Cl.[5] C04B *28/26*

U.S. Cl. 106—627 **5 Claims**

1. An improved pourable, water-containing, hardenable foam composition comprising the conventional ingredients

(a) as a hardener, dissolved SiO_2 in the form of an aqueous solution of alkali metal silicates,

(b) per part by weight of dissolved SiO_2, 0.7 to 2.5 parts by weight of K_2O or 0.55 to 1.5 parts by weight of NA_2O,

(c) per part of weight of dissolved SiO_2, 1.3 to 10 parts by weight of at least one solid selected from the group consisting of oxide mixtures containing amorphous SiO_2 and aluminum oxide, vitreous amorphous electrofilter ash, calcined bauxite, and undissolved SiO_2 in the form of amorphous, powdery, dehydrated or water-containing silicic acid,

(d) fillers,

(e) water, and

(f) an oxygen-releasing foaming agent, wherein the improvement resides in that the composition further comprises 0.1 to 9% by weight, based on the total weight of the foam composition, of at least one reaction accelerator selected from the group consisting of

(i) reducing agents selected from the group consisting of alkali metal pyrosulfites, alkali metal dithionites, alkali metal salts of hydroxy-methanesulphinic acid, alkali metal phosphites and alkali metal borohydrides, and

(ii) oxidizing agents selected from the group consisting of alkali metal chromates, alkali metal bichromates, cu(II) salts and Fe(III) salts.

5,312,487

COATING APPARATUS

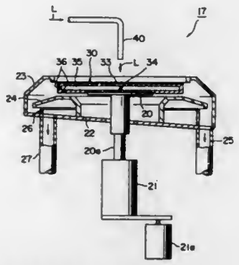
Masami Akimoto; Akihiro Fujimoto, and Haruo Iwatsu, all of Kumamoto, Japan, assignors to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Kyushu Kabushiki Kaisha, both of Japan

Filed Sep. 18, 1992, Ser. No. 946,853

Claims priority, application Japan, Sep. 20, 1991, 3-268644; Dec. 5, 1991, 3-348428; Mar. 16, 1992, 4-090249

Int. Cl.[5] B05C *1/00*

U.S. Cl. 118—52 **22 Claims**



1. A coating apparatus comprising:

rotating and holding means for holding and rotating an object to be coated;

a container which encloses said rotating and holding means and prevents dispersion of coating liquid supplied to an object to be coated;

a washing liquid supply means provided above said container for supply washing liquid;

a washing fitting provided on said rotating and holding means in place of an object to be coated for discharging washing liquid supplied from said washing liquid supply means for washing off coating liquid which has attached inside said container;

said washing fitting having a collection pool portion for collecting washing liquid, and discharge holes through which washing liquid in said collection pool portion is discharged by rotation of said rotating and holding means.

5,312,488

CROSS GLUING CYLINDER

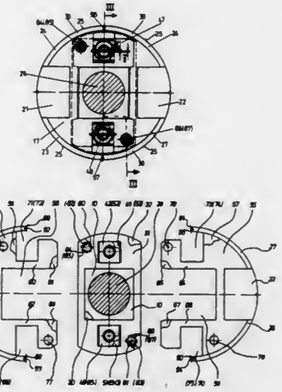
Albrecht Bolza-Schünemann, Coswig, and Manfred Kepert, Grosskarlbach, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Sep. 24, 1991, Ser. No. 764,721

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1990, 4030271; Sep. 4, 1991, 4129404

Int. Cl.[5] B05C *1/10*

U.S. Cl. 118—205 **6 Claims**



1. A cross gluing cylinder usable to apply glue to a movable web comprising:

a rotatable cross-gluing cylinder;

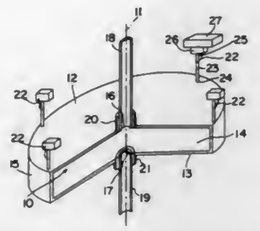
first and second glue application bars supported on a peripheral surface of said cross gluing cylinder, said first and second glue application bars being diametrically oppositely spaced on said peripheral surface of said cross gluing cylinder;

means for radially shifting said first and second glue application bars for varying the circumferential length of said cross gluing cylinder; and

a plurality of intermediate cylinder sections cooperating with said spaced first and second glue application bars to form said peripheral surface of said cross gluing cylinder, said intermediate cylinder sections being radially shiftable with said first and second glue application bars.

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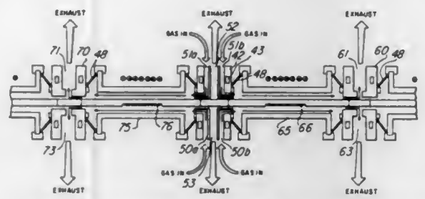
5,312,489
ROTARY FIXTURE FOR VAPOR DEPOSITION COATING APPARATUS
Roger A. Olson, Amery, Wis., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.
Filed Sep. 30, 1993, Ser. No. 129,471
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 **14 Claims**



1. A rotary fixture for coating the inside surfaces of hollow objects with a coating material by vapor deposition, comprising:
(i) a hollow chamber rotatably mounted about an axis of rotation, said chamber having a top wall, a bottom wall and an interior space;
(ii) a first vapor transfer port concentrically disposed about the axis of rotation through the top wall and in communication with the interior space of the chamber;
(iii) a second vapor transfer port concentrically disposed about the axis of rotation through the bottom wall and in communication with the interior space of the chamber; and
(iv) at least one connecting union assembly comprising;
(a) a hollow connecting member having a first end attached to the top wall of the chamber and in communication with the interior space of the chamber, and a second end; and
(b) a valve means in communication with the second end.

9. An apparatus for coating the inside surfaces of hollow objects with parylene by vapor deposition under vacuum conditions comprising:
(A) a rotary fixture comprising:
(i) a hollow chamber rotatably mounted about an axis of rotation, said chamber having a top wall, a bottom wall and an interior space;
(ii) a first vapor transfer port concentrically disposed about the axis of rotation through the top wall and in communication with the interior space of the chamber;
(iii) a second vapor transfer port concentrically disposed about the axis of rotation through the bottom wall and in communication with the interior space of the chamber; and
(iv) at least one connecting union assembly comprising;
(a) a hollow member having a first end attached to the top wall of the chamber and in communication with the interior space of the chamber, and a second end; and
(b) a valve means in communication with the second end;
(B) a vaporization zone to which parylene dimer can be introduced;
(C) a pyrolysis zone connected having an entrance end in communication with the vaporization zone and an exit end in communication with the first vapor transfer port of the rotary fixture; and
(D) a vacuum means having a suction end and a discharge end, said suction end being in communication with the second vapor transfer port of the rotary fixture.

5,312,490
GAS SEAL FOR CONTINUOUS CHEMICAL VAPOR DEPOSITION REACTORS
Thomas F. Wilkinson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 674,417, Mar. 22, 1991, Pat. No. 5,105,762, which is a continuation of Ser. No. 287,171, Dec. 20, 1988, abandoned. This application Jan. 29, 1992, Ser. No. 827,780
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—733 **9 Claims**



1. A seal for preventing reactive gas flow out of a chemical reaction chamber to the atmosphere through an interface where said reaction chamber is attached to a reaction chamber junction, said seal comprising:
a first gas inlet communicating between a source of reaction gas and said reaction chamber; and
a second gas inlet coupled to a source of a second gas and positioned to introduce said second gas into said reaction chamber between said first gas inlet and said interface, said second gas source being at a pressure greater than the pressure of said reaction gas source.

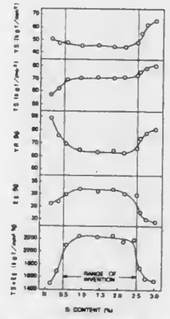
5,312,491
RUST INHIBITING COMPOSITIONS AND METHODS FOR PROTECTING METAL SURFACES WITH SAME
Randolph K. Binter, 928 Fernwood, Moorestown, N.J. 08057
Filed Jun. 8, 1992, Ser. No. 894,953
Int. Cl.[5] C23C *22/00*
U.S. Cl. 148—240 **24 Claims**

15. A method of coating a metal substrate surface with a flexible, elastic coating material for inhibiting rust corrosion of the metal, comprising:
(a) placing a mesh screening onto a metal substrate surface;
(b) applying a rust inhibiting composition onto the metal substrate surface and the mesh screening, the composition consisting essentially of:
(i) a base carrier fluid comprising a latex based paint;
(ii) an oxime compound capable of reacting with rusted metal to form an inert metal complex, wherein said oxime compound is not complexed with a metal; and
(iii) optionally, at least one additive selected from the group consisting of rheology modifiers, poly(tetrafluoroethylene), lubricity additives, surfactants, zinc oxide, ammonia, defoamers, and ultraviolet protectants; and
(c) optionally, applying a second coating of the composition to the metal substrate surface and the mesh screening;
wherein the composition comprises less than about 1 weight percent of volatile organic compounds, and
wherein the composition, when applied to a metal substrate surface, forms a flexible, elastic coating wherein the stress induced in the flexible coating by the deformation of the substrate is less than the yield strength of the coating.

5,312,492
PROCESS NOT USING CHLORATE OR NITRITE FOR THE PRODUCTION OF NICKEL AND MANGANESE CONTAINING ZINC PHOSPHATE FILMS
Joerg Riesop, Niederzier; Kurt Hosemann, Cologne, and Karl-Heinz Gottwald, Erftstadt, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany
PCT No. PCT/EP90/00592, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO90/12901, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 14, 1990, Ser. No. 768,692
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913089
Int. Cl.[5] C23C *22/18*
U.S. Cl. 148—260 **6 Claims**

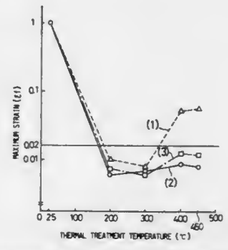
1. A chlorate-free and nitrite-free process for the production of nickel- and manganese-containing zinc phosphate coatings on steel, zinc, or alloys thereof, said process comprising spray coating, spray coating and dip coating, or dip coating the steel, zinc, or alloys thereof with an aqueous solution containing 0.8 to 1.0 g/l of zinc(II), 0.8 to 1.0 g/l of manganese(II), 0.2 to 0.4 g/l of iron(II), 0.5 to 0.7 g/l of nickel(II), 12.0 to 16.0 g/l of phosphate ions, 3.0 to 6.0 g/l of nitrate ions and 0.3 to 0.8 g/l of 3-nitrobenzene sulfonic acid, the aqueous solution having a free acid content of 0.5 to 1.8 points and a total acid content of 15 to 35 points and the quantity of Na^+ required to establish the free acid content.

5,312,493
LOW-YIELD-RATIO HIGH-STRENGTH HOT-ROLLED STEEL SHEET AND METHOD OF MANUFACTURING THE SAME
Susumu Masui; Masahiko Morita, and Toshiyuki Kato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Dec. 23, 1992, Ser. No. 996,130
Claims priority, application Japan, Dec. 27, 1991, 3-358007
Int. Cl.[5] C22C *38/02*; C21D *8/00*
U.S. Cl. 148—326 **3 Claims**



1. A low-yield-ratio high-strength hot-rolled steel sheet having a composition essentially consisting of about:
0.18 wt. % or less of C;
more than 0.6 to 2.5 wt. % of Si;
0.5 to 2.5 wt. % of Mn;
0.05 wt. % or less of P;
0.02 wt. % or less of S;
0.01 to 0.1 wt. % of Al;
an element selected from the group consisting of about 0.02 to 0.5 wt. % of Ti and about more than 0.04 to 1.0 wt. % of Nb, and mixtures thereof, said Ti and Nb being present approximately in relation to C according to the following formula:
C wt. % ≧ 0.05 + Ti wt. %/4 + Nb wt. %/8; and
the balance substantially Fe and incidental impurities;
wherein the structure of the steel comprises substantially ferrite and martensite containing a precipitated carbide of Ti and/or Nb or said precipitated carbide and residual austenite.

5,312,494
HIGH STRENGTH AND HIGH TOUGHNESS ALUMINUM ALLOY
Hiroyuki Horimura; Noriaki Matsumoto, and Kenji Okamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 4, 1993, Ser. No. 57,071
Claims priority, application Japan, May 6, 1992, 4-113712
Int. Cl.[5] C22C *21/00*
U.S. Cl. 148—437 **2 Claims**



1. A high strength and high toughness aluminum alloy produced by crystallization of an aluminum alloy blank having a metallographic structure selected from the group consisting of a mixed-phase texture consisting of an amorphous phase and an aluminum crystalline phase having a volume fraction Vf equal to or greater than 50% (Vf≧50%) and an amorphous single-phase texture having a volume faction Vf equal to or greater than 50% (Vf≧50%), wherein
said aluminum alloy is represented by a chemical formula:

$$Al_{(a)}X_{(b)}Z_{(c)}Si_{(d)}$$

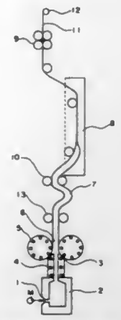
wherein X is at least one element selected from the group consisting of Mn, Fe, Co and Ni; Z is at least one element selected from the group consisting of Zr and Ti; and each of (a), (b), (c) and (d) is defined within the following range:
84 atomic % ≦ (a) ≦ 94 atomic %,
4 atomic % ≦ (b) ≦ 9 atomic %,
0.6 atomic % ≦ (c) ≦ 4 atomic %, and
0.5 atomic % ≦ (d) ≦ (b)/3, and Si is present in the form of at least one selected from the group consisting of a solute atom of an aluminum solid solution and a component element of an intermetallic compound.

5,312,495
PROCESS FOR PRODUCING HIGH STRENGTH ALLOY WIRE
Tsuyoshi Masumoto, 3-8-22, Kamisugi; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi, both of, Aoba-ku, Sendai-shi, Miyagi; Hirokazu Yamamoto, both of Sendai; Junichi Nagahora, Yokohama, and Toshisuke Shibata, Sendai, all of Japan, assignors to Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi; Unitika Ltd., Hyogo and Kogyo K.K. Yoshida, Tokyo, all of Japan
Filed May 5, 1992, Ser. No. 878,562
Claims priority, application Japan, May 15, 1991, 3-138574
Int. Cl.[5] C22C *45/00*
U.S. Cl. 148—550 **4 Claims**

4. A process for producing a high-strength alloy wire comprising the steps of forming a cast amorphous alloy having a circular or polygonal cross section from an alloy which exhib-

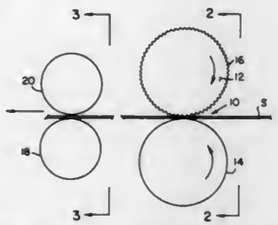
VOL 1162 ISS 3 MY 17 1994 UMI

its glass transition behavior; continuously introducing the amorphous alloy into one or more heating zones arranged in series; heating the amorphous alloy to a temperature between the glass transition temperature (Tg) of the alloy and the crystallization temperature (Tx) of the alloy while subjecting the alloy to single stage or multistage drawing in each heating zone



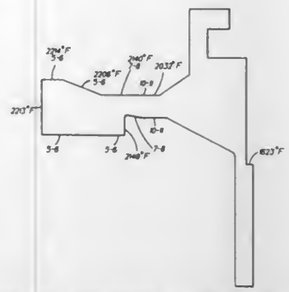
such that the drawing stress is controlled by adjusting the feed rate and pulling rate of the amorphous alloy such that the strain rate during drawing is from 10^{-5} to 10^{2}/sec and the drawing stress is from 10 to 60 MPa to obtain a wire; and, after attaining the desired cross-sectional area, continuously cooling the wire thus attained to a temperature not higher than (Tg-50 K).

5,312,496
SKIN PASS ROLLING OF MECHANICALLY SCRIBED SILICON STEEL
S. Leslie Ames, Sarver, Pa., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.
Filed Nov. 17, 1992, Ser. No. 977,345
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—111 **11 Claims**



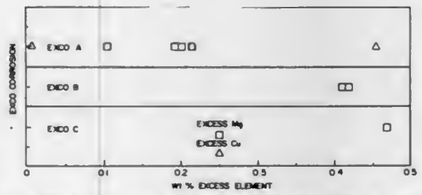
1. A method of providing a flattened surface on final texture annealed cube-on-edge grain-oriented silicon steel strip having a refined magnetic domain wall spacing by mechanical scribing formed by a multiplicity of closely spaced scribe lines extending generally transversely across the width of the strip forming localized undulations to the strip surface, the method comprising skin pass rolling the domain refined strip with rolling pressure sufficient essentially only to flatten undulations due to said scribing.

5,312,497
METHOD OF MAKING SUPERALLOY TURBINE DISKS HAVING GRADED COARSE AND FINE GRAINS
Gerald F. Mathey, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 31, 1991, Ser. No. 816,370
Int. Cl.[5] C22C *19/00*
U.S. Cl. 148—675 **8 Claims**



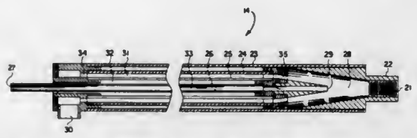
1. A method for heat treating a nickel-base superalloy turbine disk having a central bore position and a rim portion to provide a fine grain structure in said bore portion and a coarse grain structure in said rim portion, comprising:
providing said disk having an initially uniform fine grain size;
heating said rim portion above the γ' solvus temperature for said nickel-base superalloy and cooling to assure that said bore portion is below said γ' solvus temperature, and holding for a time sufficient to provide said coarse grain structure in said rim portion;
cooling said disk at a controlled rate to a temperature below said γ' solvus temperature, which said controlled rate is greater in said rim portion than in said bore portion;
subsolvus annealing said disk;
aging said disk, thus providing a disk with good tensile strength in said bore portion and good crack growth resistance in said rim portion.

5,312,498
METHOD OF PRODUCING AN ALUMINUM-ZINC-MAGNESIUM-COPPER ALLOY HAVING IMPROVED EXFOLIATION RESISTANCE AND FRACTURE TOUGHNESS
Kevin R. Anderson, Glen Allen, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Aug. 13, 1992, Ser. No. 930,110
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—695 **25 Claims**



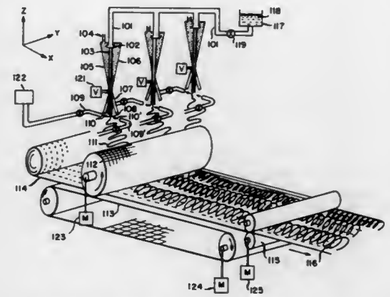
1. A method of producing an aluminum alloy product having superior exfoliation resistance and fracture toughness comprising the steps of:
a) providing an aluminum-based alloy consisting essentially of about 5.5 to 10.0% by weight of zinc, about 1.75 to 2.6% by weight of magnesium, about 1.8 to 2.75% by weight of copper, a maximum of 0.15% by weight of iron, a maximum of 0.12% by weight of silicon, about 0.08 to 0.15% by weight of zirconium, one or more additional grain refining elements selected from chromium, manganese, titanium, boron, vanadium, and hafnium, the total of said additional grain refining elements being between 0.0% and about 0.5% by weight, with the balance aluminum and incidental impurities, wherein the amounts of zinc, copper and magnesium are stoichiometrically balanced in said alloy such that during an aging treatment of said alloy product, substantially all of said copper, magnesium and zinc form $MgZn_2$ and Al_2CuMg precipitates upon reaching equilibrium to produce an alloy product having not more than 0.11 wt. percent excess zinc, copper and magnesium;
b) working said alloy into a predetermined shape;
c) heat treating said predetermined shape;
d) quenching said heat treated shape;
e) aging said heat treated shape for a period of time at an elevated temperature; and
f) recovering said aged shape.

5,312,499
METHOD AND APPARATUS FOR MAKING A LOOSE TUBE FIBER OPTIC CABLE COMPONENT
Rodney D. Bolick, Taylorsville, and Mark A. Sigmon, Newton, both of N.C., assignors to Siecor Corporation, Hickory, N.C.
Filed Oct. 19, 1992, Ser. No. 963,173
Int. Cl.[5] B29C *47/10*
U.S. Cl. 156—48 **6 Claims**



1. A device for making a loose tube fiber optic cable component including one or more grease coated optical fibers loosely disposed in a tubular member comprising:
(a) a cross head having an entrance and exit port for extruding a tubular shaped plastic member, said crosshead having a polymer passageway connecting the entrance and exit ports through which molten plastic polymer may be flowed and a grease injection unit receiving passageway; and,
(b) a grease injection unit disposed in said grease injection unit receiving passageway, said grease injection unit including fiber and grease passageways, both having terminal free ends, said fiber passageway delimiting a travel path for one or more grease uncoated optical fibers and said grease passageway delimiting a travel path for said grease and a chamber communicating with, said terminal free ends said terminal free end of said fiber passageway protruding into said chamber and beyond the terminal free edge of said grease passageway.

5,312,500
NON-WOVEN FABRIC AND METHOD AND APPARATUS FOR MAKING THE SAME
Kazuhiko Kurihara; Shigezou Kojima, both of Tokyo; Hiroshi Yazawa, Kunitachi, and Toshikazu Oishi, Kawaguchi, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Inst., Ltd., both of Tokyo, Japan
PCT No. PCT/JP90/00318, § 371 Date Dec. 4, 1990, § 102(e) Date Dec. 4, 1990, PCT Pub. No. WO90/10743, PCT Pub. Date Sep. 20, 1990
Continuation-in-part of Ser. No. 302,627, Feb. 21, 1989, Pat. No. 4,992,124. This PCT application Mar. 12, 1990, Ser. No. 613,542
Claims priority, application Japan, Mar. 10, 1989, 1-58384
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—62.4 **17 Claims**



1. A method of making a non-woven fabric comprising the steps of:
spinning a filament composed of polymeric material;
vibrating said filament;
amplifying the vibration of said filament in a predetermined first axis direction whereby the filament is scattered, the scattered filament depicting an ellipse having a elongated major axis as a locus in its cross section every one cycle of the vibration, the direction of the major axis corresponding to the first axis; the amplifying step being started at a point other than the starting point of the filament vibration step; and
collecting the scattered filaments into a series of ellipses so that the major axis of each ellipse deviates from the immediately adjacent ellipse in a predetermined second axis direction crossing the first axis and the major axes of said ellipses are arranged substantially in parallel.

5,312,501
AUTOMATED LINER REMOVING TRANSFER TAPE APPLICATOR METHOD
Michael W. Gruber, Woodbury, Minn., and Robert A. Luhman, Deer Park, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 148,845, Jan. 27, 1988, Pat. No. 4,980,011. This application Aug. 17, 1990, Ser. No. 568,842
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—238 **6 Claims**

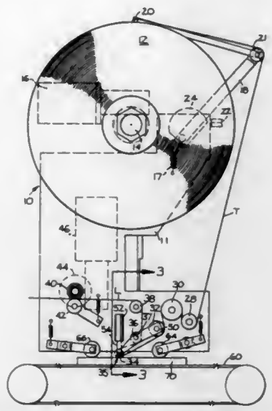
1. A method for applying an adhesive transfer tape carried on a roll to a product carried on a conveyor and removing the liner of the tape, comprising the steps of:
a) using an application head, pressing the adhesive transfer tape onto the product carried on the conveyor so that the adhesive carried on the tape liner adheres to the product and so that the product pulls the tape from the roll and over the head as the product moves underneath the head on the conveyor;
b) pulling the liner of the tape away from the application

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head and from the adhesive adhered to the product so that the transfer of the adhesive from the liner to the product is completed;

c) while the product is moving under the head, selectively stopping the tape from advancing over the head so that the continued movement of the product brakes the adhesive carried on the liner whereby a leading edge of adhesive is formed on the liner; and

d) while the liner is pressed against a subsequent product on the conveyer, releasing the stopped tape so that the advance of the product under the head catches the leading edge of the adhesive on the liner, and repeating steps (a) and (b).



5,312,502

METHOD AND APPARATUS FOR STITCHING A TIRE

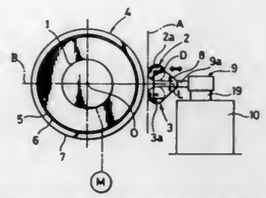
Hisashi Imai, Nishishirakawa; Kenichi Masuda, and Yoshinobu Miyanaga, both of Shirakawa, all of Japan, assignors to Sumitomo Rubber Industries Ltd., Hyogo, Japan

Filed Feb. 18, 1993, Ser. No. 19,450

Claims priority, application Japan, Feb. 19, 1992, 4-016569[U]; Dec. 10, 1992, 4-353052

Int. Cl.[5] B29D *30/28*

U.S. Cl. 156—130.3 **10 Claims**



1. A method for fabricating a tire, the steps of the method comprising:

mounting an annular carcass on an outer circumferential surface of a rotatable drum;

placing a breaker and a tread over the carcass;

pressing against an outer circumferential surface of the tread radially inward of the drum to thereby adhere the carcass, breaker, and tread to one another using first and second stitch roller members, each including first and second roller elements arranged in parallel with a rotatable shaft of the drum, the first roller elements arranged at positions shifted to each other in a circumferential direction of the tread and aligned in parallel with respect to each other along a first circumferential line about the rotatable drum parallel with a tread centerline and the second roller elements aligned in parallel with respect to each other along a second circumferential line about the rotatable drum parallel with the tread centerline and located on the opposite side of said tread centerline from said first circumferential line;

rotating the carcass, breaker, and tread together with the drum and, at the same time, moving the roller elements of each stitch roller member away from each other and a center portion of the outer circumferential surface of the tread to opposite ends thereof.

4. A tire fabricating apparatus for mounting an annular carcass on an outer circumferential surface of a drum, placing a breaker and a tread over the carcass, and pressing the carcass, breaker, and tread radially inward of the drum to thereby adhere the same to one another, the apparatus comprising:

a rotatable drum;

drive means for rotating the drum;

a first stitch roller member, including first and second roller elements arranged in parallel with a rotatable shaft of the drum;

a second stitch roller member, including first and second roller elements arranged in parallel with the rotatable shaft of the drum at a position shifted from the roller elements of the first stitch roller member in a circumferential direction of the tread, the first roller elements aligned in parallel with respect to each other along a first circumferential line about the rotatable drum parallel with a tread centerline and the second roller elements aligned in parallel with respect to each other along a second circumferential line about the rotatable drum parallel with the tread centerline and located on the opposite side of said tread centerline from said first circumferential line;

pressing means for rotatably supporting and pressing the first and second stitch roller members against the outer circumferential surface of the tread; and

widening means for moving the roller elements of each stitch roller member away from each other from a center portion of the outer circumferential surface of the tread to opposite ends thereof so as to widen a spacing between the roller elements.

5,312,503

LAMINATED MAGNETIC CORE AND METHOD OF MANUFACTURING SAME

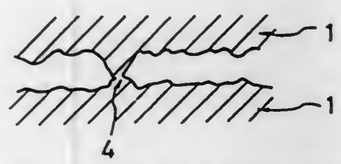
Norio Yuki, Kanagawa, Japan, assignor to Nippon Mining Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 563,317, Jul. 26, 1990, abandoned, which is a division of Ser. No. 388,519, Aug. 2, 1989, Pat. No. 5,097,373. This application Nov. 18, 1991, Ser. No. 798,259

Claims priority, application Japan, Aug. 4, 1988, 63-193458

Int. Cl.[5] B32B *3/00*

U.S. Cl. 156—250 **5 Claims**



1. A method of manufacturing a laminated magnetic core comprising the steps of providing a plurality of core-forming thin metal sheets, each having protruded portions along both sides thereof defining a maximum height Rmax of at least 1 μm; laminating and bonding said core-forming thin sheets one upon another through a cured metal bonding organic adhesive to create an interface between adjacent sheets, said cured adhesive fixedly bonded to each of the adjacent sheets; punching out a block of a given shape from said laminated and bonded core-forming sheets by a press; and thereafter magnetically annealing the block, while decomposing and vaporizing said organic adhesive to effect diffusion-bonding at the interface between adjacent thin sheets of the block.

5,312,504

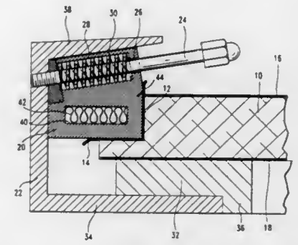
EDGE VENEERING

Edward P. Jorde, Cottage Pl.; Box 103, Granite Springs, N.Y. 10527

Filed Dec. 11, 1992, Ser. No. 989,240

Int. Cl.[5] B27D *1/00;* **B32B** *31/00*

U.S. Cl. 156—258 **20 Claims**



6. A method of veneering an edge having a complex surface of a workpiece comprising the steps of forming the edge in the shape desired, stretching a flexible veneer strip across the edge, and pressing the veneer strip against the edge with a complementary surface, wherein pressing the veneer strip with a complementary surface involves moving the workpiece edge against a yieldable bar having the complementary surface.

5,312,505

FILM PEELING METHOD AND APPARATUS FOR PRACTICING SAME

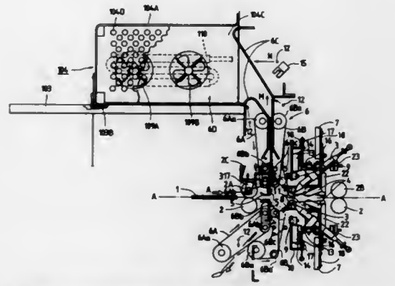
Shigeo Sumi, Saitama; Fumio Hamamura, Kanagawa; Mitsuhiro Seki, and Ichio Fukuda, both of Tokyo, all of Japan, assignors to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 622,981, Dec. 6, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,430

Claims priority, application Japan, Apr. 6, 1990, 2-91555; Sep. 1, 1990, 2-231924

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—584 **3 Claims**



1. A film peeling apparatus comprising:

a base plate conveyance means for conveying the base plate stuck with the film;

a base plate centering start position sensor for detecting that the base plate is conveyed forward on the conveyance means and reaches a prescribed position upstream of the position of peeling of the film from the base plate;

a base plate centering unit which is put into action on the basis of the output from the centering start position sensor for moving the center of the width of the base plate to the center line of the conveyance means;

a base plate leading edge sensor for detecting a position of a leading edge of the base plate at the film peeling position;

a film contact tightness reduction means for reducing a contact tightness of a leading edge of the film to said base plate, an operation of said reduction means being started in accordance with the output of the base plate leading edge sensor;

a fluid blowing means for blowing fluid into gaps between the film end leading edge whose tightness has been reduced by said reduction means and said base plate, to thereby separate the film;

a support frame on which said reduction means and said fluid blowing means are provided, said support frame being movable in an advance direction of the base plate;

means for moving said support frame for a prescribed time period in synchronism with the rotation of base plate conveyance rollers so that the conveyance speed of the base plate is kept substantially unchanged during the film tightness reduction operation;

a film peeling sensor for detecting that the separated film has entered into a film discharge passage; and

a film pinch means for discharging the film while pinching the separated film and peeling the separated film from the base plate;

wherein said support frame moving means includes a crank means for being driven in synchronism with the rotation of said base plate conveyance rollers; and

wherein said crank means includes a crank member connected at one end to said support frame, and a one-way clutch mechanism for synchronizing, during the film tightness reduction operation, the movement of the crank member and the rotation of the base plate conveyance rollers with each other.

5,312,506

METHOD FOR GROWING SINGLE CRYSTALS FROM MELT

Akira Omino, Sendai, Japan, assignor to Mitsui Mining Company, Limited, Tokyo, Japan

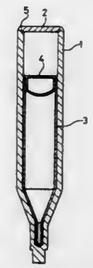
Continuation of Ser. No. 590,494, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 309,672, Feb. 3, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 947,968

Claims priority, application Japan, Jun. 15, 1987, 62-146939

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[5] C30B *7/00, 11/00, 35/00*

U.S. Cl. 117—83 **6 Claims**



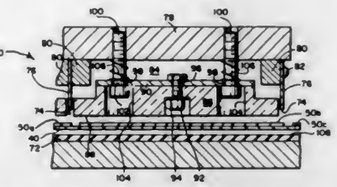
1. A method for growing single crystals of a compound substance having a high melting point and which has a substantial vapor pressure from a melt, which comprises the steps of:

(a) charging the starting material into an inner crucible

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which is adapted to hold the starting material and the melt and which is formed from at least one material selected from the group consisting of high-melting ceramic materials and carbon which is durable to heat in the heating step of the process;
(b) closing the inner crucible with a lid made of the same material as that of the inner crucible;
(c) inserting the inner crucible with the starting material charged therein into an outer crucible made of a weldable and high-melting material selected from the group consisting of metals and alloys having melting points of 1500° C. or more, the interior shape of the outer crucible being so shaped that the inner crucible may be inserted into the outer crucible;
(d) hermetically sealing the outer crucible with an outer lid by welding said outer lid to said outer crucible;
(e) placing the thus-assembled double-structure crucible in a vessel which is equipped with a heating means, and
(f) heating the double-structure crucible to melt the raw material and allowing the melt to cool over a temperature gradient to effect crystal growth.

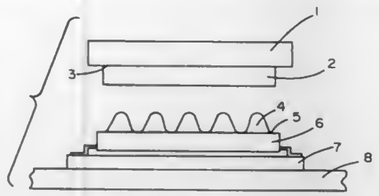
5,312,507
THERMOCONTACT WELDING METHOD AND WELDED PRODUCT
William R. Miller, Walnut, Calif., assignor to Rembrandt Photo Services, Los Angeles, Calif.
Division of Ser. No. 666,260, Mar. 8, 1991, Pat. No. 5,266,150. This application Sep. 10, 1993, Ser. No. 120,157
Int. Cl.[5] B32B *31/18, 31/20*
U.S. Cl. 156—290 **20 Claims**



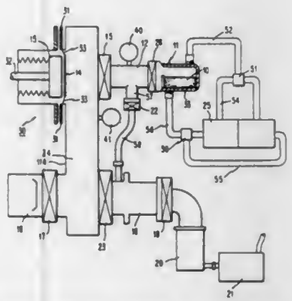
1. A thermocontact welding method for welding thermoplastic sheets comprising the steps of:
providing a thermocontact welding press having platen means and opposing die means, said die means including a seam producing die surface and thermal isolation means movable relative to said die surface;
interposing superposed thermoplastic sheets between said platen means and said die means;
engaging said platen means and said die means for applying pressure to said superposed sheets at areas thereof between said die surface and said platen means and for thermally isolating other areas of said superposed sheets in the vicinity of said die surface while said die surface is at a temperature higher than the melting temperature of said sheets; and
disengaging said platen means and said die means.

5,312,508
ATTACHING CRIMPED WIRE MESH TO AN OBJECT REQUIRING HEAT TRANSFER
John Chisholm, 9337 S.E. River Ter., Jupiter, Fla. 33469
Filed Oct. 16, 1992, Ser. No. 971,994
Int. Cl.[5] B32B *3/28*
U.S. Cl. 156—292 **1 Claim**

1. The process of making a heat sink by attaching a corrugated wire mesh to a heat dissipating surface using a thermosetting adhesive, wherein the wire mesh comprises a woven web of wire, each wire having a generally circular cross section and forming a plurality of bends; cleaning those surfaces of the bend portion forming the mesh which comes in contact with the heat dissipating surface and the corresponding mating area of the dissipating surface which defines the interface area of the mesh; forming a slight flat on the contact area of the mesh whereby the flat is parallel to the heat dissipating surface; dispensing a small amount of adhesive on the cleaned interfaces; assembling the components and clamping them together such that the adhesive is largely displaced and squeezed out from the mesh interface and deposited in the mesh intersticies leaving the mesh wire bend and the mating area of the heat source in good thermal contact and curing the clamped assembly in a suitable oven.

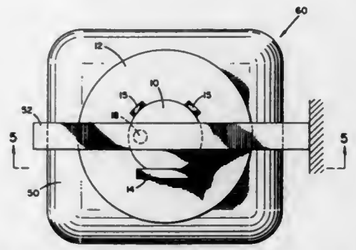


5,312,509
MANUFACTURING SYSTEM FOR LOW TEMPERATURE CHEMICAL VAPOR DEPOSITION OF HIGH PURITY METALS
Rudolph J. B. Eschbach, Amenia, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 516,847, Apr. 30, 1990, abandoned. This application May 11, 1992, Ser. No. 880,838
Int. Cl.[5] H05H *1/00*
U.S. Cl. 156—345 **16 Claims**



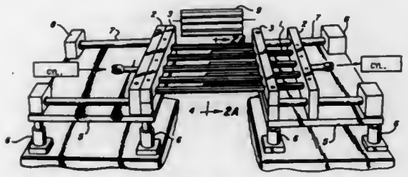
1. An automatic manufacturing apparatus for processing a substrate having etched patterns to be filled with metallization comprising,
a) a chamber, means for automatically loading said substrate onto a chuck in said chamber,
b) means for evacuating gases from said chamber,
c) means for plasma cleaning said substrate,
d) means for depositing an adhesion layer of a first metal on said substrate and for depositing a nucleation layer of seeds of a second metal onto said substrate subsequent to evacuation of gases from said chamber,
e) chemical vapor deposition reactor means carrying a sublimable precursor of said second metal, said reactor means being adjacent to said chamber,
f) means for selectively connecting said chemical vapor deposition reactor means to said chamber whereby sublimated gases can be transported into said chamber, and
g) chemical vapor deposition heating means for heating said substrate above the dissociation temperature of said precursor releasing said second metal from said precursor onto said substrate, whereby nucleation of said second metal species occurs on said seed locations on said substrate.

5,312,510
APPARATUS FOR OPTIMALLY SCANNING A TWO-DIMENSIONAL SURFACE OF ONE OR MORE OBJECTS
Sherman Pooltney, Ridgefield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Division of Ser. No. 899,419, Jun. 16, 1992, Pat. No. 5,282,921. This application Mar. 24, 1993, Ser. No. 36,310
Int. Cl.[5] H01L *21/306;* B44C *1/22*
U.S. Cl. 156—345 **8 Claims**



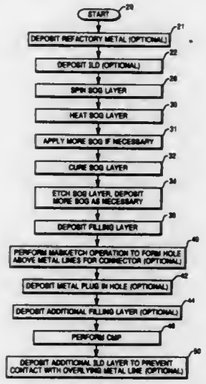
1. An apparatus for optimally scanning a surface of one or more semiconductor wafers undergoing a chemical etching process using a chemical etching instrument probe, said apparatus comprising;
means for registering said one or more semiconductor wafers to a wafer retention stage; and
means for controlling a spiral pattern movement of a spiral type scan of said surface of one or more semiconductor wafers by said chemical etching instrument probe, whereby said surface is figured to correspond to a desired thickness.

5,312,511
APPARATUS FOR THE PREPARATION OF THERMOPLASTIC HONEYCOMB
Barry M. Fell, 7124 Red Top Rd., Hommelstown, Pa. 17036
Division of Ser. No. 531,184, May 31, 1990, Pat. No. 5,139,596. This application Apr. 24, 1992, Ser. No. 873,255
Int. Cl.[5] B31F *1/22*
U.S. Cl. 156—469 **7 Claims**



1. Apparatus for continuously forming thermoplastic honeycomb core from a continuous web of uncorrugated thermoplastic web material, comprising:
(a) a lowermost set of metal formers for supporting said honeycomb core, said metal formers of said first set being disposed during use of said apparatus within the topmost cells of said honeycomb core;
(b) a topmost set of metal formers displaced by half the cell spatial frequency of said honeycomb core for forming a half-cell configuration of said honeycomb core;
(c) web supply means for supplying said continuous web of uncorrugated thermoplastic web material over the topmost set of formers;
(d) heating means positioned to selectively heat the underside of the web being supplied from said web supply means and the previously formed half-cell at the node-antinode mating surfaces in the vicinity of each respective consecutive metal former of said first set of metal formers to a temperature above the softening temperature of the web;
(e) pressure applying means for applying forming pressure to the just heated web to form therein a half-cell configuration while substantially simultaneously fusing consecutively the just formed antinode of the half-cell configuration to the corresponding node of the topmost cells of the honeycomb core; and
(f) means for retracting the first set of formers raising said formers by an amount at least equal to the thickness of the fused node-antinode surface, and redisposing the first set of formers in the antinode depressions in the last formed half-cell configuration, said redisposed formers thereby becoming topmost formers; said apparatus enabling continuous formation of honeycomb core wherein consecutive layers of uncorrugated thermoplastic web may be substantially simultaneously and continuously laid-down, corrugated and fused.

5,312,512
GLOBAL PLANARIZATION USING SOG AND CMP
Derryl D. J. Allman, and Kenneth P. Fuchs, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio
Filed Oct. 23, 1992, Ser. No. 965,309
Int. Cl.[5] H01L *21/306, 21/465*
U.S. Cl. 156—636 **2 Claims**



1. A method of planarizing a semiconductor device having an irregular surface with high and low portions, wherein the semiconductor device has a plurality of aluminum metal lines causing the irregular surface, the method comprising the steps of:
depositing a PECVD siloxane ILD layer over the surface;
spinning a layer of SOG over the ILD layer;
heating the SOG layer to drive out solvents and low-boiling point organics, including the substep of performing a hot plate process at temperatures between about 50 to 300 degrees Celsius for about one second to five minutes;
curing the SOG layer;
etching away higher portions of the SOG layer;
depositing an oxide filling layer over the SOG layer;

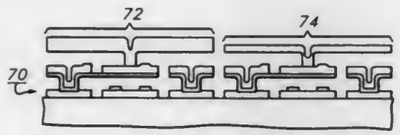
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perform a mask and etch operation to form holes through the oxide filling layer and the SOG layer down to the metal lines;
depositing plugs into the holes and in contact with the metal lines, wherein the plugs are tungsten to prevent hillock formations;
performing a CMP operation to smooth the oxide filling layer; and
depositing another aluminum metal line over the oxide filling layer and in contact with the tungsten plugs.

5,312,513
METHODS OF FORMING MULTIPLE PHASE LIGHT MODULATORS

James M. Florence, Richardson, and R. Mark Boysel, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 3, 1992, Ser. No. 862,933
Int. Cl.[5] B44C 1/22; C23F 1/00
U.S. Cl. 156—643 **20 Claims**



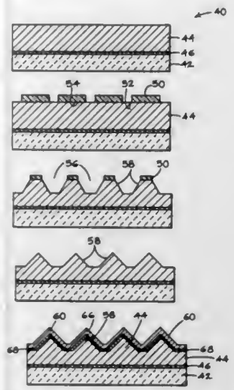
1. A method for forming a DMD having movable mirror elements for modulating incident light, said method comprising:
a) providing a substrate having addressing circuitry;
b) forming a first mirror metal layer over said substrate, said first mirror metal layer in electrical communication with a first address electrode of said addressing circuitry;
c) forming a first mirror etch stop overlying said first mirror metal layer;
d) patterning said first mirror etch stop whereby said first mirror etch stop overlies a first mirror area;
e) forming a second mirror metal layer over said first mirror metal layer and over said first mirror etch stop;
f) forming a second mirror etch stop overlying said second mirror metal layer;
g) patterning said second mirror etch stop whereby said second mirror etch stop overlies a second mirror area;
h) removing said second mirror metal layer in areas not underlying said patterned second mirror etch stop to form a second mirror element; and
i) removing said first metal mirror layers in areas not underlying said patterned first mirror etch stop of sad second mirror etch stop to form a first mirror element in electrical communication with said first address electrode.

5,312,514
METHOD OF MAKING A FIELD EMITTER DEVICE USING RANDOMLY LOCATED NUCLEI AS AN ETCH MASK

Nalin Kumar, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 789,220, Nov. 7, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,958
Int. Cl.[5] H01J 9/00
U.S. Cl. 156—643 **58 Claims**

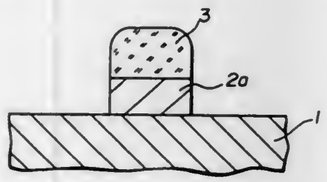
1. A method of making a field emitter device, comprising the following steps:
providing a substrate;
depositing a continuous layer of a low work function material on the substrate;
depositing in situ by evaporation or sputtering a non-polymerized randomly patterned etch mask with a relatively high melting point on the low work function material, said etch mask comprising randomly located discrete nuclei with discontinuities therebetween thereby exposing portions of the low work function material beneath the discontinuities while covering other portions thereof beneath the nuclei;
etching the exposed portions of the low work function material by applying an ion etch after the deposition of nuclei begins, wherein the low work function material etches at a greater rate than the etch mask so as to form valleys in the low work function material with emission tips between the valleys; and
removing the etch mask from the low work function material.



5,312,515
DRY ETCHING METHOD

Keiji Shinohara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 813,342, Dec. 24, 1991, Pat. No. 5,200,032. This application Dec. 14, 1992, Ser. No. 990,093
Claims priority, application Japan, Dec. 27, 1990, 2-415023
Int. Cl.[5] H01L 21/00
U.S. Cl. 156—626 **2 Claims**

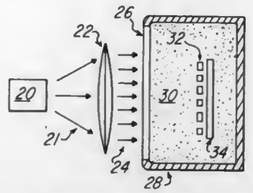


1. In a dry etching method comprising etching a layer of a metal alloy in which copper is a minor constituent using an etching gas including a compound containing chlorine as a component element to produce a copper reaction product the improvements comprising detecting an end point of the etching of the metal alloy by monitoring only the emission spectrum of the copper reaction product.

5,312,516
ANISOTROPIC TANTALUM PENTOXIDE ETCH

Monte A. Douglas, Coppell; Howard R. Beratan, Richardson, and Scott R. Summerfelt, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 872,702, Apr. 20, 1992, abandoned. This application Mar. 31, 1993, Ser. No. 41,302
Int. Cl.[5] B44C 1/22; C23F 1/00
U.S. Cl. 156—635 **13 Claims**

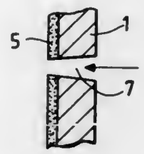


1. A method to anisotropically etch tantalum pentoxide comprising the steps of
(a) submersing a surface of said tantalum pentoxide in a liquid ambient; and
(b) illuminating portions of said surface with radiation, thereby etching said illuminated portions of said surface at a substantially greater rate than the unilluminated portions of said surface.

5,312,517
METHOD OF FORMING A NOZZLE FOR AN INK-JET PRINTER HEAD

Yasuhiro Ouki, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,713
Claims priority, application Japan, Jun. 24, 1992, 4-166041; Jul. 21, 1992, 4-194107; May 12, 1993, 5-134046
Int. Cl.[5] B44C 1/22; B29C 37/00
U.S. Cl. 156—643 **4 Claims**

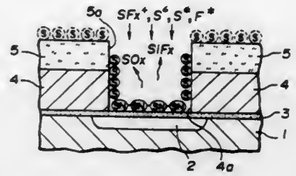


1. A method of forming a nozzle for an ink-jet printer head, comprising the steps of:
preparing a nozzle forming member made of plastics which can be ablated by an excimer laser;
forming a coating layer made of a fluorine-containing polymer on a surface of said nozzle forming member made, said coating layer having a thickness at which said coating layer can be completely removed from a nozzle by the ablation of said nozzle forming member and which is at least 20 nm; and
forming a nozzle by irradiating the excimer laser in a direction from a back of said nozzle forming member to a nozzle formation portion.

5,312,518
DRY ETCHING METHOD

Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 891,448
Claims priority, application Japan, May 31, 1991, 3-155454
Int. Cl.[5] H01L 21/00
U.S. Cl. 156—662 **9 Claims**

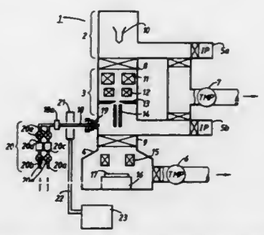


1. A dry etching method for etching a silicon oxide based material layer, comprising providing a silicon substrate, a three-layer gate insulation film being formed on said silicon substrate, a gate electrode formed on said gate insulation film, and an SiO_2 layer covering said gate electrode with said three-layer gate insulation film having a first SiO_2 gate insulation film, a Si_3N_4 gate insulation film, and a second SiO_2 gate insulation film; creating a plasma etching gas containing at least one compound selected from S_2F_2, SF_2, SF_4 and S_2F_{10}; etching part of said SiO_2 layer and part of said second SiO_2 gate insulation film to form a sidewall on both sides of said gate electrode.

5,312,519
METHOD OF CLEANING A CHARGED BEAM APPARATUS

Itsuko Sakai; Nobuo Hayasaka, both of Kanagawa, and Haruo Okano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

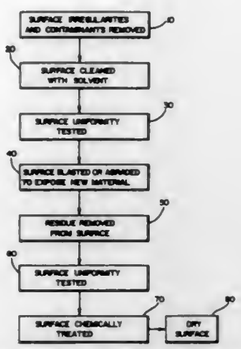
Filed Jul. 2, 1992, Ser. No. 907,570
Claims priority, application Japan, Jul. 4, 1991, 3-163208; May 18, 1992, 4-124406
Int. Cl.[5] B08B 7/00; H01L 21/465
U.S. Cl. 134—1 **9 Claims**



1. A method of cleaning a charged beam irradiating apparatus having a part exposed by a charged beam contained in a vacuum chamber, the part having organic contaminations, said method comprising the steps of:
exhausting the vacuum chamber;
forming plasma discharging gas outside the chamber, the plasma discharging gas including electrically neutral active species and other species including at least one of electrons and positive ions;
selectively introducing the electrically neutral active species into the chamber; and
removing the contaminations from the part by exposure to the introduced electrically neutral active species.

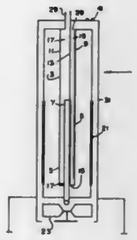
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,520
METHOD OF METALLIC SURFACE PREPARATION UTILIZING SILANE FOR ADHESIVE BONDING
Jaycee H. Chang, Rockwall, Tex., assignor to E-Systems, Inc., Dallas, Tex.
Filed Jan. 21, 1993, Ser. No. 6,490
Int. Cl.[5] B08B *7/00*; **B24C** *1/00*
U.S. Cl. 134—7 **22 Claims**



1. A method of cleaning a metallic surface for adhesive bonding, comprising the steps of:
removing surface irregularities and contaminants from a metallic surface;
abrading the metallic surface to expose new surface material;
applying a solvent to the abraded metallic surface; and
treating the metallic surface with a silane solution.

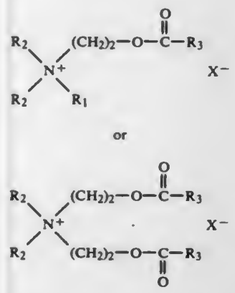
5,312,521
COMPACT DC ELECTRIC POWER GENERATOR USING LOW BANDGAP THERMOPHOTOVOLTAIC CELL STRINGS WITH A HYDROCARBON GAS BURNER FITTED WITH A REGENERATOR
Arthur P. Fraas, 1040 Scenic Dr., Knoxville, Tenn. 37919, and Robert M. Fraas, 38120 Boulder Creek Dr., Palm Desert, Calif. 92260
Filed Jun. 30, 1992, Ser. No. 906,452
Int. Cl.[5] H01L *31/052, 31/058*
U.S. Cl. 136—253 **13 Claims**



1. A thermophotovoltaic generating method comprising:
combusting a hydrocarbon fuel and air mixture producing a flame and infrared energy in a central coaxial burner-emitter-regenerator;
partially surrounding the burner-emitter-regenerator by linear parallel thermophotovoltaic cell strings facing the burner-emitter-regenerator and increasing the flame temperature for providing increased efficiency utilization of the energy from the fuel and producing an increased amount of infrared energy;
receiving infrared energy from the emitters and converting the infrared energy to DC electric power in the thermophotovoltaic cell strings;
surrounding the burner-emitter with plural reflector panels except for spaces occupied by the thermophotovoltaic cell strings, thereby directing the infrared energy emanating radially from the emitter, reflecting the energy from the reflector panels and concentrating the infrared energy on the cell strings; and
providing a uniform infrared energy along the length of each photovoltaic cell string from the burner-emitter and the reflector.

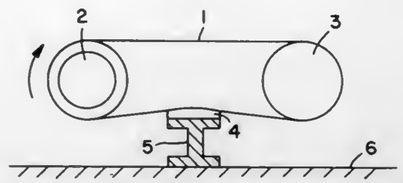
5,312,522
PAPER PRODUCTS CONTAINING A BIODEGRADABLE CHEMICAL SOFTENING COMPOSITION
Dean Van Phan, West Chester; Paul D. Trokhan, Hamilton, and Toan Trinh, Maineville, all of Ohio, assignors to Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 14, 1993, Ser. No. 4,334
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] D21H *21/22*
U.S. Cl. 162—111 **37 Claims**

1. A paper product comprising a sheet of fibrous cellulose material and from about 0.005% to about 5.0% by weight of said fibrous cellulose material of a biodegradable chemical softening composition comprising a mixture of:
(a) a quaternized ester-amine compound having the formula



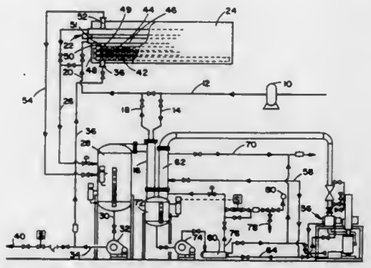
wherein each R_2 substituent is a C_1–C_6 alkyl or hydroxyalkyl group, or mixture thereof; each R_1 substituent is a C_{14}–C_{22} hydrocarbyl group, or mixture thereof; each R_3 substituent is C_{12}–C_{20} hydrocarbyl group, or mixture thereof; and X^- is a compatible anion; and
(b) a polyhydroxy compound selected from the group consisting of glycerol, and polyethylene glycols and polypropylene glycols having a weight average molecular weight from about 200 to 4000,
wherein the weight ratio of the quaternized ester-amine compound to the polyhydroxy compound ranges from about 1:0.1 to 0.1:1, wherein said polyhydroxy compound is mixed with said quaternized ester-amine compound at an elevated temperature wherein said quaternized ester-amine compound and said polyhydroxy compound are miscible.

5,312,523
ASSEMBLY FOR HEAT TREATING OF AN ENDLESS WIRE OR FELT
Gunnar Eriksen, Borgen, and Sissel W. Olsen, Tranby, both of Norway, assignors to Kvaerner Eureka A/S, Tranby, Norway
Filed Apr. 10, 1992, Ser. No. 867,054
Claims priority, application Norway, Mar. 10, 1992, 920930
Int. Cl.[5] D21F *1/32*
U.S. Cl. 162—274 **3 Claims**



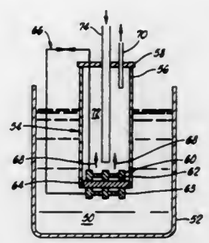
1. An assembly for heat treating an endless papermaking wire or felt, comprising two rotatable rollers spaced apart and positioned parallel to each other, at least one of the rollers being heated, the endless wire or felt being trained about the two rollers, and a heated glide surface which is stationary with respect to the direction of movement of the felt/wire and presses against an outer surface of the felt/wire to deflect the felt/wire inwardly between said rollers by imparting to the felt/wire a single outwardly concave arcuate outer surface over all that portion of the felt/wire in contact with the glide surface.

5,312,524
DISTILLATION SYSTEM FOR RECOVERY OF INDUSTRIAL PROCESS LIQUIDS
Lyle B. Barcomb, North Syracuse, N.Y., assignor to Filter Tech, Inc., Syracuse, N.Y.
Filed Apr. 21, 1992, Ser. No. 871,961
Int. Cl.[5] B01D *3/02, 3/10*
U.S. Cl. 202—177 **15 Claims**



1. A distillation system for recovery of process liquids used for cooling and lubricating purposes in an industrial process, said system comprising:
a) a still (**28**) having an enclosed chamber which is maintained at a sub-atmospheric pressure for vaporization of the more volatile components of heated process and recycled bottoms liquids discharged into said chamber, said still having first (**29**) and second (**30**) outlets for said volatile components in vaporized and bottoms in liquid states, respectively;
b) a condenser (**16**) for receiving vaporized components from said first outlet and returning said components to the liquid state as recovered distillate;
c) a heater (**24**) including a bank of tubes (**42, 44, 46**) having a first inlet (**38**) connected for receiving said bottoms liquids from said second outlet, a third outlet **49** communicating with a connecting tube (**50**), and means for heating bottoms liquids passing through said bank of tubes from said first inlet to said third outlet; and
d) a tube assembly (**22**) including at least one elongated outer tube (**86, 90**) and at least one elongated inner tube (**92, 94, 98, 100**) positioned within and extending axially of said outer tube, said outer tube having a second inlet **51** connected via said connecting tube to said third outlet for receiving heated bottoms liquids from said bank of tubes, and a fourth outlet (**52**) connected via a first line (**54**) to discharge said bottoms liquids into said still, and said inner tube having a third inlet (**82**) connected for receiving said process liquids from said industrial process and a fifth outlet (**84**) connected via a second line (**26**) to discharge said process liquids into said still, whereby said process liquids are heated within said inner tube by heated bottoms liquids in said outer tube prior to discharge into said still.

5,312,525
METHOD FOR REFINING MOLTEN METALS AND RECOVERING METALS FROM SLAGS
Uday B. Pal, Needham, and Kuo-Chih Chou, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jan. 6, 1993, Ser. No. 1,092
Int. Cl.[5] C25C *3/34*
U.S. Cl. 204—64 R **46 Claims**



1. A method for electrochemically refining a melt comprising the steps of:
(1) providing a melt including an impurity and characterized by a first impurity concentration;
(2) providing a refining gas;
(3) exposing said melt to a refining device wherein said refining device further comprises a solid electrolyte ionic conductor, including said impurity as an ionically conductive species and characterized by a solid electrolyte electronic conductivity in electrical contact with an electrode, a refining gas inlet and a gas outlet;
(4) introducing into said refining gas inlet said refining gas wherein said refining gas is further characterized by a second impurity concentration less than said first impurity concentration and wherein said second impurity concentration is selected to result in transport of said impurity from said melt and through said solid electrolyte ionic conductor driven by the difference between said first impurity concentration in said melt and said second impurity concentration in said refining gas and resulting in removal of said impurity from said melt to produce a refined melt characterized by a third impurity concentration, less than said first impurity concentration; and
(5) short-circuiting said electrode so that transport of said impurity from said melt to said refining gas is not limited by said solid electrolyte electronic conductivity.

VOL 1162 ISS 3 MY 17 1994 UMI

5,312,526

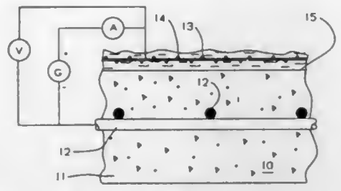
METHOD FOR INCREASING OR DECREASING BOND STRENGTH BETWEEN CONCRETE AND EMBEDDED STEEL, AND FOR SEALING THE CONCRETE-TO-STEEL INTERFACE

John B. Miller, Bergtunvn 9B, 1087 Oslo 10, Norway

Continuation of Ser. No. 854,950, Mar. 23, 1993, abandoned. This application Sep. 15, 1993, Ser. No. 121,962

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—130 **8 Claims**



1. The process of controllably increasing or decreasing the bond strength between a body of set and cured concrete and internally embedded steel which comprises,

(a) providing a source of DC voltage,

(b) connecting said internally embedded steel to a negative terminal of said voltage source,

(c) forming a distributed electrode means in association with said concrete body,

(d) connecting said distributed electrode means to a positive terminal of said voltage source,

(e) establishing, if necessary, and providing a data base, applicable to said concrete, indicating progressive relationships between increasing and decreasing steel-to-concrete bond strengths and total electrical flow between said steel and said distributed electrode means, per unit area of said embedded steel,

(f) determining in advance a desired increase or decrease in the bond strength of said embedded steel to said concrete and ascertaining from said data base the required current flow per unit of embedded steel to achieve such desired modification,

(g) causing said voltage source to effect a current flow between said embedded steel and said distributed electrode means, and

(h) terminating said process when the total electrical flow per unit of said steel is such, as calculated from said data base, to impart said desired increase or decrease in the bond strength of said embedded steel to said concrete and in all cases before the total electrical flow substantially exceeds that which achieves a maximum increase in bond strength.

5,312,527

VOLTAMMETRIC SEQUENCE-SELECTIVE SENSOR FOR TARGET POLYNUCLEOTIDE SEQUENCES

Susan R. Mikkelsen, Montreal; Kelly M. Millan, LaSalle, and Aleksandrs J. Spurmanis, Montreal, all of Canada, assignors to Concordia University, Canada

Filed Oct. 6, 1992, Ser. No. 957,602

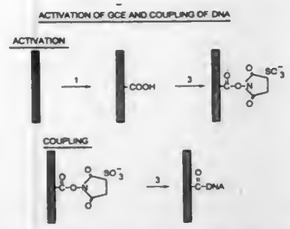
Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.12 **10 Claims**

1. A voltammetric sequence-selective sensor for target polynucleotide sequences, comprising:

a) an amperometric electrode;

b) an immobilized polynucleotide probe having one end covalently bound onto said electrode and said immobilized probe having a target binding region is hybridized to said target polynucleotide sequences to form an immobilized heteroduplex having at least a hybridized region; and



c) means for voltammetrically detecting said immobilized heteroduplex.

5,312,528

METHOD OF DETERMINING, WITH THE AID OF AN ION-SELECTIVE ELECTRODE, THE CONCENTRATION OF A SUBSTANCE TO BE DETERMINED, AND APPARATUS TO BE USED IN SAID METHOD

Robert Hoogendijk, Spijkernisse, Netherlands, assignor to Applikon Dependable Instruments B.V., Schiedam, Netherlands

Filed Jun. 5, 1992, Ser. No. 894,112

Claims priority, application Netherlands, Jun. 7, 1991, 9100984

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.21 **13 Claims**

1. Method of determining, with the aid of an ion-selective electrode ion selective electrode the concentration of a substance to be determined, which comprises taking a known volume of a sample, a buffer is added to a sample solution in order to produce a medium in which a potential of the ion selective electrode is directly related to the concentration of a respective ion and, after a set reaction time, an initial potential of the electrode pair including an ion-selective electrode and reference electrode is measured, then a known volume of a solution having an accurately known concentration of the substance to be determined which is a standard solution is added and a change in potential produced is measured, and the concentration of the substance to be determined is calculated therefrom, including the steps of providing that the addition of the standard solution to a reaction mixture is carried out in steps, the first addition being a small one which brings about a change in potential which indicates what the concentration of a substance to be determined is approximately, then further additions are made on the basis of the change in potential produced until a final change in potential is such that it corresponds to an increase in concentration of 1.5 to 10 times the concentration of the substance to be determined which was present in the sample.

5,312,529

METHOD OF COATING METAL USING LOW TEMPERATURE PLASMA AND ELECTRODEPOSITION

Joseph A. Antonelli, Riverton, N.J.; Tyau-Jeen Lin, Chadds Ford, Pa.; Duck J. Yang, Wilmington, Del., and Hirotsugu Yasuda, Columbia, Mo., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 789,485, Nov. 12, 1991, Pat. No. 5,182,000. This application Oct. 29, 1992, Ser. No. 968,512

The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.

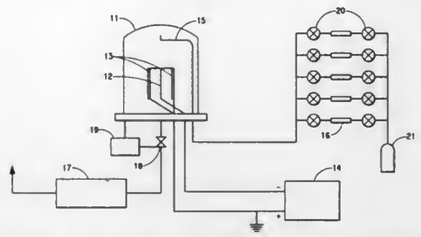
Int. Cl.[5] C25D *13/12*

U.S. Cl. 204—181.1 **9 Claims**

1. A method of coating a metal substrate to provide corrosion protection, which method comprises the following steps:

(a) pretreating the metal substrate with a gas plasma to reduce or remove surface oxides from the metal substrate;

(b) forming an oxygen-free film on the pretreated metal substrate by means of plasma deposition, comprising polymerizing a non-oxygen containing organic compound, wherein the plasma deposition employs DC power and is



carried out in a vacuum chamber enclosing a cathode and anode, and wherein the metal substrate is the cathode; and

(c) applying a primer by cathodic electrocoating the primer over said oxygen-free film.

5,312,530

SURFACE PROCESSING DEVICE

Reine Lindwall, Ehrenprisvägen 79, S-59062 Linghem, Sweden

Filed Jul. 1, 1992, Ser. No. 906,944

Claims priority, application Sweden, Jul. 1, 1992, 9102031

Int. Cl.[5] C25D *17/00*

U.S. Cl. 204—206 **5 Claims**



1. A surface processing device for cleaning and other surface processing of running material, comprising a body having a throughbore where the material is passed under movement in a path (**19***a*) through the device, characterized in that the body is provided with means, comprising an inner cavity (**13**) that is fed with a processing agent under pressure and has a jet forming slot (**20**) connecting said cavity with said throughbore to direct to the running material a well defined laminar jet of the processing agent at an acute angle wherein the device includes a bipolar electric cell having a first electrode (**21**) forming a wall portion of said cavity and a second electrode (**22**) forming a wall portion of said throughbore downstream from said slot.

5,312,531

PROCESS FOR MANUFACTURING GALVANIZED STEEL SHEET BY NICKEL PRE-COATING METHOD

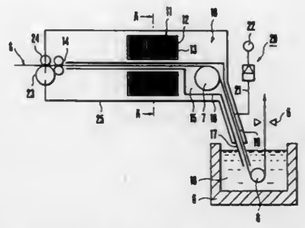
Kazumi Nishimura; Hisao Odashima; Tetsuya Ohara; Ryohei Mizoguchi, and Shigeto Fujii, all of Hyogo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 700,457, May 15, 1991, Pat. No. 5,203,985. This application Dec. 16, 1992, Ser. No. 991,409

Claims priority, application Japan, Oct. 9, 1990, 2-271957

Int. Cl.[5] C25D *17/00;* **B05C** *3/12*

U.S. Cl. 204—206 **1 Claim**



1. A continuous hot-dip galvanization installation for galvanization of a nickel pre-coated steel sheet comprising a nickel electroplating apparatus, a non-oxidative atmosphere-heating apparatus, and a galvanizing apparatus having an outlet side and being equipped with a molten zinc adhering amount-controlling device at the outlet side, arranged sequentially in a delivery direction for the steel sheet, said non-oxidative atmosphere-heating apparatus comprising

(i) a ring transformer having an inlet side and a space for steel sheet delivery,

(ii) a conductor roll provided at the inlet side of the ring transformer and being connected by use of an electroconductive member to a molten zinc bath of the galvanizing apparatus, thus a secondary coil of the transformer being formed from the conductor roll, the electroconductive member and the delivered steel sheet between a point at which the steel sheet enters the molten zinc bath and a point at which the conductor roll contacts the steel sheet, where resistance R_1 of the steel sheet and resistance R_2 of the electroconductive member is in the relation of $R_1 > R_2$,

(iii) an atmospheric chamber enclosing the steel sheet within the range from a point between the inlet side of the ring transformer and the conductor roll to a point just below a surface of the molten zinc bath, and

(iv) an atmospheric gas-feeding device for feeding a non-oxidative gas to the atmospheric chamber.

5,312,532

MULTI-COMPARTMENT ELETROPLATING SYSTEM

Panayotis Andricacos, Croton-on-Hudson, N.Y.; Moritz Branger, Los Altos; Robert M. Browne, San Jose, both of Calif.; John O. Dukovic, Pleasantville, N.Y.; Benjamin W. B. Fu, Cupertino; Robert W. Hitzfeld, San Jose, both of Calif.; Matteo Flotta, Mahopac, N.Y.; Donald R. McKenna, San Jose, Calif.; Lubomyr T. Romankiw, Briarcliff Manor, N.Y., and Saeed Sahami, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1993, Ser. No. 6,070

Int. Cl.[5] C25D *17/02, 17/10, 21/10, 21/12*

U.S. Cl. 204—231 **21 Claims**

1. A multi-compartment electroplating system for simultaneously electroplating at least two objects comprising:

a source of electroplating solution;

a single multi-compartment tank comprising:

at least two separate compartments each for containing electroplating solution and a cathode-paddle-anode

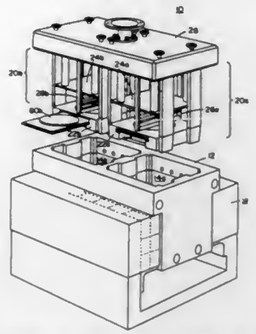
VOL 1162 ISS 3 MY 17 1994 UMI

(CPA) assembly, each of said compartments having a floor and four walls;

each of said CPA assemblies comprising:

an anode;

a cathode adapted for receiving and holding one of said objects and having a single thieving electrode, said thieving electrode covers substantially all of said compartment floor not covered by said object;



agitation means for generating agitation in said electroplating solution; and

means for driving all of said agitation means within said compartments,

whereby said objects exhibit substantial uniformity of plating thickness and composition.

5,312,533

ELECTRODE ELEMENT FOR ELECTROLYTIC PURPOSES AND ITS USE

Max Mayr, Alzenau; Wolfgang Blatt, Wächtersbach, and Harri Heinke, Erlensee, all of Fed. Rep. of Germany, assignors to Heraeus Electrochemie GmbH, Hanau, Fed. Rep. of Germany

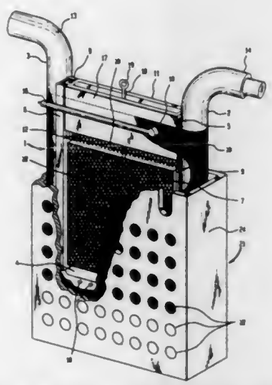
PCT No. PCT/EP91/00043, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO91/12358, PCT Pub. Date Aug. 22, 1991

PCT Filed Jan. 12, 1991, Ser. No. 916,877

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1990, 4003516

Int. Cl.[5] C25C *7/02*

U.S. Cl. 204—282 **7 Claims**



1. An electrode element for an electrolysis cell for electrolytic precipitation of metals from a liquid containing metal ions, having

a frame (1) provided with parallel side sections (2, 3) of electrically insulating plastic,

each element including at least one conduit (13) for supplying a liquid ion conductor and at least one conduit (16) for the removal of this liquid ion conductor, where

at least one planar active part is disposed between said conduits to serve as an electrode (7), along which the ion conductor flows and where

the active surface of the electrode (7) is covered by

an ion exchange diaphragm (20),

characterized in that

said electrode element is used for partial dipping, up to an immersion line (17), in said liquid;

the electrode (7) is removably supported in the side sections (2, 3) of the frame (1),

that the diaphragm (20) defines a pouch enclosing at least the portion of the electrode (7) dipped into the metal-ion-containing liquid,

and that

the pouch is enclosed by a protective box (21) of an electrically insulating plastic provided with openings 922), where at least a portion of the openings (22) are directed toward an active surface of the electrode (7).

5,312,534

TECHNIQUES FOR ENHANCING THE PERMEABILITY OF IONS THROUGH MEMBRANES

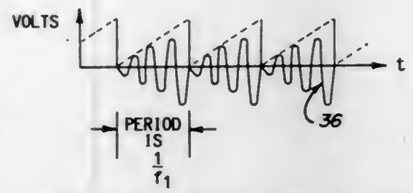
Abraham R. Liboff, 345 Berwyn Rd., Birmingham, Mich. 48009; Bruce R. McLeod, 411 W. Curtiss, Bozeman, Mont. 59715, and Steven D. Smith, 3042 Montavista Rd., Lexington, Ky. 40502-2957

Continuation of Ser. No. 923,760, Oct. 27, 1986, Pat. No. 4,818,697. This application Dec. 7, 1988, Ser. No. 280,848

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] B65D *85/18*

U.S. Cl. 204—299 R **20 Claims**



1. An apparatus for regulating the transfer of a predetermined ion having a predetermined charge-to-mass ratio through a membrane located in a space subjected to a local static field, the space defining at least one reference path passing through the membrane, the reference path extending in a first direction and also extending in a second direction opposite the first direction, said apparatus comprising:

a pair of electrical coils;

means for energizing said electrical coils to create a magnetic field, which when combined with the local magnetic field, results in a resultant magnetic field having a flux density with at least one component representable by a component vector having a direction extending in the first direction along the path; and

in association with said electrical coils and said energizing means, means for oscillating said magnetic field such that the magnitude of said one component vector fluctuates at a predetermined rate to create a non-zero average value, the ratio of the predetermined rate to the non-zero average value having a predetermined relationship to the charge-to-mass ratio of the predetermined ion where the predetermined relationship is a function of the cyclotron resonance frequency of the predetermined ion.

5,312,535

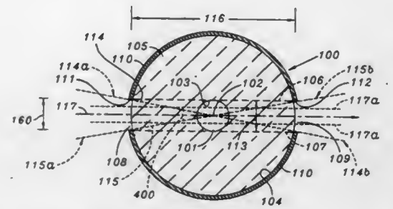
CAPILLARY ELECTROPHORESIS DETECTION

Frank L. Waska, Brea; Gerald L. Klein, Orange, and Wayne S. Johnson, La Habra, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 17, 1992, Ser. No. 917,640

Int. Cl.[5] C25B *9/00*

U.S. Cl. 204—299 R **58 Claims**



1. A capillary electrophoresis system comprising a capillary tube having a bore, an inner surface defining the bore, an outer surface, and a wall thickness of the tube defined between the surfaces, the bore having a width and being for transporting fluid, an input window in an outer surface portion of the tube and an output window in an outer surface portion of the tube, the input window and output window being spaced apart, at least one of the input window or output window defining a window width, and wherein the window width is not substantially greater than the bore width.

5,312,536

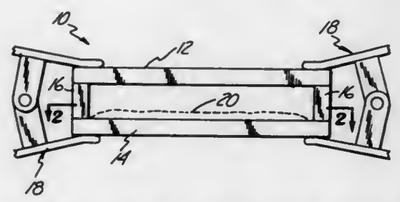
METHOD AND APPARATUS TO EVALUATE EFFECTIVENESS OF CLEANING SYSTEMS FOR HIGH DENSITY ELECTRONICS

Deepak K. Pai, Burnsville, and Gene A. Maday, Spring Lake Park, both of Minn., assignors to Ceridian Corporation, Bloomington, Minn.

Filed Aug. 25, 1992, Ser. No. 935,034

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—401 **16 Claims**



1. A device for testing a selected cleaning process and cleaner used to remove residue resulting from solder connection of components to printed wiring boards, the device comprising:

first and second members each of which having a planar surface with at least one of the first and second members being transparent;

spacing means positioned between a portion of the planar surfaces of each of the first and second members for maintaining a selected separation therebetween;

means which provides an electric field between the planar surfaces for promoting electrolysis in the presence of electrolytes in solution; and

clamping means engaging each of the first and second members opposite the planar surfaces for maintaining the planar surfaces of the first and second members in engagement with the spacing means, the planar surface of at least one of the first and second members being disposed and arranged to support material constituting the residue, the clamping means and spacing means being disposed and arranged to allow opposing planar surfaces atmospheric exposure.

5,312,537

ELECTROCHEMICAL CELL, REFERENCE ELECTRODE AND ELECTROCHEMICAL METHOD

Michael H. Harrison, and David J. Clarke, both of Salisbury, England, assignors to Public Health Laboratory Service Board, London, England

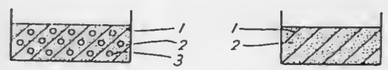
PCT No. PCT/GB90/01016, § 371 Date Mar. 19, 1992, § 102(e) Date Mar. 19, 1992, PCT Pub. No. WO91/01495, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 2, 1990, Ser. No. 838,809

Claims priority, application United Kingdom, Jul. 20, 1989, 8916633

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—416 **12 Claims**



1. A reference electrode for use in determining the activity or concentration of an ionic species in a sample, in combination with a working electrode having a selective membrane responsive, by virtue of a selective component of that membrane, selectively to said ionic species and an internal electrode electrochemically coupled with said membrane, the reference electrode comprising a reference membrane which is of the same composition as the selective membrane save that said selective component is absent.

5,312,538

DEVICE FOR CONTROLLING THE ELECTRICAL POWER SUPPLY OF AN OXYGEN PUMP OF A LINEAR OXYGEN PROBE

Pierre M. R. Metrich, Plaisance du Tonch, France, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 14, 1990, Ser. No. 613,080

Claims priority, application France, Nov. 14, 1989, 8914891

Int. Cl.[5] G01N *27/419*

U.S. Cl. 204—425 **11 Claims**

1. A device for supplying electrical power to an oxygen pump of a linear oxygen probe for measuring oxygen concentration in exhaust gases from internal combustion engines, comprising:

an oxygen pump of a linear oxygen probe including a pair of electrodes;

a measurement cavity of the probe in communication with exhaust gases and with said oxygen pump;

a measurement cell in communication with said measurement cavity, said measurement cell being sensitive to oxygen present in said measurement cavity of the probe to produce a corresponding measurement signal;

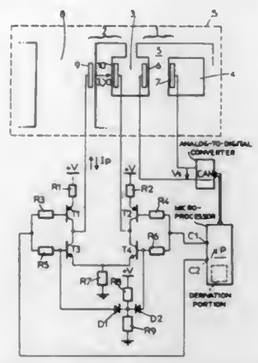
an electrical power supply of the oxygen pump connected for control by the measurement signal, said power supply including:

a source of electrical energy; and

means for selectively connecting said source to said pair of electrodes of said oxygen pump so as to provide a current of alternating electrical strength of a fixed frequency and

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of variable cyclic ratio controlled by said measurement signal from said measurement cell, said fixed frequency being higher than a frequency of said measurement signal,



said current being independent of oxygen concentration, said variable cyclic ratio being a measure of the oxygen concentration.

5,312,539

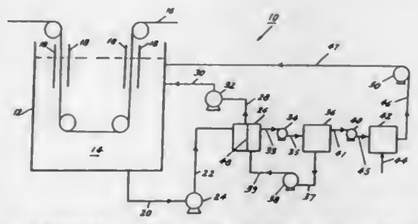
ELECTROLYTIC TIN PLATING METHOD

Donald Thomson, Northport, N.Y., assignor to LeaRonal Inc., Freeport, N.Y.

Filed Jun. 15, 1993, Ser. No. 76,750

Int. Cl.[5] C25D *21/22, 21/18*

U.S. Cl. 205—101 **9 Claims**



1. A method for electrolytically plating tin onto a cathodic metallic surface using an insoluble anode and an acidic electrolyte bath comprising lower alkane or alkanol sulfonic acid, comprising the steps of:

a) immersing the metallic surface in the acidic electrolyte bath, the bath comprising a free acid and an acid combined with divalent in wherein the acid is a lower alkane or alkanol sulfonic acid;

b) plating tin out of the bath onto the metallic surface;

c) extracting at least a portion of the free acid from the bath to form a free acid extract;

d) concentrating the free acid extract to form a concentrated free acid extract;

e) dissolving tin in the concentrated free acid extract; and

f) returning the concentrated free acid extract with the tin dissolved therein to the bath to replenish the bath with tin.

5,312,540

METHOD OF AND APPARATUS FOR PRODUCING A GRINDER USED FOR A GRINDING MACHINE AND GRINDING-PARTICLES PACKING APPARATUS

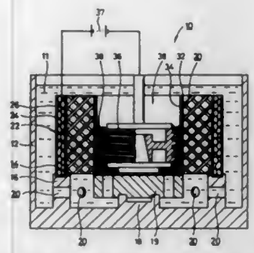
Hidehiro Kurono; Koji Hatanaka, and Yuichi Tazaki, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,880

Claims priority, application Japan, Jan. 31, 1992, 4-17096; Mar. 3, 1992, 4-45806

Int. Cl.[5] C25D *5/02, 15/00*

U.S. Cl. 205—110 **3 Claims**



1. A method of electrodepositing super-hard grinding particles on a metallic grinder matrix having recessed portions defined in an outer peripheral surface thereof to thereby produce a grinder used for a grinding machine, comprising steps of:

disposing said grinder matrix in a mesh-like holder for holding the grinding-particles provided within a plating tank;

charging the grinding particles into said holder and holding the grinding particles in contact with the recessed portions of the grinder matrix;

bonding the grinding particles to said grinder matrix using a plating layer formed by electroplating;

reversing said grinder matrix upside-down and holding the grinding particles in contact with the recessed portions of the reversed grinder matrix; and

bonding the grinding particles to said grinder matrix using a plating layer formed by electroplating.

5,312,541

IMPROVEMENTS IN PROCESSES FOR COLORING ANODIZED ALUMINUM AND/OR ALUMINUM ALLOYS

Jean-Francois Paulet, Siblingen; Bruno Boetsch; Fritz Schneeberger, both of Schaffhausen; Günther Tscheulin, Frick, and Hans Bohler, Rheinfelden, all of Switzerland, assignors to Sandoz Ltd., Basel and Schweizerische Aluminium AG, Chippis, both of Switzerland

Continuation of Ser. No. 802,079, Dec. 3, 1991, abandoned, which is a continuation of Ser. No. 507,703, Apr. 10, 1990, abandoned, which is a continuation of Ser. No. 392,186, Aug. 10, 1989, abandoned, which is a continuation of Ser. No. 28,275, Mar. 20, 1987, abandoned. This application Jul. 27, 1992, Ser. No. 920,061

Claims priority, application Switzerland, Mar. 25, 1986, 1223/86

Int. Cl.[5] C25D *3/32*

U.S. Cl. 205—302 **10 Claims**

1. A process for coloring oxide layers on anodized aluminum or aluminum alloys comprising treating the anodized aluminum or aluminum alloy with a water soluble acidic composition comprising a Sn(II) electrolyte and a stabilizing agent selected from the group consisting of:

4-amino-diphenylamine-2-carboxylic acid

diphenylamine-4-sulfonic acid,

2-amino-diphenylamine-4-sulfonic acid

4-amino-diphenylamine-2-sulfonic acid

4,4'-diamino-diphenylamine-2-sulfonic acid

4'-amino-4-nitrodiphenylamine-2-sulfonic acid

1-amino-2,4-di(phenylamino)benzene-5-sulfonic acid, and

diphenylamine -4,4'-disulfonic acid, and mixtures thereof.

5,312,542

HYDROCARBON FUEL AND FUEL SYSTEMS

William L. Talbert, York, Pa., assignor to Talbert Fuel Systems, Inc, Allentown, Pa.

Continuation of Ser. No. 790,029, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 426,859, Oct. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 236,162, Aug. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 941,833, Dec. 15, 1986, abandoned, which is a continuation of Ser. No. 833,038, Feb. 26, 1986, abandoned, which is a continuation of Ser. No. 638,069, Aug. 6, 1984, abandoned, which is a continuation of Ser. No. 463,251, Feb. 2, 1983, abandoned, which is a continuation of Ser. No. 70,683, Aug. 29, 1979, abandoned. This application Jun. 30, 1992, Ser. No. 908,560

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] C10L *1/04*

U.S. Cl. 208—16 **8 Claims**

1. A low Reid Vapor Pressure liquid gasoline for combustion in an automotive internal combustion engine in a gaseous state, said gasoline comprising a mixture of hydrocarbons having an intermediate carbon range relative to C_4–C_{12} fuel and said intermediate carbon range consisting essentially of the hydrocarbons in the range of C_6–C_{10} with C_9 and C_{10} hydrocarbons being present in the gasoline; said gasoline having a boiling point range between 121° F. and about 345° F. at 1 atmosphere pressure and said low Reid Vapor Pressure gasoline being capable of being vaporized by heating in a chamber to a temperature above the final boiling point of the gasoline at one atmosphere pressure in the absence of air and said vapor capable of being immediately mixed with air in a carburetor without the substantial instantaneous formation of liquid droplets therein so that said vapor/air mixture can be immediately combusted in the engine in substantially a vaporized form.

5,312,543

RESID HYDROTREATING USING SOLVENT EXTRACTION AND DEEP VACUUM REDUCTION

James L. Taylor, Naperville; William I. Beaton; Bernard Y. C. So, both of Wheaton, all of Ill., and Jeffrey J. Kolstad, Wayzata, Minn., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 610,936, Nov. 9, 1990, Pat. No. 5,124,024, and a continuation-in-part of Ser. No. 616,219, Nov. 20, 1990, Pat. No. 5,124,025, and a continuation-in-part of Ser. No. 616,208, Nov. 20, 1990, Pat. No. 5,124,026, and a continuation-in-part of Ser. No. 381,372, Jul. 18, 1989, Pat. No. 5,013,427, and a continuation-in-part of Ser. No. 824,289, Jan. 23, 1992, Pat. No. 5,242,578, and a continuation-in-part of Ser. No. 824,508, Jan. 23, 1992, Pat. No. 5,228,978, and a continuation-in-part of Ser. No. 824,509, Jan. 23, 1992, Pat. No. 5,258,117, and a continuation-in-part of Ser. No. 618,218, Nov. 20, 1990, Pat. No. 5,124,027. This application Jun. 22, 1992, Ser. No. 902,585

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[5] C10G *45/00*

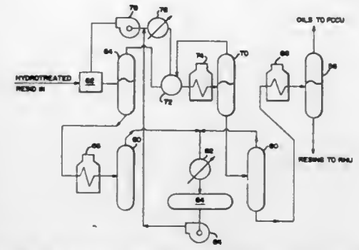
U.S. Cl. 208—211 **18 Claims**

1. A hydrotreating process comprising the steps of:

hydrotreating a resid feedstock at a temperature between about 700° and 850° F., at a total pressure of between about 2650 and 3050 psig, and at a hydrogen partial pressure of between 1800 and 2300 psig;

thereafter the hydrotreating step fractionating the hydrotreated feedstock into a hydrotreated resid bottoms fraction and at least one relatively lower boiling fraction;

thereafter the fractionating step deasphalting the bottoms fraction to remove an asphaltene fraction therefrom; and



thereafter the deasphalting step deep-vacuum reducing the hydrotreated resid bottoms fraction to produce an oil fraction having an upper boiling point cut-off temperature of at least 1050° F.

5,312,544

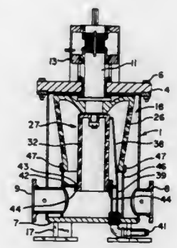
CONTINUOUS STRAINER

Craig S. Kinney, Sewickley, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.

Filed Oct. 23, 1992, Ser. No. 965,763

Int. Cl.[5] B01D *33/06, 33/39*

U.S. Cl. 210—107 **16 Claims**



1. A strainer of improved liquid volume processing and straining capability, comprising a housing having an inlet for liquid to be strained and an outlet for strained liquid, a vertical drive shaft mounted on a top of the housing, means to rotatably drive the drive shaft, an elongated hollow primary drum mounted on the drive shaft and rotatable therewith, an elongated hollow secondary drum mounted on the drive shaft inside the primary drum and rotatable with the drive shaft, each of the primary and secondary drums having a plurality of perforations extending from a top to a bottom of the respective drums and within which are mounted a corresponding plurality of media strainers, means to introduce pressurized liquid into the inlet and into a space between the housing and the outside of the primary drum, to force the liquid through the strainer inserts in the primary drum into a space between the inside of the primary drum and the outside of the secondary drum and through the strainer inserts in the secondary drum into the hollow interior of the secondary drum and thence out of the housing outlet.

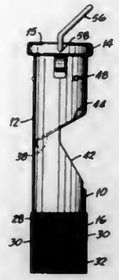
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5,312,545

FUEL FILTERING DEVICE

Ronald H. Starin, 122 Westwood Cir., Roslyn Heights, N.Y. 11577, and Augusto F. Avila, 19 Robinson Ave., Glen Cove, N.Y. 11542

Filed May 7, 1993, Ser. No. 59,053
Int. Cl.[5] B01D *35/02*
U.S. Cl. 210—172 **12 Claims**



1. A fuel filtering device for insertion within a fuel inlet aperture of a fuel tank comprising,

a thin elongated metal tube having one end open for receiving a fuel filling nozzle and having filtering means covering its other end, said tube having a further opening in the body thereof,

a fume reducing barrier member,

a thin, flexible and resilient metal strip extending parallel to the axis of said tube having one end attached to said barrier member, and having its other end attached to said device at a location between said open end and said body opening of said tube,

said barrier member being normally supported by said strip in a position through said body opening and transverse to the interior of said tube and being dimensioned to substantially close the internal passageway provided by said tube, and

said body opening being large enough to permit the outward movement of said barrier member through the body of said tube against the resilient force of said strip when a fuel filling nozzle is inserted within said tube beyond said barrier member.

5,312,546

DRY CHANGE FUEL FILTER SYSTEM

Leon P. Janik, Suffield, Conn., assignor to Stanadyne Automotive Corp., Windsor, Conn.

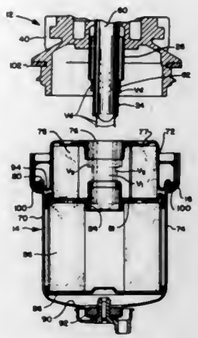
Continuation of Ser. No. 745,871, Aug. 16, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 105,210
Int. Cl.[5] B01D *35/31*
U.S. Cl. 210—248 **17 Claims**

1. A fuel filter assembly comprising:

base means defining a central axis and comprising an inlet and an outlet, and first and second conduits in fluid communication with said inlet and outlet, respectively, and extending in generally axial relationship with said axis, said base means comprising plug means extending into said first conduit, and cap means engageable against said plug means for retaining said plug means with said base means, said plug means being formed of non-metallic material;

imperforate container means suspended from said base means and including aperture means for receiving said first and second conduits to provide fluid communication with said base means via said first and second conduits, said container means having filtering means enclosed therein for filtering fuel which traverses a flow path through said filtering means from said first conduit, a pre-established volume of said plug means being disposed in said container means when said container means is mounted to said base means, and

retainer means for lockably securing said container means to said base means,



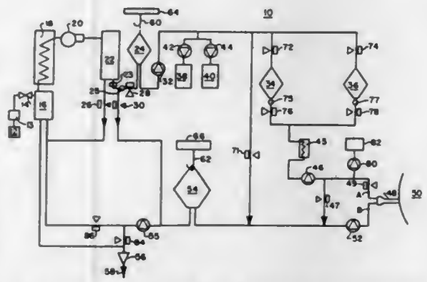
so that when said retainer means is unlocked and said container means is axially dismounted from said base means, fuel dischargeable from said base means through said conduits under the force of gravity is capturable in said container means.

5,312,547

MEDICAL DRUG FORMULATION AND REVERSE OSMOSIS PURIFICATION DEVICE

Robert J. Kruger, McHenry; Warren P. Frederick, Wonder Lake, both of Ill.; William J. Hook, Mansfield, Ohio; Mark E. Larkin, Lindenhurst, Ill.; Joaquin Mayoral, Downers Grove, Ill.; Roman W. Siczek, Lindenhurst, Ill.; Kenneth J. Timmons, Highland Park, Ill., and Sheldon M. Wecker, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 570,660, Aug. 20, 1990, abandoned. This application Mar. 4, 1992, Ser. No. 846,184
Int. Cl.[5] B01D *61/08*
U.S. Cl. 210—317 **75 Claims**



1. Apparatus for purifying fluid from a source comprising:

a. first reverse osmosis means adapted for spiral flow fluid communication with the source for purification of at least a portion of the fluid from the source, said first reverse osmosis means constructed and arranged to provide at least a first reverse osmosis multilayer assembly spirally rolled about a first axis so as to provide a generally spiral flow path for the fluid from the source; and

b. second reverse osmosis means being in spiral flow fluid communication with said first reverse osmosis means to receive at least some of the purified portion of fluid for further purification of at least a further portion of the fluid, said second reverse osmosis means constructed and arranged to provide at least a second reverse osmosis multilayer assembly spirally rolled about a second axis so as to provide a generally spiral flow path for at least some of the purified portion of fluid from the first reverse osmosis means.

5,312,548

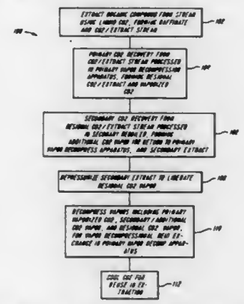
Patent Not Issued For This Number

5,312,549

METHOD AND APPARATUS FOR EXTRACTING ORGANIC LIQUIDS FROM AN ORGANIC LIQUID SOLUTE/SOLVENT MIXTURE

Darrell String, Parkton, Md., and Arun Lakhani, Audubon, Pa., assignors to Clean Harbors, Inc., Quincy, Mass.

Filed Feb. 12, 1993, Ser. No. 17,122
Int. Cl.[5] B01D *11/00*
U.S. Cl. 210—634 **4 Claims**



1. A process for extracting at least one organic liquid from a mixture including an aqueous portion and said at least one organic liquid, said process comprising the steps of:

contacting said mixture with a near or super critical solvent to extract said at least one organic liquid from said mixture and to form a raffinate comprising at least a portion of said aqueous portion and a solvent/extract stream;

processing said solvent/extract stream in a primary vapor recompression apparatus to vaporize and separate said solvent from said solvent/extract stream and to form a vaporized solvent and a residual solvent/extract stream;

processing said residual solvent/extract stream in a secondary reboiler to vaporize and separate said solvent from said residual solvent/extract stream and to form additional vaporized solvent and organic liquid extract;

recompressing said vaporized solvent and said additional vaporized solvent to form a recompressed vapor; and

conveying said recompressed vapor to said primary vapor recompression apparatus to provide energy to vaporize and separate said solvent from said solvent/extract stream and to form a vaporized solvent and a residual solvent/extract stream.

5,312,550

METHOD FOR DETECTING UNDESIRED DIALYSIS RECIRCULATION

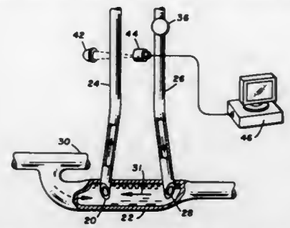
Robert L. Hester, 1426 Tracewood Dr., Jackson, Miss. 39211

Filed Apr. 27, 1992, Ser. No. 873,781
Int. Cl.[5] B01D *61/32*
U.S. Cl. 210—646 **5 Claims**

1. In a dialysis process wherein blood is removed from a patient's vascular system and passed through a dialyzer system comprising an inlet arterial line, a dialyzer, and an outlet venous line, said blood being fed via said inlet arterial line to said dialyzer and returned to the patient via said outlet venous line, the improvement comprising:

(a) injecting a material at an injection point in said dialyzer system, said material having a physical property differing from that of blood; and

(b) monitoring the fluid in said dialyzer system at a point in said dialyzer system upstream from said injection point for the presence of said differing physical property, to thereby detect undesired recirculation of freshly dialyzed blood from said venous line directly to said arterial line.

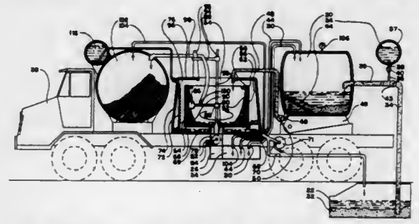


5,312,551

MOBILE MUD DEHYDRATOR

Jean-Noel Perron, Beauce Sud, and Denis Veilleux, Beauceville, both of, assignors to Benoit Allard and Denix Lemieux, Quebec, Canada

Filed Jul. 20, 1992, Ser. No. 915,520
Claims priority, application Canada, Jul. 16, 1992, 2074065
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—712 **9 Claims**



1. A mobile unit for the treatment of septic tanks containing a slurry of liquid with suspended particles, said mobile unit being of the type having a series of reservoirs and comprising a centrifugation unit mounted thereon, said mobile unit comprising:

pumping means for pumping said slurry, said pumping means comprising piping means to draw said slurry from a septic tank;

a first reservoir for temporary storage of said pumped and piped slurry;

treating means for causing the coagulation of said solid particles in said slurry;

centrifuging means comprising a vertical and cylindrical bucket comprising a bottom, a perforated vertical wall and means attached to said bucket for effecting the rotation of said bucket on its vertical axis, thereby causing the deposit of said coagulated particles on said perforated wall and the flow of said liquid through said perforated wall thereby causing the separation of said liquid from said coagulated particles;

removal means for removing said deposit of coagulated particles from said perforated wall, said removal means comprising a retractable arm mounted on a central column mounted in the center of said bucket, said retractable arm being slidable up and down said column, said retract-

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able arm being moveable between a first retracted position during centrifuging and second extended position close to said perforated wall, when said bucket is rotated at a speed for cleaning said perforated wall, said retractable arm comprising:

scraper means for removing said coagulated particle deposit from said perforated wall; and

suction means, positioned near said scraper, for catching the removed coagulated particle deposits;

a second reservoir for storage of said removed coagulated particles;

transportation means for moving said removed coagulated particles from said suction means to said second storage reservoir;

cleaning means for cleaning said perforated wall;

said pumping means also including piping means for returning said separated liquid back to said septic tank.

5,312,552

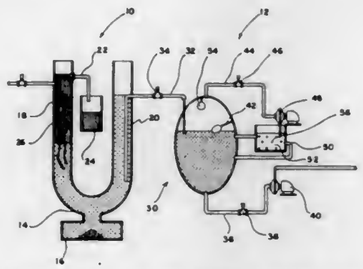
METHOD AND APPARATUS FOR REMOVING BTX-TYPE GASES FROM A LIQUID

J. M. Norman, 215 S. Hillcrest Dr., Goldsboro, N.C. 27534

Filed Feb. 2, 1993, Ser. No. 12,373

Int. Cl.[5] B01D *17/12, 19/00;* **C02F** *1/20*

U.S. Cl. 210—741 **4 Claims**



2. A method for removing BTX-type gases from water separated from an oil-water solution comprising the steps of:

a) transferring purified water from an oil-water separator to a vacuum chamber;

b) effectively sealing the vacuum chamber and drawing a vacuum on the vacuum chamber and vaporizing BTX-type gas from the purified water and containing the vaporized BTX-type gases in the upper part of the vacuum chamber;

c) removing vaporized BTX-type gases from the vacuum chamber and storing the removed BTX-type gases in a gas collector, the step of removing vaporized BTX-type gases including sensing that pressure within the vacuum chamber and the level of purified water within the vacuum chamber and expelling vaporized BTX-type gases from the vacuum chamber when the pressure within the vacuum chamber has exceeded to threshold value and the level of purified water within the vacuum chamber has reached a selected level; and

d) sensing the level of purified water within the vacuum chamber and the pressure within the vacuum chamber and transferring additional purified water from the oil-water separator to the vacuum chamber in response to the level of purified water and the vacuum within the vacuum chamber respectively, reaching threshold levels.

5,312,553

MIXTURES OF ORGANIC AMMONIUM SALTS AS FLOW ACCELERATORS

Dieter Ohlendorf, Liederbach; Manfred Hofinger, Burgkirchen, and Detlef Wehle, Kastl/Obb., all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

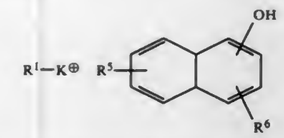
Filed Aug. 9, 1989, Ser. No. 391,176

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1988, 3827183

Int. Cl.[5] C09K *3/00;* **B01F** *17/18*

U.S. Cl. 252—1 **11 Claims**

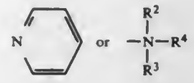
1. A salt mixture comprising: a quaternary ammonium salt of the formula (1)



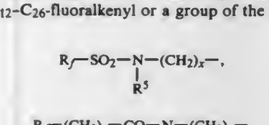
(1)

the above right-hand structure being the anion, wherein

R denotes a group of the formula



R^1 denotes C_{12}–C_{26}alkyl, C_{12}–C_{26}alkenyl, C_{12}–C_{26}fluoroalkyl, C_{12}–C_{26}-fluoralkenyl or a group of the formulae



R^2 and R^3 denote C_1–C_3-alkyl,

R^4 denotes C_1–C_3-alkyl and, for the case where R^1 = alkyl or alkenyl, also a group of the formula $—(C_2H_4O)_zH$,

R_f denotes C_8–C_{20}fluoroalkyl or C_8–C_{20}-fluoroalkenyl,

R^5 denotes hydrogen, methyl or ethyl,

R^6 denotes —COO⊖ or —SO_3⊖,

R^7 denotes hydrogen or methyl,

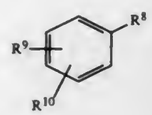
B denotes oxygen or sulfur,

x denotes an integer from 2 to 6,

y denotes 0, 1 or 2, and

z denotes numbers from 1 to 4,

and an alkali metal salt of an anion of the formula 2



(2)

wherein

R^8 denotes —COO⊖ or —SO_3⊖, R^9 denotes hydrogen, hydroxyl, CO_2, fluorine, chlorine, bromine or iodine and R^{10} denotes C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_5alkoxy,

in a quantity of 30 to 70 mol %, based on the total amount of said anion.

5,312,554

PROCESS FOR PREPARING STABLE OLEAGINOUS COMPOSITIONS

Malcolm Waddoups, and Barry J. Hewlett, both of Westfield, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 54,288, May 26, 1987, Pat. No. 4,938,880. This application Jul. 6, 1989, Ser. No. 376,120

The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.

Int. Cl.[5] C10M *137/10*

U.S. Cl. 252—32.007 E **80 Claims**

1. A process for producing dispersant-detergent compositions of improved haze-resistance, said compositions being useful as additives for oleaginous compositions which comprises:

(a) contacting a mixture comprising lubricating oil, ashless dispersant and metal detergent at a temperature of at least about 100° C. to form a heat-treated mixture;

(b) cooling said heat-treated mixture to a temperature of not greater than about 85° C. to form a cooled heat-treated mixture;

(c) admixing said cooled heat-treated mixture with at least one additional additive selected from the group consisting of oxidation inhibitors, viscosity modifiers, corrosion inhibitors, friction modifiers, dispersants, detergents, anti-foaming agents, anti-wear agents, pour point depressants and rust inhibitors to form an additive package of improved haze-resistance properties; said ashless dispersant comprising a nitrogen or ester containing dispersant selected from the group consisting of (i) oil soluble salts, amides, imides, oxazolines and esters, or mixtures thereof, of long chain hydrocarbon substituted mono and dicarboxylic acids or their anhydrides; (ii) long chain aliphatic hydrocarbon having a polyamine attached directly thereto; and (iii) Mannich condensation products formed by condensing about a molar proportion of a long chain hydrocarbon substituted phenol with about 1 to 2.5 moles of formaldehyde and about 0.5 to 2 moles of polyalkylene polyamine; wherein said long chain hydrocarbon group in (i), (ii) and (iii) is a polymer of a C_2 to C_{10} monoolefin, said polymer having a number average molecular weight of at least about 1300.

5,312,555

SUCCINIMIDES

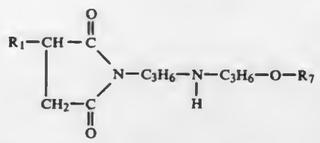
Dennis J. Malfer, Crestwood, Mo., assignor to Ethyl Petroleum Additives, Inc., Richmond, Va.

Filed Feb. 16, 1990, Ser. No. 480,905

Int. Cl.[5] C10M *129/00, 133/16*

U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil composition containing a lubricating oil and from about 0.5 to about 10 weight percent of an additive product wherein the product is composed predominantly of succinimide represented by the following formula:



wherein R_1 is an alkyl or alkenyl group bifurcated on its beta carbon atom into two branches, one of which contains at least 4 carbon atoms and the other of which contains at least 6 carbon atoms, said group containing an average of in the range of 12 to 50 carbon atoms and R_7 is an alkyl group containing up to about 50 carbon atoms.

5,312,556

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER DERIVED FROM POLYAMINE CONTAINING ONE PRIMARY AMINE GROUP AND AT LEAST ONE TERTIARY AMINE GROUP AND DEGRADED ETHYLENE COPOLYMER

David Y. Chung, Edison, and Mark J. Struglinski, Bridgewater, both of N.J., assignors to Exxon CHemmical Patents Inc., Linden, N.J.

Continuation of Ser. No. 420,186, Oct. 12, 1989, abandoned. This application Aug. 6, 1992, Ser. No. 931,810

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] C10M *149/08, 145/02*

U.S. Cl. 252—51.5 A **46 Claims**

1. A multifunctional viscosity index improver additive for lubricant composition comprising reaction product of:

(a) degraded ethylene-alpha-olefin copolymer obtained by degrading undegraded copolymer of ethylene and at least one other alpha-olefin monomer, said undegraded copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene; said degraded copolymer grafted with (b) ethylenically monounsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group to form grafted degraded ethylene copolymer; and

(ii) at least one polyamine containing one primary amine group and at least one tertiary amine group.

39. A lubricating oil composition comprising:

1. lubricating oil; and

a viscosity improving and dispersant effective amount of a multifunctional viscosity index improver additive comprising reaction product of:

(i) (a) degraded ethylene-alpha-olefin copolymer obtained by degrading undegraded copolymer of ethylene and at least one other alpha-olefin monomer, said undegraded copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene; said degraded copolymer grafted with (b) ethylenically monounsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhy-

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dride group to form grafted degraded ethylene copolymer; and

(ii) at least one polyamine containing one primary amine group and at least one tertiary amine group.

5,312,557

STABILIZING SODIUM PARCABONATE BY SEPARATELY SPRAYING COATING SOLUTIONS OF BORIC ACID AND A SILICATE

Masayoshi Onda, Yokkaichi; Akira Ito, Kashiwa; Yasuo Hiro, Suzuka; Kenji Umehara, Yotsukaido, and Yuji Yoneyama, Funabashi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 696,477, May 6, 1991, Pat. No. 5,219,549. This application Apr. 6, 1993, Ser. No. 43,670

Claims priority, application Japan, May 25, 1990, 2-134108

Int. Cl.[5] B05D *1/02;* **C11D** *7/18, 7/54, 11/00*

U.S. Cl. 252—99 **7 Claims**

1. A method for producing a composition comprising granulated sodium percarbonate coated with boric acid and an alkali metal silicate, comprising the steps of separately spraying an aqueous boric acid solution and an aqueous alkali metal silicate solution onto sodium percarbonate particles kept in a fluidized state to coat the particles with an aqueous solution of the boric acid and the alkali metal silicate, wherein the amount of boric acid is 0.3–20% by weight relative to sodium percarbonate and the amount of alkali metal silicate is 0.1 to 10% by weight in terms of SiO_2 relative to sodium percarbonate.

5,312,558

PESTICIDE COMPOSITION

Michael H. West, Sanatobia, Miss., assignor to IBC Manufacturing Company, Memphis, Tenn.

Filed Apr. 4, 1991, Ser. No. 680,434

Int. Cl.[5] C11D *3/48*

U.S. Cl. 252—106 **2 Claims**

1. A pesticide composition in the form of a molecular dispersion comprising:

(a) a solvent (water dispersible)	10–40 parts by wt.
(b) an orthophosphoric acid (85% in water)	5–15 parts by wt.
(c) cocodimethyl amine	30–60 parts by wt.
(d) a water-insoluble pesticide	3–9 parts by wt.
(e) an emulsifier	0–20 parts by wt..

5,312,559

PERSONAL CLEANSER WITH MOISTURIZER

Mark L. Kacher, Mason; Julie A. Wagner, Cincinnati; James R. Schwartz, West Chester; Efrain Torres; Marcus W. Evans, both of Cincinnati, and James E. Taneri, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 7, 1992, Ser. No. 909,877

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[5] C11D *9/24, 9/48, 17/00, 17/02*

U.S. Cl. 252—125 **34 Claims**

1. A stable dispersoidal semi-solid soap cleansing and moisturizing composition, by weight, consisting essentially of:

(A) from about 7% to about 33% potassium C_8–C_{22} fatty acid soap;

(B) from about 4% to about 18% C_8–C_{22} free fatty acid;

(C) from about 40% to about 70% water;

(D) from about 5% to about 30% of a polyol selected from the group consisting of: glycerol (glycerin), propylene glycol, polypropylene glycols, polyethylene glycols, ethyl hexanediol, hexylene glycols, and mixtures thereof; and

(E) from about 0.5% to about 15% petrolatum having a particle size distribution in which 20% to 80% of the particles are from 10 to 120 microns;

wherein said semi-solid has a viscosity of from about 60,000 cps to about 400,000 cps at 25° C.

17. A stable cleansing bar composition, by weight, comprising;

(A) from about 5% to about 75% of a substantially saturated fatty acid material selected from the group consisting of C_8–C_{22} free fatty acid and fatty soap and mixtures thereof;

(B) from about 10% to about 90% water; and

(C) from about 0.5% to about 35% petrolatum having a particle size distribution wherein from about 20% to about 80% of said particles have a particle size of from 10 microns to about 110 microns.

5,312,560

RARE EARTH PHOSPHOR

Toshifumi Somatomo; Masaki Mori; Miyuki Sumitomo; Koichi Kunikata, and Katsunori Uchimura, all of Anan, Japan, assignors to Nichia Chemical Industries, Ltd., Tokushina, Japan

Filed Mar. 18, 1993, Ser. No. 33,331

Claims priority, application Japan, Mar. 19, 1992, 4-093523; Apr. 25, 1992, 4-131911

Int. Cl.[5] C09K *11/84*

U.S. Cl. 252—301.4 S **4 Claims**

1. A rare earth phosphor represented by the formula: ps

$Y_{1-x-y-z}Lu_xTb_y\,Sm_z)_2O_2S$

wherein:

$1\times10^{-3}\leqq x\leqq5\times10^{-2}$

$1.0\times10^{-3}\leqq y\leqq5\times10^{-3}$

$0\leqq z\leqq5\times10^{-2}$

2. The phosphor according to claim 1, wherein said value Z is 1×10^{-4} to 5×10^{-2}, and said phosphor emits white luminescence when being excited by electron beams, said white luminescence including a green luminescence spectrum, a blue luminescence spectrum, and a red luminescence spectrum which has a peak in the vicinity of 608 nm.

5,312,561

DETERGENT COMPOSITION

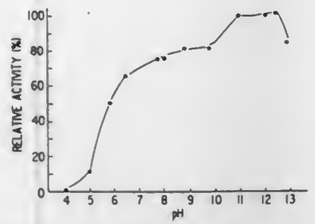
Eiichi Hoshino; Kazuo Mori, both of Wakayama; Akira Suzuki, and Jun Hitomi, both of Takanezawamachi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 823,360

Claims priority, application Japan, Jan. 22, 1991, 3-021565; Feb. 28, 1991, 3-034396; Dec. 10, 1991, 3-325980

Int. Cl.[5] C11D *3/386*

U.S. Cl. 252—174.12 **3 Claims**



1. A detergent composition, comprising:

(a) an alkaline protease which has an activity of hydrolyzing human horny keratin fiber of 40 KFU/APU or more, and wherein said alkaline protease possesses the following optimum pH range and optimum temperature range;

(1) optimum pH range when reacted at 40° C. using casein as a substrate: 10.0–12.5

(2) optimum temperature range when reacted at pH 10.0 using casein as a substrate, with no Ca^{+2} ions: 50°–60° C.; and

(b) at least one component selected from the group consisting of surface active agents, divalent metal sequestering agents, inorganic salts, anti-redeposition agents, additional enzymes, effective chlorine capturing or reducing agents, bleaching agents, fluorescent dynes, solubilizing agents, perfumes, caking preventatives, enzyme activators, antioxidants, antiseptics, pigments, blueing agents, bleaching activators, and water, wherein said alkaline protease is present in an amount of 5–400 APU per 1 Kg of said composition.

5,312,562

AQUEOUS ELECTRONIC CIRCUIT ASSEMBLY CLEANER AND METHOD

Alfredo Vinci, Dayton; M.Stephen Lajoie, Basking Ridge, and Anthony E. Winston, East Brunswick, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 731,512, Jul. 17, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 980,920

Int. Cl.[5] C11D *3/10*

U.S. Cl. 252—174.14 **10 Claims**

1. A saponifier composition for removing rosin soldering flux and other residues from electronic circuit assemblies and consisting essentially of substantially water soluble components, said substantially water soluble components comprising a mixture of alkali-metal carbonate and bicarbonate salts and about 6–10 wt. % based on the composition of a surfactant, said substantially water soluble components being free of a chelating agent and so combined that when in an aqueous saponifier solution of from about 1 to 1.7 percent by weight said solution has a pH of from about 10 to 12 and an adequate reserve of titratable alkalinity, at least equivalent to about 0.6 to 4.5 percent caustic potash when titrated to the colorless phenolphthalein end point.

5,312,563

FLUORINATED 4''-CYANO SUBSTITUTED TERPHENYLS

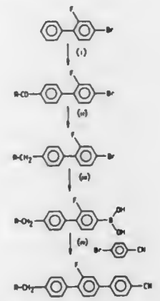
David Coates, Wimbourne; Ian Sage; Simon Greenfield, both of Dorset; George W. Gray, North Humberside; David Lacey, North Humberside; Kenneth J. Toyne, North Humberside; Lawrence K. Chan, Middlesex, and Michael Hird, North Humberside, all of England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 659,351, Feb. 19, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 7,821

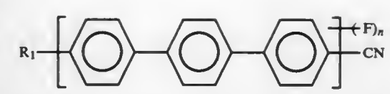
Claims priority, application United Kingdom, Jun. 16, 1988, 8814327

Int. Cl.[5] C09K *19/12, 19/52;* **C07C** *25/13*

U.S. Cl. 252—299.66 **11 Claims**



1. Fluorinated 4''-cyanosubstituted terphenyl of the formula I:



I

wherein R_1 is selected from the group consisting of alkenyl, R, RO, RCO and hydrogen, where R is alkyl or perfluoroalkyl containing 1 to 12 carbon atoms; n is 1, 2 or 3; and the fluoro-substituent may be in any of the available lateral substitution positions.

5,312,564

HALOGEN-CONTAINING, OPTICALLY ACTIVE LIQUID CRYSTAL COMPOUND AND LIQUID CRYSTAL COMPOSITION CONTAINING SAME

Kazutoshi Miyazawa; Hiromichi Inoue; Shinichi Saito; Takashi Inukai; Kanetsugu Terashima, and Mitsuyoshi Ichihashi, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

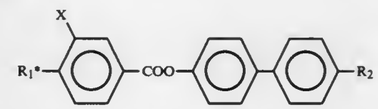
Division of Ser. No. 228,315, Aug. 4, 1988, abandoned, which is a division of Ser. No. 838,561, Mar. 11, 1986, Pat. No. 4,780,242. This application Dec. 31, 1992, Ser. No. 999,141

Claims priority, application Japan, Mar. 14, 1985, 60-51512

Int. Cl.[5] C09K *19/12, 19/20;* **C07C** *69/76*

U.S. Cl. 252—299.65 **2 Claims**

1. An optically active liquid crystal compound of the formula



wherein R_1* is an optically active alkoxy group of 4 to 12 carbon atoms, R_2 is an optically inactive alkyl, alkoxy or alkoxycarbonyl group each of which has 4 to 12 carbon atoms, and X is F or Cl.

5,312,565

NONLINEAR OPTICAL MATERIALS

Richard Beckerbauer, Wilmington, Del.; Dennis S. Donald, Mendenhall; Wilson Tam, Boothwyn, both of Pa., and Frederick C. Zumsteg, Jr., Wilmington, Del., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 577,044, Aug. 28, 1990, abandoned. This application May 8, 1991, Ser. No. 697,124

Int. Cl.[5] C09K *19/52;* **F21V** *9/04;* **G02B** *6/00;* **C07D** *211/56*

U.S. Cl. 252—582 **3 Claims**

1. A poled organic glass composition which consists essentially of the compound N-p-nitroanilinoglutarimide.

5,312,566

AIR INTAKE SYSTEM DEVICE

Robert Carroli, Bradbury; David Gann, Newport Beach, both of Calif.; Loren Zanier, and Rod L. Quinn, both of Bend, Oreg., assignors to American Technologies Group, Inc.

Filed Sep. 9, 1992, Ser. No. 941,778

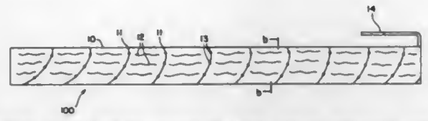
Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—18.4 **13 Claims**

1. A discardable device for placement within the air intake system of any combustion engine, said device being comprised of a package having a flexible outer covering; and a catalyst contained by said covering, said covering enabling said cata-

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lyst to pass therethrough at a controlled rate, wherein the passing of said catalyst through said covering into said air



intake system during operation of said engine improves combustion efficiency.

5,312,567

COMPLEX MIXER FOR DISPERSION OF GASES IN LIQUID

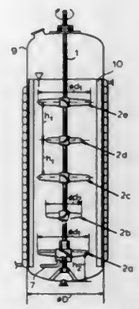
László Kozma; Sándor Kováts, both of Budapest; Béla Makádi, Debrecen; László Csóke, Debrecen; Sándor Pusztai, Debrecen; Mihály Kaszás, Debrecen; György Sántha, Debrecen; István Barthó, Budapest; Károly Zalai, Budapest; Gyula Beszedics, Budapest; Gabriella Kordik, Budapest; Károly Gergely, Budapest, and Miklós Féder, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Cyar Rt., Budapest, Hungary

Filed Sep. 25, 1992, Ser. No. 930,515

Claims priority, application Hungary, Feb. 1, 1991, 364/91

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—87 7 Claims



1. A mixer for dispersing a gas in a liquid, comprising:

a generally cylindrical vessel having a substantially vertical axis and receiving a body of liquid to be mixed with a gas;

a shaft extending along said axis and rotatable in said vessel;

a gas-dispersing primary propeller mixer on said shaft at a lower portion of said vessel and including:

a downwardly open hub on said shaft,

a plurality of primary blades extending radially from said hub and formed with respective channels open rearwardly of each primary blade with respect to a direction of rotation thereof by said shaft, said channels opening along trailing edges of said primary blades and being of increasing cross section from tips of said blades to said hub, said hub having bores communicating between said channels and an interior of said hub;

a plurality of secondary propeller mixers spaced apart above said gas-dispersing propeller mixer along said shaft, said secondary propeller mixers having radial secondary blades extending from said shaft and rotatable thereby, the secondary blades of at least one of said secondary propeller mixers being shorter than the secondary blades of another of said secondary propeller mixers and shorter than said primary blades, at least one of said secondary propeller mixers below an uppermost secondary propeller mixer being formed with at least one flow modifier selected from baffle bars on trailing edges of the secondary blades thereof and secondary blades with inclinations opposite those of other secondary blades, said uppermost secondary propeller mixer having channel-free and flow-modifier-free blades of the same length from the axis as the primary blades; and

a gas-inlet pipe opening upwardly into said hub for feeding gas to said hub and from said hub into said channels.

5,312,568

POLARIZING FILM MADE OF SEMICRYSTALLINE POLYOLEFINE

Cornelis W. M. Bastiaansen, Maastricht, Netherlands, assignor to DSM N.V., Heerlen, Netherlands

Division of Ser. No. 897,070, Jun. 11, 1992, Pat. No. 5,258,208. This application Aug. 6, 1993, Ser. No. 102,810

Claims priority, application Netherlands, Jun. 11, 1991, 9101008

Int. Cl.[5] B05D *1/36*

U.S. Cl. 264—1.3 3 Claims

1. Process for the manufacture of a polarizing film by drawing a polymer film containing a dichroic dye at a temperature above the glass transition temperature of the polymer, wherein the polymer film consists essentially of a semicrystalline polyolefin, said drawing is conducted at a temperature below the crystalline melting point of the polyolefin, and the dye in the film is present in the liquid state at that drawing temperature.

5,312,569

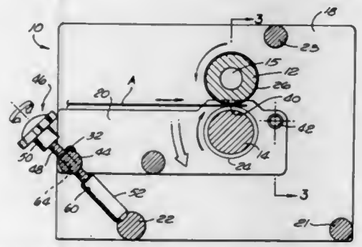
METHOD FOR MARRING FIBER OPTIC SUBSTRATES

George A. Mezei, Huntington Beach, Calif., assignor to Poly-Optical Products, Inc., Irvine, Calif.

Filed Oct. 30, 1991, Ser. No. 785,130

Int. Cl.[5] B29C *59/04*

U.S. Cl. 264—1.500 12 Claims



1. A method for marring a fiber optic substrate comprising;

feeding the fiber optic substrate between a pair of rotating rollers that form a nip, said pair of rotating rollers comprising a first roller and a second roller wherein at least one roller has a roughened surface for marring the fiber optic substrate as it passes through the nip, and wherein at least one roller is adjustable to vary the pressure in the nip; and

varying the pressure in the nip to obtain a predetermined marring pattern on the fiber optic substrate.

5,312,570

SYSTEM AND METHOD FOR PREPARING FIBER OPTIC RIBBONS

Roger F. Halter, Santa Ana, Calif., assignor to Poly-Optical Products, Inc., Irvine, Calif.

Filed Feb. 21, 1992, Ser. No. 839,822

Int. Cl.[5] B29C *59/04; G02B 6/00*

U.S. Cl. 264—1.5 30 Claims

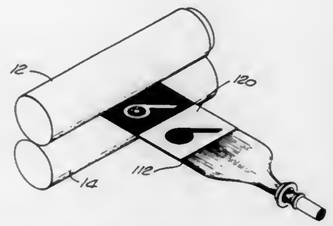
1. A system for prepared abraded fiber optic ribbon, comprising:

an abrasion selection panel containing a design, said panel being positioned for direct contact with said ribbon;

variable pressing means for pressing said panel and said ribbon together so that the panel and pressing means combine to produce the design of said panel on the ribbon; and

means for driving said pressing means to feed and press said panel and said ribbon so that the panel and pressing means combine to produce the design of said panel on the ribbon.

19. A method for preparing an abraded fiber optic ribbon comprising the steps of:



preparing an abrasion selection panel containing a design;

contacting said panel with a fiber optic ribbon;

feeding and variably pressing said panel and said fiber optic ribbon through a processing means as said design is being processed onto said fiber optic ribbon;

driving said processing means to feed said panel and said fiber optic ribbon; and

separating said panel from said fiber optic ribbon after said specific design has been processed onto said fiber optic ribbon to produce varying abrasion on the ribbon.

5,312,571

SHAPED BODIES AND THE PRODUCTION THEREOF

Vimal K. Pujari, Northborough, and Gulio Rossi, Shrewsbury, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Jan. 7, 1993, Ser. No. 1,367

Int. Cl.[5] B29B *9/10*

U.S. Cl. 264—13 21 Claims

1. A method of making shaped, gelled bodies, comprising:

(1) producing a mixture comprising a first liquid, a granular substance or precursor thereof, and a gelation compound which quickly gels at a gelation temperature, and

(2) introducing portions of the mixture into a first fluid in which the first liquid is immiscible, said first fluid having a temperature of about the gelation temperature, thereby causing the portions to take on a shape and then gel to form shaped, gelled bodies.

5,312,572

PROCESS FOR HEATING A BLOW MOLDING PREFORM

Claus Horwege, Hamburg, Fed. Rep. of Germany, assignor to Krupp Corpoplast Maschinenbau GmbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,583

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 4123933

Int. Cl.[5] B29C *35/08, 49/64*

U.S. Cl. 264—25 12 Claims

1. Process for heating a preform of a thermoplastic material in preparation for subjecting said preform to a blow molding operation and said preform being suitable for blow molding, characterized in that the preform (1) is provided at least over a portion of its surface (13, 14) with a texturing enlarging the surface (13, 14) prior to the thermal treatment, heating said preform to a suitable temperature for blow molding, said heating being operative to provide a programmable temperature profile in the region of the preform (1) by means of the texturing (8), the profile depths of the texturing matching the temperature profile to be generated, and thereafter subjecting said preform to the blow molding operation.



5,312,573

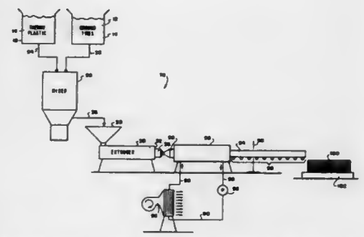
PROCESS FOR EXTRUDING MIXTURES OF THERMOPLASTIC AND THERMOSET MATERIALS

James E. Rosenbaum, Denton, and Frank R. Keith, Gainesville, both of Tex., assignors to Renewed Materials Industries, Inc., Meunster, Tex.

Continuation-in-part of Ser. No. 740,376, Aug. 1, 1991, abandoned. This application Apr. 24, 1992, Ser. No. 873,410

Int. Cl.[5] B29C *17/00, 47/00*

U.S. Cl. 264—37 8 Claims



1. A method of producing useful articles from ground whole tire waste, comprising:

continuously extruding a heated mixture of ground whole tire waste and thermoplastic binder material into the interior of an elongated, open-ended casting chamber having a cross-section corresponding substantially to the cross-section of the desired useful article wherein the ground whole tire waste comprises rubber and metal debris;

continuously cooling the exterior surface of the casting chamber to remove sufficient thermal energy from said casting chamber so that a dimensionally stable extrudate emerges from the open end of the casting chamber; and

cutting the emerging extrudate to length

5,312,574

METHOD FOR SINTERING CERAMIC FORMED BODIES

Kenichi Yamada, and Nirohiko Sakamoto, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co. Ltd., Japan

Filed Aug. 7, 1992, Ser. No. 926,716

Claims priority, application Japan, Aug. 8, 1991, 3-199430

Int. Cl.[5] C04B *33/32*

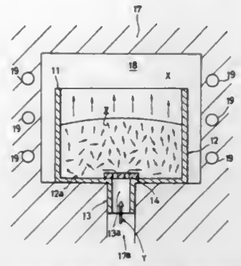
U.S. Cl. 264—58 4 Claims

1. A sintering method for sintering a plurality of ceramic

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formed bodies disposed in a container, said container disposed in a furnace for sintering, comprising the steps of:

introducing atmospheric gas through an atmospheric gas inlet port of said container, said atmospheric gas inlet port being provided in an inner wall portion of said container in contact with the plurality of ceramic formed bodies piled upon each other in said container, said container



having a bottom surface and said atmospheric gas inlet port being disposed so as to open into the bottom surface of said container;

supplying the atmospheric gas directly to surfaces of the plurality of piled ceramic formed bodies by passing the atmospheric gas through spaces between the ceramic formed bodies; and

sintering said plurality of ceramic formed bodies.

5,312,575

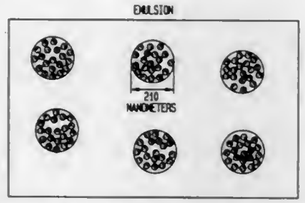
MICROAGGLOMERATION OF IMPACT MODIFIERS

Morris C. Wills, Roebling, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Divisiou of Ser. No. 746,013, Aug. 13, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,600

Int. Cl.[5] B29C *45/00, 47/00;* B29B *9/08*

U.S. Cl. 264—109 **16 Claims**



1. A process for preparing a core/shell impact modifier which comprises:

a) forming by emulsion polymerization a latex of rubbery polymer particles having a glass transition temperature below about −20 degrees C. and a particle size below about 100 nm diameter, the rubbery polymer particle being formed from at least 75 weight percent of units derived from butadiene, C_2–C_8 lower alkyl esters of acrylic acid, or mixtures thereof;

b) forming by sequential emulsion polymerization in the presence of the latex of rubbery polymer particle, under conditions wherein essentially no new polymer particles are formed, a latex of first core/intermediate shell polymer particles, the intermediate polymer shell having a glass transition temperature above about −20 degrees C., the intermediate shell being formed predominately from units derived from methyl methacrylate, and the intermediate shell being from about 5% to about 20% by weight of the first core/intermediate shell polymer particles;

c) agglomerating the latex of first core/intermediate shell polymer particles to form a latex of agglomerated particles of at least 150 nm diameter, the solids content of the latex of first core/intermediate shell polymer particles being no higher than about 40 percent, and the solids content of the latex of agglomerated particles being no higher than about 30%.

d) forming an encapsulating shell of hard polymer having a glass transition temperature at least 60 degrees C. in a final core/shell polymer by sequential emulsion polymerization onto the agglomerated particles, under conditions wherein essentially no new polymer particles are formed, the encapsulating shell being formed predominately from units derived from methyl methacrylate, the encapsulating shell comprising from about 5 to about 20% by weight of the final core/shell polymers, the total shell content being now lower than about 14% by weight of the final core/-shell polymer, the sequential emulsion polymerization being conducted in the latex of the agglomerated particles, and the final core/shell polymer remaining in latex form; and, if desired,

e) isolating the final core/shell polymer.

5,312,576

METHOD FOR MAKING PARTICULATE FILLED COMPOSITE FILM

Gwo S. Swei, Northboro, and David J. Arthur, Norwood, both of Mass., assignors to Rogers Corporation, Rogers, Conn.

Filed May 24, 1991, Ser. No. 704,983

Int. Cl.[5] B29C *39/00;* B32B *27/00*

U.S. Cl. 264—112 **41 Claims**



1. A method for making a particulate filled polymer matrix composite film, comprising:

mixing the polymer with a dispersion of a particulate filler in a carrier liquid comprising water to provide an aqueous casting composition wherein said casting composition includes relative amounts of polymer and filler effective to provide a composite film having greater than 15 volume percent filler particles;

adding a surfactant to the casting composition to modify the surface tension of the carrier liquid so that the carrier liquid wets the filler particles and adding a viscosity and modifier to adjust the viscosity of the casting composition to retard separation of the particulate filler from the composition to provide a stabilized, homogeneous casting composition;

casting a layer of the casting composition onto a substrate; and

consolidating the cast layer to form the particulate filled polymer matrix composite film.

5,312,577

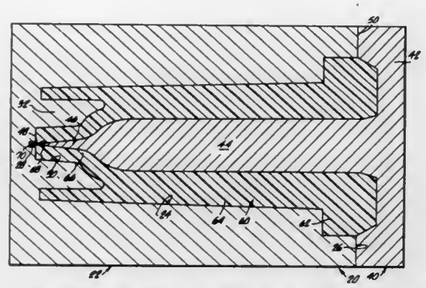
METHOD FOR MANUFACTURING AN AMPULE

Steven F. Peterson, West Linn; John W. Ashley, Hillsboro; Victor L. Bartholomew, Tigard; James P. Casey, Sr., Forest Grove, all of Oreg., and Charles N. McKinnon, Jr., Laguna Niguel, Calif., assignors to Bioject Inc., Portland, Oreg.

Filed May 8, 1992, Ser. No. 880,249

Int. Cl.[5] B29C *45/17*

U.S. Cl. 264—154 **5 Claims**



1. In a method of fabricating a nozzle section of a jet injection ampule having a nozzle opening at a front end of the nozzle section, by thermoplastic injection molding of the type using a mold cavity housing and a core pin, and including the steps of moving the core pin into the mold cavity housing to form a mold cavity and injecting thermoplastic into the mold cavity, the improvement comprising the steps of:

guiding a core pin tip on the core pin at least partially into a clearance hole formed by clearance hole walls in the mold cavity housing, without allowing the core pin tip to hit the clearance hole walls, the clearance hole extending beyond the nozzle section of the molded ampule;

allowing the thermoplastic to flow into the clearance hole and around the core pin tip during said injecting step without allowing the core pin tip to hit the clearance hole walls;

allowing the thermoplastic to at least partially solidify and form a nozzle pilot cylinder within the clearance hole and around the core pin tip, with the core pin tip and nozzle pilot cylinder extending beyond the nozzle section;

removing the nozzle section from the mold cavity housing; and

removing the nozzle pilot cylinder from the nozzle section to expose the nozzle opening.

5,312,578

METHOD OF MAKING AN INSULATING BODY OF HIGH DIELECTRIC STRENGTH

Bernard Aladenize, Epinay Sur Orge, and Alain Le Mehaute, Gif Sur Yvette, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 11, 1992, Ser. No. 943,882

Claims priority, application France, Sep. 13, 1991, 91 11336

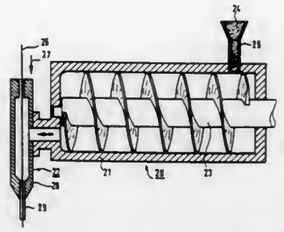
Int. Cl.[5] B29C *47/02*

U.S. Cl. 264—174 **11 Claims**

1. A method of preparing an electrically insulating body, comprising;

heating a mixture of at least a first polymeric material and a second polymeric material, said first polymeric material having a higher molecular weight and a lower melt flow index than said second polymeric material; and

applying a stress to the heated mixture so as to form an electrically insulating body having an internal structure formed primarily by the first polymeric material and a surface structure formed primarily by the second polymeric material, the proportion in said body of said first polymer material relative to said second polymer material



being reduced progressively from said internal structure towards said surface structure.

5,312,579

LOW PRESSURE PROCESS FOR CONTINUOUS FIBER REINFORCED POLYAMIC ACID RESIN MATRIX COMPOSITE LAMINATES

Darleen A. Druyun, Washington, D.C.; Tan-Hung Hon, Poquoson, Va.; Paul W. Kidder, East Falmouth, Mass.; Rakasi M. Reddy, Yorktown, Va., and Robert M. Baucom, Newport News, Va., assignors to The United States of America as represented by the United States National eronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1992, Ser. No. 924,689

Int. Cl.[5] B29C *67/14*

U.S. Cl. 264—258 **7 Claims**

1. A low pressure process for preparing a consolidated polyimide composite laminate comprising:

a. forming prepreg plies from unidirectional fibers and a polyamic acid resin solution;

b. placing molding stops at the sides of a matched metal mold set wherein one of the mold halves has a cavity therein;

c. cutting the prepreg plies shorter than the length of the mold in an in-plane lateral direction;

d. stacking the cut prepreg plies between the molding stops to a height which is higher than the molding stops wherein at least 2 prepreg plies are consecutively stacked in one direction in forming a cross-ply laminate;

e. compressing the stacked prepreg plies to the height of the molding stops;

f. heating the compressed prepreg plies to a temperature of about 150° C. to 250° C. for about 0.25 to 1.50 hours to start an imidization reaction and to allow volatiles to escape;

g. removing the molding stops from the mold;

h. increasing the temperature to a temperature of about 275° C. to 370° C. and applying a pressure to the prepreg plies of about 0 p.s.i. to 500 p.s.i. for about 0.25 to 1.50 hours to complete the imidization reaction and to enhance resin flow throughout the matrix; and

i. further heating while applying a pressure of about 100 p.s.i. to 600 p.s.i. to the prepreg plies for about 0.25 to 1.50 hours to form a consolidated polyimide composite laminate.

5,312,580

METHODS OF MANUFACTURING POROUS METAL ALLOY FUEL CELL COMPONENTS

Diane S. Erickson, 3931 W. 64th Pl., Chicago, Ill. 60629, and Estela T. Ong, 2931 S. Emerald Ave., Chicago, Ill. 60616

Filed May 12, 1992, Ser. No. 881,686

Int. Cl.[5] B22F *5/00*

U.S. Cl. 419—2 **10 Claims**

1. A method of manufacturing a porous metal alloy compo-

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nent for a high temperature fuel cell, said method comprising the steps of:

suspending particles of a base metal and a master alloy in a liquid medium which has dispersed therein a binding agent and a halide activator;

casting the suspension thus formed;

removing the liquid medium from the cast suspension to form a porous green structure in which the particles of base metal and master alloy and the halide activator are uniformly distributed; and

so heat treating the green structure as to: (a) burn out the binder phase of the structure, (b) form an alloy of the master alloy and the base metal, and (c) sinter together into a coherent, porous, metallic structure the particles of the alloy formed by heat treating the green component structure, the green structure being heat treated in an environment effective to prevent oxidation of the alloy or its constituents and by heating said structure at atmospheric pressure to a temperature in the range of 800° C. to 1200° C. over a period of 3 to 15 hours, holding the structure at the temperature to which it is heated for a period of 30 to 120 minutes, and then cooling the structure to ambient temperature over a period of 2 to 8 hours.

5,312,581

METHOD FOR FORMING CONNECTOR TERMINAL ELECTRODES OF A LAMINATION CAPACITOR

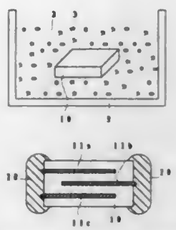
Koshi Amano, and Seiichi Katsumata, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed May 4, 1993, Ser. No. 56,781

Claims priority, application Japan, Jun. 16, 1992, 4-156641

Int. Cl.[5] B22F *3/10*

U.S. Cl. 419—8 **20 Claims**



1. A method for forming connector terminal electrodes of a lamination capacitor containing a ceramic main body part having opposed two sides and a plurality of internal electrodes therein, the method comprising steps of:

a) putting the ceramic main body part into a mixture Of at least two powders, one being a metal powder with a diffusion coefficient different from the internal electrodes and the other being a ceramic powder which is inactive to both the internal electrode and the metal powder,

b) subjecting the ceramic main body part in the mixture to a heat treatment at a heat temperature, and

c) forming a connector terminal electrode on each of the sides of the ceramic main body part.

5,312,582

POROUS STRUCTURES FROM SOLID SOLUTIONS OF REDUCED OXIDES

Rafael A. Donado, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 4, 1993, Ser. No. 13,706

Int. Cl.[5] B22F *1/00*

U.S. Cl. 419—19 **26 Claims**

18. A process for producing porous structures for use in molten carbonate fuel cells comprising:

mixing a powder selected from the group consisting of a non-alloyed metal, a metal oxide and mixtures thereof with one of a ceramic oxide precursor powder and a ceramic oxide powder;

heat-treating said mixture in an oxidizing gaseous atmosphere at a temperature between about 900° C. and about 1400° C. forming an oxide powder mixture, followed by an inert gas atmosphere;

contacting said oxide powder mixture with a reducing gas forming a reduced metal/oxide powder mixture;

shaping said reduced metal/oxide powder mixture into a structure;

sintering said structure at a temperature between about 900° C. and about 1400° C. in one of an inert and a reducing gas atmosphere, forming a porous metallic structure with dispersed oxide; and

cooling said porous metallic structure.

5,312,583

Patent Not Issued For This Number

5,312,584

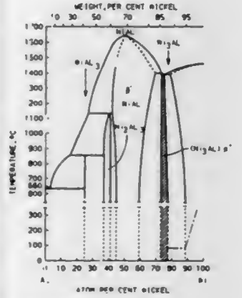
MOLDLESS/CORELESS SINGLE CRYSTAL CASTINGS OF NICKEL-ALUMINIDE

Donald J. Frasier, Greenwood; Ralph E. Peeler, Reelsville; John H. Lane, and Heidi Mueller-Largent, both of Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1992, Ser. No. 838,155

Int. Cl.[5] B22F *7/02*

U.S. Cl. 419—47 **5 Claims**



1. A method comprising:

(a) providing a NiAl(β′) target;

(b) positioning a seed block of a single crystal alloy beneath said target;

(c) causing a selective portion of said target to melt so that a drip of molten NiAl(β′) is deposited on said block;

(d) causing said drip of molten NiAl(β′) to slowly solidify so as to have a single crystal orientation.

(e) repeating steps (c)–(d) to cast a first layer of a single crystal NiAl(β′) on the block,

(f) causing a selective portion of said target to melt so that a drip of molten NiAl(β′) is deposited on a previously formed layer of single crystal NiAl(β′) and causing the drip of molten NiAl(β′) to slowly solidity so as to have a single crystal orientation, and

(g) repeating step (f) to build successive layer of single crystal NiAl(β′) and to produce a product having a single crystal orientation of NiAl(β′) throughout and of of predetermined configuration and shape.

5,312,585

CORROSION INHIBITION IN HIGH TEMPERATURE ENVIRONMENT

Robert L. Jones, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1993, Ser. No. 82,640

Int. Cl.[5] C23F *11/04*

U.S. Cl. 422—7 **16 Claims**

1. A method of inhibiting corrosion at high temperature comprising the step of contacting a structural member with oxides of sodium and sulfur at a temperature of about 300°–1500° C., the structural member comprising a tin oxide.

5,312,586

PROCESS FOR STERILIZING A CONTACT LENS

Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807

Continuation-in-part of Ser. No. 719,169, Jun. 21, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,335

Int. Cl.[5] A61L *2/18*; C02F *1/42*; B01J *39/24*

U.S. Cl. 422—37 **10 Claims**

1. A process for sterilizing a contact lens with an aqueous solution containing a sterilant comprising the steps of:

(a) contacting a contact lens with an aqueous solution containing a sterilant selected from the group consisting of peroxygen disinfectants, inorganic hypochlorite compounds and hypochlorite precursor compounds, the amount of sterilant present in the solution and the time of contact of the lens with the solution being sufficient to effect sterilization of the lens; and thereafter

(b) contacting the aqueous solution and lens resulting from step (a) with an amount of activated carbon and for a period of time sufficient to decompose substantially all of any residual sterilant to ophthalmologically innocuous by-products, said activated carbon having a surface area in excess of about 500 m^2/g and a pore volume of at least about 0.75 ml/g.

5,312,587

MICROCALORIMETERS

Charles Templer, and Alexander J. Groszek, both of London, United Kingdom, assignors to Microscal Limited, London, England

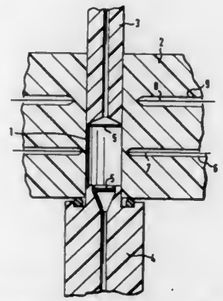
PCT No. PCT/GB90/00189, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO90/09581, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 7, 1990, Ser. No. 743,297

Claims priority, application United Kingdom, Feb. 15, 1989, 8903454; May 31, 1989, 8912508

Int. Cl.[5] G01N *25/20*

U.S. Cl. 422—51 **5 Claims**



1. A microcalorimeter having a sample cell and means for retaining a sample within the cell, wherein the cell is formed of a fluorinated polymer which is thermally insulating and has an inner wall defining a volume for containing said sample; and further having temperature sensing means embedded within the polymer forming the cell, said temperature sensing means being located a predetermined distance from said inner wall and exterior to said volume.

5,312,588

HYDROGEN PEROXIDE DESTROYING COMPOSITIONS AND METHODS OF MAKING AND USING SAME

Peter Gyulai, Santa Ana; Larry K. Thomas, Fullerton, both of Calif., and Hermann Osterwald, Bovenden-Eddigehausen, Fed. Rep. of Germany, assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 485,584, Feb. 27, 1990, abandoned. This application Nov. 6, 1991, Ser. No. 788,340

Int. Cl.[5] A61L *9/00*

U.S. Cl. 422—30 **7 Claims**

1. A method for producing a delayed release hydrogen peroxide destroying composition comprising:

forming a core containing at least one hydrogen peroxide destroying component effective when released into a hydrogen peroxide-containing liquid medium to destroy or cause the destruction of hydrogen peroxide present in the hydrogen peroxide-containing liquid medium;

placing said core in a cavity partially filled with solid material, said solid material being substantially free of an apparent liquid phase;

adding an additional amount of said solid material to said cavity; and

applying a compressive force to the contents of said cavity, thereby securing said solid material, which acts as a delayed releasing agent for said core material, to said core and forming a coated core.

5,312,589

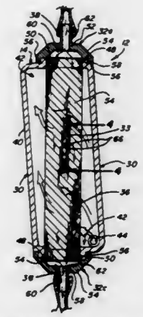
GAS TRANSFER APPARATUS

Gary D. Reeder, Morrison, Colo.; Thomas C. Robinson, Berkeley, Calif.; Thomas P. Sahines, Milpitas, Calif., and Robert K. Fernandez, Santa Clara, Calif., assignors to Electromedics, Inc., Parker, Colo.

Filed Mar. 4, 1993, Ser. No. 19,400

Int. Cl.[5] A61M *1/14*

U.S. Cl. 422—45 **16 Claims**



16. A gas transfer apparatus comprising in combination:

a housing having spaced opposed face plates and four manifolds forming each of four sides of the housing while being sealed of the face plates along four side edges thereof, said face plates and manifolds cooperating to define an interior fluid processing chamber, an inlet pot and an outlet port establishing communication between said interior cham-

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ber and the environment surrounding said housing, connector means in each of said manifolds establishing communication between the manifolds and the environment surrounding said housing, and

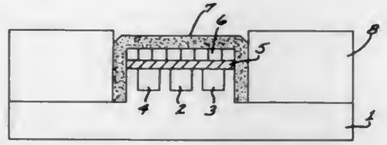
a mat of woven elongated hollow fibers disposed in said interior chamber and operatively associated with said housing to hermetically separate the manifolds from each other and from the interior chamber and to totally bridge the space between the two face plates, said mat being woven from two sets of substantially mutually perpendicular hollow fibers with the fibers of one set having walls with micropores formed therein to allow a gas to diffuse through the micropores into a fluid being processed and the fibers of the other set being liquid and gas impervious to selectively allow for the passage of a thermal transfer fluid, opposite ends of said fibers of each set being spoted in a potting compound and adapted to be seated in an associated manifold to define a hollow space within the manifold in communication with the connector means in the manifold, the ends of the fibers being open and in communication with the hollow space of the manifold with which the ends of the fibers are associated such that separate fluids can be passed through the fibers of each set between opposed manifolds while said fluid being processed is passed through the housing and across the mat via the inlet and outlet ports.

5,312,590

AMPEROMETRIC SENSOR FOR SINGLE AND MULTICOMPONENT ANALYSIS

Hari Gunasingham, Singapore, Singapore, assignor to National University of Singapore, Kent Ridge, Singapore

Filed Apr. 24, 1989, Ser. No. 342,075
Int. Cl.[5] G01N *27/12*
U.S. Cl. 422—56 **13 Claims**



1. An amperometric dry chemistry test apparatus applicable to a broad range of chemical analyses, comprising:

a dry-chemical test device including

a bottom layer of a non-conducting material having at least two working electrode/reference electrode pairs supported by the non-conducting material with a face of each electrode exposed at a surface of the bottom layer;

a second layer overlying the bottom layer including aperfluorinated ion exchange film incorporating a redox-mediator overlying the bottom layer and the electrodes, and an enzyme-containing layer overlying the ion exchange film,

a third layer overlying the second layer comprising a permeable membrane, and

a top insulating layer overlying the third layer with separate wells for a sample and for a reference standard therein, the top insulating layer having at least one sample well and at least one reference well adjacent each working electrode/reference electrode pair, the distance from each of said at least one sample well to said adjacent working electrode/reference electrode pair being substantially the same as the distance from each said at least one reference well to that same working electrode/reference electrode pair; and

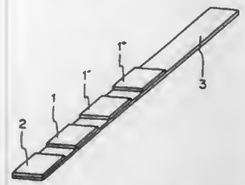
a microprocessor-based measuring apparatus operatively connected to the working electrode/reference electrode pairs.

5,312,591

COLOR TEST STRIP CARRYING PAD FOR CORRECTION

Kenichi Doi, Shiga, Japan, assignor to Kyoto Dalichi Kagaku Co., Ltd., Kyoto, Japan

Filed Nov. 14, 1991, Ser. No. 791,530
Claims priority, application Japan, Nov. 14, 1990, 2-309128
Int. Cl.[5] G01N *31/22, 33/50*
U.S. Cl. 422—56 **4 Claims**



1. In a color test strip for detecting the presence of at least one predetermined substance which comprises a support having disposed thereon at least one coloring pad which provides a color indication upon contact with a predetermined substance, and at least one pad for correction which does not provide a color indication upon contact with said predetermined substance, the improvement comprising:

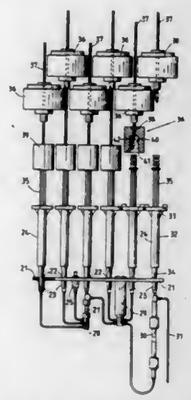
said pad for correction being impregnated with an acid selected from the group consisting of tartaric acid, citric acid, oxalic acid, phthalic acid, sulfosalicylic acid, metaphosphoric acid and acidic polymers, and having a pH which is ±1.5 from the pH of said coloring pad.

5,312,592

DISPOSABLE KIT FOR PREPARATION

Henry Andersson, Upsala, Sweden, assignor to Scanditronix AB, Upsala, Sweden

Filed Sep. 15, 1992, Ser. No. 945,257
Int. Cl.[5] G01N *35/00*
U.S. Cl. 422—61 **3 Claims**



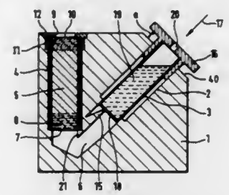
1. A disposable kit for the preparation of radiopharmaceuticals with a radiotracer as a starting substance, comprising a card in a form of an elongated, rigid strip which is provided with a row of openings comprising one or more first openings and one or more second openings, means mounted around each of said one or more first openings and projecting out from one main surface of the rigid strip in a form of a sleeve for supporting a liquid injector on an inner surface of an inlet end of the sleeve and for connecting a hose at an outlet end of the sleeve, said supporting and connecting means being provided at the first openings but not being provided at the second openings, and a hydrolysis vessel, one opening of said one or more second openings adapted to support said hydrolysis vessel.

5,312,593

COLORIMETRIC DETECTING DEVICE HAVING A REAGENT SUPPLY VESSEL

Horst Rabenecker, Klein Parin; Klaus-Peter Rindt; Stephan Scholtissek, both of Lübeck, and Wolfgang Breithaupt, Seedorf, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Continuation of Ser. No. 746,471, Aug. 16, 1991, abandoned.
This application Jun. 1, 1993, Ser. No. 70,218
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025842
Int. Cl.[5] G01J *1/48;* G01N *31/22*
U.S. Cl. 422—86 **28 Claims**



1. A colorimetric detecting device for detecting a gaseous test quantity, the detecting device comprising:

a housing having a first recess having a first longitudinal axis formed therein and an unobstructed clear opening communicating with said first recess to permit the gaseous test quantity to migrate to said first recess;

a carrier having first and second end faces and at least one side wall perpendicular to said first and second end faces, said carrier being seated in said first recess, and said first end face being disposed at said opening so as to be directly viewable by an observer through said opening;

said first end face defining an unobstructed detecting surface exposed directly to the gaseous test quantity to be detected and have a detecting region below said detecting surface;

said housing having a second recess having a second longitudinal axis different from said first axis formed therein;

a reagent supply vessel seated in said second recess and containing a reagent solution;

said second end face being disposed opposite said first end face;

said carrier having a substance region in said carrier in the vicinity of said second end face containing a reaction constituent having a color indicator;

said reaction constituent having said color indicator being impregnated in said substance region of said carrier;

said detecting region containing a detecting substance and being in spaced relationship to said substance region within said carrier;

releasing means mounted on said housing for acting on said vessel to permit said reagent solution to pour out of said vessel;

said housing defining a reagent chamber formed therein between said second recess and said second end face for receiving said reagent solution released from said vessel and allowing said reagent solution to come into contact with said second end face of said carrier for uniformly wetting said second end face and for dissolving said reaction constituent thereby preventing said reagent solution from pouring over said carrier in an uncontrolled manner; and,

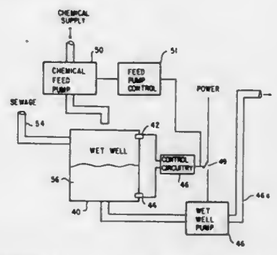
said carrier being a porous body to facilitate a capillary movement up to said detecting region by said reagent solution with said dissolved reaction constituent therein to combine with said detecting substance and said gaseous test quantity to form a reaction product which enters into a color-changing reaction with said color indicator to provide a color change on said detecting surface directly viewable by an observer through said opening.

5,312,594

SEWAGE TREATMENT APPARATUS

Jon D. Heller, Denver; Kenneth J. Heller, Englewood, and Timothy Reeves, Arvada, all of Colo., assignors to Nutech Environmental Corp., Denver, Colo.

Filed Sep. 18, 1992, Ser. No. 947,301
Int. Cl.[5] G05D *9/00*
U.S. Cl. 422—106 **6 Claims**



1. An apparatus for treating sewage in a wet well that has a defined volume and is occasionally pumped out by a wet well pump, comprising:

means for sensing when a wet well is substantially empty and generating an output signal upon sensing when said wet well is substantially empty; and

means, responsive to said output signal, for discharging a sewage treatment chemical into the substantially empty wet well, wherein sewage entering the wet well mixes with said sewage treatment chemical and substantially immediately begin reacting with said sewage treatment chemical to inhibit an undesirable chemical in the sewage.

5,312,595

METHOD AND APPARATUS FOR PREPARING LOW-CONCENTRATION POLYSILICATE MICROGELS

Robert H. Moffett, Landenberg, Pa., and John D. Rushmere, Wilmington, Del., assignors to E. 1. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 887,793, May 26, 1992, Pat. No. 5,279,807.
This application Jul. 23, 1993, Ser. No. 93,157
Int. Cl.[5] B01J *14/00*
U.S. Cl. 422—129 **2 Claims**

1. An apparatus for continuously producing a stable aqueous polysilicate microgel which comprises:

(a) a first reservoir containing a water soluble silicate solution;

(b) a second reservoir containing an acid having a pKa of less than 6;

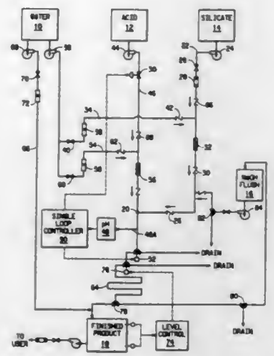
(c) a mixing device having a first inlet which communicates with said first reservoir, a second inlet arranged at an angle of at least 30 degrees with respect to said first inlet which communicates with said second reservoir, and an exit;

(d) a first pumping means located between said first reservoir and said mixing device for pumping a stream of silicate solution from said first reservoir into said first inlet and, a first control means for controlling the concentration of silica within the range of from 1 to 6 wt. % in the silicate/acid mixture in said mixing device while said solution is being pumped;

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(e) a second pumping means located between said second reservoir and said mixing device for pumping a stream of acid from said second reservoir into said second inlet at a rate relative to the rate of said first pumping means sufficient to produce a Reynolds number within said mixing device of at least 4000 in the region where said streams converge whereby said silicate and said acid are thoroughly mixed;

(f) a mixture control means located within said exit and



responsive to the flow rate of said acid into said mixing device for controlling the pH of the silicate/acid mixture in the range of from 2 to 10.5;

(g) a receiving tank,

(h) an elongated transfer loop which communicates with the exit of said mixing device and said receiving tank for transferring said mixture therebetween; and

(i) a dilution means for diluting the silicate/acid mixture in the receiving tank to a silica concentration of not more than 1.0 wt. %.

5,312,596

MIXHEAD FOR MIXING AT LEAST TWO FREE-FLOWING REACTION COMPONENTS

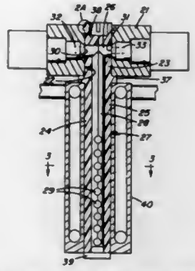
Ferdinand Proksa, Leverkusen; Hans-Michael Sulzbach, Königswinter, and Ferdinand Althausen, Neunkirchen, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Filed Apr. 20, 1993, Ser. No. 49,902

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1992, 4213525

Int. Cl.[5] B01F *15/02*

U.S. Cl. 422—133 **4 Claims**



1. A mixhead for mixing at least two plastic-forming, free-flowing reaction components, comprising i) a housing having a bore therein and inlet apertures through which said reaction components flow, and ii) an exchangeable, rigid insert part having a) inlet openings through which said reaction components flow, b) a mixing chamber in which said reaction components are mixed to form a reaction mixture and c) an outlet channel through which said mixture flows, said insert being held in position in said housing by an elastic clip, such that said apertures are aligned with said openings.

5,312,597

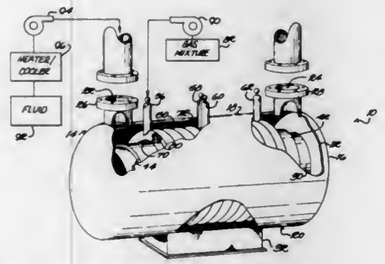
APPARATUS FOR SEPARATING AND RECOVERING HYDROGEN ISOTOPES

Leung K. Heung, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 28, 1992, Ser. No. 967,491

Int. Cl.[5] G21C *1/00, 1/06*

U.S. Cl. 422—159 **8 Claims**



1. An apparatus for separating a hydrogen isotope from a gaseous mixture, said apparatus comprising:

a housing having an inlet and an outlet;

a conduit disposed within said housing, said conduit having an interior and an exterior, and an inlet and an outlet;

particles of a hydride carried in said interior of said conduit, said hydride particles having a first temperature;

a fluid in said housing and adjacent said exterior of said conduit, said fluid having a second temperature, said second temperature different from said first temperature; and

means in spaced relation to said exterior of said conduit for creating turbulent flow of said fluid over said conduit so that said fluid can exchange heat with said hydride particles for adsorbing and desorbing said hydrogen isotope.

5,312,598

HOPPER SYSTEM AND ELECTROSTATIC GUN FOR INJECTION OF AN ELECTROSTATICALLY CHARGED SORBENT INTO A POLLUTED GAS STREAM

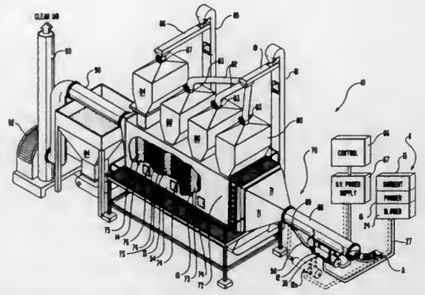
Larry M. Kersey, Scottsdale, Ariz., and Richard A. Steinke, Park City, Utah, assignors to Alanco Environmental Resource Corp., Salt Lake City, Utah

Filed Aug. 26, 1993, Ser. No. 111,941

Int. Cl.[5] B01D *50/00;* **B01J** *8/08, 19/08*

U.S. Cl. 422—170 **11 Claims**

1. A hopper system and electrostatic gun for injection of an electrostatic charge sorbent into a polluted gas stream as part of an apparatus for removing particulate matter and gaseous pollutants comprising, a hopper system including a bin that has inner connected upstanding side walls that can be opened for receiving and maintaining a volume of a dry sorbent material; means for providing a flow of a measured volume of dry sorbent materials through a conduit means for mixing with a flow of air under pressure; a blower means connected to said conduit means to pass a controlled air flow into said conduit means for mixing with said volume of dry sorbent materials and conveying said mix through a sorbent feed line connected into an electrostatic gun; an electrostatic gun including a housing containing a straight barrel having a smooth inner bore including a fitting means for connecting to said sorbent feed line to receive said flow of dry sorbent , which said barrel bore opens therethrough for providing passage to said flow of dry sorbent and connects, at an open forward end, to a tube for receiving the electrostatically charged sorbent particles and injecting them into a polluted gas stream; a charging wand, formed from a straight section of an electrically conductive material maintained longitudinally in the center of said barrel, and connects, at a rear end of said charging wand, to an insula-



tor means; an insulator means with means for connection to said charging wand and to a variable source of electrical power to transmit electrical power through said insulator means to said charging wand so as to produce a corona discharge surrounding said charging want to electrostatically charge individual particles of sorbent material that pass thereby and are dispersed into said polluted gas stream; and means for adjusting the electrical power supplied to said charging wand to provide a maximum electrostatic charge to approximately all said particles of sorbent materials as are passed through said straight barrel.

5,312,599

ROTARY FURNACE APPARATUS FOR MAKING CHEMICALLY ACTIVATED CARBON

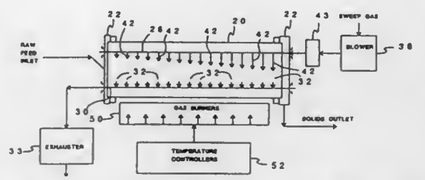
Frank R. Schwartz, Jr., Galena, Ohio, assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 961,835, Oct. 16, 1992, Pat. No. 5,270,017, which is a division of Ser. No. 891,734, Jun. 1, 1992, Pat. No. 5,212,144. This application Apr. 30, 1993, Ser. No. 55,853

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[5] B01J *8/08;* **F26B** *11/04;* **F27B** *7/36*

U.S. Cl. 422—209 **4 Claims**



1. In an indirect fired rotary furnace for chemically activating a bed of carbonaceous raw material moved longitudinally along the length of said furnace of the type associated with a source of indirect heat and means to control the rate of heat transferred to said bed of raw material, wherein the improvement comprises;

a) means mounted within an internal furnace processing chamber defined by rotating furnace walls, said means including a plurality of outlet ports of distribute separate flows of sweep gas, each of said ports located at longitudinally spaced intervals along the axis of rotation of said furnace walls to direct the sweep gas into contact with a bed of carbonaceous raw material passing through said furnace; said outlet ports operatively connected to a source of sweep gas disposed outside of said furnace processing chamber; and

b) means mounted within said furnace processing chamber to collect and exhaust said sweep gas introduced by said means defined in paragraph (a) including a plurality of inlet ports, each of said inlet ports disposed at spaced intervals from one another along the axis of rotation of said furnace walls and operatively connected to a source of negative pressure disposed outside of said furnace processing chamber; said means defined in paragraphs (a) and (b) being spaced from one another and disposed in non-engaging relationship with the bed of raw material during rotation of said furnace walls.

5,312,600

SILICON SINGLE CRYSTAL MANUFACTURING APPARATUS

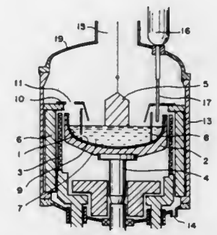
Hiroshi Kamio; Kenji Araki; Yoshinobu Shima; Makoto Suzuki; Takeshi Kaneto; Yasumitsu Nakahama; Takeshi Suzuki, and Akio Fujibayashi, all of Tokyo, Japan, assignors to Toshiba Ceramics Co., Handano, Japan

Continuation of Ser. No. 775,984, Nov. 15, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 50,732

Claims priority, application Japan, Mar. 20, 1990, 2-70054; Apr. 18, 1990, 2-102417

Int. Cl.[5] C30B *15/30*

U.S. Cl. 117—213 **7 Claims**



1. An apparatus for manufacturing large-diameter silicon crystal of greater than 12 cm in diameter comprising:

a rotary quartz glass crucible containing molten silicon;

an electric resistance heater for heating said quartz glass crucible from the side thereof;

a quartz glass partition for dividing said crucible into a single crystal growing section and a material melting section within said quartz glass crucible, said partition member having at least one small hold for permitting unidirectional flow of said molten silicon therethrough;

a heat keeping cover for covering said partition and said material melting section with said heat keeping cover having one or more openings for establishing a flow direction for atmospheric gas away from said molten silicon with said openings located between said partition member and said electric resistant heater and arranged on an upper flat plate portion and/or an upper side conical portion of said heat keeping cover in such a manner that the total area of said openings is greater than the area formed between the lower end of said heat keeping cover and the surface of said molten silicon;

a feeder for continuously feeding starting material silicon to said material melting section and

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a means for reducing pressure within the heating chamber to 0.1 atmosphere or less.

5,312,601
POND FERTILIZING APPARATUS
Joseph H. Patrick, 507 Creswell Ave., Greenwood, S.C. 29646
Filed Dec. 2, 1992, Ser. No. 984,988
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] A01K *61/02*
U.S. Cl. 422—261 **14 Claims**



1. An apparatus for dispersing fertilizer in a pond, comprising:
a flotation structure, said flotation structure including a buoyant block and an opening defined through said block;
a flexible porous material secured relative to and enclosing the bottom of said flotation structure;
a collapsible reservoir disposed below said flotation structure, said reservoir defined by said flexible porous material so that the entire surface area of said reservoir is freely permeable by water;
means for anchoring said flotation structure within the pond; and
said flotation structure being of sufficient buoyancy to float on the surface of a body of water while at least the bottom of said buoyant block and said reservoir are immersed below the surface of the water.

5,312,602
METHOD FOR PURIFYING IRON OXIDE
Karl J. V. Svensson, and Bo H. Zander, both of Stora, Sweden, assignors to A/S Sydvaranger, Norway
Filed Sep. 8, 1992, Ser. No. 941,407
Int. Cl.[5] C22B *1/00*; **C01G** *49/00*
U.S. Cl. 423—150.1 **8 Claims**

1. A method for purifying iron oxide from a quartz-containing iron ore, to an SiO_2 content that does not exceed 0.03% by weight, comprising:
(a) contacting a finely divided quartz-containing iron oxide ore with an alkali carbonate in an amount sufficient to obtain an alkali oxide/$(SiO_2+Al_2O_3)$ mole ratio of about 0.5–2.0;
(b) calcinating said quartz-containing iron oxide ore with said alkali carbonate at a temperature of about 850°–1000° C. for a time sufficient to melt the alkali carbonate;
(c) leaching said calcinated ore at room temperature with a weak aqueous solution of at least one acid selected from the group consisting of hydrochloric acid, hydrofluoric acid, sulfuric acid and nitric acid until the SiO_2 content of the ore is less than 0.03% by weight.

5,312,603
USING POLYGLYCERINES IN THE BAYER PROCESS TO INCREASE CRYSTAL SIZE OF THE PRODUCT
Johannes Hachgenei, Duesseldorf; Reinhard Bunte, Dormagen, and Juergen Foell, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany
PCT No. PCT/EP91/02251, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO92/10426, PCT Pub. Date Jun. 25, 1992
PCT Filed Nov. 28, 1991, Ser. No. 70,364
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039053
Int. Cl.[5] C01F *7/02*
U.S. Cl. 423—122 **7 Claims**

1. A Bayer process for the formation of aluminum oxide trihydrate crystals, said process comprising a step of
crystallization of dissolved aluminum hydroxide as gibbsite from a filtrate to produce gibbsite crystals,
wherein the improvement comprises adding a crystallization aid consisting essentially of polyglycerines corresponding to general formula (I)

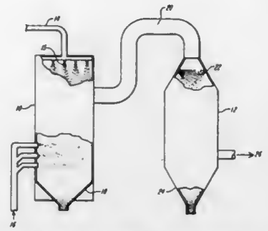
$$H-(OCH_2CHOH-CH_2)_n-OH \quad (I)$$

in which n is an integer equal to or greater than 3,
to the filtrate before, during, or both before and during, the crystallization, the gibbsite crystals produced in the process being coarser than when crystallization occurs from an otherwise identical filtrate that contains no polyglycerines.

5,312,604
WORK-UP OF WASTE MATERIALS FROM BARIUM OR STRONTIUM SULFIDE LEACHING
Paul Jaeger; Hans-Hermann Riechers, both of Bad Hoenningen; Karl Koehler, Diekholzen, and Martin Wulff, Bad Hoenningen, all of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany
Continuation of Ser. No. 704,933, May 23, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 988,020
Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017530
Int. Cl.[5] C01F *11/46*
U.S. Cl. 423—155 **8 Claims**

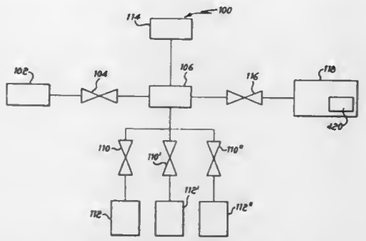
1. A process for processing a waste leaching residue from barium sulfide leaching or strontium sulfide leaching to recover barium or strontium from said residue in the form of a solid containing barium sulfate or strontium sulfate, said process comprising reacting said waste leaching residue with
a) an acid mixture formed by adding to a hydrochloric acid containing approximately 25 to 32% by weight of HCl a sulfuric acid containing approximately 80 to 100% by weight of H_2SO_4; or
b) an initial hydrochloric acid containing approximately 25 to 32% by weight of HCl, and then subsequently adding to the initial hydrochloric acid a sulfuric acid containing approximately 80 to 100% by weight of H_2SO_4,
at a temperature in the range from 60° C. to the boiling point of the reaction mixture to form an acid solution and a solid, whereby the hydrochloric acid is used in at least the quantity required to dissolve any calcium and any iron contained in said waste leaching residue; and separating said acid solution from said solid.

5,312,605
METHOD FOR SIMULTANEOUSLY REMOVING SO_2 AND NO_X POLLUTANTS FROM EXHAUST OF A COMBUSTION SYSTEM
Yiannis A. Levendis, Boston, and Donald L. Wise, Belmont, both of Mass., assignors to Northeastern University, Boston, Mass.
Filed Dec. 11, 1991, Ser. No. 805,012
Int. Cl.[5] B01D *47/00*
U.S. Cl. 423—210 **16 Claims**



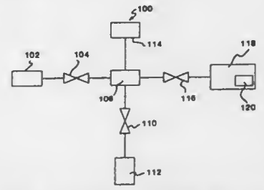
1. A method for simultaneously controlling SO_2 and NO_x pollutant emissions from a combustion system, consisting essentially of the steps of:
providing an acetate salt of a cation that forms an oxide reactive with gaseous compounds of sulfur; and
spraying said acetate salt into a high temperature environment of a combustion system in the presence of gaseous compounds SO_2 and NO_x pollutants resulting from combustion in said combustion system, the acetate anion of said salt volatilizing and reacting with the NO_x pollutant and, simultaneously, cenospheric, porous particles of an oxide of said cation forming and reacting with the SO_2 pollutants.

5,312,606
PROCESS FOR THE SORPTION OF RESIDUAL GAS BY MEANS OF A NON-EVAPORATED BARIUM GETTER ALLOY
Claudio Boffito, and Antonio Schiabel, both of Milan, Italy, assignors to SAES Getters SpA, Milan, Italy
Continuation of Ser. No. 854,568, Mar. 20, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,620
Claims priority, application Italy, Apr. 16, 1991, MI91 A 001038
Int. Cl.[5] B01J *8/06*
U.S. Cl. 423—210 **14 Claims**



1. A process for the sorption of residual gas in a vessel by a non-evaporated barium getter comprising the steps of:
i) reducing an alloy of $Ba_{1-x}A_xLi_{4-y}B_y$ to particles under a vacuum or inert gas to produce a reduced alloy; and
ii) placing the reduced alloy in the vessel; and
iii) providing a partially evacuated atmosphere within the vessel to produce an evacuated vessel; and
iv) exposing the reduced alloy to the residual gas at a temperature less than 150° C., and absorbing the residual gas without vaporizing the reduced alloy wherein,
"A" is a metal chosen from the group consisting of elements of Group IIa of the periodic table of elements, excluding barium, and,
"B" is a metal chosen from the group consisting of Group IIIa, of the periodic table of elements and magnesium, and
"x" has a value from zero to 0.8; and
"y" has a value from zero to 3.5.

5,312,607
PROCESS FOR THE SORPTION OF RESIDUAL GAS BY MEANS BY A NON-EVAPORATED BARIUM GETTER ALLOY
Antionio Schiabel, and Claudio Boffito, both of Milan, Italy, assignors to SAES Getters S.p.A., Milan, Italy
Continuation of Ser. No. 854,567, Mar. 20, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,630
Claims priority, application Italy, Apr. 16, 1991, MI91-1A001036
Int. Cl.[5] B01J *8/06*
U.S. Cl. 423—210 **14 Claims**



1. A process for sorption of residual gas in a vessel by a non-evaporated barium getter comprising the steps of:
i) comminuting an alloy of $(Ba_{1-x}A_x)_nB_m$ to particles under a vacuum or inert gas to produce a particulate alloy; and
ii) placing the particulate alloy in the vessel; and
iii) sealing the vessel thereby providing a sealed vessel; and
iv) providing a partially evacuated atmosphere within the sealed vessel; and
v) exposing the particulate alloy to the residual gas in the vessel at room temperature and absorbing the residual gas without vaporizing the particulate alloy and; wherein:
"A" is a metal selected from the group consisting of elements of Group IIa of the periodic table of elements, excluding barium,
"B" is a metal selected from the group consisting of elements of Group Ib, IIb, IIIa, IVa, and Va of the periodic table of elements,
"n"=a whole number,
"m"=a whole number,
"x" has a value equal to or greater than zero and equal to or less than 0.5.

5,312,608
EXHAUST GAS PURIFYING CATALYST AND AN EXHAUST GAS PURIFYING METHOD USING THE CATALYST
Toshiaki Hayasaka, and Takuma Kimura, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan
Division of Ser. No. 783,628, Oct. 24, 1991, Pat. No. 5,238,890. This application May 7, 1993, Ser. No. 58,425
Claims priority, application Japan, Oct. 31, 1990, 2-296242; May 28, 1991, 3-154140; Jun. 14, 1991, 3-169242
Int. Cl.[5] B01D *53/34*; **B01J** *8/02*
U.S. Cl. 423—213.5 **3 Claims**

1. An exhaust gas purifying method comprising the steps of bringing an exhaust gas into contact with a catalyst containing (1) gallium, (2) at least one ingredient selected from the group

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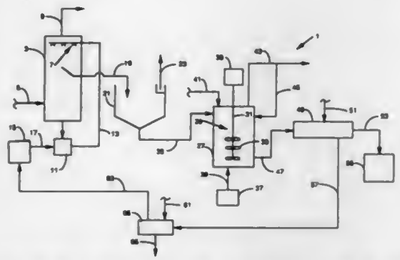
consisting of cobalt, zirconium, niobium, potassium and barium and (3) a zeolite, in the presence of a hydrocarbon in an oxidative gas, thereby reducing and eliminating nitrogen oxides in said exhaust gas.

5,312,609

METHOD OF SULFUR DIOXIDE REMOVAL FROM GASEOUS STREAMS WITH ALPHA-HEMIHYDRATE GYPSUM PRODUCT FORMATION

John W. College, Pittsburgh, Pa., assignor to Dravo Lime Company, Pittsburgh, Pa.

Filed Dec. 31, 1992, Ser. No. 999,621
Int. Cl.[5] C01B *17/00*; C01F *11/46*
U.S. Cl. 423—243.08 **12 Claims**



1. A method of removing sulfur dioxide for a sulfur dioxide-containing hot gaseous stream and producing α-hemidydrate gypsum, comprising:

contacting said sulfur dioxide-containing hot gaseous stream with an aqueous scrubbing medium containing calcium and magnesium scrubbing components in a scrubbing unit, wherein said sulfur dioxide is converted to calcium and magnesium sulfites in an aqueous medium;

continuously removing at least a portion of said aqueous medium containing calcium sulfite and magnesium sulfite from said scrubbing unit;

continuously passing at least a portion of said removed aqueous medium containing calcium sulfite and magnesium sulfite, having a solids content of between about 5–35 percent by weight, to a pressurized oxidation vessel;

contacting said aqueous medium containing calcium sulfite and magnesium sulfite in said pressurized oxidation vessel with an oxidizing gas at an elevated temperature and super-atmospheric pressure to convert said calcium sulfite to α-hemihydrate gypsum, which precipitates from said aqueous medium, and said magnesium sulfite to magnesium sulfate, which dissolves in said aqueous medium, with heat of reaction resulting from said conversion used to maintain said elevated temperature and provide a portion of the pressure within said pressurized oxidation vessel, and the presence of magnesium ions from said magnesium sulfite and magnesium sulfate enhancing said conversion of calcium sulfite to α-hemihydrate gypsum;

continuously removing aqueous medium containing precipitated α-hemihydrate gypsum and dissolved magnesium sulfate from said pressurized oxidation vessel; and

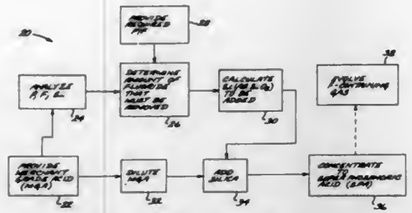
separating said α-hemihydrate gypsum from said aqueous medium.

5,312,610

DEFLUORINATION OF PHOSPHORIC ACID

Klaas J. Hutter, Pocatello, Id., assignor to J. R. Simplot Co., Pocatello, Id.

Filed Jun. 23, 1992, Ser. No. 902,651
Int. Cl.[5] C01B *25/16*
U.S. Cl. 423—321.1 **16 Claims**



1. A method for producing defluorinated phosphoric acid, comprising the steps of:

providing phosphoric acid;

determining the concentration of fluoride to be removed from the acid and the concentration of silicon in the acid;

adding silica to the acid in an amount sufficient that the molar ratio of fluoride to be removed from the acid to silicon in the acid is about 18/3; and

removing fluorine from the phosphoric acid in a manner such that silicon tetrafluoride hydrolyzes and silica reacts with hydrogen fluoride.

8. A method for producing defluorinated phosphoric acid, comprising the steps of:

providing phosphoric acid;

determining the concentration of fluoride to be removed from the acid and the concentration of silicon in the acid;

adding silica to the acid in an amount sufficient that the ratio of molar concentration of HF in the acid to molar concentration of SiF_4 in the acid is about 2/1; and

removing fluorine from the phosphoric acid in a manner such that silicon tetrafluoride hydrolyzes and silica reacts with hydrogen fluoride.

5,312,611

LITHIUM SECONDARY BATTERY PROCESS FOR MAKING CARBONACEOUS MATERIAL FOR A NEGATIVE ELECTRODE OF LITHIUM SECONDARY BATTERY

Norio Takami, and Takahisa Ohsaki, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Division of Ser. No. 819,224, Jan. 13, 1992, Pat. No. 5,244,757.
This application Jan. 16, 1993, Ser. No. 77,093
Int. Cl.[5] D01F *9/12*
U.S. Cl. 423—447.6 **19 Claims**

1. A process for making carbonaceous material for a negative electrode of a lithium secondary battery comprising the step of heat-treating a carbon-containing starting material wherein the starting material is a mesophase small spherical particle or a mesophase pitch fiber, wherein the heat-treating step is a carbonizing step or a graphitizing step conducted in a carbonizing or graphitizing environment, and wherein the environment is an inert gas or a vacuum, at a temperature of 600° C. or above.

5,312,612

POLYMORPHOUS LUMINESCENT COMPOSITIONS

Alok M. Srivastava, Schenectady, N.Y., and John F. Ackerman, Cheyenne, Wyo., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 24, 1992, Ser. No. 949,952
Int. Cl.[5] C09K *11/61, 11/67*
U.S. Cl. 423—464 **5 Claims**

1. A luminescent crystalline compound having the formula $MNbOF_5$, wherein M is at least one of strontium and lead.

5,312,613

PROCESS FOR PRODUCING CERAMIC PRECURSOR POWDERS WITHOUT GEL FORMATION

Lieh-Jiun Shyu, Yorktown Heights, and Fawzy G. Sherif, Stony Point, both of N.Y., assignors to Akzo nv, Arnhem, Netherlands

Continuation of Ser. No. 727,515, Jul. 9, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 81,951
Int. Cl.[5] C01G *25/02, 27/02*
U.S. Cl. 423—608 **8 Claims**

1. In a process for forming a ceramic precursor composition, suitable for calcining to form a metal oxide ceramic product, by the combining of an aqueous solution containing at least one metal cation for the ceramic with a concentration of from about 15 gm to 40 gm of metal cation, expressed as oxide, per 100 ml of water, and base precipitating agent to form a precipitate of the ceramic precursor composition, wherein the improvement comprises adding the aqueous solution to the base precipitating agent to produce a pH above the zero point charge for the precipitate and to reduce gelation during the formation of the precipitate which comprises agglomerated particles of 25 to 100 micron size.

5,312,614

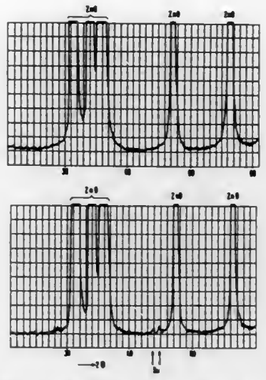
METHOD FOR PRODUCING WHITE ELECTRICALLY CONDUCTIVE ZINC OXIDE

Takao Hayashi; Norihiro Sato; Chikara Omotani, all of Shimonoseki; Manabu Hosoi, Omiya; Nobuyoshi Kasahara, Sayama, all of Japan; Günther Rudolph, Neuberg, Fed. Rep. of Germany; Wolf-Dieter Griebler, Moers, Fed. Rep. of Germany, and Jörg Hocken, Dusseldorf, Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 14, 1990, Ser. No. 538,255
Claims priority, application Japan, Jun. 21, 1989, 156650
Int. Cl.[5] C01G *9/02*; C04B *14/30*; C09C *1/04*; H01B *1/08*
U.S. Cl. 423—622 **8 Claims**

1. A method for producing white, electrically conductive zinc oxide comprising

simultaneously adding to a reactor (1) an aqueous solution containing both a water-soluble zinc compound and at least one water-soluble compound of a metal selected from the group consisting of tin, aluminum, gallium and indium, and (2) an aqueous alkaline solution in a manner effective to maintain the resulting neutralization reaction solution at a pH from 6 to 12.5 to obtain co-precipitates, then



calcining said co-precipitates in a reducing atmosphere including hydrogen gas to obtain said conductive zinc oxide.

5,312,615

INJECTABLE OPACIFYING COMPOSITION CONTAINING LIPOSOMES OF HIGH ENCAPSULATION CAPACITY FOR X-RAY EXAMINATIONS

Michel Schneider, Troinex; Hervé Tournier, Valleiry, France, and Bernard Lamy, Carouge, Switzerland, assignors to Bracco - Industria Chimica S.p.A., Milan, Italy

PCT No. PCT/EP88/00447, § 371 Date Jan. 19, 1989, § 102(e) Date Jan. 19, 1989, PCT Pub. No. WO88/09165, PCT Pub. Date Dec. 1, 1988
PCT Filed May 16, 1988, Ser. No. 302,690
Claims priority, application Switzerland, May 22, 1987, 1991/87
Int. Cl.[5] A61K *49/04, 49/00*
U.S. Cl. 424—5 **7 Claims**

1. Process for increasing the encapsulation capacity of an aqueous suspension of liposomes comprising lipidic membrane vesicles containing, in encapsulated form, at least one opacifying agent to X-rays in solution in an aqueous liquid, wherein these liposomes in suspension in the said aqueous liquid are subjected to an extrusion through a filtering membrane with porosities ranging between 0.4 and 3 μm, so as to "normalize" the size of the said vesicles in a range of values corresponding to the size of the pores of the said membrane.

5,312,616

COMPOSITIONS OF IODOBENZOIC ACID DERIVATIVES IN FILM-FORMING MATERIALS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Carl R. Illig, Phoenixville, and Brent D. Douty, Coatesville, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Mar. 11, 1993, Ser. No. 29,756
Int. Cl.[5] A61K *49/04, 31/715, 31/235, 31/075*
U.S. Cl. 424—5 **24 Claims**

1. An x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine of a patient to form a barrier between said nutrient absorbing inner surface and the content of said intestine, said flexible film membrane to remain bound to said mucosal lining until eliminated by normal cell turnover comprising based on w/v;

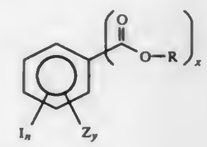
(a) of from about 0.001 to about 15% of a polymeric material

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capable of forming a film membrane on the gastrointestinal tract in the pH range of from about 5 to about 8, said polymeric material being selected from the group consisting of anionic polymers carrying negative charges in the ionized form, cationic polymers carrying positive charges in the ionized form, and neutral polymers, said neutral polymers having atoms containing polarizable electrons thereon selected from the group consisting of oxygen, nitrogen, sulfur, fluoride, chloride, bromide and iodide; in combination with

(b) of from about 0.001 to about 15% of a divalent cation to potentiate the binding of said flexible film membrane to said mucosal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++}; and

(c) of from about 0.001 to about 75% of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein

Z is H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;

R is C_1–C_{25} alkyl, cycloalkyl, or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy, $(CR_1R_2)_p$—$(CR_3{=}CR_4)_m$Q, or $(CR_1R_2)_p$—C≡C—Q;

R_1, R_2, R_3 and R_4 are independently lower-alkyl, optionally substituted with halo;

x is 1–3;

y is 1–4;

n is 1–5;

m is 1–15;

p is 1–10; and

Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl

in an aqueous, pharmaceutically acceptable carrier.

5,312,617

LIPOSOLUBLE COMPOUNDS USEFUL AS MAGNETIC RESONANCE IMAGING AGENTS

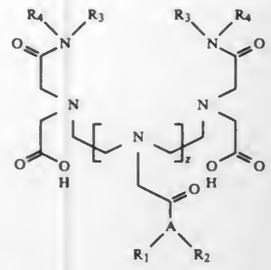
Evan C. Unger, 13365 E. Camino La Cebadilla, Tucson, Ariz. 85749, and DeKang Shen, 2602 W. Aiden St., Tucson, Ariz. 85745

Continuation-in-part of Ser. No. 704,542, May 23, 1991, abandoned. This application May 22, 1992, Ser. No. 887,290

Int. Cl.[5] A61B *5/055; C07C 233/00*

U.S. Cl. 424—9 **18 Claims**

1. A method of providing an image of an internal region of a patient comprising (i) administering to the patient a contrast agent comprising a paramagnetic ion in combination with a compound of the formula,



(IV)

wherein:

R_1 and R_2 are, independently, H, or a substituted or unsubstituted C_7–C_{10} straight chain or cyclic compound;

each R_3 and R_4 are, independently, H, or a substituted or unsubstituted C_1–C_{30} straight chain or cyclic compound; and

A is N, or a N-containing substituted or unsubstituted C_1–C_{30} straight chain or cyclic compound;

z is 1 to 10;

provided that at least one of R_1 and R_2 is other than H, and at least one of R_3 and R_4 is other than H; and

(ii) scanning the patient using magnetic resonance imaging to obtain visible images of the region.

5,312,618

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION

Abdul Gaffar, Princeton; Nuran Nabi, No. Brunswick; John Afflitto, Brookside, all of N.J.; Orum Stringer, Yardley, Pa., and Michael Prencipe, East Windsor, N.J., assignors to Colgate-Palmolive Co., New York, N.Y.

Division of Ser. No. 758,345, Sep. 9, 1991, Pat. No. 5,192,531, which is a continuation of Ser. No. 399,669, Aug. 25, 1989, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, which is a continuation-in-part of Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, and a continuation of Ser. No. 8,901, Jan. 30, 1989, abandoned. This application Dec. 2, 1992, Ser. No. 984,629

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 **12 Claims**

1. An oral composition for attaching, adhering or bonding a plaque-inhibiting agent to oral tooth and gum surfaces comprising in an orally acceptable aqueous humectant vehicle, about 30–70% by weight of a dentally acceptable water-insoluble polishing agent, an effective antiplaque amount in the range of about 0.01–5% by weight of a substantially water insoluble noncationic antibacterial agent, at least one of a surface active agent or a flavoring oil and an effective amount in the range of about 0.05–4% by weight of water-soluble or swellable antibacterial-enhancing agent having an average molecular weight of about 100 to about 1,000,000 which contains at least one acid phosphonic delivery-enhancing functional group and at least one organic retention-enhancing group, which delivery-enhancing group enhances attachment, adherence or bonding of antibacterial agent to oral tooth and gum surfaces, wherein said antibacterial-enhancing agent is poly(beta-styrene-phosphonic acid), poly(alpha-styrenephosphonic acid) polymer, or a polymer of either styrenephosphonic acid monomer with the other or with another ethylenically unsaturated polymerizable monomer and said vehicle is other than polyethylene glycol which reduces the antibacterial activity of said antibacterial agent.

5,312,619

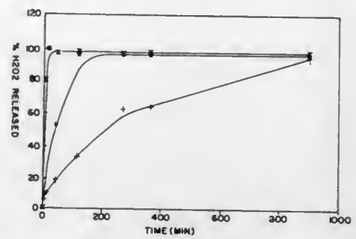
AQUEOUS STABLE COMPLEX OF A STRONGLY SWELLABLE, MODERATELY CROSSLINKED POLYVINYLPYRROLIDONE AND HYDROGEN PEROXIDE

Jenn S. Shih, Paramus; John J. Merianos, Middletown; Terry E. Smith, Morristown, and Jui-Chang Chuang, Wayne, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Apr. 30, 1992, Ser. No. 875,951

Int. Cl.[5] A61K *31/79*

U.S. Cl. 424—78.25 **1 Claim**



1. A gel composition comprising about 5–15% by weight of the reaction product of a strongly swellable, moderately crosslinked PVP powder having an aqueous gel volume of about 15 to 150 ml/g of PVP and a Brookfield viscosity in 5% aqueous solution of at least about 10,000 cps, and H_2O_2, in substantially a 1:1 molar ratio of said constituents, and water.

5,312,620

POLYMERIC IMMUNOLOGICAL ADJUVANTS

Hans O. Ribi, 1465 Woodberry Ave., San Mateo, Calif. 94403

Continuation of Ser. No. 144,408, Jan. 15, 1988, abandoned. This application Oct. 30, 1991, Ser. No. 784,923

Int. Cl.[5] A61K *31/765, 45/00, 37/20*

U.S. Cl. 424—78.31 **4 Claims**

1. A polymeric immunological adjuvant composition comprising:

a copolymer comprising at least one adjuvant joined to a water soluble addition polymerizable acrylyl or methacrylyl monomer through a linking group and a lamellar forming lipid comprising a chain of from 8 to not more than 36 carbon atoms and joined to a water soluble addition polymerizable acrylyl or methacrylyl monomer;

said lipid adjuvant selected from the group consisting of monophosphoryl lipid A, lipopolysaccharide, BCG cell wall skeleton, diphosphoryl lipid A, muramyl di- or tripeptide, muramyl dipeptide-phosphatidyl-ethanolamine, muramyltripeptide phosphatidylethanolamine, trehalose monomycolate, trehalose dimycolate, lipid X, isoprinosine, and lithosperman (A, B or C).

5,312,621

METHOD OF TREATING FIBROTIC DISORDERS

Brian Berman, Orinda, and Matthew R. Duncan, Concord, both of Calif., assignors to Baker Cummins Dermatologicals, Inc., Miami, Fla.

Continuation of Ser. No. 469,149, Jan. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 147,973, Jan. 25, 1988, abandoned. This application Apr. 20, 1992, Ser. No. 871,280

Int. Cl.[5] A61K *37/66;* **C12P** *21/06;* **C07K** *3/00;* **C07H** *15/12*

U.S. Cl. 424—85.7 **10 Claims**

1. A method of treating a human patient suffering from cutaneous keloid formation in a tissue area to reduce and degrade the keloid lesions comprising the administration to the patient of a sufficiently quantity of a composition containing a human alpha$_{2b}$-interferon to raise the total concentration of such interferon in the tissue area to 10 to 4×10^7 international units per cubic centimeter.

5,312,622

ACARICIDAL COMPOSITIONS AND PROCESS FOR PREPARING SAME

Tibor Nagy; Karoly Zalai; Dénes Máthé; Béla Stefkó, all of Budapest; Arpád Hadházy, Szekszárd; Gyula Csókás, Tamási, and István Gebhardt, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

PCT No. PCT/HU90/00042, § 371 Date Jan. 30, 1992, § 102(e) Date Jan. 30, 1992, PCT Pub. No. WO91/00013, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 25, 1990, Ser. No. 828,870

Int. Cl.[5] C12N *1/20*

U.S. Cl. 424—93 K **9 Claims**

1. A biologically pure culture of the bacillus strain deposited at the National Collection of Agricultural and Industrial Microorganisms, Budapest, Hungary under the identification No. 001083, which forms mat, greyish colonies of 1 to 2 mm in diameter on a simple nutrient agar and shows the following properties:

a) Gram:		positive,
b) sporulation:		oval,
c) motion:		positive,
d) anaerobic growth:		positive,
e) growth on bismuth sulfite agar:		+/−,
f) growth on eosin-methylene blue agar:		+/−,
g) growth in the presence of 7% sodium chloride:		positive,
h) catalase:		positive,
i) NO_3—NO_2:		negative,
j) Voges-Proskauer test		negative,
k) indole:		negative,
l) urease (kristensen):		negative,
m) arginine-dihydrolase:		negative,
n) lysine-decarboxylase:		negative,
o) ornithine-decarboxylase:		negative,
p) aesculin hydrolysis:		positive,
q) starch hydrolysis:		negative,
r) casein hydrolysis:		negative,
s) lecithin hydrolysis:		negative,
t) gelatine hydrolysis:		positive,
u) ammonium citrate:		negative,
ü) acid formation on the Hungh-Leifson's oxidation-fermentation nutrient medium:		oxidative,
v) gas formation, peptone-water glucose:		negative,
x) acid formation (BSS)	glucose:	positive,
	fructose:	positive,
	lactose:	negative,
	maltose:	negative,
	mannitol:	positive,
	rhamnose:	negative,
	saccharose:	positive
	xylose:	negative,
(peptone water)	arabinose:	negative,
	adonitol:	negative,
z) ONPG:		positive.

5,312,623

HIGH TEMPERATURE, RECHARGEABLE, SOLID ELECTROLYTE ELECTROCHEMICAL CELL

Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 18, 1993, Ser. No. 80,150

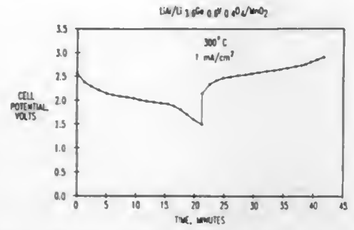
Int. Cl.[5] H01M *4/48*

U.S. Cl. 429—193 **4 Claims**

1. A high temperature rechargeable solid electrolyte electrochemical cell including an alloy of lithium as the anode, a compound selected from the group consisting of MnO_2, FeS_2,

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CoS_2, MoS_2, MoS_3, NiS_2, $LiCoO_2$, $LiNiO_2$, V_6O_{13}, Cr_3O_8, V_2O_5, V_2S_5, and other transition metal halides, chalcogenides,



selenides, tellurides and oxides as the cathode, and a solid solution of Li_4GeO_4 and Li_3VO_4 as the solid electrolyte.

5,312,624

DRAIN TREATMENT PRODUCT AND METHOD OF USE

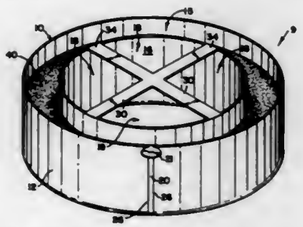
Francis L. Richter, Circle Pines; James Wilson, Maplewood, and Daniel E. Pedersen, Cottage Grove, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 661,697, Feb. 27, 1991, abandoned, which is a division of Ser. No. 247,279, Sep. 21, 1988, Pat. No. 5,019,346. This application Apr. 22, 1993, Ser. No. 51,580

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] A01N *25/08*; C11D *17/00*

U.S. Cl. 424—405 **52 Claims**



1. A drain sanitizing article for dispensing a chemical sanitizing agent for sanitizing running and standing drainage said drain sanitizing article comprising a housing, said housing having an inner wall, defining an opening in said housing for the passage of drainage over the article into the drain, and a bottom wall, said bottom wall cooperatively connected to said inner wall and forming a cavity in said housing, and a hardened aqueous soluble chemical sanitizing agent contained within the cavity of said housing, said sanitizing agent comprising (a) an effective amount of an antimicrobial sanitizer, and (b) an effective amount of hardener.

5,312,625

FUSED 7-MEMBERED CYCLIC COMPOUND AND ANTIPSYCHOTIC PREPARATION CONTAINING THE SAME

Toshio Tatsuoka, Nishinomiya, and Kayoko Nomura, Takatsuki, both of Japan, assignors to Suntory Limited, Osaka, Japan

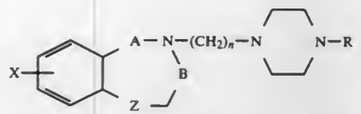
Continuation of Ser. No. 661,132, Feb. 27, 1991, abandoned. This application May 11, 1993, Ser. No. 60,701

Claims priority, application Japan, Feb. 28, 1990, 2-45753; Jun. 28, 1990, 2-168554

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—433 **28 Claims**

1. A fused cyclic compound having the formula (I) or salts thereof:



(I)

wherein both A and B are carbonyl groups, or one represents a methylene group and the other a carbonyl group, Z represents a sulfur atom, an —NH— group or an —N(CH$_3$)— group, R represents an aromatic group selected from the group consisting of phenyl and napthyl which aromatic group may be substituted with one or more groups selected from the group consisting of halogen, hydroxy, C_1–C_6 lower alkyl, C_1–C_5 alkoxy, arylalkoxy, nitro, amino, C_1–C_5 amide, cyano, and ester groups or a heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl, pyrazinyl, pyridazinyl and imidazoyl groups which heterocyclic group may be substituted with one or more groups selected from the group consisting of halogen, hydroxy, C_1–C_6 lower alkyl, C_1–C_5 alkoxy, arylalkoxy, nitro, amino, C_1–C_5 amide, cyano, and ester groups, X represents a hydrogen atom, a halogen atom, a C_1–C_5 lower alkyl group, a C_1–C_5 lower alkoxy group, a C_7–C_9 arylalkoxy group, a C_1–C_5 lower acyloxy group, a C_7–C_{10} arylcarbonyloxy group, a hydroxy group, a nitro group or an ester group, and n is an integer of 2 to 10.

5,312,626

LOZENGE OR CHEWABLE TABLET

Gerhard Gergely; Thomas Gergely, and Irmgard Gergely, all of Gartengasse 8, A-1053 Vienna, Austria

Filed Jul. 1, 1992, Ser. No. 907,507

Claims priority, application Switzerland, Jul. 1, 1991, 1943/91

Int. Cl.[5] A61K *9/28*

U.S. Cl. 424—441 **15 Claims**

1. A lozenge or chewable tablet, which contains, as the base, at least 30 percent by weight of the reaction product of metal or alkaline earth metal salt and at least one edible, organic acid; at least 10 percent by weight of a mixture of at least one unreacted, edible organic acid with at least one unreacted alkali metal or alkaline earth metal carbonate or bicarbonate and, optionally, a pharmaceutical active substance or tablet assistants.

5,312,627

TRANSDERMAL THERAPEUTIC SYSTEM FOR THE ADMINISTRATION OF DRUGS HAVING BRONCHODILATING ACTIVITY

Federico Stroppolo, Pregassona, Switzerland; Daniele Bonadeo, Varese, and Annibale Gazzaniga, Rescaldina, both of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Jul. 13, 1992, Ser. No. 912,510

Claims priority, application Italy, Jul. 15, 1991, MI91A001950

Int. Cl.[5] A61K *9/70*

U.S. Cl. 424—448 **7 Claims**

1. A transdermal therapeutic system in polymer matrix for the administration of drugs having bronchodilating activity, said system consisting essentially of a substance having bronchodilating activity suspended in solid form and a matrix in which said substance is suspended, said matrix comprising from 10% to 60% by weight of medium molecular weight polyisobutylene having a molecular weight higher than 5,000 and up to 500,000 and from 9% to 25% by weight of high molecular weight polyisobutylene having a molecular weight higher than 500,000, the weight ratio between the medium and the high molecular weight polyisobutylene being from 1 to 2.3.

5,312,628

ISOLATION OF A SOLUBLE 42 KD PANCREATIC ISLET CELL AUTOANTIGEN

Margo P. Cohen, New York, N.Y., and Van-Yu Wu, Cherry Hill, N.J., assignors to Exocell, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 731,700, Jul. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 509,773, Apr. 17, 1990, abandoned. This application May 12, 1993, Ser. No. 59,719

Int. Cl.[5] C07K *15/06*; A61K *39/00*; G01N *33/564*

U.S. Cl. 424—88 **27 Claims**

1. A cell-free antigenic preparation useful for measuring autoantibody titers in blood, said preparation comprising a detergent-soluble antigen which immunologically binds to circulating autoantibodies to pancreatic islet cells associated with diabetes mellitus, wherein said preparation immunologically binds at least two-fold less to antibodies in serum from non-diabetic humans than to antibodies in serum from diabetic humans, wherein said antigen has a molecular weight of between 40 and 45 kD when measured on SDS-polyacrylamide gels, wherein said antigen is obtainable from pancreases of humans having an HLA type selected from the group consisting of HLA-DR 7; HLA-DR 1, w-11; HLA-DR 11,7; and HLA-DR 2,4, and wherein said antigen is substantially purified from other antigens which are not immunologically reactive with diabetes-specific, islet cell antibodies.

5,312,629

PHARMACEUTICAL COMPOSITION SUITABLE FOR INFLUENCING THE RETICULOENDOTHELIC SYSTEM AND FOR TREATING MUCOVISCIDOSIS AND CHRONIC PAIN SYNDROMES DERIVING FROM DEGENERATIVE LOCOMOTOR DISEASES OR ACCOMPANYING DISEASES OF TUMOROUS ORIGIN, A PROCESS FOR PREPARING SAME

József Béres, Kisvárda; József Béres, Jr., Budapest, both of Hungary, assignors to Béres Export-Import Rt., Budapest, Hungary

Filed Jul. 26, 1991, Ser. No. 736,314

Claims priority, application Hungary, Jul. 24, 1991, 2492/91

Int. Cl.[5] A61K *33/34, 33/32, 33/26, 33/22*

U.S. Cl. 424—638 **1 Claim**

1. A method of treating mucoviscidosis or a chronic pain syndrome derived from either a locomotor disease of a degenerative nature or from a disease of tumorous origin, which comprises the step of administering to a patient in need of said treatment, a therapeutically effective amount of a pharmaceutical composition, which consists essentially of:

i) one or more, pharmaceutically acceptable, water soluble compounds of boron, fluorine, magnesium, vanadium, manganese, iron, cobalt, nickel, copper, zinc and molybdenum, which compounds do not precipitate with each other or with the other components of the composition and exhibit a neutral or acidic pH in an aqueous medium;

ii) glycine;

iii) glycerol;

iv) L-(+)-ascorbic acid;

v) succinic acid;

vi) a neutral or acidic and water-soluble, pharmaceutically acceptable salt of ethylenediamine tetraacetic acid;

vii) potassium sodium tartrate; and

viii) L-(+)-tartaric acid.

5,312,630

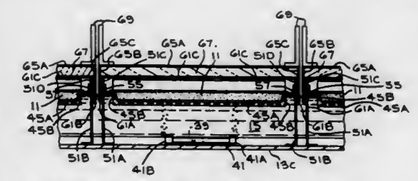
METHOD FOR CULTURING PLANT MATERIALS AS FOODS

Gunter Pfaff, 14780 Beardslee Rd., Perry, Mich. 48872

Division of Ser. No. 871,065, Apr. 20, 1992, Pat. No. 5,228,396. This application Jul. 1, 1993, Ser. No. 84,615

Int. Cl.[5] A23L *1/20*

U.S. Cl. 426—46 **19 Claims**



1. A method for culturing a plant material with a microorganism to produce a cultured food, which comprises:

(a) providing a culturing apparatus, which comprises: an open container means holding a water bath; shallow tray means with a flat bottom surrounded by sides and supported in the container means and holding a quantity of the plant material containing added microorganisms spread over the bottom of the tray means, wherein the tray means is mounted in the container means so as to be partially immersed in the water bath in the container means with the bottom of the tray means in the water bath; heater means for evenly heating the water bath in the container means; circulating means which evenly regulates the temperature of the water bath in the container means; aerating means providing an airflow in the container means; and lid means mounted in the container means and sealed over and around the tray means, the lid means having perforations that provide for the airflow from the aerating means to move over the plant material held in the tray means and out the lid means, through the perforations to aerate the plant material held in the tray means;

(b) mounting the tray means holding the plant material in the container means, partially immersed in the water bath; and

(c) sealing the lid means over and around the tray means;

(d) maintaining the water bath with the heater means and circulation means at a water temperature so that the plant material in the tray means is at a culturing temperature which in combination with the airflow from the aerating means that is sufficient for culturing the microorganisms to provide the cultured food from the plant material;

(e) removing the lid means from over and around the tray means; and

(f) removing the tray means from the container means.

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5,312,631

METHOD OF PREVENTING CUT PIECES OF AGRICULTURAL PRODUCTS CONTAINING STARCH FROM STICKING TO EACH OTHER IN THE DRYING AND COOKING STEPS

Kosaku Yamashita, Osaka, Japan, assignor to Mikakuto Co., Ltd., Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 881,749
Claims priority, application Japan, Jan. 7, 1992, 4-019455
Int. Cl.[5] A23B *7/10*
U.S. Cl. 426—52 8 Claims

1. A method for preventing cut pieces of agricultural products containing starch from sticking to one another, comprising

(i) blanching said cut pieces in hot water at a temperature of 50°–100° C. for a time effective to gelatinize starch present on surfaces of said cut pieces,

(ii) contacting said cutpieces with a solution containing at least one member selected from the group consisting of an amylolytic enzyme, an acidic compound and a basic compound for a time effective to saccharify starch present on surfaces of said cut pieces of agricultural products into sugar, and

(iii) separating said sugar from said cut pieces of agricultural products.

5,312,632

METHOD FOR THE MANUFACTURE OF FODDER AND/OR SOIL IMPROVING AGENTS FROM WASTE MATERIAL

Peter Simsa; Jenó Toth; Lajos Czakó, and Pál Mihaltz, all of Budapest, Hungary, assignors to Vertikum Magas-es Melyepitmenyjavito Kisszovetkezet, Hungary and Henri-Davis Gutmans, Switzerland

Division of Ser. No. 571,259, Aug. 23, 1990, Pat. No. 5,198,252.
This application Aug. 26, 1992, Ser. No. 932,311
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843670
Int. Cl.[5] A23B *7/10, 4/22*
U.S. Cl. 426—53 7 Claims

1. A method for the manufacture of fodder, and/or soil improving agents from waste material comprising harvesting environmentally disturbing aquatic plants and mixing the pieces thereof with:

a) about 20 to about 70 percent by weight of organic waste material of the food industry, agriculture industry or both, said organic waste having a dry substance content of at least 20 percent by weight; and

b) inoculating agents selected from the group consisting of a pectin cleaving enzyme, a thermophilic lactic acid bacteria culture having an activity of about 10^6 to about 10^{10} cells per gram of dry substance, and a mixture thereof; and

c) biological degradation agents selected from the group consisting of molasses, urea, organic carboxylic acids having 1 to 5 carbon atoms and mixtures thereof; and

d) a starter culture having a high cellulase activity selected from the group consisting of Trichoderma viridae, Chaetonium globusum and Actinomycetes and mixtures thereof; wherein the resulting mixture is brought to a carbon/nitrogen ratio of about 1/20 to about 1/80 with waste material containing nitrogen, nitrogen-containing natural or synthetic fertilizer or a mixture thereof, and subsequently aerobically fermenting the mixture for about 2 to about 45 days.

5,312,633

METHOD OF MAKING A STUFFED PRETZEL DOUGH PRODUCT AND COMPLETED STUFFED PRETZEL PRODUCT

Janet Schwartz, 4353 Frankford Ave., Philadelphia, Pa. 19124

Continuation-in-part of Ser. No. 505,798, Apr. 6, 1990, Pat. No. 5,185,167. This application Feb. 5, 1993, Ser. No. 13,910
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] A21D *13/00*; A23P *1/08*
U.S. Cl. 426—94 17 Claims



1. A method of making a soft pretzel dough product from pretzel dough having an edible filling material therein, the method comprising the steps of:

(a) providing the combination of soft pretzel dough upon which an edible food has been positioned;

(b) forming the soft pretzel combination into a soft pretzel dough product where the edible food is substantially enclosed by the dough; and

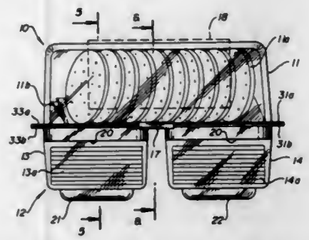
(c) baking the soft pretzel combination.

5,312,634

COMPACT PACKAGE FOR FOOD PRODUCT

Ray Griesbach, Monona, and Jeffrey M. Lipinski, Sun Prairie, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Sep. 26, 1989, Ser. No. 412,320
Int. Cl.[5] B65D *85/00*
U.S. Cl. 426—106 23 Claims



1. A compact food package hermetically sealing a perishable food snack for transport in commerce and sale in a space confined environment, the overall shape of said package being of a height above a bottom thereof which is greater than its width, and less than its length, and thus of a shape which can stand up on its bottom in a confined space,

said package formed of a material sufficiently rigid to maintain its shape and prevent physical damage to the food contents during normal travel of the package in commerce, said package also being transparent so as to permit viewing of food contents prior to opening of the package, said package comprising,

opposed rigid upper and lower parts, each part comprising flanges in respective reference plans, which reference planes are generally adjacent and parallel to each other,

a hinge means joining opposed side flanges along one side of the package, such that the two parts fold about said hinge means, bringing the flanges of the upper and lower parts toward each other, such that the outer periphery of the upper and lower flanges essentially mate with each other, and such that the upper and lower parts are of essentially the same height above the below their respective flanges,

and a flexible film covering the recessed compartments and attached to the flanges surrounding such recessed compartments, essentially in their respective reference planes, air-tightly sealing the contents within their respective compartments,

the upper part having a compartment running essentially the full length and width of the package, a farinaceous food product contained within said compartment of the upper part, the lower part having at least two compartments, each containing a proteinaceous food product which has a higher density than the food product in the upper part, the compartment of the upper part thus being a large compartment, namely larger than the compartments of the lower part.

5,312,635

METHOD OF MAKING REDUCED OIL CONTENT FRIED FOOD PRODUCTS

Peter T. Kazlas, Allentown; Richard A. Novak, Lansdale; Raymond J. Robey, Macungie, and Richard E. Wildasin, Allentown, all of Pa., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Continuation of Ser. No. 729,613, Jul. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 571,748, Aug. 23, 1990, abandoned. This application Dec. 17, 1992, Ser. No. 991,760
Int. Cl.[5] A23L *1/217*; C11B *3/00*
U.S. Cl. 426—417 13 Claims

1. A method of reducing the oil content of oil-containing deep-fried food products comprising the steps of:

(a) placing the food products into an extraction vessel;

(b) contacting the food products in the extraction vessel with liquid carbon dioxide at a temperature of from about 0° C. to about 30° C. and at a pressure between the liquid carbon dioxide liquefaction pressure and about 4500 psig to effect extraction of at least 50% of the oil from the food products into the liquid carbon dioxide; and

(c) withdrawing liquid carbon dioxide containing extracted oil from the extraction vessel.

5,312,636

PROCESS FOR FRACTIONING CROP INTO INDUSTRIAL RAW MATERIAL

Olavi Myllymäki; Yrjö Mälkki, and Karin Autio, all of Espoo, Finland, assignors to Valtion Teknillinen Tutkimuskeskus, Espoo, Finland

Continuation of Ser. No. 752,994, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 460,891, Feb. 12, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 994,465
Claims priority, application Finland, Aug. 12, 1987, 873499
Int. Cl.[5] A23L *1/10*
U.S. Cl. 426—417 4 Claims

1. A process for concentrating and separating dietary fiber, starch, antioxidant oil, protein and gum products from dehulled or hull-less oat grains, comprising:

(a) dry milling of dehulled or hull-less oat grains by using at least one of pressing, flaking or impacting operations, such that said milling does not include substantial shearing of said grains, whereby a mixture of coarse bran and a first fine endosperm are provided;

(b) dividing said mixture into a first fine endosperm fraction and a coarse bran fraction;

(c) forming a suspension of said coarse bran fraction with an extraction mixture of polar organic solvent and water, agitating said suspension, thereby substantially inactivating enzymes present in said coarse bran fraction, and separating said suspension by at least one of sieving, sedimentation and hydrocyclonic treatment into a coarse concentrated bran fraction and a second fine endosperm fraction, and a lipid fraction, whereby said lipid fraction contains antioxidants which are extracted by said extraction mixture of polar organic solvent and water;

(d) extracting beta glucan from said coarse concentrated bran fraction by successively:

(i) subjecting said coarse concentrated bran fraction to alkaline solution at a temperature of 50° to 75° C., and separation, such that a degummed coarse concentrated bran fraction and an extract are provided;

(ii) deproteinizing said extract by isoelectric precipitation and separation to provide a protein product and a deproteinized extract, and

(iii) precipitating beta glucan from said deproteinized extract by mixing said deproteinized extract with a precipitating agent selected from the group consisting of ethanol, 2-propanol and a solution of ammonium sulphate, thereby forming a fibrous precipitate of beta glucan;

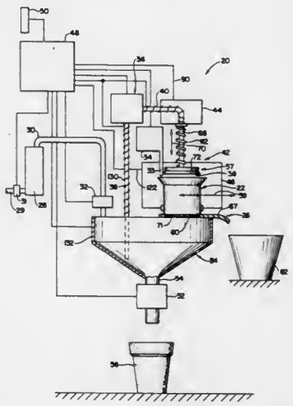
(e) separating starch from said first or second fine endosperm fraction by extraction with an alkaline solution at about 40° C., followed by at least one of sedimentation, hydrocyclonic treatment or air classification.

5,312,637

ONE-CUP BREWER

William E. Midden, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Jun. 21, 1993, Ser. No. 81,027
Int. Cl.[5] A47J *31/36*
U.S. Cl. 426—433 21 Claims



11. A method of brewing a beverage comprising the following steps:

depositing a brewing substance into a brew chamber;

placing a plunger on top of said brewing substance disposed in said brew chamber for enclosing said brewing substance;

introducing liquid into a reservoir;

circulating said liquid from said reservoir to said brew chamber;

infusing said brewing substance with said liquid circulated from said reservoir;

filtering a brewed beverage from said brew chamber;

collecting said brewed beverage from said brew chamber;

circulating said brewed beverage from said reservoir to said brew chamber;

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draining said brewed beverage from said reservoir into a container.

5,312,638

PROCESS FOR MAKING REDUCED-CALORIE ANIMAL FOODS

Helmut Traitler, Corseaux, and Heike Winter, Vevey, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Dec. 16, 1992, Ser. No. 992,842

Claims priority, application European Pat. Off., Jan. 9, 1992, 92100261.4

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] A23L *1/308*

U.S. Cl. 426—531 **7 Claims**

1. A process for preparing a reduced-calorie animal food composition comprising incorporating into a fat-containing animal food a caloric moderator selected from the group consisting of 2,3-butanediol diesters of C_{16-22} fatty acids.

5,312,639

SHELF-STABLE RICE PRODUCTS AND PROCESSES FOR THEIR PRODUCTION

John G. Howard; John Atherton; Eric S. Field, and Michael J. Hawkins, all of King's Lynn, United Kingdom, assignors to Mars Incorporated, McLean, Va.

PCT No. PCT/GB90/01348, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991, PCT Pub. No. WO91/03171, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 31, 1990, Ser. No. 678,984

Claims priority, application United Kingdom, Sep. 1, 1989, 8919820.4

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[5] A23B *9/16*

U.S. Cl. 426—575 **13 Claims**

1. A process which comprises:

(a) treating rice with an aqueous solution of a polymeric food acceptable acid to adjust the pH of the rice to 4.5 or below; and

(b) heat pasteurizing the rice while it is maintained at said pH of 4.5 or below by use of a polymeric food acceptable acid, whereby shelf-stable, acid-pasteurized rice is produced.

5,312,640

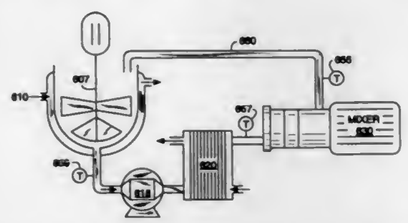
REDUCTION OF CHOLESTEROL IN EGG YOLK BY THE ADDITION OF EITHER ACID OR BOTH SALT AND ACID

Stephen P. Lombardo, Grayslake, and Mark Kijowski, Chicago, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation of Ser. No. 873,704, Apr. 22, 1992, abandoned, Continuation-in-part of Ser. No. 839,585, Feb. 21, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 108,178

Int. Cl.[5] A23L *1/015*

U.S. Cl. 426—614 **32 Claims**



1. A method of removing cholesterol from egg yolk which comprises combining a food grade acid, salt, water, oil and egg yolk to form a mixture, wherein the mixture contains a ratio in a range of between about 2.4:1 to about 1:1 oil to yolk and a ratio in a range of between about 0.30:0.14:0.003 to about 0.70:0.45:0.56 water:salt:food grade acid, based upon 1.0 part of egg yolk, shearing said mixture without forming an emulsion and centrifuging the mixture to separate the mixture into a first and a second stream, where the first stream contains the egg yolk, salt, food grade acid and water and the second stream contains oil and cholesterol.

5,312,641

NON-SPREAD PEANUT BUTTER SLICES AND METHOD OF MAKING

Ruben Castillo, Jr., Corpus Christi, Tex., assignor to Celso Rodriguez, Corpus Christi, Tex.

Filed Sep. 14, 1992, Ser. No. 944,541

Int. Cl.[5] A23L *1/38*

U.S. Cl. 426—633 **2 Claims**

1. Peanut butter slices, each consisting essentially of pressed dough, said dough further consisting essentially of one ounce of chunky peanut butter mixed with 0.25 ounce powdered egg white, 1 ounce of flour and 0.25 ounce of an edible emulsifier, mixing said ingredients into a dough then, pressing or extruding said dough into uniform sheets or slices about 0.2 inches thick and about the height and width of a typical slice of soft white bread.

5,312,642

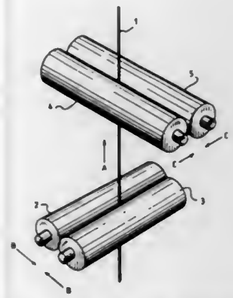
METHOD AND APPARATUS FOR CALENDERING AND COATING/FILLING SUTURES

Michael P. Chesterfield, Norwalk, and Mark P. Reale, Trumbull, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 652,939, Feb. 8, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,570

Int. Cl.[5] A61K *9/70*

U.S. Cl. 427—2 **26 Claims**



18. A method for coating and filling a multifilament surgical suture comprising:

a) providing a multifilament surgical suture;

b) coating said multifilament surgical suture with a coating agent; then

c) applying a first compressive force to the multifilament suture along a first linear direction which is substantially transverse to the axial orientation of the suture, said first compressive force being of sufficient magnitude to expand the suture diameter at least temporarily in a second linear direction substantially orthogonal to said first linear direction, and then applying a second compressive force to said suture substantially along said second linear direction, said second compressive force being of sufficient magnitude to

expand the suture diameter at lest temporarily in substantially said first linear direction; and then,

d) filling the suture with an effective amount of storage stabilizing filling agent.

5,312,643

METHOD OF PRODUCING A TRANSPARENT CONDUCTIVE FILM PROVIDED WITH SUPPLEMENTARY METAL LINES

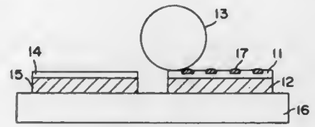
Osamu Yamamoto, Hirakata; Kouji Nishimura, Miyazaki; Akira Isomi, Hirakata, and Masahide Tsukamoto, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 20, 1991, Ser. No. 795,022

Claims priority, application Japan, Nov. 20, 1990, 2-317225

Int. Cl.[5] B05D *5/12*; **C23C** *14/00*

U.S. Cl. 427—108 **6 Claims**



1. A method of producing a transparent conductive film provided with an auxiliary metal electrode, comprising the steps of:

forming a transparent conductive film composed mainly of a metal oxide selected from the group consisting of indium oxide, tin oxide and antimony oxide on a transparent substrate;

printing a pattern of metallorganic ink composed mainly of an organic noble metal compound on the transparent conductive film by an intaglio offset printing method using an intaglio which is made of a mono-crystal silicon wafer or silica glass plate on which a pattern of grooves have been formed by dry etching, the pattern of grooves having a width of 10 μm or less and a depth of 10 μm or more; and

baking for metallizing the pattern of metallorganic ink to obtain an auxiliary metal electrode composed mainly of noble metal on the transparent conductive film, the auxiliary metal electrode having a width of 10 μm or less.

5,312,644

METHOD OF MAKING A MAGNETORESISTIVE HEAD WITH INTEGRATED BIAS AND MAGNETIC SHIELD LAYER

Theodore A. Schwarz, Woodbury, Minn.; Peter G. Bischoff, Cupertino, Calif.; Chak M. Leung, SAn Jose, Calif.; Johnny C. Chen, San Jose, Calif., and Pradeep Thayamballi, Fremont, Calif., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 809,678, Dec. 18, 1991. This application Sep. 17, 1993, Ser. No. 122,690

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—130 **7 Claims**

1. A method for making a thin-film magnetoresistive recording head comprising the steps of

providing a substrate having a non-conductive, non-magnetic surface,

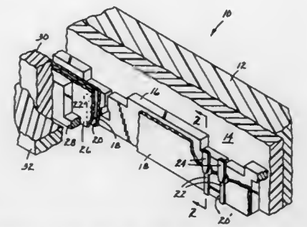
depositing on said substrate surface a thin film layer of an electrically conducting, low coercive force and high permeability material to form a first shield layer configured with means for enabling current flow through said layer to provide a magnetic bias field,

depositing over said first shield layer a first thin film insulator layer,

depositing over said first thin film insulator layer a thin film layer of a low coercive force, high permeability magnetoresistive material,

depositing over said layer of magnetoresistive material a thin film of a conductive material, configured to provide a pair of sense leads for the film of magnetoresistive material, the distance between the leads defining the length of the transducer formed by the magnetoresistive layer, and extending away from a first edge of the magnetoresistive layer to provide contact pads facilitating external connections,

depositing over said thin conductive film a second thin film insulator layer,



depositing over said second thin film layer a second thin film layer of an electrically conducting, low coercive force, high permeability material to form a second shield layer configured with means for enabling current flow therethrough to contribute to said bias field,

wherein the thickness of each of the magnetically permeable layers is not less than three times the distance between opposing faces of the magnetically permeable layers, and

forming a surface along said edge which is common to all said layers, the distance from said surface to the opposite edge of the magnetoresistive film defining the throat height of said transducer.

5,312,645

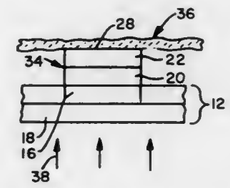
HEAT-APPLIED ATHLETIC LETTERING

Donald R. Dressler, 22 Colony Cir., Glastonbury, Conn. 06033

Filed Dec. 10, 1991, Ser. No. 805,000

Int. Cl.[5] B41M *3/12*

U.S. Cl. 427—148 **16 Claims**



1. A method of fabricating a plastic web having a carrier sheet, a pigment layer, and an adhesive layer in succession for use in cutting and applying plastic lettering to fabric, comprising:

selecting a non-release coated, transparent polyester carrier film having a thickness of at least about 4 mils for said carrier sheet;

coating a first layer of pigmented polyurethane material having a first material formulation with a first dry melting point directly on the carrier sheet;

coating a second layer of unpigmented thermoplastic adhesive material having a second material formulation with a second dry melting point lower than said first melting point, directly on the first layer; and

drying said first and second layers as coated on said carrier sheet to produce said web having a first layer thickness

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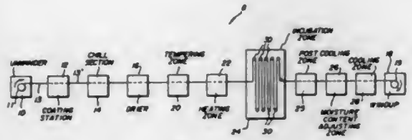
between about 1.0 to 2.0 mils and having a peel value between the first layer and the carrier sheet in the range of about 15-30 ounces.

5,312,646

METHOD FOR MANUFACTURING PHOTOGRAPHIC MATERIAL

Eugene H. Barbee; Kathleen A. Bonsignore, both of Rochester; Wilbur S. Gaugh, Webster; Christopher J. Klasner, Rochester; Avogelle L. Leonard, Rochester, and Daniel G. Ocorr, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1991, Ser. No. 661,770
Int. Cl.[5] G03C *1/74*
U.S. Cl. 427—177 **16 Claims**



1. A method of manufacturing a silver halide photographic material, including:
providing a continuous web-like support;
coating said support with a photographic composition including gelatin and hardener;
drying the coating on the support;
ensuring that the moisture content of the coating is sufficiently low that at temperatures subsequently to be encountered in the manufacturing method gelation cross-links will not be remelted and that the coating is less than 85 percent hardened;
heating the coating in an atmosphere having a relative humidity sufficiently low as to avoid condensation on the coating;
incubating the heated coating at a temperature of approximately the glass transition temperature or above and below the melting point of the coating, in an atmosphere having a relative humidity which causes a moisture content defined as weight of water/weight of gelatin of the coating of 0.1 to 0.25 for a period of time so that the coating is at least 85 percent hardened;
cooling the support and coating; and
winding the support with the coating thereon into a roll.

5,312,647

METHOD AND APPARATUS OF VACUUM DEPOSITION

Carmen B. Bischer, Jr., Hayward, and Edward A. Small, Jr., Santa Rosa, both of Calif., assignors to Dielectric Coating Industries, Hayward, Calif.

Filed Jul. 24, 1992, Ser. No. 949,768
Int. Cl.[5] C23C *14/22*
U.S. Cl. 427—178 **17 Claims**

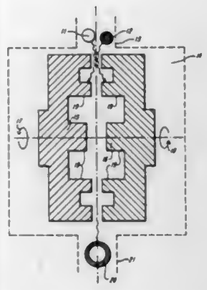
1. In apparatus for applying a coating of high light reflecting material to a continuously moving long web of aluminum from a coil, including coating means, and a vacuum chamber in which the coating takes place, the improvement comprising:
a first vacuum compartment within the chamber wherein said vacuum compartment contains the coil of aluminum to which the high reflective coating is to be applied; and
heater means in said vacuum compartment for driving off water from the coil and creating water vapor in said compartment.

5,312,648

METHOD FOR COATING PARTICLES USING COUNTER-ROTATING DISKS

Igor V. Gorynin; Boris V. Farmakovsky; Alexander P. Khinsky; Karina V. Kalogina; Evgenii V. Vlasov, all of Leningrad, U.S.S.R.; Alfredo Riviere V., Caracas, Venezuela; Julian Szekely, Weston, and Navtej S. Saluja, Cambridge, both of Mass., assignors to Technalum Research, Inc., Cambridge, Mass.

Filed Sep. 5, 1991, Ser. No. 755,127
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—192 **28 Claims**



4. The method of preparing a coated particle comprising the steps of:
providing a working chamber containing counter-rotating disks equipped with teeth capable of accelerating particles towards one another;
introducing a first material and a second metal as powders, said first material having a hardness greater than said second metal and said first material capable of reacting with said second metal;
counter-rotating said disks of said working chamber in a low velocity process so as to cause said first material and second metal powders to collide with each other, whereby said first material powder is mechanically coated with said second metal; and
further increasing the rate of rotation of said counter-rotating disks in a high velocity process, whereby said second metal coating is chemically bonded to said first material.

5,312,649

DIORGANOSILACETYLENE-ALT-DIORGANOSILVINYLENE POLYMERS AND A PROCESS DENSIFYING POROUS SILICON-CARBIDE BODIES

Thomas J. Barton; Sina Ijadi-Maghsoodi, and Yi Pang, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 817,602, Jan. 7, 1992, Pat. No. 5,241,029.
This application Jun. 8, 1993, Ser. No. 73,589
Int. Cl.[5] C04B *41/83*
U.S. Cl. 427—228 **11 Claims**

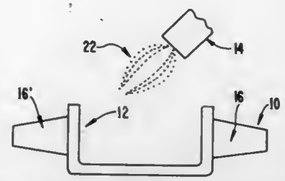
1. A process for densifying a porous SiC body comprising:
(a) infiltrating a porous SiC body with a diorganosilacetylene-alt-diorganosilvinylene linear polymer of the formula $-[-(R^1)(R^2)Si-C\equiv C-(R^3)(R^4)Si-CH=CH-]_n$;
wherein $n \geq 2$, **and each** R^1, R^2, R^3, and R^4 is independently selected from the group consisting of hydrogen, halogen, alkyl, alkeny, aryl, and aralkyl radicals; and
(b) pyrolyzing the porous SiC body infiltrated with a silacetylene-alt-diorganosilvinylene linear polymer to form a densified ceramic SiC body.

5,312,650

METHOD OF FORMING A COMPOSITE ARTICLE BY METAL SPRAYING

Ranes P. Dalal; John M. McFadden; Mark J. Straszheim, and Louis E. Dardi, all of Muskegon, Mich., assignors to Howmet Corporation, Greenwich, Conn.

Filed Jan. 12, 1988, Ser. No. 143,030
Int. Cl.[5] B05D *1/10*
U.S. Cl. 427—295 **29 Claims**



1. A method of making a composite metal article by spraying molten metal on the surface of at least one solid metal member, said method comprising the steps of:
providing a solid metal member;
facilitating the formation of a metallurgical bond at the interface between the surface of said metal member and metal sprayed thereon by cleaning the surface of said metal member and preheating said metal member in a controlled atmosphere at low pressure;
spraying molten metal onto the surface of said metal member;
rapidly solidifying said molten metal incrementally to form a solid partially porous sprayed metal portion adherent to at least a portion of the surface of said metal member to form a composite preform;
reducing residual stresses at said interface by cooling said preform at a sufficiently low cooling rate; and
hot pressing said preform to substantially eliminate voids in said sprayed metal portion and metallurgically bond said sprayed metal portion to the surface of said metal member.

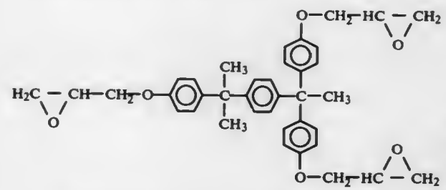
5,312,651

METHOD FOR MAKING A PREPREG OF AN EPOXY RESIN IMPREGNATED FIBERGLASS SUBSTRATE

Toshiharu Takada, and Eiichiro Saito, both of Kooriyama, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 24, 1992, Ser. No. 933,739
Claims priority, application Japan, Aug. 26, 1991, 3-213295
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—386 **6 Claims**

1. A method for making a prepreg of an epoxy resin impregnated fiberglass substrate, said method comprising the steps of preparing a resin mixture of
(1) a brominated 3-functional epoxy resin, which consists essentially of tetrabromobisphenol-A, bisphenol-A epoxy resin and an epoxy resin of the formula;



(2) dicyandiamide and 4,4'-methylenebis(3-chloro-2,6-diethylaniline as a curing agent; and
(3) 2-ethyl-4-methylimidazole as a catalyst;
diluting the resin mixture in a solvent to form a resin varnish;
impregnating a fiberglass substrate with said resin varnish; and
drying to partially cure the resin impregnated substrate into said prepreg.

5,312,652

PROCESS FOR FORMING A COPOLYMER-BASED ANTICORROSION COATING ON A METAL SURFACE AND THE PRODUCTS THUS OBTAINED

Philippe Antoine, Avignon, France, assignor to Sollac, Puteaux, France

Filed Jun. 4, 1992, Ser. No. 893,842
Claims priority, application France, Jun. 4, 1991, 91 06752
Int. Cl.[5] B05D *3/00*
U.S. Cl. 427—387 **17 Claims**

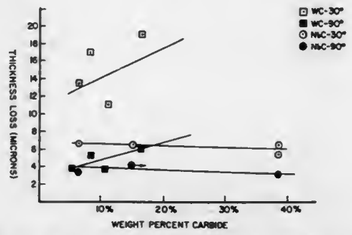
1. A process for imparting protection against corrosion for a minimum period of two months to a metal surface and for decreasing the friction coefficient of said metal surface, comprising coating said metal surface with a layer of a solution comprising a solvent and a block copolymer made up of at least two blocks, the first block being based on a siloxane monomer and the second block consisting essentially of monomers selected from the group consisting of acrylic and vinyl monomers.

5,312,653

NIOBIUM CARBIDE ALLOY COATING PROCESS FOR IMPROVING THE EROSION RESISTANCE OF A METAL SURFACE

Edward R. Buchanan, 31 Washington Park, Maplewood, N.J. 07040

Continuation-in-part of Ser. No. 716,543, Jun. 17, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,149
Int. Cl.[5] B05D *1/08*
U.S. Cl. 427—451 **22 Claims**



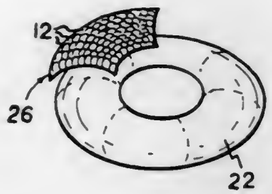
1. A process for improving the erosion resistance of the surface of a metal substrate by the technique of applying a powder comprised of niobium carbide in a matrix of a ductile metal alloy, said ductile metal alloy consisting essentially of cobalt and chromium, to the substrate surface by hypersonic flame spray coating at a velocity of 1,500 to 3,500 ft/sec, whereby a dense and adherent alloy coating is formed on said substrate.

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5,312,654
METHOD FOR DIRECTLY MAKING PRINTING PLATES USING INK-JET SYSTEM
Seiji Arimatsu, Hirakata; Takakazu Hase, Nishinomiya, and Koichi Kimoto, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Sep. 17, 1992, Ser. No. 947,506
Claims priority, application Japan, Sep. 17, 1991, 3-236163
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—511 **3 Claims**

1. A method for making lithographic printing plates comprising:
forming an image on a substrate having an ink absorbing layer and a hydrophilized layer between the substrate and absorbing layer by ink-jet printing using a photopolymerizable ink composition, and
exposing it to an active light in the wavelength region with which said ink composition is sensitized to cure the image.

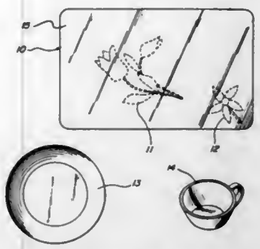
5,312,655
DECORATION MEANS
Ann-Margret Hultberg, Ljungvägen 3, S-263 32 Höganäs, Sweden
PCT No. PCT/SE90/00146, § 371 Date Sep. 11, 1991, § 102(e) Date Sep. 11, 1991, PCT Pub. No. WO90/11027, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 7, 1990, Ser. No. 768,403
Claims priority, application Sweden, Mar. 20, 1989, 8900974
Int. Cl.[5] A41G *1/04*
U.S. Cl. 428—10 **10 Claims**



1. A wreath body cover mat having a plurality of artificial plant parts, said wreath body cover mat comprising
a plurality of elongated strips, each strip having lobes along at least one of its longitudinal edges representing said artificial plant parts,
said strips successively overlapping each other such that the lobes of one strip cover an area of an overlapped strip facing away from the lobes of said overlapped strip,
each successive pair of strips being fastened to each other along a fastening line extending along the full length of the strips, said fastening line being covered by the lobes of the next successive strip,
whereby a wreath body cover mat of a desired shape may be formed.

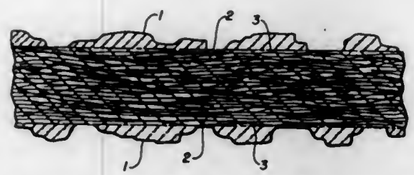
5,312,656
TOY PICNIC SET HAVING LATENT IMAGE PLACEMAT
James Michaels, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Feb. 5, 1993, Ser. No. 13,892
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—13 **1 Claim**

1. A toy picnic set comprising:
a placemat defining a translucent upper surface supporting a red/yellow obscuring design;
a plate formed of a transparent red material; and
a latent image formed on said placemat obscured by said red/yellow design,



said plate being placed upon said placemat overlying said latent image to filter out said obscuring design and reveal said latent image.

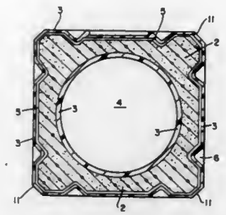
5,312,657
PHOSPHATE CEMENT PIPE CLADDING
Jeffery L. Barrall; Debra L. Morris, both of Lancaster, and Carrielee Fidler, Willow Street, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Aug. 18, 1989, Ser. No. 395,618
Int. Cl.[5] B32B *13/02*
U.S. Cl. 428—34.4 **14 Claims**



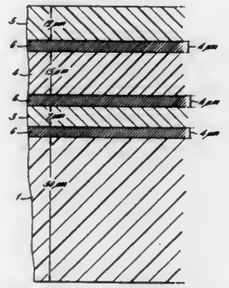
1. A pipe cladding sheet which comprises a non-woven fibrous network with two faces and a phosphate ceramic permeating the network, the pipe cladding sheet having a thickness in the range of from about 5 to about 20 mils, wherein the non-woven fibrous network has a thickness in the range of from about 5 to about 16 mils and contains polymer fibers, further providing that the phosphate ceramic can extend beyond the fibrous network only up to a maximum thickness of about 3 mils on each face, further providing that the sheet naturally rests in a curled, cylindrical position, and has a curl memory.

5,312,658
CONDUITS HAVING A SHOCK ABSORBING SHELL AND METHOD FOR THEIR FORMATION
Frederick L. Griffith, Hampton, N.J., assignor to Progressive Polymerics Inc., Moonachie, N.J.
Division of Ser. No. 696,617, May 7, 1991, Pat. No. 5,217,667. This application Mar. 5, 1993, Ser. No. 26,947
Int. Cl.[5] B29D *22/00*; **H01R** *4/00*
U.S. Cl. 428—34.4 **17 Claims**

1. An elongated conduit segment which is suitable for coupling in end-to-end fashion with another conduit segment, comprising: an elongated concrete material tubular member having an inner surface, an outer surface and a bore extending in a longitudinal direction between open ends thereof; and a plastic, elongated conduit segment shell, which is resistant to deformation and which covers said inner surface and at least substantially all of said outer surface to help insulate the tubular member from mechanical shocks, the conduit segment shell being characterized by a longitudinally disposed bore therethrough between two open ends thereof, with the bore of the conduit segment shell being situated within the bore of the concrete tubular member, and the conduit segment shell being further characterized by a neck region at each of its open ends.



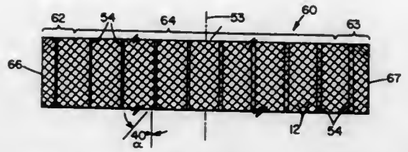
5,312,659
LAMINATED FILM BAG FOR PACKAGING FOOD
Yoshiaki Otsuka; Hideaki Masuo, both of Tokyo, and Yotaro Tsutsumi, Kanagawa, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan
Filed Jun. 23, 1992, Ser. No. 902,240
Claims priority, application Japan, Jun. 25, 1991, 3-248525
Int. Cl.[5] B65D *17/28*
U.S. Cl. 428—35.2 **8 Claims**



1. A laminated film bag for packaging food, which is formed of a laminated film composed of an outermost layer made of polyester resin film and an innermost layer made of a polyolefin resin film having a shock resistance strength of higher than 0.5 kg cm and an orientation of more than 0.05, and an intermediate layer made of an aluminum foil, wherein said polyolefin film layer has an elongation of less than 1,000 % and has formed thereon, during production of said laminated film, score lines having a depth which is 1/20 to ⅔ of the thickness of the polyolefin resin film layer and an opening width of 0.5 to 7 mm, at intervals of 1 to 15 mm.

5,312,660
BRAIDED SHAPED FILAMENTARY STRUCTURES AND METHODS OF MAKING
Edward L. Morris, and Ronnie S. Liew, both of Pueblo, Colo., assignors to The B. F. Goodrich Company, Akron, Ohio
Division of Ser. No. 746,267, Aug. 15, 1991, Pat. No. 5,217,770. This application Jan. 22, 1993, Ser. No. 7,700
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.3 **23 Claims**

1. A braided tape having a width defined as the distance between its lengthwise extending, laterally spaced first and second edges, and a fiber volume in different laterally adjacent longitudinally extending portions that differs from that fiber volume that results from the collapse of a circumferentially uniform tubular braid.



5,312,661
ARTIFICIAL SOIL AND PROCESS FOR PRODUCING THE SAME
Takeji Suzuki, and Hiroshi Azuma, both of Hyogo, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan
Filed Sep. 13, 1991, Ser. No. 758,850
Int. Cl.[5] B32B *5/14*
U.S. Cl. 428—36.5 **10 Claims**

1. An artifical soil which is suitable for growth of plants therein comprising porous granules consisting essentially of:
a plurality of thermosplastic resin foamed particles "selected from the group consisting of polystyrene and polyolefin foamed particles"; and
a plurality of fine substance particles wherein the fine substance is selected from the group consisting of natural soils, natural sands, artificial soils, organic substances derived from living matter, charcoal powder, and ash;
which granules are irregularly-shaped agglomerates in which individual particles are bonded to each other solely by heat fusion of the thermosplastic resin foamed particles wherein said thermosplastic resin foamed particles have a rate of expansion of from 3 to 20, which bonding occurs without the use of solvent or an adhesive as a binder, and which granules have the property of excellent water retention have a greater specific gravity than the starting resin foam particles.

5,312,662
CONDUCTIVE ROLL
Yuji Ohta, Nagasaki; Masaaki Inubushi, Inuyama, and Hiroyasu Kato, Bisai, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,147
Int. Cl.[5] B32B *1/08*
U.S. Cl. 428—36.8 **22 Claims**



1. An electrically conductive roll comprising:
a cylindrical core body;
an electrically conductive, resilient layer located radially outwardly of said core body, said resilient layer containing a softening agent;
a preventive layer located radially outwardly of said resilient layer, said softening agent being prevented from spreading by said preventive layer, said preventive layer being formed of N-methoxymethylated nylon as a major

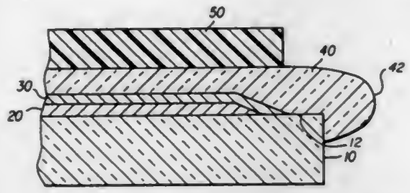
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constituent thereof, and containing an electrically conductive material; and

a resistance adjusting layer located radially outwardly of said preventive layer, said adjusting layer being formed of epichlorohydrin-ethylene oxide copolymer rubber as a major constitutent thereof and having an electric resistance of 10^8 to 10^9 Ω-cm,

said core body, said resilient layer, said preventive layer and said adjusting layer constituting an integral cylindrical body.

5,312,663
OPTICAL ELEMENT HAVING DURABILITY ENHANCING LAYER
James J. Kosinski, and Alfred J. Amell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 27, 1991, Ser. No. 815,020
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **5 Claims**



1. An optical disk comprising a support material formed of an optically transparent resin, having thereon:

a) a recording layer such that said recording layer does not cover the entire surface of said disk but leaves an annular portion of approximately 1.4 mm at the outer diameter;

b) a reflective layer such that said reflective layer does not cover the entire surface of said disk but leaves an annular portion of approximately 0.77 mm at the outer diameter;

c) a first protective layer having a thickness between about 2–20 μm, said protective layer being a resinous material having good adhesion to said support and covering a portion of the surface of said disk having said reflective layer, including at least a portion of said annular portion;

d) a second protective layer having a thickness of about 3 μm, said second layer covering at least the area of said surface having the reflective layer and having good adhesion to said first protective layer.

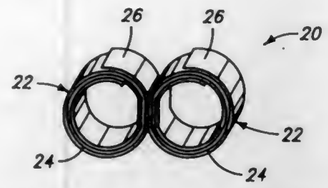
5,312,664
OPTICAL RECORDING MEDIA
Pranab K. Raychaudhuri, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 21, 1992, Ser. No. 886,218
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **6 Claims**

1. An optical recording film represented by the formula:

$$(Sb_aSn_bX_c)_{100-m-n}C_mH_n$$

wherein X is an element selected from the group consisting of indium, germanium, aluminum, cadmium, and zinc; a, b, c, m and n represent atomic percents of the elements in the SbSnX alloy wherein $55<a<75$; $5<b<40$; $5<c<30$; $0<m<15$ and $0\leqq n<5$; and m and n represent the atomic percent of carbon in the recording film that are effective to increase the transition temperature over recording films of identical SbSnX composition, but not containing carbon or hydrogen.

5,312,665
BIODEGRADABLE LOOSE-FILL PACKING MATERIAL
Earl F. Pratt; Gary W. Apel, both of Yakima, and Kevin D. Jorgensen, Selah, all of Wash., assignors to Michelsen Packaging Company, Yakima, Wash.
Filed Aug. 20, 1992, Ser. No. 932,994
Int. Cl.[5] B65D *81/12*; B32B *1/08*
U.S. Cl. 428—402 **18 Claims**



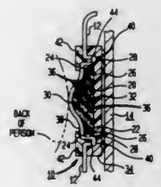
1. A loose-fill packing material of low bulk density in which the packing material comprises a plurality of individual packing elements, each individual packing element comprising:

two paper rings;

each ring formed of a separate strip of paper which is rolled lengthwise upon itself about a central axis forming multilayers with a cylindrical outer surface; and

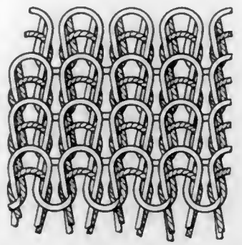
connecting means interconnecting the two rings along their outer surfaces.

5,312,666
DISINFECTABLE THREE PIECE WALL MOUNTED BACK SCRUBBER USING DETACHABLE CLOTH SURFACE
Karol Jovanovic, 24 River Rd., Clifton, N.J. 07015
Filed Apr. 30, 1992, Ser. No. 876,450
Int. Cl.[5] B32B *1/06, 3/26*
U.S. Cl. 428—76 **2 Claims**



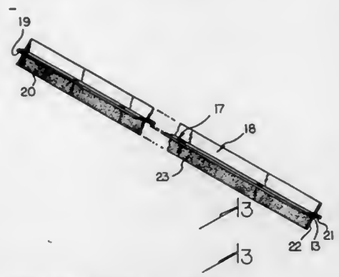
1. A backwasher comprising a resilient member, a facecloth, a framed cavity securely and removably holding said resilient member in said cavity, said frame cavity having means for attaching said frame cavity securely and permanently to a wall, said framed cavity comprising a securing means securing said resilient member, said facecloth having an exposed surface and an opposite surface adjacent said resilient member, said resilient member having a first side resembling a mound and a second flat side, said facecloth being adjacent said first side, said securing means comprising a channel frictionally holding a protuberant member with a portion of said facecloth therein between, said resilient member, said framed cavity, and said securing means each being made of a non-absorbent material.

5,312,667
COMPOSITE SWEATSHIRT FABRIC
Douglas Lamb, Methuen, and Moshe Rock, Andover, both of Mass., assignors to Malden Mills Industries, Inc., Lawrence, Mass.
Filed May 23, 1991, Ser. No. 704,781
Int. Cl.[5] B32B *33/00*; D06C *11/00*
U.S. Cl. 428—91 **14 Claims**



1. A composite textile fabric comprising a first fabric layer of a material selected from the group consisting of polyester and nylon having a raised fiber surface for conducting moisture and which has been rendered hydrophilic and a second fabric layer comprising at least 35% by weight of a moisture absorbent material wherein the first fabric layer and the second fabric layer are formed concurrently by knitting a plaited construction so that there is nothing imposed between the first and second fabric layers.

5,312,668
PAPER SPLICE MEMBER
Kirk D. Brown, 121 S. Burris Ave., Compton, Calif. 90221
Filed Sep. 8, 1992, Ser. No. 941,712
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—99 **2 Claims**

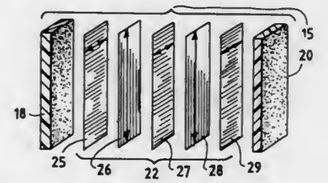


1. A paper splice member, comprising,

a first flexible web, wherein the first flexible web includes a predetermined length and a predetermined width, and a second flexible web, wherein the second flexible web includes a length equal to said predetermined length and a width equal to said predetermined width, the first flexible web medially intersecting the second flexible web, wherein the first flexible web and the second flexible web are coextensive relative to one another, and include a web intersection, with a web intersection longitudinally aligned having an intersection length equal to said predetermined length, and wherein the web intersection is of a flexible, shape-retentent construction, and

a first web includes a first web first interior surface and a first web second interior surface on opposed sides of the intersection, and the second web includes a second web first interior surface and a second web second interior surface on opposed sides of the intersection, wherein the first web first interior surface and the second web first interior surface are in a confronting coextensive relationship relative to one another, and the first web second interior surface and the second web interior surface are in confronting coextensive relationship to one another, and each interior surface includes an adhesive layer coextensive with each interior surface.

5,312,669
THERMOPLASTIC COMPOSITE REINFORCEMENT AND METHOD FOR ORTHOTIC, PROSTHETIC AND OTHER DEVICES
Gary Bedard, San Mateo, Calif., assignor to Becker Orthopedic Appliance Company, Troy, Mich.
Filed Jan. 3, 1992, Ser. No. 818,024
Int. Cl.[5] B32B *5/12*
U.S. Cl. 428—105 **31 Claims**



1. A reinforced orthotic or prosthetic device comprising:

a. a layer of bonding compatible thermoplastic host material defining a desired shape of said device;

b. a thermoplastic composite reinforcing sheet material of a desired shape bonded to the host material in a desired area comprising a plurality of thin layers bonded to one another to form a substantially unitary sheet, the layers including two outer thermoplastic layers, at least one of the thermoplastic layers being devoid of fibers so that no fibers can be felt on the surface of said layers, forming opposed sides of the composite reinforcing sheet material for bonding one or more sides of the composite reinforcing sheet material to the bonding compatible thermoplastic host material for reinforcing the thermoplastic host material, the sheet material including a core composed of a plurality of bonded internal layers of oriented fibers impregnated with a thermoplastic resin bonding compatible with the thermoplastic used in the two outer thermoplastic layers of the composite reinforcing sheet material, the impregnated thermoplastic resin being bonded to the thermoplastic used in the two outer thermoplastic layers.

5,312,670
FULLY ISOTROPIC LAMINATES AND QUASI-HOMOGENEOUS ANISOTROPIC LAMINATES
Kuang-Ming Wu, 1321 Timberly La., McLean, Va. 22102, and Brian L. Avery, 898 Read St., Attleboro, Mass. 02703
Filed Jan. 6, 1992, Ser. No. 817,385
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—141 **5 Claims**

1. The multiply multiangle laminate, which consists of at least six plies of at least three different orientations, wherein each ply is of an identical uniform thickness, of one orthotropic or anisotropic material, wherein on either side of the midplane of the laminate

(a) there are the same total number of plies aligned in each orientation;

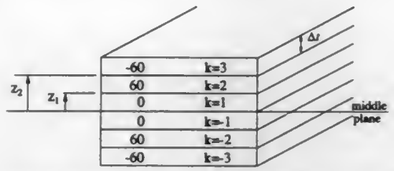
(b) the orientation angles are equally spaced;

(c) the layup sequence is defined by the following:

(i) each ply is assigned a value, k, an integer number that represents the stacking order of the ply from the midplane, therefore $k=1$ is for the play closest to the midplane, $k=2$ is for the ply adjacent to ply 1, and so forth;

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(ii) each ply is assigned a weighting factor equal to $3k^2-3k+1$, where k is defined in (i);
(iii) the sums of the weighting factors of all the plies in each orientation are identical;
wherein each side of the laminate has the same numbers of orientations and plies, and the resulting laminate has con-

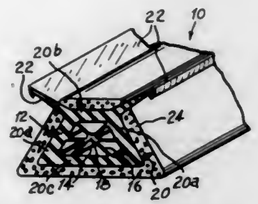


comitant isotropy in extensional, shear, bending, and twisting stiffnesses; the said bending stiffness equals to the extensional stiffness multiplied by a constant, $t^2/12$, and the said twisting stiffness equals to the said shear stiffness multiplied by the same constant, $t^2/12$, wherein t is the thickness of the entire laminate.

5,312,671
ANTISTATIC DRAFTING FILMS
David Atherton, North Kingstown; Morgan E. Gager, Warwick, and Sankar K. Paul, West Warwick, all of R.I., assignors to Arkwright Incorporated, Fiskeville, R.I.
Filed May 21, 1991, Ser. No. 702,803
Int. Cl.[5] B32B *3/00*; D06N *7/04*
U.S. Cl. 428—143 **25 Claims**

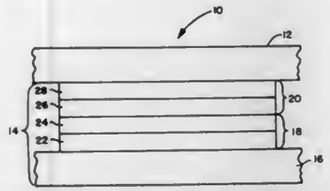
1. A film composite comprising a substrate having on at least one side thereof a polymeric matrix layer which provides a matte drafting surface to the film composite and which contains particulates and a quaternary ammonium salt, the cation of the quaternary ammonium salt having a charge density of from 3.33×10^{-3} to 13.5×10^{-3} at a concentration sufficient to provide a surface resistivity of said matrix layer of at most about 1×10^{13} ohms/square at 50% RH.

5,312,672
SEALING STRIP FOR WALL AND FLOOR JOINTS
Stewart B. Dittmeier, Wells, Vt., and Samuel E. Sher, Rockaway, N.J., assignors to Norton Company, Worcester, Mass.
Filed Dec. 21, 1992, Ser. No. 995,629
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—192 **12 Claims**



1. A compressible, flexible, and resilient wedge shaped sealing strip for joints between opposing spaced walls of a structure comprising:
a compressible, flexible, and resilient wedge shaped hollow body having an outer side wall extending around an internal passage including opposite side wall portions extending from an inner narrow side wall portion to an outer wider side wall portion, and
a layer of cellular foam material secured to at least the opposite side wall portions of the body and adapted for conforming sealing engagement with the opposing spaced side walls of a structure.

5,312,673
ADHESIVE SYSTEM FOR ATHLETIC LETTERING AND THE LIKE
Donald R. Dressler, Glastonbury, Conn., assignor to Bradford Industries, Inc., Lowell, Mass., a part interest
Filed Jul. 28, 1992, Ser. No. 921,313
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **21 Claims**

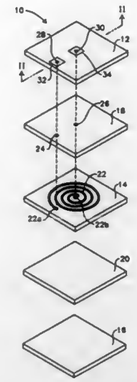


1. An adhesive-up web for attaching a thermoplastic or thermoset graphic to a substrate, comprising:
a plastic carrier sheet;
a pigment layer having at least one coating of pigmented thermoplastic or thermoset graphic material, said pigment layer being releasably carried by the carrier sheet; and
an adhesive layer having a primary adhesive coating of solvent based thermoplastic urethane adhesive resin on the pigment layer and a secondary adhesive coating of water-based thermoplastic urethane adhesive resin on the primary adhesive coating.

5,312,674
LOW-TEMPERATURE-COFIRED-CERAMIC (LTCC) TAPE STRUCTURES INCLUDING COFIRED FERROMAGNETIC ELEMENTS, DROP-IN COMPONENTS AND MULTI-LAYER TRANSFORMER
Carol Haertling, Santa Ana; Andrew A. Shapiro, Orange; Charles A. Goodman, Garden Grove; Ramona G. Pond, Downey; Robert D. Washburn, Malibu; Robert F. McClanahan, Valencia; Carlos H. Gonzalez, La Mirada, and David M. Lusher, Gardena, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 31, 1992, Ser. No. 923,409
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—210 **16 Claims**

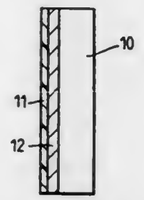
1. A cofired ceramic tape circuit structure, comprising;
a plurality of sandwiched sheets of low-temperature-cofired-ceramic (LTCC) tape; and
a ferromagnetic element sandwiched between sheets of said tape, said element being formed of a material which is substantially chemically non-reactive with, is sinterable

using a same firing profile as and has approximately the same thermal shrinkage characteristics as said tape,



wherein said the ferromagnetic material comprises a ferromagnetic oxide, a glass powder (or frit) and an organic binder.

5,312,675
PROTECTIVE CLOTHING
Graham J. Cooper; Stephen J. Cater, both of Salisbury, and David J. Townend, Poole, all of England, assignors to The Secretary of the State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
PCT No. PCT/GB91/01200, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/02153, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 18, 1991, Ser. No. 988,120
Claims priority, application United Kingdom, Aug. 1, 1990, 9016915
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—215 **11 Claims**

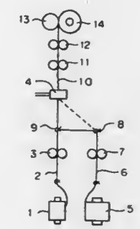


1. An article of protective clothing, comprising:
an outer sheet formed of solid material having an areal density of 18 to 22 kg/square meter and a thickness of 8 to 10 mm; and
at least one inner sheet contacting said outer sheet and of a pneumatic material having a density of 40–50 kg/cubic meter, an air content of 92–96% and a total thickness of 17 to 23 mm.

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Patent Not Issued For This Number

5,312,677
LATENT LOOPED YARN, A FABRIC MADE OF THE SAME, AND A METHOD FOR MANUFACTURING THE LATENT LOOPED YARN
Minoru Shiojima, Ichinomiya; Toshiaki Miura, Nagoya; Keitarou Nabeshima, Otsu, and Satoru Masuzaki, Nara, all of Japan, assignors to Toray Industries, Inc., Tokyo and Toray Textile, Inc., Osaka, both of Japan
Division of Ser. No. 224,313, Jul. 26, 1988, Pat. No. 5,102,735.
This application Dec. 11, 1991, Ser. No. 804,748
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—229 **17 Claims**



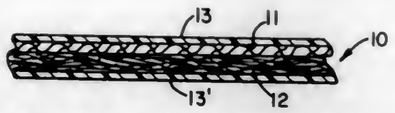
1. A high density fabric comprising:
(a) warp yarns comprising a mixed composite multifilament yarn consisting of synthetic multifilament yarns having opened loops and closed loops on the surface thereof, wherein the cover factor of said warp yarns is more than 1100; and
(b) weft yarns.

5,312,678
CAMOUFLAGE MATERIAL
Francis P. McCullough, Jr.; Leo R. Novak, both of Lake Jackson, Tex., and David M. Hall, Auburn, Ala., assignors to The Dow Chemical Company, Midland, Mich.
Filed Oct. 6, 1989, Ser. No. 418,045
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—225 **28 Claims**

1. In a structure for absorbing and/or reflecting radiated energy or electromagnetic radiation, the improvement which comprises 1) means for absorbing incident radar waves for reducing target signature and 2) at least one layer of a non-flammable fluorinated or non-fluorinated carbonaceous mate-

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rial having a LOI value of at least 40 for absorbing radiant energy, said carbonaceous material consisting of at least one of



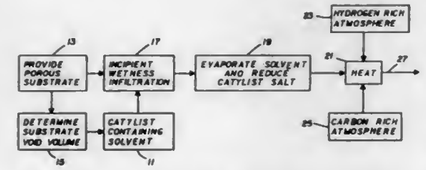
foam, film, linear and non-linear non-graphitic fibers and non-linear graphitic fibers.

5,312,679

NICKEL CATALYZED CARBON INFILTRATION OF CARBON FIBER SUBSTRATES

Eduardo E. Wolf, Granger, Ind., and Paul McAllister, Houston, Tex., assignors to University of Notre Dame du Lac, Notre Dame, Ind.

Filed Aug. 14, 1992, Ser. No. 930,861
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—289 4 Claims



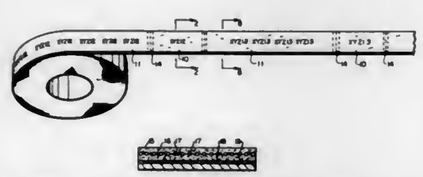
1. A process of impregnating a porous carbon substrate with a catalyst comprising the steps of:
determining the void volume of the substrate;
selecting said catalyst from a group consisting of iron, nickel and cobalt;
providing a solution of a salt of the catalyst and a liquid;
impregnating the porous substrate with a volume of catalyst compound containing liquid which is incrementally less that the determined void volume; and
heating said catalyst impregnated substrate in an atmosphere rich in carbon and hydrogen to evaporate said liquid and to reduce the catalyst salt leaving the catalyst in the substrate.

5,312,680

TAMPER-REVEALING SEALING DEVICE FOR PACKAGED DOCUMENTS

Carolyn N. Simpson, 1946 East 6400 South, Salt Lake City, Utah 84121

Continuation of Ser. No. 888,142, Feb. 25, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 85,259
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—321.5 3 Claims



1. A tamper-revealing strip of multiple sealing devices spaced apart end-to-end and each comprising:
a stain-loaded seal including a sheet of frangible material having a top side and bottom side, the bottom side of said sheet being coated with an adhesive material;
a staining material contained within microencapsulation vesicles of frangible material which are secured by said adhesive material to the bottom side of said sheet of frangible material; and
a sheet of peelable backing material covering said adhesive material and said vesicles, said frangible components being sufficiently frangible so that any attempt to remove the seal one adhered to a substrate will result in the treating of said frangible components and the release of the staining material associated therewith, said sealing devices being spaced apart end-to-end by non-staining portions of said strip that are marked transversely for the separation of successive sealing device without disturbance thereof to cause stainings.

5,312,681

SHEET OR WEB MATERIAL HAVING ANTISTATIC PROPERTIES

Bavo Muys, Mortsel, Belgium, and Friedrich Jonas, Aachen, Fed. Rep. of Germany, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jan. 5, 1993, Ser. No. 683
Claims priority, application European Pat. Off., Jan. 28, 1992, 92200230.8
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—323 10 Claims

1. A sheet or web material comprising a hydrophobic resin support or a paper support coated with at least one hydrophobic resin layer wherein said resin support or resin layer is coated with an antistatic layer applied from a polymer dispersion containing a polythiophene with conjugated polymer backbone and a polymeric polyanion compound, with the size of the polymer particles in said dispersion being from 5 nm to 1 μm, and wherein said antistatic layer is coated with an overlying adhering barrier layer applied from an aqueous polymer dispersion wherein the polymer of said barrier layer has hydrophilic functionality and said overlying adhering barrier layer is adhered to a hydrophilic colloid-containing layer.

5,312,682

PHOTOGRAPHIC PRINTING PAPER SUPPORT

Yasuo Nishikawa; Takahito Miyoshi, and Sugihiko Tada, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1993, Ser. No. 32,251
Claims priority, application Japan, Mar. 17, 1992, 4-091814
Int. Cl.[5] B32B *27/08;* G03C *1/775*
U.S. Cl. 428—328 10 Claims

1. A photographic printing paper support wherein one side of raw paper is covered by a composition containing titanium oxide dispersed in polyethylene terephthalate resin or a mixture of polyethylene terephthalate and at least one resin selected from resins which can be extruded at 270°–350° C., and the other side is covered by a composition containing calcium carbonate dispersed in polyethylene terephthalate resin or a mixture of polyethylene terephthalate with at least one resin selected from resins which can be extruded at 270°–350° C.

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SOLVENT COATED METALLIC THERMAL MASS TRANSFER DONOR SHEETS

Hsin-hsin Chou, Woodbury; Christopher E. Kunze, Blaine, and Peter A. Voso, Wyoming, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 7, 1993, Ser. No. 58,441
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—328 25 Claims

1. A thermal mass transfer donor element comprising a carrier layer having on one surface thereof a mass transferable layer of thermoplastic organic polymeric binder and metal flakes, said metal flakes having an average ratio of length to thickness of greater than 20:1.

5,312,684

THRESHOLD SWITCHING DEVICE

Keith W. Michael, and Udo C. Pernisz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 2, 1991, Ser. No. 694,721
Int. Cl.[5] H03K *19/23*
U.S. Cl. 428—336 8 Claims



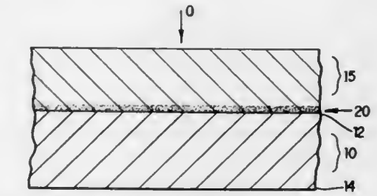
1. A threshold switching device comprising:
at least 2 leads making contacts at separate points on a material comprising silica with a density between about 0.9 and about 2.1 g/cc derived from hydrogen silsequioxane, wherein said leads are separated by said material.

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ATOMIC OXYGEN PROTECTIVE COATING WITH RESISTANCE TO UNDERCUTTING AT DEFECT SITES

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, and Sharon K. Rutledge, Bedford, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 6, 1992, Ser. No. 909,345
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—336 16 Claims



1. An oxidation-protected polymer structure comprising an organic substrate having at least two surfaces wherein at least one of said surfaces supports a metal catalyst which promotes combination of atomic oxygen to form molecular oxygen.

5,312,686

PROCESSABLE, HIGH MOLECULAR WEIGHT POLYANILINE AND FIBERS MADE THEREFROM

Alan G. MacDiarmid, Drexel Hill; Elliot Scherr, and Xun Tang, both of Philadelphia, all of Pa., assignors to Trustees of University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 950,414, Sep. 23, 1992, Pat. No. 5,258,474, which is a division of Ser. No. 768,352, Sep. 30, 1991, Pat. No. 5,177,187, which is a continuation of Ser. No. 306,448, Feb. 3, 1989, abandoned. This application Sep. 7, 1993, Ser. No. 117,502
Int. Cl.[5] C08G *73/00*
U.S. Cl. 428—364 15 Claims

1. A method of preparing fibers of high molecular weight polyaniline comprising drawing a viscous solution of an amorphous polyaniline base having a molecular weight of at least about 300,000 as determined by gel permeation chromatography into a fiber in a coagulating bath selected from the group consisting of non-solvents for said polyaniline and mixtures of solvents and non-solvents for said polyaniline, and allowing the drawn polyaniline to precipitate.

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SIZE COMPOSITION FOR IMPREGNATING FILAMENT STRANDS WITH A LIQUID CRYSTAL POLYMER AND THE STRANDS PRODUCED THEREBY

Jean-Claude Pollet; David L. Shipp, both of Granville; Gordon P. Armstrong, Newark, and Martin C. Flautt, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Continuation of Ser. No. 582,735, Sep. 14, 1990, abandoned, which is a continuation of Ser. No. 360,622, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 24,947, Mar. 12, 1987, abandoned. This application Jan. 15, 1993, Ser. No. 4,039
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] B32B *9/00;* D02G *3/00*
U.S. Cl. 428—372 5 Claims

1. A glass strand comprised of a plurality of filaments having a coating thereon, the coating comprising a melt spinnable liquid crystal polyester resin powder which is optically anisotropic in the melt phase, wherein the coating is the dried residue formed by evaporation of water from an aqueous composition comprising, in weight percent based on the weight of the aqueous composition, about 25 to about 55 wt. % liquid crystal polyester resin powder, about 0.1 to about 2.0 wt. % thickener material, and about 0.5 wt. % surfactant.

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ACARICIDE FIBER MATERIAL AND PROCESS FOR PRODUCING SAME

Tetsuya Hongu; Mikio Tashiro, both of Matsuyama, and Kazunori Orii, Kusatsu, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 2, 1989, Ser. No. 388,703
Claims priority, application Japan, Aug. 10, 1988, 63-197878
Int. Cl.[5] A01N *25/34;* B05D *1/18, 3/02;* B32B *27/34*
U.S. Cl. 428—395 9 Claims



1. An acaricide fiber material comprising: a number of individual polyester fibers and an acaricide component fixed to the individual fibers, wherein the acaricide component consists essentially of a solution comprising at least one acaricide selected from the group consisting of N-(fluorodichloromethylthio)-phthalimide, N-methyl-N'-pehnyl-(N'fluorodichloromethylthio)-sulfamide, 4-chlorophenyl-3'-iodopropargyl formal, and 2,4,4'-trichloro-2'-hydroxydiphenylether, dissolved in a carrier consisting of diethyl phthalate, said acaricide being fixed to the individual polyester fibers, in an amount of from 0.05% to 5.0% based on the weight of the individual polyester fibers and said diethyl phthalate being present in an amount of 2.5 to 20 times the weight of the acaricide.

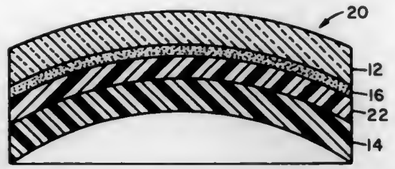
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,689

LAMINATED OPHTHALMIC LENS

David Dasher; E. Robert Fretz, Jr.; Mark S. Friske, all of Corning, N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Incorporated, Corning, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,424
Int. Cl.[5] B32B *27/38*
U.S. Cl. 428—413 11 Claims



1. In an improved, laminated, ophthalmic lens structure comprising two adjacent layers of dissimilar, organic plastic materials, at least one of which contains matter that tends to migrate, the improvement comprising a barrier layer that is intermediate the adjacent layers, that is impermeable to the migratory matter, and that is composed of a polyolefin containing a functional group selected from a group composed of acid or anhydride groups.

7. In the production of an ophthalmic lens structure wherein at least one organic monomeric material is cured adjacent to a layer of dissimilar organic material, wherein at least one of the organic materials contains matter that tends to migrate, the improvement that comprises applying a barrier layer, intermediate the dissimilar organic materials, that is impermeable to the migratory matter, and that is composed of a polyolefin containing a functional group selected from a group composed of acid and anhydride groups.

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SELF-ADHESIVE SILICONE RUBBER COMPOSITION AND SILICONE RUBBER COATED-FABRIC MATERIAL

Takeshi Fukuda; Shiniti Ide, both of Gunma, and Motoo Fukushima, Kanagawa, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 622,572, Dec. 5, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 944,630
Claims priority, application Japan, Dec. 5, 1989, 1-315585
Int. Cl.[5] B32B *9/04;* C08G *77/26*
U.S. Cl. 428—447 8 Claims

1. A silicone rubber-coated fabric web which comprises:
(A) a fabric web; and
(B) a layer of a silicone rubber cured and bonded to at least one surface of the fabric web, said rubber being a cured self-adhesive silicone rubber composition

which is a uniform blend comprising:
(a) 100 parts by weight of an organopolysiloxane represented by the average unit formula

$$R_aSiO_{(4-a)/2}$$

in which R is an unsubstituted or substituted monovalent hydrocarbon group and the subscript a is a positive number in the range from 1.98 to 2.01, and having a viscosity of at least 300 centistokes at 25° C.;
(b) from 0.1 to 20 parts by weight of an organosilane compound having, in a molecule, an isocyanato group —NCO and a hydrolyzable group represented by the formula

$$R^1{}_bSi(OR^1)_{3-b}(R^2—NCO),$$

in which the group denoted by R^1 is a monovalent hydrocarbon group or an alkoxy-substituted alkyl group, the group denoted by R^2 is a divalent hydrocarbon group having 1 to 10 carbon atoms or an alkylene group having a sulfur atom between the carbon atoms forming a sulfide linkage and the subscript b is zero, 1 or 2, or a partial hydrolysis product thereof; and
(c) a curing agent in an amount sufficient to cure the composition.

5,312,691

COPPER-CLAD MC4 UNSATURATED POLYESTER RESIN

Thomas E. Even, Memphis; Stephen K. Bishop, Ardmore, both of Tenn., and Lewis M. Perkey, Chesterland, Ohio, assignors to Glasteel Industrial Laminates, Inc., Collierville, Tenn.

Filed Sep. 10, 1991, Ser. No. 756,204
Int. Cl.[5] B32B *15/08, 27/36;* C08G *63/48, 63/91*
U.S. Cl. 428—458 15 Claims

1. A metal foil laminate, comprising:
a sheet of an unsaturated polyester resin blend having opposite first and second faces, a first sheet of metal foil.

5,312,692

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Shuhei Shiraishi, Mishima, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 512,152, Apr. 20, 1990, abandoned. This application May 11, 1992, Ser. No. 884,211
Claims priority, application Japan, May 10, 1989, 1-115118; Mar. 5, 1990, 2-51827
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—500 33 Claims

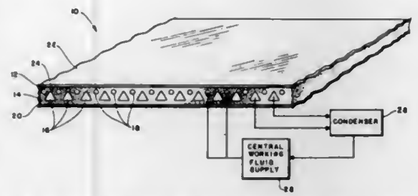
1. A thermal image transfer recording medium comprising:
a support, and
a thermal image transfer layer formed thereon consisting essentially of an acrylic resin having a molecular weight of 1 million or more and a glass transition temperature of 5 to 60° C., and a coloring agent, wherein the amount of said coloring agent is 10 wt % to 20 wt % of the total weight of said thermal image transfer layer and wherein said thermal image transfer layer has a thickness of 0.5 μm to 5 μm.

5,312,693

NONSACRIFICIAL LASER HARDENING

Donald B. Paul, Bellbrook, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 28, 1986, Ser. No. 867,726
Int. Cl.[5] B32B *15/20;* B64C *1/38;* F41H *5/04*
U.S. Cl. 428—554 8 Claims



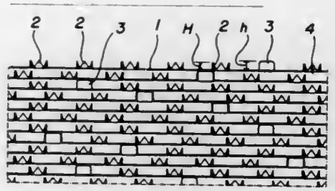
1. A laminate structure hardened against the effects of laser irradiation, comprising:
(a) a face sheet having a front surface and a back surface, the front surface having a high reflectivity to said laser irradiation so that a substantial portion of the energy of said laser irradiation is reflected away from said front surface;
(b) a liquid heat transfer working fluid covering the back surface of the face sheet so that a substantial portion of the energy of the said laser irradiation is absorbed into the liquid heat transfer working fluid to vaporize said liquid to transform said irradiation energy into heat of vaporization of the heat transfer working fluid;
(c) a porous foam core adjacent to the back surface of the face sheet;
(d) a supply of liquid heat transfer working fluid impregnating the foam core for supplying said liquid to the back surface of the face sheet to replace vaporized liquid heat transfer fluid;
(e) a first set of passages through the foam core for supplying liquid heat transfer working fluid to the foam core;
(f) a second set of passages through the foam core for removing vaporized heat transfer working fluid from the foam core; and,
(g) a supporting structure adjacent to the foam core.

5,312,694

MATERIAL FOR CATALYZER FOR PURIFICATION OF EXHAUST GAS AND CATALYZER USING SUCH A MATERIAL

Minoru Sugawara, Kanagawa, Japan, assignor to Ishino Corporation Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,105
Claims priority, application Japan, Oct. 17, 1991, 3-92677; Dec. 17, 1991, 3-352841; Dec. 18, 1991, 3-359692
Int. Cl.[5] B01J *35/04;* B01D *53/36;* F01N *3/28*
U.S. Cl. 428—592 8 Claims



1. Catalyzer for purifying exhaust gas, characterized in that tabs are formed in a circle around the perimeter of a circular opening in a heat-resisting metallic thin plate, said tabs protruding from at least one side of said metallic thin plate, lugs having a protruding height equal to or slightly greater than the protruding height of said tabs are arranged in said metallic thin plate formed with said tabs, said lugs being arranged in spaced distances from each other, and said metallic thin plate formed with said tabs is spirally wound to form the catalyzer.

5,312,695

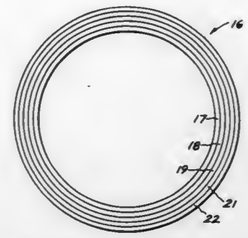
REINFORCED MULTILAYER FILAMENT REINFORCED RING STRUCTURE

Paul A. Siemers, Clifton Park; Stephen F. Rutkowski, Duanesburg, both of N.Y.; Joseph J. Jackson, Topsfield, Mass., and Donald R. Spriggs, San Diego, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 2, 1990, Ser. No. 546,961
Int. Cl.[5] B21D *39/00*
U.S. Cl. 428—614 5 Claims

1. A superring structure having a matrix of a titanium base metal,

said structure having embedded therein over 100 layers of continuous filamentary reinforcement extending fully around the ring,



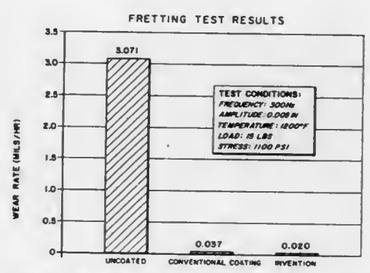
the volume fraction of filament reinforcement being at least 20%.

5,312,696

METHOD FOR REDUCING FRETTING WEAR BETWEEN CONTACTING SURFACES

Russell A. Beers, West Palm Beach; Michael F. Machinchick, Royal Palm Beach, and Allan A. Noetzel, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 760,318, Sep. 16, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,666
Int. Cl.[5] F01D *5/30*
U.S. Cl. 428—660 20 Claims



1. A method for reducing fretting wear between contacting surfaces at a temperature from about 1000° F. to about 1250° F., said method comprising applying to at least one of said contacting surfaces a coating consisting essentially of from about 88 to about 96 weight percent copper, from about 4 to about 8 weight percent aluminum, and from 0 to about 4 weight percent silicon, placing said surfaces in contact, and causing relative movement between said surfaces at said temperature.

5,312,697

ALLOY OVERLAY HAVING THERMAL CHARACTERISTICS SIMILAR TO THOSE OF A SUBSTRATE

Samuel D. Kiser, Catawba, N.C.; Melissa A. Moore, South Point, Ohio, and David B. O'Donnell, Huntington, W. Va., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Apr. 24, 1992, Ser. No. 874,232
Int. Cl.[5] B32B *15/18;* C22C *19/05*
U.S. Cl. 428—679 4 Claims

1. A binary structure comprising a mild or low alloy steel substrate and a nickel-base alloy disposed thereon, the alloy having a coefficient of thermal expansion of about 7.2×10^{-6}

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in/in/° F. at 800° F. and a thermal conductivity of about 100–130 BTU-in/ft²hr-° F. at 800° F. which is physically and thermally compatible with the steel substrate and including 19–20% molybdenum, 5–6% chromium, up to about 2% iron, the iron/chromium ratio less than about 0.6, up to about 3% tungsten and/or niobium, up to about 0.1% carbon, commercially acceptable levels of impurities, and the balance nickel.

5,312,698

ALUMINUM NITRIDE SUBSTRATE AND METHOD FOR PRODUCING SAME

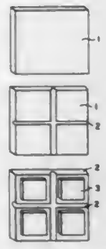
Hideki Sato, and Yasuyuki Sugiura, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 825,799, Jan. 21, 1992, Pat. No. 5,258,218, which is a continuation of Ser. No. 406,416, Sep. 13, 1989, abandoned. This application Aug. 11, 1993, Ser. No. 104,564

Claims priority, application Japan, Sep. 13, 1988, 63-229400

Int. Cl.[5] C04B *41/51*

U.S. Cl. 428—698 **10 Claims**



1. A semiconductor device, comprising an insulating substrate and a semiconductor circuit mounted on said substrate, wherein said substrate comprises an aluminum nitride substrate obtained by severing an initial aluminum nitride substrate along a high density energy means-generated score line for machining the substrate, having a predetermined depth in at least one portion thereof, said initial substrate comprising a re-solidified layer at the surface of said score line comprised of at least one material selected from the group consisting of an oxide, nitride or oxynitride of aluminum and an oxide, nitride or oxynitride of an additive of the aluminum nitride substrate, wherein said predetermined depth is greater than the thickness of said re-solidified layer.

5,312,699

POWER STORAGE SYSTEM

Chihiro Yanagi, Akashi; Yasuhira Kikuoka, Kako; Keiichi Kagimiya, Kobe; Masakazu Yoshino, Kobe; Michio Tokura, Kobe, and Sabuo Ueda, Takasago, all of Japan, assignors to The Kansai Electric Power Co., Ltd., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

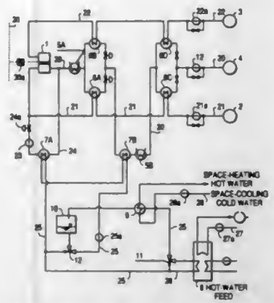
Filed Sep. 30, 1992, Ser. No. 953,790

Claims priority, application Japan, Oct. 11, 1991, 3-263798

Int. Cl.[5] H07M *8/18*

U.S. Cl. 429—22 **8 Claims**

1. A power storage system comprising; a unitary electrolytic and fuel cell having a solid oxide electrolyte, said cell being selectively operable to electrolyze steam to produce hydrogen and oxygen and to generate electric power; a steam feed system connected to said cell so as to deliver steam to said cell; a hydrogen store and an oxygen store connected to said cell so as to store hydrogen and oxygen produced by said cell, respectively, and so as to serve as a supply of hydrogen and oxygen for said cell; a heat-exchanger system connected to said cell so as to effect a heat exchange operation with said cell wherein heat of exhaust produced by said cell when generating electric power and when electrolyzing steam is transferred to said heat-exchanger system; a hot water feed system through which water is fed to effect space heating, said hot water feed system being connected to said heat-exchanger system such that water being fed through said hot water feed system is heated by said heat-exchanger system; an absorption refrigerating machine which uses heat to effect an absorption process, said refrigerating machine being connected to said heat-exchanger system so



as to receive heat therefrom to effect said absorption process; and a cold water feed system through which water used for cooling a space is fed, said cold water feed system including a feed line connected to said refrigerating machine such that water being fed through said line is cooled by said refrigerating machine.

5,312,700

SOLID OXIDE FUEL CELL AND METHOD FOR PRODUCING THE SAME

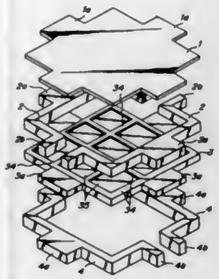
Yoshihiko Ishida, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Mar. 23, 1992, Ser. No. 855,661

Claims priority, application Japan, Mar. 27, 1991, 3-085841

Int. Cl.[5] H01M *8/10*

U.S. Cl. 429—30 **8 Claims**



1. A method for producing a solid oxide fuel cell comprising the steps of:

press contacting a flat plate-shaped green sheet made of an ion-conductive ceramic molding material and a rib-forming green sheet made of substantially the same material as that of the flat plate-shaped green sheet and having a unitary shape formed by connecting elongated portions thereof to each other;

sintering the press-contacted flat plate-shaped green sheet and the rib-forming green sheet to form an ion-conductive ceramic plate from the flat plate-shaped green sheet and to form ribs from the rib-forming green sheet;

forming an air electrode on one main surface of the ion-conductive ceramic plate; and

forming a fuel electrode on the other main surface of the ion-conductive ceramic plate.

5,312,701

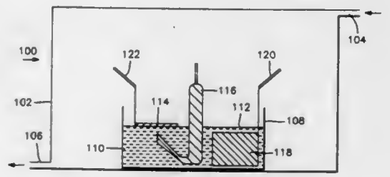
PROCESS FOR PREPARING A SINGLE PASS GAS DIFFUSION ELECTRODE

Eric E. Khasin, Rishon LeZion; Neal Naimer, Jerusalem; Jonathan R. Goldstein, Jerusalem, and Jonathan Sassen, Jerusalem, all of Israel, assignors to Electric Fuel (E.F.L.) Limited, Jerusalem, Israel

Continuation-in-part of Ser. No. 903,115, Jun. 23, 1992, Pat. No. 5,242,765. This application May 18, 1993, Ser. No. 62,835

Int. Cl.[5] H01M *4/88*

U.S. Cl. 429—42 **12 Claims**



1. A single pass wet fabrication process for preparing a gas diffusion electrode for metal-air batteries and fuel cells comprising:

a) preparing an active-layer forming dispersion containing catalyzed carbon black, hydrophilic fluorinated polymer and particulate hydrophobic fluorinated polymer in a liquid medium;

b) preparing a blocking-layer forming dispersion containing carbon black and particulate hydrophobic polymeric binders in a liquid medium;

c) filtering a first of said layer forming dispersions though filtering means to deposit a first layer of damp solids mass;

d) filtering a second of said layer forming dispersions through said first deposited damp solids mass before the drying or sintering of said first deposited damp solids mass in order to deposit a second layer of damp solids mass thereon in such a manner that lower components of said second layer of damp solids mass are intermixed with upper components of said first layer of deposited damp solids mass;

e) drying and compressing said composite first and second layers with a conductive metal mesh incorporated therein; and

f) heating said dried layers to a temperature above the sintering temperature of the hydrophobic polymer while applying pressure thereto thereby causing the polymeric materials of both layers to sinter and bond with each other and with other components of said layers.

5,312,702

Patent Not Issued For This Number

5,312,703

REVERSIBLE OR IRREVERSIBLE PRODUCTION OF AN IMAGE

Gerhard Wagenblast, Frankenthal, and Volker Bach, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/01539, § 371 Date Mar. 13, 1992, § 102(e) Date Mar. 13, 1992, PCT Pub. No. WO91/04514, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 12, 1990, Ser. No. 838,293

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1989, 3930667

Int. Cl.[5] G03G *5/024, 5/12, 15/056*

U.S. Cl. 430—19 **31 Claims**

1. A process for the reversible or irreversible production of an image by imagewise exposure of a recording layer (a) to energy in the presence or absence of an electrical and/or magnetic field, resulting in a pattern of surface charges on the surface of the recording layer (a) corresponding to the imagewise exposure to energy, wherein

(1) the recording layer (a) comprises an organic material which has a nematic liquid-crystalline, smectic liquid-crystalline or ferroelectric smectic liquid-crystalline behavior which solidifies in a glass-like manner, is not or only slightly photoconductive and contains permanent dipoles, and wherein

(2) the pattern of surface charges is produced therein without or virtually without formation of free charge carriers by reversible imagewise alignment of all or some of the permanent dipoles present in the recording layer (a), the energy used for imagewise exposure being thermal.

5,312,704

MONOMODAL, MONODISPERSE TONER COMPOSITIONS AND IMAGING PROCESSES THEREOF

Timothy J. Fuller, W. Henrietta; Ralph A. Mosher, Rochester, and Anita C. Van Laeken, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 78

Int. Cl.[5] G03G *9/087*

U.S. Cl. 430—45 **26 Claims**

1. A toner composition comprised of pigment particles, and a resin comprised of a monomodal polymer resin or monomodal polymer resin blends and wherein the monomodal resin or resin blends possess a narrow polydispersity.

5,312,705

PHOTOSENSITIVE MATERIALS FOR ELECTROPHOTOGRAPHY HAVING A DOUBLE-LAYER STRUCTURE OF A CHARGE GENERATION LAYER AND A CHARGE TRANSPORT LAYER

Sohji Tsuchiya, Kanagawa; Atsushi Omote, Kawasaki, and Mutsuaki Murakami, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 26, 1991, Ser. No. 736,671

Claims priority, application Japan, Jul. 27, 1990, 2-199401; Sep. 3, 1990, 2-233509

The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

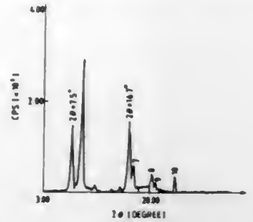
Int. Cl.[5] G03G *15/02*

U.S. Cl. 430—58 **9 Claims**

1. A photosensitive material for electrophotography which comprises a conductive support, and a charge transport layer and a charge generation layer formed on the conductive support in this order, said charge generation layer having a thickness of from 10 to 50 micrometers and being formed from a

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dispersion which is obtained by mixing X-type and/or τ-type metal-free phthalocyanine and a resin binder in a solvent, which is capable of dissolving at least a part of X-type and/or



τ-type metal-free phthalocyanine, to such an extent that a ratio between X-ray diffraction peak intensities at about 7.5° and at about 9.1° is in the range of 1:1 to 0.1:1.

5,312,706

INFRA-RED PHOTOCONDUCTOR BASED ON OCTA-SUBSTITUTED PHTHALOCYANINES

Brian E. Springett, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1992, Ser. No. 889,881

Int. Cl.[5] G03G *5/04*

U.S. Cl. 430—58 **33 Claims**

1. A photoconductor comprising a charge generation layer, wherein the charge generation layer comprises a metal centered octa-substituted phthalocyanine, wherein substituents on exterior rings of the phthalocyanine comprise alkoxy groups and where said alkoxy groups are para to each other.

5,312,707

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR AND DIAMINE COMPOUNDS FOR USE IN THE SAME

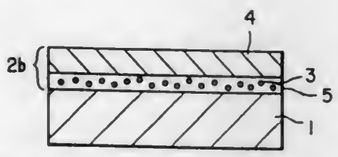
Masafumi Ota; Masaomi Sasaki, both of Susono; Tamotsu Aruga, Mishima; Tomoyuki Shimada, Shizuoka; Mitsutoshi Anzai, Kawagoe, and Masaki Okubo, Ushiku, all of Japan, assignors to Ricoh Company, Ltd. and Hodogaya Chemical Co., Ltd., both of Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,841

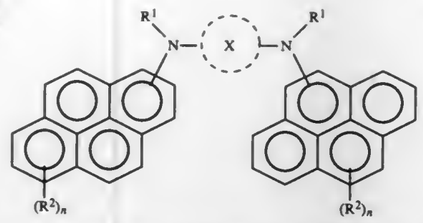
Claims priority, application Japan, Sep. 30, 1991, 3-278648; Oct. 30, 1991, 3-311988; Dec. 9, 1991, 3-350313; Jul. 20, 1992, 4-214613; Aug. 10, 1992, 4-234319

Int. Cl.[5] G03G *5/047, 5/09*

U.S. Cl. 430—59 **23 Claims**



1. An electrophotographic photoconductor comprising an electroconductive substrate and a photoconductive layer formed thereon comprising a diamine compound of formula (I):



(I)

wherein R^1 is an alkyl group having 1 to 4 carbon atoms, or an aryl group; R^2 is hydrogen, an alkyl group having 1 to 4 carbon atoms, or an alkoxy group having 1 to 4 carbon atoms; n is an integer of 1 to 3; and



is an arylene group or a bivalent group of a heterocyclic compound, said photoconductive layer comprising said diamine compound, a sensitizer dye and a binder, or said photoconductive layer comprising a charge generating material and a charge transporting material which comprises said diamine compound and a binder.

22. The electrophotographic photoconductor as claimed in claim 1, wherein said photoconductive layer comprises a charge generation layer comprising said charge generating material, and a charge transport layer comprising said charge transporting material.

5,312,708

PHOTOCONDUCTIVE RECORDING MATERIAL HAVING A CROSSLINKED BINDER SYSTEM

David Terrell, Lint, and Stefaan De Meutter, Antwerpen, both of Belgium, assignors to AGFA-Gevaret, N.V., Mortsel, Belgium

Filed May 11, 1993, Ser. No. 59,284

Claims priority, application European Pat. Off., Jun. 4, 1992, 92201612.6

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—59 **9 Claims**

1. A photoconductive recording material containing a support and a charge generating layer (CGL) in contiguous relationship (contact) with a charge transporting layer (CTL), containing a n-charge transporting material (n-CTM), wherein the binder of said charge generating layer (CGL) is made insoluble in methylene chloride by crosslinking, and said binder is composed essentially of one or more polymeric reaction products of at least one epoxy resin with at least one polyamide resin having amino groups and being called herein polyaminoamide resin.

5,312,709

IMAGE HOLDING MEMBER AND APPARATUS MAKING USE OF IT

Susumu Kadokura, Sagamihara; Fumio Sumino, Yokohama, and Teigo Sakakibara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,684

Claims priority, application Japan, Apr. 11, 1990, 2-96831; Apr. 12, 1990, 2-98345

Int. Cl.[5] G03G *5/10*

U.S. Cl. 430—62 **8 Claims**

1. An image holding member comprising a support and a photoconductive layer provided on said support, wherein said support comprises a substrate and a conductive layer comprising a conductive electro-deposition coating film provided on the surface of said substrate, said coating film having conductive powder dispersed in a resin and said conductive powder being electrodeposited together with the resin.

5,312,710

ELECTROPHOTOGRAPHIC TONER AND PROCESS FOR PRODUCING THE SAME

Kazufumi Tomita; Yoshihiro Inaba; Koichi Takashima; Tsutomu Kubo, and Izuru Matsui, all of Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

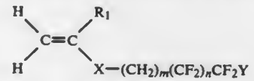
Filed Jun. 30, 1992, Ser. No. 906,423

Claims priority, application Japan, Jul. 4, 1991, 3-190673; Jul. 15, 1991, 3-200040

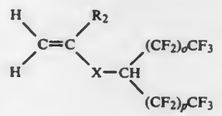
Int. Cl.[5] G03G *9/00, 9/08*

U.S. Cl. 430—109 **14 Claims**

1. An electrophotographic toner comprising toner particles having adhered on the surface thereof a polymer comprising at least 5 mol % of a monomer unit derived from a fluorine-containing vinyl monomer represented by formula (I) or (II):



(I)



(II)

wherein X represents COO, OCO, O, or a p-phenylene group; R_1 and R_2 each represent a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms; m represents an integer of from 1 to 7; n represents an integer of from 1 to 19, o and p each represent an integer of from 0 to 7; and Y represents a hydrogen atom or a fluorine atom.

5,312,711

DRY ELECTROSTATOGRAPHIC DEVELOPER COMPOSITION

Serge M. Tavernier, Lint; Paul F. Sterckx, Begijnendijk, and Jean-Marie O. Dewanckele, Drongen, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 16, 1991, Ser. No. 730,480

Claims priority, application European Pat. Off., Jul. 19, 1990, 90113845.3

Int. Cl.[5] G03G *9/00, 5/00, 9/083, 9/107*

U.S. Cl. 430—110 **14 Claims**

1. Dry electrostatographic developer suitable for use in the development of an electrostatic charge pattern, comprising inorganic microparticles containing fluor containing groups in an amount sufficient to enhance the flowability and negative chargeability of the developer particles and negatively chargeable toner particles comprising an acidic binder resin having an acid value between 10 and 30 mg KOH/g and not comprising (a) charge controlling agent(s) and featuring a classified size distribution wherein more than 90 percent by volume of the toner particles have equivalent particle size diameters between 1 and 7 micron.

5,312,712

MULTILAYER ADHESIVE LABEL

Rolf Will, Bad Toelz, and Hans-Peter Ast, Holzkirchen, both of Fed. Rep. of Germany, assignors to Zweckform Etikettiertechnik GmbH, Holzkirchen, Fed. Rep. of Germany

Division of Ser. No. 702,237, May 17, 1991, Pat. No. 5,262,251, which is a division of Ser. No. 454,518, Dec. 21, 1989, Pat. No. 5,032,477, which is a division of Ser. No. 254,383, Oct. 5, 1988, Pat. No. 4,911,994, which is a continuation of Ser. No. 70,642, Jul. 2, 1987, Pat. No. 4,801,514, which is a continuation of Ser. No. 739,376, May 30, 1985, abandoned. This application Apr. 9, 1993, Ser. No. 45,481

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430162

The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.

Int. Cl.[5] H01M *2/02*

U.S. Cl. 429—167 **2 Claims**



1. A label enclosing, by overlapping and by being shrunk around, the circumferential surface, and adjoining border areas of a top end face and a bottom end face, a cylindrical dry cell battery body, comprising:

a bottom layer of a plastic foil which is shrunk in an axial direction of said body;

a top layer of a plastic foil which is shrunk simultaneously in said axial direction; and

a laminating adhesive connecting an upper side of said bottom layer with a lower side of said top layer,

wherein an imprint, which is visible through said top layer, is printed on one of the upper side of said bottom layer and the lower side of said top layer, and further wherein, below said imprint, a metallic layer, contrasting said imprint and visible through said top layer, is vapor deposited on said bottom layer.

5,312,713

INFORMATION RECORDING MEDIUM AND INFORMATION RECORDING METHOD

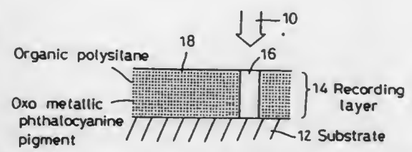
Masaaki Yokoyama, Toyonaka, and Mikio Kakui, Minoo, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 756,589, Sep. 9, 1991, Pat. No. 5,264,266. This application Sep. 14, 1993, Ser. No. 120,460

Claims priority, application Japan, Sep. 10, 1990, 2-40337

Int. Cl.[5] G03C *8/00*

U.S. Cl. 430—200 **16 Claims**

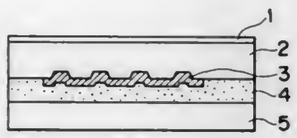


1. A method for recording information onto a recording medium which comprises a recording layer including a mixture of organic polysilane and oxo metallic phthalocyanine pigment, wherein a decoloring reaction of oxo metallic phthalocyanine pigment is used which is caused by heating the

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recording layer to a temperature equal to or higher than the pyrolyzing point of the organic polysilane.

5,312,714
OPTICAL RECORDING MEDIUM, PROCESS FOR PRODUCING RECORDING MEDIUM, AND INFORMATION RECORDING METHOD
Yoshihiro Ogawa, Hachioji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 30, 1992, Ser. No. 921,585
Claims priority, application Japan, Aug. 2, 1991, 3-216580
Int. Cl.[5] G11B *7/00, 7/24, 7/26*
U.S. Cl. 430—273 **50 Claims**



1. An optical recording medium comprising a substrate, a recording layer and a protective substrate laminated to said recording layer interposing an adhesive layer, wherein said adhesive layer contains at least one copolymer selected from the group consisting of an ethylene-acrylic acid copolymer, an ethylene-acrylate copolymer, an ethylene-methacrylic acid copolymer and an ethylene-methacrylate copolymer, and has a Vicat softening point of from 65° C. to 95° C.

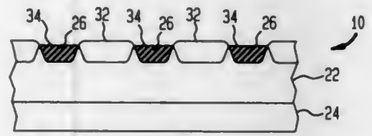
5,312,715
LIGHT-SENSITIVE COMPOSITION AND PROCESS
George R. E. Daniels, Mattapan, Mass.; Michael J. Oddi, Springhill, Fla.; Kevin J. Cheetham, Millbury, and Stephen S. Rodriguez, Monument Beach, both of Mass., assignors to Shipley Company Inc., Marlborough, Mass.
Continuation-in-part of Ser. No. 663,604, Mar. 4, 1991, Pat. No. 5,206,116. This application Feb. 3, 1992, Ser. No. 829,371
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/725*
U.S. Cl. 430—280 **25 Claims**

1. An aqueous developable photoimageable composition comprising a binder and a curing system for components of said binder, said binder comprising an admixture of a phenolic resin and a compound having at least two reactive functionalities selected from the group of an epoxy radical, a vinyl ether radical and a mixture of an epoxy and a vinyl ether radical, and said curing system comprising a crosslinking agent for the phenolic resin and photoactive compound capable of generating a curing catalyst for said binder; said phenolic resin being present in an amount sufficient to render unexposed portions of the composition alkali soluble, said compound having at least two reactive functionalities being present in an amount capable of hardening said composition, and said curing system being present in a amount capable of curing the components of the binder upon exposure to activating radiation and baking before development.

5,312,716
PROCESS FOR PRODUCING A SEMICONDUCTOR
Masao Unoki; Shunsuke Yokotsuka, and Masaru Nakamura, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Filed Jan. 5, 1992, Ser. No. 894,760
Claims priority, application Japan, Jan. 6, 1991, 3-162171
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—313 **17 Claims**

1. A process for producing a semiconductor having a thin film of a fluorine resin as a protective film, which comprises coating on the surface of a fluorine resin a photoresist solution containing a surfactant, followed by exposure, development and etching for fine processing of the fluorine resin.

5,312,717
RESIDUE FREE VERTICAL PATTERN TRANSFER WITH TOP SURFACE IMAGING RESISTS
Harbans S. Sachdev, Hopewell Junction; John C. Forster, Poughkeepsie; Leo L. Linehan, Walden, all of N.Y.; Scott A. MacDonald, San Jose, Calif.; K. Paul L. Muller, Wappingers Falls, N.Y.; Walter E. Mlynko, Colchester, and Linda K. Somerville, W. Bolton, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 24, 1992, Ser. No. 949,963
Int. Cl.[5] G03F *7/36;* **G03C** *5/00*
U.S. Cl. 430—313 **4 Claims**



1. A method for transferring a pattern through a photoresist layer in the fabrication of submicron semiconductor device structures, said method comprising the steps of:

a) providing a photoresist on a substrate;

b) imagewise exposing the photoresist with a desired pattern to form exposed and unexposed patterned areas in a top surface of the photoresist;

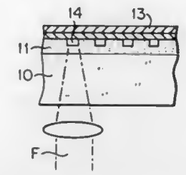
c) baking the photoresist to form cross-linked regions in the exposed patterned areas of the photoresist, hereafter referred to as exposed patterned cross-linked areas;

d) silylating the photoresist to incorporate silicon into the unexposed patterned area of the photoresist, wherein some incorporation of silicon occurs in the exposed patterned cross-linked areas of the photoresist; and

e) etching the photoresist utilizing a high density, low pressure, anisotropic O_2 plasma alone to produce residue-free images with vertical wall profiles in the photoresist, wherein the high density, low pressure anisotropic O_2 plasma is generated by radio frequency induction (RFI) in a RFI reaction chamber having magnetic confinement of the plasma, the chamber operating with an inductive power in the range of 300–500 Watts applied to an RF coil; and RF bias in the range of 100–300 Watts applied to the substrate; a chamber pressure in the range of 0.5 to 10 mTorr; and a gas flow in the range of 10–50 sccm, etching the photoresist at a rate of 0.5–2.5 μm per minute,

whereby the exposed patterned cross-linked areas are completely etched, including any exposed cross-linked patterned areas incorporating some silicon, and the unexposed silylated patterned areas remain with no detectable damage occurring to the unexposed silylated patterned areas nor any image deformation occurring to the exposed and unexposed patterned areas.

5,312,718
METHOD OF MANUFACTURING DIES FOR PRESSING OPTICAL DISKS
Jean Ledieu, Crespieres, and Jean-Francois Dufresne, Caen, both of France, assignors to Digipress, Caen Cedex, France
Filed Jan. 19, 1993, Ser. No. 5,289
Claims priority, application France, Jan. 24, 1992, 92 00778
Int. Cl.[5] C25D *1/10*
U.S. Cl. 430—320 **7 Claims**



1. A method for manufacturing an optical disk die, comprising the steps:

illuminating a laminated disk with a laser beam, the disk including—

(a) a substrate;

(b) an overlying heat sensitive layer;

(c) a reflective layer deposited on the hat sensitive layer, the illumination being directed through the substrate and reflected from an internal surface of the reflective layer, causing ablated micro-pits to form in the heat sensitive layer;

removing the reflective layer;

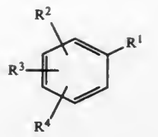
depositing a first metallic layer on the pitted heat sensitive layer, the metallic layer following contours of the micro-pits;

depositing a second metallic layer over the first metallic layer, the second metallic layer having an interface with the first metallic layer which duplicates a pattern of the micro-pits; and

separating the deposited second metallic layer from a remainder of the laminated disk thereby forming a die.

5,312,719
DEVELOPING SOLVENT FOR LAYERS WHICH ARE CROSSLINKABLE BY PHOTOPOLYMERIZATION AND PROCESS FOR THE PRODUCTION OF RELIEF FORMS
Hans-Joachim Schlosser, and Guenther Schoen, both of Wiesbaden, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company
Continuation of Ser. No. 807,615, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 540,792, Jun. 20, 1990, abandoned, which is a division of Ser. No. 426,413, Oct. 26, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 20,173
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1988, 3836403
Int. Cl.[5] G03F *7/32*
U.S. Cl. 430—325 **17 Claims**

1. A process for the production of photopolymerization-crosslinked relief forms, which comprises the steps of imagewise exposing to actinic light, layers which are crosslinkable by photopolymerization, said layers comprising a binder based on an elastomeric polymer, a photopolymerizable monomer compatible therewith and a photoinitiator, and washing off the non-crosslinked portions of said layers with a developing solvent, said developing solvent comprising in admixture (a) about 55 to 90% by weight of at least one aromatic compound of the general formula I



(I)

wherein

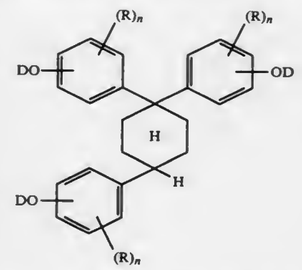
R^1 to R^4 are the same or different and denote hydrogen, (C_1–C_5)n-alkyl or iso-alkyl and R^1 and R^2, provided that said R^1 and R^2 are directly adjacent, may also form a cycloaliphatic or aromatic ring having 5 or 6 carbon atoms as ring members which are non-substituted or substituted,

provided that the sum of carbon atoms of all substitutents and ring members is from 9 to 13, and (b) an alcohol selected from the group consisting of butanol and 2-ethyl butanol-(1).

5,312,720
PROCESS OF DEVELOPING A POSITIVE IMAGE UTILIZING O-NAPHTHOQUINONE DIAZIDE RADIATION-SENSITIVE ESTERS OF PHENOLIC DERIVATIVES OF 4-(4-HYDROXYPHENYL)CYCLOHEXANONE
Alfred T. Jeffries, III, Providence, and Medhat A. Toukhy, Barrington, both of R.I., assignors to OCG Microelectronic Materials Inc., West Paterson, N.J.
Division of Ser. No. 45,022, Apr. 5, 1993, Pat. No. 5,278,021. This application Oct. 18, 1993, Ser. No. 137,522
Int. Cl.[5] G03F *7/30, 7/38*
U.S. Cl. 430—326 **7 Claims**

1. The process of developing an image-wise exposed photoresist-coated substrate comprising:

(1) coating said substrate with a radiation sensitive mixture useful as a positive working photoresist, said mixture comprising an admixture of an alkali soluble binder resin and a photoactive compound of formula (I):



(I)

wherein each R is individually selected from hydrogen and a lower alkyl group having 1 to 4 carbon atoms; n is either 0, 1, or 2; and D is selected from the group consisting of hydrogen or o-naphthoquinone diazide sulfonyl group; with the proviso that at least two D's are o-naphthoquinone diazide sulfonyl groups; and wherein the amount of said binder resin being about 70% to 95% by weight and the amount of photoactive compound is from about 5% to about 30% by weight, based on the total solid content of said radiation sensitive mixture;

(2) subjecting said coating on said substrate to an image-wise exposure of radiation; and

(3) subjection said image-wise exposed coated substrate to a developing solution wherein the exposed areas of said radiation-exposed coating are dissolved and removed

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from the substrate, thereby resulting in positive image-wise pattern in the coating.

5,312,721

BLEACHABLE ANTIHALATION SYSTEM

Ingrid Gesing, Dreieich, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1992, Ser. No. 995,100

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142956

Int. Cl.[5] G03C *5/38*

U.S. Cl. 430—449 **11 Claims**

1. A bleachable antihalation system containing

(a) a bleaching agent which is 2,4-diaryl-substituted 1,2,3,5-oxathiadiazole-2-oxide, wherein said aryl groups are unsubstituted or independently of each other substituted by at lest one substituent selected from the set consisting of alkyl, aryl, ether, ester, halogen, hydroxy, cyano, amino, carbonyl, carxboxyl, carbamoyl, sulfonyl groups, carbocyclic and heterocyclic annular ring, and

(b) an antihalation dye which is triphenylmethane, quinone imine or oxonol dye with the proviso that said system upon exposure to heat, actinic radiation, or combination thereof, said bleaching agent forms at least one of sulfurous acid, derivitized sulfuric acid or sulfur dioxide.

5,312,722

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toru Harada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

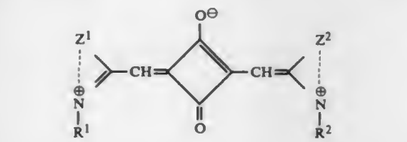
Filed May 3, 1993, Ser. No. 55,370

Claims priority, application Japan, May 11, 1992, 4-117584

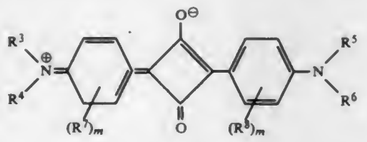
Int. Cl.[5] G03C *1/815, 1/825*

U.S. Cl. 430—517 **16 Claims**

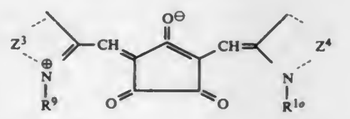
1. A silver halide photographic material comprising a support having thereon a silver halide emulsion layer and further comprising at least one dye of the formula (Ia), (Ib), (Ic) or (Id):



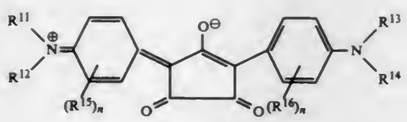
(Ia)



(Ib)



(Ic)



(Id)

wherein R^1 represents a hydrogen atom, a halogen atom, a sulfonic acid group, a carboxylic acid group or a CONHR, SO_2NHR, $NHSO_2R$, NHCOR or NHCONHR group, wherein R is an alkyl group which may be substituted with a sulfonic acid group, a carboxylic acid group or a hydroxy group, an aryl group which may be substituted with a sulfonic acid group, a carboxylic acid group, a hydroxy group, a halogen atom, an alkoxy group or an amino group, or a heterocyclic group which may be substituted with a sulfonic acid group, a carboxylic acid group, a hydroxy group, a methyl group, a methoxy group, or a halogen atom; R^2 and R^3 are the same or different and each represents a hydrogen atom, a halogen atom, an alkyl group or an $NHSO_2R$ or NHCOR group wherein R is an alkyl group which may be substituted with a sulfonic acid group, a carboxylic acid group or a hydroxy group, an aryl group which may be substituted with a sulfonic acid group, a carboxylic acid group, a hydroxy group, a halogen atom, an alkoxy group or an amino group, or a heterocyclic group which may be substituted with a sulfonic acid group, a carboxylic acid group, a hydroxy group, a methyl group, a methoxy group, or a halogen atom, or R^2 and R^3 may be joined together and represent a group of atoms which is required to form an aromatic ring; R^4 and R^5 are the same or different and each represents a hydrogen atom, an alkyl group which may be substituted with a sulfonic acid group, a carboxylic acid group or a hydroxy group, an alkoxy group which may be substituted with a sulfonic acid group or

R^1, R^2, R^9 and R^{10} are the same or different and each represents an alkyl group;

Z^1 Z^2, Z^3 and Z^4 each represents a non-metallic atomic group necessary for forming a nitrogen-containing heterocyclic ring;

R^3, R^4, R^5, R^6 R^{11}, R^{12}, R^{13} and R^{14} are the same or different and each represents a hydrogen atom, an alkyl group, an aryl group or an aralkyl group;

R^7, R^8, R^{15} and R^{16} are the same or different and each represents a hydrogen atom, a halogen atom, or alkyl group, an alkoxy group, an amino group or a hydroxyl group;

R^3 and R^4, R^5 and R^6, R^{11} and R^{12}, R^{13} and R^{14}, R^3 and R^7, R^5 and R^8, R^{11} and R^{15}, or R^{13} and R^{16} may be bonded to each other to form a 5-membered or 6-membered ring; and m and n each represents an integer of from 1 to 4; wherein the dye contains at lest two acidic substituents.

5,312,723

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Toru Harada, and Kiyoshi Kawai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

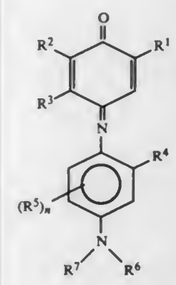
Filed May 14, 1993, Ser. No. 61,017

Claims priority, application Japan, May 18, 1992, 4-148933

Int. Cl.[5] G03C *1/815, 1/825*

U.S. Cl. 430—517 **8 Claims**

1. A silver halide photographic photosensitive material which contains at least one dye represented by formula (I) below:



(I)

wherein R^1 represents a hydrogen atom, a halogen atom, a sulfonic acid group, a carboxylic acid group or a CONHR, SO_2NHR, $NHSO_2R$, NHCOR or NHCONHR group, where R is an alkyl group, an aryl group or a heterocyclic group; R^2 represents a group represented by SO_2R, COR or CONHR, where R is an alkyl group, an aryl group or a heterocyclic group; R^3 and R^4 may be the same or different, and each represents a hydrogen atom, an alkyl group, an alkoxy group, a hydroxy group, an amino group or a halogen atom; R^5 and R^6 are the same or different, and each represents an alkyl group, an aryl group, an acyl group or a sulfonyl group; R^5 and R^6 may be joined together to form a five or six membered ring; R^5 and R^6 may be joined with the adjacent R^4 respectively to form five or six membered rings; n represents an integer of value 0 to 3; wherein there are at least three acidic substituent groups within the dye.

5,312,724

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Toru Harada, and Kiyoshi Kawai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

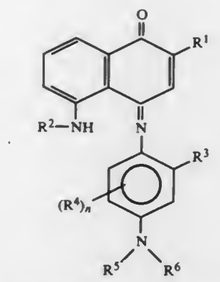
Filed May 14, 1993, Ser. No. 61,008

Claims priority, application Japan, May 18, 1992, 4-148897

Int. Cl.[5] G03C *1/815, 1/825*

U.S. Cl. 430—522 **7 Claims**

1. A silver halide photographic photosensitive material comprising a support having thereon a layer which contains at least one dye represented by general formula (I):



(I)

wherein, R^1 represents a hydrogen atom, a halogen atom, a sulfonic acid group, a carboxylic acid group or a CONHR, SO_2NHR, $NHSO_2R$, NHCOR or NHCONHR group, where R is an alkyl group, an aryl group or a heterocyclic group; R^2 represents a group represented by SO_2R, COR or CONHR, where R is an alkyl group, an aryl group or a heterocyclic group; R^3 and R^4 may be the same or different, and each represents a hydrogen atom, an alkyl group, an alkoxy group, a hydroxy group, an amino group or a halogen atom; R^5 and R^6 are the same or different, and each represents an alkyl group, an aryl group, an acyl group or a sulfonyl group; R^5 and R^6 may be joined together to form a five or six membered ring; R^5 and R^6 may be joined with the adjacent R^4 respectively to form five or six membered rings; n represents an integer of value 0 to 3; wherein there are at least three acidic substituent groups within the dye.

5,312,725

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL IN ROLL FORM

Hiromitsu Araki; Tohru Kobayashi, and Eiichi Ueda, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 41,683

Claims priority, application Japan, Apr. 20, 1992, 4-99352

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—523 **11 Claims**

1. A silver halide color photographic light-sensitive material in roll form comprising a support, and provided thereon, a silver halide emulsion layer and, on the side of the support opposite the silver halide emulsion layer, a backing layer containing gelatin and a hardener, the backing layer having a degree of swelling of 250% or less represented by the following equation:

$$\textit{Degree of swelling} = [\,(A - C) / (B - C)\,] \times 100$$

wherein A is the weight (in grams) of 10 cm^2 of the photographic light sensitive material after (i) adhering water-proof tape on the backing layer, (ii) removing the silver halide emulsion layer with a bleaching agent, (iii) peeling off the water-proof tape, (iv) conditioning the resulting material at 23° C. and 55% RH for 1 day, (v) dipping the conditioned material in a color developer at 38° C. for 3 minutes, and (vi) wiping off the color developer from the material; B is the weight of the material after further conditioning at 23° C. and 55% RH for 1 day; and C is the weight of the material after removing the backing layer with a bleaching agent and further conditioning the resulting material at 23° C. and 55% RH for 1 day.

5,312,726

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Keiji Mihayashi; Seiji Ichijima; Toshio Kawagishi; Naoki Saito, and Masuji Motoki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1991, Ser. No. 666,995

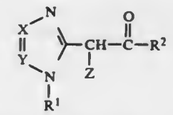
Claims priority, application Japan, Mar. 12, 1990, 2-60735; Jul. 17, 1990, 2-188240

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] G03L *7/36*

U.S. Cl. 430—544 **14 Claims**

1. A silver halide color light-sensitive material comprising a support having thereon at least one hydrophilic colloidal layer which contains a DIR coupler represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; R^2 represents an organic group; X and Y each represent —N= or



wherein R^3 represents a hydrogen atom, a halogen atom, a cyano group, a nitro group, an amino group, an acyl group, an acylamino group, a carbamoyl group, a carbamoylamino group, a sulfonyl group, a sulfonylamino group, a sulfamoyl group, a sulfamoylamino group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, a hydroxyl group, a sulfenyl group, a sulfinyl group, an aliphatic group, an aromatic group, or a heterocyclic group; and Z represents a releasable group which is released on reacting with an oxidation product of an aromatic primary amine developing agent to become a development inhibitor or a precursor thereof and which diffuses into a color developing solution and then decomposes to a compound having no substantial influence on photographic properties.

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5,312,727

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL HAVING A HIGH SENSITIVITY AND CAPABLE OF FORMING AN IMAGE WITH AN EXCELLENT QUALITY AND GRADATION

Toshihiko Yagi; Hiroyuki Hoshino; Toshiya Kondou, and Katsuhiko Suzuki, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 602,355, Oct. 22, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,654
Claims priority, application Japan, Oct. 27, 1989, 1-281446
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—567 **37 Claims**

1. A silver halide photographic light-sensitive material comprising a support having component layers thereon including at least one light-sensitive layer containing a silver bromoiodide emulsion, said silver bromoiodide emulsion consisting primarily of twinned silver bromoiodide grains comprising at least a core, an intermediate shell, and an outer shell,

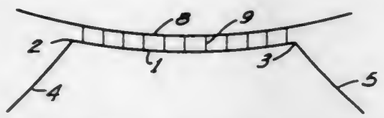
wherein, in an X-ray diffraction curve obtained by subjecting said silver bromoiodide grains to (420) X-ray diffraction with a CuKα ray, a length of an intercept drawn horizontally through said curve at a point of 0.13 times a height of a highest peak in said curve is not less than 1.5° of diffraction angle (2θ).

5,312,728

ASSAYS AND KITS INCORPORATING NUCLEIC ACID PROBES CONTAINING IMPROVED MOLECULAR SWITCH

Paul M. Lizardi, Cuernavaca, Mexico; Fred R. Kramer, New York, N.Y.; Sanjay Tyagi, New York, N.Y.; Cesar E. Guerra, New York, N.Y.; Hilda M. L. Buyoli, Col Marte, Mexico; Barbara C. Chu, Del Mar, Calif.; Gerald F. Joyce, Encinitas, Calif., and Leslie E. Orgel, La Jolla, Calif., assignors to Public Health Research Institute of the City of New York, Inc., New York, N.Y. and The Salk Institute for Biological Studies, San Diego, Calif.

Division of Ser. No. 251,696, Sep. 30, 1988, Pat. No. 5,118,801. This application May 4, 1992, Ser. No. 878,230
Int. Cl.[5] C12Q *1/68;* **C12P** *19/34*
U.S. Cl. 435—6 **23 Claims**



1. A method for the detection of at least one predetermined nucleic acid target sequence in a sample containing nucleic acid and comprising the steps of:

a) adding to the sample hybridization probes comprising a molecular switch consisting essentially of three oligonucleotide sequences:

i) a probe sequence of from about 20 to about 60 nucleotides, having a 5' side and a 3' side, which probe sequence is complementary to said target sequence,

ii) a 5' sequence of from about 10 to about 40 nucleotides, including a first switch sequence of at least about 10 nucleotides, immediately adjacent to and linked to the 5' side of the probe sequence, and

iii) a 3' sequence of from about 10 to about 40 nucleotides, including a second switch sequence of at least about 10 nucleotides, immediately adjacent to and linked to the 3' side of the probe sequence, said second switch sequence being hybridized with said first switch sequence only when said probe sequence is not hybridized to said target sequence,

wherein said molecular switch includes a preselected nucleic acid sequence for selectively generating a detectable signal when the probe sequence is hybridized with said target sequence,

b) specifically hybridizing probes with said target sequence,

c) destroying the ability of probes which did not hybridize specifically with said target sequence in step b to generate a signal,

d) generating a signal from probes which did hybridize specifically with said target sequence in step b, and

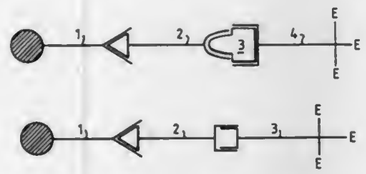
e) detecting the signal in order to detect the predetermined nucleic acid target sequence.

5,312,729

METHOD OF ASSAY NORMALIZED WITH NON-ANTIGEN CALIBRATOR

Gerald J. Allen, Windlesham; Madlyn D. Denyer, Loxwood, and Grenville A. Robinson, Ealing, all of England, assignors to Ares-Serono Research & Development Limited Partnership, Boston, Mass.

PCT No. PCT/GB89/00568, § 371 Date Mar. 6, 1990, § 102(e) Date Mar. 6, 1990, PCT Pub. No. WO89/11655, PCT Pub. Date Nov. 30, 1989
PCT Filed May 23, 1989, Ser. No. 460,861
Claims priority, application United Kingdom, May 24, 1988, 8812213
Int. Cl.[5] G01N *33/53, 33/537, 33/543*
U.S. Cl. 435—7.9 **20 Claims**



1. In a method of assay for a ligand in a sample comprising

(1) incubating in a first solution the sample, sequentially or simultaneously, with a first specific binding partner to the ligand and with a predetermined amount of reagent X, wherein reagent X comprises a second specific binding partner to said ligand, bound directly or indirectly to a detectable label, or a ligand analogue, bound directly or indirectly to a detectable label, thereby forming a complex between said first specific binding partner and reagent X, the amount of reagent X in the complex being a function of the amount of ligand in the sample;

(ii) removing said first specific binding partner from the solution by binding said first specific binding partner to a first solid phase reagent and separating said first solid phase reagent from the solution; and

(iii) determining, by means of said detectable label, the amount of reagent X bound to said first solid phase reagent, the improvement comprising normalizing the assay by comparison with a calibration assay, said calibration assay comprising

(a) incubating in a sample free second solution a predetermined amount of said reagent X with a calibration reagent Y comprising a specific binding partner for said reagent X other than the ligand and which is stable in solution at working concentrations and temperatures, thereby forming a complex between reagent Y and reagent X in a predictable and reliable manner;

(b) removing said calibration reagent Y from said second solution by binding said calibration reagent Y to a second solid phase reagent and separating said second solid phase reagent from the solution in the same manner as that used to remove the first specific binding partner in step (ii); and

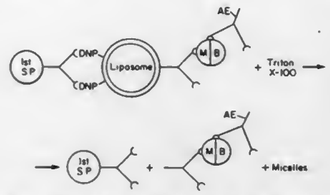
(c) determining, by means of said detectable label, the amount of reagent X bound to said second solid phase reagent.

5,312,730

IMMUNE COMPLEX TRANSFER WITH LYPOPHILIC BRIDGE

Uri Piran, Sharon; William J. Riordan, Boston, and Deborah R. Silbert-Shostek, Stoughton, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed May 27, 1992, Ser. No. 889,321
Int. Cl.[5] G01N *33/92, 33/541, 33/544*
U.S. Cl. 435—7.92 **10 Claims**



1. A rapid method for sensitive and accurate binding assay comprising

a. reacting the analyte with

1. a labeled specific binder for the analyte and

2. a specific binder for the analyte which has been reversibly attached to a first solid phase via the use of a lipophilic material to form a labeled specific binder-analyte-specific binder-lipophilic material-first solid phase complex, wherein said lipophilic material provides a stable bridge between the solid phase and specific binder, and is readily dispersed by detergents or enzymes,

b. separating the labeled specific binder-analyte-specific binder complex from the first solid phase with said detergents or enzymes,

c. reattaching the labeled specific binder-analyte-specific binder complex to a second specific binder, which binds to the analyte or another component of the immune complex and which is attached to a second solid phase, and

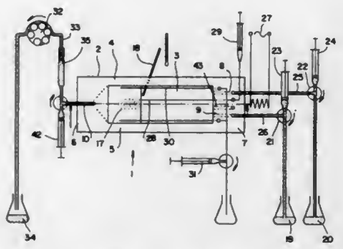
d. determining the amount of the analyte present by measurement of the amount of the labeled specific binder attached to the second solid phase.

5,312,731

METHOD AND APPARATUS FOR STUDYING A REACTION PATTERN OF A CELL OR CELL AGGREGATES DURING PERFUSION WITH DIFFERENT MEDIA

Gunnar Engström, Pl 2375 Hörnea, S-910 20 Hörnefors, Sweden

PCT No. PCT/SE90/00638, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO91/05253, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 5, 1990, Ser. No. 847,053
Claims priority, application Sweden, Oct. 5, 1989, 8903274
Int. Cl.[5] C12Q *1/18;* **C12M** *1/34*
U.S. Cl. 435—32 **21 Claims**



19. A method of studying a reaction pattern of at least a cell or cell aggregates by light transmission microscopy with high time resolution during perfusion with a media, the method comprising the steps of:

introducing said at least a cell and cell aggregates into a small space in an enclosed chamber, the chamber defining the small space and a large space wherein the small space communicates with the large space through a slit-shaped opening;

pumping a control medium disposed in the large space through the slit-shaped opening and through the small space;

studying by light transmission microscopy a reaction pattern of said at least a cell and cell aggregates during the pumping of the control medium through the small space;

replacing the control medium in the large space with a test medium;

pumping the test medium through the slit shaped opening and through the small space thereby displacing the control medium in the small space while maintaining a well defined interface between the control medium and the test medium in the second space and replacing the control medium in the second space with the test medium; and

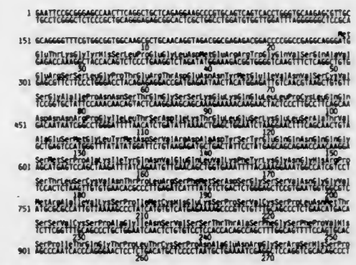
studying by light transmission microscopy a reaction pattern of said at least a cell and cell aggregates during the pumping of the test medium through the small space after the test medium has replaced the control medium in the small space.

5,312,732

HORMONE RECEPTOR COMPOSITIONS AND METHODS

Ronald M. Evans, San Diego, Calif.; Cary A. Weinberger, Silver Spring, Md.; Stanley M. Hollenberg; Vincent Giguere, both of San Diego, Calif.; Jeffrey Arriza, Carlsbad, Calif.; Catherine C. Thompson, La Jolla, Calif., and Estelita S. Ong, San Diego, Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Division of Ser. No. 108,471, Oct. 20, 1987, Pat. No. 5,071,773, which is a continuation-in-part of Ser. No. 922,585, Oct. 24, 1986, abandoned. This application Mar. 7, 1991, Ser. No. 667,602
Int. Cl.[5] C12N *15/12, 15/63*
U.S. Cl. 435—69.1 **23 Claims**



1. Recombinant DNA capable of hybridizing with DNA encoding protein having the amino acid sequence shown in FIG. IV-2(B) (hMR), FIG. V-1(B) (hERR1), or FIG. V-2(B) (hERR2), or DNA complementary thereto, under low stringency hybridization conditions, wherein said DNA encodes functional receptor protein(s) having hormone-binding and/or transcription activating properties of mineralocorticoid receptor, estrogen-related receptor hERR1 or estrogen-related receptor hERR2.

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5,312,733

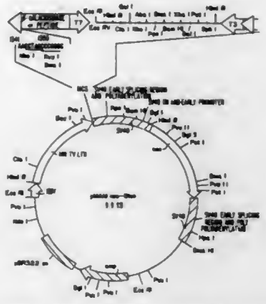
DEVELOPMENTAL MARKER GENE OF CD4-CD8 THYMOCYTES

Carol L. MacLeod, San Diego, Calif., assignor to Research Development Foundation, Carson City, Nev.

Continuation-in-part of Ser. No. 509,684, Apr. 13, 1990, abandoned. This application Apr. 11, 1991, Ser. No. 686,322

Int. Cl.[5] C07H *21/04;* C12N *15/12, 15/63*

U.S. Cl. 435—69.1 12 Claims



1. An expression vehicle which comprises a DNA sequence of a gene selected from the group consisting of 19.1 (seq. id. No. 1), 19.2 (seq. id. no. 2), 19.4 (seq. id. no. 3), 19.5 (seq. id. no. 4) and 20.5 (seq. id. no. 5) wherein said expression vehicle is capable of replication in a host which comprises, in operable linkage:

a) an origin or replication;

b) a promoter; and

c) a DNA sequence coding for a T cell protein.

5,312,734

CDNA ENCODING A DOPAMINE TRANSPORTER

George R. Uhl, Towson; Michael J. Kuhar, Baltimore; Shoichi Shimada, Baltimore; Shigeo Kitayama, Baltimore; Amrat Patel, Baltimore, and Chien-Liang Lin, Baltimore, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 20, 1991, Ser. No. 762,132

Int. Cl.[5] C12P *21/06;* C12N *5/00, 15/00;* C07H *15/12*

U.S. Cl. 435—69.1 8 Claims



1. An isolated cDNA comprising a nucleotide sequence which encodes a dopamine transporter protein having the amino acid sequence described in FIG. 3 (SEQ. ID NO: 2) of the specification.

5,312,735

SUPERSECRETING MUTANTS OF SACCHAROMYCES CEREVISIAE

Gerald R. Fink, Chestnut Hill, Mass., and Catherine M. Buckley, Cork, Ireland, assignors to Collaborative Research, Inc., Bedford, Mass.

Continuation of Ser. No. 379,613, Jul. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 294,198, Jan. 6, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,245

Int. Cl.[5] C12N *15/00, 1/16, 1/18*

U.S. Cl. 435—69.1 3 Claims

1. A supersecreting *saccharomyces cerevisiae* yeast cell exhibiting at least two-fold increased translocation of a heterologous protein through its secretory pathway and having an SSC1 gene which is disrupted or deleted making said gene incapable of producing a functional protein and rendering the supersecretion properties of said cell non-leaky and non-reverting.

5,312,736

ANTICOAGULANT ANALOGUES OF THE TISSUE FACTOR EXTRINSIC PATHWAY INHIBITOR (EPI) WITH REDUCED AFFINITY FOR HEPARIN

Jesper S. Rasmussen, Vanloese, and Ole J. Nordfang, Hilleroed, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK90/00212, § 371 Date Jan. 27, 1992, § 102(e) Date Jan. 27, 1992, PCT Pub. No. WO91/02753, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 17, 1990, Ser. No. 828,920

Claims priority, application Denmark, Aug. 18, 1989, 4080/89

Int. Cl.[5] C07K *13/00;* C12N *15/15;* A61K *37/64*

U.S. Cl. 435—69.2 9 Claims

1. An analogue of extrinsic pathway inhibitor (EPI) which analogue is a derivative of the full-length EPI sequence depicted in SEQ ID NO: 1, and which analogue retains the anticoagulant activity of native EPI as well as anti-FXa activity, comprises the three Kunitz protease inhibitor domains present in EPI, but has a heparin binding capacity less than 50% of the heparin binding capacity of native EPI when each is contacted with immobilized heparin under physiological conditions.

5,312,737

CKS METHOD OF HCV PROTEIN SYNTHESIS

Timothy J. Bolling, Gurnee, and Wlodzimierz Mandecki, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 573,103, Aug. 24, 1990, abandoned, which is a continuation of Ser. No. 276,263, Nov. 23, 1988, Pat. No. 5,124,255, which is a continuation-in-part of Ser. No. 167,067, Mar. 11, 1988, abandoned. This application Feb. 14, 1992, Ser. No. 835,878

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] C12N *15/00, 15/63, 15/67;* C12P *21/06*

U.S. Cl. 435—69.3 14 Claims

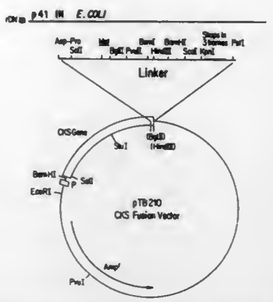
1. A method for expressing HCV protein in a prokaryotic cell, said method comprising the steps of:

(a) providing a DNA vector having:

1) a control region, said control region comprising a prokaryotic promoter and a prokaryotic binding site, wherein said control region directs expression of a DNA sequence comprising two elements operatively linked in a 5' to 3' direction, a first element encoding CKS protein; and

2) a second element encoding said HCV protein, wherein said two elements are contiguous and in the same reading frame;

(b) transforming said prokaryotic cell with said DNA vector; and



(c) expressing a fusion protein of CKS protein and said HCV protein.

5,312,738

A82846 ANTIBIOTICS

Robert L. Hamill, Greenwood; James A. Mabe, Indianapolis; David F. Mahoney, Indianapolis; Walter M. Nakatsukasa, Indianapolis, and Raymond C. Yao, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 127,737, Dec. 2, 1987, abandoned, which is a continuation of Ser. No. 909,791, Sep. 19, 1986, abandoned. This application May 9, 1990, Ser. No. 521,202

Int. Cl.[5] C12P *19/60;* C12N *1/20*

U.S. Cl. 435—75 10 Claims

1. A process for producing antibiotic A82846 which comprises cultivating *Nocardia orientalis* NRRL 18098 or NRRL 18099, or an A82846-producing mutant or variant thereof, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until antibiotic A82846 is produced.

5,312,739

PRODUCTION OF HIGH-MALTOSE SYRUP AND HIGH-PROTEIN BYPRODUCT FROM MATERIALS THAT CONTAIN STARCH AND PROTEIN BY ENZYMATIC PROCESS

Jei-Fu Shaw, Nankang, Taiwan, assignor to National Science Council, Taiwan

Filed May 28, 1992, Ser. No. 889,809

Int. Cl.[5] C12P *19/12, 21/06, 19/22*

U.S. Cl. 435—95 7 Claims

1. An enzymatic process for producing a high-maltose syrup and a high-protein byproduct from a material that contains starch and protein, said process comprising the steps of:

liquefying starch in said material in an autoclave using an effective amount of α-amylase to obtain a soluble starch hydrolysate and heat-coagulated protein;

separating said heat-coagulated protein from said soluble starch hydrolysate; and

saccharifying said soluble starch hydrolysate using an effective amount of β-amylase and debranching enzymes comprising a combination of isoamylase and pullulanase.

5,312,740

PROCESS FOR PRODUCING TAXOL BY CELL CULTURE OF TAXUS SPECIES

Koji Saito; Hiroaki Ohashi; Masaaki Hibi, and Makoto Tahara, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP92/00132, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO92/13961, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 10, 1992, Ser. No. 934,512

Claims priority, application Japan, Feb. 12, 1991, 3-019010

Int. Cl.[5] C12P *17/02, 1/00;* C12N *5/00, 5/02*

U.S. Cl. 435—123 9 Claims

1. A process for producing taxol by culturing cells originating from tissues of plants belonging to *Taxus cuspidata SIEB. et ZUCC* which comprises:

a) preparing a living tissue of *Taxus cuspidata*

b) culturing the tissue obtained in step a) in a nutrient medium containing gibberellin, suitable for inducing a callus, to thereby induce a callus;

c) culturing the callus cells obtained in step b) in a nutrient medium suitable for proliferating suspension culture cells; and

d) recovering taxol from the cultured products obtained in step c).

5,312,741

PROCESS FOR PRODUCING 2-KETO-L-GULONIC ACID

Tatsuo Hoshino, Kamakura; Setuko Ojima, Fujisawa, and Teruhide Sugisawa, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 8, 1992, Ser. No. 895,289

Claims priority, application European Pat. Off., Jun. 13, 1991, 91810451.4

Int. Cl.[5] C12P *7/60, 39/00;* C12N *1/20;* C12R *1/38*

U.S. Cl. 435—42 18 Claims

1. A process for producing 2-keto-L-gulonic acid which comprises:

(a) culturing a mixture of microorganisms in a medium containing D-sorbitol, the first of said microorganisms being a Gluconobacter or Acetobacter which converts D-sorbitol to L-sorbose and which does not convert D-sorbitol to 2-keto-L-gulonic acid, and the second of said microorganisms being a Gluconobacter oxydans having identifying characteristics of strain DSM 4025 and which converts D-sorbitol to 2-keto-L-gulonic acid in substantially lower amounts than it converts L-sorbose to 2-keto-L-gulonic acid, said culturing being carried out for a sufficient period of time to produce 2-keto-L-gulonic acid; and

(b) recovering 2-keto-L-gulonic acid from said medium.

5,312,742

PROCESS FOR MAKING L-PHENYL ACETYL CARBINOL (PAC), MICROORGANISMS FOR USE IN THE PROCESS, AND A METHOD OF PREPARING THE MICROORGANISMS

Robert J. Seely, Loveland; Donald L. Heefner, Boulder; Robert V. Hageman, Boulder; Michael J. Yarus, Boulder, and Sally A. Sullivan, Boulder, all of Colo., assignors to Synergen Associates, Inc., Boulder, Colo.

Division of Ser. No. 261,010, Oct. 21, 1988, Pat. No. 5,079,145. This application Jun. 12, 1991, Ser. No. 713,982

Int. Cl.[5] C12P *7/26, 7/22*

U.S. Cl. 435—148 7 Claims

1. A process for the production of L-phenyl acetyl carbinol (PAC), which comprises,

providing an aqueous fermentation medium containing a submerged culture of a microorganism and a source of assimilable carbon;

cultivating said organism under anaerobic or oxygen limited conditions in the presence of benzaldehyde and pyruvate

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to form PAC in a concentration of at least about 12 g/L in said fermentation medium; and

wherein said organism is a mutant of a parent strain of *Saccharomyces cerevisiae* or a mutant of a parent strain of *Candida flareri*, and said mutant is more resistant to aldehyde inhibition and produces less acetaldehyde and a higher concentration of PAC in the fermentation medium than a corresponding fermentation using the parent strain under otherwise identical conditions.

5,312,743

CHOLESTEROL ESTERASES WITH VARIABLE SUBSTRATE SPECIFICITY

Günther Schumacher, Bernried; Christian Hanke, Eberfing, and Stephan Fischer, Polling, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

PCT No. PCT/EP91/01089, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/18997, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 6, 1991, Ser. No. 828,980

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1990, 4018152

Int. Cl.[5] C12N *15/00, 15/55, 9/18;* **C12Q** *1/44, 1/60*

U.S. Cl. 435—172.3 **13 Claims**

1. Process for preparation of a cholesterol esterase, comprising mutagenizing a gene which codes for a first cholesterol esterase with an active site having amino acid sequence:

Gly-His-Ser-X-Gly

to change X to an amino acid which differs from the amino acid in said first cholesterol esterase, to form a gene which codes for a second cholesterol esterase, wherein said second cholesterol esterase has substrate specificity different from said first cholesterol esterase, transforming a microorganism with said gene, and culturing said microorganism to produce said cholesterol esterase with different substrate specificity, said mutagenizing said gene being such that X is changed to His.

5,312,744

METHOD OF IMMOBILIZING AND PRESERVING AN IMMUNOLOGICALLY REACTIVE SUBSTANCE

Yoichi Shibata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jun. 9, 1992, Ser. No. 895,927

Claims priority, application Japan, Apr. 30, 1992, 4-111848

Int. Cl.[5] C12N *11/00, 11/08, 1/04;* **G01N** *33/545*

U.S. Cl. 435—174 **13 Claims**

1. A method for immobilizing and preserving an immunologically reactive antigen substance on a surface of a solid support comprising:

(a) centrifugally bringing a suspension of immunologically reactive antigen substance selected from the group consisting of antigenic cells and non-cell bound into contact with a surface of a solid support having physical adsorption capability so as to permit the antigen substance to be immobilized on the solid support by means of physical adsorption;

(b) bringing a 1.0 to 5.0% formaldehyde solution or a 0.003 to 0.06% glutaraldehyde solution into contact with the antigen substance immobilized by physical adsorption on the solid support so as to more strongly bond the antigen substance on the solid support while maintaining the antigenicity of the immobilized antigen substance;

(c) washing the solid support with a washing solution capable of inhibiting further action performed by the formaldehyde or the glutaraldehyde; and

(d) contacting the immobilized antigen substance on the solid support with a protecting solution itself containing 0.5 to 10.0% of sugar and a suitable amount of antiseptic substance so as to protect the antigen substance immobilized on the solid support from structural damage.

5,312,745

DETERMINATION OF COMPONENTS ACTIVE IN PROTEOLYSIS

Leif Aurell, Särö, and Petter Friberger, Göteborg, both of Sweden, assignors to Chromogenix AB, Molndal, Sweden

Continuation of Ser. No. 319,084, Feb. 16, 1989, abandoned. This application Apr. 27, 1992, Ser. No. 874,222

Claims priority, application Sweden, Jun. 18, 1987, 8702556

Int. Cl.[5] C12N *1/02, 9/00;* **C12Q** *1/37*

U.S. Cl. 435—188 **11 Claims**

1. A dry reagent combination for the determination of a blood coagulation factor or a fibrinolysis factor, said combination comprising, in a substantially unreacted form and in an amount sufficient for a single test, a chromogenic substrate for a blood coagulation protease colyophilized with an enzymatically active component reactive with said substrate, and a buffer at pH, such that the enzymatically active component is inactive but not denatured;

wherein the component colyophilized with the substrate is a protease, and the factor to be determined is an inhibitor for the protease.

5,312,746

CLONING AND EXPRESSING RESTRICTION ENDONUCLEASES AND MODIFICATION METHYLASES FROM CARYOPHANON

Mary C. Longo, Germantown; Michael D. Smith, Rockville, and Deb K. Chatterjee, North Potomac, all of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Filed Jan. 8, 1993, Ser. No. 2,032

Int. Cl.[5] C12N *9/10, 9/22, 1/21*

U.S. Cl. 435—193 **44 Claims**

1. A recombinant host cell comprising a Caryophanon gene coding for a restriction endonuclease, said restriction endonuclease is capable of recognizing the palindromic sequence:

5'AT ↓ CG AT3'

3'TA GC ↑ TA5'

and cleaving said sequence between the deoxythymidine and deoxycytidine residues, producing a two-base 5' extension.

5,312,747

ISOLATION, PURIFICATION AND UTILIZATION OF SIALIDASE-L IN THE SYNTHESIS OF 2,7-ANHYDRO-N-ACETYLNEURAMINIC ACID AND FOR THE SELECTIVE CLEAVAGE OF SIALYLα2-3 D-GALACTOSE LINKAGE

Yu-Teh Li, and Su-Chen Li, both of 1717 Old Metairie St., Metairie, La. 70001

Continuation-in-part of Ser. No. 628,912, Dec. 17, 1990. This application Feb. 8, 1993, Ser. No. 15,413

Int. Cl.[5] C12N *9/20, 9/26*

U.S. Cl. 435—200 **4 Claims**

1. The enzyme sialidase-L in purified and isolated form wherein the purified enzyme has a molecular weight of 84,000 daltons when analyzed by sodium dodecyl sulfate polyacrylamide gel electrophoreses and an optimal pH of between pH 5.5 and 6.0, the purified enzyme being unstable in 50 mM sodium acetate buffer at pH 5.5 and stable for at least three months when stored at −35° C. in the presence of 10% glycerol and where the enzyme is capable of synthesizing 2,7-anhydro-N-acetylneuraminic acid.

5,312,748

PROTEASE

Liu Chi-Li, Danbury; Carol M. Beck, Bethel; Robert J. Strobel, Jr., and Janet M. Overholt, both of Danbury, all of Conn., assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK87/00144, § 371 Date Aug. 30, 1988, § 102(e) Date Aug. 30, 1988, PCT Pub. No. WO88/03947, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 25, 1987, Ser. No. 223,788

Claims priority, application Denmark, Nov. 25, 1986, 5640/86

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] C12P *21/04;* **C12N** *9/98, 9/52, 1/20*

U.S. Cl. 435—220 **7 Claims**

1. A detergent additive, comprising an alkaline serine protease derived from a strain of Nocardiopsis, having a pH optimum of about 8 and retaining at least 60% of maximum activity at pH 7–11 measured with casein as the substrate, said additive being in the form of a non-dusting granulate or a stabilized liquid.

5,312,749

INDUSTRIAL ALKALINE PROTEASE FROM SHIPWORM BACTERIUM

Harold L. Griffin; Richard V. Grene, and Michael A. Cotta, all of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 12, 1992, Ser. No. 880,912

Int. Cl.[5] C12N *9/52, 9/50;* **C11D** *10/06*

U.S. Cl. 435—220 **4 Claims**

1. A substantially pure protease isolated from a culture of bacterium found in the gland of Deshayes of the marine shipworm in the family Teredinidae, said protease having a molecular mass of about 36,000 daltons as determined by SDS-PAGE, having a isoelectric point of about pH 8.6, and having the property that the proteolytic activity thereof is stimulated by perborate or peroxide.

5,312,750

GL-7ACA ACYLASE

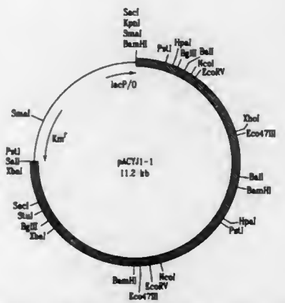
Ichiro Aramori, Kyoto; Masao Fukagawa, Tsuchiura; Hiroki Ono, Osaka; Yosuke Ishitani, Kobe; Mana Tsumura; Morita Iwami, both of Tsukuba, and Hitoshi Kojo, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 779,049, Oct. 18, 1991. This application Jun. 22, 1993, Ser. No. 80,240

Claims priority, application United Kingdom, Oct. 22, 1990, 9022907

Int. Cl.[5] C12D *21/06;* **C12N** *15/00*

U.S. Cl. 435—227 **9 Claims**



1. A DNA which encodes a 7-(4-carboxybutanamido)-3-acetoxymethyl-3-cephem-4-carboxylic acid (GL-7ACA) acylase having the following characteristics:

(a) catalyzes the enzymatic conversion of glutaryl 7-aminocephalosporanic acid (7-ACA), adipyl 7-ACA, and succinyl 7-ACA, into 7-aminocephalosporanic acid,

(b) has a molecular weight of 70,000 daltons (SDS-PAGE), and

(c) has an N-terminal amino acid sequence of the formula:

Gln-Ser-Glu-Gln-Glu-Lys-Ala-Glu-Glu (SEQ ID NO: 1).

5,312,751

HYBRIDOMA PRODUCING A MONOCLONAL ANTIBODY SPECIFIC FOR AN ANTIGEN OF THE STRATUM CORNEUM OF HUMAN EPIDERMIS

Serge Michel, Antibes; Jacques Bailly, Biot; Gaelle Saintigny, Nice, and Uwe Reichert, Le Bar S/Loup, all of France, assignors to Centre International de Recherches Dermatologiques Galderma (Cird Galderma), Valbonne, France

Filed Feb. 7, 1991, Ser. No. 652,073

Claims priority, application France, Feb. 8, 1990, 90 01462

Int. Cl.[5] C12N *5/18, 15/02;* **C07K** *15/28;* **C12P** *21/08*

U.S. Cl. 435—240.27 **2 Claims**

1. A hybridoma cell line having the accession number at the European Collectors of Animal Cell Cultures of No. 89091901.

5,312,752

SPECIFIC ANTIBODIES AGAINST THE DNA-BINDING DOMAIN OF AND IMMUNOASSAYS TO DETERMINE THE PRESENCE AND FUNCTIONAL STATUS OF ESTROGEN RECEPTOR PROTEINS

Herbert H. Wotiz, Milton, and Abdulmaged M. Traish, Belmont, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 388,091, Jul. 31, 1989, abandoned. This application Nov. 1, 1991, Ser. No. 784,626

Int. Cl.[5] C07K *15/28;* **C12N** *5/12*

U.S. Cl. 435—240.27 **2 Claims**

1. A monoclonal antibody specific for an epitope within amino acid residues 247–261 of human estrogen receptor protein, said monoclonal antibody having binding specificity for a single epitope within the DNA-binding domain in the activated but untransformed (4S) forms and in the activated and transformed (5S) forms of human estrogen receptor protein but which does not bind with the native (8S) forms of human estrogen receptor protein.

5,312,753

STRAIN OF STREPTOMYCES AVERMITILIS CAPABLE OF GLYCOSYLATING AVERMECTIN COMPOUNDS AT THE 13- AND 14A POSITIONS

Douglas J. MacNeil, and Tanya MacNeil, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 23, 1992, Ser. No. 855,311

Int. Cl.[5] C12N *1/20, 1/00*

U.S. Cl. 435—253.5 **2 Claims**

1. A biologically pure culture of a *Streptomyces avermitilis* MA 6941, ATC 55292.

5,312,754

COMPOSTING APPARATUS AND SYSTEM

Michael Bryan-Brown, 237 E. 10th St., #6B, New York, N.Y. 10003

Filed Feb. 27, 1992, Ser. No. 842,538

Int. Cl.[5] C12M *1/06, 1/38*

U.S. Cl. 435—290 **4 Claims**

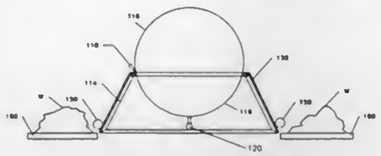
1. A composting apparatus, comprising:

a container for organic wastes having side walls and a bottom wall,

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an inflatable bladder positioned above the bottom wall of the container, the bladder comprises of a pervious top layer and an impervious lower layer for supporting, agitating and aerating organic wastes, and

a temperature controlled aeration system, wherein the temperature controlled aeration system comprises of a heat sensing means and a blower, the heat sensing means is



mounted on the side walls within the container to detect temperature changes in the organic waste and activate the blower, the blower delivers pressurized air to the inflatable bladder causing the bladder to inflate and agitate the organic waste supported by the bladder while at the same time aerating the organic waste as air exits the pervious top layer of the bladder and enters the organic waste.

5,312,755

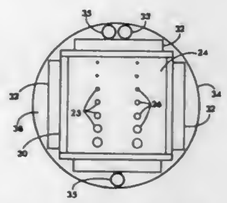
CONTRAST RESOLUTION TISSUE MIMICKING PHANTOMS FOR NUCLEAR MAGNETIC RESONANCE IMAGING WITH STABLE NMR PROPERTIES

Ernest L. Madsen, Madison, Wis.; Joseph C. Blechinger, Moore, Okla., and Gary R. Frank, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 315,923, Feb. 24, 1989, abandoned. This application Aug. 14, 1991, Ser. No. 751,621

Int. Cl.[5] G01N *24/08;* **G01V** *3/00*

U.S. Cl. 436—8 **37 Claims**



18. An NMR phantom for testing NMR imaging apparatus, which is stable in dimensions and NMR properties over time, comprising:

(a) a container formed of walls enclosing an interior space, the walls formed of a material which does not impede the NMR imaging;

(b) a base tissue mimicking material within the enclosed volume of the container, the tissue mimicking material comprising a solidified gel, the gel solidified from a mixture of agar, water and at least another gelling agent; and

(c) at least one inclusion of selected shape within and in contact with the base tissue mimicking material, the inclusion formed of a solidified gel of the same mixture as that forming the base tissue mimicking material except differing in the dry weight concentration of agar so as to result in a contrast difference between the inclusion and the base tissue mimicking material when the phantom is imaged by NMR imaging apparatus wherein the contrast difference between the inclusion and the base tissue mimicking material is substantially stable over time.

5,312,756

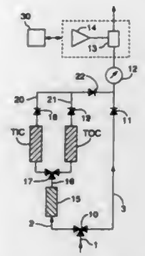
TOTAL ORGANIC CARBON (TOC) AND TOTAL INORGANIC CARBON (TIC) CALIBRATION SYSTEM

Clifford D. Jolly, Lakewood, Colo., assignor to Umpqua Research Company, Myrtle Creek, Oreg.

Continuation-in-part of Ser. No. 730,122, Jul. 15, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 998,401

Int. Cl.[5] G01N *33/18, 1/00, 30/96*

U.S. Cl. 436—8 **20 Claims**



1. A process for automatically calibrating analytical instrumentation with respect to either one or both of total organic carbon and total inorganic carbon, which comprises:

providing on-line, gravity-independent, flow-through, solid-phase modules for calibration of the analytical instrumentation;

introducing an aqueous influent stream into said on-line, gravity-independent, flow-through, solid-phase modules for removing existing levels of inorganic and organic carbon and adding to the aqueous influent stream a predetermined amount of either one or both of total organic carbon and total inorganic carbon to form an aqueous calibration stream;

introducing the aqueous calibration stream to said analytical instrumentation, and

analyzing either one or both of the total organic carbon and total inorganic carbon content of said aqueous calibration stream, and generating an output to said analytical instrumentation based on the predetermined amount of either one or both of total organic carbon and total inorganic carbon added by said on-line, gravity-independent, flow-through, solid-phase modules, thereby calibrating the analytical instrumentation.

5,312,757

SAMPLE DISTRIBUTING METHOD

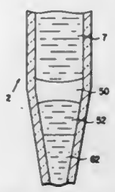
Sinya Matsuyama, Tokyo, and Takashi Yamada, Sagamihara, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,952

Claims priority, application Japan, May 2, 1991, 3-100701; May 2, 1991, 3-100702; May 2, 1991, 3-100783

Int. Cl.[5] B01L *3/02;* **G01N** *35/02*

U.S. Cl. 436—54 **5 Claims**



1. A sample distributing method comprising the steps of:

mounting a probe having an open tip portion on a mounting member;

sucking a predetermined sample into said probe through said open tip portion thereof;

discharging said sample from said probe through said open tip portion thereof to a discharging position;

detaching said probe from said mounting member; and

introducing, before said sucking step, an effective amount of a pressure transmission liquid into said probe and retaining said pressure transmission liquid in said probe so that a quantity of air is removed from an interior portion of said probe, and wherein:

said sucking step comprises sucking each of a plurality of different samples, each having a different known viscosity, separately into said probe;

said sucking step and said discharging steps are respectively controlled by applying different pressures to said pressure transmission liquid, based on the viscosity of each of said plurality of different samples; and

said discharging step comprises separately discharging each of said plurality of different samples from said probe.

5,312,758

METHOD AND DEVICE FOR COMBINED ENRICHMENT, PROCESSING AND EMBEDDING OF CYTOLOGICAL SPECIMENS ACCORDING TO HISTOLOGICAL PRINCIPLES

Johan E. W. Ahlqvist, Helsinki, Finland, assignor to Oy Sed-Par-Sed Ab, Finland

PCT No. PCT/FI90/00209, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/03720, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 5, 1990, Ser. No. 838,310

Claims priority, application Finland, Sep. 8, 1989, 894244

Int. Cl.[5] G01N *33/48, 1/00*

U.S. Cl. 436—63 **11 Claims**

1. A method for processing cytological specimens comprising:

inserting the specimens to be processed into a cup-shaped receptacle having a closed bottom part and closed sidewalls, the closed sidewalls having an upper edge which defines an upper aperture in the receptacle having an area larger than an area of the bottom part, the sidewalls forming an obtuse angle of about 105° to about 135° with the bottom part, the aperture being covered with a perforated membrane for retaining the cytological specimens, wherein the membrane is a mesh having a mesh size up to 80 microns;

inserting the receptacle with specimens in a tissue processing apparatus containing processing fluids with the perforated membrane in a vertical position so as to allow an exchange of processing fluids through the membrane and the introduction of paraffin;

after processing and removal from the processing apparatus, the receptacle being turned so that the perforated membrane is in a horizontal position and directed upwards, thus permitting the enrichment of the specimens by sedimentation to form an enriched layer at the receptacle bottom; and

after allowing to harden to form a paraffin block with the enriched layer at the bottom, the block being removed from the receptacle for histological examination.

5,312,759

METHOD FOR MEASUREMENT OF FRUCTOSAMINES USING 1,2-QUINONES

Michio Hama; Michiyo Nakayama, and Mitsunao Tanaka, all of Tokyo, Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

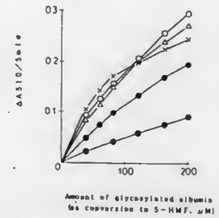
PCT No. PCT/JP90/01653, § 371 Date Aug. 2, 1991, § 102(e) Date Aug. 2, 1991, PCT Pub. No. WO91/09314, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 20, 1989, Ser. No. 741,432

Claims priority, application Japan, Dec. 20, 1989, 1-330165

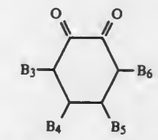
Int. Cl.[5] G01N *33/48, 33/66, 33/68*

U.S. Cl. 436—87 **6 Claims**



1. A method for measurement of fructosamines in an aqueous liquid which comprises the steps of:

(a) bringing an aqueous liquid sample into contact with a 1,2-quinone compound of the general formula:



wherein, B_3 and B_4 are respectively hydrogen atoms or are atoms necessary for forming a benzene ring or a pyridine ring together with the two carbon atoms in the formula, and B_5 and B_6 are atoms necessary for forming a benzene ring or a pyrrole ring together with the two carbon atoms in the formula, said pyridine being substituted by carboxylic acid groups and said pyrrole ring being substituted by a carboxylic acid group, at a pH of from 8.5 to 11;

(b) bringing the product of step (a) into contact with a reagent for measuring hydrogen peroxide for measuring hydrogen peroxide resulting from the reaction of step (a) between said 1,2-quinone compound and said fructosamines; and

(c) measuring a detectable change in the reagent of step (b).

5,312,760

FRUCTOSAMINE REAGENT AND CALIBRATOR SYSTEM

Shing F. Kwan, Ventura, and Marjorie Bravo-Leerabhandh, Thousand Oaks, both of Calif., assignors to Modrovich, Ivan Endre, Camarillo, Calif.

Filed Jun. 8, 1992, Ser. No. 895,606

Int. Cl.[5] G01N *33/74*

U.S. Cl. 436—87 **16 Claims**

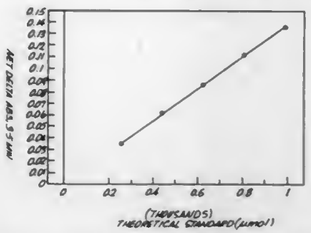
1. A reagent system for the determination of fructosamine in sera which comprises:

(a) a first alkaline aqueous reagent containing a tetrazolium salt which reacts with all reactive substances in sera including fructosamine and interfering substances to exhibit a measurable first change of color within a predetermined time span of less than about 10 minutes in consequence of

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the reaction of the tetrazolium salt with fructosamine and the interfering substances; and

(b) a second reagent identical to the first alkaline aqueous reagent and boric acid in an amount sufficient to inhibit reaction of fructosamine with the tetrazolium salt to produce by reduction of the tetrazolium salt with the reactive substances including interfering substances other than fructosamine a measurable second change of color in the same predetermined time span as the first reagent to enable the determination of fructosamine concentration in sera by the difference in the first color change produced using the first alkaline aqueous reagent which reacts with fructosamine and the second color change produced using the second alkaline aqueous reagent each color change produced on the same proportional amount of sera and after identical predetermined time spans.



5,312,761

METHOD FOR MEASURING TRACE QUANTITY OF OXYGEN IN GAS

Takashi Suzuki; Kenkichi Itoh, and Hajime Sasaki, all of Kawasaki, Japan, assignors to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan

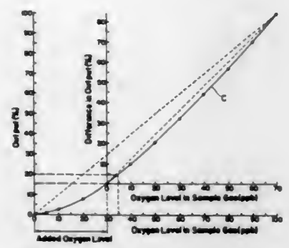
PCT No. PCT/JP90/01083, § 371 Date Apr. 26, 1991, § 102(e) Date Apr. 26, 1991, PCT Pub. No. WO91/03731, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 27, 1990, Ser. No. 674,345

Claims priority, application Japan, Aug. 28, 1989, 1-220956

Int. Cl.[5] G01N *21/76*

U.S. Cl. 436—136 **19 Claims**



1. In a method for measuring a trace quantity of oxygen in a gas comprising reacting yellow phosphorus vapor with the oxygen in a sample of said gas to provide light and measuring the quantity of the oxygen in the sample of said gas based on the measured intensity of the light emitted by the reaction, said measured intensity having a non-linear detector response in the range of 0–100 parts-per-billion wherein the improvement comprises continuously supplying a constant amount of oxygen together with the sample of the gas, the amount of oxygen continuously supplied being effective to shift the intensity of the light emitted by the reaction to a range in which the non-linear detector response is substantially removed wherein the measured intensity is the light emitted by the reaction of the yellow phosphorus vapor and both the oxygen in the sample and the oxygen continuously supplied with the sample.

5,312,762

METHOD OF MEASURING AN ANALYTE BY MEASURING ELECTRICAL RESISTANCE OF A POLYMER FILM REACTING WITH THE ANALYTE

Anthony Guiseppi-Elie, 1273 Quarry Commons Dr., Yardley, Pa. 19067

Continuation-in-part of Ser. No. 322,670, Mar. 13, 1989, abandoned. This application Sep. 13, 1991, Ser. No. 760,450

Int. Cl.[5] G01N *27/00, 27/26;* **C12Q** *1/00;* **C12N** *11/04*

U.S. Cl. 436—149 **3 Claims**

1. An analytical method for measuring an analyte that uses the interrogration of chemoresistive sensor responses from electroactive polymer films, said method using an electroactive polymer sensor device and comprising the following steps:

(a) measuring open circuit electrical potential an electroactive polymer film of said device;

(b) applying a potentiostatic electrical potential relative to a reference electrode to said polymer film which oxidizes or reduces said polymer film to provide an initial reduced or oxidized state, and thereby provides said polymer film with an initial electrical resistance;

(c) measuring the electrical resistance of the polymer film resulting from (b) by applying to the polymer film a non-perturbating voltage pulse, removing the voltage pulse from the polymer film for a period following the pulse duration, making a potentiometric measurement of the open circuit potential of the polymer film and applying to the polymer film a subsequent non-perturbating voltage pulse relative to the measured open circuit potential before said polymer film reacts with an analyte to which it has been made specific;

(d) reacting said polymer film with an analyte, to which it has been made specific whereby the reaction causes a change in electrical resistance of said polymer film;

(e) measuring the electrical resistance of the polymer film resulting from (d) by applying to the polymer film a non-perturbating voltage pulse, removing the voltage pulse from the polymer film for a period following the pulse duration, making a potentiometeric measurement of the open circuit potential of the polymer film and applying to the polymer film a subsequent non-perturbating voltage pulse relative to the emasured open circuit potential while said polymer film reacts with an analyte to which it has been made specific; and

(f) determining the rate of change of the electrical resistance and total amount of change of the electrical resistance from which the concentration of the analyte is determined.

5,312,763

METHOD FOR THE DETECTION OF ANALYTES

Horst Baumgarten, Penzberg; Michael Grol, Feldafing, and Peter Stahl, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Aug. 31, 1990, Ser. No. 575,353

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3929119

Int. Cl.[5] G01N *33/543, 33/53, 33/577*

U.S. Cl. 436—518 **6 Claims**

1. Method for determining a monovalent analyte in a sample comprising

combining a sample to be analyzed with (i) a known amount of labelled or immobilized monovalent analyte to be detected, and (ii) a mixture of at least two different monoclonal antibodies which specifically bind to said monovalent analyte, wherein each monoclonal antibody in said mixture exhibits different cross reactivity with substances other than said monovalent analyte, and determining binding to said monoclonal antibodies to said labelled or immobilized analyte to determine said analyte in said sample.

5,312,764

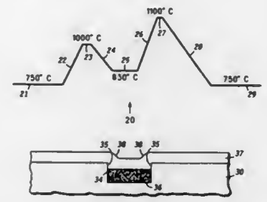
METHOD OF DOPING A SEMICONDUCTOR SUBSTRATE

Clifford I. Drowley; James A. Teplik, Mesa, and Erik W. Egan, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 28, 1993, Ser. No. 68,339

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—20 **19 Claims**



1. A method of temporally spacing a defect density modulation step and a junction depth modulation step, comprising the steps of:

doping a portion of a substrate with an impurity material of a first conductivity type;

modulating a defect density, wherein modulating the defect density includes heating the substrate to a temperature of at least 950° C.;

forming an oxide on the substrate wherein the oxide is formed at a temperature less than the temperature of heating the substrate during the defect density modulation step;

modulating a junction depth, wherein modulating the junction depth includes heating the substrate to a temperature greater than the temperature at which the oxide is formed;

removing the oxide; and

forming an epitaxial layer over the substrate.

5,312,765

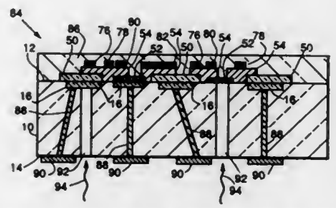
METHOD OF FABRICATING THREE DIMENSIONAL GALLIUM ARSENIDE MICROELECTRONIC DEVICE

Hilda Kanber, Rolling Hills Estates, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 723,099, Jun. 28, 1991, abandoned. This application May 11, 1993, Ser. No. 59,520

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—22 **24 Claims**



1. A method of fabricating a three-dimensional microelectronic device structure, comprising the steps of:

(a) providing a semi-insulating substrate having first and second opposite surfaces, wherein the semi-insulating substrate comprises a III-V material;

(b) forming a buried first microelectronic device in said first surface, wherein the first microelectronic device comprises a III-V material and includes active device layers formed using selective ion implantation; and

(c) forming a second microelectronic device on the substrate, the second device being spaced from the first device in a direction perpendicular to said first surface, wherein the second microelectronic device comprises a III-V material; and

(d) forming a vertical interconnect hole through the substrate from the first microelectronic device to the second microelectronic device to electrooptically couple the first microelectronic device to the second microelectronic device.

5,312,766

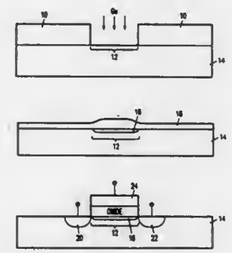
METHOD OF PROVIDING LOWER CONTACT RESISTANCE IN MOS TRANSISTORS

Sheldon Aronowitz, San Jose; Courtney Hart, Los Gatos, and Court Skinner, East Palo Alto, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 665,465, Mar. 6, 1991. This application Feb. 7, 1992, Ser. No. 832,717

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—24 **3 Claims**



1. A method of enhancing drift mobility of minority carriers in an MOS transistor, the method comprising the sequential steps of:

(a) defining a channel region in the surface of a silicon substrate;

(b) introducing germanium atoms into the previously defined channel region;

(c) after introducing germanium ions into the channel region, performing an oxidation step to form an oxide layer on the channel region and to create a germanium-rich layer in the channel region at the interfacial region between the channel region and the oxide layer; and

(d) after the oxidation step, forming an MOS transistor structure having source and drain regions separated by the channel region and a gate electrode overlying the channel region and separated therefrom by a layer of dielectric material.

5,312,767

MOS TYPE FIELD EFFECT TRANSISTOR AND MANUFACTURING METHOD THEREOF

Masahiro Shimizu, and Tachihisa Yamaguchi, both of Itamishi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 626,052, Dec. 13, 1990, Pat. No. 5,225,701. This application Jan. 26, 1993, Ser. No. 9,201

Claims priority, application Japan, Dec. 15, 1989, 1-326654

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **1 Claim**

1. A manufacturing method of a MOS field effect transistor comprising:

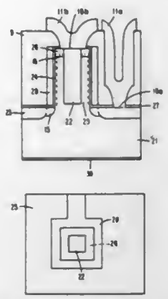
etching a semiconductor substrate of a fist conductivity type

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to form a trench on the surface of said semiconductor substrate;

forming an insulating layer on said semiconductor substrate for filling said trench;

etching said semiconductor substrate to form a cylindrical semiconductor mesa portion of first conductivity type containing said trench and a first semiconductor surface extending laterally outwardly from the circumferential bottom of said mesa portion;



forming on said first semiconductor surface a first source-drain area of a second conductivity type extending annularly from said circumferential bottom;

forming on the top of said mesa portion a second drain/-source area of the second conductivity type;

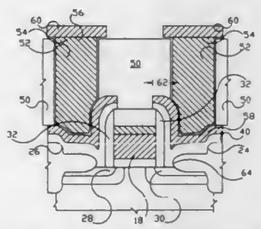
forming a gate insulating film on the vertical circumferential wall of said mesa portion and a gate electrode on said insulating film.

5,312,768

INTEGRATED PROCESS FOR FABRICATING RAISED, SOURCE/DRAIN, SHORT-CHANNEL TRANSISTORS

Fernando Gonzalez, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 9, 1993, Ser. No. 28,311
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **9 Claims**



1. In a partially completed, N-channel MOSFET device having a gate structure, a pair of oxide spacers adjacent the gate structure, a pair of silicon nitride barrier spacers adjacent the oxide spacers, a doped source and drain area over a P-well in a substrate, and a field oxide layer adjacent the source and drain area, a process for completing fabrication of a raised source/drain N-channel MOSFET device comprising the steps of:

a growing a second field oxide layer over the source and drain areas;

b. selectively etching the silicon nitride barrier spacers, thereby exposing a narrow source and drain area between the oxide spacer and the second field oxide layer;

c. depositing a transition metal nitride layer over the MOSFET device;

d. depositing a polysilicon layer over the metal nitride layer; and simultaneously

e. in situ doping the polysilicon layer to create a conducting polysilicon layer, wherein the transition metal nitride layer acts as a barrier to ion migration to the source and drain areas;

f. etching the polysilicon layer to form an opening over the gate structure and a boundary over the field oxide layer wherein the metal nitride layer acts as an etch barrier;

g. etching the transition metal nitride layer to form openings over the gate structure and a boundary over the field oxide layer, thereby forming a raised source/drain electrical connection;

h. depositing an oxide isolation layer over the MOSFET device;

i. patterning and etching a pair of contact openings in the oxide isolation layer over the conducting polysilicon wherein the nitride layer acts as an etch barrier;

j. depositing a thin titanium nitride layer within the contact openings;

k. depositing and patterning a metal conductor within the contact opening; and then

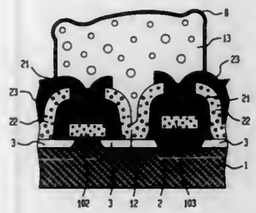
l. depositing and patterning a pair of bit line metal conductors over the metal conductor in the contact opening thereby providing a low-resistance electrical connection from the bit line through the raised source/drain electrical connection to the narrow source and drain areas.

5,312,769

METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE

Naoto Matsuo, 1-6-18, Mitsukeyama, Ibaraki-shi, Osaka, and Shouzou Okada, 2-4-20, Fukaehon-machi, Higashinada-ku, Kobe-shi, Hyogo-ken, both of Japan

Division of Ser. No. 792,347, Nov. 14, 1991. This application Apr. 13, 1993, Ser. No. 47,110
Claims priority, application Japan, Nov. 15, 1990, 2-311034
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **2 Claims**



1. A method of fabricating a semiconductor memory device comprising the steps of:

forming transistors on a semiconductor substrate;

forming polycrystalline silicon lead pads on said semiconductor substrate, each of said polycrystalline silicon lead pads electrically connected to said transistors;

forming a first interlayer insulating film over said transistors and said polycrystalline silicon lead pads;

forming bit lines electrically connected to said transistors;

forming a second interlayer insulating film on said bit lines;

forming contact holes in said first interlayer insulating film, for exposing surfaces of said polycrystalline silicon lead pads;

selectively growing first polycrystalline silicon films on said surfaces of said first polycrystalline silicon lead pads, and laterally growing upper portions of said polycrystalline silicon films, by a selective chemical vapor deposition technique, thereby forming lower portions of storage electrodes;

forming oxide films on top and side surfaces of said lower portions of said storage electrodes;

anisotropically etching said oxide films, for leaving portions of said oxide films on said side surfaces of said storage electrodes;

selectively growing second polycrystalline silicon films on said top surfaces of said first polycrystalline silicon films by a selective chemical vapor deposition technique, thereby forming upper portions of said storage electrodes;

removing said portions of said oxide films;

forming dielectric films on said storage electrodes; and

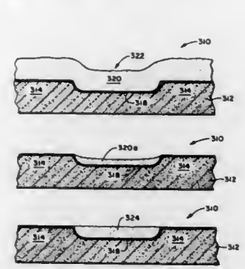
forming plate electrodes on said dielectric films.

5,312,770

TECHNIQUES FOR FORMING ISOLATION STRUCTURES

Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 748,853, Aug. 22, 1991, Pat. No. 5,248,625, which is a continuation-in-part of Ser. No. 711,624, Jun. 6, 1991. This application Nov. 20, 1992, Ser. No. 979,190
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **9 Claims**



1. A method of forming isolation structures between diffusion regions areas in a semiconductor device, consisting essentially of:

on a silicon wafer having a surface, forming a trench having sidewalls into the surface between diffusion regions;

forming a thin layer of thermal oxide over the surface of the wafer, the thin layer coating the sidewalls of the trench and the surface of the wafer in the diffusion regions;

overfilling the bathtub with a layer of material selected form the group of polysilicon or amorphous silicon;

polishing the layer of material overfilling the bathtub until it is grouped out within the bathtub, and allowing a thin remnant of the layer of material to remain over the diffusion regions for formation of subsequent structures over the diffusion regions; and

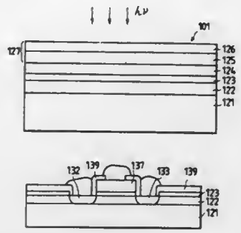
thermally treating the wafer until the gouged out layer within the bathtub is substantially planar with the diffusion regions.

5,312,771

OPTICAL ANNEALING METHOD FOR SEMICONDUCTOR LAYER AND METHOD FOR PRODUCING SEMICONDUCTOR DEVICE EMPLOYING THE SAME SEMICONDUCTOR LAYER

Takao Yonehara, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 673,516, Mar. 22, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 44,100
Claims priority, application Japan, Mar. 24, 1990, 2-74210
Int. Cl.[5] H01L *21/326, 21/306*
U.S. Cl. 437—174 **8 Claims**



1. A method for producing a semiconductor device comprising the steps of:

(i) providing a substrate comprising sequentially a base plate, a semiconductor layer on said base plate, an insulating layer on said semiconductor layer, and a light absorbing layer on said insulating layer;

(ii) irradiating said substrate with incoherent light for annealing said semiconductor layer wherein said base plate and said semiconductor layer comprise a material transmitting said incoherent light and said light absorbing layer comprises a material absorbing said incoherent light and generating thermal energy to indirectly anneal said semiconductor layer;

(iii) subsequent to the step of irradiating, removing a portion of said light absorbing layer, thereby forming a gate electrode comprising the remaining portion of said light absorbing layer, and removing a portion of said insulating layer, thereby forming a gate insulating film comprising the remaining portion of said insulating layer; and

(iv) forming a source region and a drain region.

5,312,772

METHOD OF MANUFACTURING INTERCONNECT METALLIZATION COMPRISING METAL NITRIDE AND SILICIDE

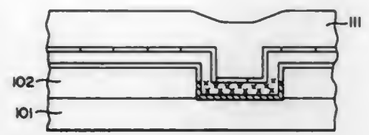
Kenji Yokoyama; Juri Kato, and Masashi Ogita, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 594,622, Oct. 9, 1990, abandoned, which is a division of Ser. No. 387,834, Aug. 1, 1989, Pat. No. 4,998,157. This application Apr. 1, 1992, Ser. No. 863,462
Claims priority, application Japan, Aug. 6, 1988, 63-196493; Aug. 6, 1988, 63-196494; Aug. 6, 1988, 63-196495; Sep. 2, 1988, 63-129819
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—190 **3 Claims**

2. In the manufacture of a semiconductor device, a method comprising the steps of: providing a semiconductor substrate having an insulation film disposed thereon; forming an aperture in the insulation film in order to expose a portion of the semiconductor substrate; forming a refractory metal layer on the insulation film and the exposed portion of the substrate; depositing a refractory metal nitride layer on the refractory metal layer above the insulation film and the exposed portion of the substrate, the refractory metal nitride layer having an exposed surface; carrying out a rapid thermal annealing of said layers to introduce oxygen atoms into the exposed surface of

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the refractory metal nitride layer to cause that exposed surface to have an oxygen atom-containing refractory metal nitride

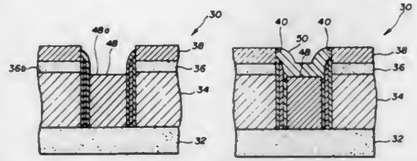


composition; and forming an Al or Al alloy body on the oxygen atom-containing surface of the refractory metal nitride layer after said step of introducing oxygen.

5,312,773
METHOD OF FORMING MULTILAYER INTERCONNECTION STRUCTURE

Naoki Nagashima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,640
Claims priority, application Japan, Apr. 3, 1992, 4-081285
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—190 **13 Claims**



1. A method of forming a multilayer interconnection structure, said method comprising the following steps in the sequence:

(a) depositing a first insulating layer on a first conductive layer, followed by the deposition of a second conductive layer on said first insulating layer;

(b) depositing a second insulating layer on said second conductive layer;

(c) forming a through-hole by opening said second insulating, second conductive and first insulating layers so as to expose a surface of said first conductive layer and two opposed surfaces of said second conductive layer, said through-hole having a first portion in which the surface of said first conductive layer is exposed and a second portion in which the two opposed surfaces of said second conductive layer are exposed;

(d) masking the two opposed surfaces of said second conductive layer with a masking film, so as not to deposit thereon a conductive material which has a strong and selective adhesion on said first and second conductive layers;

(e) depositing said conductive material on the surface of said first conductive layer by a selective chemical vapor deposition method so as to fill the first portion of said through-hole with said conductive material;

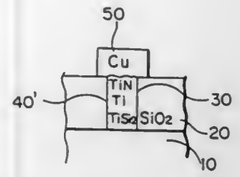
(f) removing said masking film so as to expose the two opposed surfaces of said second conductive layer; and

(g) depositing said conductive material on the two opposed surfaces of said second conductive layer by a chemical vapor deposition method so as to fill the second portion of said through-hole with said conductive material, such that said through-hole is substantially filled with said conductive material and that said first and second conductive layers are interconnected with each other.

5,312,774
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING TITANIUM

Kazuyo Nakamura, Tenri; Keiichiro Uda, Nara; Osamu Yamazaki, Nara; Hiromi Hattori, Nara; Nobutaka Fukushima, Tenri, and Shigeo Onishi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1992, Ser. No. 983,438
Claims priority, application Japan, Dec. 5, 1991, 3-349083; Sep. 18, 1992, 4-249815
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—192 **11 Claims**

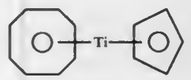


5. A method of manufacturing a semiconductor device comprising:

a) forming an interlayer insulating film on a lower conductive layer constituted by a substrate itself or formed on a substrate,

b) forming a contact hole in the interlayer insulating film,

c) forming a titanium or titanium compound film by a CVD method to bury the contact hole and cover the remaining interlayer insulating film, the CVD method using a gas containing an organic titanium compound of formula (I)



(I)

wherein R is a hydrogen atom, a lower alkyl group, a C_{8-13} condensed polycyclic hydrocarbonyl group or a silyl group which is substituted with a lower alkyl and/or an aryl, and a reducing gas,

d) etching the titanium or titanium compound film on the remaining interlayer insulating film to form a contact plug, and

e) forming an upper conductive layer thereon.

5,312,775
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING MULTILAYER INTERCONNECTION STRUCTURE

Hiroyuki Fujii, and Shigeru Harada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 822,284, Jan. 21, 1992, Pat. No. 5,202,579.
This application Jan. 26, 1993, Ser. No. 9,180
Claims priority, application Japan, Jan. 30, 1991, 3-9547
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—192 **9 Claims**

1. A method of manufacturing a semiconductor device having a multilayer interconnection structure, comprising the steps of:

forming first aluminum interconnection;

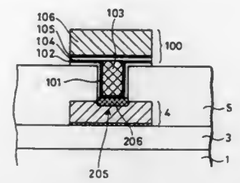
depositing an insulating film to cover said first aluminum interconnection to form an interlayer insulating film;

opening a contact hole whose bottom surface is the surface of said first aluminum interconnection in a predetermined position in said interlayer insulating film;

forming a first titanium film on the surface of said interlayer insulating film and on the inner surface of said contact hole;

forming a first titanium compound film on the surface of said first titanium film;

burying tungsten in said contact hole with said first titanium film and said first titanium compound film interposed therebetween to form a tungsten plug;



forming a second titanium film on said tungsten plug and on said first titanium compound film;

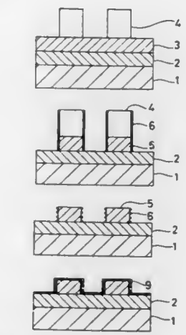
forming a second titanium compound film on said second titanium film; and

forming second aluminum interconnection on said second titanium compound film.

5,312,776
METHOD OF PREVENTING THE CORROSION OF METALLIC WIRINGS

Tomoyasu Murakami; Michinari Yamanaka; Kousaku Yano; Masayuki Endo; Noboru Nomura; Staoshi Ueda; Naoto Matsuo, all of Osaka; Hiroshi Imai, Kyoto, and Masafumi Kubota, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 16, 1992, Ser. No. 977,022
Claims priority, application Japan, Nov. 18, 1991, 3-301652
Int. Cl.[5] H01L *71/44*
U.S. Cl. 437—194 **9 Claims**



1. A method of preventing the corrosion of metallic wirings comprising:

a first step of forming a metallic film on a substrate;

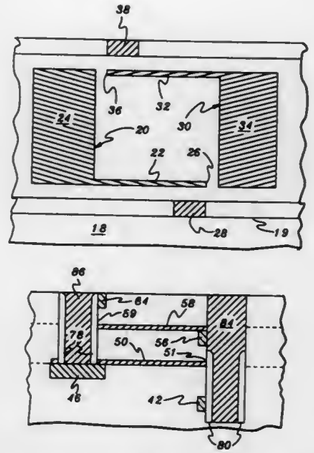
a second step of dry-etching said metallic film with chlorine-containing gas to form, in a desired pattern, metallic wirings made of said metallic film; and

a third step of supplying a surface-active agent or its derivative to said metallic wirings to form hydrophobic molecular layers on the lateral walls of said metallic wirings.

5,312,777
FABRICATION METHODS FOR BIDIRECTIONAL FIELD EMISSION DEVICES AND STORAGE STRUCTURES

John E. Cronin, Milton; Kent E. Morrett, Essex Junction; Michael D. Potter, Grand Isle, and Matthew J. Rutten, Milton, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1992, Ser. No. 951,283
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **8 Claims**



1. A method for forming a bidirectional field emission device, comprising the steps of:

(a) providing a substrate having an upper surface;

(b) forming a first cathode portion above the upper surface of said substrate so as to extend substantially parallel thereto;

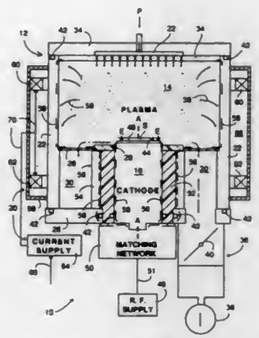
(c) forming a second cathode portion above said first cathode portion so as to extend substantially parallel thereto;

(d) forming a first anode portion and a second anode portion, said first anode portion being formed to couple with said first cathode portion so as to define a first unitary field emission structure, and said second anode portion being formed to couple with said second cathode portion so as to define a second unitary field emission structure, said first unitary field emission structure and said second unitary field emission structure being adjacently disposed such that said first cathode portion is spaced from and opposes said second anode portion so that electrons may flow by field emission from said first cathode portion of said first unitary field emission structure to said second anode portion of said second unitary field emission structure, and such that said second cathode portion is spaced from and opposes said first anode portion so that electrons may flow by field emission from said second cathode portion of said second unitary field emission structure to said first anode portion of said first unitary field emission structure; and

(e) forming metallizations for controlling the emission of electrons from said first cathode portion of said first unitary field emission structure and from said second cathode portion of said second unitary field emission structure by applying biasing voltages to said first unitary field emission structure and said second unitary field emission structure.

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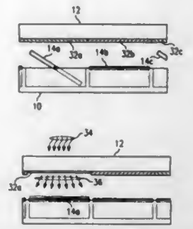
5,312,778
METHOD FOR PLASMA PROCESSING USING MAGNETICALLY ENHANCED PLASMA CHEMICAL VAPOR DEPOSITION
Kenneth S. Collins, San Jose; Chan-Lon Yang, Los Gatos, and John M. White, Hayward, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Continuation-in-part of Ser. No. 559,947, Jul. 31, 1990, abandoned, and a continuation-in-part of Ser. No. 560,530, Jul. 31, 1990, abandoned, each is a continuation-in-part of Ser. No. 416,750, Oct. 3, 1989, abandoned. This application Nov. 23, 1990, Ser. No. 618,142
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—225 **15 Claims**



1. A method for forming a plasma comprising:
providing a gas;
coupling radio frequency energy into said gas through a cathode to form a plasma having a substantially electrically neutral body portion comprising positive ions of said gas and free electrons, said plasma further having an electron-depleted sheath portion proximate to said cathode, said sheath portion having an electrical potential;
developing a magnetic field within said plasma, wherein the cathode has a surface for supporting a workpiece adjacent to the sheath portion of the plasma, and wherein flux lines of the magnetic field proximate to the surface of the cathode are substantially perpendicular to at least a portion of the surface of the cathode; and
varying the strength of said magnetic field to vary the electric potential of said sheath portion, where said electric potential is inversely related to said strength of said magnetic field within a desired operating range.

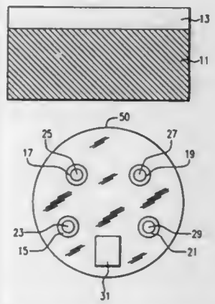
5,312,779
COLOR SPATIAL LIGHT MODULATOR AND METHOD OF MANUFACTURE
William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 26, 1992, Ser. No. 888,774
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—225 **15 Claims**

1. A process of applying color to at least one selected cell element of a spatial light modulator comprising the steps of:
a. aligning a substrate containing a color dye adjacent to the spatial light modulator;
b. sublimating the color dye onto at least one cell on the spatial light modulator;



c) generating a pattern of cells in said spatial light modulator; and
d) verifying that only said selected one received said dye.

5,312,780
INTEGRATED CIRCUIT FABRICATION METHOD
Arun K. Nanda, Bethlehem; Mark J. Sundahl, Emmaus, and Edward J. Vajda, Allentown, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 16, 1992, Ser. No. 991,806
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—225 **1 Claim**

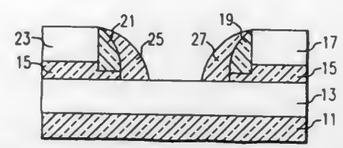


1. A method of semiconductor integrated circuit fabrication comprising:
sputtering an amorphous silicon anti-reflective coating upon a substrate chosen from the group consisting of aluminum, spin-on glass and silicon dioxide, by
preheating said substrate to a temperature between 70° C. and 175° C. prior to said sputtering step and maintaining said temperature during said sputtering.

5,312,781
FLASH EEPROM FABRICATION PROCESS THAT USES A SELECTIVE WET CHEMICAL ETCH
Richard W. Gregor, and Chung W. Leung, both of Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 12, 1991, Ser. No. 792,496
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—235 **5 Claims**

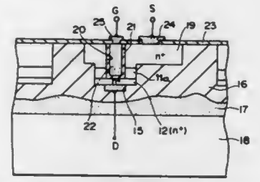
1. A method of fabricating a semiconductor device comprising:

forming a first dielectric layer of BPTEOS overlying polysilicon substrate;
wet etching said first dielectric layer;



CHARACTERIZED IN THAT said wet etching is accomplished with NH_4OH/H_2O_2.

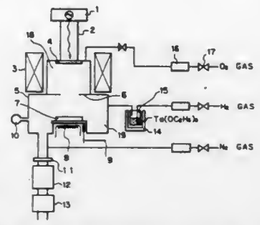
5,312,782
SOI TYPE VERTICAL CHANNEL FIELD EFFECT TRANSISTOR AND PROCESS OF MANUFACTURING THE SAME
Yoshihiro Miyazawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 21, 1991, Ser. No. 795,961
Claims priority, application Japan, Nov. 23, 1990, 319596; Nov. 23, 1990, 319597; Nov. 24, 1990, 319398
Int. Cl.[5] H01L *21/02, 29/68*
U.S. Cl. 437—235 **2 Claims**



1. A process for manufacturing a vertical channel field effect transistor comprising the steps of:
forming a drain layer on a first semiconductor substrate;
selectively etching the drain layer and the first semiconductor substrate to form a first groove;
selectively etching the first semiconductor substrate and the drain layer to form a second groove;
forming a drain electrode on the drain layer;
applying an insulating film onto the drain layer and the first and second grooves such that the first and second grooves are filled by the insulating film;
forming a polycrystal silicon layer over the insulating film;
cladding a front surface of the polycrystal silicon layer to a second substrate;
polishing a rear surface of the first semiconductor substrate to expose portions of the insulating film;
doping the exposed substrate to form a source;
selectively etching the exposed substrate to form a third groove; and
filling the third groove polycrystalline silicon a form a gate electrode.

5,312,783
PROCESS FOR THE PREPARATION OF A HIGH DIELECTRIC THIN FILM USING ECR PLASMA CVD
Kanetake Takasaki, and Satoshi Nakai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed May 28, 1992, Ser. No. 891,154
Claims priority, application Japan, May 28, 1991, 3-121529
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—235 **3 Claims**

1. A process for the preparation of a high dielectric thin film, which comprises forming a tantalum oxide film on a substrate at a temperature of from 400° to 850° C. by means of an electron cyclotron resonance plasma chemical vapor deposition (ECR plasma CVD) method, wherein the tantalum oxide film



is a Ta_2O_5 film, and the tantalum source for the tantalum oxide film is selected from the group consisting of ethoxy tantalum ($Ta(OC_2H_5)_5$) and tantalum chloride.

5,312,784
DEVITRIFICATION INHIBITOR IN LOW DIELECTRIC BOROSILICATE GLASS
Jau-Ho Jean, Export, and Tapan K. Gupta, Monroeville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Aug. 7, 1992, Ser. No. 925,630
Int. Cl.[5] C03C *8/14, 3/089*
U.S. Cl. 501—32 **12 Claims**

1. A ceramic composition comprising a mixture of ceramic particles consisting essentially of:
(a) 60–90 vol. % borosilicate glass; and
(b) 10–40 vol. % of a gallium containing material.

5,312,785
SINTERED SELF-REINFORCED SILICON NITRIDE
Aleksander J. Pyzik, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 18, 1993, Ser. No. 63,587
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 **17 Claims**

14. A silicon nitride ceramic body having a density which is at least 98 percent of theoretical value and a toughness greater than about 6.0 $MPa.(m)^{\frac{1}{2}}$ as measured by the Chevron notch technique at 23° C., comprising:
(a) a crystalline phase of β-silicon nitride of which at least about 20 volume percent, as measured by viewing one plane of the silicon nitride ceramic body by scanning electron microscopy, is present as whiskers having an average aspect ratio of at least about 2.5;
(b) a glassy grain boundary phase, in an amount ranging from about 2 to about 10 weight percent, based on total weight of the composition, comprising oxygen, nitrogen, magnesium, yttrium, silicon, zirconium, and at least one metal selected from the group consisting of titanium and aluminum;
(c) a second crystalline phase comprising zirconium oxide, in an amount ranging from about 0.1 to about 3.0 weight percent based on total weight of the composition; and
(d) at least one additional crystalline phase in an amount ranging from 0.1 to about 3.0 weight percent based on total weight of the composition, the additional phase(s) comprising metal zirconium silicide and metal zirconium silicon nitride, wherein the metal is selected from the group consisting of titanium and aluminum.

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5,312,786
ALUMINUM NITRIDE SINTERED BODY AND PROCESS FOR PRODUCING THE SAME

Akira Yamakawa; Doulti Sogabe, and Kohei Shimoda, all of Hyogo, Japan, assignors to Sumitomo Electric Industries Ltd., Japan

Division of Ser. No. 838,800, Mar. 16, 1992. This application Jun. 29, 1993, Ser. No. 85,302

Claims priority, application Japan, Oct. 29, 1990, 2-288570; Sep. 27, 1991, 3-249734

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—98 **5 Claims**

1. An aluminum nitride sintered body comprising aluminum nitride as a main component, and a titanium compound selected from the group consisting of Ti_nO_{2n-1}, a solid solution comprising Ti_nO_{2n-1} and nitrogen partly dissolved therein, and TiN_xO_y wherein $0<x<1$, y is $3/2\ (1-x)$, and n is at least 1,

said sintered body having a black color, a linear transmittance of not more than 10% for light having a wavelength of 500 to 650 nm and for light having a wavelength of 6 μm, and a heat conductivity of at least 120 W/m·K, based on a sample thickness of 0.5 mm.

5,312,787
CERAMICS COMPOSITE MATERIAL AND METHOD OF PRODUCING THE SAME

Kiyoshi Uchida; Yukio Shimokawa; Hiroshi Nomura, all of Aichi; Hirohiko Nakata, and Masaya Miyake, both of Hyogo, all of Japan, assignors to Japan Fine Ceramics Center, Nagoya and Sumitomo Electric Industries, Ltd., Osaka, both of Japan

Continuation of Ser. No. 910,694, Jul. 8, 1992, abandoned, which is a division of Ser. No. 879,158, Apr. 30, 1992, Pat. No. 5,190,895, which is a continuation-in-part of Ser. No. 465,206, Mar. 2, 1990, abandoned. This application May 25, 1993, Ser. No. 67,490

Claims priority, application Japan, Jul. 21, 1988, 63-182715; Aug. 1, 1988, 63-192421; Aug. 29, 1988, 63-214619; Oct. 28, 1988, 63-272375

Int. Cl.[5] C03C *14/00*

U.S. Cl. 501—95 **12 Claims**

1. A method of producing a ceramic composite material having a ceramic reinforcing material embedded in a crystallized glass matrix, comprising the steps of:

(a) introducing not yet crystallized original glass into interstices of oxide ceramic reinforcing material, thereby using initially an excess volume of original glass compared to a volume of original glass needed to fill said interstices when said ceramic oxide reinforcing material is in a compressed state, thereby forming a preliminary composite material,

(b) heating said preliminary composite material to a temperature exceeding the softening temperature of said original glass and not more than the softening temperature of said oxide ceramic reinforcing material, whereby said original glass is softened,

(c) pressurizing said preliminary composite material sufficiently for reducing the volume of said interstices, whereby said pressurizing removes an excess of said original glass from said interstices, and

(d) crystallizing said original glass remaining in said interstices to form said ceramic composite material in which said glass matrix is crystallized glass, so that the amount of oxide ceramic reinforcing material is at least 70 vol. % and the amount of crystallized matrix material is at most 30% by vol.

5,312,788
HIGH TOUGHNESS, HIGH STRENGTH SINTERED SILICON NITRIDE

Chien-Wei Li, Livingston, and Jean Yamanis, Morristown, both of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 716,142, Jun. 17, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 76,940

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—97 **12 Claims**



1. A silicon nitride sintered body having a composition consisting essentially of:

(a) 85 to 94% by weight β silicon nitride;

(b) 6 to 15% by weight grain boundary phases consisting essentially of (i) at least two rare earth elements, wherein yttrium is considered a rare earth, (ii) strontium which, calculated as SrO, is present up to 2 percent by weight of the total body, and (iii) at least two of Si, N, O and C; and

(c) an additive consisting essentially of a metal-carbon compound present in the amount of about 0.2 to 3.5% by volume, said additive being substantially homogeneously dispersed within said sintered body, said sintered body having a microstructure wherein (i) said β silicon nitride grains are acicular and have an average grain width ranging from 0.5 to 1.5 μm, (ii) at least 25% of said grains have width greater than 0.7 μm, and at least 10% of said grains have width greater than 1 μm, and (iii) no more than 5% of said grains have width greater than 3.5 μm and apparent aspect ratio greater than 5, with the proviso that the average aspect ratio of all grains is at least 1.8, and having a density at least 95% of theoretical.

5,312,789
ABRASIVE GRITS FORMED OF CERAMIC, IMPREGNATION METHOD OF MAKING THE SAME AND PRODUCTS MADE THEREWITH

William P. Wood, Golden Valley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 799,867, Nov. 27, 1991, Pat. No. 5,164,348, which is a continuation of Ser. No. 645,349, Jan. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 54,440, May 27, 1987, abandoned. This application Nov. 16, 1992, Ser. No. 976,893

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] C04B *35/10*

U.S. Cl. 501—127 **31 Claims**

1. Ceramic abrasive grits comprising alpha alumina and at least about 0.5% by weight of at least one modifying metal oxide, the metal of the metal oxide being selected from the group consisting of zirconium, hafnium, cobalt, nickel, zinc, magnesium, yttrium, praseodymium, samarium, ytterbium, neodymium, lanthanum, gadolinium, cerium, dysprosium, erbium, and combinations of two or more of such metals, wherein the concentration of said modifying metal oxide is greater at or near the surface of said grit than at the interior of said grit, and wherein said abrasive grits have a shape selected from the group consisting of rods, pyramids, diamonds, and cones.

5,312,790
CERAMIC FERROELECTRIC MATERIAL

Louise C. Sengupta, Woburn; Eric Ngo, Brighton; Steven Stowell, Jamaica Plain; Gary Gilde, Brighton, and Robert Lancto, Wakefield, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1993, Ser. No. 76,291

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—137 **4 Claims**

1. A ceramic ferroelectric composite material consisting essentially of

Barium Strontium Titanate, said Barium Strontium Titanate represented as $Ba_{1-x}Sr_xTiO_3$, wherein x is greater than 0.0 but less than or equal to 0.70; and

alumina; wherein said Barium Strontium Titanate and alumina are present in amounts to provide a composite having a low dielectric constant, low loss tangent and high tunability.

5,312,791
PROCESS FOR THE PREPARATION OF CERAMIC FLAKES, FIBERS, AND GRAINS FROM CERAMIC SOLS

William S. Coblenz, Arlington, Va., and Michael D. Kavanaugh, North Grafton, Mass., assignors to Saint Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Aug. 21, 1992, Ser. No. 933,161

Int. Cl.[5] C04B *35/10*

U.S. Cl. 501—153 **18 Claims**

1. A process for producing a ceramic material comprising:

(i) freezing a sol comprising a hydrated alumina material so as to obtain a frozen aqueous phase and a solid hydrated alumina phase;

(ii) drying the solid hydrated alumina by removing the frozen aqueous phase without causing redispersion in water of the solid hydrated alumina; and therafter

(iii) sintering the dried hydrated alumina to produce a ceramic material.

5,312,792
CATALYTIC COMPOSITIONS

Terry G. Roberie, Ellicot City, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 593,834, Oct. 5, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 916,460

Int. Cl.[5] B01J *29/08*

U.S. Cl. 502—60 **8 Claims**

1. A method for preparing phosphorus-containing ultrastable Y-zeolite which comprises:

(a) ion-exchanging and washing sodium Y zeolite having a unit cell dimension of about 24.53 to 24.72 Å with an ammonium salt solution and water to obtain a Y-zeolite which contains 1 to 5 weight percent Na_2O;

(b) combining the washed Y-zeolite of step (a) with an aqueous solution of a phosphorus compound selected from the group consisting of H_3PO_4, $NH_4H_2PO_4$, $(NH_4)_2HPO_4$, and NaH_2PO_4 to obtain a Y-zeolite that contains about 0.1 to 5 weight percent P_2O_5;

(c) heating the phosphorus-containing Y-zeolite of step (b) in the presence of steam to obtain a phosphorus-containing ultrastable Y-zeolite having au nit cell dimension of about 24.45 to 24.60 Å; and

(d) washing the phosphorus-containing ultrastable Y-zeolite of step (c) to remove sodium ions.

8. The phosphorus-containing ultrastable Y-zeolite prepared by the method of claim 1.

5,312,793
STABLE AQUEOUS SUSPENSIONS OF ZEOLITE WHICH CAN BE EASILY PUMPED

Paolo Colombo; Pier D. Mattioli, both of Saronno; Luigi Valtorta, Desio, and Pierino Radici, Turate, all of Italy, assignors to Enichem Augusta Industriale S.r.l., Milan, Italy

Filed Jun. 29, 1992, Ser. No. 905,731

Claims priority, application Italy, Jul. 1, 1991, MI 91 A 001813

Int. Cl.[5] B01J *20/18, 20/, 28;* **C11D** *3/08*

U.S. Cl. 502—62 **15 Claims**

1. Stable aqueous suspensions of zeolite 4A which can be easily pumped, containing from 0.5 to 65% by weight of anhydrous zeolite and from 0.05 to 6 g (per 100 g of anhydrous zeolite) of a suspending agent, composed of mixtures of ethoxylated alkanols, having an average ethoxylation degree of 3 to 12, wherein said mixtures are obtained by ethoxylating:

a) mixtures of biodegradable branched alkanols, having from 10 to 18 carbon atoms and having a single branching in position 2, said mixtures containing at least 2 alkanols having a different number of carbon atoms; or

b) mixtures containing from 40 to 100% by weight of branched alkanols as in a) and from 60 to 0% by weight of linear alkanols having from 10 to 18 carbon atoms.

5,312,794
CATALYST SYSTEM FOR OLEFIN POLYMERIZATION

Donald R. Kelsey, Fulshear, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 29, 1992, Ser. No. 998,082

Int. Cl.[5] C08F *4/69*

U.S. Cl. 502—117 **9 Claims**

1. A cyclic olefin polymerization catalyst system comprising:

(a) a transition metal hydrotrispyrazolylborate complex having the formula:

$$Tp—M—L_3$$

wherein Tp is a hydrotrispyrazolylborate ligand, M is tungsten or molybdenum, and L is independently a ligand selected from the group consisting of oxo, phenoxy, alkoxy, pyrazole, and halides provided that at least one L is a halide; and

(b) a co-catalyst for ring opening cycloolefin polymerization.

5,312,795
HYDROCARBON CONVERSION

Mark P. Kaminsky, Winfield; Mark S. Kleefisch, Naperville; George A. Huff, Jr., Naperville; Don M. Washecheck, Naperville, and Mark K. Barr, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 775,227, Oct. 11, 1991, Pat. No. 5,198,596. This application Nov. 12, 1992, Ser. No. 975,280

Int. Cl.[5] B01J *21/18*

U.S. Cl. 502—174 **14 Claims**

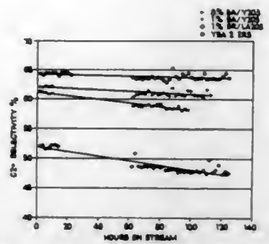
1. A composition which consists essentially of an intimately mixed, mixed oxide of:

(a) at least one cationic species of a naturally occurring Group IIIB element;

(b) at least one Group IIA metal cationic species selected

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from the group consisting magnesium, calcium, strontium and barium; and



(c) at least one additional metal cationic species selected from the group consisting of zirconium and hafnium.

5,312,796

THERMOSENSITIVE RECORDING MATERIAL

Masaki Nishimura, Tokyo, and Kunitaka Toyofuku, Sakura, both of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed May 14, 1992, Ser. No. 882,873

Claims priority, application Japan, May 20, 1991, 3-114906; Jun. 1, 1991, 3-130102

Int. Cl.[5] B41M *5/30*

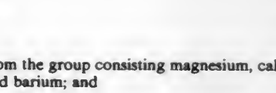
U.S. Cl. 503—209 **6 Claims**

1. A thermosensitive recording material comprising:

a sheet substrate; and

a thermosensitive colored image-forming layer formed on the sheet substrate and comprising a substantially colorless dye precursor, 10 to 40% based on the total dry weight of the thermosensitive colored image-forming layer of a color-developing agent reactive with the dye precursor upon heating to thereby develop a color, and a binder,

the color-developing agent comprising at least one compound selected from the group consisting of the methacryloylimido compounds of the formulae (I) to (V).

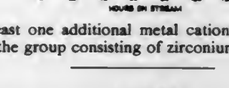


(I)

(II)

(III)

(IV)



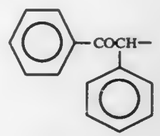
(V)

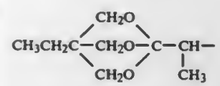
in which formulae (I) to (V),

R_1 represents a member selected from the group consisting of a hydrogen atom and alkyl, aryl, aralkyl, alkenyl and cycloalkyl groups;

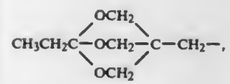
R_2 and R_3 respectively and independently from each other represent a member selected from the group consisting of a hydrogen, and alkyl, aryl, aralkyl, alkenyl and acetyl, except that when one of R_2 and R_3 represents a hydrogen, the other R_2 and R_3 represents a member other than the hydrogen, which R_2 and R_3 may be formed together with a carbon atom bonded thereto into a cyclic structure;

R_4 represents a member selected from the group consisting of alkyl, aryl, aralkyl, alkenyl, piperidino, succinimido, *p*-benzoylphenyl,

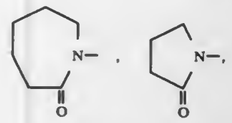


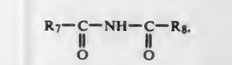


and

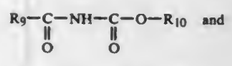


and R_5 and R_6 respectively and independently from each other represent a member selected from the group consisting of a hydrogen, alkyl, aryl, aralkyl, alkenyl, cycloalkyl, thiazolinyl and morpholino, which R_5 and R_6 may be formed together with a nitrogen atom bonded thereto into a cyclic structure selected from the group consisting of

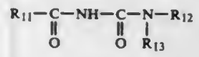




(VI)



(VII)



(VIII)

in which formulae (VI) to (VIII),

R_7, R_9 and R_{11} respectively and independently from each other represent a member selected from the group consisting of unsubstituted aromatic cyclic groups and substituted aromatic cyclic groups having at least one substituent selected from the group consisting of alkyl, alkoxyl, acyl, aryl, nitro and carboxylic groups and halogen atoms;

R_8, R_{10} and R_{12} respectively and independently from each other represent a member selected from the group consisting of unsubstituted or substituted alkyl, aryl, aralkyl and alkenyl groups and each of said substituted group having at least one substituent selected from the group consisting of alkyl, alkoxyl, acyl, nitro and halogen; and

R_{13} represents a member selected from the group consisting of hydrogen, unsubstituted or substituted alkyl, aryl, aralkyl and alkenyl groups, each of said substituted groups having at least one substituent selected from the group consisting of alkyl, alkoxyl, acyl, nitro and halogen.

5,312,797

HEAT TRANSFER IMAGE-RECEIVING SHEET

R. Takiguchi; Hitoshi Saito; Masanori Torii; Jun Hasegawa; Hideo Fujimura, and Yoshinori Nakamura, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Mar. 23, 1992, Ser. No. 855,965

Claims priority, application Japan, Mar. 28, 1991, 3-87421; Mar. 28, 1991, 3-87422; Nov. 8, 1991, 3-319665

Int. Cl.[5] B41M *5/035, 5/038*

U.S. Cl. 503—227 **10 Claims**

1. A heat transfer image-receiving sheet comprising:

a substrate sheet; and

a dye-receiving layer provided on at least one surface of the substrate sheet and comprising a polyester resin containing a diol component and an acid component, at least the diol component comprising tricyclodecanedimethanol.

5,312,798

HERBICIDAL COMPOSITION

Shinichi Kawamura, Osaka; Izumi,Keiichi, Hyogo; Junichi Sato, Osaka; Yuzuru Sanemitsu, Hyogo, all of Japan; Ryo Sato, Durham, N.C.; Tatsuhiro Hamada, Hyogo, and Hideyuki Shibata, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 11, 1992, Ser. No. 944,084

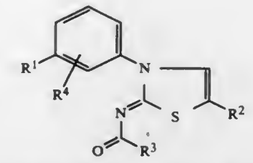
Claims priority, application Japan, Sep. 11, 1991, 3-231847; Sep. 11, 1991, 3-231848; Sep. 11, 1991, 3-231849; Sep. 11, 1991, 3-231850; Sep. 11, 1991, 3-231851

Int. Cl.[5] A01N *43/70, 43/58, 43/78, 43/76*

U.S. Cl. 504—134 **20 Claims**

1. A herbicidal composition comprising as active ingredients a herbicidally effective amount of:

(a) an iminothiazoline compound of the formula:



wherein R^1 is halogen, halo(C_1–C_2)alkyl, halo(C_1–C_2)alkoxy or halo(C_1–C_2)alkylthio; R_2 is C_1–C_2 alkyl, chlorine, bromine or iodine; R^3 is C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkoxy or C_1–C_6 alkoxy, all of which are optionally substituted with at least one substituent selected from halogen, C_1–C_2 alkyl and C_1–C_2 alkoxy; R^4 is hydrogen or halogen; and

(b) at least one of herbicidal triazine compounds, herbicidal uracil compounds, herbicidal urea compounds, herbicidal dinitro aniline compounds, norflurazon, dimethazone, imazaquin and imazethapyr.

5,312,799

AMIDES

Karl Seckinger, Riegel, Fed. Rep. of Germany; Karlheinz Milzner, Basel, Switzerland; Fred Kuhnen, Weil, Fed. Rep. of Germany, and Sasank S. Mohanty, Baden, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

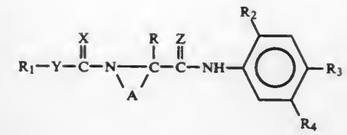
Filed May 8, 1992, Ser. No. 880,424

Claims priority, application United Kingdom, May 17, 1991, 9110693

Int. Cl.[5] A01N *43/86, 43/40*; C07D *211/06, 207/46*

U.S. Cl. 504—249 **12 Claims**

1. A compound of the formula (I)



(I)

wherein

R is H, C_{1-3}alkyl or C_{2-3}alkenyl optionally substituted by halo; or is C_{2-3}alkinyl;

R_1 is phenyl(C_{1-4}alkyl)$_n$, wherein the phenyl group is optionally substituted by one or more groups selected from —C(O)—O—C_{1-4}alkyl, C_{1-8}alkyl, C_{1-8}haloalkyl, halo, nitro, cyano, —SO_2C_{1-4}alkyl, $SO_2NR_5R_5'$ and $S(O)NR_5R_5'$; or is C_{5-8}cycloalkenyl; —N=R_6; C_{2-8}alkenyl, C_{1-8}alkyl or C_{3-5}alkinyl optionally substituted with one or more halo; or is C_{1-4}alkyl—SO_2—C_{1-4}alkyl;

R_2 is halo or hydrogen;

R_3 is halo, cyano or C_{1-4}alkyl;

R_4 is H; NO_2; NH_2; CN; C_{1-8}alkyl optionally substituted by CN; C_{2-8}alkenyl optionally substituted by CN; C_{2-5}alkinyl; (C_{2-5}alkoxycarbonyl)-C_{1-4}alkyl, whereby the carbon atom of the alkyl group alpha to the alkoxycarbonyl group may bear one more C_{2-5}alkoxcarbonyl groups or a cyano group; (C_{2-5}alkoxycarbonyl)-C_{4}alkoxy-C_{1-4}alkyl; (C_{2-5}alkoxycarbonyl)-C_{1-4}alkylamino-C_{1-4}alkyl; (C_{2-5}alkoxycarbonyl)-C_{2-5}alkenyl, whereby the alkenyl moiety is optionally substituted by halogen; C_{1-4}alkylthio-C_{1-4}alkyl; C_{1-4}alkylsulfonyl-C_{1-4}alkyl; C_{1-4}alkoxy-C_{1-4}alkoxy; X(Alk)$_m$R$_7$; OCH(SR$_8$)-COOR$_9$; NR$_{10}$R$_{11}$; COOR$_{12}$; CONR$_{13}$R$_{13}'$; COR$_{14}$ or R$_{15}$;

or R_3 and R_4 join together with the phenyl ring to form a bicyclic ring containing nine to ten ring atoms, one to three of said ring atoms optionally being selected from oxygen, nitrogen and sulfur, and optionally being substituted with one or more groups selected from C_{3-8}alkinyl, C_{1-8}alkyl, halo, oxo, C_{1-4}alkylene-R$_{16}$, and C_{2-8}alkenyl;

R_5 and R_5, independently are C_{1-4}alkyl;

R_6 is C_{2-8}alkylidene;

R_7 is H; C_{1-4}alkyl, C_{2-5}alkenyl C_{2-5}alkinyl, or C_{3-8}cycloalkyl, which hydrocarbyl is unsubstituted or substituted by one or more halogen or by CN; cyclopentanonyl; phenyl optionally substituted by O—Alk'—COOR$_8$; or is C_{2-5}alkanoyl; C_{2-5}alkoxycarbonyl; C_{2-8}(alkoxycarbonyl)(C_{3-8}-cycloalkyloxy)-carbonyl, in which the alkoxy or cycloalkyloxy group is optionally substituted by one or more halo; CONR$_9$R$_{8'}$, C(=NOR$_8$)-COOR$_{8'}$, CN; P(O)(OR$_8$)(OR$_{8'}$) or R$_{15}$;

R_8 and R$_8$, independently are C_{1-4}alkyl;

R_9 is C_{1-4}alkyl optionally substituted by one or more halo;

R_{10} is H or C_{1-4}alkyl;

R_{11} is H; C_{1-4}alkyl, optionally substituted by P(O)-(OR$_8$)(R$_{8'}$); C_{2-5}alkanoyl; C_{2-5}alkoxycarbonyl; or C_{2-5}alkoxycarbonyl-C_{1-4}alkyl;

R_{12} is N=(C_{2-8}alkylidene); C_{1-4}alkyl optionally substituted by one or more groups selected from halo, C_{1-4}alkoxy, tri-C_{1-4}alkylsilyloxy, tri-C_{1-4}alkyl-silyl, (tri-C_{1-4}alkyl-silyloxy)-carbonyl, C_{2-5}alkoxycarbonyl, P(O)(OR$_8$-)(OR$_{8'}$), C_{2-5}alkanoyl-oxy or by di(C_{1-4}alkylamino)-carbonyloxy in which both alkyl groups may be tied together to form a saturated 5 to 6 membered heteroring optionally containing one further heteroatom selected from O, S and N, and in which any further N-heteroatom present may, depending on the hydrogenation degree of the heteroring, bear a hydrogen or a C_{1-4}alkyl group;

R_{13} is H or C_{1-4}alkyl;

R_{13}, is H, C_{1-4}alkyl optionally substituted by halo, C_{1-4}alkoxy, phenyl, CHO, C_{2-5}alkanoyl, C_{1-4}alkylsulfonyl, (C_{2-5}alkoxycarbonyl)-C_{1-4}alkyl or(C_{2-5}alkoxycarbonyl)-C_{1-4}alkoxy;

or R_{13} and R_{13}, together form a 4 to 6 membered heteroring

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optionally containing one or two further heteroatoms selected from O, S and N, whereby, depending on the hydrogenation degree of the heteroring, any further N-heteroatom may bear hydrogen or be substituted by C_{1-4}alkyl;

R_{14} is H or C_{1-4}alkyl;

R_{15} is a heterocyclic ring having 5 or 6 ring atoms, one to three of said ring atom being selected from oxygen, sulfur and nitrogen, which ring is optionally substituted with one or more C_{1-4}alkyl groups;

R_{16} is CN; $COOR_{12}$; OC_{1-4}alkyl; or is 4-tetrahydropyranyl, 2H-5,6-dihydro-thiin-3-yl, 2-pyridyl, 2-pyrazinyl, 1,2-oxazol-3-yl, or 1,2,4-oxdiazol-3-yl, each of which is optionally substituted with C_{1-4}alkyl;

Alk and Alk' independently are C_{1-4}alkylene;

n and m independently are 0 or 1;

A is a C_{3-4}alkylene or straight chain substituted by one to three halogen; and

X, Y and Z are independently selected from O and S.

5,312,800

PYRROLIDINONES

Hermann Rempfler, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

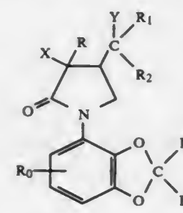
Filed May 20, 1993, Ser. No. 64,243

Claims priority, application Switzerland, May 22, 1992, 1655/92

Int. Cl.[5] A01N *43/36*, *43/08*; C07D *405/10*

U.S. Cl. 504—283 **14 Claims**

1. A compound of formula I



(I)

wherein

R is hydrogen, C_1–C_4alkyl, or phenyl unsubstituted or substituted by halogen, C_1–C_4alkyl or by C_1–C_4haloalkyl, or is fluorine, chlorine or bromine;

R_0 is hydrogen or halogen;

R_1 and R_2 independently of one another are hydrogen or C_1–C_4alkyl;

X is hydrogen, fluorine, chlorine, bromine, cyano, —$COOR_1$, —$CONR_1R_2$, —NH_2 or —$NHCOR_3$, wherein R_1 and R_2 are as defined, and R_3 is C_1–C_4alkyl; and

Y is hydrogen, chlorine or bromine; or a diastereoisomeric form thereof.

5,312,801

SOMATIC EMBRYOGENESIS AND PLANT REGENERATION OF CACAO

Maro R. Sondahl, Mt. Laurel, N.J.; Zhenghua Chen, Beijing, China; Thomas B. Sereduk, Mt. Holly, N.J.; Claudia M. Bellato, Maple Shade, N.J.; Si-Jiu Liu, Delran, N.J., and Alvina Bragin, Cherry Hill, N.J., assignors to DNA Plant Technology Corporation, Cinnaminson, N.J. and Hershey Foods Corporation, Hershey, Pa.

Continuation-in-part of Ser. No. 419,296, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 43,864, Apr. 29, 1987, abandoned. This application Dec. 30, 1991, Ser. No. 814,853

Int. Cl.[5] A01H *4/00*

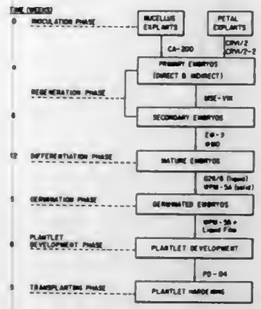
U.S. Cl. 435—240.49 **32 Claims**

1. A method for the production of a cacao plantlet capable of developing into a mature cacao plant from a non-zygotic somatic tissue of a mature cacao plant, which method comprises:

(a) providing a somatic embryo derived from non-zygotic somatic tissue;

(b) culturing the somatic embryo on a differentiation medium comprising effective amounts of at least growth regulator to obtain a differentiated embryo,

wherein said at least one growth regulator is abscisic acid



at a concentration of about 0.01 to 300 μM, or a cytokinin at a concentration of about 0.1 to 300 μM, or a gibberellin at a concentration of about 0.05 to 15 μM, or a combination thereof; and

(c) germinating the differentiated embryo on a germination medium comprising an auxin at a concentration of about 0.05 to 5 μM, a gibberellin at a concentration of about 0.1 to 10 μM, a cytokinin at a concentration of about 0.5 to 30 μM, or a combination thereof to produce a cacao plantlet.

5,312,802

OXIDE SUPERCONDUCTIVE WIRE, METHOD OF MANUFACTURING THE SAME AND THE PRODUCTS USING THE SAME

Noriki Hayashi; Satoshi Takano; Shigeru Okuda, and Hajime Hitotsuyanagi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

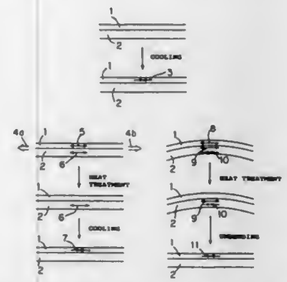
PCT No. PCT/JP90/00422, § 371 Date Nov. 29, 1990, § 102(e) Date Nov. 29, 1990, PCT Pub. No. WO90/12408, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 29, 1990, Ser. No. 613,868

Claims priority, application Japan, Mar. 31, 1989, 1-82556; Jul. 14, 1989, 1-183207; Mar. 9, 1990, 2-58814

Int. Cl.[5] H01F *7/22*; H01B *12/02*

U.S. Cl. 505—211 **3 Claims**



1. A product using an oxide superconductive tape or wire, said tape or wire comprising

(a) a longitudinal flexible base, and

(b) an oxide superconductive layer formed on one surface of the base, said surface being an outer surface upon bending, said oxide superconductive layer having a preliminary compressive strain in the longitudinal direction.

5,312,803

PROCESS FOR PRODUCING BI- AND PB-CONTAINING OXIDE SUPERCONDUCTING WIRING FILMS

Atsushi Tanaka; Kazunori Yamanaka; Nobuo Kamehara, and Koichi Niwa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

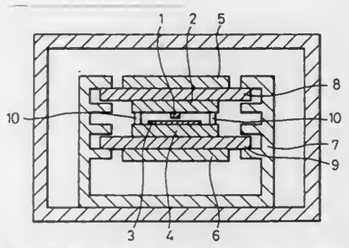
PCT No. PCT/JP91/01422, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO92/07381, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 17, 1991, Ser. No. 861,823

Claims priority, application Japan, Oct. 17, 1990, 2-276506; Mar. 18, 1991, 3-51882; Mar. 18, 1991, 3-51883

Int. Cl.[5] B05D *5/12*

U.S. Cl. 505—471 **39 Claims**



1. A process for producing a superconducting wiring film, comprising the steps of:

forming on a substrate a film wiring pattern of a material capable of producing a Pb- and Bi-containing oxide superconducting material upon being fired; and

firing the superconductor forming material film wiring pattern while preventing or compensating for the evaporation of at least one of Pb and Bi components of the superconducting material,

wherein the means for preventing or compensating for the evaporation of the at least one of Pb and Bi components of the superconducting material is to place above and close to the superconductor forming material film wiring pattern on the substrate so that the plate and the superconductor forming material film wiring pattern face each other, the plate comprising a material having no chemical influence on the superconductor forming material film wiring pattern.

5,312,804

METHOD OF FABRICATING A SUPERCONDUCTIVE FLEXIBLE CERAMIC CONDUCTOR HAVING A HIGH CRITICAL TEMPERATURE

Alain Petitbon, Saint Arnould Enyvelines, and Roland Queriaud, Orsay, both of France, assignors to Alcatel Cable, Clichy Cedex, France

Filed Oct. 28, 1992, Ser. No. 967,425

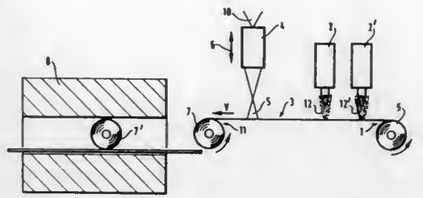
Claims priority, application France, Oct. 29, 1991, 91 13313

Int. Cl.[5] B05D *3/06*, *5/12*

U.S. Cl. 505—434 **13 Claims**

1. A method of fabricating a superconductive flexible conductor having a high Tc comprising the steps of applying a deposit of a superconductive ceramic of a thickness of 50 μm to 300 μm and of a concentration by volume of not less than 70% to a metal tape of a thickness lying in the range of 0.1 mm to 1 mm,

passing a central zone of said deposit having a width of less than 10 mm relative to a tape travel direction, through an infrared laser beam having a diameter less than said width of said deposit at a speed of not less than 5 cm per minute and causing a surface temperature to be heated to not less than 1200° C., thereby imparting to said deposit at said zone, a surface superconductive layer of a concentration by volume close to 100%, which is textured in the metal



tape travel direction, and which is of a thickness lying in the range of 10 μm to 100 μm, which thickness is less than that of said deposit and

annealing under oxygen said metal tape provided with said deposit and including said surface superconductive layer.

5,312,805

ORGANIC SUPERCONDUCTIVE MATERIAL AND PROCESS FOR PRODUCING THE SAME

Yoshinobu Ueba, Osaka, Japan, and Yoshiyuki Okamoto, New York, N.Y., assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 417,103, Oct. 4, 1989, Pat. No. 5,252,546. This application Aug. 4, 1993, Ser. No. 101,729

Claims priority, application Japan, Oct. 5, 1988, 63-252745

Int. Cl.[5] H01L *39/12*; H01B *1/00*

U.S. Cl. 549—1 **10 Claims**

1. An organic superconductive material comprising a polymer having dispersed therein an organic superconductive substance comprising (i) an electron donor selected from the group consisting of an organic electron-donating material having a tetrathiafulvalene structure and an organic electron-donating material having an anthraquinone structure and (ii) an electron acceptor selected from the group consisting of a halogen ion, a metal halide, a metal thiocyanate, a perchlorate, a metal oxide, a metal dimercaptoisotrithione complete and FSO_3^-.

5,312,806

MINERAL FIBRES

Gurli Mogensen, Lynge, Denmark, assignor to Rockwool International A/S, Hedehusene, Denmark

PCT No. PCT/DK91/00030, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/11403, PCT Pub. Date Aug. 8, 1991

PCT Filed Feb. 1, 1991, Ser. No. 916,145

Claims priority, application Denmark, Feb. 1, 1990, 0269/90

Int. Cl.[5] C03C *13/06*

U.S. Cl. 501—36 **2 Claims**

1. High temperature resistant mineral fibres consisting essentially of:

SiO_2:	34–42 % by weight
Al_2O_3:	31–38 % by weight
TiO_2:	0–1 % by weight
FeO:	2.5–7.5 % by weight
CaO:	17–21 % by weight
MgO:	0.5–4.3 % by weight
Na_2O:	0.3–1.5 % by weight
K_2O:	0.1–2.3 % by weight

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5,312,807

METHOD OF IMPROVING ABSORPTION OF SALT WATER BY WATER-SWELLABLE CLAY BY REDRYING

John Hughes, Long Grove, Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 729,931, Jul. 15, 1991, abandoned, which is a division of Ser. No. 608,816, Nov. 5, 1990, Pat. No. 5,114,893. This application Dec. 3, 1992, Ser. No. 985,830

Int. Cl.[5] C09K 7/00

U.S. Cl. 507—100 15 Claims

1. A method of absorbing salt-contaminated water with a treated, water-swellable clay, by treating the water-swellable clay that has been recovered and dried to a moisture content of 12% or less, based on the dry weight of the clay to improve its ability to absorb and swell when in contact with salt-containing water comprising:

rewetting the clay to a moisture content of more than 12% by weight based on the dry weight of the clay;

drying the rewetted clay to a moisture content of 12% by weight or less, based on the dry weight of the clay; and

contacting the treated clay with salt-contaminated water to swell the treated clay.

5,312,808

FRACTIONATION OF POLYALKYLENE OXIDE-CONJUGATED HEMOGLOBIN SOLUTIONS

Robert G. L. Shorr, Edison; Myung-Ok P. Cho, Highland Park, and Kwang Nho, Somerset, all of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 616,129, Nov. 20, 1990, Pat. No. 5,234,903, which is a continuation-in-part of Ser. No. 440,553, Nov. 22, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,007

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] A61K 37/00; C07K 3/12

U.S. Cl. 514—6 21 Claims

1. A polyalkylene oxide-conjugated hemoglobin-containing solution comprising polyalkylene oxide-conjugated hemoglobin in a physiologically acceptable aqueous buffer solution, said polyalkylene oxide-conjugated hemoglobin having a molecular weight greater than about 85,000 daltons and a degree of substitution of at least five polyalkylene oxide conjugates per hemoglobin molecule, wherein said solution does not produce hemoglobinuria in mammals.

5,312,809

PHYSIOLOGICALLY ACTIVE SUBSTANCE DERIVED FROM MALT AND PROCESS FOR THE PRODUCTION THEREOF

Yuji Maeda, Chiba; Takayoshi Fujii; Masanori Ikuzawa, both of Tokyo; Kenichi Matsunaga, Saitama; Tamotsu Kanoh, Chiba, and Shigeaki Muto, Tokyo, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 539,850, Jun. 18, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 755,834

Claims priority, application Japan, Jun. 28, 1989, 1-166412

Int. Cl.[5] A61K 37/10; A23G 1/02

U.S. Cl. 514—8 6 Claims

1. A composition comprised of:

1) An extract derived from malt residue having the following properties:

(i) said extract is a fraction having a molecular weight from 19.8×10^4 to 22.1×10^4 daltons as determined by the GPC-LALLS method,

(ii) Infrared absorption spectra at 3,600–3,200 cm^{-1} and 1,700–1,600 cm^{-1},

(iii) Proton nuclear magnetic resonance spectra having peaks at 0.5–6.0 ppm and 6.0–8.5 ppm,

(iv) Ultraviolet absorption spectra at 200–250 nm and 250–350 nm,

(v) Positive to phenol sulfuric acid color reaction,

(vi) Positive to copper-Folin color reaction, and

2) an acceptable carrier or diluent.

5,312,810

METHOD AND COMPOSITIONS FOR MAKING ACSF AND ACSF ANTAGONISTS

William I. Wood, San Mateo, Calif., and Thomas J. Martin, Victoria, Australia, assignors to The University of Melbourne, Parkville, Australia and Genentech, Inc., San Francisco, Calif.

Continuation of Ser. No. 713,021, Feb. 6, 1991, abandoned, which is a continuation of Ser. No. 252,013, Sep. 27, 1988, abandoned, which is a continuation of Ser. No. 52,637, May 20, 1987, abandoned. This application Nov. 13, 1992, Ser. No. 975,960

Int. Cl.[5] A61K 37/02, 37/24, 37/64

U.S. Cl. 514—12 4 Claims

1. A composition comprising the C-terminal peptide consisting essentially of C-terminal amino acid residues 106–109 to 141 of full length adenylate cyclase stimulating factor.

5,312,811

PEPTIDE DERIVATIVES AND ANTIDEMETIA AGENTS

Mitsuo Masaki, Chiba; Seiji Kondo, Saitama; Norihisa Miyake, Saitama; Masaki Uehara, Saitama; Kenji Hirate, Saitama; Yoshikazu Isowa, Tokyo; Yoshiaki Sato, Tokyo, and Yoshiharu Nakashima, Tokyo, all of Japan, assignors to Nippon Chemiphar Co., Ltd. and Fujirebio Kabushiki Kaisha, Tokyo, Japan

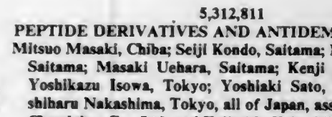
Filed Aug. 14, 1989, Ser. No. 393,515

Claims priority, application Japan, Aug. 12, 1988, 63-201356; Apr. 15, 1989, 1-95920

Int. Cl.[5] A61K 37/02; C07K 5/10, 7/06

U.S. Cl. 514—16 9 Claims

1. A peptide derivative having the formula (I):

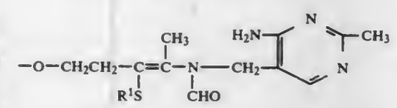


(I)

wherein

A between Pro and Q^2 is Arg or Lys: Q^1 is pGlu or H; Q^2 is -Gly-OH or OH; Y^1 is H or —CO—T and Y^2 is OH or T; wherein

T represents a group having the formula (II):

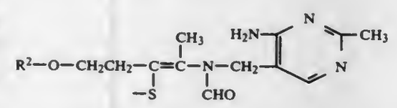


(II)

wherein

R^1 is a group selected from the group consisting of an alkylcarbonyl group having 2 to 7 carbon atoms, an arylcarbonyl group having 7 to 10 carbon atoms, and an alkylthio group having 1 to 6 carbon atoms; or

a group having the formula (III):



(III)

wherein

R^2 is a group selected from the group consisting of hydrogen, an alkylcarbonyl group having 2 to 7 carbon atoms, and an arylcarbonyl group having 7 to 10 carbon atoms;

wherein at least either Y^1 is —CO—T, or Y^2 is T,

n is 0 or 1; and amino acids constituting the peptide are those of type L with the proviso that both Pro and Arg are of type D;

or functional derivatives of said peptide derivative selected from the group consisting of N-acyl derivatives having a group of —NHCOR wherein R is an alkyl group of 1–5 carbon atoms, a derivative in the form of amide, a monoalkyl-substituted amide or dialkyl-substituted amide derivative respectively, represented by —$CONH_2$, —CONHR or —$CONR_2$ wherein R is an alkyl group of 1–6 carbon atoms, or a derivative in the form of ester represented by —COOR wherein R is an alkyl group of 1–18 carbon atoms, at least one functional group or a pharmaceutically acceptable salt.

5,312,812

PHARMACEUTICAL COMPOSITIONS COMPRISING NOVEL OLIGOPEPTIDES EXHIBITING SELECTIVE INHIBITING EFFECT UPON THE PROLIFERATION OF HEMOPOIETIC CELLS

András Balázs; István Schön; Tamás Szirtes, all of Budapest, and Lajos Kisfaludy, deceased, late of Budapest, all of Hungary by Andás Kisfaludy, Márta Kisfaludy, executors , assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed May 17, 1994, Ser. No. 750,278

Claims priority, application Hungary, Sep. 3, 1990, 5745/90

Int. Cl.[5] A61K 37/00

U.S. Cl. 514—17 2 Claims

1. A pharmaceutical composition for selectively inhibiting the proliferation of hemopoietic cells, which comprises a therapeutically effective amount of a peptide selected from the group consisting of

Xaa Glu Asp Cys Lys (SEQ I.D. No. 1)

and

Glu Asp Cys Lys (SEQ I.D. No: 2)

where Xaa is pyroglutamic acid and the Cys residue is bonded to an acetamidomethyl group, or a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutically acceptable inert carrier.

5,312,813

BIOFILM REDUCTION METHOD

John W. F. Costerton, Calgary; Antoine E. Khoury, Willowdale, and Frank Johnson, Ottawa, all of Canada, assignors to University Technologies International, Canada

Continuation-in-part of Ser. No. 694,980, May 3, 1991, abandoned. This application Jul. 22, 1992, Ser. No. 918,740

Int. Cl.[5] A01N 43/04, 37/18, 43, 42; A61K 31/43, 31/47, 31/545, 31/65, 31/70

U.S. Cl. 514—29 9 Claims

1. A method of killing microorganisms which (a) form a biofilm on a surface expanse, and (b) are refractory to killing when a planktonic biocidal concentration of a biocide effective against the microorganisms in planktonic form is administered, comprising

contacting the surface expanse with an aqueous medium containing the biocide in such planktonic biocidal concentration, and

during said contacting, applying a voltage across the biofilm, to generate an electric field whose field strength of at least about 5–25 $\mu A/cm^2$ and duration are sufficient to produce killing of such microorganisms forming the biofilm.

5,312,814

α-PHOSPHONOCARBOXYLATE SQUALENE SYNTHETASE INHIBITORS

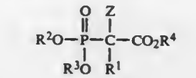
Scott A. Biller, Ewing, and David R. Magnin, Hamilton, both of N.J., assignors to Bristol-Myers Squibb Co., Princeton, N.J.

Filed Dec. 9, 1992, Ser. No. 987,831

Int. Cl.[5] A61K 31/73, 31/66; C07F 9/40, 9/38

U.S. Cl. 514—39 17 Claims

1. A compound having the structure



wherein

R^2 and R^3 are independently H, a metal ion, other pharmaceutically acceptable cation, or a prodrug ester;

R^4 is H, alkyl, aryl, alkenyl, arylalkyl, metal ion, other pharmaceutically acceptable cation, or a prodrug ester;

R^1 is lipophilic group containing at least 7 carbons and is optionally substituted cycloalkyl, optionally substituted alkenyl containing 3 or 4 double bonds, optionally substituted alkynyl, or optionally substituted aryl; and

Z is H, halogen, lower alkyl, hydroxy or hydroxyalkyl; including pharmaceutically acceptable salts thereof.

5,312,815

FUNGICIDAL (+)-2-(2,4-DIFLUOROPHENYL)-3-METHYL-1-(1H-1,2,4-TRIAZOL-1-YL)3-(6-(1H-1,2,4-TRIAZOL-1-YL)PYRIDAZIN-3-YLTHIO) BUTAN-2-OL

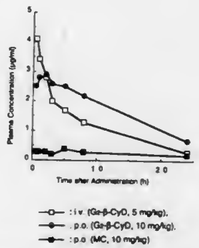
Yuji Tanaka; Teruyuki Yuasa; Yoshinari Kawakami; Kohji Terashima, all of Shiga; Tatsuya Morita, Hokkaido; Atsushi Nishikawa, and Masaji Kawashima, both of Shiga, all of Japan, assignors to Roussel Morishita Co., Ltd., Osaka, Japan

Filed Jan. 25, 1993, Ser. No. 8,750

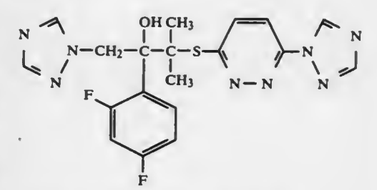
Claims priority, application Japan, Jan. 24, 1992, 4-034132

Int. Cl.[5] A61K 31/50

U.S. Cl. 514—58 10 Claims



1. (+)-2-(2,4-Difluorophenyl)-3-methyl-1-(1H-1,2,4-triazol-1-yl}-3-(6-(1H-1,2,4-triazol-1-yl)pyridazin-3-ylthio)butan-2-ol represented by formula (I):



(I)

or a pharmaceutically acceptable salt thereof.

VOL 1162 ISS 3 MY 17 1994 UMI

5,312,816

METHOD OF COMBATTING OSTEOPOROSIS IN MAMMALIAN SUBJECTS, UTILIZING ORGANIC BORON COMPOUNDS

Bernard F. Spielvogel, Raleigh; Anup Sood, Durham, and Iris H. Hall, Carrboro, all of N.C., assignors to Boron Biologicals, Inc., Raleigh, N.C.

Continuation of Ser. No. 759,222, Sep. 13, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 121,221

Int. Cl.[5] A61K *31/69; C07F 5/02*

U.S. Cl. 514—64 **12 Claims**

1. A method of combatting osteoporosis in an animal subject, comprising administering to the animal subject an amount of an organic boron compound which (i) is effective against osteoporosis, and (ii) does not cause a statistically significant increase in hydroxylated steroids selected from the group consisting of 17-β-estradiol and testosterone, wherein said organic boron compound is selected from the group consisting of:

(1) organic boron compounds of the formula:

$$R_1R_2R_3XBR_4R_5R_6$$

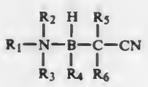
wherein:
X is N or P;
R_1, R_2, R_3 are independently selected from H, C_1–C_{20} linear or branched alkyl, alkoxy, alkylaryl, aryl, and substituted aryl, or R_1, R_2, and R_3 together with X form a heterocyclic ring structure, with the proviso that when X=N, R_1, R_2 and R_3 are not alkoxy:
R_4 and R_5 are independently selected from H, C_1–C_{20} linear or branched alkyl, aryl, alkylaryl, and substituted aryl: R_6 is H, C_1–C_{20} linear or branched alkyl, aryl, alkylaryl, substituted aryl, CN, COOH, COOM, $COOR_7$, $CONHR_7$, CONHOH, or COAA, or
R_4, R_5, and R_6 together with B form a heterocyclic ring structure:
where:
M is Li, Na, K, or ammonium ion;
R_7 is H, C_1–C_{10} alkyl, substituted alkyl, aryl, or substituted aryl; and AA is $NHCH(R_8)COOR_9$ or $NHCH(R_8)CONHR_9$
where R_8 is selected from the side chains of common amino acids and R_9 is H, or C_1–C_5 alkyl.

(2) organic boron compounds of the formula:

$$R_1R_2R_3XBR_4(R_5)_2$$

wherein: R_1, R_2, R_3, R_4 and X are same as above, and R_5 is CN.

(3) organic boron compounds of the formula:



wherein:
R_1, R_2 and R_3 are same as in (1):
R_4 is H, C_1–C_{10} linear or branched alkyl, alkylaryl, or aryl; and R_5 and R_6 are independently selected from H, C_1–C_{10} alkyl, alkylaryl, aryl, or substuted aryl;

(4) organic boron compounds of the formula:

$$(R_1O)_2PCH_2NR_2R_3BHR_4R_5$$

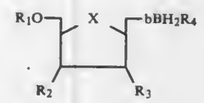
wherein:
R_1 is C_1–C_{10} linear or branched alkyl, alkylaryl, or aryl;
R_2, R_3 are independently selected from H, and C_1–C_{10} linear or branched alkyl;
R_4 is H, C_1–C_{10} linear or branched alkyl, alkylaryl, or aryl;
R_5 is CN, COOH, $CONHR_6$, or $COOR_6$, wherein R_6 is same as R_7 in (1);

(5) organic boron compounds of the formula;

$$R_1R_2R_3BNCH_2CH_2XCR_4$$

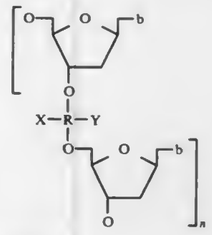
wherein;
X is O or S;
R_1, R_2, R_3 are independently selected from H, C_1–C_{10} alkyl, alkylaryl, and aryl;
R_4 is NMe_2 or R_5, wherein R_5 is C_1–C_{10} linear or branched alkyl, alkylaryl, aryl, or substituted aryl;

(6) organic boron compounds of the formula:



wherein:
X is C or O;
R_1 is H or a suitable protecting group;
R_2 is H or OH;
R_3 is H or OH;
b represents a nucleoside base;
R_4 is CN, COOH, $COOR_5$, or $CONHR_5$, wherein R_5 is H, C_1–C_{10} alkyl, alkylaryl, aryl, or substituted aryl;

(7) organic boron compounds of the formula:



wherein:
n=1–50;
b is a nucleoside base;
X is O, or OR, wherein R is CH_3, CH_2CH_2CN, or CH_2CH_3; and
Y is BH_3, BH_2CN, BH_2COOH, BH_2COOR_1, or BH_2CONHR,
wherein R_1 is H, or C_1–C_5 alkyl; and

(8) metal complexes of amine-cyanoboranes, and metal complexes of aminecarboxyboranes.

5,312,817

TREATMENT OF FATIGUE SYNDROME

Ernir Snorrason, Stigahlid 80, 105 Reykjavík, Iceland

Filed May 14, 1992, Ser. No. 883,038

Claims priority, application Iceland, May 14, 1991, 3706/91; Denmark, Feb. 13, 1992, 181/92

Int. Cl.[5] A61K *31/66, 31/55, 31/44, 31/40*

U.S. Cl. 514—141 **36 Claims**

1. A method for the treatment of a fatigue syndrome, comprising administering, to a patient in need thereof, an effective amount of a pharmaceutically acceptable cholinesterase inhibitor or a prodrug therefor.

5,312,818

METHOD OF PROTECTING AGAINST AND/OR TREATING ULCERATIVE GASTROINTESTINAL CONDITIONS USING A THROMBOXANE A_2 RECEPTOR ANTAGONIST AND COMBINATION USEFUL IN PREVENTING AND/OR TREATING ULCERS AND/OR INFLAMMATION

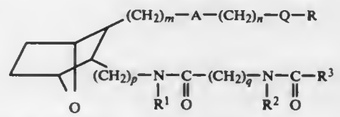
Bernard Rubin, Lawrenceville, N.J.; Martin L. Ogletree; Eugene H. O'Keefe, both of Newtown, Pa., and A. K. Gunnar Aberg, Lawrenceville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 495,865, Mar. 19, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 993,876

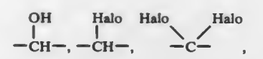
Int. Cl.[5] A61K *31/55, 31/445, 31/425, 31/42*

U.S. Cl. 514—212 **10 Claims**

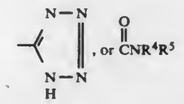
1. A method for preventing or treating ulcerative conditions of the gastrointestinal tract, in a mammalian species, which comprises administering to a mammalian species in need of such treatment an effective amount of a thromboxane A_2 receptor antagonist, which is a 7-oxabicycloheptane substituted diamide prostaglandin analog, or an interphenylene 7-oxabicycloheptyl substituted heterocyclic amide prostaglandin analog, said 7-oxabicycloheptane substituted diamide prostaglandin having the formula



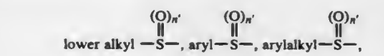
including all stereoisomers thereof, wherein m is 0 to 4; A is —CH=CH— or $—CH_2—CH_2—$; n is 1 to 5; O is —CH=CH—, $—CH_2—$,



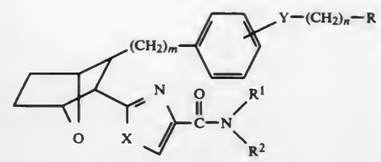
or a single bond; R is CO_2H, CO_2alkyl, CO_2 alkali metal, CO_2polyhydroxyamine salt, $—CH_2OH$,



wherein R^4 and R^5 are the same or different and are H, lower alkyl, hydroxy, lower alkoxy or aryl at least one of R^4 and R^5 being other than hydroxy and lower alkoxy; p is 1 to 4; R^1 is H or lower alkyl; q is 1 to 12; R^2 is H or lower alkyl; and R^3 is H, lower alkyl, lower alkenyl, lower alkynyl, aryl, arylalkyl, lower alkoxy, arylalkyloxy, aryloxy, amino, alkylamino, arylalkylamino, arylamino,



(wherein n' is 0, 1 or 2), alkylaminoalkyl, arylaminoalkyl, arylalkylaminoalkyl, alkoxyalkyl, aryloxyalkyl or arylalkoxyalkyl, and said interphenylene 7-oxabicycloheptane substituted heterocyclic amide prostaglandin analog having the formula



and including all stereoisomers thereof, wherein
m is 1, 2 or 3; n is 0, 1, 2, 3 or 4;
Y is O or a single bond, with the proviso that when n is 0, Y is a single bond;
R is CO_2H, CO_2lower alkyl, CO_2alkali metal, $CONHSO_2R^3$ or 5-tetrazolyl, with the proviso that when R is 5-tetrazolyl, n cannot be 0;
X is O, S or NH;
R^1 is lower alkyl, aryl, cycloalkyl, saturated heterocycle or aromatic heterocycle, each optionally substituted with an alkyl, aryl, cycloalkyl, or cycloalkylalkyl;
R^2 is hydrogen, lower alkyl, aryl, or aralkyl; or R^1 and R^2 together with the nitrogen to which they are linked may form a 5- to 8-membered ring; and
R^3 is lower alkyl, aryl or aralkyl.

5,312,819

PHARMACEUTICAL COMPOSITIONS COMPRISING CLOZAPINE AND A RADICAL SCAVENGER

Volker Fischer, Lörrach-Brombach, Fed. Rep. of Germany, and Ronald P. Mason, Cary, N.C., assignors to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 717,136, Jun. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 569,689, Aug. 20, 1990, abandoned. This application Aug. 2, 1991, Ser. No. 739,635

Int. Cl.[5] A61K *31/55, 31/355, 31/34, 31/075*

U.S. Cl. 514—220 **7 Claims**

1. A method of inhibiting the formation of granulocytopenia and agranulocytosis upon enteral administration of clozapine-containing compositions to schizophrenic patients comprising concomitantly administering to said patients a granulocytopenia- and agranulocytosis-inhibiting amount of a radical scavenger.

5,312,820

SUBSTITUTED CARBAMOYL AND OXYCARBONYL DERIVATIVES OF BIPHENYLMETHYLAMINES

Wallace T. Ashton, Clark; Linda L. Chang, Wayne; William J. Greenlee, Teaneck; Steven M. Hutchins, Iselin, and Ralph A. Rivero, Tinton Falls, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

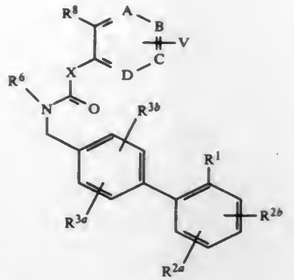
Filed Jul. 17, 1992, Ser. No. 917,642

Int. Cl.[5] A61K *31/47, 31/415, 31/34, 31/535, 31/54, 31/17, 31/27;* **C07C** *275/28;* **C07D** *207/16, 265/36, 275/04, 295/22*

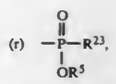
U.S. Cl. 514—227.5 **22 Claims**

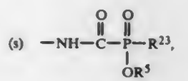
1. A compound of structural formula:

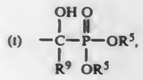
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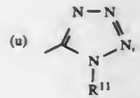


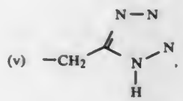
or a pharmaceutically acceptable salt thereof wherein:
A, B, C, and D are independently —CH= or —N=, with the proviso that at least two of them are —CH=;
X is —O— or —N(R^7)—;
R^1 is
(a) —CO_2R^4,
(b) —SO_3R^5,
(c) —$NHSO_2CF_3$,
(d) —$PO(OR^5)_2$,
(e) —SO_2—NH—R^9,
(f) —$CONHOR^5$,
(g) —SO_2NH-heteroaryl,
(h) —CH_2SO_2NH-heteroaryl,
(i) —SO_2NHCOR^{23},
(j) —$CH_2SO_2NHCOR^{23}$,
(k) —$CONHSO_2R^{23}$,
(l) —$CH_2CONHSO_2R^{23}$,
(m) —$NHSO_2NHCOR^{23}$,
(n) —$NHCONHSO_2R^{23}$,
(o) —$SO_2NHSO_2R^{23}$,
(p) —$SO_2NHCO_2R^{20}$,
(q) —$SO_2NHCONHR^{20}$,

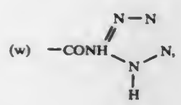






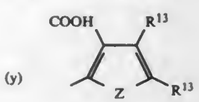


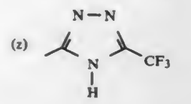


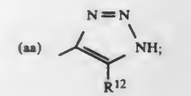


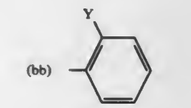
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(x) —$CONHNHSO_2CF_3$,



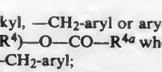




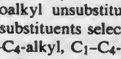


wherein:
Y is
(1) —CO_2R^4,
(2) —SO_3R^5,
(3) —$NHSO_2CF_3$,
(4) —$PO(OR^5)_2$, or
(5) —SO_2—NH—R^9;
(6) 1H-tetrazol-5-yl;
R^{2a} and R^{2b} are each independently:
(a) hydrogen,
(b) halo,
(c) —NO_2,
(d) —NH_2,
(e) C_1–C_4-alkylamino,
(f) —SO_2NHR^9,
(g) —CF_3,
(h) C_1–C_4-alkyl
(i) C_1–C_4-alkoxy;
R^{3a} is
(a) —H,
(b) halo,
(c) C_1–C_6-alkyl,
(d) C_1–C_6-alkoxy,
(e) C_1–C_6-alkoxy-C_1–C_4-alkyl;
R^{3b} is
(a) —H,
(b) —halo,
(c) —NO_2,
(d) C_1–C_6-alkyl,
(e) C_1–C_5-alkylcarbonyloxy,
(f) C_3–C_6-cycloalkyl
(g) C_1–C_6-alkoxy,
(h) —$NHSO_2R^4$,
(i) hydroxy-C_1–C_4-alkyl,
(j) aryl-C_1–C_4-alkyl
(k) C_1–C_4-alkylthio
(l) C_1–C_4-alkylsulfinyl
(m) C_1–C_4-alkylsulfonyl
(n) —NH_2
(o) C_1–C_4-alkylamino
(p) di(C_1–C_4-alkyl)amino
(q) —CF_3
(r) —SO_2—NHR^9
(s) aryl;
(t) furyl;

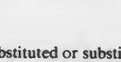
R^4 is H, C_1–C_6-alkyl, —CH_2-aryl or aryl;
R^5 is H or —CH(R^4)—O—CO—R^{4a} wherein R^{4a} is C_1–C_6-alkyl, aryl or —CH_2-aryl;
R^6 is (a) C_1–C_6-alkyl, C_2–C_6-alkenyl or C_2–C_6-alkynyl each of which is unsubstituted or substituted with one or more substituents selected from the group consisting of aryl, C_3–C_7-cycloalkyl, halo, C_1–C_4-alkoxy, —NH_2, —NH(C_1–C_4-alkyl), —N(C_1–C_4-alkyl)$_2$, —NH—SO_2R^4, —$COOR^4$, —SO_2NHR^9, and C_1–C_4-alkylthio,
(b) C_3–C_7-cycloalkyl unsubstituted or substituted with one or more substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, OH, perfluoro-C_1–C_4-alkyl, and halo,
(c) C_3–C_7-cycloalkyl-C_1–C_3-alkyl wherein the cycloalkyl is unsubstituted or substituted as in (b) above,
(d) aryl, or
(e) heteroaryl;
R^7 is (a) H,
(b) phenyl unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of halo, C_1–C_4-alkoxy, C_1–C_4-alkyl, —NO_2, —CF_3, —$SO_2NR^9R^{10}$, C_1–C_4-alkylthio, —OH, —NH_2, —$COOR^4$, C_3–C_7-cycloalkyl, and C_3–C_{10}-alkenyl,
(c) C_1–C_6-alkyl, C_2–C_6-alkenyl or C_2–C_6-alkynyl each of which is unsubstituted or substituted with one or more substituents selected from the group consisting of aryl, heteroaryl, C_3–C_7-cycloalkyl, halo, C_1–C_4-alkoxy, —NH_2, —NH(C_1–C_4-alkyl), —N(C_1–C_4-alkyl)$_2$, —NH—SO_2R^4, —$COOR^4$, —SO_2NHR^9, and C_1–C_4-alkylthio,
(d) heteroaryl, or
(e) C_3–C_7-cycloalkyl unsubstituted or substituted with one or more substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, —OH, —$COOR^4$, perfluoro-C_1–C_4-alkyl, and halo;
R^8 is —H, halo, —CF_3, —CH_3, —OCH_3 or —NO_2;
R^7 and R^8 when joined together form a ring with the atoms to which they are attached such that
R^7–R^8 is
(a) —Y—$(CH_2)_n$—Z, wherein n is 1 or 2; Y is a single bond, —C(O)— or —$C(R^{14})(R^{15})$—; Z is a single bond, —O—, —$S(O)_p$—, —$N(R^{16})$—, —C(O)—, —CF_2— or —$C(R^{14})(R^{15})$—; and p is 0, 1 or 2
(b)



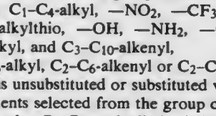
with the proviso that:
(1) Q is a single bond or —CO—;
(2) T is a single bond or —CO—; and
(3) at least one of Q and T is a single bond,
(c)



(d)

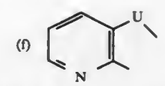


(e)



wherein U is —O—, —S—, —C(O)—, —CF_2— or —CH_2—, or

(f)



R^9 is H, C_1–C_5-alkyl, aryl or —CH_2-aryl;
R^{10} is H, C_1–C_4-alkyl, or
R^9 and R^{10} when together form —$(CH_2)_m$— where m is 3–6;
R^{11} is H, C_1–C_6-alkyl, C_2–C_4-alkenyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, or —CH_2—$C_6H_4R^{21}$;
R^{12} is —CN, —NO_2 or —CO_2R^4;
R^{13} is H, C_2–C_4-alkanoyl, C_1–C_6-alkyl, allyl, C_3–C_6-cycloalkyl, phenyl or benzyl;
R^{14} and R^{15} are independently H, C_1–C_4-alkyl, aryl, aryl-C_1–C_2-alkyl, C_1–C_4-alkoxycarbonyl, —CO_2H or —CH_2OH;
R^{16} is (a) C_1–C_6-alkyl, either unsubstituted or substituted with C_1–C_4-alkoxy, C_1–C_4-alkyl-$S(O)_p$—, —CF_3, —OH, —CN, C_1–C_4-alkoxycarbonyl, —CO_2H, —$CONR^9R^{10}$ or —CO-aryl,
(b) C_3–C_6-alkenyl,
(c) C_3–C_6-cycloalkyl,
(d) aryl,
(e) heteroaryl,
(f) —COR^{20},
(g) —CO_2R^{20},
(h) —$CONR^9R^{10}$, or
(i) —SO_2R^{20};
R^{17} and R^{18} are independently H, C_1–C_4-alkyl, aryl, aryl-C_1–C_2-alkyl, C_1–C_4-alkoxy, —CF_3, halo, C_1–C_4-alkoxycarbonyl, —CO_2H or —CH_2OH;
R^{19} is C_1–C_4-alkyl, C_1–C_4-alkoxy, halo, —CF_3, C_1–C_4-alkyl-$S(O)_p$—, CF_3SO_2—, —CN, —NO_2, C_1–C_4-alkoxycarbonyl, —CO_2H, or —CH_2OH;
R^{20} is C_1–C_6-alkyl, aryl or aryl-C_1–C_2-alkyl;
R^{21} is H, —NO_2, —NH_2, —OH or —OCH_3;
R^{23} is (a) phenyl, unsubstituted or substituted with one or two substituents selected from halo, —CH_3 and —CF_3, at least one or which occupies an ortho-position;
(b) heteroaryl, selected from the group consisting of furan-2-yl, thiophen-2-yl, benzo[b]furan-2-yl, benzo[b]thiophene-2-yl, furan-3-yl, thiophen-3-yl, and oxazol-5-yl, unsubstituted or substituted with one or two substituents selected from halo, —CH_3 and CF_3 wherein at least one of the substituents is located adjacent to the carbonyl substituent or to a ring heteroatom or both;
(c) C_3–C_6-alkyl;
(d) C_3–C_7-cycloalkyl, unsubstituted or substituted at the 1- or 2-position or both with one to three substituents selected from halo, —CH_3 and —CH_2CH_3;
(e) C_7–C_8-bi- or tricycloalkyl;
(f) saturated 5- or 6-membered heterocyclyl linked through a carbon atom and containing one or two heteroatoms selected from oxygen and sulfur selected from the group consisting of tetrahydrofuroyl, 1,3-dithiolane, and 1,3-dithiane.
R^{24} is H, or R^{25},
R^{25} is (a) phenyl unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of halo, —O—C_1–C_4-alkyl, C_1–C_4-alkyl, —NO_2, —CF_3, —$SO_2NR^9R^{10}$, —S—C_1–C_4-alkyl, —OH, —NH_2, —$COOR^4$, C_3–C_7-cycloalkyl, and C_3–C_{10}-alkenyl,
(b) C_1–C_6-alkyl, C_2–C_6-alkenyl or C_2–C_6-alkynyl each of which is unsubstituted or substituted with one or more substituents selected from the group consisting of aryl, C_3–C_7-cycloalkyl, halo, —OH, —O—C_1–C_4-alkyl, —NH_2, —NH(C_1–C_4-alkyl), —N(C_1–C_4-alkyl)$_2$, —NH—SO_2R^4, —$COOR^4$, —SO_2NHR^9, and —S—C_1–C_4-alkyl,
(c) an unsubstituted, monosubstituted or disubstituted

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aromatic 5 or 6 membered ring comprising one or two heteroatoms selected from the group consisting of N, O, and S, and wherein the substituents are members selected from the group consisting of —OH, —SH, C_1–C_4-alkyl, C_1–C_4-alkyloxy, —CF_3, —$COOR^4$, halo, and NO_2, or

(d) C_3–C_7-cycloalkyl unsubstituted or substituted with one or more substituents selected from the group consisting of C_1–C_4-alkyl, —O—C_1–C_4-alkyl, —S—C_1–C_4-alkyl, —OH, —$COOR^4$, perfluoro—C_1–C_4-alkyl, halo;

V is

(a) H,
(b) C_1–C_5-alkoxy,
(c) C_1–C_5-alkyl,
(d) hydroxy,
(e) C_1–C_5-alkyl-$S(O)_p$,
(f) —CN,
(g) —NO_2,
(h) —NR^9R^{10};
(i) C_1–C_5-alkyl-$CONR^9R^{10}$,
(j) —$CONR^9R^{10}$
(k) —CO_2R^9,
(l) C_1–C_5-alkyl-carbonyl,
(m) CF_3,
(n) halogen,
(o) hydroxy-C_1–C_4-alkyl-,
(p) carboxy-C_1–C_4-alkyl-,
(q) —1H-tetrazol-5-yl,
(r) —NH—SO_2CF_3,
(s) aryl,
(t) C_1–C_5-alkyl-CO_2R^9,
(u) aryloxy,
(v) aryl-C_1–C_3-alkoxy,
(w) aryl-C_1–C_3-alkyl,
(x) carboxyphenyl,
(y) heteroaryl,
(z) 2-oxazolin-2-yl unsubstituted or bearing one or more C_1–C_4-alkyl substituents,
(aa) —$(CH_2)_tOCOR^{25}$,
(bb) —$(CH_2)_tOCONR^{24}R^{25}$,
(cc) —$(CH_2)_tNR^{24}COR^{25}$,
(dd) —$(CH_2)_tNR^{24}CO_2R^{25}$,
(ee) —$(CH_2)_tNR^{24}CONR^{24}R^{25}$,
(ff) —$(CH_2)_tNR^{24}CON(CH_2CH_2)_2L$,
(gg) —$(CH_2)_tOCON(CH_2CH_2)_2L$,
(hh) —$N(CH_2CH_2)_2L$,
(ii) —C_1–C_5-alkyl-$CON(CH_2CH_2)_2L$, or
(jj) —$CON(CH_2CH_2)L$;

t is 0, 1 or 2; and

L is a bond, —CH_2—, —O—, —$S(O)_p$— or —NR^9—,

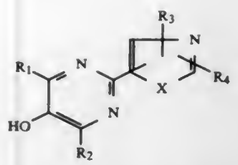
wherein heteroaryl is selected from the group consisting of pyridine, pyrimidine, pyrazine, triazine, furan, thiophene, oxazole, thiazole, imidazole, triazole and thiadiazole, which is unsubstituted or fused to a benzo group and wherein the mono- or bicyclic system can be unsubstituted or substituted with one or two substituents selected from the group consisting of C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, —CF_3, halo, —NO_2, —CN, —OH, —NH_2, —$NH(C_{1-4}$ alkyl), —$N(C_{1-4}$ alkyl)$_2$, C_{1-4} alkoxycarbonyl and —CO_2H.

5,312,821
2-HETEROCYCLIC-5-HYDROXY-1,3-PYRIMIDINES USEFUL AS ANTIINFLAMMATORY AGENTS

David T. Connor, Ann Arbor; Catherine R. Kostlan, Saline, and Paul C. Unangst, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 924,212, Aug. 3, 1992, Pat. No. 5,240,929. This application Apr. 28, 1993, Ser. No. 54,382
Int. Cl.[5] A61K *31/52*
U.S. Cl. 514—262 **2 Claims**

1. A method of treating ulcers in a human in need of such treatment which comprises administration to said human an antiallergy effective amount of a compound of the formula



I

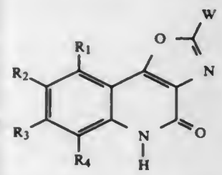
or a pharmaceutically acceptable salt or hydrate thereof, wherein X is NH; R_1 and R_2 are each independently hydrogen or lower alkyl; R_3 is hydrogen, lower alkyl, phenyl, phenyl substituted by one, two, or three substituents of one or more of each of alkyl of one to four carbons, alkoxy, thioalkoxy, alkanoyloxy, carboalkoxy, in which "alk" is one to four carbons, hydroxymethyl, NR_5R_6 wherein R_5 and R_6 are each independently hydrogen or lower alkyl, nitro, CF_3, or halogen, NR_5R_6 in which R_5 and R_6 are as defined above, OR_7 or $S(O)_nR_R$ in which R_7 is hydrogen, lower alkyl, or phenyl and n is 0, 1, or 2; and R_4 is phenyl, substituted phenyl as defined above, NR_5R_6, OR_7, or $S(O)_nR_7$ in which R_5 and R_6 are as defined above in unit dosage form.

5,312,822
CERTAIN OXAZOLOQUINOLINONES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Pamela Albaugh, Clinton, Conn., assignor to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 750,464, Aug. 27, 1991, Pat. No. 5,182,290. This application Oct. 28, 1992, Ser. No. 967,664
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] C07D *498/04;* **A61K** *31/42*
U.S. Cl. 514—293 **1 Claim**

1. A compound of the formula:



and the pharmaceutically acceptable non-toxic salts thereof wherein:

R_1 and R_4 are the same or different and represent hydrogen or halogen;

W is phenyl which is mono or disubstituted with, hydroxy, or straight or branched chain lower alkoxy having 1–6 carbon atoms; and

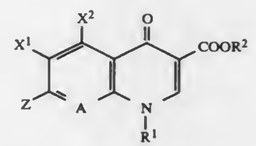
R_2 and R_3 are the same or different and represent hydrogen, halogen, or hydroxy.

5,312,823
7-AZAISOINDOLINYL-QUINOLONE-CARBOXYLIC ACID DERIVATIVES

Uwe Petersen, Leverkusen; Andreas Krebs, Odenthal-Holz; Thomas Schenke, Gladbach; Klaus Grohe, Odenthal; Klaus-Dieter Bremm, Dortmund; Rainer Endermann, Wuppertal; Karl-Georg Metzger, Wuppertal, and Hans-Joachim Zeiler, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 19, 1992, Ser. No. 901,056
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121214
Int. Cl.[5] C07D *519/00;* **A61K** *31/55*
U.S. Cl. 514—300 **10 Claims**

1. Quinolone- carboxylic acid derivatives of the formula (I)



(I)

in which

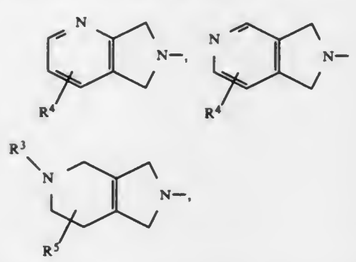
X^1 represents halogen,

X^2 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio, halogen or methyl,

R^1 represents alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, 2-hydroxyethyl, 2-fluoroethyl, methoxy, amino, methylamino, ethylamino, dimethylamino, or phenyl which is optionally substituted by 1 or 2 fluorine atoms,

R^2 represents hydrogen, or represents alkyl which has 1 to 4 carbon atoms and which is optionally substituted by hydroxyl, methoxy, amino, methylamino or dimethylamino, or represents (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

Z represents a radical of the structure



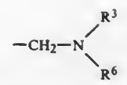
where

R^3 represents hydrogen, optionally hydroxyl-substituted C_1–C_3-alkyl, alkoxycarbonyl having 1 to 4 C atoms in the alkoxy moiety or C_1–C_3-acyl,

R^4 represents hydrogen, hydroxyl,



hydroxymethyl or

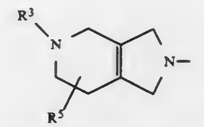


where R^6 represents hydrogen or methyl,

R^5 represents hydrogen, C_1–C_3-alkyl or cyclopropyl and

A represents C—R^7 where R^7 represents H, halogen, methyl, hydroxyl or methoxy, with the proviso that A cannot be CH or CF when

Z represents



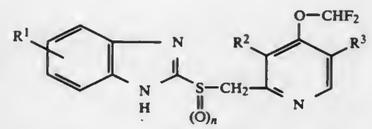
and their pharmaceutically usable hydrates and acid addition salts and alkali metal salts, alkaline earth metal salts, silver salts and guanidinium salts.

5,312,824
CERTAIN 2-[(4-DIFLUOROMETHOXY-2-PYRIDYL)-METHYLTHIO OR METHYLSULFINYL-5-BENZIMIDAZOLES USEFUL FOR TREATING PEPTIC ULCERS

Takashi Sohda, Takatsuki, and Nobuhiro Inatomi, Mishima, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 16, 1991, Ser. No. 777,171
Claims priority, application Japan, Oct. 17, 1990, 2-280331; Jun. 21, 1991, 3-149045
Int. Cl.[5] C07D *401/12, 403/12;* **A61K** *31/44*
U.S. Cl. 514—338 **11 Claims**

1. A compound of the formula



wherein R^1 is hydroxyl, fluorine, or difluoromethoxy, R^2 and R^3 are independently hydrogen or methyl, and n is 0 or 1, or a pharmacologically acceptable salt thereof.

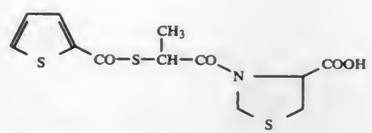
5,312,825
S-(2-THENOYL)-THIOLACTIC ACID DERIVATIVE HAVING PHARMACOLOGICAL ACTIVITY

Giuseppe Quadro, Milan, Italy, assignor to Yason S.r.l., Milan, Italy

PCT No. PCT/EP91/00366, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/13883, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 28, 1991, Ser. No. 923,959
Claims priority, application Italy, Mar. 5, 1990, 19566 A/90
Int. Cl.[5] C07D *417/12;* **A01K** *31/425*
U.S. Cl. 514—365 **3 Claims**

1. Compound of formula I

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(I)

and the non toxic salts and isomers thereof.

5,312,826

N,3-DISUBSTITUTED ALANINAMIDE DERIVATIVES

Ken-ichi Nunami, Kobe; Tameo Iwasaki, Nishinomiya; Kazuo Matsumoto, Ibaraki; Koji Yano, Hoya, and Isao Yamaguchi, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

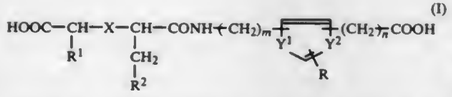
Filed Jun. 19, 1992, Ser. No. 901,234

Claims priority, application Japan, Jun. 21, 1991, 3-247155

Int. Cl.[5] **C07D** *277/593, 263/34, 233/66;* **C07C** *69/612;* **A61K** *31/235, 31/41*

U.S. Cl. 514—371 **12 Claims**

1. A N,3-substituted alaninamide compound represented by the formula (I):



(I)

wherein R represents hydrogen, lower alkyl, phenyl or hydroxy; R^1 represents straight or branched alkyl of 1 to 10 carbons or lower alkyl substituted by aryl, thienyl or cycloalkyl of 4 to 8 carbons; R^2 represents aryl, lower alkoxy substituted aryl, cycloalkyl of 4 to 8 carbons, thienyl or indolyl; X represents sulfur, oxygen, imino or lower substituted imino; Y^1 represents imino, oxygen or sulfur and Y^2 represents nitrogen, or Y^1 represents vinylene and Y^2 represents: —CH═; m represents 0 to 3; and n represents 0 or 1, and wherein the carboxyl groups are free or one or two carboxyl groups are esterified or pharmaceutically acceptable salts thereof.

12. Method for treatment of hypertension, heart failure and/or renal insufficiency in a warm-blooded animal which comprises administering an effective amount of a N,3-disubstituted alaninamide derivative of the formula (I) as set forth in claim 1 to said warm-blooded animal suffering from the disease.

5,312,827

NITROSAMINE-FREE-3-ISOTHIAZOLONES AND PROCESS

Horst O. Bayer; Barry C. Lange, both of Levittown, and Ramesh B. Petigara, Hatfield, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

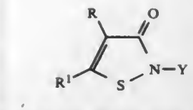
Continuation of Ser. No. 728,438, Aug. 12, 1991, abandoned, which is a division of Ser. No. 500,158, Mar. 27, 1990, Pat. No. 5,068,338, which is a division of Ser. No. 376,199, Jul. 3, 1989, Pat. No. 4,939,266, which is a division of Ser. No. 383,858, Jun. 1, 1982, abandoned. This application Nov. 2, 1992, Ser. No. 970,971

Int. Cl.[5] **A01N** *43/80;* **C07D** *275/03*

U.S. Cl. 514—372 **12 Claims**

1. A stabilized 3-isothiazolone composition substantially free of nitrosamine impurities or precursors thereof which comprises:

(a) a biologically effective amount of 5-chloro-2-methyl-3-isothiazolone and, optionally, one or more other biologically active 3-isothiazolone(s) of the formula



wherein R and R^1 are independently selected from hydrogen, halogen or an alkyl group of 1 to 4 carbon atoms; Y is an alkyl group of 1 to 8 carbon atoms, a cycloalkyl group of 5 or 6 carbon atoms, an aralkyl group of up to 8 carbon atoms, or an aryl or substituted aryl group of 6 carbon atoms;

(b) a ring-stabilizing amount of a soluble metal nitrate salt; and

(c) sufficient water to dissolve (a) and (b);

said composition containing less than 100 ppm of by-product compounds containing an amine moiety capable of being nitrosated or a nitrosamine compound derived therefrom per 150,000 parts of (a).

5,312,828

SUBSTITUTED IMIDAZOLES HAVING ANGIOTENSIN II RECEPTOR BLOCKING ACTIVITY

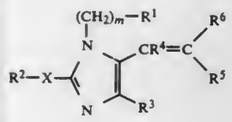
Joseph A. Finkelstein; Richard M. Keenan, and Joseph Weinstock, all of SmithKline Beecham Corporation, Corporate Patents-U.S. UW2220, P.O. Box 1539, King of Prussia, Pa. 19406-0939

Continuation-in-part of Ser. No. 627,177, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 505,958, Apr. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 366,055, Jun. 14, 1989, abandoned. This application Aug. 14, 1991, Ser. No. 746,024

Int. Cl.[5] **C07D** *233/70;* **A61K** *31/415*

U.S. Cl. 514—381 **24 Claims**

1. A compound of the formula.



in which:

R^1 is adamantyl, phenyl, biphenyl, or naphthyl, with each aryl group being unsubstituted or substituted by one to three substituents selected, from Cl, Br, F, I, C_1–C_6alkyl, nitro, CO_2R^7, tetrazol-5-yl, C_1–C_6alkoxy, hydroxy, SC_1–C_6alkyl, SO_2NHR^7, $NHSO_2R^7$, SO_3H, $CONR^7R^7$, CN, SO_2C_1–C_6alkyl, $NHSO_2R^7$, $PO(OR^{7l})_2$, NR^7R^7, NR^7COH, NR^7COC_1–C_6alkyl, $NR^7CON(R^7)_2$,

m is 0–4;

R^2 is C_2–C_{10}alkyl, C_3–C_{10}alkenyl, C_3–C_{10}alkynyl, C_3–C_6cycloalkyl, or $(CH_2)_{0\text{-}8}$phenyl unsubstituted or substituted by one to three substituents selected from C_1–C_6alkyl, nitro, Cl, Br, F, I, hydroxy, C_1–C_6alkoxy, NR^7R^7, CO_2R^7, CN, $CONR^7R^7$, tetrazol-5-yl, NR^7COC_1–C_6alkyl, SC_1–C_6alkyl, or SO_2C_1–C_6alkyl;

X is a single bond,

R^3 is hydrogen, Cl, Br, F, I, CHO, hydroxymethyl, $COOR^7$, $CONR^7R^7$, NO_2, CN, NR^7R^7, or phenyl;

R^4 and R^5 are independently hydrogen, C_1–C_6alkyl, phenyl-Y-, naphthyl-Y-, or biphenyl-Y-, wherein the aryl groups are unsubstituted or substituted by one to three substituents selected from Cl, Br, F, I, C_1–C_6alkoxy, hydroxy, CO_2R^7, CN, NO_2, tetrazol-5-yl, SO_3H, CF_3, $CONR^7R^7$, SO_2NHR^7, C_1–C_6alkyl, or NR^7R^7, or by methylenedioxy, phenoxy or phenyl, except that R^4 and R^5 are not both selected from hydrogen;

Y is a single bond, O, S, or C_1–C_6alkyl which is straight or branched or optionally substituted by phenyl or benzyl,

wherein each of the aryl groups is unsubstituted or substituted by halo, NO_2, CF_3, C_1–C_4alkyl, C_1–C_4alkoxy, CN, or CO_2R^7;

R^6 is $—Z—COOR^8$ or $—Z—CONR^7R^7$;

Z is a single bond, vinyl, $—CH_2—O—CH_2—$, methylene optionally substituted by C_1–C_4alkyl, one or two benzyl groups,

thienylmethyl, or furylmethyl, or $—C(O)NHCHR^9—$, wherein R^9 is H, C_1–C_4alkyl, phenyl, benzyl, thienylmethyl, or furylmethyl;

each R^7 independently is hydrogen, C_1–C_4alkyl, or $(CH_2)_m$phenyl, wherein m is 0–4; and

R^8 is hydrogen, C_1–C_6alkyl, or 2-di(C_1–C_4alkyl)amino-2-oxoethyl; or

R^5 and R^6 are both hydrogen, R^4 is $—Z—COOR^8$ wherein R^8 is as defined above and Z is other than a single bond; or a pharmaceutically acceptable salt thereof.

5,312,829

INDOLE DERIVATIVES

Satoshi Okada; Kozo Sawada; Natsuko Kayakiri; Yuki Saitoh, all of Tsukuba; Hirokazu Tanaka, Tsuchiura, and Masashi Hashimoto, Toride, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 792,595, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 757,522, Sep. 11, 1991, Pat. No. 5,212,320, which is a continuation-in-part of Ser. No. 702,500, May 20, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 956,579

Claims priority, application United Kingdom, May 21, 1990, 9011335

Int. Cl.[5] **C07D** *209/10, 405/04;* **A61K** *31/405*

U.S. Cl. 514—419 **10 Claims**

1. A compound of the formula:

wherein

R^1 is carboxy of pharmaceutically acceptable salts and esters thereof;

R^2 is hydrogen, lower alkyl or halogen;

R^3 is phenyl, naphthyl, phenyl or naphthyl each substituted by from one to three $C_{1\text{-}6}$ alkyl groups, mono- di- or triphenyl($C_{1\text{-}6}$)alkyl; mono-, di- or triphenyl($C_{1\text{-}6}$)alkyl substituted by from one to three substituents selected from the group consisting of $C_{1\text{-}6}$ alkyl, halogen, cyano, carboxy, mono-, di- or triphenyl($C_{1\text{-}6}$)alkyoxycarbonyl, mono- or di(lower)alkylphenylcarbamoyl, di(C_1–C_6)alkylcarbamoyl, phenylcarbamoyl and (C_1–C_6)alkylphenylcarbamoyl;

A is lower alkylene which may be substituted by oxo or lower alkylene,

Q is carbonyl or lower alkylene,

X is

in which

R^4 is hydrogen or $C_{1\text{-}6}$ alkyl, and

R^5 is hydrogen, $C_{1\text{-}6}$ alkyl or $Y—Z—R^3$,

Y is a bond or lower alkylene,

Z is lower alkylene,



in which R^6 is hydrogen, (C_1–C_6) alkyl, mono-, di- or triphenyl($C_{1\text{-}10}$)alkyl, $C_{1\text{-}6}$ alkyl or lower alkoxycarbonyl substituted mono-, di- or triphenyl($C_{1\text{-}6}$)alkyl or pharmaceutically acceptable carboxylic acid acyl, and pharmaceutically acceptable salts thereof.

5,312,830

3-CYCLOALKYL-PROP-2-ENAMIDES

Elizabeth A. Kuo, Swindon Wilts, England, assignor to Roussel-Uclaf, France

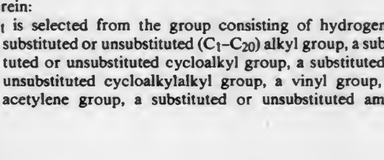
Filed Sep. 14, 1992, Ser. No. 944,830

Claims priority, application United Kingdom, Sep. 17, 1991, 9119874; Jul. 1, 1992, 9213972

Int. Cl.[5] **A61K** *31/275;* **C07C** *255/34*

U.S. Cl. 514—464 **12 Claims**

1. A compound selected from the group consisting of a compound of the formula



I

wherein R_1 is hydrogen or alkyl of 1 to 3 carbon atoms, W is selected from the group consisting of —O—, —S—, —SO— and $—SO_2$, Z and Y are —CH—, R_2, R_3, R_4, R_5 and R_6 are individually selected from the group consisting of hydrogen, halogen, methoxy, methylthio, alkyl of 1 to 4 carbon atoms, $—WCF_3$, $—CF_3$, $—NO_2$, —CN, $—W—(CH_2)_n—CF_3$, $—W—(CF_2)_n—CF_3$, $—(CF_2)_n—CF_3$ and $—(CH_2)_n—CX_3$, n is an integer from 1 to 3, X is a halogen or R_3 and R_4 together are $—O—(CH_2)—O—$ and R_2, R_5 and R_6 are as defined above, R_7 and R_8 are individually hydrogen or alkyl of 1 to 6 carbon atoms, R_9 is cycloalkyl of 3 to 6 carbon atoms and their non-toxic, pharmaceutically acceptable salts with bases.

5,312,831

URETHANES AND UREAS THAT INDUCE CYTOKINE PRODUCTION

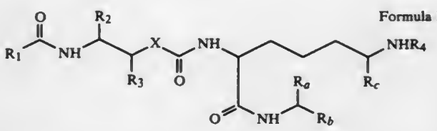
Semiramis Ayral-Kaloustian, Tarrytown; Steven R. Schow, Washingtonville; Mila T. Du, Suffern, all of N.Y., and James J. Gibbons, Jr., Westwood, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed May 12, 1993, Ser. No. 63,174

Int. Cl.[5] **A61K** *37/00;* **C07C** *261/00*

U.S. Cl. 514—478 **25 Claims**

1. A compound of the Formula I:



Formula I

wherein:

R_1 is selected from the group consisting of hydrogen, a substituted or unsubstituted (C_1–C_{20}) alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted cycloalkylalkyl group, a vinyl group, an acetylene group, a substituted or unsubstituted amino

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group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkoxyaryl group, a substituted or unsubstituted alkoxyaralkyl group and a substituted or unsubstituted monocyclic or bicyclic heterocyclic group containing from 1 to 4 hetero atoms selected from the group consisting of nitrogen, sulfur and oxygen atoms; R_a and R_3 are independently selected from hydrogen, substituted or unsubstituted (C_1–C_6) alkyl, substituted or unsubstituted alkoxyalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl, substituted or unsubstituted alkoxyaralkyl, vinyl, acetylene and a sustituted or unsubstituted monocyclic or bicyclic heterocycle containing from 1 to 4 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen atoms provided that, in the case of R3, the hetero atoms in said heterocycle are not directly bonded to the —CH— group of the —CH—X— moiety; and R_2, R_b and R_c are independently selected from carboxy or protected carboxy, carboxy or protected carboxyloweralkyl and carboxyamide;

X is oxygen or nitrogen; and

R_4 is H or an amino protecting group; wherein the substituents in the aforementioned substituted alkyl, cycloalkyl, cycloalkylalkyl, amino, acylamino, aryl, aralkyl, aryloxy, alkoxyaryl, alkoxyaryalkyl and heterocyclic groups are selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkoxy, aryloxy, aralkyloxy, amino, monoor di-lower alkylamino, arylamino, aralkylamino, carboxyl, formyl, lower alkoxycarbonyl, aryloxycarbonyl, aralkyloxycarbonyl, lower alkylthio, arylthio, aralkylthio, arylsulfinyl, arylsulfinyl, aralkylsulfinyl, lower alkylsulfonyl, arylsulfonyl, aralkylsulfonyl and a monocyclic or bicyclic heterocyclic group having 1–4 hetero atoms selected from nitrogen, sulfur and oxygen;

and the pharmaceutically acceptable salts thereof.

5,312,832

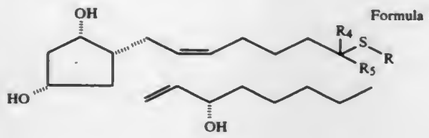
OCULAR HYPOTENSIVE 2-DECARBOXYL-2-ACYLTHIOALKYL PROSTAGLANDIN DERIVATIVES

Ming F. Chan, Gurnee, Ill., assignor to Allergan, Inc., Irvine, Calif.

Filed May 17, 1991, Ser. No. 702,220
Int. Cl.[5] A61K *31/557*
U.S. Cl. 524—513 **4 Claims**

1. A pharmaceutical composition for the treatment of ocular hypertension, comprising an amount sufficient to treat ocular hypertension of a compound of formula (III), wherein R is an acyl group derived from an alkylcarboxylic acid having from 1 to 6 carbon atoms in the alkyl moiety, and both R_4 and R_5 are hydrogen.

Formula III



5,312,833

METHOD OF INHIBITING TUMOR GROWTH USING XANTHOCILLIN X DIMETHYLETHER

Tsutomu Tsuruoka; Harumi Fukuyasu; Katsumi Kawaharajo; Masao Koyama, and Hiroshi Kurihara, all of Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 792,993
Claims priority, application Japan, Nov. 16, 1990, 2-308843
Int. Cl.[5] A61K *31/275*
U.S. Cl. 514—525 **9 Claims**

1. A method of inhibiting growth of cancer cells in a mammal against which xanthocillin X dimethylether is effective comprising a step of administering to the mammal an effective amount of xanthocillin X dimethylether for inhibiting the growth of cancer cells against which the xanthocillin X dimethylether is effective.

5,312,834

PHARMACEUTICAL COMPOSITION FOR TREATING ACNE

Young K. Yeo, Taegu, Rep. of Korea, assignor to Woobang Land Co., Ltd., Taegu, Rep. of Korea

Filed Apr. 10, 1992, Ser. No. 866,991
Claims priority, application Rep. of Korea, Apr. 10, 1991, 91-5731
Int. Cl.[5] A61K *31/20*
U.S. Cl. 514—560 **23 Claims**

1. A pharmaceutical composition for treating acne, which consists essentially of effective amount of eicosapentaenoic acid, α-linolenic acid and a pharmaceutically acceptable auxiliary.

5,312,835

USE OF CARDIOTONIC DRUGS AND INHIBITORS OF NITRIC OXIDE SYNTHESIS TO ALLEVIATE PATHOLOGIC HYPOTENSION

Robert G. Kilbourn, Houston, Tex.; Steven S. Gross, New York, N.Y., and Owen W. Griffith, Milwaukee, Wis., assignors to Board of Regents, the University of Texas System, Austin, Tex. and Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 838,814, Mar. 13, 1992, which is a continuation-in-part of Ser. No. 406,909, Sep. 13, 1989, Pat. No. 5,028,627. This application May 29, 1992, Ser. No. 890,430
The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/195, 31/135*
U.S. Cl. 514—565 **4 Claims**

1. A method for treating hypotension induced by nitric oxide in septic shock, the method comprising concomitantly intravascularly administering a therapeutically effective amount of dobutamine and N^G-substituted L-arginine or N^G, N^G-disubstituted L-arginine, whereby mean arterial pressure and cardiac output are increased.

5,312,836

SHORT CHAIN TRIGLYCERIDES

Bruce R. Bistrian, Ipswich, Mass., assignor to New England Deaconess Hospital Corp., Boston, Mass.

Continuation of Ser. No. 334,892, Apr. 7, 1989, abandoned. This application Oct. 11, 1991, Ser. No. 774,643
Int. Cl.[5] C11C *3/02*
U.S. Cl. 554—224 **3 Claims**

1. A synthetic triglyceride of the form



where R_1, R_2, and R_3 meet the following criteria:

A. R_1, R_2, and R_3 are fatty acids with at least one, but not all, of R_1, R_2, and R_3 being a short-chain (C_2–C_5) fatty acid having 2–5 carbon atoms in the carbon backbone;

B. R_1 is not the same fatty acid as R_3;

C. the non-short-chain fatty acids are selected from the group consisting of long-chain (C_{14}–C_{22}) and medium-chain (C_6–C_{12}) fatty acids, with at least one of R_1, R_2, and R_3 being a medium-chain fatty acid; and

D. R_2 is a medium-chain or short chain fatty acid.

5,312,837

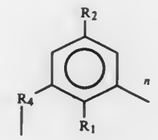
METHOD OF TREATING VIRAL INFECTIONS WITH ARYL MACROCYCLIC COMPOUNDS

Kou M. Hwang, Danville; You M. Qi, Redwood City, and Su-Ying Liu, Belmont, all of Calif., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 647,720, Jan. 29, 1991, Pat. No. 5,196,452, which is a continuation-in-part of Ser. No. 647,469, Jan. 29, 1991, Pat. No. 5,166,173. This application Nov. 13, 1991, Ser. No. 791,920
Int. Cl.[5] A61K *31/185*
U.S. Cl. 514—577 **8 Claims**

1. A method of inhibiting cell infection by a herpesvirus comprising

administering to the site of infection a therapeutically effective dose of a macrocyclic compound which has the form



where R_2 is a sulfonic acid, sulfonate salt, sulfinic acid, sulfinate salt, alkyl sulfonate, alkyl sulfinate, or a sulfonamide, R_1 is OH, =O, an alkyl or aryl ether, ester, or acid, or a mixture thereof, R_4 is >CHR″ or ≧CR″, where R″ is H or a carboxylic acid group, and n=4, 6, or 8.

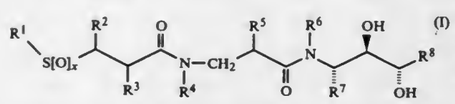
5,312,838

BETA-ALANINEAMIDE ARYL/ALKYLSULFIDE/SULFONYL-TERMINATED AMINO-DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

Barbara B. Chen, Glenview; Gunnar J. Hanson, Skokie, and John S. Baran, Winnetka, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sep. 21, 1992, Ser. No. 949,194
Int. Cl.[5] A61K *31/16, 31/165;* C07C *317/50, 323/41*
U.S. Cl. 514—616 **30 Claims**

1. A compound of Formula I:



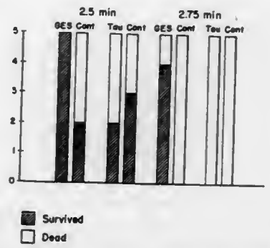
wherein R^1 is a group selected from alkyl, trifluoromethyl, cycloalkyl, cycloalkylalkyl, aryl, haloaryl, aralkyl and haloaralkyl; wherein x is a number selected from zero, one and two; wherein R^2 is selected from hydrido and alkyl; wherein R^3 is a group selected from hydrido, cycloalkylalkyl, aralkyl and haloaralkyl; wherein each of R^4 and R^6 is a group independently selected from hydrido and methyl; wherein R^5 is methyl; wherein R^7 is a group selected from alkyl, cycloalkylalkyl and aralkyl; wherein R^8 is a group selected from hydrido, alkyl, hydroxyalkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkenylalkyl and haloalkenyl; and wherein any one of said R^1 through R^8 groups having a substitutable position may be substituted with one or more groups selected from alkyl, hydroxy, hydroxyalkyl, alkoxy, alkoxyalkyl and alkenyl.

5,312,839

COMPOUNDS AND METHOD FOR PROTECTION OF CELLS AND TISSUES FROM IRREVERIBLE INJURY DUE TO LACTIC ACIDOSIS

Tsutomu Nakada, San Francisco, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Mar. 5, 1991, Ser. No. 664,933
Int. Cl.[5] A01N *37/52;* C07C *239/00*
U.S. Cl. 514—634 **8 Claims**



1. A method for protection of tissue cells from irreversible damages due to lactic acidosis caused by oxygen deficiency which method comprises administration to a patient in need of such treatment of a compound permeable through a cell membrane, or crossing the blood-brain barrier, which compound is able to buffer an increase in hydrogen ion concentration in the cells to the physiologically acceptable levels, wherein said compound is $NH_2CH_2CH_2SO_3H$, NH_2—C(NH)NH(CH_2)-$_2SO_3H$, or NH_2 —C(NH)NH(CH_2)$_2SO_3Na$.

5,312,840

SUBSTITUTED GUANIDINES HAVING HIGH BINDING TO THE SIGMA RECEPTOR AND THE USE THEREOF

John F. W. Keana, Eugene, Oreg., and Eckard Weber, Laguna Beach, Calif., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, Portland, Oreg.

Continuation of Ser. No. 528,216, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 254,068, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 884,150, Jul. 10, 1986, Pat. No. 4,709,094, and a continuation-in-part of Ser. No. 346,494, May 2, 1989, abandoned. This application Feb. 25, 1993, Ser. No. 23,880
Int. Cl.[5] A61K *31/155*
U.S. Cl. 514—634 **36 Claims**

1. A method of treating a human being suffering from a psychotic mental illness associated with hallucinations, which comprises administering thereto, in an amount effective to ameliorate the hallucinations, a non-heterocyclic N,N′-disubstituted guanidine which is an antagonist to the sigma receptor binding activity of a hallucinogenic benzomorphan.

5,312,841

WATER BASED BIOCIDE

Donald J. Paterson, Jacksonville, Fla., assignor to Betz Paper-Chem, Inc., Jacksonville, Fla.

Filed Jun. 15, 1992, Ser. No. 898,974
Int. Cl.[5] A01N *33/12, 41/10*
U.S. Cl. 514—711 **7 Claims**

1. A biocidal formulation comprising a water based, stable solution of:

a) about 1–20% by weight of bis(trichloro methyl) sulfone or bis(tribromo methyl) sulfone;

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b) about 2–20% by weight of a nonionic surfactant; and
c) about 5–40% by weight of a cationic quaternary ammonium halide surfactant.

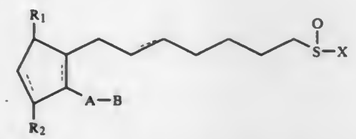
5,312,842

CYCLOPENTANE HEPTENYLSULFINYLALKYL AND HEPTANYLSULFINYLALKYL-2-ALIPHATIC OR ARYL ALIPHATIC DERIVATIVES

Ming Fai Chan, San Diego, Calif., assignor to Allergan, Inc., Irvine, Calif.

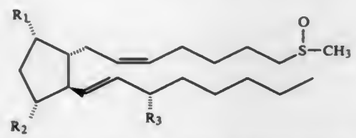
Filed Oct. 30, 1992, Ser. No. 968,700
Int. Cl.[5] C07C *317/10*; A01K *31/557*
U.S. Cl. 514—708 **19 Claims**

1. A method of treating ocular hypertension which comprises administering an effective amount of a compound represented by the formula VI



wherein X is an alkyl radical having from one to seven carbon atoms, the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration, A is an alkylene or alkenylene radical having from two to seven carbon atoms, which radical may be substituted with one or more hydroxy, oxo, alkyloxy or alkylcarboxy groups wherein the alkyl moiety has from 1 to 10 atoms, B is a methyl radical or a cycloalkyl radical having from three to seven carbon atoms, or an aryl radical selected from the group consisting of aryl and monoheteroaryl radicals having from 4 to 10 carbon atoms wherein the heteroatom is selected from the group consisting of nitrogen, oxygen and sulfur atoms, any of the groups defining B may be substituted by radicals from the group consisting of halo, nitro, amino, thiol, hydroxy, alkyloxy and alkylcarboxy having from 1 to 10 atoms in the alkyl moiety and R_1 and R_2 are independently selected from the group consisting of hydryl, hydroxy and 1–20 carbon alkyl ester derivatives thereof, or a pharmaceutically acceptable salt thereof.

17. A compound for treating ocular hypertension of the formula (IV)



wherein R_1 and R_2 are independently selected from the group consisting of hydryl, hydroxy and 1-20 carbon atom alkyl ester derivatives thereof, R_3 is =O, —OH or —O(CO)R_6 wherein R6 is a saturated or unsaturated acyclic hydrocarbon group having from 1 to 20 carbon atoms or —$(CH_2)_m R_7$ wherein m is 0-20 and R_7 is an aliphatic ring having from 3 to 7 carbon atoms, or an aryl radical selected from the group consisting of 4 to 10 carbon aryl and monoheteroaryl wherein the heteroatom is selected from the group consisting of nitrogen, oxygen and sulfur atoms.

5,312,843

METHOD FOR PRODUCING METHANOL BY USE OF NUCLEAR HEAT AND POWER GENERATING PLANT

Yasuhiro Yamauchi; Yuuji Tokita; Nobuaki Murakami; Katsuhiko Takita; Yasushi Mori; Kensuki Muraishi; Shozo Kaneko; Satoshi Uchida, all of Nagasaki; Nobuhiro Ukeguchi, Tokyo, and Seiichi Shirakawa, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,770
Claims priority, application Japan, Jan. 29, 1991, 3-9174; Jan. 31, 1991, 3-10653; Feb. 14, 1991, 3-20929
Int. Cl.[5] C07C *27/06*
U.S. Cl. 518—702 **8 Claims**

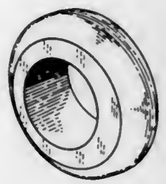
1. A process for producing methanol, said process comprising the steps of: extracting nuclear heat from a high-temperature gas-cooled reactor; heating water with the extracted heat to produce steam; electrolyzing the produced steam in a steam electrolyzer containing a solid electrolyte to thereby generate hydrogen; and synthesizing methanol using the generated hydrogen and carbon dioxide obtained from a carbon dioxide source.

5,312,844

METHOD OF PRODUCING POLYURETHANE INJECTION MOLDED IN-LINE SKATE WHEELS

Stanley W. Gonsior, Minnetonka, and Dennis L. Hvam, Eden Prairie, both of Minn., assignors to S&W Plastics, Inc., Eden Prairie, Minn.

Filed May 14, 1993, Ser. No. 61,920
Int. Cl.[5] C08J *9/00*
U.S. Cl. 521—99 **34 Claims**



1. A method of producing injection molded in-line skate wheels, comprising the steps of:
placing a polymeric material containing a portion of polyether type polyurethane into an injecting unit suitable for injecting molten polyurethane, heating said unit until said polymeric material is molten,
placing a hub into a wheel mold,
heating said hub-containing wheel mold to prevent the injected polymeric material from prematurely hardening,
injecting said molten polymeric material into said mold under pressure,
cooling said wheel mold containing injected molten polymeric material to harden said polymeric material.

5,312,845

RIM POLYOL BLENDS CONTAINING ACIDIC SILOXANE INTERNAL MOLD RELEASE AGENTS AND TIN CATALYSTS

John E. Dewhurst, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 16, 1992, Ser. No. 992,404
Int. Cl.[5] C08G *18/00*; C08K *5/17, 5/36*
U.S. Cl. 521—111 **19 Claims**

1. In an active hydrogen-containing B-side composition for reaction with a polyisocyanate-containing A-side composition to make a polyurethane, polyurethaneurea or polyurea elastomer by reaction injection molding, which B-side composition consists essentially of polyol, urethane catalyst, an internal mold release composition, silicone surfactant and, optionally, a diol and/or diamine chain extender, the improvement which comprises an internal mold release composition consisting essentially of (1) the reaction product of a mixture of a carboxylic acid, a tertiary amine, and a reactive epoxide and (2) a carboxy functional siloxane.

5,312,846

CELLULAR POLYMER CONTAINING PERFORATED CELL WINDOWS AND A PROCESS FOR THE PREPARATION THEREOF

Guido E. Smits, Wijnegem, Belgium, and Johan A. Thoen, Terneuzen, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 951,970, Sep. 28, 1992, Pat. No. 5,250,579. This application Jun. 22, 1993, Ser. No. 81,926
Int. Cl.[5] C08J *9/12*
U.S. Cl. 521—134 **14 Claims**

1. A process for preparing a cellular thermoset polyurethane polymer containing perforated cell windows by reacting an organic polyisocyanate with a substance containing one or more isocyanate-reactive hydrogen atoms/molecule in the presence of a perforating agent and a blowing agent wherein: the perforating agent, present in from about 0.01 to about 1.0 percent based on total weight of polymer, is a solid substance that has a critical surface free energy of less than about 23 mJ/m^2 and an average particle size of about 20 microns or less; the blowing agent comprises water; and the isocyanate-reactive substance is a polyether polyol, polyester polyol, amine-terminated polyether, or mixtures thereof.

5,312,847

POLYURETHANE FOAM CONTAINING A PARTICULATE ORGANIC SOLID AND A PROCESS FOR THE PREPARATION THEREOF

Hans de Vos, Terneuzen, Netherlands, assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 16, 1993, Ser. No. 32,348
Int. Cl.[5] C08J *9/02*; C08G *18/14, 18/62*
U.S. Cl. 521—137 **18 Claims**

1. A process for preparing a polyurethane foam by contacting under reaction conditions an organic polyisocyanate with a polyahl, in the of a blowing agent and from about 1 to about 20 weight percent based on total weight of polyisocyanate and polyahl of a particulate organic polymer having a glass transition temperature of less than 0° C., with the proviso that when the polyisocyanate is toluene diisocyanate the polyahl, when a polyether polyol, has a molecular weight of greater than 3000.

5,312,848

THERMOFORMABLE POLYISOCYANURATE FOAM LAMINATES FOR INTERIOR FINISHING APPLICATIONS

Kenneth P. Klapper, Hillsborough County; Wayne E. Laughlin, and John P. Oliver, both of Pinellas County, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 879,616, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 716,565, Jun. 17, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 935,799
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—172 **29 Claims**

1. A molded polyisocyanurate foam prepared by thermoforming the reaction product made under foam-forming conditions of an organic polyisocyanate and a polyol component selected from the group consisting of (i) a polyester polyol and (ii) a polyester polyol and at least one other OH-containing compound, the equivalent ratio of isocyanate groups to hydroxyl groups being at least 1.5 to 1, and the reaction under foam-forming conditions being conducted in the presence of a trimerization catalyst.

5,312,849

PROCESS FOR PREPARATION OF RUBBER COMPOSITION AND RUBBER COMPOSITION

Shuichi Akita, and Haruhisa Yamamoto, both of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 8,991
Claims priority, application Japan, Jan. 31, 1992, 4-042089
Int. Cl.[5] C08J *3/20*
U.S. Cl. 523—351 **12 Claims**

1. A process for preparation of a rubber composition which comprises mixing a modified diene polymer wherein at least one functional group represented by the formula >C=N+< is bound to the main chain of the polymer or is bound to both the main chain and terminal of the polymer directly or through another atomic group, with carbon black in an organic solvent, and separating the mixture of the modified diene polymer with carbon black from the resultant mixture solution.

5,312,850

POLYLACTIDE AND STARCH CONTAINING HOT MELT ADHESIVE

Carmine P. Iovine, Bridgewater, N.J.; Thomas F. Kauffman, Easton, Pa.; Jules E. Schoenberg, Bridgewater, and Paul P. Puletti, Pittstown, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jan. 4, 1993, Ser. No. 153
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] C08L *3/02, 3/04, 93/04*
U.S. Cl. 524—47 **14 Claims**

1. A hot melt adhesive composition comprising 20 to 98% by weight of a polylactide mono- or copolymer containing at least 20 molar percent of the lactide component; 2 to 80% by weight of a polar tackifier having a Ring and Ball softening point (as described by ASTM E-26) greater than about 60° C.; 0 to 50% by weight of a plasticizer; starch or modified starch in an amount up to 20% by weight; 0 to 30% by weight of a wax diluent and 0–3% by weight of a stabilizer.

5,312,851

WHOLLY AROMATIC POLYAMIDE RESIN COMPOSITION HAVING ENHANCED LIGHT RESISTANCE

Toshitsugu Matsuki; Tsutomu Kiriyama, and Toshihiro Santa, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

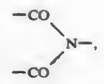
Filed Dec. 29, 1992, Ser. No. 998,010
Claims priority, application Japan, Jan. 22, 1992, 4-9265
Int. Cl.[5] C08K *5/3417*
U.S. Cl. 524—89 **10 Claims**

1. A wholly aromatic polyamide resin composition comprising:
a matrix consisting essentially of a wholly aromatic polyamide resin; and
a light-resisting agent blended to the wholly aromatic polyamide resin matrix and comprising at least one naphthalene ring structure-containing compound of the formula (I):

$$A-Y-Ar_1+X-Ar_2-X-Ar_3\rightarrow_n Y-B \quad (I)$$

wherein Ar_1, Ar_2 and Ar_3 respectively and independently from each other represent a divalent organic group, X represents an amide bond group of the formula —CONH—, Y represents a member selected from the group consisting of an amide bond group of the —CONH— formula and an imide bond group of the formula of

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A and B respectively and independently from each other a monovalent organic group when Y represents the amide bond group and a divalent organic group when Y represents the imide bond group;

n represents an integer of from 1 to 10, and at least one of Ar_1, Ar_2, Ar_3, A and B has a naphthalene ring structure.

5,312,852

2-(2-HYDROXY-3-PERFLUOROALKYLTHIOMETHYL-5-ALKYLPHENYL)-2H-BENZOTRIAZOLES, PROCESSES FOR PREPARING THEM AND STABILIZED COMPOSITIONS THEREOF

Robert A. Falk, New City, and Gregory R. Coughlin, Poughkeepsie, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 926,105, Aug. 5, 1992, Pat. No. 5,250,698. This application Jul. 12, 1993, Ser. No. 90,834

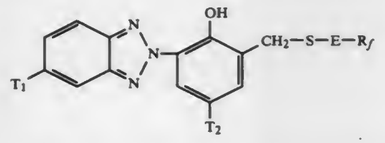
Int. Cl.[5] C08K *5/3475;* **C07D** *249/20*

U.S. Cl. 524—91 **13 Claims**

1. A composition stabilized against the deteriously effects of actinic light which comprises

(a) an organic material subject to light-induced deterioration, and

(b) an effective stabilizing amount of a compound of formula I



(I)

wherein

T_1 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

T_2 is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms or phenylalkyl of 7 to 15 carbon atoms,

E is a branched or straight chain alkylene of 1 to 10 carbon atoms or said alkylene interrupted by one to three groups selected from the group consisting of —NR—, —O—, —S—, $—SO_2—$, —COO—, —OOC—, —CONR—, —NRCO—, $—SO_2NR—$, $—NRSO_2—$, or terminated at the R_f end with —CONR— or $—SO_2NR—$, where R_f is attached to the carbon or sulfur atom, and where R is independently hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 2 to 6 carbon atoms, and

R_f is a straight or branched chain perfluoroalkyl of 1 to 12 carbon atoms, perfluoroalkyl of 2 to 6 carbon atoms substituted by perfluoroalkoxy of 2 to 6 carbon atoms, or R_f is an oligo(hexafluoropropene oxide) terminal group.

5,312,853

FLAME RETARDANT POLYMERIC COMPOSITIONS

Horst Staendeke, Lohmar, Fed. Rep. of Germany, and Daniel J. Scharf, East Greenwich, R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 669,799, Mar. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 87,186, Aug. 19, 1987, abandoned. This application Sep. 23, 1993, Ser. No. 126,142

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1986, 3628797; Jun. 16, 1987, 3720094

Int. Cl.[5] C08K *5/3492*

U.S. Cl. 524—100 **16 Claims**

1. A flame-retardant polymer composition, containing an intumescent flame-retardant system consisting essentially of ammonium polyphosphate and tris-(2-hydroxyethyl) isocyanurate wherein said ammonium polyphosphate is present in an amount of at least about 20 percent by weight based upon the total weight of said polymer composition and wherein the ratio of ammonium polyphosphate to tris-(2-hydroxyethyl) isocyanurate on weight basis is at least about 2:1.

5,312,854

COLOR-STABILIZING POLYARYLENE SULFIDE MIXTURE

Udo Wolf; Burkhard Köhler, both of Krefeld; Alfred Zembrod, Bergisch Gladbach; Klaus Kraft, Krefeld, and Helmut Görner, Muelheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 864,617, Apr. 7, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 84,315

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112788

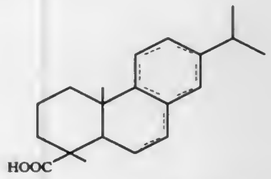
Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—270 **4 Claims**

1. A mixture consisting essentially of

a) 80 to 99.98% polyarylene sulfide and

b) 0.02 to 20% of an acid or a mixture of acids having the following basic structure



with at least one conjugated double bond system being present in the region marked by chain lines, or esters, salts or amides thereof.

5,312,855

ADHESIVE ORGANOPOLYSILOXANE COMPOSITION

Takehide Okami, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 616,568, Nov. 21, 1990, abandoned. This application Feb. 1, 1993, Ser. No. 11,832

Claims priority, application Japan, Nov. 22, 1989, 1-303571

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—290 **1 Claim**

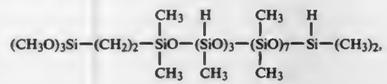
1. An adhesive organopolysiloxane composition comprising:

(A) 100 parts by weight of an organopolysiloxane having at least two alkenyl group in its molecule and a viscosity at 25° C. of 100 to 200,000 cSt,;

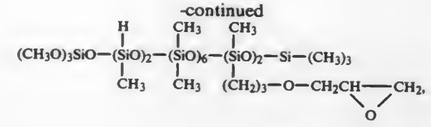
(B) an organohydrogenpolysiloxane having two or more silicon-bonded hydrogen atoms in its molecule in such an amount as to supply 0.6 to 6.0 silicon-bonded hydrogen atoms per alkenyl group of said (A) organopolysiloxane;

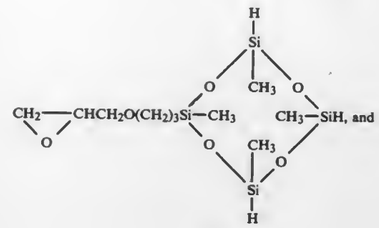
(C) a catalytic amount of a platinum catalyst;

(D) 0.5 to 20 parts by weight of an adhesion imparting agent comprising at least one compound selected from the group consisting of compounds of the formulas:



-continued





and

(E) 0.05 to 5 parts by weight of a compound containing two or more allyl ester groups in its molecule.

5,312,856

THERMOPLASTIC ELASTOMER BASED ON POLYNORBORNENE AND POLYVINYL CHLORIDE

Marius Hert, 49 Rue Max Carpentier, 27470 Serquigny, and Christian Dousson, "Les Aumones" Saint-Victor de Chretienville, 27300 Bernay, both of France

Filed Sep. 9, 1991, Ser. No. 720,440

Claims priority, application France, Nov. 8, 1989, 89 14680

Int. Cl.[5] C08J *3/18;* **C08L** *23/20*

U.S. Cl. 524—297 **12 Claims**

1. Thermoplastic composition comprising a mixture of 20 to 70 parts by weight of crosslinked polynorbornene, 80 to 30 parts by weight of a polymer based on vinyl chloride and of at least one plasticiser customary for polynorbornene and the polymer based on vinyl chloride in an amount sufficient for reducing the glass-transition temperature of polynorbornene down to the range of rubbers.

5,312,857

GOLF BALL COVER COMPOSITIONS CONTAINING HIGH LEVELS OF METAL STEARATES

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Filed Jan. 9, 1992, Ser. No. 819,108

The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.

Int. Cl.[5] C08K *5/09;* **A63B** *37/12*

U.S. Cl. 524—400 **19 Claims**

1. A golf ball comprising a core and a cover, wherein the cover consists essentially of 100 parts by weight of at least one ionomer resin and from above 25 to about 100 parts by weight of a metal stearate, wherein said ionomer resin is the reaction product of an olefin having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms.

5,312,858

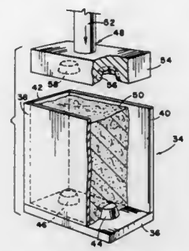
CONSTRUCTION ARTICLE FROM WASTE MATERIALS AND METHOD OF MAKING THE SAME

Virgil Folsom, 2324 W. Mount Vernon, Springfield, Mo. 65802

Continuation of Ser. No. 807,208, Dec. 16, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 78,488

Int. Cl.[5] C08K *3/10, 11/00*

U.S. Cl. 524—435 **18 Claims**



1. A construction article comprising of self-sustaining body including at least about 30% by weight synthetic resin binder intermixed with filler comprising unburnt comminuted waste derived from MSW and having an average maximum dimension of up to about ¾", said MSW-derived filler including respective quantities of unburnt glass and metals, said article being formed by mixing said binder in a solid form with said filler, simultaneously subjecting the mixture to a temperature of from about 400°–600° F. and compression of at least about 300 psi to liquefy said binder and cause intimate mixing thereof with the filler to form said body, and allowing the body to cool.

5,312,859

ACID ACCEPTOR FOR POLYMERS CONTAINING ACID MOIETIES

Barry W. Preston, Whiteford; Robin F. Lewis, Bel Air, both of Md.; Gerard Mooney, Ajax, Canada; Suneet K. Sikka, Churchville, and Claude R. Andrews, Pasadena, both of Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Filed Feb. 19, 1992, Ser. No. 843,777

Int. Cl.[5] C08K *3/10, 3/22*

U.S. Cl. 524—436 **8 Claims**

1. A polymer composition comprising substantially 100 parts by weight of a thermoplastic polymer, containing an acid moiety and about 0.01 to about 40 phr tricalcium aluminum hexahydrate as an acid acceptor.

5,312,860

HEAT-CURABLE SILICONE RUBBER COMPOSITION AND CURED PRODUCT THEREOF

Kipp J. Mize, Lakewood, Calif.; Masaharu Takahashi, and Yoshio Inoue, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,982

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—493 **24 Claims**

1. A heat-curable silicone rubber composition comprising:

(A) 100 parts by weight of a polydiorganosiloxane having at least two unsaturated aliphatic hydrocarbon groups and represented by the general formula (1):

$$R_a^1SiO_{(4-a)/2} \quad (1)$$

wherein R^1 represents a substituted or unsubstituted

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. monovalent hydrocarbon group containing 0.01 to 15 mole % of an unsaturated aliphatic hydrocarbon group, a is a positive number of from 1.95 to 2.05,

(B) 0.05 to 10 parts by weight of a polyorganohydrogensiloxane having at least three hydrogen atoms directly bonded to silicon atoms in a molecule,

(C) 1 to 100 parts by weight of silica filler having a specific surface area of at least 50 m^2/g,

(D) a catalytic amount of an addition reaction catalyst, and

(E) 0.1 to 10 parts by weight of water.

5,312,861

FILLED HYDROLYZABLE COPOLYMER COMPOSITIONS RESISTANT TO PREMATURE CROSSLINKING

Craig C. Meverden, Mason, and Robert L. Silverman, Cincinnati, both of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Continuation of Ser. No. 735,485, Jul. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 660,765, Feb. 25, 1991, abandoned. This application May 18, 1992, Ser. No. 885,437

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] C08L *43/00;* C08F *230/08;* C08K *5/54*

U.S. Cl. 524—521 28 Claims

1. A filled, pelletized hydrolyzable silane copolymer composition consisting essentially of:

(a) 20 to 94 weight percent random ethylene-vinyltriethoxysilane copolymer having a melt index from 0.1 to 50 and from 0.1 to 20 weight percent copolymerized vinyltriethoxysilane;

(b) 5 to 70 weight percent rubber ethylene copolymer having a melt index from 0.1 to 100 and less than about 30% crystallinity selected from the group consisting of ethylene-vinyl acetate copolymer, ethylene-alkyl acrylate copolymer, and ethylene-α-olefin copolymer; and

(c) 1 to 70 weight percent particulate filler; said filled, pelletized composition retaining at least 70% of the original melt index upon storage under ambient conditions for six months in the absence of a silanol condensation catalyst but capable of being crosslinked by the action of water in the presence of a silanol condensation catalyst to a tensile strength greater than 1800 psi and elongation greater than 250 percent.

5,312,862

METHODS FOR ADMIXING COMPRESSED FLUIDS WITH SOLVENT-BORNE COMPOSITIONS COMPRISING SOLID POLYMERS

Keaneth A. Nielsen, Charleston; Jeffrey J. Lear; John N. Argyropoulos, Scott Depot, and Alex Chia-Huei Kuo, Charleston, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 18, 1992, Ser. No. 992,619

Int. Cl.[5] C08L *25/00*

U.S. Cl. 524—552 24 Claims

1. In a method for pressurizing, proportioning, admixing, and forming an admixture of (i) a solvent-borne composition containing a high concentration of at least one solid polymer capable of being sprayed as a liquid solution and (ii) at least one compressed fluid as a viscosity reducing diluent, in at least an amount which when added to (i) is sufficient to render the viscosity of said admixture to a point suitable for being transportable, said compressed fluid being a gas at standard conditions of 0° Celsius temperature and one atmosphere pressure (STP), the improvement which comprises:

admixing the solvent-borne composition and the at least one compressed fluid together at pressure P, with the at least one compressed fluid having feed temperature T_1, such that the at least one compressed fluid, at pressure P and temperature T_1, is substantially a gas or a supercritical fluid and has a solubility parameter of about 0.5 to about 4 (cal/cc)$^{\frac{1}{2}}$, thereby substantially avoiding undesirable precipitation of said solid polymer and consequential plugging of the apparatus.

5,312,863

CATIONIC LATEX COATINGS

Paul R. Van Rheenen, Warminster, and Chuen-Shyong Chou, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 593,359, Oct. 1, 1990, abandoned, which is a division of Ser. No. 375,653, Jul. 5, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 855,150

Int. Cl.[5] C08L *39/00*

U.S. Cl. 524—555 6 Claims

1. A pigmented cationic coating composition consisting of cationic and nonionic components, said coating composition comprising a cationic polymeric binder for coatings, said binder comprising an aqueous dispersion of filming cationic functional polymer particles formed from at least one monoethylenically unsaturated amine functional monomer, wherein an amine functional group is neutralized by the addition of an amount of at least one monoprotic acid effective to neutralize at least a portion of said amine functional groups; pigment particles and an amount of a cationic pigment dispersant effective to selectively absorb on or chemically react with said pigment particles.

5,312,864

α-CYANOACRYLATE ADHESIVE COMPOSITIONS

Gerhard Wenz, Mainz; Konrad Engelskirchen, Meerbusch; Herbert Fischer, Duesseldorf; Heinz C. Nicolaisen, Hannover, all of Fed. Rep. of Germany, and Steven Harris, Dublin, England, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf and Max-Planck-Gesellschaft zur Foerderung der Wissenschaften eV, Goettingen, both of Fed. Rep. of Germany

PCT No. PCT/EP91/00517, § 371 Date Nov. 17, 1992, § 102(e) Date Nov. 17, 1992, PCT Pub. No. WO91/14749, PCT Pub. Date Oct. 3, 1991

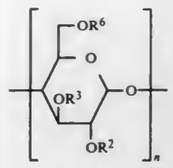
PCT Filed Mar. 18, 1991, Ser. No. 927,482

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1990, 4009621

Int. Cl.[5] C09J *4/04*

U.S. Cl. 524—716 7 Claims

1. An adhesive composition comprising α-cyanoacrylate and a hydroxyl group derivative of α-, β-, γ-cyclodextrin which is at least partly soluble in said α-cycanoacrylate and which corresponds to the formula



wherein R^2, R^3 and R^6 are the same or different and are independently selected from the group consisting of hydrogen, a linear alkyl containing up to 12 carbon atoms, a branched alkyl containing up to 12 carbon atoms, a linear alkenyl containing up to 12 carbon atoms, a branched alkenyl containing up to 12 carbon atoms, a cycloalkyl containing up to 12 carbon atoms, an alkylaryl containing up to 12 carbon atoms, an acyl group corresponding to the formula —C(O)—R', a group corresponding to the formula —C(O)—NR'$_2$ and a trialkylsilyl group corresponding to the formula —SiR"$_3$; wherein R^2, R^3 and R^6 are not simultaneously hydrogen; wherein n is 6, 7 or 8; wherein R' is hydrogen, linear alkyl containing up to 12 carbon

atoms, branched alkyl containing up to 12 carbon atoms, linear alkenyl containing up to 12 carbon atoms, branched alkenyl containing up to 12 carbon atoms, a cycloalkyl containing up to 12 carbon atoms, an alkylaryl containing up to 12 carbon atoms or an aryl; wherein R" is an alkyl containing up to 6 carbon atoms; and wherein R^2, R^3 and R^6 optionally contain a substituent selected from the group consisting of a halogen, an ether, an ester and an alkoxy.

5,312,865

COATING COMPOSITIONS

Rainer Hoefer, Duessledorf; Roland Gruetzmacher, Wuelfrath, and Gerhard Kaindl, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01052, § 371 Date Dec. 15, 1992, § 102(e) Date Dec. 15, 1992, PCT Pub. No. WO91/19750, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 6, 1991, Ser. No. 955,910

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1990, 4019171

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—591 18 Claims

1. A coating composition for flexible substrates containing an aqueous polyurethane dispersion, wherein the polyurethane dispersion comprises a polyurethane comprising residues of a block A of a polycaprolactone diol and a block B of a polycaprolactone diol wherein an average molecular weight of the block A is different from an average molecular weight of the block B and each of block A and block B falls within an average molecular weight of from 230 to 10,000 and a hydroxyl value of from 15 to 540 and wherein a ratio of an amount by weight of block A to an amount by weight of block B is from 10:1 to 1:10.

5,312,866

POLYIMIDE BASED RESIN COMPOSITION

Toshihiko Tsutsumi; Toshiyuki Nakakura; Shuichi Morikawa; Katsunori Shimamura; Toshiaki Takahashi; Atsushi Morita; Nobuhito Koga; Akihiro Yamaguchi, all of Kanagawa; Masahiro Ohta, Fukuoka; Yoshihisa Gotoh, Kanagawa; Masaki Amano, Kanagawa; Hiroyasu Oochi, Kanagawa, and Kayako Ito, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

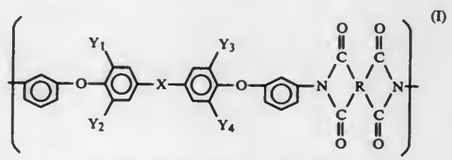
Continuation-in-part of Ser. No. 617,147, Nov. 23, 1990, abandoned. This application May 14, 1992, Ser. No. 883,267

Claims priority, application Japan, Nov. 30, 1989, 1-309100; Dec. 5, 1989, 1-314394; Jul. 30, 1990, 2-199058; May 21, 1991, 3-116153; May 28, 1991, 3-123350; May 29, 1991, 3-125726; May 29, 1991, 3-125789; May 30, 1991, 3-127081

Int. Cl.[5] C08L *67/02, 79/08*

U.S. Cl. 524—600 17 Claims

1. A resin composition comprising from 99.9 to 50% by weight of a polyimide having recurring units represented by the formula (I):



(I)

wherein X is a direct bond, divalent hydrocarbon having from 1 to 10 carbon atoms, hexafluorinated isopropylidene, carbonyl, thio or sulfonyl; Y_1, Y_2, Y_3 and Y_4 are individually hydrogen, lower alkyl, lower alkoxy, chlorine or bromine; R is a tetravalent radical selected from an aliphatic having 2 or more carbon atoms, alicyclic, monocyclic aromatic or fused polycyclic aromatic radical or a polycyclic aromatic radical connected to each other through a direct bond or a bridge member and from 0.1 to 50% weight of a polyether ketone resin and/or a polyester resin which forms an anisotropic molten phase.

5,312,867

THERMOPLASTIC PROPYLENE RESIN COMPOSITION

Tatsuyuki Mitsuno; Takeshi Fujii, both of Chiba; Masashi Yamamoto, Ichihara; Kentaro Yamaguchi, Ichihara, and Kiyoshi Mitsui, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 395,094, Aug. 17, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 918,780

Claims priority, application Japan, Aug. 17, 1988, 63-205196; Aug. 17, 1988, 63-205197

Int. Cl.[5] C08L *51/00*

U.S. Cl. 525—66 11 Claims

1. A thermoplastic propylene resin composition comprising 10 to 50% by weight of a polyamide resin (F), and 1 to 5% by weight of an epoxy group containing copolymer (G),

the remainder being a graft resin composition (J) obtained by graft copolymerizing maleic anhydride onto a mixture of 1 to 99% by weight of a polypropylene (C) and 99 to 1% by weight of a rubber material (H) selected from the group consisting of ethylenic copolymer rubbers, propylene-butene rubber, isoprene-butylene rubber, polyisoprenes, polybutadienes, styrene block copolymers, linear low-density polyethylenes and the blends thereof.

the composition totaling 100% by weight.

5,312,868

THERMOSETTING COVERING SHEET AND A METHOD OF FORMING HARD COATING ON THE SURFACE OF SUBSTRATES USING THE SAME

Hiroshi Abe, Takatsuki; Akitaka Miyake, Ibaraki; Shunro Aoto, Osaka; Yoshihiro Nishiyama, Obtsu; Natsuki Morishita; Yosuke Oshikawa, both of Osaka, and Makoto Yamaguchi, Takatsuki, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 415,829, Oct. 2, 1992, abandoned. This application May 7, 1992, Ser. No. 883,232

Int. Cl.[5] C08G *18/62;* C08L *75/04*

U.S. Cl. 525—124 5 Claims

1. A thermosetting covering sheet comprising a semihardened layer made of a thermosetting resin composition,

wherein said thermosetting resin composition comprises, as main ingredients, a reactive acrylic resin, which is in a solid state at room temperatures, and a blocked isocyanate, said reactive acrylic resin containing a plurality of at least one kind of functional group selected from the group consisting of hydroxyl, amino, and carboxyl, and the weight average molecular weight of said reactive acrylic resin being in the range of 100,000 to 1,000,000, and

the ratio of the number of isocyanate groups in said blocked isocyanate to the number of functional groups in the reactive acrylic resin (number of isocyanates/number of functional groups) is within the range of 0.5 to 2.0, the number of functional groups being the sum of the number of hydroxyl, amino, and carboxyl groups, and

said resin composition is in the form of a preformed thermosetting covering sheet comprising a semihardened resin layer made of said resin composition, the proportion of functional groups of the reactive acrylic resins in said semihardened layer that have already reacted being from 1% to 80% based on the total number of functional groups of reactive acrylic resins present before reaction, and

said thermosetting covering sheet being capable of being laid onto a surface of an object and being subsequently hardened to result in a permanent coating.

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5,312,869
VULCANIZABLE RUBBER COMPOSITION
Akimasa Nomura, Zushi, and Kazuyoshi Nakajima, Hoya, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1993, Ser. No. 37,432
Claims priority, application Japan, Mar. 27, 1992, 4-101683
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—193 **5 Claims**

1. A vulcanizable rubber composition comprising
(a) 100 weight parts of a polymer component comprising 10 to 40 wt. % of an ethylenically unsaturated nitrile-conjugated diene highly saturated copolymer wherein the content of the conjugated diene unit in the polymer wherein the content of the conjugated diene unit in the polymer chain is 30 wt. % or less and 90 to 60 wt. % of a polyethylenic polymer selected from the group consisting of polyethylene, a copolymer of ethylene with an α-olefin, and a ternary copolymer of ethylene, an α-olefin and a non-conjugated diene,
(b) 10 to 80 weight parts of a metal salt of an ethylenically unsaturated carboxylic acid, and
(c) 0.2 to 10 weight parts of an organic peroxide.

5,312,870
METHOD FOR BLEACHING TACKIFYING RESINS
Theodore J. Williams, Panama City, Fla., assignor to Arizona Chemical Company, Panama City, Fla.
Division of Ser. No. 702,253, May 17, 1991. This application May 25, 1993, Ser. No. 66,729
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—193 **3 Claims**

1. A formulated adhesive comprising:
a tackifier resin prepared from non-terpenic C_5 to C_{10} unsaturated monomers of a mixture of non-terpenic C5 to C_{10} unsaturated hydrocarbon monomers selected from the group consisting of piperylene, 2-methyl-2-butene, isoprene, styrene, and α-methylstyrene, the resin bleached by brining the hydrocarbon resin to a molten state thereby producing a molten resin, adding an iodine supplying compounds selected from the group consisting of elemental iodine and hydrogen iodide to the molten resin, adding an activating hydrogen donating compound selected from the group consisting of α-terpinene, γ-terpinene, d-limonene, 1,4-cyclohexadiene and abietic acid to the molten resin thereby forming a reaction mixture, maintaining the reaction mixture in a molten state for a period of time of between about 15 minutes and about 120 minutes, and removing the activating compound from the reaction mixture thereby recovering a bleached hydrocarbon tackifier resin; and
a copolymeric elastomer.

5,312,871
FREE RADICAL POLYMERIZATION PROCESS
Daniela Mardare, and Krzysztof A. Matyjaszewski, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburg, Pa.
Filed Jul. 27, 1993, Ser. No. 98,494
Int. Cl.[5] C08F *297/00, 4/52*
U.S. Cl. 525—272 **16 Claims**

14. A "living" polymerization process for the preparation of narrow molecular weight distribution block co-polymers which comprises:
(a) contacting under polymerizing conditions a monomer or monomers capable of free radical polymerization of the formula $H_2C{=}CRX$ or $XRC{=}CRX$, where R is hydrogen, methyl, chlorine or fluorine and X is selected from the group consisting of acyloxy, carboalkoxy, cyano, aryl, chlorine, fluorine, pyridino, carbazolo and vinyl, with an initiator or initiating system comprising an alkyl or aryl metal, a strongly binding monodentate, bidentate or polydentate ligand and a stable oxy free radical; and
(b) contacting the product of step (a) with a second monomer selected from monomer or monomers capable of free radical polymerization of the formula $H_2C{=}CRX$ or $XRC{=}CRX$, where R is hydrogen, methyl, chlorine or fluorine and X is selected from the group consisting if acyloxy, carboalkoxy, cyano, aryl, chlorine, fluorine, pyridino, carbazolo and vinyl,
provided that the monomer of step (a) is different from the monomer used in step (b).

5,312,872
METHOD FOR PREPARING A VINYL POLYMER-POLYOLEFINE COMPOSITE
Torvald Vestberg, Porvoo, and Ismo Lehtiniemi, Helsinki, both of Finland, assignors to Neste Oy, Finland
Continuation of Ser. No. 761,340, Sep. 17, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 103,886
Claims priority, application Finland, Sep. 18, 1990, 904586
Int. Cl.[5] C08F *255/02;* B32B *27/30;* C08J *3/02*
U.S. Cl. 525—324 **13 Claims**

1. A method for preparing a polyolefine-vinyl polymer composite, comprising:
A. impregnating from about 10 to about 200 weight fractions of vinyl monomer and from about 0.01 to about 4.0 weight fractions of a free radical polymerization initiator, based on 100 weight fractions of vinyl monomer, by slowly blending said vinyl monomer and said initiator in 100 weight fractions of polyolefine particles at a temperature from about 20° to about 100° C. initially in the absence of water, and adding from about 1 to about 60% by weight water, based on the total weight of the vinyl monomer and said polyolefine particles, immediately after said polyolefine particles begin absorption of said vinyl monomer, the total impregnation time being between about 0.2 and 1 hour, the amount of water added being sufficient to maintain the particulate structure of said polyolefine;
B. preparing a water suspension by adding water and a stabilizing agent to the above-mentioned mixture after a substantially completed impregnation of said vinyl monomer into said polyolefine, whereby the total quantity of water added is from about 80 to about 1000 weight fractions, based on 100 weight fractions of polyolefine + vinyl monomer; and
C. increasing the temperature of the water suspension to a level sufficient for polymerizing said vinyl monomer.

5,312,873
SURFACE TREATMENTS TO IMPART HYDROPHILICITY
Harry P. Gregor, 410 Riverside Dr., New York, N.Y. 10025; Alexander Burshteyn, Flushing, N.Y.; Leonard T. Hodgins, Closter, N.J.; John Kassotis, Astoria, and Edgar Samuelson, Brooklyn, both of N.Y., assignors to Harry P. Gregor, New York, N.Y.
Division of Ser. No. 635,421, Jan. 3, 1991, Pat. No. 5,059,659, which is a continuation of Ser. No. 55,667, May 29, 1987, abandoned. This application Jun. 6, 1991, Ser. No. 711,673
Int. Cl.[5] C08F *8/04*
U.S. Cl. 525—348 **2 Claims**

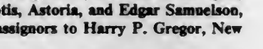
1. A process comprising the following steps:
(a) providing a solid insoluble non-swelling polymeric material comprising an interior portion and a surface portion and containing hydrophobic pendant nitrile groups on said surface portion; and
(b) reacting the polymeric material with hydrogen peroxide in the presence of a reducing agent to convert a substantial fraction of said pendant nitrile groups to hydrophilic pendant amide groups.

5,312,874
POLY(BENXOIC ACID), METHOD FOR THE PREPARATION THEREOF AND METHOD FOR THE PREPARATION OF POLY(P-PHENYLENE) FROM POLY(BENZOIC ACID)
Susumu Tanaka, Tsukuba, and Kyoji Kaeriyama, Tsuchiura, both of Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, Tokyo, Japan
Filed Sep. 7, 1993, Ser. No. 116,702
Claims priority, application Japan, Sep. 7, 1992, 4-264295
Int. Cl.[5] C08G *83/00, 61/10*
U.S. Cl. 525—418 **4 Claims**

1. A method for the preparation of a poly(p-phenylene) which comprises heating a solution of a poly(benzoic acid) in an organic solvent in the presence of metallic copper dust or a copper (II) compound as the catalyst to effect a decarbonation reaction.

5,312,875
PROCESS FOR THE MANUFACTURE OF IN SITU POLYMER ALLOYS AND MICROCOMPOUNDS, AND USE THEREOF
Rolf Mülhaupt, Freiburg; Joachim Rösch, Gundelfingen; Siegfried Hopperdietzel, Selb; Ekkehard Weinberg, Schönwald, and Herbert Klein, Hof/Saale, all of Fed. Rep. of Germany, assignors to Rehau AG+Co., Rehau, Fed. Rep. of Germany
Division of Ser. No. 895,368, Jun. 10, 1992. This application Aug. 20, 1993, Ser. No. 109,711
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1991, 4119146
Int. Cl.[5] C08L *77/10, 77/02*
U.S. Cl. 525—432 **6 Claims**

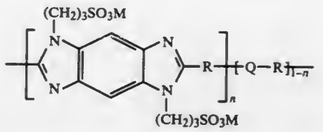
1. A process for producing a polymer mixture including microphases of melt-polymerized material in a thermoplastic polymer, the process comprising the steps of:
a. melting a component A to provide a melt, the component A being composed of at least one thermoplastic polymer which is one of (i) selected from the group consisting of olefin homopolymers, olefin copolymers, styrene homopolymers, and styrene copolymers or is (ii) a polar, heteroatom-containing thermoplastic polymer selected from the group consisting of polyamides and polyamidimides, and
b. adding from 0.2 to 90 weight % of a component B to the melt of component A to produce melt-polymerization reaction products, component B being composed of at least one compound having the structure



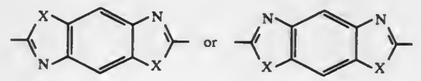
wherein X is NH_2, NHR^3, or OH; Y is CO, SO_2, or $R^5P{=}O$; R^1 is a (n+m) valent aromatic radical or an aliphatic radical having the formula $C_xH_{(2x+2-m-n)}$ or a cycloaliphatic radical of the formula $C_xH_{(2x-m-n)}$ with $1<x<15$; R^2 is a bivalent radical of the formula $(CH_2)_z$ with $1<z<15$; and R^3 and R^5 are monovalent aromatic radicals or monovalent aliphatic radicals of the formula $C_pH_{(2p+1)}$ or monovalent cycloaliphatic radicals of the formula $C_pH_{(2p-1)}$ with $1<p<20$, and R^1, R^2, R^3 and R^5 optionally containing heteroatoms in place of the stated formulas and being optionally unsaturated; and n and m are integers with $1\leqq m$ and $n\leqq 5$, the polymerization reaction products being linear, branched or cross-linked, high or low molecular weight polymers constituting microphases.

5,312,876
WATER SOLUBLE RIGID-ROD POLYMER
Thuy D. Dang, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 12, 1993, Ser. No. 30,523
Int. Cl.[5] C08G *73/18*
U.S. Cl. 525—435 **6 Claims**

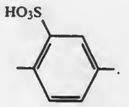
1. A water-soluble rigid-rod aromatic heterocyclic polymer having repeating units of the formula:



wherein n has a value of 0.05 to 1.00, M is an alkali metal, Q is a benzobisazole of the formula



wherein X is —S— or —O—, and R is



5,312,877
HIGH SOLIDS COATING COMPOSITION
Selcuk Avci, Clifton, N.J.; Narendra M. Patel, Mount Pocono, Pa.; Leonard Di Leo, Clifton, and Ralph H. Reiter, River Vale, both of N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.
Filed Feb. 12, 1993, Ser. No. 16,633
Int. Cl.[5] C08F *20/00*
U.S. Cl. 525—444 **14 Claims**

1. A coating composition having a total solids content of 85 to 95 wt. %, based on the weight of the composition, a volatile organic chemical content of less than 10 wt. %, based on the weight of the composition, and a Brookfield viscosity of about 800 to 1,400 cps at 25° C., consisting essentially of:
(a) a polyester polyol having a weight average molecular weight of about 300–900 and a hydroxy number of about 150–400;
(b) at least one thermosettable polyester having a hydroxy value of about 40–250 and an acid value of about 30–60;
(c) an alkoxy aminoplast resin;
(d) 0–30 wt. %, based on the weight of the composition, of a reactive diluent; and
(e) an acid catalyst curing agent.

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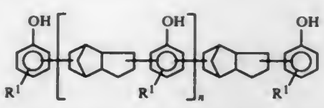
5,312,878

NAPHTHALENE CONTAINING EPOXY RESIN CURED WITH A DICYCLOPENTADIENE PHENDIC RESIN

Toshio Shiobara; Kazutoshi Tomiyoshi; Takayuki Aoki, and Hatsuji Shiraishi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,613
Claims priority, application Japan, Oct. 7, 1991, 3-286993
Int. Cl.[5] C08F *283/00*
U.S. Cl. 525—507 **20 Claims**

1. A thermosetting resin composition comprising
(A) a naphthalene ring-bearing epoxy resin,
(B) a dicyclopentadiene-modified phenolic resin of the following general formula (1):



(1)

wherein R^1 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, and letter n is an integer of 0 to 15, and
(C) an inorganic filler.

5,312,879

MIXTURES OF EPOXY CATIONIC RESINS

Nancy A. Rao, and Richard A. Hickner, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 20,815, Feb. 22, 1993, Pat. No. 5,260,355, which is a division of Ser. No. 718,749, Jun. 21, 1991, Pat. No. 5,206,274, which is a division of Ser. No. 404,725, Sep. 8, 1989, Pat. No. 5,064,880, which is a division of Ser. No. 69,475, Jul. 2, 1987, Pat. No. 4,883,572. This application Jul. 16, 1993, Ser. No. 93,500
Int. Cl.[5] C08K *3/20*; **C08L** *63/02*
U.S. Cl. 525—526 **5 Claims**

1. A mixture of
I. an advanced epoxy cationic resin prepared by reacting in the presence of a suitable catalyst
(A) a composition comprising (1) from about 20 to 100 weight percent of a diglycidyl ether of an aliphatic diol which diol is essentially free of ether oxygen atoms and (2) from zero to about 80 weight percent of a diglycidyl ether of a dihydric phenol with
(B) at least one dihydric phenol and optionally,
(C) a monofunctional capping agent: wherein components (A) and (B) are employed in such quantities that the resultant advanced epoxy resin has an average epoxide equivalent weight of from about 350 to about 10,000, whereby there is formed an advanced epoxy resin having terminal oxirane groups; and
subsequently converting at least some of the oxirane groups to cationic groups and
II. a different epoxy cathodic electrodeposition resin.

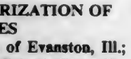
5,312,880

PRODUCTION PROCESSES OF ARYLENE THIOETHER OLIGOMER AND COPOLYMER

Hiroyuki Sato; Mitsuru Hoshino, and Yukichika Kawakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

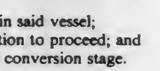
Division of Ser. No. 858,735, Mar. 27, 1992, Pat. No. 5,262,517. This application Aug. 30, 1993, Ser. No. 113,471
Claims priority, application Japan, Apr. 9, 1991, 3-103750
Int. Cl.[5] C08F *283/00*; **C08G** *75/14*
U.S. Cl. 525—537 **4 Claims**

1. A process for the production of an arylene thioether copolymer, which comprises forming a carboxylated arylene thioether oligomer by
(1) first causing an alkali metal sulfide to act on a poly(arylene thioether) having recurring units represented by the general formula (I):



(I)

wherein Ar is an arylene group, in a water-containing polar organic solvent to depolymerize the poly(arylene thioether), thereby preparing an oligomer having at least one alkali thiolate group; and
(2) second causing a carboxylating agent represented by the general formula (II):



(II)

wherein X is a halogen atom, R_1 denotes a hydrogen atom, an alkyl group having 1–4 carbon atoms, an aryl group or an alkali metal atom, and Ar' is an arylene group, to act on the alkali thiolate-containing oligomer obtained in the first step, thereby forming the carboxylated arylene thioether oligomer; and
reacting (A) a carboxylic acid component consisting of the carboxylated arylene thioether oligomer alone, or a mixture of the carboxylated oligomer in an amount of at least 50 wt. % and another carboxylic compound in an amount less than 50 wt. % with (B) an alkylenediol.

5,312,881

METHOD FOR CATALYTIC POLYMERIZATION OF SUBSTITUTED ACRYLATES

Tobin J. Marks; Yoshihiro Yamamoto, both of Evanston, Ill.; Laurent Brard, Philadelphia, Pa., and Michael Giardello, Pasadena, Calif., assignors to Northwestern University, Chicago, Ill.

Continuation-in-part of Ser. No. 860,784, Mar. 31, 1992. This application Feb. 26, 1993, Ser. No. 25,372
Int. Cl.[5] C08F *4/16*
U.S. Cl. 526—126 **13 Claims**

1. A method for polymerizing α-substituted acrylates, including the steps of
1) placing a catalyst in a vessel, said catalyst having the formula:

$$(C_5R'_{4-x}H_xR^\bullet)\ A\ (C_5R''_{4-y}H_yR''')\ M\ Q_p$$

where x and y represent the number of unsubstituted locations on the cyclopentadienyl ring; R', R'', R''', and R• represent substituted and unsubstituted alkyl groups having 1–30 carbon atoms, R• having a chiral substituent; A comprises a Group 13, 14, 15, 16 element of the Periodic Table; M is a Group 3, 4, 5 metal of the Periodic Table or lanthanide metal; and Q is a hydrocarbyl radical, aryl, halogen radical, hydrogen or amide radical with $3 \geqq p \geqq o$ and m=o or +1;
2) placing an α-substituted acrylate in said vessel;
3) allowing the polymerization reaction to proceed; and
4) quenching the reaction at desired conversion stage.

5,312,882

HETEROGENEOUS POLYMERIZATION IN CARBON DIOXIDE

Joseph M. DeSimone; Elise E. Maury, both of Chapel Hill; James R. Combes, Carboro, and Yusuf Z. Menceloglu, Chapel Hill, all of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Jul. 30, 1993, Ser. No. 99,905
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—201 **10 Claims**

1. A method of carrying out the heterogenous polymerization of a water-insoluble polymer, the method comprising:

providing a heterogeneous reaction mixture comprising carbon dioxide, a monomer, and a surfactant that stabilizes said monomer in said carbon dioxide, wherein said surfactant comprises a carbon dioxide soluble segment;
polymerizing said monomer in said reaction mixture to form said water-insoluble polymer.

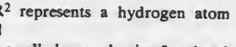
5,312,883

WATER-SOLUBLE POLYMER SENSITIVE TO SALT

Masanori Komatsu, and Ikuko Toki, both of Tokyo, Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,572
Claims priority, application Japan, Nov. 7, 1991, 3-291704
Int. Cl.[5] C08F *20/10*
U.S. Cl. 526—318.44 **9 Claims**

1. A water-soluble polymer which is soluble in tap water, but insoluble in an aqueous solution containing 0.5% or more of a neutral inorganic salt, which is a copolymer of:
(A) 30 to 75% by weight of acrylic acid,
(B) 5 to 30% by weight of a vinyl monomer represented by the following general formula [1]:



[1]

wherein R represents a hydrogen atom or a methyl group; and R^1 represents an alkyl group having 8 to 12 carbon atoms, and
(C) 20 to 40% by weight of a vinyl monomer represented by the following general formula [2]:

[2]

wherein R^2 represents a hydrogen atom or a methyl group; and
R^3 represents an alkyl group having 2 to 4 carbon atoms, said copolymer having a weight average molecular weight of 50,000 to 800,000 and having not more than 50 molar % of the repeating units derived from the acrylic acid in the form of a salt.

5,312,884

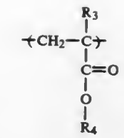
COPOLYMER USEFUL AS A POUR POINT DEPRESSANT FOR A LUBRICATING OIL

Robert H. Gore, Southampton, and James H. O'Mara, Ambler, both of Pa., assignors to Rohm and Haas Company, Phila, Pa.

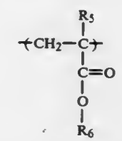
Filed Apr. 30, 1993, Ser. No. 55,131
Int. Cl.[5] C08F *220/10, 220/68*
U.S. Cl. 526—328 **26 Claims**

1. A random copolymer, comprising: from about 15 mole percent to about 67 mole percent first repeating units, each of said first repeating units having the structural formula:

wherein
each occurrence of R_1 is independently H or methyl and each occurrence of R_2 is independently selected from the group consisting of (C_8–C_{15}) alkyl;
from about 3 mole percent to about 40 mole percent second repeating units, each of said second repeating units having the structural formula:



wherein
each occurrence of R_3 is independently H or methyl and each occurrence of R_4 is independently selected from the group consisting of (C_{16}–C_{24}) alkyl; and
from greater than 30 mole percent to about 65 mole percent third repeating units, each of said third repeating units having the structural formula:



wherein
each occurrence of R_5 is independently H or methyl and each occurrence of R_6 is independently selected from the group consisting of (C_1–C_4) alkyl; and
said copolymer having a number average molecular weight of about 20,000 to about 80,000 and a weight average molecular weight of about 50,000 to about 200,000.

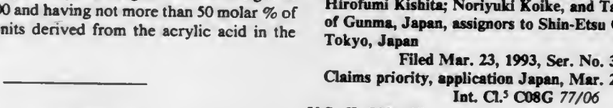
5,312,885

CURABLE ORGANOSILOXANE-BASED COMPOSITION

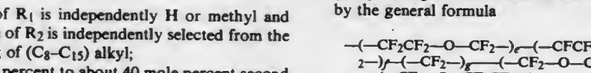
Toshio Takago; Hiroshi Inomata; Shinichi Sato; Hitoshi Kinami; Hirofumi Kishita; Noriyuki Koike, and Takashi Matsuda, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 38,600
Claims priority, application Japan, Mar. 24, 1992, 4-097090
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—15 **4 Claims**

1. A curable organosiloxane-based composition which comprises, as a uniform blend:
(a) an organosiloxane polymer represented by the general formula



in which the subscript a is a positive integer in the range from 2 to 300, the subscript b is zero or a positive integer not exceeding 300, the subscript c is zero or a positive integer not exceeding 5000, the subscript d is a positive integer in the range from 2 to 8, Me is a methyl group, R is an unsubstituted or substituted monovalent hydrocarbon group free from aliphatic unsaturation, X is a triorganosilyl group having three monovalent hydrocarbon groups bonded to a silicon atom, of which at least one is an aliphatically unsaturated hydrocarbon group, and Rf is a perfluoroalkylene group or a perfluoroalkylene polyether group having not more than 30 carbon atoms represented by the general formula



the subscripts e and i each being zero or 1, the subscripts

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f and h each being zero or a positive integer not exceeding 5 and the subscript g being zero or a positive integer not exceeding 8 wherein if e, f, h and i are each equal to zero, g cannot be equal to zero so that Rf is a perfluoroalkylene group;

(b) an organohydrogenpolysiloxane represented by the general formula

$$(H—SiMe_2—O—)_3Si—CH_2CH_2—Rf—CH_2CH_2—Si(—O—SiMe_2—H)_3,$$

in which Me and Rf each have the same meaning as defined above, in an amount sufficient to provide from 1.0 to 4.0 moles of the silicon-bonded hydrogen atoms per mole of the aliphatically unsaturated hydrocarbon groups in the organosiloxane polymer as the component (a); and

(c) a complex compound of rhodium in a catalytic amount selected from the group consisting of tris(triphenylphosphine) rhodium chloride of the formula $(Ph_3P)_3RhCl$, in which Ph is a phenyl group, rhodium acetate dimer of the formula $[(MeCOO)_2Rh]_2$, in which Me is a methyl group, and rhodium acetylacetonate of the formula $Rh(acac)_2$, in which acac is an acetylacetonato group forming a ring structure with the rhodium atom.

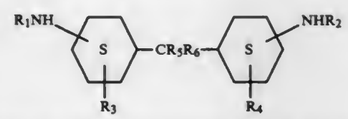
5,312,886

BIS(N-ALKYLAMINOCYCLOHEXYL)METHANES AS CURING AGENTS FOR POLYURETHANES AND POLYUREAS

David W. House, Arlington Heights; Ray V. Scott, Jr., Schaumburg, and Mark J. Gattuso, Palatine, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Sep. 20, 1993, Ser. No. 122,946
Int. Cl.[5] C08G *18/10*
U.S. Cl. 528—64 **26 Claims**

1. A process for preparing a polymer comprising reacting from about 0.9 to about 1.25 equivalents of a polyisocyanate reactant or mixture of polyisocyanate reactants with one equivalent of compounds having isocyanate-reactive hydrogens selected from the group consisting of 1) first polyamines, 2) blends of said first polyamines with polyols, 3) blends of said first polyamines with second polyamines, and 4) blends of said first polyamines with polyols and second polyamines, said first polyamines having the structure



where R_1 and R_2 are independently selected from the group consisting of alkyl groups with from 1 up to about 10 carbon atoms, and R_3, R_4, R_5 and R_6 are independently selected from the group consisting of hydrogen and alkyl groups with from 1 up to about 5 carbon atoms.

5,312,887

DICYANATE PREPOLYMERS, USE AND PREPARATION THEREOF

Konstantinos I. Papathomas, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1992, Ser. No. 987,605
Int. Cl.[5] C08G *73/00*
U.S. Cl. 528—67 **20 Claims**

1. An amorphous prepolymer from a composition containing (a) 1,4-bis (p-hydroxy cumyl) benzene); and (b) 1,3-bis (para hydroxy cumyl) benzene.

9. A process for preparing the amorphous prepolymer of claim 1 which comprises:

obtaining a composition containing (a) 1,4-bis (p-hydroxy cumyl) benzene and (b) 1,3 (p-hydroxy cumyl) benzene;

heating said compositions at a temperature and for a time sufficient to trimerize about 5 to about 45% of the cyanate groups in the composition.

5,312,888

FLEXIBLE POLYURETHANE REBOND FOAM HAVING IMPROVED TEAR RESISTANCE AND METHOD FOR THE PREPARATION THEREOF

John L. Nafziger, Lake Jackson; Steven B. Lowenkron, Houston; Charles E. Koehler, Baytown, and Bruce N. Stevens, Longview, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 989,256, Dec. 11, 1992. This application Nov. 8, 1993, Ser. No. 148,471
Int. Cl.[5] C08G *18/70*
U.S. Cl. 528—67 **8 Claims**

1. An isocyanate prepolymer formulation useful for preparing a binder comprising:

(A) methylene diphenyldiisocyanate or polymethylene polyphenyl polyisocyanate;

(B) toluene diisocyanate distillation bottoms; and

(C) an active hydrogen containing material.

5,312,889

HYDROXYFATTY-ACID-BASED MONOMERS FOR PRODUCING PLASTICS

Rainer Frische, Frankfurt am Main, and Juergen Volkheimer, Wiesbaden, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/01260, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991
PCT Filed Aug. 1, 1990, Ser. No. 687,933
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1989, 3926286
Int. Cl.[5] C08G *18/36*
U.S. Cl. 528—74.5 **12 Claims**

1. A monomer for preparation of thermoplastic polymers, said monomer obtained by reacting esters of hydroxyl-group-containing fatty acids or esters or salts of amino-group-containing fatty acids, either separately or as mixtures thereof, with bifunctional compounds which are capable of reacting with hydroxyl or amino groups, said reaction being such that two molecules of the fatty acid esters or salts, the fatty acid residues of which may be identical or different, are always linked with each other by means of said bifunctional compound via the hydroxyl groups or the amino groups.

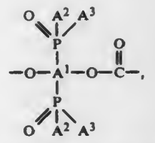
5,312,890

POLYCARBONATE COMPOSITIONS COMPRISING BISPHOSPHINE OXIDE MONOMER

Gary C. Davis, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1993, Ser. No. 51,145
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] C08G *64/08*
U.S. Cl. 528—167 **7 Claims**

1. A polycarbonate polymer comprising the structural units of the formula



wherein A^1 is a tetravalent or hexavalent substituted or unsubstituted aromatic radical and A^2 and A^3 each are independently selected from aromatic radicals.

5,312,891

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 954,993, Oct. 1, 1992, Pat. No. 5,256,757, which is a continuation-in-part of Ser. No. 883,509, May 15, 1992, Pat. No. 5,256,758, which is a continuation-in-part of Ser. No. 712,380, Jun. 10, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 106,750
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—176 **9 Claims**

1. A curable polyester having a number average molecular weight of about 1500 to about 3500 and a weight average molecular weight of about 10,000 to about 70,000, comprising:

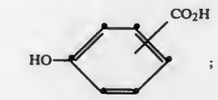
(a) about 20 to 36 mole percent of diol residues, based on the total moles of (a), (b), (c), (d), and (e);

(b) about 10 to about 21 mole percent of triol residues, based on the total moles of (a), (b), (c), (d), and (e);

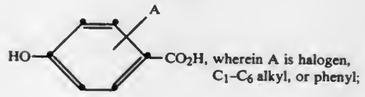
(c) about 5 to about 18 mole percent, based on the total moles of (a), (b), (c), (d), and (e), of residues of an aliphatic diacid,

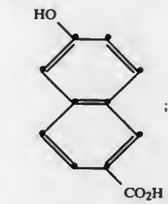
(d) about 25 to about 35 mole percent of aromatic dicarboxylic acid residues based on the total moles of (a), (b), (c), (d), and (e);

(e) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d), and (e), of hydroxy acid residues selected from residues of

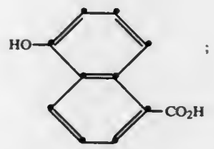


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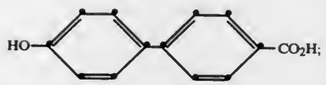




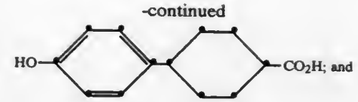
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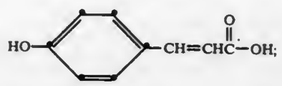


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wherein substantially all of said hydroxy acid residues are at the ends of said curable polyester.

5,312,892

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 954,992, Oct. 1, 1992, Pat. No. 5,256,756, which is a continuation-in-part of Ser. No. 883,079, May 15, 1992, Pat. No. 5,245,002, which is a continuation-in-part of Ser. No. 712,380, Jun. 10, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 107,088
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—176 **9 Claims**

1. A curable polyester having a number average molecular weight of about 1500 to about 3000 and a weight average molecular weight of about 5000 to about 40,000, comprising

(a) about 20 to about 36 mole percent of diol residues, based on the total moles of (a), (b), (c), (d) and (e);

(b) about 10 to about 21 mole percent of triol residues, based on the total moles of (a), (b), (c), (d) and (e);

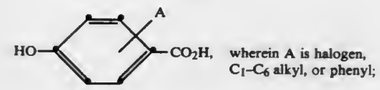
(c) about 0 to about 16 mole percent, based on the total moles of (a), (b), (c), (d) and (e), of residues of a linear aliphatic diacid;

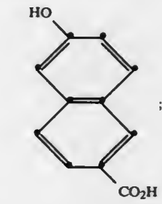
(d) about 24 to about 40 mole percent of cylohexanedicarboxylic acid residues based on the total moles of (a), (b), (c), (d) and (e);

(e) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d) and (e), of hydroxy acid residues selected from residues of



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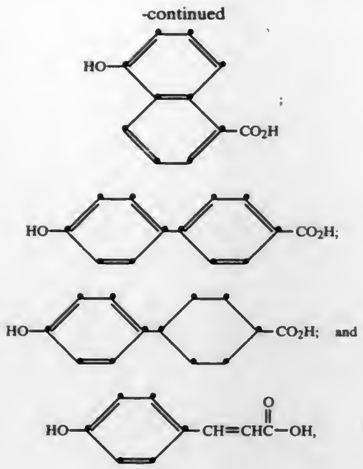




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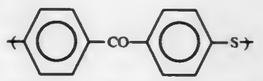
wherein substantially all of said hydroxy acid residues are located at the ends of the polymer chains to which they are attached.

5,312,893
ORIENTED POLYESTER FILM
Hisashi Hamano, Sagamihara; Masahiro Hosoi, Tokyo; Masanori Nishiyama, and Yasuhiro Saeki, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Mar. 17, 1993, Ser. No. 32,102
Claims priority, application Japan, Mar. 19, 1992, 4-063444; Mar. 19, 1992, 4-063445; Mar. 27, 1992, 4-071093
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—190 **13 Claims**

1. An oriented polyester film:
(A) which comprises modified polyethylene-2,6-naphthalenedicarboxylate containing a 4,4'-diphenyldicarboxylic acid component as a polymerized unit in its polymer chain, in an amount of 1 to 5 mol % based on a total acid component content of the modified polyethylene-2,6-naphthalenedicarboxylate, and having a heat of crystallization of 16 to 25.5 Joule/g, and
(B) which is biaxially oriented.

5,312,894
GRANULAR HIGH-MELT-STABLE POLY(ARYLENE THIOETHER-KETONE) AND PRODUCTION PROCESS THEREOF
Yukichika Kawakami, and Zenya Shiiki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan
Filed Apr. 27, 1993, Ser. No. 52,967
Claims priority, application Japan, Apr. 30, 1992, 138103
Int. Cl.[5] C08G *16/00*
U.S. Cl. 528—226 **3 Claims**

1. A granular, high-melt-stable poly(arylene thioether-ketone) comprising recurring units represented by the following formula [I]:



[I]

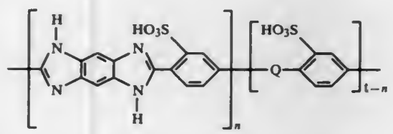
(a) the solution viscosity (η_{inh}) being at least 0.30 dl/g as determined by viscosity measurement at 30° C. and a polymer concentration of 0.4 g/dl in a 1:1 (by weight) mixed solvent of m-chlorophenol and 1,2,4-trichlorobenzene,
(b) the retention (400° C./20 min) of melt crystallization enthalpy (ΔHmc) being at least 60%, wherein the ΔHmc retention (400° C./20 min) is calculated in accordance with the following equation:

$$\Delta Hmc\ (400°\ C./20\ min) = [\Delta Hmc\ (400°\ C./21\ min)/\Delta Hmc\ (400°\ C./1\ min)] \times 100,$$

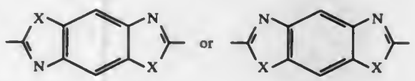
wherein (1) melt crystallization enthalpy, ΔHmc (400° C./1 min and (2) melt crystallization enthalpy, ΔHmc (400° C./21 min) being determined by means of a differential scanning calorimeter, when the polymer is cooled at a rate of 10° C./min after being held at 50° C. for 5 minutes in an inert gas atmosphere, heated to 400° C. at a rate of 100° C./min and then held, respectively, for 1 minute at 400° C. and for 21 minutes at 400° C.,
(c) the melting point (Tm) being 340°–360° C.,
(d) the glass transition temperature being at least 125° C., and
(e) the average particle diameter being at least 0.1–2 mm.

5,312,895
BENZOBISAZOLE COPOLYMER SYSTEM SOLUBLE IN APROTIC SOLVENTS
Thuy D. Dang, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 12, 1993, Ser. No. 30,527
Int. Cl.[5] C08G *73/18*
U.S. Cl. 528—337 **6 Claims**

1. A para-ordered aromatic heterocyclic polymer consisting essentially of repeating units of the formula:

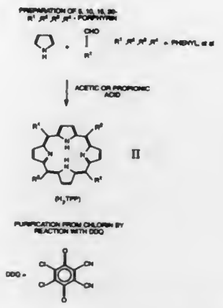


wherein n has a value of 0.05 to 1.00 and Q is a benzobisazole of the formula

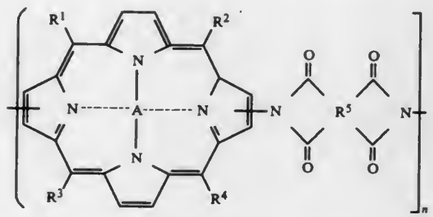


wherein X is —S— or —O—.

5,312,896
METAL ION PORPHYRIN-CONTAINING POLY(IMIDE)
Tilak R. Bhardwaj, Chandigarh, India; Susanna C. Ventura, Mountain View, and Subhash C. Narang, Redwood City, both of Calif., assignors to SRI International, Menlo Park, Calif.
Filed Oct. 9, 1992, Ser. No. 958,916
Int. Cl.[5] C08G *69/26, 73/10*
U.S. Cl. 528—353 **19 Claims**



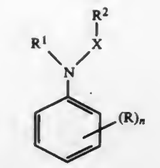
1. A polyporphyrin-containing polymer of the structure:



wherein R^1, R^2, R^3 and R^4 are each independently selected from H, alkyl having 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 3 alkyl groups each having 1 to 6 carbon atoms or with 1 to 3 halogen atoms;
R^5 is independently selected from aryl, substituted aryl, alkylenearyl, alkylene substituted aryl, wherein at least one aryl group is present;
A in each porphyrin group of the polymer is independently selected from two hydrogen groups or a metal atom selected from tin, silicon, germanium, a transition metal, an actinide metal or a lanthanide metal; and
n is an integer between 3 and 10,000.

5,312,897
N-PHENYLHYDROXYLAMINE POLYMER, METHOD OF PREPARATION
Floyd Klavetter, Santa Barbara, Calif., assignor to Neste Oy, Kulloo, Finland
Filed Aug. 11, 1992, Ser. No. 927,917
Int. Cl.[5] C08G *73/00*
U.S. Cl. 528—422 **15 Claims**

1. A method for preparing a conjugated, electroactive polymer, comprising polymerizing, under anhydrous conditions, a monomeric starting material contained within a reaction mixture and having the structural formula (III)



(III)

in which:
n is an integer in the range of 0 to 4 inclusive;
the R substituents are independently selected from the group consisting of alkyl, alkenyl, alkoxy, cycloalkyl, cycloalkenyl, alkanoyl, aroyl, alkylthio, aryloxy, dialkylamino, alkylamino, amino, aryl, alkylsulfinyl, alkylsulfonyl, alkoxyaryl, alkoxyalkyl, arylthio, alkoxycarbonyl, arylsulfonyl, carboxylate, sulfonate, halogen, cyano, nitro, hydroxyl, hydroxylamine, alkyl-substituted hydroxylamine, and alkyl substituted with one or more sulfonate, carboxylate, halo, nitro, cyano, or epoxy moieties, or wherein any two R groups together form an alkylene and alkenylene chain completing a 3, 4, 5, 6 or 7-membered aromatic or alicyclic ring, which ring is either unsubstituted or substituted with one or more divalent nitrogen, sulfur, phosphorus, or oxygen atoms;
R^1 is selected from the group consisting of hydrogen, alkyl, alkenyl, alkoxy, cycloalkyl, cycloalkenyl, alkanoyl, aroyl, aryl, alkylsulfinyl, alkylsilyl, alkylsiloxyl, arylsilyl, arylsiloxyl, alkylsulfonyl, alkoxycarbonyl, hydroxyl, arylsulfonyl, and alkyl substituted with one or more sulfonate, carboxylate, halo, nitro, cyano, or epoxy moieties;
R^2 is selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkenyl, alkanoyl, aroyl, aryl, alkylsulfinyl, alkylsilyl, alkylsiloxyl, arylsilyl, arylsiloxyl, alkylsulfonyl, alkoxycarbonyl, arylsulfonyl, cyano, alkyl substituted with one or more sulfonate, carboxylate, halo, nitro, cyano, or epoxy moieties, or R^2 is a cationic species selected from the group of ammonium, tetraalkylammonium, trialkylammonium, dialkylammonium, monoalkylammonium, alkali metals, alkaline earth metals and transition metals; and
X is either O or S,
such that, as polymerization proceeds, the moiety R^2 is removed as the eliminated species R^2—X—H, and wherein said polymerizing is in the presence of a Lewis acid catalyst.

5,312,898
PROCESS FOR DEPOLYMERIZATION OF POLYACRYLONITRILE USING HOT WATER
Michael Siskin, Livingston; Ramzi Y. Saleh, Flemington, and George A. Knudsen, Scotch Plains, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Dec. 20, 1991, Ser. No. 812,250
Int. Cl.[5] C08F *6/00*
U.S. Cl. 528—481 **5 Claims**

1. A process for degrading polyacrylonitrile comprising: contacting the starting materials of polyacrylonitrile and neutral, deoxygenated water at a temperature of from about 200° C. up to the critical temperature of water at autogenous pressure for a time sufficient to depolymerize the polyacrylonitrile to produce water soluble by-products without the release of hydrogen cyanide.

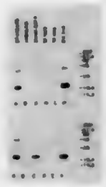
VOL 1162 ISS 3 MY 17 1994 UMI

5,312,899
DERMORPHIN ANALOGS
Peter W. Schiller, Montreal, Canada, assignor to BioChem Pharma, Inc., Laval, Canada
Filed Jun. 30, 1989, Ser. No. 374,521
Claims priority, application Canada, Jun. 30, 1988, 570874
Int. Cl.[5] A61K *37/02;* **C07K** *5/08, 5/10, 7/06*
U.S. Cl. 530—331 **5 Claims**

1. A peptide represented by the formula:

H-Tyr-D-Nva-Phe-Orn-NH_2.

5,312,900
23K PROTEIN WITH BINDING SPECIFICITY FOR QUEUINE
R. Douglas Armstrong, Encinitas, Calif., assignor to La Jolla Cancer Research Foundation, La Jolla, Calif.
Filed Apr. 8, 1991, Ser. No. 681,889
Int. Cl.[5] C07K *15/00, 3/18*
U.S. Cl. 530—350 **5 Claims**



3. A method for purifying a non-antibody polypeptide having specific binding reactivity with Queuine, comprising:
(a) contacting a sample containing said polypeptide with insolubilized Queuine or antibody having specific reactivity with said polypeptide;
(b) separating bound polypeptide from unbound components of the sample;
(c) detaching bound polypeptide from the insolubilized Queuine or antibody; and
(d) collecting purified polypeptide.

5,312,901
CLONED STREPTOCOCCAL GENES ENCODING PROTEIN G AND THEIR USE TO CONSTRUCT RECOMBINANT MICROORGANISMS TO PRODUCE PROTEIN G
Stephen R. Fahnestock, Olney, Md., assignor to Pharmacia LKB Biotechnology AB, Sweden
Division of Ser. No. 540,169, Jun. 19, 1990, which is a division of Ser. No. 209,236, Jun. 20, 1988, Pat. No. 4,956,296, which is a continuation-in-part of Ser. No. 63,959, Jun. 19, 1987, Pat. No. 5,082,773, which is a continuation-in-part of Ser. No. 854,887, Apr. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 829,354, Feb. 14, 1986, abandoned. This application Apr. 21, 1992, Ser. No. 871,539
Int. Cl.[5] C07K *13/00;* **H61K** *37/02;* **C12P** *21/06*
U.S. Cl. 530—350 **9 Claims**

1. A protein G variant having the immunoglobulin-binding properties of protein G, the polypeptide consisting essentially of the amino acid sequence:

```
          5                  10                  15
 1 M D P A L P K T D T Y K L I L
31 A A T A E K V F K Q Y A N D N
61 T V T E K P E V I D A S E L T
91 K G E T T T K A V D A E T A E
121 W T Y D D A T K T F T V T E M
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-continued

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          20                  25                  30
N G K T L K G E T T T E A V D
G V D G E W T Y D D A T K T F
P A V T T Y K L V I N G K T L
K A F K Q Y A N D N G V D G V
V T E V P V A S K R K E D.
```

5,312,902
DIMER OF THE PRECURSOR OF HIV-2 ENVELOPE GLYCOPROTEIN
Luc Montagnier, Le Plessis Robinson; Ara Hovanessian, Montreuil; Anne Laurent, Paris; Bernard Krust, Paris, and Marie-Anne Rey, Paris, all of France, assignors to Institut Pasteur and C.N.R.S., Paris, France
Continuation of Ser. No. 204,346, Jun. 9, 1988. This application Dec. 6, 1991, Ser. No. 802,712
Int. Cl.[5] C07K *15/04, 15/14*
U.S. Cl. 530—395 **6 Claims**

1. A glycoprotein of human immunodeficiency virus type 2 (HIV-2) wherein
(A) said glycoprotein is a precursor of envelope protein of HIV-2;
(B) said glycoprotein has an apparent molecular weight of about 300 kD (gp300); and
(C) said glycoprotein is isolated from other HIV-2 proteins and glycoproteins.

5,312,903
LYSINE-GLYCOSYLATED RECOMBINANT INTERLEUKIN-2
Timo J. Linna, San Carlos, Calif., and Subramaniam Sabesan, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jun. 1, 1990, Ser. No. 531,970
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—351 **6 Claims**

1. A composition of matter comprising a lysine glycosylated rIL-21 wherein a carbohydrate-tether conjugate is covalently linked to an amino group of at least one lysine of the rIL-2 and wherein said lysine glycosylated rIL-2 demonstrates reduced T-cell stimulating activity as compared with unglycosylated rIL-2.

5,312,904
CATIONIC COMPLEXES OF TECHNETIUM-99M
James D. Kelly, Amersham; Kwok W. Chiu, Gloucester, both of England; David V. Griffiths, Keele, and Jonathan R. Dilworth, Colchester, both of United Kingdom, assignors to Amersham International plc, Buckhamshire, United Kingdom
Continuation of Ser. No. 472,293, Jan. 30, 1990, abandoned. This application May 4, 1992, Ser. No. 879,098
Claims priority, application United Kingdom, Feb. 3, 1989, 8902362
Int. Cl.[5] A61K *49/02;* **C07F** *13/00*
U.S. Cl. 534—14 **7 Claims**

1. A complex with technetium having the formula $[^{99m}Tc^{III}K_2]^+$ where K is a tridentate mono-anionic ligand having the structure

R_2X-A-YR-Q-Z

where
X is P, As or N,
Y is P, As or N, wherein at least one of X and Y is P or As,
Z is phenolic OH, thiophenol or thiol,
each of A and Q is a C1–C4 hydrocarbon bridge, two adjacent C atoms of which may form part of a benzene ring and which may carry at least one C1–C4 alkyl, alkoxy alkyl, alkoxy or tetrahydropyran substituent,
R is the same or different at different places in the molecule, and in each case is selected from the group consisting of C1 to C4 alkyl, alkoxy, alkoxyalkyl and alkoxyalkoxy alkyl.

5,312,905
2-DIAZO-1,2-NAPHTHOQUINONE COMPOUNDS
Kan Wakamatsu; Yuichi Wakata; Masato Satomura, and Tomizo Namiki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 26, 1991, Ser. No. 736,343
Claims priority, application Japan, Jul. 27, 1990, 2-200989; Dec. 1, 1990, 2-400059
Int. Cl.[5] C07C *245/12;* **G03C** *1/52, 1/54;* **G03F** *7/016*
U.S. Cl. 534—557 **2 Claims**

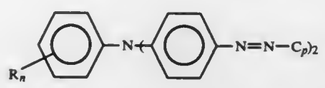
1. A 2-diazo-1,2-naphthoquinone compound substituted at the 4- or the 5-position by a substituent group represented by formula III:

$$-SO_2-NR^4R^5 \quad \text{(III)}$$

wherein each of R^4 and R^5 independently represents a substituent group containing an alkyl group which has 2 to 20 carbon atoms and is substituted by at least 3 fluorine atoms.

5,312,906
OPTICAL INFORMATION RECORDING MEDIA AND BISAZO COMPOUNDS FOR USE THEREIN
Masakatsu Shimoda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 24, 1992, Ser. No. 919,593
Claims priority, application Japan, Jul. 25, 1991, 3-186306; Aug. 2, 1991, 3-194166
Int. Cl.[5] C09B *35/021*
U.S. Cl. 534—653 **1 Claim**

1. A bisazo compound of formula (I):



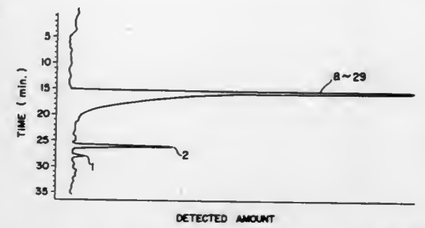
(I)

wherein R represents an alkyl group having 1 to 20 carbon atoms and having a phenyl group as a substituent, n is an integer of 1, 2 or 3, and C_p represents a coupler residue.

5,312,907
GLYCOSIDURONIC ACIDS
Manfred Schattschneider, Niederzier-Ellen; Burkhard Weuste, Gummersbach, and Hans J. Weissen, Kreuzau, all of Fed. Rep. of Germany, assignors to Akzo N.V., Netherlands
Filed Oct. 5, 1992, Ser. No. 957,312
Claims priority, application European Pat. Off., Oct. 8, 1991, 91202608.5
Int. Cl.[5] C07H *15/04, 15/10;* **C11D** *1/66, 1/04*
U.S. Cl. 536—18.6 **20 Claims**

1. A process for the preparation of glycosiduronic acids having
(a) at least one glycoside unit carrying a carboxyl function directly attached to the glycoside ring, and
(b) at lest one glycoside unit carrying an acetalically bound hydrocarbon group with 8–22 carbon atoms, the unit defined under a) and b) optionally being the same unit,
characterized in that an oxidized mono-, oligo-, or polysaccharide with up to 10 monomer units which has at least one glycoside unit carrying a carboxyl function is reacted with one or more fatty alcohols having 8–22 carbon atoms in the presence of a catalyst, and after acetalization the non-reacted alcohol is removed and the glycosiduronic acid product is recovered.

5,312,908
CHITIN-CHITOSAN OLIGOMER HAVING 2,5-AMHYDROMANNITOL GROUP OR 2,5-ANHYDROMANNOSE GROUP AT TERMINAL END AND METHOD FOR PREPARATION THEREOF
Etsuko Nakao, Sapporo, Japan, assignor to Tamatsukuri Corporation, Hokkaido, Japan
Continuation of Ser. No. 572,501, Aug. 23, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 912,561
Claims priority, application Japan, Aug. 29, 1989, 1-222248
Int. Cl.[5] C08B *37/08, 37/10;* **C07H** *5/04;* **C07G** *3/00*
U.S. Cl. 536—20 **7 Claims**



1. A method for preparing a chitin oligomer or a chitosan oligomer having a 2,5-anhydromannitol group at a terminal end, which comprises reacting chitin or chitosan with nitrous acid at a temperature of 10° C. or lower in an aqueous solution with a pH of 2 to 4 to effect a deamination reaction and pinacol rearrangement and thereby produce a chitin or chitosan oligomer having a 2,5-anhydromannose group at a terminal end, then reducing said chitin oligomer or chitosan oligomer having a 2,5-anhydromannose group at a terminal end with a reducing agent, precipitating and recovering said chitin or chitosan oligomer.

5,312,909
RECOMBINANT DNA ENCODING NEUTRAL TREHALASE
Marianne Driessen, Zoeterwoude Rijndijk; Klaas A. Osinga, Voorschoten, and Margareta A. Herweijer, Amsterdam, all of Netherlands, assignors to Gist Brocades, N.V., Delft, Netherlands
Continuation-in-part of Ser. No. 577,888, Sep. 5, 1990, abandoned. This application Mar. 22, 1991, Ser. No. 673,833
Claims priority, application European Pat. Off., Mar. 28, 1990, 90200757; Dec. 20, 1990, 90203462
Int. Cl.[5] C12N *15/56, 15/31*
U.S. Cl. 536—23.2 **1 Claim**

1. A recombinant DNA comprising a gene or part of a gene coding for neutral trehalase of yeast selected from the group consisting of
i) the NDA insert 16.1.1 in plasmid pTRE16.1.1 (CBS 115.91),
ii) A DNA capable of hybridizing under stringent conditions to a DNA of i) and encoding a protein having the enzymatic activity of the protein encoded by i) and
iii) A DNA encoding the same amino acid sequence as that of i) or ii).

VOL 1162 ISS 3 MY 17 1994 UMI

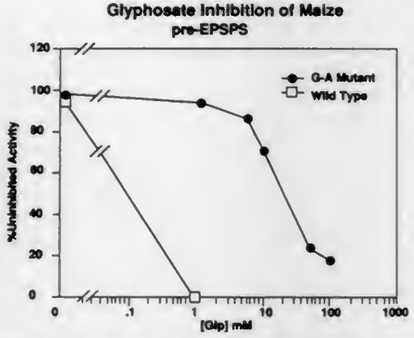
5,312,910
GLYPHOSATE-TOLERANT 5-ENOLPYRUVYL-3-PHOSPHOSHIKIMATE SYNTHASE

Ganesh M. Kishore, Chesterfield, and Dilip M. Shah, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 550,267, Jul. 9, 1990, Pat. No. 5,145,783, which is a continuation-in-part of Ser. No. 179,245, Apr. 22, 1988, Pat. No. 4,971,908, which is a continuation-in-part of Ser. No. 54,337, May 26, 1987, abandoned. This application Sep. 4, 1992, Ser. No. 941,578

Int. Cl.[5] **C07H** *21/04;* **C12P** *21/04;* **C12N** *15/00;* **A01H** *1/00*

U.S. Cl. 536—23.2 **6 Claims**



2. A DNA molecule encoding a glyphosate-tolerant 5-enolpyruvyl-3-phosphoshikimate (EPSP) synthase, said EPSP synthase having the amino acid sequence:

-L-G-N-A-A-T-A-

between positions 80 and 120 in the mature EPSP synthase sequence.

5. A method of using a planted crop seed or plant which is glyphosate tolerant to selectively control weeds in a field containing said planted crop seed or plant, said method comprising the steps of:

a) planting said crop seed or plant which is glyphosate tolerant as a result of a chimeric gene being inserted into said crop seed or plant, said chimeric gene having

i) a promoter sequence which functions in plant cells,

ii) a coding sequence which causes the production of RNA, encoding a chloroplast transit peptide/glyphosate-tolerant 5-enolpyruvyl-3-phosphoshikimate (EPSP) synthase fusion polypeptide, which chloroplast transit peptide permits the fusion polypeptide to be imported into a chloroplast of a plant cell and said glyphosate-tolerant EPSP synthase has the sequence:

-L-G-N-A-A-T-A-

between positions 80 and 120 of the mature EPSP synthase sequence, and

iii) a 3' non-translated region which encodes a polyadenylation signal which functions in plant cells to cause the addition of multiple adenine nucleotides to the 3' end of the RNA,

where the promoter is adapted to cause sufficient expression of the fusion polypeptide to enhance the glyphosate resistance of a plant cell transformed with said gene; and

b) applying to said crop and weeds in said field a sufficient amount of glyphosate to control said weeds without significantly affecting said crop.

5,312,911
CYSTEINE-MODIFIED ACIDIC FIBROBLAST GROWTH FACTOR

Keaneth A. Thomas, Chatham Burough, and David L. Linemeyer, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 938,310, Aug. 28, 1992, Pat. No. 5,223,483, which is a continuation of Ser. No. 759,128, Sep. 10, 1991, which is a continuation of Ser. No. 244,431, Sep. 16, 1988, which is a continuation-in-part of Ser. No. 112,600, Oct. 27, 1987, abandoned. This application Mar. 12, 1993, Ser. No. 30,510

Int. Cl.[5] **C12N** *15/18*

U.S. Cl. 536—23.51 **4 Claims**

1. A nucleotide sequence coding for recombinant human mutant microheterogeneous forms of acidic fibroblast growth factor wherein all three cysteine residues at positions 16,83, and 117, numbered in accordance with the native human 140 amino acid microheterogeneous form, are replaced with an amino acid incapable of forming intramolecular or intermolecular disulfide bonds, wherein said mutant acidic fibroblast growth factor has increased biological activity and less dependence on heparin when compared to native acidic fibroblast growth factor and optionally having an additional methionine attached to the N-terminus of said microheterogeneous forms.

5,312,912
PROCEDURES AND REGULATORY DNA SEQUENCES FOR GENETICALLY ENGINEERING DISEASE RESISTANCE AND OTHER INDUCIBLE TRAITS IN PLANTS

Lee A. Hadwiger, Dept. of Plant Pathology, Washington State University, Pullman, Wash. 99164; Chin C. Chiang, P.O. Box 2884 CS, Pullman, Wash. 99165, and Daniel A. Horovitz, Rte. 1, Box 159, Palouse, Wash. 99161

Filed Jun. 13, 1989, Ser. No. 393,301

Int. Cl.[5] **C12N** *15/11, 15/29*

U.S. Cl. 536—24.1 **1 Claim**

1. The 5' DNA promotor sequence of the DRRG-49 gene of FIG. 1 consists of nucleotides −1084 to +30 which contains the AP-1 binding site sequence, an SV-40 core enhancer sequence and topoisomerase II cleavage sequences.

5,312,913
ELECTRICALLY CONDUCTIVE COMPLEX

Makoto Mizutani; Kazushige Kawabata, and Keiji Tanaka, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

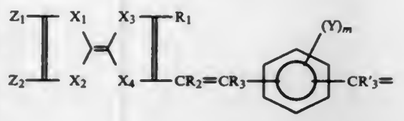
Division of Ser. No. 690,973, Jun. 17, 1991, Pat. No. 5,175,280. This application Sep. 29, 1992, Ser. No. 953,746

Claims priority, application Japan, Nov. 21, 1989, 1-300874; Jun. 15, 1990, 2-157310; Oct. 5, 1990, 2-266612

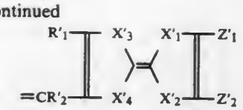
Int. Cl.[5] **C07D** *339/06, 343/00, 345/00, 421/10*

U.S. Cl. 540—1 **12 Claims**

1. An electrically conductive complex which comprises (a) a thia- and/or selenafulvalenyl group-containing compound as an electron donor and (b) an electron acceptor, the complex having an electron donor/electron acceptor molar ratio of 1/0.1 to 1/10, said thia- and/or selenafulvalenyl group-containing compound having the formula (I)



-continued



wherein:

each of X_1, X_2, X_3, X_4, X'_1, X'_2, X'_3 and X'_4 is independently S or Se,

Y is selected from the group consisting of a lower alkyl group having 1 to 5 carbon atoms, a lower alkoxy group having 1 to 5 carbon atoms, a thio lower alkyl group having 1 to 5 carbon atoms, an amino group, a hydroxyl group, a halogen atom, a cyano group and a nitro group, said Y having a size which is not so large as to prevent molecular overlapping,

m is an integer of 0 to 4,

each of Z_1, Z_2, Z'_1, and Z'_2 is independently a hydrogen atom, C_nH_{2n+1} in which n is an integer of 1 to 5, or XC_nH_{2n+1} in which X is S or Se and n is an integer of 1 to 5, or a combination of Z_1 and Z_2 or a combination of Z'_1 with Z'_2 are C_nH_{2n} in which n is an integer of 1 to 5, or $X(C_nH_{2n})_{n'}X$ in which X is S or Se and n' is an integer of 1 to 3, and

each of R_1, R_2, R_3, R'_1, R'_2 and R'_3 is independently a hydrogen atom or C_nH_{2n+1} in which n is an integer of 1 to 5,

wherein said electron acceptor (b) is an organic electron acceptor selected from the group consisting of:

7,7,8,8-tetracyanoquinodimethane, 2-methyl-7,7,8,8-tetracyanoquinodimethane, 2,5-dimethyl-7,7,8,8-tetracyanoquinodimethane, 2,5-diethyl-7,7,8,8-tetracyanoquinodimethane, 2-methoxy-7,7,8,8-tetracyanoquinodimethane, 2,5-dimethoxy-7,7,8,8-tetracyanoquinodimethane, 2-methoxy-5-ethoxy-7,7,8,8-tetracyanoquinodimethane, 2-methoxydihydrodioxabenzo-7,7,8,8-tetracyanoquinodimethane, 2-chloro-7,7,8,8-tetracyanoquinodimethane, 2-bromo-7,7,8,8-tetracyanoquinodimethane, 2,5-dibromo-7,7,8,8-tetracyanoquinodimethane, 2,5-diiodo-7,7,8,8-tetracyanoquinodimethane, 2-chloro-5-methyl-7,7,8,8-tetracyanoquinodimethane, 2-bromo-5-methyl-7,7,8,8-tetracyanoquinodimethane, 2-iodo-5-methyl-7,7,8,8-tetracyanoquinodimethane, 11,11,12,12-tetracyano-2,6-naphthoquinodimethane, 1,1,2,3,4,4-hexacyanobutadiene, sodium-13,13,14,14-tetracyanodiphenoxydimethane, tetracyanoethylene, o-benzoquinone, p-benzoquinone, 2,6-naphthoquinone, diphenoquinone, tetracyanodiquinone, p-fluoranil and tetrachlorodiphenoquinone or,

an inorganic electron acceptor selected from the group consisting of halogen atoms, trihalide anions, SCN^-, $Cu(NCS)_2$, AuI_2, $AuBr_2$, $AuCl_2$, ClO_4, PF_6 and BF_4.

5,312,914
PROCESS FOR THE MANUFACTURE OF 4-ACETOXY-3-HYDROXYETHYL-AZETIDINONE

Gottfried Sedelmeier, Schallstadt, Fed. Rep. of Germany, and Jacques Bersier, Riehen, Switzerland, assignors to Ciba-Geigy Corp, Ardsley, N.Y.

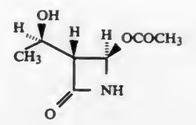
Continuation of Ser. No. 732,995, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 629,096, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 445,919, Dec. 4, 1989, abandoned, which is a continuation of Ser. No. 153,694, Feb. 8, 1988, abandoned. This application Aug. 27, 1992, Ser. No. 937,457

Claims priority, application Switzerland, Feb. 17, 1987, 577/87

Int. Cl.[5] **C07D** *205/08, 307/66;* **C07B** *53/00*

U.S. Cl. 540—357 **10 Claims**

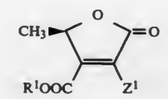
1. A process for the manufacture of the optically active diastereoisomerically pure compound of the formula



(I)

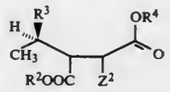
which is characterized in that

a) an enantiomerically pure (4R)-compound of the formula



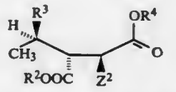
(IIb)

in which R^1 represents lower alkyl and Z^1 represents amino, arylmethylamino, acylamino or azido, or a salt thereof, is catalytically reduced with hydrogen and, if desired, an acylamino group Z^1 and/or the lower alkoxycarbonyl group $COOR^1$ is hydrolyzed, resulting in a compound of the formula



in which R^2 represents hydrogen or lower alkyl, R^3 and R^4 together represent a bond, and Z^2 represents amino or acylamino, or in a salt thereof,

b) epimerising an obtained 2S,3R,4R-compound or an obtained mixture consisting of a 2S,3S,4R-, a 2R,3S,4R- and a 2S,3R,4R-compound of the formula III by treatment in an anhydrous polar solvent with a tertiary amine, an amidine base, sodium or potassium carbonate or potassium fluoride and isolating the pure 2S,3S,4R-compound of the formula



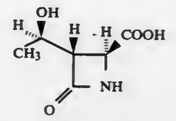
(IIIa)

wherein the substituents have the meanings given above,

c) opening the lactone ring by treatment with an aqueous base, and if Z^2 is an acylamino group, this acylamino group Z^2 is hydrolyzed, to give a 2S,3S,4R-compound of the formula IIIa, in which R^2 is hydrogen or lower alkyl, R^3 is hydroxy, R^4 is hydrogen, and Z^2 is amino, or a salt thereof,

d) protecting in an obtained compound or in a salt thereof the hydroxy group R^3 and a carboxyl group $—COOR^2$ and $—COOR^4$ with a protecting group,

e) closing the β-lactam ring by treatment with a non-nucleophilic alkalimetal amide, a lower alkyllithium or lower alkylmagnesium compound branched in the 1-position, and removing the protecting groups to give a compound of the formula



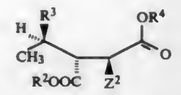
(IV)

VOL 1162 ISS 3 MY 17 1994 UMI

or a salt thereof,

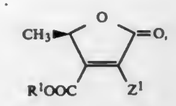
f) which compound of the formula IV or salt thereof is oxidatively decarboxylated in the presence of an acetate-yielding agent.

2. A process for the manufacture of a compound of the formula



(IIIa)

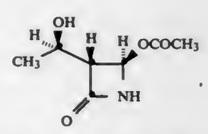
in which R^2 represents lower alkyl, R^3 and R^4 together represent a bond, and Z^2 represents amino or acylamino, or a salt of such compound, characterized in that a compound of the formula



(IIb)

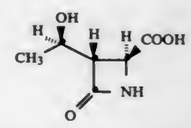
in which R^1 represents lower alkyl and Z^1 represents amino, arylmethylamino, acylamino or azido, or a salt thereof, is reduced with hydrogen in the presence of a noble metal catalyst, in an inert solvent, at temperatures of from 0° C. to 100° C. and a hydrogen pressure of from 1 to 100 bars and a resulting compound or diastereoisomeric mixture is epimerized by treatment in an anhydrous polar solvent with a tertiary amine, an amidine base or a basic sodium or potassium carbonate or potassium fluoride, at temperatures of from 0° C. to 50° C., and, if desired, a resulting salt is converted into the free compound or into a different salt or a resulting free compound is converted into a salt.

3. A process for the manufacture of a compound of the formula



(I)

characterized in that a compound of the formula



(IV)

or a salt thereof is oxidatively decarboxylated electrochemically in the presence of acetic acid and/or an alkali metal acetate at current densities of from 10 to 400 mA/cm^2 and temperatures of from 0° to 50° C.

5,312,915

PROCESS FOR PRODUCING EPSILON-CAPROLACTAM

Tatsuaki Yashima, and Takayuki Komatsu, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 10, 1993, Ser. No. 118,721

Claims priority, application Japan, Mar. 4, 1993, 5-043845

Int. Cl.^{5} E07D *201/04*

U.S. Cl. 540—536 **11 Claims**

1. A process for producing ϵ-caprolactam by contacting cyclohexanone oxime in gas phase with a solid catalyst, wherein a crystalline zeolite having a pore size smaller than molecular size of cyclohexanone oxime or a crystalline zeolite having closed pores is used as the solid catalyst.

5,312,916

PROCESS FOR PREPARING 3-AMINO-9,13B-DIHYDRO-1H-DIBENZ(C,-F)IMIDAZO(1,5-A)AZEPINE-HYDROCHLORIDE

Heinrich Schneider, Ingelheim am Rhein, Fed. Rep. of Germany, assignor to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jan. 23, 1992, Ser. No. 824,415

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102148

Int. Cl.^{5} C07D *487/04*

U.S. Cl. 540—579 **7 Claims**

1. A process for preparing 3-amino-9,13b-dihydro-1H-dibenz[c,f]imidazo[1,5-a]azepine-hydrochloride, which comprises:

a) hydrogenating 6-phthalimidomethyl-5H-dibenz[b,e]-azepine i) in dimethylformamide and 0.5 to 5 mol/mol of formic acid, or ii) in dimethylacetamide and 0.5 to 5 mol/-mol of acetic acid, in the presence of palladium/charcoal, at 1 to 10 bar of hydrogen pressure and at a temperature of 40° to 100° C., to produce 6-(phthalimidomethyl)-6,11-dihydro-5H-dibenz[b,e]azepine;

b) reacting the 6-(phthalimidomethyl)-6,11-dihydro-5H-dibenz[b,e]azepine with hydrazine in an alkali metal hydroxide to produce 6-aminomethyl-6,11-dihydro-5H-dibenz[b,e]azepine;

c) reacting the 6-aminomethyl-6,11-dihydro-5H-dibenz[-b,e]azepine with bromocyanogen produced in situ to produce a reaction mixture;

d) adding a base selected from the group consisting of N,N-dibenzylamine, N,N-dibutylamine, diethanolamine, diisopropylamine, N-ethylbenzylamine, sarcosin-Na salt and N-methylbenzylamine to the reaction mixture, to produce 3-amino-9,13b-dihydro-1H-dibenz[c,f]imidazo[1,5-a]azepine;

e) dissolving the 3-amino-9,13b-dihydro-1H-dibenz[e,f-]imidazo[1,5-a]azepine in a solvent selected from the group consisting of benzene, xylene, tolune and a halobenzene; and then adding a sodium hydroxide solution to effect precipitation;

f) dissolving the precipitate produced in e) in dimethylformamide comprising from 2 to 7 wt. -% hydrochloric acid gas to produce a solution; and

g) removing approximately one third of the dimethylformamide from the solution produced in f) by filtration and distillation, and then cooling the remainder of the solution to produce 3-amino-9,13b-dihydro-1H-dibenz[c,-f]imidazo[1,5-a]azepine-hydrochloride.

5,312,917

WATER-SOLUBLE TRIAZINE DERIVATIVES

Francesco Fuso, Therwil, and Gerhard Reinert, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

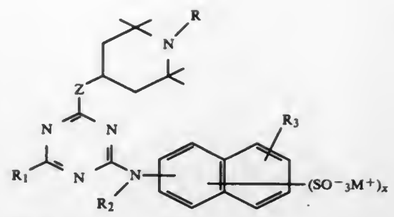
Filed Dec. 9, 1992, Ser. No. 987,875

Claims priority, application Switzerland, Sep. 12, 1991, 3609/91

Int. Cl.^{5} C07D *401/12*

U.S. Cl. 544—198 **8 Claims**

1. A water-soluble compound of formula

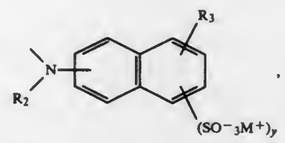


(1)

wherein

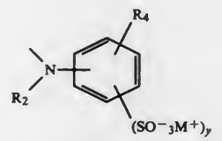
R is hydrogen, oxyl; hydroxy; C_1–C_5alkyl; C_3–C_5alkenyl; C_1–C_5alkoxy; acyl; or benzyl,

R_1 is halogen; C_1–C_5alkyl; amino; C_1–C_5alkoxy; C_3–C_5alkenyloxy; cycloalkoxy; unsubstituted phenoxy or phenoxy which is substituted in the phenyl moiety by halogen, C_1–C_5alkyl, C_1–C_5alkoxy, carboxy, carboxy-C_1–C_5alkyl, carbamoyl, mono- or di-C_1–C_5-acylamino or acyl; phenyl; phenyl-C_1–C_5alkyl; phenylthio; phenyl-C_1–C_5alkylthio; mono- or diphenyl-C_1–C_5alkylamino; C_1–C_5alkylthio; cycloalkylthio; unsubstituted or hydroxy- or carboxy-substituted mono- or di-C_1–C_5alkylamino, wherein the alkyl groups may be interrupted by an oxygen atom; mono- or di-C_3–C_5alkenylamino; unsubstituted or C_1–C_5alkyl-substituted mono- or dicycloalkylamino; unsubstituted or C_1–C_5alkyl-, hydroxy- or carboxy-substituted 1-azacyclohexyl; unsubstituted or C_1–C_5alkyl-substituted morpholino; a radical of formula

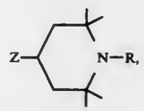


(2)

a radical of formula



or a radical of formula



R_2 is hydrogen or C_1–C_5alkyl,

R_3 is hydrogen or hydroxy,

R_4 is hydrogen; halogen; C_1–C_5alkyl; C_1–C_5alkoxy; carboxy; carboxy-C_1–C_5alkyl; acyl; carbamoyl; or mono- or di-C_1–C_5-acylamino,

M may be the same or different and is hydrogen; alkali metal; alkaline earth metal; ammonia; or an organic ammonio radical of formula $(C_1$–C_4alkyl$)_n(H)_mN^+$,

Z —O—; or —(NR_5)—,

R_5 is hydrogen or C_1–C_5alkyl,

m is 0 to 3;

n is 1 to 4; and the sum of m+n=4,

x is 1 or 2 and

y is 0 or 1;

and, if R_1 is a radical of formula (2) or (3) and y is 1, x in formula (1) is 1.

5,312,918

METHOD FOR PREPARING SUBSTITUTED NITROGEN-HETEROCYCLIC COMPOUNDS

John C. Schmidhauser, Schenectady; Kathryn L. Longley, Saratoga Springs, and William L. Gately, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 795,577, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 620,678, Dec. 3, 1990, abandoned. This application May 24, 1993, Ser. No. 65,381

Int. Cl.^{5} C07D *251/30*

U.S. Cl. 544—218 **18 Claims**

1. A method for preparing a halo-displacement reaction product of (A) an aliphatic hydroxy compound and (B) an alkoxy- or aryloxy-substituted dichloro-1,3,5-triazine, which comprises effecting contact between reagents A and B in solution in a substantially water-immiscible organic solvent under alkaline conditions, in the presence of a phase transfer catalyst and in the substantial absence of inorganic salts other than those formed in the reaction; reagent A being employed in the amount of at most 30% in excess of stoichiometric.

5,312,919

PHOTOOXIDATION PRODUCTS AND DERIVATIVES THEREOF OF MEROCYANINE-540, THEIR PREPARATION AND USES

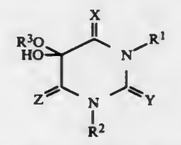
Kirpal S. Gulliya, Dallas, Tex.; Burchard Franck, Munster, Fed. Rep. of Germany; J. Lester Matthews, Dallas, Tex., and Udo Schneider, Dülmen, Fed. Rep. of Germany, assignors to Baylor Research Institute, Dallas, Tex.

Filed Jun. 12, 1992, Ser. No. 898,961

Int. Cl.^{5} C07D *239/02*; A61K *31/505*

U.S. Cl. 544—302 **5 Claims**

1. A compound having the formula



(3)

or optical isomers or mixtures thereof wherein:

R^1=H, C_1–C_6 linear or branched alkyl, or $CH_2C_6H_5$;

R^2=H, C_1–C_6 linear or branched alkyl, or $CH_2C_6H_5$;

R^3=H, C_1–C_6 linear or branched alkyl, or $CH_2C_6H_5$; (4)

X=O, S, or NH;

Y=S; and

Z=O, S, or NH; or

a pharmaceutically acceptable salt thereof.

5,312,920

PROCESS FOR PREPARING 4-PYRIMIDINONES

Isaac Chekroun, Epinay; Manuel Bedoya Zarita, Paris; José Ruiz-Montes, Mantes la Jolie, and Guy Rossey, Voisins le Bretonneux, all of France, assignors to Synthelabo, Le Plessis Robinson, France

Filed Mar. 12, 1993, Ser. No. 30,545

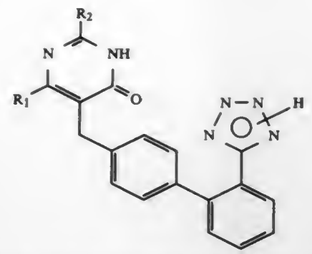
Claims priority, application France, Mar. 16, 1992, 92 03115

Int. Cl.^{5} C07D *403/10*

U.S. Cl. 544—319 **13 Claims**

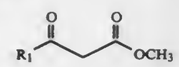
1. A process for preparing a compound represented by formula (I):

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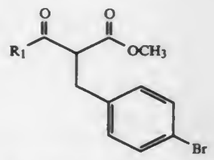
(I)

in which R_1 is selected from the group consisting of hydrogen, unbranched and branched C_{1-7} alkyl, unbranched and branched C_{3-9} alkenyl, and (C_{3-7})cycloalkyl(C_{1-6})alkyl groups, and R_2 is selected from the group consisting of hydrogen, unbranched and branched C_{1-7} alkyl, (C_{3-7})cycloalkyl(C_{1-3})alkyl, aryl(C_{1-3})alkyl, aryloxy(C_{1-3})alkyl, arylthio(C_{1-3})alkyl, arylsulphonyl(C_{1-3})alkyl and heteroaryl (C_{1-3}) alkyl groups, said process comprising the steps of reacting a compound of general formula (II):



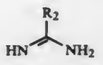
(II)

in which R_1 is as defined above, with 1-bromo-4-(bromomethyl)benzene or 4-bromobenzaldehyde, and reducing the product compound formed to obtain a compound represented by formula (III):



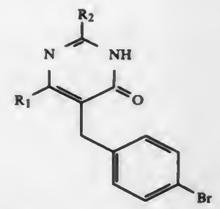
(III)

in which R_1 is as defined above, reacting the compound represented by formula (III) with an amidine of general formula (IV):



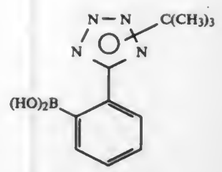
(IV)

in which R_2 is as defined above to obtain a compound represented by formula (V):



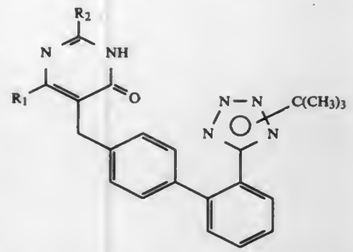
(V)

in which R_1 and R_2 are as defined above, reacting the compound represented by formula (V) with a compound represented by formula (VI):



(VI)

to obtain a compound represented by formula (VII):



(VII)

in which R_1 and R_2 are as defined above, and deprotecting the compound represented by formula (VII) by removing the protecting group $—C(CH_3)_3$ from the tetrazole moiety of the compound of formula (VII).

5,312,921

DYES DESIGNED FOR HIGH SENSITIVITY DETECTION OF DOUBLE-STRANDED DNA

Alexander N. Glazer, Orinda, and Scott C. Benson, Albany, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 831,823, Feb. 6, 1992, which is a continuation-in-part of Ser. No. 493,347, Mar. 14, 1990, Pat. No. 5,138,501. This application May 14, 1993, Ser. No. 60,910

Int. Cl.[5] C07D *215/38, 221/12*

U.S. Cl. 546—108 **4 Claims**

1. Thiazole orange tetramethylpropane diamine.

5,312,922

EUROPIUM AND TERBIUM CHELATORS FOR TIME-RESOLVED FLUOROMETRIC ASSAYS

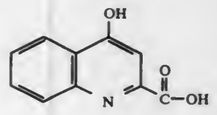
Eleftherios P. Diamandis, Toronto, Canada, assignor to Nordion International Inc., Kanata, Canada

Filed Apr. 6, 1992, Ser. No. 863,746

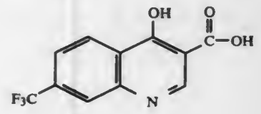
Int. Cl.[5] C07D *215/16*

U.S. Cl. 546—156 **4 Claims**

1. Fluorescent lanthanide metal chelator selected from compounds of the following formulas:

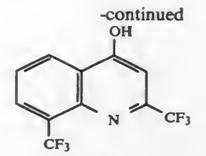


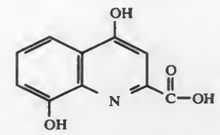
II

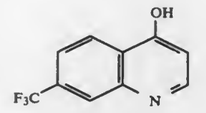


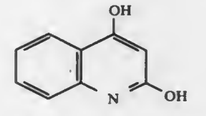
XI

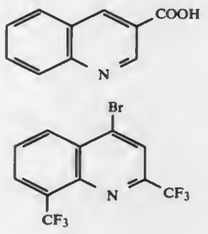
-continued











5,312,923

PROCESS FOR PREPARING FIBRINOGEN RECEPTOR ANTAGONISTS

John Y. L. Chang, Edison; David L. Hughes, Old Bridge, and Dalian Zhao, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 843,690, Feb. 28, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 17,922

Int. Cl.[5] C07D *211/02, 211/82*

U.S. Cl. 546—185 **3 Claims**

1. A process for preparing compounds of the following formula:



wherein:

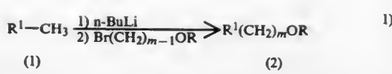
R^1 is a six member saturated or unsaturated heterocyclic ring containing one or two heteroatoms wherein the heteroatoms are N; or NR^6, wherein R^6 is C_{1-10} alkyl;

m is an integer from two to six; and

R^4 is aryl, C_{1-10} alkyl, or C_{4-10} aralkyl,

according to the process steps whereby

XXI

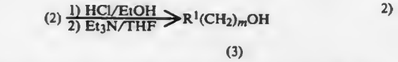


1)

(1) (2)

methylated R^1 is reacted with nBuLi, before quenching with a straight chain alkyl group having Br at one end and OR at the other end, to yield (2), wherein R is tetrahydropyran;

XXIII



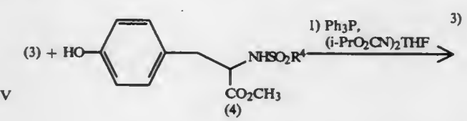
2)

(3)

(2) is aged, first in hydrogen chloride gas in ethanol, and then neutralized in triethylamine/tetrahydrofuran and to yield (3); and

XXIV

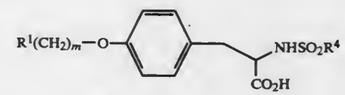
XXV



3)

(4)

XXVIII



(5)

a solution of (4) and Ph_3P in THF is combined with (3) and $(iPrO_2CN)_2$ in THF to yield (5) after ester hydrolysis.

XXX

5,312,924

PHENYLACETIC ACID BENZYLAMIDES

Wolfgang Greli; Rudolf Hurnaus, both of Biberach; Gerhart Griss, deceased, late of Biberach by Elisabeth Griss, executrix ; Robert Sauter, Laupheim; Manfred Reiffen, Biberach, and Eckhard Rnprecht, Aulendorf-Tannhausen, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

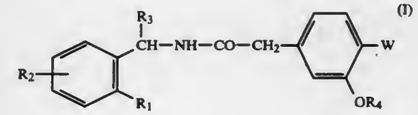
Continuation-in-part of Ser. No. 495,820, Jun. 21, 1990, Pat. No. 5,216,167, which is a continuation of Ser. No. 302,022, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 872,706, Jun. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 684,054, Dec. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 878,921, Jun. 26, 1986, abandoned. This application Jul. 24, 1992, Ser. No. 919,820

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] C07D *211/32;* A61K *31/445, 31/40*

U.S. Cl. 546—234 **2 Claims**

1. A method of lowering the level of glucose in the blood of a warm-blooded animal and humans in need thereof, which comprises orally or parenterally administering to said animal and humans an effective hypoglycemic amount of a compound of formula



(I)

wherein

R_1 represents an unbranched alkyleneimino group with 4 to

VOL 1162 ISS 3 MY 17 1994 UMI

6 carbon atoms optionally mono- or di-(alkyl of 1 to 3 carbon atoms)-substituted;

R_2 represents a hydrogen or halogen atom or a methyl or methoxy group;

R_3 represents a hydrogen atom, an alkyl group with 1 to 7 carbon atoms, a phenyl group optionally substituted by a halogen atom or a methyl or methoxy group, an alkyl group with 1 or 2 carbon atoms substituted by a hydroxy, alkoxy, alkanoyloxy, tetrahydrofuranyl, tetrahydropyranyl, cycloalkyl or phenyl group, in which the alkoxy part can contain from 1 to 3 carbon atoms, the alkanoyloxy part can contain 2 or 3 carbon atoms and the cycloalkyl part can contain 3 to 7 carbon atoms, an alkenyl group with 3 to 6 carbon atoms, an alkynyl group with 3 to 5 carbon atoms, a carboxy group or an alkoxycarbonyl group with a total or 2 to 5 carbon atoms;

R_4 represents a hydrogen atom, a methyl, ethyl or allyl group; and

W represents a methyl, hydroxymethyl, formyl, carboxyl, alkoxycarbonyl, cyanomethyl, 2-cyano-ethyl, 2-cyano-ethenyl, carboxymethyl, 2-carboxyethyl, 2-carboxyethenyl, alkoxycarbonylmethyl, 2-alkoxycarbonyl-ethyl or 2-alkoxycarbonyl-ethenyl group, in which each alkoxy part can contain from 1 to 4 carbon atoms and can be substituted by a phenyl group; and

when R_3 is other then hydrogen and/or the radical R_1 contains an optically active carbon atom, the enantiomers and the diastereomers thereof or their mixtures; when W is carboxyl, a non-toxic salt thereof formed with an inorganic or organic base; or a non-toxic acid addition salt thereof formed by an inorganic or organic acid with the amino function in the R_1-position.

5,312,925
MONOHYDRATE OF 5-(2-(4-(1,2-BENZISOTHIAZOL-3-YL)-1-PIPERAZINYL)-ETHYL)-6-CHLORO-1,3-DIHYDRO-2H-INDOL-2-ONE-HYDROCHLORIDE

Douglas J. M. Allen, New London; Frank R. Busch, Gales Ferry; Sabeto A. DiRoma, Uncasville, and Dennis M. Godek, Glastonbury, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 1, 1992, Ser. No. 939,204
Int. Cl.[5] C07D *417/14*
U.S. Cl. 544—368 **4 Claims**

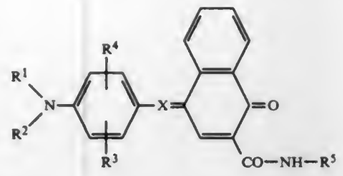
1. 5-(2-(4-(1,2-Benzisothiazol-3-yl)-1-piperazinyl)ethyl)-6-chloro-1,3-dihydro-2H-indol-2-one hydrochloride monohydrate.

5,312,926
INDONAPHTHOL DYES AND THERMAL TRANSFER THEREOF

Volker Bach, Neustadt; Karl-Heinz Etzbach, Frankenthal, and Ruediger Sens, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 29, 1991, Ser. No. 677,291
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010269
Int. Cl.[5] C07D *277/46*
U.S. Cl. 548—195 **7 Claims**

1. An indonaphthol dye of the formula I



(I)

where

X is nitrogen or the radical CH,

R^1 and R^2 are each independently of the other C_1–C_6-alkyl which may be substituted with phenyl, cyano, C_1–C_6-alkanoyloxy, C_1–C_4-alkoxycarbonyl or C_1–C_4-alkoxycarbonyloxy wherein said C_1–C_4 alkoxycarbonyloxy may itself be substituted in the alkoxy group by phenyl or C_1–C_4-alkoxy, C_1–C_6-monooxaalkyl or -dioxaalkyl or allyl,

R^3 and R^4 are each hydrogen, and

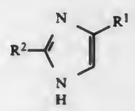
R^5 is five-membered hetaryl which is not benzofused and has two or more hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, with the proviso that R^1 and R^2 are not both unsubstituted C_1–C_6-alkyl at one and the same time.

5,312,927
PREPARATION OF IMIDAZOLES

Susumu Takada, Kawanishi, and Makoto Adachi, Ikoma, both of Japan, assignors to Shionogi & Co., Inc., Osaka, Japan

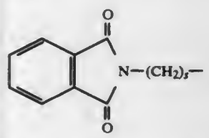
Filed Aug. 16, 1993, Ser. No. 106,550
Claims priority, application Japan, Aug. 18, 1992, 4-219078
Int. Cl.[5] C07D *233/56, 233/58, 233/64*
U.S. Cl. 548—335.1 **4 Claims**

1. A process for preparing imidazoles of the formula (I):

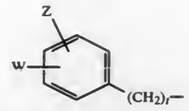


(I)

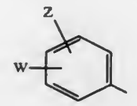
in which R^1 is (1) hydrogen; (2) alkyl group; (3) a haloalkyl group of the formula: $Y—(CH_2)_m—$ wherein Y is chloro or bromo, and m is an integer of from 2 to 6; (4) an acyloxyalkyl group of the formula: $R^3—O—(CH_2)_n—$ wherein n is an integer of from 2 to 6, and R^3 is an acyl group; (5) a cyanoalkyl group of the formula: $NC—(CH_2)_p—$ wherein p is an integer of from 1 to 6; (6) a cycloalkyl group; (7) a group of the formula: $R^4—S—(CH_2)_q—$ wherein R^4 is lower alkyl or phenyl group, and q is an integer of from 1 to 5; (8) a group of the formula: $CF_3—(CH_2)_r—$ wherein r is an integer of from 0 to 5; (9) a group of the formula:



wherein s is an integer of from 1 to 5; (10) an aralkyl group of the formula:



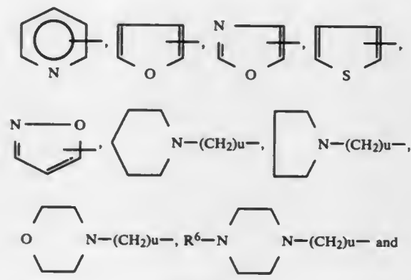
wherein W and Z are independently hydrogen, halogen, alkyl, alkoxy, acetylamino, cyano, or nitro group, or a group: $—COOR^5$ wherein R^5 is lower alkyl, or W and Z, taken together, may form alkylenedioxy group, and t is an integer of from 1 to 5; or (11) an aryl group of the formula:

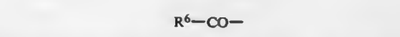


wherein

W and Z have the same meaning as defined above;

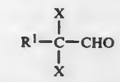
R^2 has the same meaning as R^1 or R^2 may represent a group selected from the group consisting of





wherein R^6 is hydrogen, lower alkyl, alkoxy, or phenyl, and u is an integer of from 1 to 5,

which comprises conducting condensation among an α,α-dihaloaldehyde compound of the formula (II):



(II)

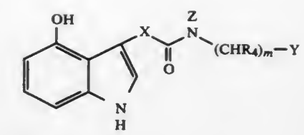
in which R1 is as defined above, and X is halogen, an aldehyde compound of the formula: $R^2—CHO$ in which R^2 is as defined above, and aqueous ammonia.

5,312,928
CALCIUM CHANNEL ANTAGONISTS AND METHODOLOGY FOR THEIR IDENTIFICATION

Stanley M. Goldin, Lexington; Kazumi Kobayashi, Arlington; Andrew G. Knapp, Salem; Lee Margolin; Subbarao Katragadda, both of Belmont; Deborah Daly, Melrose; Lain-Yen Hu, Waltham, and N. Laxma Reddy, Malden, all of Mass., assignors to Cambridge Neuroscience, Cambridge, Mass.

Filed Feb. 11, 1991, Ser. No. 654,104
Int. Cl.[5] C07D *209/20;* A61K *31/405*
U.S. Cl. 548—495 **19 Claims**

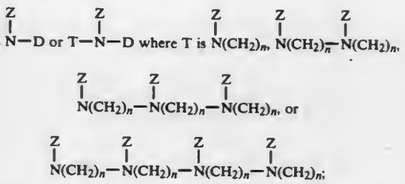
1. A compound of the formula:



wherein

each R_4, independently, is H or C_{1-6} alkyl;

X is CH_2, CH_2CH_2, CH=CH, or $CH_2CH_2CH_2$;



each Z, independently, is H, CH_3, or Q where Q is acyl, benzoyl, phenacetyl, benzyloxycarbonyl, alkoxycarbonyl, or N-methyl-dihydropyridine-3-carbonyl;

D is H or



where R_5 is H or C_{1-4} alkyl;

m is an integer from 2 to 12, inclusive; and

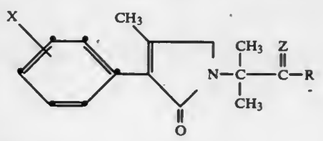
each n, independently, is an integer from 2 to 12, inclusive.

5,312,929
2-OXO-3-PYRROLINE DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND HERBICIDAL COMPOSITION

Nobuyuki Ohba; Toshihiro Nagata; Akira Takeuchi; Shigehiko Tachikawa, and Yasunori Ogawa, all of Shizuoka, Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,828
Claims priority, application Japan, Feb. 17, 1992, 4-061483; Feb. 17, 1992, 4-061484
Int. Cl.[5] C07D *207/27;* A01N *43/36*
U.S. Cl. 548—551 **7 Claims**

1. A 2-oxo-3-pyrroline derivative of the formula:



(I)

wherein

X is a hydrogen atom or a halogen atom;

Z is an oxygen atom or a group of the formula $=N—OR^1$ wherein R^1 is a hydrogen atom, a lower alkyl group, a benzyl group, or a phenyl group which is substituted by halogen atoms;

R is a hydrogen atom, a lower alkyl group, a benzyl group, a chloro-substituted benzyl group, a benzylidene methyl group, a group of the formula

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wherein Y is a hydrogen atom, a halogen atom, a lower alkyl group, a lower haloalkyl group, or a lower alkoxy group and n is an integer of from 1 to 3, or a group of the formula ER^2 wherein E is an oxygen atom, a sulfur atom or a group of the formula $>N-R^3$ wherein R^3 is a hydrogen atom, a lower alkyl group or a lower alkenyl group; and R^2 is a hydrogen atom, a lower alkyl group, a lower cycloalkyl group, a lower alkenyl group, a lower alkynyl group, a benzyl group, a phenylsulfonyl group or a group of the formula



wherein G is a hydrogen atom, a halogen atom, a lower alkyl group, a lower haloalkyl group, a lower alkoxy group, a lower haloalkoxy group, a methylenedioxy group, a lower alkylthio group, a lower alkylsulfonyl group, a phenoxy group, a lower alkoxycarbonyl group, acetyl, a nitro group, a hydroxyl group, a cyano group or a dimethylamino group, and m is an integer of from 1 to 5.

5,312,930

FLUORINATED SULFONES/KETONES FOR NONLINEAR OPTICS

Lap T. Cheng, Newark; Andrew E. Feiring, Wilmington, both of Del., and Wilson Tam, Boothwyn, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 841,352, Feb. 27, 1992, abandoned, which is a division of Ser. No. 486,672, Feb. 28, 1990, Pat. No. 5,120,876, which is a continuation of Ser. No. 442,677, Nov. 29, 1989, abandoned. This application Dec. 31, 1992, Ser. No. 999,061

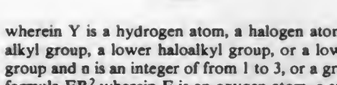
Int. Cl.[5] C07D *207/04*

U.S. Cl. 548—577 **7 Claims**

1. A compound providing for high nonlinearity and high transparency selected from the following structures:

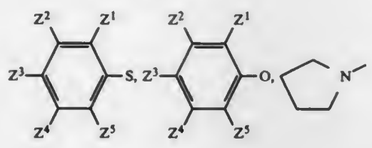
7.

9.

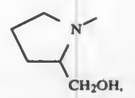


wherein

D is an electron donor moiety selected from NH_2, NHR^1, $N(C_nH_{2n+1})_2$, $N(C_nH_{2n+1})(C_nH_{2n}OH)$, $N(C_nH_{2n}OH)_2$, $N(C_nH_{2n+1})N(C_nH_{2n+1})_2$, $N=C(C_nH_{2n+1})_2$, OC_nH_{2n+1}, SC_nH_{2n+1},



-continued



branched or straight chain alkyls having from 2 to 20 carbons, F, and Br,

wherein n=0 to 20

Z^1, Z^2, Z^3, Z^4 and Z^5 are individually selected from H, alkyl of 1 to 20 carbon atoms, aryl, OR^2, SR^3 and NR^4R^5,

R^1, R^2, R^3, R^4 and R^5 are individually selected from aryl, alkyl of from 1 to 20 carbon atoms, and COR^6, wherein R^6 is selected from H, aryl, and alkyl of from 1 to 20 carbon atoms,

X and Y are the same or different and are individually selected from F, alkyl and fluoroalkyl of 1 to 20 carbon atoms, aryl and fluoroaryl,

with the proviso for structure 7 that when D is H, p—Cl, p—F, m—F, p—NH_2 and X and Y are not F.

5,312,931

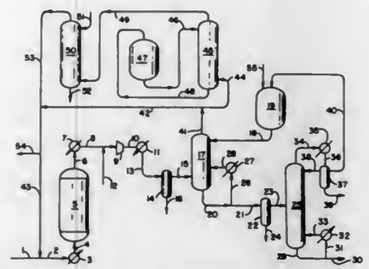
RECOVERY OF 3,4-EPOXY-1-BUTENE FROM 1,3,-BUTADIENE OXIDATION EFFLUENTS

Jerome L. Stavinoha, Jr., Longview, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 4, 1993, Ser. No. 130,926

Int. Cl.[5] C07D *301/10, 301/32, 303/04*

U.S. Cl. 549—538 **12 Claims**



1. Process for the recovery of EpB from a substantially-gaseous, effluent from an epoxidation zone wherein butadiene is contacted with an oxygen-containing gas in the presence of a catalyst and butane to produce an epoxidation effluent comprising EpB, butadiene, oxygen and butane which comprises feeding the effluent to an absorption vessel wherein the effluent is intimately contacted with a mixture of butane and butadiene at a pressure of about 2 to 10 bars and a temperature of about 0° to 60° C. to obtain:

(1) a vapor effluent comprising butadiene, oxygen and butane from the upper section of the absorption vessel; and

(2) a liquid effluent comprising EpB, butadiene, and butane from the lower section of the absorption vessel;

wherein EpB is 3,4-epoxy-1-butene and butadiene is 1,3-butadiene.

5,312,932

PROCESS FOR THE CONTINUOUS PRODUCTION OF PARTIAL GLYCERIDE SULFATES

Ansgar Behler, Bottrop; Uwe Ploog, Haan; Bernd Fabry, Korschenbroich, and Frank Clasen, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/02208, § 371 Date Aug. 3, 1993, § 102(e) Date Aug. 3, 1993, PCT Pub. No. WO92/09569, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 25, 1991, Ser. No. 66,170

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1990, 4038477

Int. Cl.[5] C11D *1/28*

U.S. Cl. 554—90 **20 Claims**

1. A process for the continuous production of partial glyceride sulfates comprising the steps of

A) reacting at least one partial glyceride with gaseous sulfur trioxide to produce at least one acidic sulfation product;

B) ageing the at least one acidic sulfation product; and

C) neutralizing the aged acidic sulfation product with aqueous base in the presence of a buffer.

5,312,933

METHOD OF PRODUCING SYMMETRICAL DIFATTY ACID DIAMIDES

Rainer Frische, Frankfurt am Main; Jürgen Volkheimer, Wiesbaden; Klaus Wollmann, Eschhofen; Herrmann Schomann, Langen; Judith Schneider; Alexander Ach, both of Frankfurt am Main; Renate Gross-Lannert, Dietzenbach, and Bernd Best, Moerfelden, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/00996, § 371 Date Feb. 28, 1991, § 102(e) Date Feb. 28, 1991, PCT Pub. No. WO91/00263, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 22, 1990, Ser. No. 655,456

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921342

Int. Cl.[5] C07C *231/02*

U.S. Cl. 554—69 **18 Claims**

1. A method of producing a symmetrically structured difatty acid diamide or a corresponding pure fatty acid, comprising:

reacting a mixture of fatty acids or their esters with a diamine, to produce a mixture containing a symmetrical difatty acid diamide; and, separating the symmetrical difatty acid diamide from the resulting reaction mixture by recrystallization or fractured crystallization from methanol or ethanol or by hot vapor extraction with methanol based on differential solubility.

5,312,934

SYNTHESIS OF SULFATED POLYHYDROXY FATTY ACID AMIDE SURFACTANTS

James C. Letton, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 30, 1992, Ser. No. 984,067

Int. Cl.[5] C11D *1/28*

U.S. Cl. 554—98 **2 Claims**

1. A method for sulfating a polyhydroxy fatty acid amide, comprising contacting said polyhydroxy fatty acid amide with an SO_3/pyridine complex in a non-hydroxy solvent at a reaction temperature from about 25° C. to about 35° C. to produce a yield of at least about 80% of a sulfated polyhydroxy fatty acid amide.

5,312,935

PURIFICATION OF FLUORINATED CARBOXYLIC ACIDS

Ludwig Mayer, Burghausen, and Gernot Löhr, Burgkirchen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 21, 1993, Ser. No. 50,874

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1992, 4213154

Int. Cl.[5] C02F *1/72*; C07C *53/21*

U.S. Cl. 554—182 **17 Claims**

1. A process for the purification of an impure perfluorinated carboxylic acid, which process comprises: oxidizing the impurities in a reaction mixture comprising a water content of less than about 9% by weight, impure perfluorinated carboxylic acid and an oxidant, thereby purifying said acid, and isolating the resulting purifies perfluorinated carboxylic acid.

5,312,936

ANGIOTENSIN II ANTAGONISTS

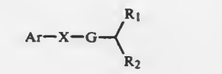
Sherryl L. Lifer, Indianapolis; Winston S. Marshall, Bargersville; Fariborz Mohamadi; Jon K. Reel, both of Indianapolis; Richard L. Simon, Greenwood; Mitchell I. Steinberg, and Celia A. Whitesitt, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 444,456, Nov. 30, 1989, Pat. No. 5,073,566. This application Sep. 17, 1991, Ser. No. 761,127

Int. Cl.[5] C07D *403/06, 233/44*; A61K *31/41, 31/415*

U.S. Cl. 548—253 **10 Claims**

1. A compound of the formula

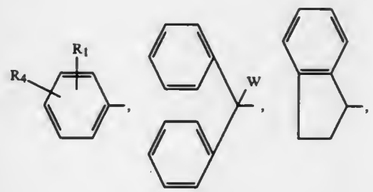


I

or a pharmaceutically acceptable salt or solvate thereof where G is

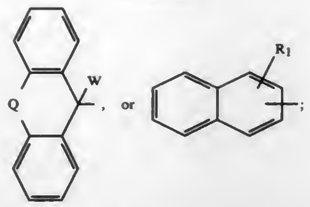


Ar is



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-continued



each of A_1, A_2, and A_3 is independently N or CH;
X is —CO—, —CONH—, —NHCO—, —CH_2CONH—, —O—, —NH—, —CH_2—or a bond;
each R_1 is independently —$(CH_2)_nR_3$;
R_2 is C_4–C_7 straight chain alkyl;
each R_3 is independently —OH, —COOH, or 5-tetrazolyl;
each n is independently 0, 1, 2, 3, or 4,
R_4 is H, OH, halo, nitro, methyl, amino, acetamido, or methanesulfonamido;
Q is a bond or —O—; and
W is H, methyl, ethyl, or hydroxy,
provided that A_2 is not N when A_1 and A_3 are each CH and R_1 is —COOH or 5-tetrazolyl;
provided that if G is not imidazolyl or tetrazolyl, at least one R_3 is 5-tetrazolyl.

5,312,937
METHOD FOR THE PREPARATION OF PLATINUM COMPLEXES

Steven H. Waier; ChiTang Li, both of Midland, and Donna Gyles-Mayon, Saginaw, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 7, 1993, Ser. No. 133,491
Int. Cl.[5] C07F *19/00, 15/00, 7/18*
U.S. Cl. 556—9 **16 Claims**

1. A method for preparing a platinum-organosiloxane complex which comprises:
(I) reacting
(a) a platinous halide having an average crystal size of less than 2500 Angstroms; and
(b) an organosiloxane having from 2 to 4 silicon bonded organic groups having from 2 to 6 carbon atoms and having terminal olefinic unsaturation, the remaining silicon- bonded organic substituents being selected from alkyl groups
having from 1 to 6 carbon atoms and phenyl groups; wherein said reaction is carried out in the presence of a polar organic liquid which is at least a partial solvent for platinous halide; and
(II) neutralizing the reaction mixture of (I).

5,312,938
HOMOGENEOUS CATALYSTS AND OLEFIN POLYMERIZATION PROCESS

John G. Hefner, and Brian W. S. Kolthammer, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 897,719, Jun. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 586,629, Sep. 20, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 42,027
Int. Cl.[5] C07F *7/28, 17/00*
U.S. Cl. 556—11 **5 Claims**

1. A process for preparing catalytic compounds represented by the formula $LTi(NR^1{}_2)_3$ wherein L is a pi-bonded ligand selected from the group consisting of indenyl, C_1–C_4 alkyl substituted indenyl, —$OSiR_3$ substituted indenyl, and each R_1 is the same and is a C_1–C_4 alkyl group which process comprises (1) reacting in a solvent or reaction medium selected from the class of aliphatic or aromatic hydrocarbons a compound represented by the formula $Ti(NR^1{}_2)_4$ wherein each R_1 is the same and is a C_1–C_4 alkyl group; with a compound represented by the formula R'(Ind) wherein R' is hydrogen, a C_1–C_4 alkyl group, —$OSiR_3$, —OR or a halogen; R is a C_1–C_4 alkyl group; and IND is an indenyl group; and (2) recovering the desired product from the reaction mixture.

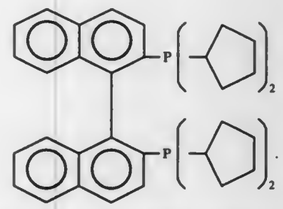
5,312,939
2,2'-BIS (DICYCLOPENTYLPHOSPHINO)-1,1'-BINAPHTHYL AND TRANSITION METAL COMPLEX USING THE SAME AS LIGAND

Yoji Hori, and Hidenori Kumobayashi, both of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 727,709
Claims priority, application Japan, Jul. 12, 1990, 2-184535
Int. Cl.[5] C07F *15/04, 15/00, 9/02*
U.S. Cl. 556—14 **12 Claims**

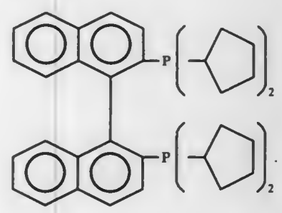
1. 2,2'-Bis(dicyclopentylphosphino)-1,1'-binaphthyl represented by formula (I):

(I)



2. A metal complex comprising a transition metal and, as a ligand, 2,2'-bis(dicyclopentylphosphino)-1,1'-binaphthyl represented by formula (I):

(I)

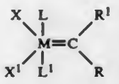


5,312,940
RUTHENIUM AND OSMIUM METAL CARBENE COMPLEXES FOR OLEFIN METATHESIS POLYMERIZATION

Robert H. Grubbs, South Pasadena, Calif.; Lynda K. Johnson, Carrboro, N.C., and Sonbinh T. Nguyen, Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

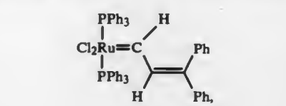
Filed Apr. 3, 1992, Ser. No. 863,606
Int. Cl.[5] C07F *15/00*
U.S. Cl. 556—136 **7 Claims**

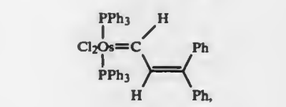
1. A compound of the formula

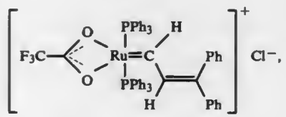


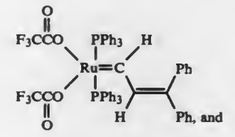
wherein:
M is Os or Ru;
R and R^1 are independently selected from hydrogen; C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, C_1–C_{20} alkyl, aryl, C_1–C_{20} carboxylate, C_1–C_{20} alkoxy, C_2–C_{20} alkenyloxy, C_2–C_{20} alkynyloxy, aryloxy, C_2–C_{20} alkoxycarbonyl, C_1–C_{20} alkylthio, C_1–C_{20} alkylsulfonyl or C_1–C_{20} alkylsulfinyl; each optionally substituted with C_1–C_5 alkyl, halogen, C_1–C_5 alkoxy or with a phenyl group optionally substituted with halogen, C_1–C_5 alkyl or C_1–C_5 alkoxy;
X and X^1 are independently selected from any anionic ligand;
L and L^1 are independently selected from any neutral electron donor, and
wherein any 2, or 3 of X, X^1, L, and L^1 are optionally bonded together to form a chelating multidentate ligand.

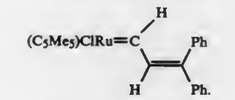
7. A compound selected from the group consisting











5,312,941
BASIC CALCIUM ALUMINUM HYDROXIDE DICARBOXYLATES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Coriolan Razvan, Karlsfeld; Reinhard Beck, Munich; Alfred Kürzinger, Karlsfeld; Michael Rosenthal, and Albert W. Piirzer, both of Munich, all of Fed. Rep. of Germany, assignors to Bärlocher GmbH, Fed. Rep. of Germany

PCT No. PCT/DE92/00143, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO92/15545, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 21, 1992, Ser. No. 98,307
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106404
Int. Cl.[5] C07F *5/06, 3/04; C08K 5/04, 5/09*
U.S. Cl. 556—179 **10 Claims**

1. A basic calcium aluminum hydroxide dicarboxylate compound represented by the general formula

$$Ca_xAl_2(OH)_{2(x+3-y)}A_y \cdot m\ H_2O$$

wherein
X is 2 to 12;

$$\frac{2x+5}{2} > y > 0$$

with the proviso that $y \neq 1$ if $x = 2$ to 8;
m is 0 to 12; and
A is an aliphatic, aromatic or heteroaromatic dicarboxylic acid anion or combination thereof.

5,312,942
SILICON BORON NITRIDE CERAMIC AND PRECURSOR COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Martin Jansen, Bonn; Hans-Peter Baldus, Burscheid, and Oliver Wagner, Bonn, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 840,158, Feb. 24, 1992, Pat. No. 5,233,066. This application May 20, 1993, Ser. No. 64,851
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 4107108
Int. Cl.[5] C07F *7/02*
U.S. Cl. 556—402 **6 Claims**

1. A process for the preparation of a silicon boron nitride ceramic powder wherein trichlorosilylamino-boranes having the formula Cl_3Si—NH—BClX, wherein X is —Cl or —NH—Si—Cl_3 are ammonolyzed with solid, liquid or gaseous ammonia at temperatures of from −200° C. to 1400° C. and the resulting product is calcined in N_2, argon, NH_3 or mixtures thereof at temperatures of from 800° to 1400° C.

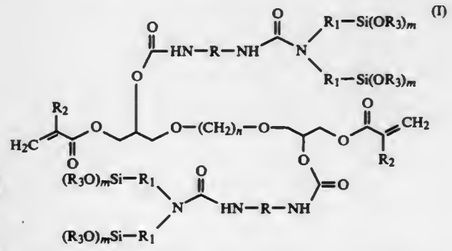
5,312,943
DUAL CURING CONFORMAL COATINGS

Kamlesh Gagiani, South Plainfield, N.J., assignor to CasChem, Inc., Bayonne, N.J.

Filed Oct. 13, 1992, Ser. No. 960,042
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—414 **10 Claims**

1. An oligomer of Formula I comprising,

(I)



wherein:
R represents aryl, alkoxy substituted aryl, aryl substituted alkyl, aryl ether, cyclo-alkyl substituted alkyl, halo-substituted aryl, alkyl substituted aryl alkyl, alkoxy substituted aryl, and (—CH_2) m where M=4–6;
R_1 represents C_2–C_{10} alkyl;
R_2 represents H, —CH_3, —C_2H_5;
R_3 represents —CH_3, C_2H_5, —R^1— $(O(CH_2)S—O_t—R^1$ where R^1=R as defined above, s=2–10 and t=1–10;
n=2–20, and m=1–3.

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5,312,944

ANTIBACTERIAL SILANE COUPLER COMPOUNDS CONTAINING GUANIDYL GROUP

Tsunetoshi Honda; Akiko Azuma, and Akira Nishihara, all of Omiya, Japan, assignors to Mitsubishi Material Corporation, Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 996,987

Claims priority, application Japan, Dec. 28, 1991, 3-359589; Dec. 28, 1991, 3-359591

Int. Cl.[5] C07F 7/08

U.S. Cl. 556—415 **3 Claims**

1. Silane coupler compounds represented by the formula (I):

$$XSi(CH_2)_n(NH(CH_2)_2)_mG$$

wherein X is a halogen or a C1–C5 alkoxy group, n is an integer of 1–6, m is an integer of 0 or 1 and G is a cyanoguanidyl or biguanidyl group, which may be substituted with a C1–C8 alkyl, a phenyl, which may be substituted with halogen, a C1–C4 alkyl or fluoromethyl, or a salt thereof.

5,312,945

PROCESS FOR PREPARATION OF β-CYANOALKYLSILANES USING RUTHENIUM CATALYST

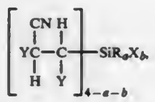
Howard M. Bank, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 29, 1993, Ser. No. 38,313

Int. Cl.[5] C07F 7/10

U.S. Cl. 556—415 **18 Claims**

1. A process for preparation of β-cyanoalkylsilanes described by formula



the process comprising: contacting a mixture comprising an organohydrosilane described by formula

$$R_aX_bSiH_{4-a-b}$$

and an olefinic nitrile described by formula



with an effective concentration of a ruthenium compound catalyst at a temperature within a range of about 50° C. to 300° C.; where each Y is independently selected from a group consisting of hydrogen and alkyl radicals comprising one to eight carbon atoms; each R is a radical independently selected from a group consisting of alkyls comprising one to 12 carbon atoms, cycloalkyls comprising one to eight carbon atoms, aryls, alkoxys comprising one to 12 carbon atoms, and aryloxys; X is a halogen; a=1 or 2; b=1 or 2; and a +b=2 or 3.

5,312,946

SILOXANE FLUID FROM METHYLCHLOROSILANE RESIDUE WASTE

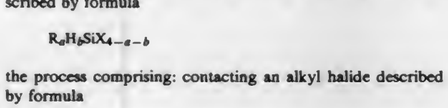
Robert G. Stank, Ballston Spa; Luisito A. Tolentino, Clifton Park; Alan Ritzer, Sand Lake, and Frank J. Traver, Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 13, 1992, Ser. No. 867,938

Int. Cl.[5] C07F 7/08

U.S. Cl. 556—430 **19 Claims**

1. A silicone fluid comprising a siloxane polymer having the following general formula:



wherein X represents an alkyl group or a siloxane branch; a is an integer greater than 0; b and c are 0 or integers greater than 0; provided that b and c are both not 0; and wherein a, b and c are randomly ordered on the polymer backbone and a viscosity adjuster selected from the group consisting of monomeric organofunctional silanes.

5,312,947

SILOXANE PURIFICATION

Akihito Tsukuno, Annaka; Isao Watanuki, Kanra; Makoto Sato, Annaka; Masaru Suzuki, Usui; Masao Maruyama, Usui, and Masaaki Furuya, Usui, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,274

Claims priority, application Japan, Sep. 24, 1992, 4-279518

Int. Cl.[5] C07F 7/08

U.S. Cl. 556—456 **7 Claims**

1. A method for purifying siloxanes comprising

contacting a siloxane crude product containing ionic crystals as an impurity with a polar solvent,

evaporating the solvent from the crude product, thereby increasing the mean particle size of the ion crystals, and

filtering the siloxane crude product for separating and removing the ion crystals therefrom.

5,312,948

PARTICLE SIZE DISTRIBUTION FOR FLUIDIZED-BED PROCESS FOR MAKING ALKYLHALOSILANES

Steven K. Freeburne, Edgewood, Ky.; Roland L. Halm; Joseph P. Kohane, both of Madison, Ind., and Jonathan D. Wineland, Fareham, United Kingdom, assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 8, 1993, Ser. No. 133,241.

Int. Cl.[5] C07F 7/16

U.S. Cl. 556—472 **10 Claims**

1. A process for the manufacture of alkylhalosilanes described by formula

$$R_aH_bSiX_{4-a-b}$$

the process comprising: contacting an alkyl halide described by formula

RX

with a fluidized-bed of particulate silicon where the particle silicon has a size within a range of about one micron to 85 microns in the presence of a catalyst composition comprising copper, at a temperature within a range of about 250° C. to 350° C.;

where each R is independently selected from a group consisting of alkyls comprising one to four carbon atoms; a=1, 2, 3, or 4; b=0, 1, or 2; a+b=1, 2, 3, or 4; and X is a halogen.

5,312,949

METHOD FOR THE PREPARATION OF TRIORGANOCHLOROSILANE

Akihiko Shirahata, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1993, Ser. No. 140,593

Claims priority, application Japan, Nov. 27, 1992, 4-341445

Int. Cl.[5] C07F 7/08, 7/12

U.S. Cl. 556—477 **5 Claims**

1. A method for preparation of triorganochlorosilane with the general formula

$$R^1R^2R^3SiCl$$

where R^1, R^2, and R^3 are independently selected from a group consisting of substituted and unsubstituted monovalent hydrocarbon groups, wherein said method is characterized by the reaction of hydrogen chloride with triorganohydrosilane with the general formula

$$R^1R^2R^3SiH,$$

where R^1, R^2, and R^3 are as previously described, in the presence of a Group 8 transition metal or complex thereof.

5,312,950

METHOD FOR PURIFICATION OF ALCOHOLS

Neil W. Boaz, Waterloo, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,808

Int. Cl.[5] C07C 303/02, 69/76, 29/74

U.S. Cl. 558—51 **17 Claims**

1. A method for the purification of an alcohol comprising the sequential steps of:

(a) contacting an organic solution comprising an organic-soluble impurity and a crude parent alcohol with a cyclic anhydride to form a mixture comprising a corresponding alcohol half-ester and said organic-soluble impurity wherein said half-ester substituent is derived from the cyclic anhydride;

(b) combining said mixture with a base in an aqueous environment wherein said half-ester forms a water-soluble salt;

(c) separating said water-soluble salt from said organic-soluble impurity; and

(d) removing said half-ester substituent from said water-soluble salt to afford a purified parent alcohol.

5,312,951

3,4-DIMETHYL-2,5,6-TRIS(P-SULFONATOPHENYL)-1-PHOSPHANORBORNADIENE, PROCESS FOR THE PREPARATION THEREOF AND PROCESS FOR THE HYDROFORMYLATION OF OLEFINNICALLY UNSATURATED COMPOUNDS

Wolfgang A. Herrmann, Giggenhausen; Rainer Manetsberger, Munchen; Christian Kohlpaintner, Stephanskirchen, and Helmut Bahrmann, Hamminkeln, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 17, 1993, Ser. No. 78,975

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1992, 4220267

Int. Cl.[5] C07F 9/02

U.S. Cl. 558—45 **6 Claims**

1. The compound 3,4-dimethyl-2,5,6-tris(p-sulfonatophenyl)-1-phosphanorbornadiene.

5,312,952

POLYMERIZATION INHIBITOR FOR VINYL AROMATICS

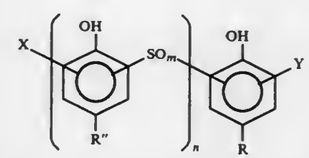
Anthony V. Grossi, Torrington; Paul E. Stott, Sandy Hook; John M. DeMassa, South Norwalk; Howard S. Friedman, North Haven, and Gerald J. Abruscato, Southington, all of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Apr. 23, 1992, Ser. No. 872,563

Int. Cl.[5] C07C 309/28, 317/14

U.S. Cl. 558—46 **5 Claims**

1. A compound represented by structure (I)



(I)

wherein R is C_9–C_{20} alkyl, Y is SO_3R', R' is C_1–C_{20} alkyl, X is NO_2, and R'' is H or C_1–C_{20} alkyl, m is 2 or 3 and n is 1,2,3.

2. A Compound according to claim 1 wherein X and Y are ortho to the OH.

5,312,953

POLYETHER BIS-PHOSPHONIC ACID COMPOUNDS

Charles G. Carter, Silver Spring, and Ranjit Kumar, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 269,205, Nov. 9, 1988, Pat. No. 5,266,722. This application Aug. 17, 1993, Ser. No. 107,549

Int. Cl.[5] C07F 9/40, 9/38

U.S. Cl. 558—87 **8 Claims**

1. A method of preparing a polyether bis-phosphonic acid compound comprising the steps of:

(a) reacting (i) a hydroxyalkylphosphonic acid dialkyl ester compound of the formula



where R is selected from the group consisting of —CH_2— and —CH_2CH_2—, R'' is an alkyl group having from 1 to 6 carbons, and M is an alkali metal or an alkaline earth metal, with (ii) a compound selected from the group consisting of 2-benzyloxyalkyl p-toluenesulfonate, 2-benzyloxyalkyl benzenesulfonate and 2-benzyloxyalkyl alkylsulfonate to form a first intermediate, the alkyl group of said alkylsulfonate having from about 1 to 6 carbon atoms, the oxyalkyl group of said sulfonate corresponding to the formula OR' where R' is selected from the group consisting of —CH_2CH_2—, and —CH_2CH_2— which is substituted with one or more methyl groups, and the benzene ring of the benzyl group of said sulfonate being optionally substituted with one or more substituents selected from the group consisting of halogen groups, alkyl groups having from about 1 to 30 carbon atoms and alkoxy groups having from about 1 to 30 carbon atoms;

(b) reacting said first intermediate with hydrogen or a hydrogen source to form a second intermediate;

(c) reacting said second intermediate with a hydrogen ion acceptor and compound selected from the group consisting of toluene sulfonyl chloride, benzene sulfonyl chloride, and alkane sulfonyl chlorides having from 1 to about 6 carbon atoms to form a third intermediate; and

(d) reacting said third intermediate with a hydroxyalkylphosphonic acid dialkyl ester compound of the formula

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where R, R'' and M are as described above.

5,312,954

BIS- AND TETRAKIS-PHOSPHONATES USEFUL FOR TREATING CALCIUM RELATED DISORDERS

Eli Breuer, Jerusalem, and Gershon Golomb, Efrat, both of Israel, assignors to Yissum, Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation of Ser. No. 570,266, Aug. 20, 1990, abandoned. This application May 13, 1992, Ser. No. 884,291

Claims priority, application Israel, Aug. 20, 1989, 91362

Int. Cl.[5] C07F *9/40, 9/38, 9/655, 9/655.3*

U.S. Cl. 558—161 **4 Claims**

1. Disodium dihydrogen isophthaloylbisphosphonate.

5,312,955

METHOD FOR MAKING AROMATIC ORGANIC CARBONATES

Eric J. Pressman, East Greenbush, and Sheldon J. Shafer, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 17, 1992, Ser. No. 929,861

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] C07C *68/04*

U.S. Cl. 558—260 **8 Claims**

1. A method for making an aromatic organic carbonate by carbonylating an aromatic organic hydroxy compound in the presence of a transition metal catalyst, where at the termination of the carbonylation reaction, an aromatic organic carbonate precursor is produced in the form of a 1:1 adduct of aromatic organic hydroxy compound and aromatic organic carbonate, and the transition metal catalyst is sufficiently stable under ambient conditions to allow its reuse as part of the reaction mixture mother liquor after recovery of the aromatic organic carbonate precursor from the resulting reaction mixture, which method comprises,

(1) charging a reactor with aromatic organic hydroxy compound and an amount of a transition metal catalyst which is sufficient to catalyze the carbonylation of the aromatic organic hydroxy compound,

(2) introducing a mixture of oxygen and carbon monoxide into the reactor and thereafter agitating and heating the resulting mixture to a temperature of about 60° C. to about 150° C., while maintaining the total reaction pressure and the partial pressures of carbon monoxide and oxygen in the mixture substantially constant until the aromatic organic hydroxy compound is substantially converted to aromatic organic carbonate,

(3) allowing the resulting mixture of (2) to cool to a temperature of from about 50° C. to about 25° C., to form a 1:1 molar adduct of aromatic organic carbonate and aromatic organic hydroxy compound

(4) recovering the 1:1 molar aromatic adduct from the reaction mixture of (3), and/or,

(5) adding make-up aromatic organic hydroxy compound directly to the resulting reaction mixture mother liquor of (4), and,

(6) recovering the aromatic organic carbonate from the 1:1 molar aromatic adduct of (4), where the transition metal catalyst is a member selected from the group consisting of,

(a) a mixture consisting essentially of

(i) 1 gram atom, per 800–10,000 moles of aromatic organic hydroxy compound, of a palladium material selected from catalytically active palladium or chemically combined palladium,

(ii) 0.5–5.0 gram atom, per gram atom of palladium, of metal in the form of a cocatalyst selected from divalent or trivalent cobalt or manganese or copper compounds selected from the class consisting of salts, complexes with diketones, and complexes with carbon monoxide,

(iii) 0.1 to 2 moles, per gram atom of palladium, of an aromatic organic amine selected from terpyridines, phenanthrolines and quinolines, and

(iv) 10 to 100 moles, per gram atom of palladium, of a quaternary ammonium halide, and

(b) a mixture consisting essentially of

(v) 1 gram atom, per 800–10,000 moles of aromatic organic hydroxy compound of the palladium material of (a) (i),

(vi) 0.5 to 5 gram atoms of cobalt, per gram atom of palladium, of a cobalt cocatalyst comprising a cobalt complex containing a pentadentate organic ligand, and a mixture of 0 to 0.5 moles of an aromatic amine of (a) (iii), per gram atom of cobalt of such cobalt complex containing a pentadentate ligand, and

(vii) 10 to 100 moles, per gram atom of palladium, of a quaternary ammonium or phosphonium halide of (a) (iv).

5,312,956

SYNTHESIS OF LOW VISCOSITY NON-FUNCTIONAL TERMINATED POLYMERS

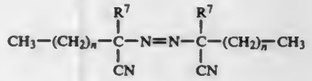
Robert J. Bertsch, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 515,801, Apr. 27, 1990, abandoned. This application Nov. 17, 1992, Ser. No. 978,183

Int. Cl.[5] C07C *255/05, 255/33*

U.S. Cl. 558—409 **6 Claims**

1. A low viscosity liquid polymer product having improved clarity and reduced odor having a copolymer backbone comprising from about 50 percent to about 99 percent by weight based on the total weight of the copolymer backbone of a diene monomer, and up to about 50 percent by weight of a vinyl nitrile comonomer or a vinyl aromatic comonomer, said copolymer backbone being derived by free radical solution polymerization utilizing an initiator which provides a non-functional initiator fragment, said initiator being a bis-azocyano initiator having the formula



wherein R^7 is an alkyl group of 1 to 3 carbon atoms and n is an integer of from 0 to about 6, the initiator being added to said free radical solution polymerization in a mole ratio of initiator to monomers of from about 1.5:50 to about 2.0:15, whereby said copolymer backbone is provided with a non-functional terminus derived from said initiator fragments which undergoes substantially non condensation reaction or addition reaction and further whereby said rubbery polymer has a number average molecular weight of from about 1,500 to about 20,000.

5,312,957

ENANTIOSELECTIVE HYDROCYANATION OF AROMATIC VINYL COMPOUNDS

Albert L. Casalnuovo; Thaliyil V. Rajanbabu; Lawrence W. Gosser; Ronald J. McKinney, and Nugent, Jr. William A., all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 790,322, Nov. 12, 1991, Pat. No. 5,175,335. This application Oct. 15, 1992, Ser. No. 961,593

Int. Cl.[5] C07C *255/33*

U.S. Cl. 558—410 **2 Claims**

2. Optically pure (S)-(−)-2-(6-methoxy-2-naphthalene)propionitrile.

5,312,958

PROCESS FOR PRODUCING 4-BROMOMETHYLBIPHENYL COMPOUNDS

Syuji Suenaga, Oita; Hitoshi Kawaguchi, Fukuoka, and Takeshi Kato, Osaka, all of Japan; assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

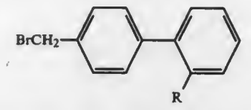
Filed Jan. 26, 1993, Ser. No. 9,101

Claims priority, application Japan, Jan. 31, 1992, 4-046078; Nov. 9, 1992, 4-324831

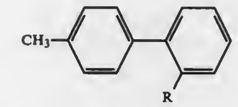
Int. Cl.[5] C07C *253/30, 255/50*

U.S. Cl. 558—425 **4 Claims**

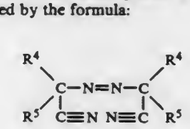
1. A process for producing a 4-bromomethylbiphenyl compound of the formula:



wherein R represents cyano, carboxy, carbamoyl or tetrazolyl which may be substituted with a straight-chain or branched $C_{1\text{-}6}$ alkyl group which may be substituted with 1 to 3 phenyl groups, which comprises brominating a compound of the formula:



Wherein R is as defined above, with a brominating agent selected from the group consisting of N-bromoacetamide, N-bromophthalimide, N-bromosuccinimide, N-bromomaleimide and N-bromosulfonamide, in the presence of an azobis compound represented by the formula:



, wherein R^4 and R^5 independently represent hydrogen or a straight-chain or branched lower $C_{1\text{-}6}$ alkyl group optionally substituted with hydroxy, amino, imino, halogen or a lower $C_{1\text{-}4}$ alkoxy group; R^4 may be taken together with R^5 to form a ring, in a methylene chloride solvent.

5,312,959

PURIFICATION OF 2-METHYLGLUTARONITRILE OR ADIPONITRILE

James B. Sieja, Newark, Del., and John J. Ostermaier, Orange, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 12, 1993, Ser. No. 89,459

Int. Cl.[5] C07C *253/34*

U.S. Cl. 558—456 **2 Claims**

1. A process for the purification of a mixture containing (1) a nitrile selected from the group consisting of adiponitrile and 2-methylglutaronitrile and mixtures thereof and (2) an organoboron compound which is the residue of a boron promoter used in the reaction of hydrogen cyanide and butadiene to form adiponitrile, which comprises adding an alcohol selected from the group consisting of triethanolamine, pentaerythritol, ethylene glycol, propylene glycol, sorbitol, 1,3-propanediol, 1,4-butanediol, and 1,2,6-hexanetriol, in an amount at least stoichiometrically equivalent to the amount of organo-boron compound, and then recovering the nitrile by distillation.

5,312,960

FUNGICIDAL 2-METHOXIMINOCARBOXYLIC ESTERS

Wolfgang Krämer, Burscheid; Dieter Berg, Wuppertal; Heinz-Wilhelm Dehne, Monheim, and Stefan Dutzmann, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

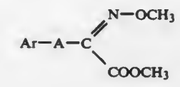
Filed Jun. 4, 1991, Ser. No. 709,937

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1990, 4019307

Int. Cl.[5] C07C *229/06*

U.S. Cl. 560—35 **11 Claims**

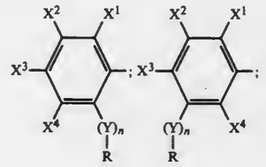
1. A 2-methoximinocarboxylic ester of the formula

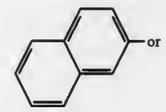


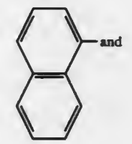
(I)

in which

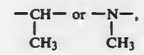
Ar represents





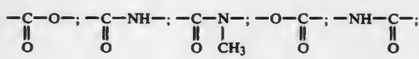


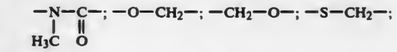
A represents —CH_2—;

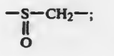


where

Y represents







—SO_2—CH_2—; —O—; —CH=CH— or —CH_2—CH_2—,

n represents the number 0 or 1,

R represents alkyl, halogenoalkyl, alkenyl or halogenoalke-

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nyl, or represents optionally substituted cycloalkyl, or and in the event that n is 0, may also represent halogen, and X^1, X^2, X^3 and X^4 each independently represents hydrogen, halogen, hydroxyl or methoxy, but in the event that X^2 represents bromine X^3 does not simultaneously represent hydroxyl or methoxy.

5,312,961

2-AMINO-7-HYDROXYTETRALIN CARBOXYLALKYL ETHERS

Umberto Guzzi; Roberto Cecchi, both of Milan, and Luciano Manara, Alessandria, all of Italy, assignors to Elf Sanofi, Paris, France

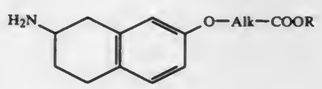
Continuation of Ser. No. 622,964, Dec. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 480,207, Feb. 14, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 905,483

Claims priority, application France, Feb. 14, 1989, 89 01910; European Pat. Off., Jun. 12, 1990, 90401606.0

Int. Cl.[5] **C07C** *101/72*

U.S. Cl. 560—45 **4 Claims**

1. A 2-amino-7-hydroxytetralin carboxyalkyl ether of formula (I)



(I)

wherein Alk represents a straight or branched (C_3–C_5)-alkylene chain, and R represents hydrogen or (C_1–C_4)-alkyl or a salt thereof.

5,312,962

PROCESS FOR THE PRODUCTION OF COMPOUNDS CONTAINING ALDIMINE OR KETIMINE GROUPS AND THE COMPOUNDS OBTAINED BY THIS PROCESS

Walter Schäfer, Leichlingen, and Hanns-Peter Müller, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

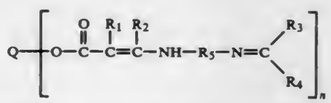
Filed Jul. 2, 1992, Ser. No. 908,137

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122766

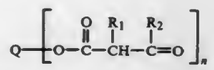
Int. Cl.[5] **C07C** *251/20, 251/08;* **C08G** *12/00*

U.S. Cl. 560—121 **1 Claim**

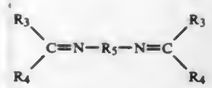
1. An organic compound containing aldimine or ketimine groups which corresponds to the formula



and is prepared by a process which comprises reacting an organic compound containing β-ketoester groups and corresponding to the formula



with 0.75 to 1.0 mole, per mole of ketoester groups, of a bis-aldimine or bis-ketimine corresponding to the formula



wherein

Q is an n-functional residue obtained by removing the hydroxyl groups from an n-functional polyhydroxyl compound containing primary and/or secondary hydroxyl groups and having a molecular weight of 62 to 15,000,

R_1 is hydrogen or is attached to R_2 by a C—C bond and with R_2 forms a tri- or tetramethylene group,

R_2 is a methyl or ethyl group or is attached to R_1 by a C—C bond and with R_1 forms a tri- or tetramethylene group,

R_3 is a $C_{1\text{-}9}$ alkyl radical or, together with the carbon atom and the substituent R_4, forms a cycloaliphatic ring containing 5 or 6 ring members,

R_4 is a $C_{1\text{-}9}$ alkyl radical or, together with the carbon atom and the substituent R_3, forms a cycloaliphatic ring containing 5 or 6 ring members,

R_5 is a (cyclo)aliphatic $C_{2\text{-}15}$ hydrocarbon radical and

n is a number from 2 to 15,

at a temperature of 0° to 80° C. in the presence of a catalytic quantity of water with elimination of aldehyde or ketone in a quantity equivalent to the quantity of ketoester groups.

5,312,963

PROCESS FOR PREPARING SUBSTITUTED CYCLOBUTANES

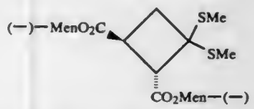
Richard J. Pariza, Winthrop Harbor; Steven M. Hannick, Highland Park; Thomas J. Sowin, Grayslake, and Elizabeth M. Doherty, Evanston, all of Ill., assignors to Bristol-Myers Squibb Co., Princeton, N.J.

Division of Ser. No. 665,413, Mar. 11, 1991, Pat. No. 5,235,052, which is a continuation-in-part of Ser. No. 509,938, Apr. 16, 1990, abandoned. This application Jun. 14, 1993, Ser. No. 75,426

Int. Cl.[5] **C07C** *67/30, 69/74*

U.S. Cl. 560—123 **4 Claims**

1. A process for the preparation of the substantially pure (−)-enantiomeric form of the compound of the formula:



wherein Men represents a menthyl comprising reacting the di-(−)-menthyl ester of fumaric acid with 1,1-bis(methylthio)ethylene in the presence of a Lewis acid catalyst.

5,312,964

NOVEL PROCESS AND INTERMEDIATES

Didier Babin, Montigny; Neerja Bhatnagar, Savigny-Sur-Orge; Francis Brion, Gagny, and Colette Colladant, Rosny Sous Bois, all of France, assignors to Roussel UCLAF, France

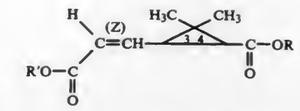
Filed May 27, 1993, Ser. No. 68,251

Claims priority, application France, Jun. 4, 1992, 92 06772

Int. Cl.[5] **C07C** *121/75*

U.S. Cl. 560—124 **15 Claims**

1. A process for the preparation of a compound of the formula

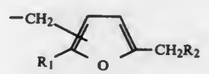


I

wherein R is either a remainder of a cleavable ester or a remainder of an ester known for pyrethrinoids selected from the group consisting of:

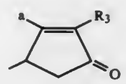
a) benzyl optionally substituted on the aromatic vertices by at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkenyloxy of 2 to 6 carbon atoms, alkadienyl of 4 to 8 carbon atoms, methylenedioxy and halogen;

b)



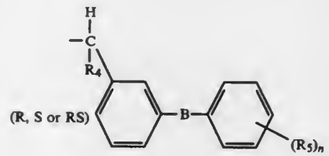
in which R_1 is hydrogen or methyl and R_2 is a monocyclic aryl or —C≡CH;

c)

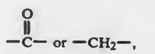


in which a hydrogen or methyl and R_3 is aliphatic of 2 to 6 carbon atoms and having at least one carbon-carbon unsaturation;

d)

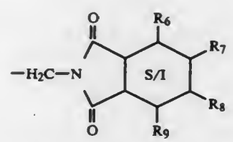


in which B is oxygen or sulfur or



R_4 is selected from the group consisting of hydrogen, chlorine, bromine, iodine, —C≡N, methyl, —$CONH_2$. —$CSNH_2$ and —C≡CH, R_5 is halogen or methyl and n is 0, 1 or 2;

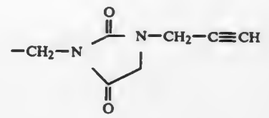
e)



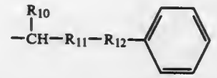
in which R_6, R_7, R_8 and R_9 are hydrogen, chlorine or methyl and in which S/I symbolizes an aromatic ring or a dihydro, tetrahydro or hexahydro ring,

f) (succimido or maleimido) methylene;

g)



h)

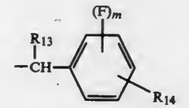


in which R_{10} is hydrogen or CN, R_{12} is —CH_2 or oxygen, R_{11} is thiazolyl or thiadiazolyl whose bond with



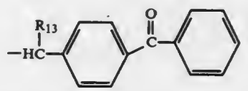
can be found in any one of the available positions, R_{12} being linked to R_{11} by the carbon atom contained between the sulfur and the nitrogen;

i)



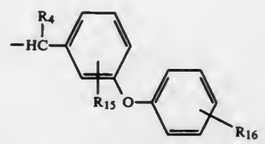
in which R_{13} is hydrogen or —CN or —C≡CH, R_{14} is trifluoromethyl or alkyl, alkenyl or alkynyl of up to 6 carbon atoms and m is a number of 1, 2, 3 or 4;

j)



in which R_{13} is defined as above;

k)

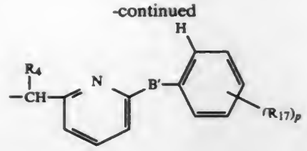


in which R_4 is defined as above, R_{15} is fluorine, chlorine or bromine and R_{16} is hydrogen, fluorine, chlorine or bromine;

l)

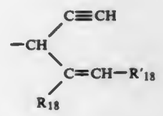
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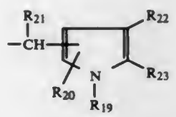
in which R_4 is defined as above, each of R_{17} is independently selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, 3,4-methylenedioxy, chloro, fluoro or bromo, p is 0, 1 or 2 and B' is oxygen or sulfur;

m)



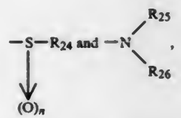
in which R_{18} is fluorine or methyl and R'_{18} is methyl, ethyl or propargyl;

n)



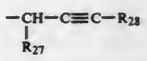
in which R_{21} is hydrogen —C≡N, —C≡CH, —CF_3 or alkyl of 1 to 3 carbon atoms, R_{20}, R_{22} and R_{23} individually are selected from the group consisting of hydrogen, halogen, alkyl of 1 to 18 carbon atoms, aryl of up to 14 carbon atoms, aralkyl of up to 18 carbon atoms, cyano, —CF_3, —CO_2-alkyl of up to 8 carbon atoms, NO_2, alkoxy of up to 8 carbon atoms,

o)



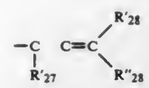
n is 0, 1 and 2 and R_{24}, R_{25} and R_{26} are alkyl of 1 to 8 carbon atoms, R_{22} and R_{23} being able to form a saturated or unsaturated carbonaceous homocycle of up to 8 carbon atoms and R_{19} is:

a) either



in which R_{27} and R_{28} are individually hydrogen, halogen, alkyl of 1 to 8 carbon atoms or aryl of up to 14 carbon atoms;

b) or



in which R'_{27}, R'_{28} and R''_{28} are individually one of the values for R_{27} and R_{28}, the dotted lines being an optional second bond;

c) or



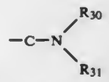
in which R_{29} can have the values indicated for R_{22} and R_{23} with the exception of halogen, cyano, —NO_2,



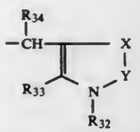
in which n is 1 or 2 and



d) or



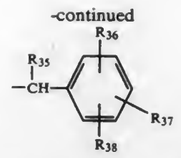
in which R_{30} and R_{31} are individually hydrogen, alkyl of 1 to 18 carbon atoms, aryl of up to 14 carbon atoms, aralkyl of up to 18 carbon atoms, —CF_3, —CO_2-alkyl of up to 8 carbon atoms or alkoxy of up to 8 carbon atoms,



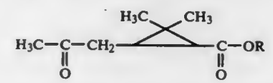
in which X is sulfur or oxygen, Y is >C=O, >C=S or —CH_2, R_{32} is selected from the group consisting of saturated or unsaturated, alkyl or cycloalkyl of up to 8 carbon atoms optionally substituted by at least one halogen and aryl of up to 14 carbon atoms, R_{33} is selected from the group consisting of hydrogen, saturated or unsaturated alkyl or cycloalkyl of up to 8 carbon atoms optionally substituted by at least one halogen, aryl of up to 14 carbon atoms, —CF_3, —NO_2 —C≡N, halogen, alkoxy of up to 8 carbon atoms and —CO_2-alkyl of up to 8 carbon atoms, R_{34} is hydrogen, alkyl of 1 to 3 carbon atoms or —C≡CH;

p)

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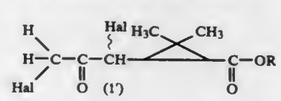


in which R_{35} is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, —C≡N, —C≡CH and —CF_3, R_{36} and R_{38} are individually selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms optionally substituted by at least one halogen, alkenyl of 2 to 4 carbon atoms and halogen and R_{37} is phenyl optionally substituted by at least one alkyl of 1 to 3 carbon atoms or by at least one halogen, R' is selected from the group consisting of hydrogen, saturated or unsaturated alkyl of 1 to 18 carbon atoms optionally substituted by at least one identical or different functional groups, or R' is cycloaliphatic of 3 to 7 carbon atoms substituted by at least one identical or different functional group, or R' is aryl of 6 to 14 carbon atoms optionally substituted by at least one identical or different functional group, or R' is heterocyclic optionally substituted by at least one identical or different functional group, in the form of mixtures of isomers or separate isomers at the level of the cyclopropane ring comprises reacting an ester of the formula



II

in which R is defined as above with a halogenation agent to obtain a compound of the formula



III

in which R is defined as above, and Hal is halogen in the form of a mixture of isomers at the level of the carbon atom in position 1' and treating the latter with a basic agent in the presence of a compound of the formula R'—OH, in which R' is defined as above to obtain the corresponding compound of formula I.

5,312,965

LUBRICATING OIL COMPOSITION CONTAINING SUBSTANTIALLY STRAIGHT CHAIN ALKYLPHENYL POLY(OXYPROPYLENE) AMINOCARBAMATES

Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 69,674, Jul. 2, 1987, abandoned. This application Nov. 27, 1991, Ser. No. 803,657

Int. Cl.[5] C10M *133/00*

U.S. Cl. 560—159 **8 Claims**

1. An alkylphenyl poly(oxypropylene) aminocarbamate having at least one basic nitrogen and an average molecular weight of about 1,000 to 2,500, wherein the alkyl group of said alkylphenyl poly(oxypropylene) aminocarbamate is derived from a substantially straight-chain C_{20} to C_{28} olefin mixture and wherein the aminocarbamate group of said alkylphenyl poly(oxypropylene) aminocarbamate is derived from a polyalkylene polyamine selected from the group consisting of ethylene diamine, propylene diamine, diethylene triamine and dipropylene triamine.

5,312,966

PROCESS FOR PRODUCTION OF CARBOXYLIC ACID ESTER AND FORMAMIDE

Takafumi Abe; Yoshiyuki Nishide; Nobuyuki Muro, and Hirofumi Higuchi, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,359

Claims priority, application Japan, Dec. 26, 1991, 3-345190

Int. Cl.[5] C07C *69/675, 69/34, 69/68, 69/54*

U.S. Cl. 560—179 **20 Claims**

1. A process for producing a carboxylic acid ester and formamide which comprises reacting a carboxylic acid amide with a formic acid ester or reacting a carboxylic acid amide with an alcohol and carbon monoxide, in the presence of a strongly basic anion-exchange resin at a temperature of 0° C. to 150° C.

5,312,967

PROCESS FOR MAKING ACTIVATED ALDARATE ESTERS, ESTER/LACTONES AND LACTONES

Donald E. Kiely; Liang Chen, and David W. Morton, all of Birmingham, Ala., assignors to UAB Research Foundation, Birmingham, Ala.

Filed Aug. 12, 1992, Ser. No. 927,914

Int. Cl.[5] C07C *69/675*

U.S. Cl. 560—180 **6 Claims**

1. A one-step process which comprises reacting a salt of glucaric acid selected from the group consisting of sodium, potassium and ammonium salts with a molar excess of a lower aliphatic alcohol in the presence of a strong acid in the substantial absence of water to form at least one glucaric acid ester.

5,312,968

FLUORINE CONTAINING GUERBET CITRATE ESTERS

Anthony J. O'Lenick, Jr., Lilburn, Ga., and Charles Buffa, Englewood, N.J., assignors to Siltech Inc., Norcross, Ga. and Biosil Technologies Inc., Englewood, N.J.

Filed Sep. 7, 1993, Ser. No. 116,566

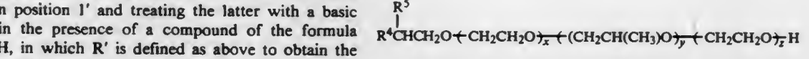
Int. Cl.[5] C07C *69/704*; A61K *7/075, 7/48, 31/225*

U.S. Cl. 560—182 **20 Claims**

1. A guerbet flouro-ester which is prepared by the esterification reaction of;

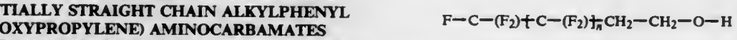
(a) citric acid

(b) a guerbet alcohol conforming to the following structure;



R^4 and R^5 are each independently alkyl having from 4 to 20 carbon atoms;

x, y and z are independently between 0 and 20; and



wherein: n is ranges from 3 to 17.

5,312,969

LINEAR DICARBONYLATION OF DIFUNCTIONALIZED BUTENES

Marc Huser, Villeurbanne; Sylvain Mutez, Irigny, and Robert Perron, Charly, all of France, assignors to Rhone-Poulenc Chimie, Courbevole, France

Filed May 18, 1992, Ser. No. 884,194

Claims priority, application France, May 17, 1991, 91 06188

Int. Cl.[5] C07C *67/38*

U.S. Cl. 560—204 **19 Claims**

1. A process for the linear dicarbonylation of a difunctionalized butene, comprising reacting such butene with carbon monoxide at a temperature of 50° C. to 180° C. under superat-

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mospheric pressure, in the presence of at least one source of hydrogen chloride, a catalytically effective amount of palladium, at least a portion of which palladium being in the zero oxidation state, and a quaternary onium chloride of nitrogen or phosphorus, said nitrogen or phosphorus atom being tetracoordinated to carbon atoms, with the proviso that the nitrogen atom may be coordinated to two pentavalent phosphorus atoms.

5,312,970
METHOD OF PREPARING D-PROPOXYPHENE
John R. Duchek, St. Louis, Mo., assignor to Mallinckrodt Specialty Chemicals Company, Chesterfield, Mo.
Continuation of Ser. No. 700,328, May 9, 1991, abandoned, which is a continuation of Ser. No. 357,564, May 26, 1989, abandoned. This application Mar. 19, 1992, Ser. No. 853,847
Int. Cl.[5] C07C *67/02*
U.S. Cl. 560—250 **22 Claims**

1. A method of preparing d-propoxyphene comprising
(a) dissolving d-oxyphene in propionic anhydride solvent so as to form a solution of said d-oxyphene in said propionic anhydride, which solution is substantially free of other non-aqueous solvent;
(b) reacting said d-oxyphene with said propionic anhydride in said solution under acylating conditions at a temperature of from about 70° to about 80° C. so as to form d-propoxyphene; and
(c) thereafter isolating d-propoxyphene from the solution.

5,312,971
COLOR REDUCTION OF POLYMETHYLENE POLYPHENYL POLYISOCYANATES
Rick L. Adkins, New Martinsville, W. Va., and Clarence D. Blue, Dormagen, Fed. Rep. of Germany, assignors to Miles Inc., Pittsburgh, Pa.
Filed Jul. 23, 1992, Ser. No. 920,229
Int. Cl.[5] C07C *263/10, 263/18*
U.S. Cl. 560—347 **4 Claims**

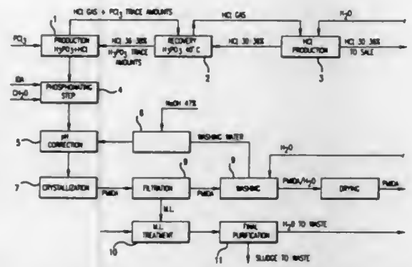
1. In a process for the production of polymethylene polyphenyl polyisocyanates comprising phosgenating the corresponding polyamines in solution in an inert organic solvent, removing excess phosgene, and stripping said solvent, the improvement wherein at least 0.02 parts by weight of reducing agent per 150 parts by weight of polyamine are added to said polyamines at any time prior to said stripping step.

5,312,972
CONVERSION OF HYDROXYMETHYL-IMINODIACETIC ACID TO PHOSPHONOMETHYL-IMINODIACETIC ACID
Barry A. Cullen, Lyndeborough, N.H., assignor to Hampshire Chemical Corp., Lexington, Mass.
Filed Oct. 29, 1992, Ser. No. 969,705
Int. Cl.[5] C07C *229/00; C07F 9/38*
U.S. Cl. 562—17 **12 Claims**

1. A process for the preparation of a stable, storable solution of an alkali metal salt of hydroxymethyl-iminodiacetic acid, comprising reacting an alkali metal salt of iminodiacetic acid with a formaldehyde source selected from the group consisting of formaldehyde, paraformaldehyde, formalin and trioxane.

10. A process for the preparation of phosphonomethyl-iminodiacetic acid, comprising:
a. reacting an alkali metal salt of iminodiacetic acid with a formaldehyde source selected from the group consisting of formaldehyde, paraformaldehyde, formalin and trioxane to form a stable, storable solution of the alkali metal salt of hydroxymethyl-iminodiacetic acid; and
b. reacting the reaction product of step a with a phosphorus source selected from the group consisting of PCl_3 and H_3PO_3 and a strong acid having a pK_a less than or equal to about 2.

5,312,973
PROCESS FOR PRODUCING N-PHOSPHONO-METHYL-IMINO-DIACETIC ACID
Graziello Donadello, Valdagno, Italy, assignor to Finchimica S.P.A., Manerbio, Italy
Filed Mar. 25, 1993, Ser. No. 37,128
Int. Cl.[5] C07F *9/38*
U.S. Cl. 562—17 **7 Claims**



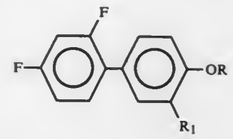
1. A process for preparing N-phosphono-methyl-iminodiacetic acid by means of phosphonomethylation of iminodiacetic acid by the reaction of an aqueous solution of phosphoric acid and hydrochloric acid, obtained from the hydrolysis of phosphorous trichloride, with iminodiacetic acid and formaldehyde, comprising the steps of:
(a) hydrolysing the phosphorous trichloride with water or an aqueous solution of hydrochloric acid, the reaction temperature and amount of water are regulated such that an aqueous solution of hydrochloric acid and phosphoric acid in a molar ratio of 0.5:1 to 2:1 is formed, and gaseous hydrochloric acid is caused to is develop from the reaction medium;
(b) performing the phosphonomethylation reaction in the solution obtained in step (a) in the presence of iminodiacetic acid in a molar ratio of iminodiacetic acid to phosphoric acid of between 1:1 and 1:1.2, with the addition of formaldehyde; and
(c) recovering N-phosphono-methyl-imino-diacetic acid from the reaction medium.

5,312,974
PROCESS FOR THE PRODUCTION OF LIGHT-COLORED LOWER ALKANE-SULFONIC ACIDS, MORE PARTICULARLY METHANESULFONIC ACID
Willi Wuest, Ratingen; Rainer Eskuchen, Duesseldorf, and Christoph Lohr, Dortmund, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
PCT No. PCT/EP90/00962, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO91/00268, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 19, 1990, Ser. No. 778,825
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1989, 3921131
Int. Cl.[5] C07C *61/00*
U.S. Cl. 562—120 **17 Claims**

1. A process for producing a light-colored, lower alkane sulfonic acid comprising the steps of: (a) reacting an alkyl halide having up to six carbon atoms with an alkali metal sulfite in an aqueous medium at a temperature of up to about 120° C. and a pressure sufficient to keep said alkyl halide in the liquid phase to form an aqueous reaction mixture comprised of an alkali metal salt of said alkane sulfonic acid and an alkali metal halide; (b) removing a portion of the water from said aqueous reaction mixture to form an aqueous suspension containing crystallized salt phases, said lower alkane sulfonic acid, and up to about 50% by weight of water; (c) adding hydrogen chloride to said aqueous suspension to form solid alkali metal halide and a first aqueous solution comprising said alkanesulfonic acid and said hydrogen chloride wherein the molar ratio of hydrogen chloride to said alkane sulfonic acid is at least 3 to 1; (d) separating said solid alkali metal halide from said first aqueous solution to form a second aqueous solution comprised of said alkane sulfonic acid and hydrogen chloride.

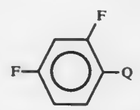
5,312,975
PROCESS FOR THE PREPARATION OF 5-(2,4-DIFLUOROPHENYL)-SALICYLIC ACID
Claudio Giordano, Monza; Laura Coppi, Florence, and Francesco Minisci, Milan, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy
Filed Dec. 27, 1991, Ser. No. 813,661
Claims priority, application Italy, Jan. 8, 1991, MI91 A 00027; Apr. 19, 1991, MI91 A 001094
Int. Cl.[5] C07C *51/15, 41/24, 41/01*
U.S. Cl. 562—406 **12 Claims**

1. A process for the preparation of a biphenyl derivative of formula

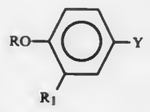


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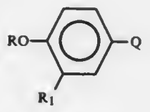
comprising the reaction between a difluorophenyl organometallic derivative of formula



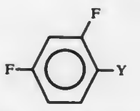
and a phenol compound of formula



or the reaction between a phenol organometallic derivative of formula



and a difluorophenyl compound of formula



wherein Q is a copper atom or an MX_n group where M is a metal selected from the group consisting of Mg, Zn, Cd, Hg, B and Al
with the proviso when M is Mg, Zn, Cd or Hg, X is Cl, Br or I and n is 1; when M is B, X is Cl, Br, I, OH, a C_{1-3} alkoxy and n is 2; when M is Al, X is C_{1-4} alkyl and n is 2;
Y is selected from the group consisting of Cl, Br, I and a trifluoromethanesulfonyloxy group;
wherein R is selected from the group consisting of a hydrogen atom, a linear or branched C_{1-5} alkyl, phenyl, substituted phenyl and benzyl; R_1 is selected from the group consisting of a hydrogen atom, a carboxyl group and a carboxyl precursor group;
in the presence of a zero valent transition-metal based catalyst.

5,312,976
PROCESS FOR THE PREPARATION OF 2-HYDROXY-NAPHTHALENE-6-CARBOXYLIC ACID
Volker Hautzel, Flörsheim am Main, and Siegbert Rittner, Mörfelden-Walldorf, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
PCT No. PCT/EP91/00132, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/11422, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 24, 1991, Ser. No. 917,049
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003043
Int. Cl.[5] C07C *51/15*
U.S. Cl. 562—425 **7 Claims**

1. A process for the preparation of 2-hydroxy-naphthalene-6-carboxylic acid or its dipotassium salt, which comprises reacting potassium β-naphtholate with potassium carbonate and carbon monoxide at a temperature above 260° C. and under a carbon monoxide pressure above 10 bar in 2,5- to 18-times the amount by weight, calculated with respect to the amount of the potassium β-naphtholate, of potassium formate as the solvent or siluent, and optionally converting the dipotassium salt thus formed into 2-hydroxy-naphthalene-6-carboxylic acid.

5,312,977
METHOD FOR PURIFYING L-PHENYLALANINE
Makoto Yanaka; Tooru Miyahara; Daisuke Ura, and Nobuhiro Fukuhara, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Feb. 17, 1993, Ser. No. 19,116
Claims priority, application Japan, Feb. 17, 1992, 4-029205
Int. Cl.[5] C07C *229/28*
U.S. Cl. 562—443 **20 Claims**

1. A method for purifying L-phenylalanine which comprises the steps of:
(a) subjecting an aqueous solution containing mainly cinnamic acid and L-phenylalanine to toluene extraction to extract cinnamic acid therefrom followed by separating the extracting toluene solution from the extracting aqueous solution;
(b) concentrating as an aqueous phase concurrently with the separated extracted aqueous solution until a solid phase comprising L-phenylalanine forms therein;
(c) collecting a solid phase comprising the solid phase comprising crystals of L-phenylalanine separated in said step (b).

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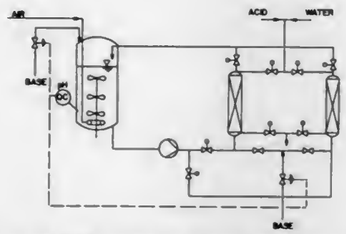
5,312,978
PROCESS FOR PRODUCING VITAMIN A ACID
Toshiki Mori; Hiroshi Fujii; Takashi Onishi, all of Kurashiki, and Yoshin Tamai, Shibata, all of Japan, assignors to Kuraray Company Ltd., Kurashiki, Japan
Filed Mar. 19, 1993, Ser. No. 34,910
Claims priority, application Japan, Mar. 27, 1992, 4-101863
Int. Cl.[5] C07C *51/29*
U.S. Cl. 562—510 10 Claims

1. A process for producing vitamin A acid which comprises oxidizing vitamin A aldehyde by gradually dropwise adding an acid to a mixture comprising vitamin A aldehyde, an aqueous solution of an alkali metal chlorite and a lower unsaturated compound having at least one double bond and at least 3 carbon atoms.

5,312,979
PREPARATION OF ADIPIC ACID BY HYDROCARBOXYLATION OF PENTENOIC ACIDS
Philippe Denis, Decines; Francois Metz, Vernaison, and Robert Perron, Charly, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France
Filed Jul. 9, 1993, Ser. No. 88,353
Claims priority, application France, Jul. 9, 1992, 92 08762
Int. Cl.[5] C07C *51/14*
U.S. Cl. 562—522 8 Claims

1. A process for the preparation of adipic acid, comprising reacting water and carbon monoxide with at least one pentenoic acid, in the presence of a catalytically effective amount of a rhodium-based catalyst and at least one iodinated promoter therefor, at a temperature ranging from 100° to 240° C. and at a pressure greater than atmospheric, with the proviso that (a) said reaction is carried out in the absence of a third reaction solvent and (b) the carbon monoxide partial pressure, measured at 25° C., is less than or equal to 20 bar.

5,312,980
PROCESS FOR THE SEPARATION OF AMINO ACIDS FROM AQUEOUS SOLUTIONS
Sems Yonsel, Hanau; Wiltrud Schäfer-Treffenfeldt, Obertshausen; Akos Kiss, Hanau; Elfriede Sextl, Geiselbach, and Heike Kinz, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany
Filed May 3, 1993, Ser. No. 55,313
Claims priority, application Fed. Rep. of Germany, May 23, 1992, 4217203
Int. Cl.[5] C07C *227/40, 229/26, 229/22*
U.S. Cl. 562—554 8 Claims



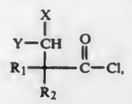
1. A process for the separation of amino acids from aqueous solutions which comprises adjusting the pH value of a solution of an amino acid, the pH being adjusted to a pH value of ≧pI, where pI is the isoelectric point, in the case of basic amino acids (isoelectric point pI>pH 7), and the pH being adjusted to pH≦pI in the case of neutral amino acids (pI between 5 and 7) and acidic amino acids (pI<5), then contacting the said solution with a zeolite, and eluting the amino acid adsorbed on the zeolite at a pH value of pH</pI in the case of basic amino acids and pH>pI in the case of neutral and acidic amino acids.

5,312,981
HYDROLYSIS OF ALKYL DICARBOXYLATES
Gerard Berrod, Villeurbanne; Eric Grillon, Armes, and Francois Klinger, Chaponost, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France
Filed May 20, 1993, Ser. No. 63,679
Claims priority, application France, May 20, 1992, 92 06392
Int. Cl.[5] C07C *51/42*
U.S. Cl. 562—590 14 Claims

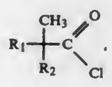
1. A process for the preparation of a dicarboxylic acid, comprising reactively distilling and hydrolyzing admixture of a C_1–C_4 alkyl aliphatic dicarboxylate and water, in liquid phase, in a distillation column, the lower end of which distillation column being charged with a gel of a crosslinked styrene/-divinylbenzene resin bearing sulfonic acid substituents, the amount by weight of divinylbenzene comprising said resin ranging from 1% to 12% based on the total weight thereof and said resin having an exchange capacity of from 3 to 6.5 millie-quivalents H^+/gram of dry resin, also comprising introducing said dicarboxylate/water admixture into the middle region of said column, withdrawing dicarboxylic acid from the base thereof and overhead distilling the alcohol of hydrolysis.

5,312,982
PROCESS FOR THE PREPARATION OF β-HALOGENO-TERT.-ALKYL-CARBOXYLIC ACID CHLORIDES
Rüdiger Schubart, Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Apr. 2, 1992, Ser. No. 862,092
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4111908
Int. Cl.[5] C07C *51/58*
U.S. Cl. 562—864 7 Claims

1. A process for the preparation of β-halogeno-tert.-alkyl-carboxylic acid chlorides of the formula (I)


(I)

in which
X represents chlorine,
Y represents hydrogen or chlorine,
R_1 represents in each case straight-chain or branched lower alkyl or halogeno alkyl and
R_2 represents in each case straight-chain or branched lower alkyl or halogeno alkyl or represents optionally halogen- and/or trifluoromethyl-substituted phenyl,
which comprises reacting a tert.-alkylcarboxylic acid chloride of the formula (II)


(II)

in which
R^1 and R^2 have the definition given above with elemental chlorine in the liquid phase, optionally under irradiation or in the presence of free-radical catalysts in a suitable apparatus.

5,312,983
ORGANOMETALLIC TELLURIUM COMPOUNDS USEFUL IN CHEMICAL VAPOR DEPOSITION PROCESSES
Duncan W. Brown, Wilton, Conn.; Rein U. Kirss, Needham, Mass., and Douglas Gordon, Cornwall Bridge, Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.
Filed Feb. 15, 1991, Ser. No. 656,564
Int. Cl.[5] C07F *11/00*
U.S. Cl. 562—899 4 Claims

1. A compound having the formula:

$$TeR^1R^2$$

wherein R^1 is a fluorinated alkyl having the formula $C_nF_{(2n+1)-x}H_x$; and where n ranges from 1 to 6 and x ranges from 0 to 2 n; and R^2 is selected from the group consisting of secondary and tertiary alkyls having 3 to 6 carbon atoms, cycloalkyls having 3 to 6 carbon atoms, allyl, alkyl-substituted allyls having 4 to 6 carbon atoms, cyclopentadienyl, benzyl, alpha-methylbenzyl, and bis(alpha-methyl)benzyl.

5,312,984
AMIDATION OF VINYL CHLORIDE WITH DIMETHYLAMINE USING A SUPPORTED PALLADIUM CATALYST
Paul P. Nicholas, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Continuation-in-part of Ser. No. 161,710, Feb. 29, 1988, Pat. No. 5,159,113, which is a continuation-in-part of Ser. No. 683,840, Dec. 19, 1984, abandoned. This application Sep. 23, 1992, Ser. No. 950,441
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] C07C *231/10*
U.S. Cl. 564—132 16 Claims

1. In the amidation of vinyl chloride with dimethylamine to produce N,N-dimethylacrylamide, a two step continuous process comprising,
in a first step, reacting a stoichiometric excess of vinyl chloride and carbon monoxide with dimethylamine in the presence of a catalytically effective amount of a heterogeneous catalyst consisting essentially of a porous support having covalently bonded triorganophosphines forming coordination complexes with Pd(0) or a Pd(II) complex capable of being reduced to Pd(0) under amidation conditions, said Pd(0) complex having the stoichiometry:

$$Pd(PR_3)_n$$

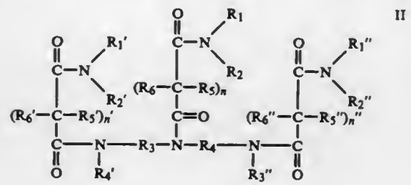
wherein
R represents C_1–C_4 lower alkyl, phenyl, C_1–C_4 alkyl-phenyl, and cycloalkyl having 4 to 6 ring carbon atoms;
n is an integer in the range from 2 to 6; and, when n>4 excess ligand is present;
under elevated temperature and pressure reaction conditions, to form a major amount, on a molar basis, of the Michael adduct of said dimethylamine with said N,N-dimethylacrylamide, said conditions being a temperature in the range from above 80° C. to a temperature below which said Michael adduct dissociates, and under a pressure in the range from about 200 psig but below 600 psig; and,
in a second step, converting said Michael adduct to said N,N-dimethylacrylamide.

5,312,985
METHOD OF SYNTHESIZING THE PRECURSOR PYRUVAMIDE
Madhup K. Dhaon, Mundelein, and John A. Houbion, Vernon Hills, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Division of Ser. No. 868,891, Apr. 16, 1992, Pat. No. 5,256,697. This application Apr. 8, 1993, Ser. No. 43,699
Int. Cl.[5] C07C *231/02*
U.S. Cl. 564—143 2 Claims

1. A method of synthesizing the pyruvate precursor pyruvamide comprising the steps of:
(a) reacting sodium pyruvate with a substance selected from the group consisting of thionyl chloride and oxalyl chloride to yield pyruvyl chloride; and
(b) reacting the pyruvyl chloride with 1,1,1,3,3,3-hexamethyldisilazane at a temperature of 0°–40° Centrigrade, followed by treatment with methanol in the presence of a solvent to generate pyruvamide.

5,312,986
HEXACARBOXYLIC ACID HEXA-AMIDES WHICH FORM LIPHOPHILIC COMPLEXES WITH MAGNESIUM IONS, CORRESPONDING MAGNESIUM COMPLEXES, AND TEST DEVICES AND ION SELECTIVE PARTS CONTAINING SUCH HEXACARBOXYLIC ACID HEXA-AMIDES
Wilhelm Simon; Marizel V. Rouilly, both of Zürich, and Bruno Rusterholz, Thalwil, all of Switzerland, assignors to Willi Molier AG, Zurich, Switzerland
Continuation of Ser. No. 488,560, Mar. 2, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,922
Claims priority, application Switzerland, Mar. 3, 1989, 811/89
Int. Cl.[5] C07C *233/06*
U.S. Cl. 564—153 8 Claims

1. A hexacarboxylic acid hexa-amide adapted for forming lipophilic complexes with magnesium ions, and lipophilic complexes of said hexacarboxylic acid hexa-amide with magnesium ions, said hexacarboxylic acid hexa-amide having the following formula II:


II

wherein
(i) n, n′ and n″ are independently 1 or 2,
(ii) R_1 and R_2 are independently selected from the group A, consisting of hydrogen, C_1–C_{15} alkyl, C_2–C_{15} alkenyl, C_2–C_{15} alkynyl, cyclohexyl and phenyl;
(iii) R_1' and R_2' are independently selected from the group A defined above;
(iv) R_1'' and R_2'' are independently selected from group A as defined above;
(v) R_3 is selected from the group B consisting of a divalent aliphatic, alicyclic and aromatic hydrocarbon radicals;
(vi) R_3'' is selected from group A defined above;
(vii) R_4 is selected from group B defined above;
(viii) R_4' is selected from group A defined above;
(ix) R_5, R_5', R_5'', R_6, R_6' and R_6'' are independently selected from the group consisting of hydrogen, C_1–C_4 alkyl and halogen.

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5,312,987
TWO-STEP PROCESS FOR LIQUID-PHASE PRODUCTION OF OXIMES

Maria A. Mantegazza, Monza; Guido Petrini, Galliate, and Alberto Cesana, Carate Brianza, all of Italy, assignors to Enichem Anic S.r.l., Palermo, Italy

Filed Mar. 30, 1993, Ser. No. 39,839
Claims priority, application Italy, Apr. 1, 1992, MI.92-A/000776
Int. Cl.[5] C07C *249/04*
U.S. Cl. 564—267 **7 Claims**

1. Two-step process for producing oximes in the liquid phase, at 60°–1000° C. and 1.5–5 bars, which process comprises:

(a) in a primary step, ammoximating a carbonylic compound with H_2O_2 and NH_3 in the presence of a silicon, titanium and oxygen based catalyst;

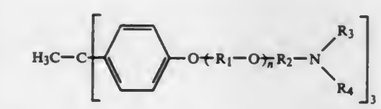
(b) oximating the residual carbonylic compound with a solution of hydroxylamine, obtained in its turn by oxidizing ammonia with H_2O_2, having a concentration comprised within the range of from 0.01 to 3%, preferably of from 0.5 to 2% by weight, in such a way as to have a molar ratio of hydroxylamine to the carbonylic compound comprised within the range of from 0.95 to 3, preferably of from 1 to 2.

5,312,988
AMINES DERIVED FROM THPE

Michael T. Sheehan; James R. Sounik, both of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 28, 1993, Ser. No. 69,964
Int. Cl.[5] C07C *217/44*
U.S. Cl. 564—325 **4 Claims**

1. Amino compounds having the structural formula (1):



wherein n is 0–1000; and $R_1=R_2$, and R_1 and R_2 are from the group $—CH_2—CH_2—$; $—CH_2—C(CH_3)H—$; and $—C(CH_3)H—CH_2—$; and R_3 and R_4 are each independently selected from the group consisting of H, $—CH_3$, $—CH_2CH_3$; $—CH_2OH$; and $—CH_2—CH_2-OH$.

5,312,989
METHOD FOR THE PURIFICATION OF 4,4'-DIAMINO-DIPHENYLMETHANE

Takahiro Yamamoto, Oita; Hirokazu Murata, Osaka, and Kiichi Hattori, Oita, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed May 28, 1993, Ser. No. 68,229
Claims priority, application Japan, May 29, 1992, 4-138673
Int. Cl.[5] C07C *209/84*
U.S. Cl. 564—334 **13 Claims**

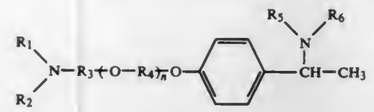
1. A method for the purification of 4,4'-diaminodiphenylmethane comprising partially melting a crystal of crude 4,4'-diaminodiphenylmethane and removing a melt to obtain high purity 4,4'-diaminodiphenylmethane, wherein said crystal of crude 4,4'-diaminodiphenylmethane is prepared by reacting aniline and formaldehyde.

5,312,990
DI-AMINO COMPOUNDS

Michael T. Sheehan; James R. Sounik; Bret F. Hann, all of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 28, 1993, Ser. No. 69,948
Int. Cl.[5] C07C *217/44*
U.S. Cl. 564—348 **4 Claims**

1. Di-amino compounds having the structural formula (I):



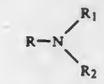
wherein n is 1–1000; R_1, R_2, R_5, and R_6 are each independently selected from the group consisting of H, $—CH_3$, $—CH_2CH_3$; $—CH_2OH$; and $—CH_2—CH_2—OH$; and R_3=R_4 and R_3 and R_4 are from the group $—CH_2—CH_2—$; $—CH_2—C(CH_3)H—$; and $—C(CH_3)H—CH_2—$; and the diasteromeric salts thereof.

5,312,991
SURFACTANT IMPROVEMENT FOR PARA-AMINOPHENOL PROCESS

Douglas C. Miller, St. Louis, Mo., assignor to Mallinckrodt Specialty Chemicals Company, Chesterfield, Mo.

Filed Jun. 9, 1992, Ser. No. 895,632
Int. Cl.[5] C07C *213/00*
U.S. Cl. 564—418 **20 Claims**

1. A process for preparing p-aminophenol comprising catalytically hydrogenating nitrobenzene in an acidic reaction medium containing an amine of the formula (I)



(I)

wherein R represents alkyl having from about 6 to about 20 carbon atoms; R and R_2 are the same or different, and are represented by the formula $—[(CH_2)_mO]_nH$, wherein m is an integer of from 1 to about 5 and n is an integer of from 1 to about 10.

5,312,992
PROCESS FOR REMOVING SULFUR FROM ORGANIC SULFIDES

Roger T. Clark, Pottstown; Michael J. Lindstrom, Downington; Glenn T. Carroll, Jeffersonville, all of Pa., and Jeffrey H.-G. Yen, Woolwich, N.J., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 357,399, May 26, 1989, Pat. No. 5,091,593. This application Oct. 23, 1991, Ser. No. 780,608
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] C07C *319/22*
U.S. Cl. 568—21 **18 Claims**

1. A process for decreasing the sulfur content of an organic sulfide which is one or more compounds having the formula:

$$RSS_aSR^1$$

where R and R^1 are independently alkyl, aryl, alkaryl, hydroxyalkyl or alkoxyalkyl groups wherein the alkyl moieties have from 1 to 24 carbon atoms and a is an average number greater than 0 but no greater than 13, comprising contacting said organic sulfide at an elevated temperature with a catalyst having the capacity and in amount sufficient to increase the rate of disproportionation of said organic sulfide to thereby produce sulfur and a sulfide of reduced sulfur rank, and continuously removing said sulfide of reduced sulfur rank from the reaction zone.

5,312,993
PROCESS FOR THE MANUFACTURE OF DIMETHYL DISULPHIDE

Emmanuel Arretz, Pau, France, assignor to Elf Atochem S.A., Paris, France

Continuation of Ser. No. 664,698, Mar. 5, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 970,592
Claims priority, application France, Mar. 5, 1990, 0902715
Int. Cl.[5] C07C *321/14*
U.S. Cl. 568—26 **9 Claims**

1. Process for the manufacture of dimethyl disulphide from methyl mercaptan and sulphur, comprising:

(a) reacting methyl mercaptan and sulphur in a first reaction zone maintained at a pressure not above 50 bars but sufficient to maintain the methyl mercaptan in the liquid state, wherein the methyl mercaptan and sulphur are introduced in an excess of methyl mercaptan such that the methyl mercaptan/sulphur ratio is between 3 and 6 to selectively produce dimethyl disulphide and minimize methyl mercaptan recycling, and wherein said methyl mercaptan and sulphur are reacted at an elevated temperature in the presence of a catalyst that oxidizes mercaptans with sulphur,

(b) treating products originating from the first reaction zone in a degassing zone, said products comprising dimethyl polysulphides, to selectively remove at least partially the dissolved hydrogen sulphide, wherein at least 50% of the hydrogen sulphide is removed, and

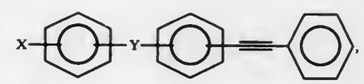
(c) bringing the products originating from the degassing zone into contact with a catalyst in a second reaction zone to convert the dimethyl polysulphides with the excess methyl mercaptan.

5,312,994
PHENYLETHYNYL ENDCAPPING REAGENTS AND REACTIVE DILUENTS

Robert G. Bryant, Poquoson; Brian J. Jensen, Williamsburg, and Paul M. Hergenrother, Yorktown, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 2, 1993, Ser. No. 45,343
Int. Cl.[5] C07C *205/06, 317/14, 49/794, 22/08*
U.S. Cl. 568—306 **4 Claims**

1. A composition of matter capable of undergoing aromatic nucleophilic substitution, the composition having the general formula:



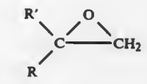
wherein X is selected from the group consisting of F, Cl, and NO_2, and Y is selected from the group consisting of CO, SO_2, and $C(CF_3)_2$.

5,312,995
PROCESS FOR ISOMERIZING EPOXIDES TO ALDEHYDES

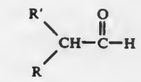
Mahmoud K. Faraj, Newtown Square, Pa., assignor to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Apr. 23, 1993, Ser. No. 53,026
Int. Cl.[5] C07C *45/67*
U.S. Cl. 568—427 **15 Claims**

1. A process which comprises isomerizing an epoxide having the structure:



to an aldehyde having the structure:



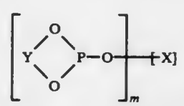
in the presence of a metal-exchanged zeolite, wherein the zeolite contains an alkali metal and a second exchangeable metal selected from the group consisting of Group IIA, Group IB, Group IIB, and Group IIIB metals; and wherein each of R and R' separately represents hydrogen, a C_1–C_{30} alkyl group, a C_6–C_{30} aryl group, or a C_7–C_{30} aralkyl group.

5,312,996
HYDROFORMYLATION PROCESS FOR PRODUCING 1,6-HEXANEDIALS

Diane L. Packett, South Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 905,415, Jun. 29, 1992, abandoned. This application May 20, 1993, Ser. No. 62,475
Int. Cl.[5] C07C *45/50*
U.S. Cl. 568—454 **16 Claims**

1. A hydroformylation process for producing a 1,6-hexanedial which comprises reacting a butadiene with hydrogen and carbon monoxide in the presence of a catalytic amount of rhodium complexed with a poly-phosphite ligand having the formula:



(I)

wherein Y is a divalent organic radical that contains at least 5 carbon atoms, X is an organic radical that contains at least 12 carbon atoms, that contains at least two branched alkyl groups and that has a valence of m supplied by carbon atoms of the X radical, provided that at least two of the carbon atoms supplying the valences of the X radical are separated from each other by no more than 10 atoms and m has a value from 2 to 6 inclusive.

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5,312,997

SURFACE-ACTIVE PEREOXIDES AND THEIR USE

Martin Bohnenpoll; Adolf Schmidt, both of Cologne, and Heinrich Alberts, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

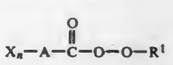
Filed May 4, 1993, Ser. No. 57,230

Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4215484

Int. Cl.[5] C07C *409/00*

U.S. Cl. 568—558 **5 Claims**

1. A peroxide of the formula



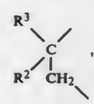
(I)

wherein

R^1 denotes alkyl or cycloalkyl having 4 to 20 carbon atoms, and aryl radicals having 6 to 20 carbon atoms,

X denotes the radicals —COOH and —SO_3H and alkali metal, alkaline earth metal or ammonium salts thereof,

n denotes an integer in the range from 1 to 6, and wherein the radical A is corresponding to the formula (II)



(II)

wherein

the radicals R^2 and R^3 represent H, C_1–C_{40}-alkyl, C_3–C_{40}-cycloalkyl, aryl, aralkyl or halogen, with the limitation that the sum of the carbon atoms in the two radicals is greater than 16.

5,312,998

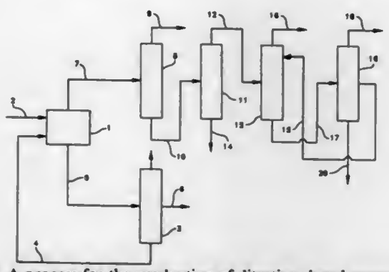
INTEGRATED PROCESS FOR THE PRODUCTION OF DITERTIARY BUTYL PEROXIDE

Frank J. Liotta, Jr., Collegeville; Mahmoud K. Faraj, Newtown Square; Daniel B. Pourreau, Downingtown, and Haven S. Kesling, Jr., Drexel Hill, all of Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Jun. 10, 1993, Ser. No. 75,185

Int. Cl.[5] C07C *409/16*

U.S. Cl. 568—578 **4 Claims**



1. A process for the production of ditertiary butyl peroxide which comprises reacting isobutane oxidate containing tertiary butyl hydroperoxide and tertiary butyl alcohol in the presence of a water soluble protic or Lewis acid catalyst, separating the reaction product mixture into an organic ditertiary butyl peroxide-containing phase and an aqueous phase containing tertiary butyl alcohol and the said catalyst, distilling the aqueous phase in order to separate tertiary butyl alcohol and the said catalyst and recycling the aqueous solution of said catalyst to the peroxide reaction zone, water extracting tertiary butyl alcohol from teritary butyl peroxide in the said organic phase and recovering the tertiary butyl peroxide product.

5,312,999

PROPOXYBENZENE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Toshihiro Fujiwara, and Tutomu Ebata, both of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

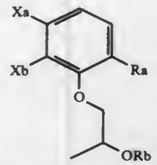
Division of Ser. No. 290,383, Dec. 27, 1988, Pat. No. 5,136,059. This application Mar. 2, 1992, Ser. No. 844,543

Claims priority, application Japan, Dec. 25, 1987, 62-329230; Dec. 28, 1987, 62-336489; Mar. 1, 1988, 63-48195; Mar. 31, 1988, 63-75968

Int. Cl.[5] C07C *229/02, 65/01, 65/10, 211/44, 43/225, 43/23, 309/19, 309/20*

U.S. Cl. 568—587 **2 Claims**

1. A propoxybenzene derivative represented by the following formula:



wherein Ra represents a nitro group, an amino group which may have a protecting group or an —NHCH=C(COO—C_{1-6}-Alkyl)$_2$ group, Rb represents a hydrogen atom, a protecting group for the hydroxyl group or a p-toluenesulfonyl, methanesulfonyl or trifluoromethanesulfonyl group and Xa and Xb, which may be the same or different, each represents a halogen atom.

5,313,000

POLYMERIZATION OF CYCLIC ETHERS

Malcolm J. Stewart, Bedford, England, assignor to The Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Britain and Northern Ireland, London, England

PCT No. PCT/GB90/00837, § 371 Date Jan. 27, 1992, § 102(e) Date Jan. 27, 1992, PCT Pub. No. WO90/15092, PCT Pub. Date Dec. 13, 1990

PCT Filed May 30, 1990, Ser. No. 820,692

Claims priority, application United Kingdom, May 31, 1989, 8912456

Int. Cl.[5] C07C *31/18, 201/00, 41/03*

U.S. Cl. 568—613 **14 Claims**

1. A process for polymerizing at least one cyclic ether monomer which is capable of oxonium ion cationic polymerization and selected from the group consisting of nitrato-and nitro-substituted oxiranes comprising reacting the monomer with a catalyst and an organic hydroxy-containing precursor compound, the catalyst being capable of generating oxonium ions by reaction with the monomer and the precursor compound having at least one hydroxy functional group for initiating polymerization of the monomer, wherein the polymerization process comprises the steps of:

(a) mixing monomer together with stoichiometric excesses of both the catalyst and the precursor compound to promote formation of said oxonium ions and subsequent reaction between said ions and the hydroxy groups on molecules of the precursor compound to give a non-ionic product having at least one hydroxyl terminal group, the molar ratio of precursor compound to catalyst being at least 5:f where f is the number of hydroxyl functionalities of the precursor compound; and

(b) bringing further of the monomer into contact with the reaction mixture at a sufficiently low rate to maintain the catalyst in stoichiometric excess over the monomer such that the non-ionic product of step (a) undergoes chain extension polymerization with further of said oxonium ions, said chain extended polymer having at least one hydroxyl terminal group.

5,313,001

PROCESS FOR THE PREPARATION OF α-FLUROSTYRENE

Walter Heitz, Kirchhain, and Arno Knebelkamp, Marburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00789, § 371 Date Nov. 17, 1992, § 102(e) Date Nov. 17, 1992, PCT Pub. No. WO91/16286, PCT Pub. Date Oct. 31, 1991

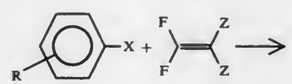
PCT Filed Apr. 24, 1991, Ser. No. 927,430

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013305

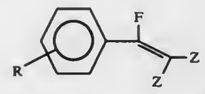
Int. Cl.[5] C07C *43/02, 22/00*

U.S. Cl. 568—655 **10 Claims**

1. A process for the preparation of α-fluorostyrene from fluoroolefins:



(I) (II)



(III)

Z=hydrogen, fluorine, chlorine

X=iodine, bromine, chlorine

characterized in that a halogenated aromatic (I) is reacted with a fluorine-substituted ethylene (II) in the presence of a palladium catalyst to give α-fluorostyrene (III), wherein R is a hydrogen atom, a halogen atom, a C_1–C_4-alkyl group, a C_1–C_5-alkoxy group, an amino, alkylamino or dialkylamino group, an aryl radical or a fused aryl or heteroaryl ring, a hydroxyl or hydroxyalkyl group, a trifluoromethyl or perfluoroalkyl group or a nitro group.

5,313,002

ETHERS FOR AROMATIZING PURPOSES

Johannes T. De Heij, Hilversum; Franciscus P. Van Lier, Huizen, and Harrie Renes, Nederhorst den Berg, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

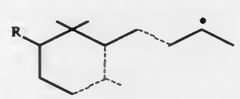
Filed Nov. 3, 1992, Ser. No. 970,870

Claims priority, application European Pat. Off., Nov. 4, 1991, 91202864.4

Int. Cl.[5] C07C *43/115, 43/15, 43/162;* **A61K** *7/46*

U.S. Cl. 568—664 **8 Claims**

1. An ether having the formula R_1—O—R_2 wherein R_1 and R_2 are radicals according to the following formula:



and wherein:

R denotes either hydrogen or a lower alkyl group, and double bonds can be present at the positions indicated by the dotted lines.

5,313,003

COPOLYMERIZABLE FLUORINATED COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THERMOPLASTIC FLUOROPOLYMERS OBTAINABLE THEREFROM

Ralf Krüger, Bergisch Gladbach; Michael Negele, Solingen, and Albrecht Marhold, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

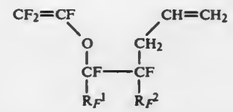
Filed Jun. 10, 1993, Ser. No. 75,207

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1992, 4219764

Int. Cl.[5] C07C *43/192, 43/17*

U.S. Cl. 568—669 **2 Claims**

1. A 2-allyl-perfluoroalkyl-trifluorovinyl ether of the formula



(I)

wherein

$R^1_F$and R^2_Frepresent either —CF_3or, when taken together, $(CF_2)_n$ where n=2 or 3.

5,313,004

PRODUCTION OF ALKYL TERTIARY ALKYL, ETHERS FROM ISOALKANES

Mohsen N. Harandi, Langhorne, Pa., and Paul J. Oswald, Voorhees, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 726,418, Jul. 5, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,317

Int. Cl.[5] C07C *41/00, 43/00*

U.S. Cl. 568—697 **5 Claims**

1. A process for the production of alkyl tertiary alkyl ethers, comprising:

contacting a hydrocarbon feedstream rich in iso-olefins in the vapor phase and a C_1–C_3 alkanol feedstream with acidic shape selective zeolite etherification catalyst particles in an etherification zone under etherification conditions whereby an effluent stream is produced comprising said alkyl tertiary alkyl ethers, unreacted C_1 –C_3 alkanol and hydrocarbons;

passing said effluent stream to a fractionator and separating said etherification effluent stream in contact with a reflux stream comprising fresh hydrocarbon feedstock rich in isoparaffins whereby a bottom stream is recovered comprising said ethers and an overhead stream is separated comprising said unreacted alkanol and hydrocarbons rich in isoparaffins;

converting at least a portion of said overhead stream in a dehydrogenation zone in contact with dehydrogenation catalyst under vapor phase dehydrogenation conditions whereby a dehydrogenation effluent vapor stream is produce rich in iso-olefins and hydrogen;

compressing said dehydrogenation effluent and separating said hydrogen therefrom with a selective membrane to recover hydrogen byproduct and a retentate stream rich in iso-olefin;

recycling said retentate stream to said etherification zone in vapor phase.

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5,313,005

METHOD FOR CONTROLLING CATALYTIC DISTILLATION ETHERIFICATIONS

Lawrence A. Smith, Jr., Bellaire; Edward M. Jones, Jr., Friendswood, and Henry J. Semerak, Houston, all of Tex., assignors to Chemical Research & Licensing Company, Pasadena, Tex.

Continuation of Ser. No. 11,464, Jan. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 964,496, Oct. 21, 1992, Pat. No. 5,248,837. This application Sep. 13, 1993, Ser. No. 120,644

Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 **11 Claims**

1. In a process for the production of ethers from the reaction of isoolefins with a mixture of alcohols in a distillation column reactor having a distillation reaction zone above a distillation zone, the improvement comprising determining the concentration of oxygen derived from alcohol at the lower end of or a point below the distillation reaction zone and maintaining the concentration of the oxygen in the range of greater than 0 weight % to 7 weight %.

5,313,006

COGENERATION OF ISOBUTYLENE PLUS MTBE FROM CRUDE T-BUTANOL/METHANOL FEEDSTOCKS

John F. Knifton, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

Filed Dec. 21, 1992, Ser. No. 994,015

Int. Cl.[5] C07C *41/09*

U.S. Cl. 568—698 **9 Claims**

1. In a method for the etherification of tert-butanol/methanol to methyl tertiary butyl ether over an ion exchange resin etherification catalyst and recovery of the product and bottoms in a primary fractionator, the improvement, allowing more complete conversion of the remaining tertiary butyl alcohol (tBA) fraction in the bottoms to MTBE plus isobutylene, which comprises:

a) recovering the methyl tertiary butyl ether (MTBE) from the etherification as an overhead fraction in the primary fractionator,

b) recovering tertiary butyl alcohol, isopropanol and methanol from the etherification as bottoms in the primary fractionator,

c) removing the bottoms from the primary fractionator, and

d) reacting said bottoms in a second step over a catalyst comprising an acidic type Y-zeolite having a silica:alumina ratio in the range of 100:1 to 1:1, modified with a fluorine-containing compound selected from the group consisting of hydrogen fluoride, hydrofluoric acid, ammonium fluoride and triflic anhydride, at a temperature from 180° C. to 220° C.

5,313,007

SUBSTITUTED PENTAALKYLCHROMANS

David Laffan, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland and Sankyo Company Ltd., Tokyo, Japan

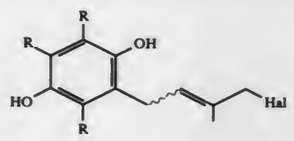
Division of Ser. No. 977,255, Nov. 16, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 26,811

Claims priority, application Switzerland, Nov. 20, 1991, 3393

Int. Cl.[5] C07C *39/19*

U.S. Cl. 568—765 **2 Claims**

1. A substituted tetraalkylhydroquinone of the formula:



IV

wherein R denotes a lower alkyl group having 1 to 4 C atoms and Hal denotes chlorine, bromine or iodine.

5,313,008

8-HYDROXYCYMENE PREPARATION BY DEHYDROGENATION

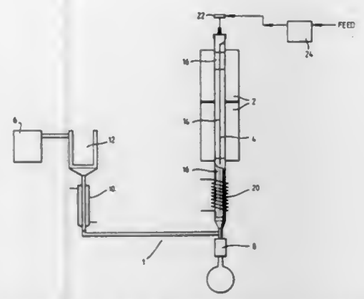
Christopher P. Newman, Canterbury, Great Britain, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Apr. 6, 1993, Ser. No. 42,776

Claims priority, application European Pat. Off., Apr. 6, 1992, 92303006.8

Int. Cl.[5] C07C *29/00, 27/00*

U.S. Cl. 568—814 **17 Claims**



1. Process for the vapour phase catalytic conversion of an 8-hydroxymenthene to an 8-hydroxycymene which comprises treating an 8-hydroxymenthene with an alkaline dehydrogenation catalyst at a temperature above 145° C.

5,313,009

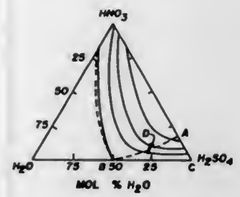
NITRATION PROCESS

Alfred A. Guenkel; John M. Rae, both of Vancouver, and Edward G. Hauptmann, West Vancouver, all of Canada, assignors to NRM International Technologies C.V., Utrecht, Netherlands

Continuation-in-part of Ser. No. 863,315, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 619,151, Nov. 28, 1990, abandoned, and a continuation-in-part of Ser. No. 461,142, Jan. 4, 1990, abandoned. This application Oct. 14, 1993, Ser. No. 135,569

Int. Cl.[5] C07C *201/00;* B01D *3/00*

U.S. Cl. 568—927 **15 Claims**



1. A continuous atmospheric process to nitrate a nitratable aromatic compound in a nitronium ion solution in a nitrator, the process comprising:

(a) introducing into the nitrator a nitronium ion solution of a composition that contains nitric acid, water and sulfuric acid, and lies within an area defined by three points A, B and C of a ternary phase diagram of nitric acid, sulfuric acid and water where -

A. corresponds to about 82% of sulfuric acid and 18% nitric acid;

B. corresponds to about 55% sulfuric acid and 45% water; and

C. corresponds to 100% sulfuric acid; said composition being selected so that nitric acid is present below about 3% and is substantially fully dissociated to nitronium ion and the sulfuric acid strength is sufficiently high to permit a temperature at the inlet of the nitrator of from about 97° to 120° C.;

(b) allowing the nitratable aromatic compound to commingle with the nitronium ion solution so as to provide a fine emulsion of said aromatic compound within the nitronium ion solution with the aromatic compound being evenly distributed in the nitronium ion solution;

(c) causing the nitronium ion solution containing said nitratable aromatic compound to react at a temperature at the inlet of the nitrator of from about 97° to 120° C. in a nitrator containing mixing elements able to achieve and to maintain mixing of the contents of the nitrator to nitrate the nitratable compound to provide an aromatic nitro compound containing only low levels of impurities.

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5,313,010

HAND MUSICAL TONE CONTROL APPARATUS

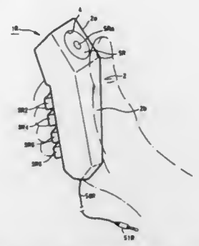
Sbunichi Matsushima; Masao Sakama; Hideo Suzuki; Masahiko Obata, and Takamichi Masabuchi, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 454,058, Dec. 20, 1989, abandoned. This application Nov. 4, 1992, Ser. No. 971,674

Claims priority, application Japan, Dec. 27, 1988, 63-329698; Mar. 1, 1989, 1-49279

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—600 **19 Claims**



1. A musical tone control apparatus for controlling a musical tone in correspondence with a movement of a part of a performer, comprising:

a holding member adapted to be held by a hand of the performer;

a push-button switch, operable by the performer's hand holding the holding member, for designating generation of a tone, said push-button switch being placed on the holding member;

an actuator including first detecting means for detecting a movement of a performer's operation in an x-axis direction, and second detecting means for detecting movement of a performer's operation in a y-axis direction, said actuator designating a continuously changeable value defining a point on an x-y plane, defined by said x axis and said y-axis, in response to a detected value by said first detecting means, and a detected value by said second detecting means, said actuator being placed on said holding member and being operable by the performer's hand holding the holding member;

conversion means for converting said continuously changeable value into a control signal representing a magnitude of the movement; and

control data generating means for generating musical tone control data imparting an effect on the generated musical tone designated by said push button switch in accordance with said control signal.

5,313,011

APPARATUS FOR CARRYING OUT AUTOMATIC PLAY IN SYNCHRONISM WITH PLAYBACK OF DATA RECORDED ON RECORDING MEDIUM

Satoru Koguchi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,456

Claims priority, application Japan, Nov. 29, 1990, 2-333233

Int. Cl.[5] G10H *1/00*

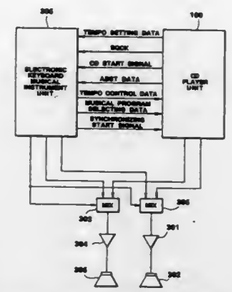
U.S. Cl. 84—609 **29 Claims**

19. A reproducing method for carrying out a reproduction of performance data and a reproduction of automatic playing data in synchronism with each other by using a recording medium in which said performance data is recorded and an automatic playing data storing means in which said automatic playing data is stored, comprising the steps of:

storing reproducing speed data used when said performance data and said automatic playing data are reproduced in synchronism with each other;

controlling a playing speed of said recording medium such that said performance data is reproduced at a set reproducing speed corresponding to said stored reproducing speed data; and

a performance reproducing step which includes controlling



a read-out speed of said automatic playing data from said automatic playing data storing means such that said automatic playing data is reproduced at a set reproducing speed corresponding to said stored reproducing speed data.

5,313,012

AUTOMATIC PERFORMANCE APPARATUS FOR MUSICAL INSTRUMENT WITH IMPROVED EDITING

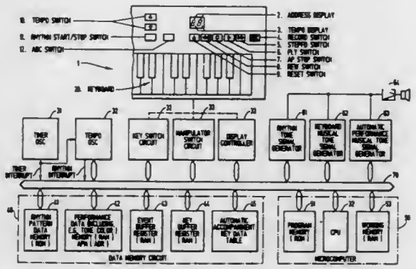
Takashi Ishida, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 460,991, Jan. 4, 1990, abandoned. This application May 22, 1992, Ser. No. 888,260

Claims priority, application Japan, Jan. 6, 1989, 64-542; Jan. 6, 1989, 64-543; Jan. 6, 1989, 64-544

Int. Cl.[5] G10H *1/06, 1/38, 1/42*

U.S. Cl. 84—609 **11 Claims**



6. An automatic performance apparatus comprising:

a performance data memory for sequentially storing a performance data to execute an automatic performance;

control means for producing the performance data for storage in the memory with a storage format including a plurality of fixed-length records, each of the fixed-length records including key data concerning tone generation and a portion of additional data for defining a tone generation characteristic for a plurality of successive key data;

reading means for sequentially reading out said performance data from said performance data memory; and

tone signal generation means for generating musical tones have tone characteristics in accordance with the performance data.

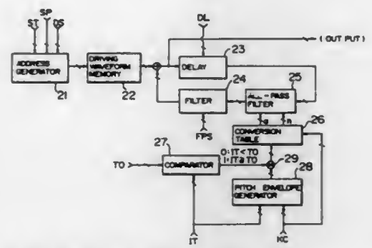
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5,313,013

TONE SIGNAL SYNTHESIZER WITH TOUCH CONTROL

Norio Suzuki, and Takaaki Muto, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 30, 1991, Ser. No. 738,218
Claims priority, application Japan, Aug. 8, 1990, 2-208266
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—622 **13 Claims**



1. A tone signal synthesizer comprising:

touch signal generation means for generating a touch signal representing a degree of a performance;

a loop circuit for circulating a tone signal;

means for applying a driving waveform to said loop circuit;

variable delay means, connected within said loop circuit, for delaying the circulating tone signal by a delay time which corresponds to the pitch of a tone signal to be synthesized;

a variable all-pass filter connected within said loop circuit and being capable of changing the phase of the tone signal corresponding to the frequency thereof;

factor generation means for generating a filtering amplification factor having a value which initially corresponds to said touch signal and which changes over time to a predetermined value; and

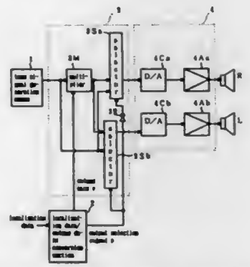
means for applying said filtering amplification factor to said all-pass filter to variably control the phase changes imparted to the tone signal by the filter.

5,313,014

ELECTRONIC MUSICAL INSTRUMENT HAVING SOUND IMAGE LOCALIZATION CIRCUIT

Taichi Kosugi, and Takashi Suzuki, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed May 11, 1993, Ser. No. 60,247
Claims priority, application Japan, Jun. 24, 1992, 4-188959
Int. Cl.[5] G10H *1/02, 7/00*
U.S. Cl. 84—632 **7 Claims**



1. An electronic musical instrument, which incorporates at least two tone signal output means, and which controls sound image localization of the musical sounds of the instrument in accordance with localization data by changing the levels of at least first and second tone signals that are provided, respectively, to said tone signal output means, said instrument comprising:

tone signal generation means for generating a tone signal;

output control data production means receiving the localization data and providing tone signal volume data and a selection signal; and

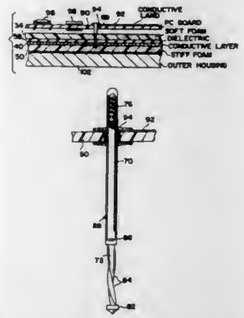
tone signal output level control means receiving said generated tone signal and providing said first and second tone signals to said tone signal output means, said tone signal output level control means having means for altering the generated tone signal responsive to said volume data to provide one of said first and second tone signals, said tone signal output level control means providing a signal corresponding of the tone signal generated by said tone signal generation means as the other of said first and second tone signals, said tone signal output level control means having selection means responsive to said selection signal for providing one of said first and second tone signals to one of the tone signal output means, and for providing the other of said first and second tone signals to the other of the tone signal output means, thereby to control sound image localization of the musical sounds of the electronic musical instrument.

5,313,015

GROUND PLANE SHIELD

William Hoge, Palmyra, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,143
Int. Cl.[5] H05K *9/00, 1/18;* **H01R** *43/00*
U.S. Cl. 174—35 R **17 Claims**



1. A shielding arrangement for a circuit the circuit being mounted on a substrate and having a connection point, the arrangement comprising:

a groundplane defining at least a partial enclosure for blocking propagation of electromagnetic interference, the groundplane including a laminated body having a soft foam layer and a conductive sheet arranged substantially coextensively;

a connection pin coupled to the connection point of the circuit and protruding from the substrate toward the groundplane; and,

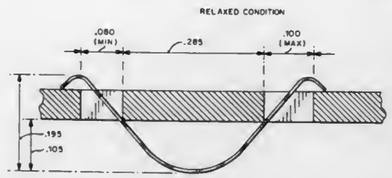
wherein the connection pin pierces the soft foam layer to engage in the conductive sheet, whereby the connection point of the circuit is coupled to the groundplane through the connection pin.

5,313,016

AUTO-INSERTABLE ELECTROMAGNETIC INTERFERENCE GROUND CLIP

Peter V. Brusati, Hayward, and Diane L. Boross, Belmont, both of Calif., assignors to SynOptics Communications, Inc., Santa Clara, Calif.

Filed Oct. 19, 1992, Ser. No. 963,437
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 GC **11 Claims**



1. An electromagnetic shielding device comprising:

a frame and panel structures having planar parts, wherein one of the panel structures includes two parallel slots; and

a resilient electrically conductive sheet, wherein an electrical connection is created when said sheet is compressed between said one of the panel structures and a second mating surface without said sheet being permanently deformed,

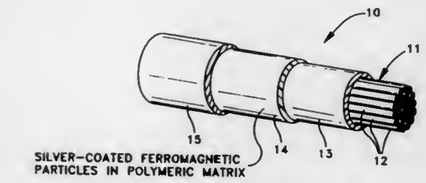
said sheet having curved portions comprising a series of arc-shaped sections interconnected, such that each of said arc-shaped sections is opposite to that of its adjacent arc-shaped section, wherein one of said arc-shaped sections is at each of the ends of said sheet for coupling said sheet behind said one of said panel structures containing two parallel slots, such that said arc-shaped sections at the ends of said sheet are received by said one of the panel structures, wherein the arc-shaped sections at the ends of said sheet are resilient, such that both of said ends are temporarily deformed when passing through said two parallel slots and are anchored behind said one of said panel structures after passing through said two parallel slots.

5,313,017

HIGH-TEMPERATURE, LIGHT-WEIGHT FILTER LINE CABLE

Mahmoud Aldissi, Colchester, Vt., assignor to Champlain Cable Corporation, Winooski, Vt.

Continuation-in-part of Ser. No. 748,146, Aug. 21, 1991. This application Jun. 19, 1992, Ser. No. 901,632
Int. Cl.[5] H01B *11/18*
U.S. Cl. 174—36 **14 Claims**



1. A filter line cable having high temperature capability in an approximate temperature range of between 150° and 260° C., comprising:

a conductive core;

a primary insulation layer disposed over said conductive core;

a filter layer disposed over said primary insulation layer including ferromagnetic particles disposed in a polymer matrix, said filter layer providing enhanced operational frequency range;

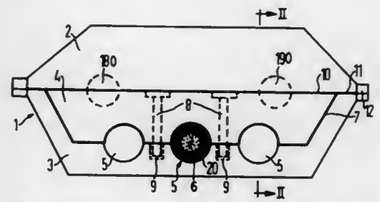
a high-temperature jacket of at least one layer of a fluorinated polymer, including polyimide and polytetrafluoroethylene, disposed over said filter layer in an approximate thickness range of between 1 to 3 mils, and providing an operative upper temperature range of approximately between 150° and 260° C.

5,313,018

CABLE SLEEVE COMPOSED OF A LONGITUDINALLY-DIVIDED HOUSING

Hans-Juergen Meltsch, Schwerte; Hermann Klostermeyer, and Detlef Graefe, both of Hagen, all of Fed. Rep. of Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 950,657
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138462
Int. Cl.[5] H02G *15/113*
U.S. Cl. 174—92 **20 Claims**



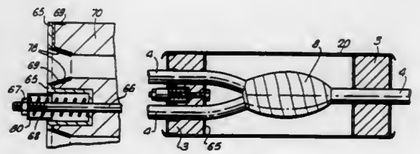
1. In a cable sleeve composed of a longitudinally-divided housing having a sealing system and a housing parting plane between a pair of cable sleeve shells, each of said shells having end walls with cable introduction openings being disposed in at least one of said end walls of one of the shells, the improvements comprising said one end wall having a matched seal member with a trapezoidal shape, said seal member having one edge forming a portion of the housing parting plane and a second edge forming a second parting plane being independent of the housing parting plane, said cable introduction openings being introduced in said second parting plane.

5,313,019

CLOSURE ASSEMBLY

Jacques H. F. Brusselmans, Orp-Jauche; Jean-Marie E. Nolf, Korbeek-lo; Amandus L. E. Pieck, Kortenaken, all of Belgium; Alistair A. P. Sutherland, Wiltshire, United Kingdom; Willy E. G. Tournel, Zolder, and Lodewijk C. M. Van Noten, Lueven, both of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Division of Ser. No. 689,809, May 9, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 985,516
Claims priority, application United Kingdom, Nov. 9, 1988, 8826250; Feb. 8, 1989, 8902795; May 30, 1989, 8912375
Int. Cl.[5] H02G *15/04*
U.S. Cl. 174—93 **22 Claims**

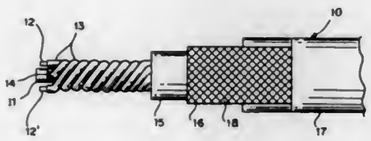


1. A cable test comprising:

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(a) a substantially rigid portion:
(b) a sealing material retained by the portion (a);
the portion (a) comprising two end parts between which is positioned the sealing material and that can be moved towards one another thereby providing a compressive force on the sealing material, each end part comprising an inner part and one or more outer parts that in use lie around the inner part, a port for a cable being provided partly within the inner part and partly within the outer part the port thereby being formed into a port of substantially closed cross-section when the inner and outer parts are brought together.

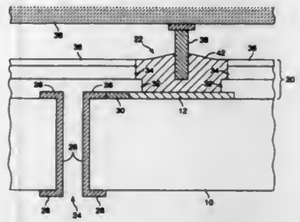
5,313,020
ELECTRICAL CABLE
James A. Sackett, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.
Filed May 29, 1992, Ser. No. 890,942
Int. Cl.[5] H01B *11/06, 13/00*
U.S. Cl. 174—113 C **12 Claims**



1. A cable, comprising
(a) an interior element having
(i) a longitudinal cylindrical central core;
(ii) two insulated conductors helically wrapped around the core so that the conductors are substantially diametrically opposed from each other along the length of the core;
(iii) a plurality of cylindrical spacers helically wrapped around the core between the conductors to ensure that the conductors are remain substantially diametrically opposed from each other along the length of the core;
(b) a dielectric material encasing the interior element;
(c) a shield surrounding the dielectric material; and
(d) an outer dielectric sheath surrounding the shield.
7. A method of forming a cable, comprising the steps of:
(a) helically wrapping two insulated conductors and a plurality of spacers around a longitudinal, cylindrical central core so that the spacers are located between the conductors in a manner that ensures the conductors are substantially diametrically opposed from each other along the length of the core;
(b) encasing the conductors, the plurality of spacers, and the central core within a dielectric material;
(c) surrounding the dielectric material with a shield; and
(d) encasing the shield within an outer dielectric sheath.

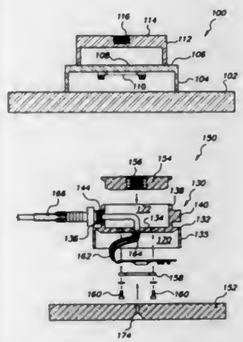
5,313,021
CIRCUIT BOARD FOR HIGH PIN COUNT SURFACE MOUNT PIN GRID ARRAYS
Vijay M. Salja, Fremont, and Siamak Jonaidi, San Jose, both of Calif., assignors to Aptix Corporation, San Jose, Calif.
Filed Sep. 18, 1992, Ser. No. 947,106
Int. Cl.[5] H05K *1/03*
U.S. Cl. 174—260 **9 Claims**

1. A printed circuit board for high reliability mounting of surface mount pin grid array integrated circuit packages, said printed circuit board comprising:
at least one mounting surface adapted to receive the surface mount pin grid array integrated circuit packages;
a plurality of conductive surface-mount component-attachment pads disposed on said at least one mounting surface of the printed circuit board, groups of said pads arrayed in patterns to match the pin patterns of the surface mount pin grid array integrated circuit packages to be mounted thereon;
a first solder mask layer disposed on said at least one mounting surface of the printed circuit board, said first solder mask layer having a plurality of first apertures defined completely therethrough, said first apertures substantially aligned with said pads so as to expose a portion of a top surface of said pads at bottoms of wells defined by vertical



walls of said first solder mask layer defining said first apertures, said first apertures having a first cross-sectional area;
a second solder mask layer disposed on said first solder mask layer having a plurality of second apertures defined completely therethrough, said second apertures substantially aligned with said pads so as to expose said portion of said top surface of said pads, said second apertures having a second cross-sectional area of magnitude greater than said first cross-sectional area.

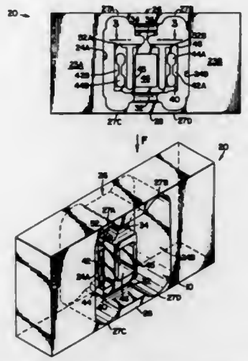
5,313,022
LOAD CELL FOR WEIGHING THE CONTENTS OF STORAGE VESSELS
Farid Piroozmandi, Bothell, and Walter P. Kistler, Redmond, both of Wash., assignors to Kistler-Morse Corporation, Redmond, Wash.
Filed Nov. 12, 1992, Ser. No. 975,464
Int. Cl.[5] G01G *3/14;* **G01L** *1/22*
U.S. Cl. 177—211 **26 Claims**



1. A load cell for weighing the contents of a storage vessel supported on a foundation by a plurality of storage vessel support members, said load cell comprising:
a mounting pad having a planar lower surface, said mounting pad further including fastening means for securing said mounting pad either to said foundation or to one of said storage vessel support members;

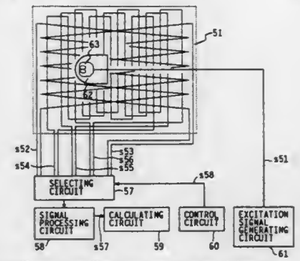
a first cylindrical member having its lower edge secured to an upper surface of said mounting pad;
a resilient, generally planar, circular flex plate having its lower surface secured to the upper edge of said first cylindrical member;
a second cylindrical member having its lower edge secured to the upper surface of said flex plate so that said first and second cylindrical members are concentric with each other, the diameters of said first and second cylindrical members differing from each other so that a force exerted between the lower edge of said first cylindrical member and the upper edge of said second cylindrical member in a direction extending along the axis of said first and second cylindrical members causes said flex plate to deflect with a magnitude that is a function of the magnitude of said force;
a mounting plate secured to the upper edge of said second cylindrical member, said mounting plate having a single attachment structure positioned at the axis of said first and second cylindrical members for securing said mounting plate either to said foundation or to one of said storage vessel support members; and
a strain sensor mounted on said flex plate, said strain sensor generating an electrical indication of the strain of said flex plate thereby providing an indication of the magnitude of said force whereby the weight of the contents of said storage vessel can be determined from the electrical indications generated by the load cells supporting each of said vessel support members.

5,313,023
LOAD CELL
Thomas H. Johnson, Winnebago, Minn., assignor to Weigh-Tronix, Inc., Fairmont, Minn.
Filed Apr. 3, 1992, Ser. No. 863,162
Int. Cl.[5] G01G *3/08, 3/14;* **G01L** *1/10, 1/22*
U.S. Cl. 177—229 **28 Claims**



1. A force sensing load cell comprising:
(a) a block comprising an interior wall defining an aperture therein, said interior wall comprising a base;
(b) a load bearing element having first and second ends, said load bearing element affixed to said base at said first end, said load bearing element being affixed at said second end to said interior wall and spanning across said aperture, said load bearing element comprising a cantilever beam;
(c) a capacity supporting cantilever beam, said cantilever beam spaced apart from, and parallel in at least one plane to, said load bearing element; and
(d) means for sensing force, said force sensing means affixed between said load bearing element and said capacity supporting cantilever beam in a manner which rejects frictional movement whereby, when stressed, the parallel deflection of said load bearing element and said capacity supporting cantilever beam of said load cell compensates for changes in modulus and allows for variation in deflection created by environmental stresses.

5,313,024
COORDINATE READING SYSTEM
Yoshiyuki Morita, Koto, Japan, assignor to Seiko Instruments Inc., Japan
Filed Apr. 15, 1992, Ser. No. 869,431
Claims priority, application Japan, Apr. 26, 1991, 3-97597; Apr. 26, 1991, 3-97599; Jun. 7, 1991, 3-136855
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—19 **11 Claims**



1. A coordinate reading system, comprising:
a tablet having a first zigzag sense line formed from a plurality of first sense lines connected in series in a direction perpendicular to a coordinate detecting direction, wherein the first sense lines are laid by gradually increasing their width along the coordinate detecting direction, and a second zigzag sense line formed from a plurality of second sense lines connected in series in the direction perpendicular to the coordinate detecting direction, wherein the second sense lines are laid by gradually decreasing their width along the coordinate detecting direction;
a coordinate indicator;
selecting means connected to said first and second zigzag sense lines for selecting either one of said first and second zigzag sense lines;
signal processing means connected to said selecting means for outputting an amplitude signal of an induced signal induced in a selected zigzag sense line; and
calculating means for calculating a position of said coordinate indicator based on induced signals induced in said first and second zigzag sense lines due to electromagnetic coupling between said first and second zigzag sense lines and said coordinate indicator.

5,313,025
DISPLACEMENT AMPLIFIED ACOUSTIC TRANSMITTER
Dennis E. Roessler, and A. J. Mallett, both of Houston, Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.
Filed May 5, 1993, Ser. No. 57,605
Int. Cl.[5] G01V *1/143, 1/40*
U.S. Cl. 181—106 **10 Claims**

1. An acoustic wave transmitter for use in a well borehole comprising:
(a) an elongate flexible membrane having spaced ends wherein said membrane is formed of a pliable, relatively thin, lightweight material;
(b) opposing first and second hydraulically powered motors having membrane connected reciprocating rods at the ends of said membrane so that said rods may reciprocate synchronously to inpart flexure to the membrane wherein flexure results in bowing at the mid portions thereof; and
(c) a window support structure for said membrane to position said membrane so that said window support structure,

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when positioned in a well borehole, locates the membrane to form a wave in drilling fluid in the well borehole radiating outwardly therefrom on vibration of said membrane by said motors.

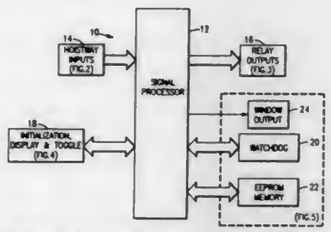


5,313,026

ELECTRONIC STEPPER TO DETERMINE ELEVATOR CAR POSITION, WITH AUTOMATIC ERROR CORRECTION AND IMMUNITY FROM POWER FAILURE

Jean Youla, Brooklyn, N.Y.; Monique M. LaRose, Berlin, Mass.; William P. Reid, Windsor, and Burton Greenfield, Avon, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 11, 1991, Ser. No. 728,669
Int. Cl.[5] B66B *3/02*
U.S. Cl. 187—134 **4 Claims**



1. Elevator car floor position indicating means, responsive to a hoistway input signal indicative of said car passing a floor in an up and down direction, for providing, respectively, an increment and decrementing output signal indicative of the floor position of said car, comprising:

an initialization switch, being settable to be indicative of a selected reference position of said car, responsive to an interrogating signal, for providing a reference signal indicative of said reference position as set by said settable initialization switch; and

signal processing means, responsive to:

said hoistway input signal, for providing said incrementing and decrementing output signal;

a request for initialization signal, for providing said interrogating signal; and

both a correction signal indicative of the position of said car being at said reference position and said reference signal, for providing said output signal with a referenced magnitude indicative of the same floor as that indicated by the magnitude of said reference signal and for thereafter incrementing and decrementing said output signal starting from said referenced magnitude;

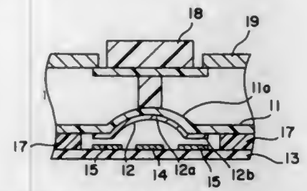
wherein said signal processing means provides a display signal having a magnitude indicative of the magnitude of said output signal and wherein said indicating means further comprises display means, responsive to said display signal, for displaying said magnitude of said display signal, said indicating means further comprising toggle switch means, responsive to manual toggling, for providing a toggle signal to said signal processing means for incrementing or decrementing said magnitude of both said output signal and said display signal.

5,313,027

PUSH BUTTON SWITCH ASSEMBLY INCLUDING SINGLE OR PLURAL SEQUENTIALLY CLOSED SWITCHES

Kenji Inoue, Hirakata; Futoshi Matsui, Tsuyama, and Kouichi Santo, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 30,838
Claims priority, application Japan, Mar. 16, 1992, 4-057634
Int. Cl.[5] H01H *13/70, 1/06*
U.S. Cl. 200—5 A **14 Claims**



1. A push switch capable of performing a two step switching operation in response to a pressing force, said push switch comprising:

an insulating substrate having disposed thereon at least one outer pole contact and at least one inner pole contact, electrically insulated from said outer pole contact; and

dome means including an extending peripheral area, said dome means having an electrically conductive surface, said conductive surface being disposed opposing said inner and outer pole contacts wherein:

(i) said conductive surface of said peripheral area contacts said outer pole contact when a first pressing force is applied to the dome means at a first time, and

(ii) said conductive surface contacts said inner pole contact, while maintaining contact between said conductive surface of said peripheral area and said outer pole contact, when a second pressing force, which is greater than said first pressing force, is applied to the dome means at a second time different from said first time.

5,313,028

TURN SIGNAL CANCEL MECHANISM

Daniel J. DuRocher, Leonard, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 2, 1992, Ser. No. 908,683
Int. Cl.[5] H01H *3/18, 3/16*
U.S. Cl. 200—61.27 **17 Claims**

1. A turn signal mechanism for controlling the turn signal indicators of a vehicle, said turn signal mechanism comprising:

a pivot assembly adapted to be pivotally mounted with respect to a vehicle steering assembly and adapted to receive a turn signal arm for manual movement of said pivot assembly between a normal position and signalling positions;

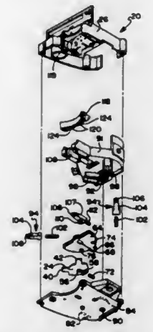
restoring means for restoring said pivot assembly to said normal position;

latching means for holding said pivot assembly in each of said signalling positions;

cancelling means for releasing said latching means so that said pivot assembly can be restored to said normal position by said restoring means, said cancelling means including a cancel pawl having first and second cancelling fingers that

are adapted to be engaged by said steering assembly, said cancelling fingers being pivotally mounted for pivotal movement between first and second positions corresponding to said signalling positions and a third position corresponding to said normal position;

said pivot assembly and said cancelling means being operatively coupled such that when said pivot assembly is latched in one of said signalling positions, one of said cancelling fingers is pivoted to said first or second position and adapted to be engaged by said steering assembly to subsequently release said latching means as said steering assembly is operated so that said pivot assembly and said cancelling fingers can be restored to said normal position, wherein said cancel pawl is pivotally secured to said turn signal mechanism and includes a recess for receiving a pin extending from said latching means and said latching means extends from said turn signal pivot mechanism such that said cancel pawl and said pivot mechanism are operationally coupled, wherein the outer periphery of said cancel pawl includes a first pair of arc shaped ramps intersecting at a first point generally opposite said first finger and a second pair of arc shaped ramps intersecting at a point generally opposite said second finger, biasing means for biasing said cancel pawl outwardly and for positioning one of said first and second fingers into said first and second positions when said pin of said latching means comes into contact with a wall of said recess of said cancel pawl.



5,313,029

SWITCH LEVER OF A STEERING COLUMN SWITCH FOR MOTOR VEHICLES

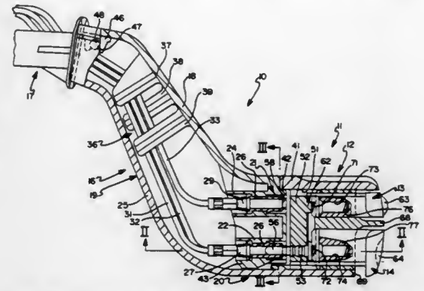
Wolfgang Kerner, Erlenbach; Franz Schreiber, Guglingen, and Adam Weber, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Fed. Rep. of Germany

PCT No. PCT/EP91/02180, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO92/09455, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 19, 1991, Ser. No. 910,310
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 4037153
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—61.54 **18 Claims**

1. A switch lever assembly adapted for use on a vehicle steering column, said switch lever assembly comprising: a switch lever having a free end;

a first electric connection contact positioned in the switch lever; and

a modular electric switch unit, said electric switch unit at least partly inserted into the free end of the switch lever, said electric switch unit including at least one integral switch component, and a second electric connection contact formed on the switch unit, wherein the first and second connection contacts are mated to form an operational connection on the insertion of said switch unit into the free end of the switch lever.

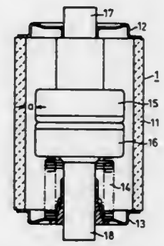


5,313,030

VACUUM SWITCH

Joerg Kusserow, Neuenhagen, and Roman Renz, Berlin, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 29, 1993, Ser. No. 55,123
Int. Cl.[5] H01H *33/66*
U.S. Cl. 200—144 B **12 Claims**



1. A vacuum switching tube, comprising:

a fixed contact piece;

an axially movable contact piece having a predetermined contact stroke;

a cylindrical housing surrounding said fixed and axially movable contact pieces, said cylindrical housing having two end surfaces and at least one hollow cylinder insulator, said cylindrical insulator surrounding said fixed and axially movable contact pieces;

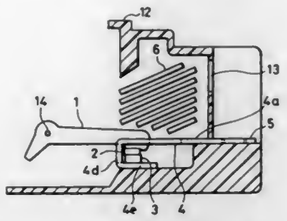
wherein a radial distance of said insulator from each of said contact pieces is less than or equal to said contact stroke;

a metallic end plate arranged at each of said end surfaces of said cylindrical housing; and

a contact pin associated with each of said contact pieces, each contact pin connecting a corresponding contact piece with its corresponding metallic end plate.

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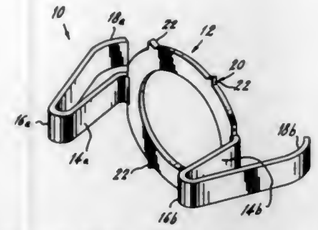
5,313,031
ELECTRIC SWITCH GEAR WITH IMPROVED STATIONARY CONTACT CONFIGURATION
Mitsugu Takahashi; Takao Mitsuhashi, and Kenichi Nishina, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 18, 1991, Ser. No. 809,325
Claims priority, application Japan, Dec. 28, 1990, 2-409110; Dec. 28, 1990, 2-409111; Dec. 28, 1990, 2-409112; Sep. 13, 1991, 3-234773
Int. Cl.[5] H01H *1/06*
U.S. Cl. 200—275 **8 Claims**



1. An electrical switch comprising: a movable contact arm with an elongate conductor having
a moving contact on a distal end, and
a fulcrum pin on a proximal end, pivotally supported by a housing; and
a stationary elongate conductor having,
a first conductor part including a horizontal portion and having a terminal on a first end,
a vertical conductor part having a first end connected to a second end of said first conductor part,
a folded back conductor part parallel with said horizontal portion of said first conductor part and connected to a second end of said vertical conductor part, said folded back conductor part having a fixed contact thereon, and
a substantially L-shaped slot extending from a central portion of said first conductor part through a central portion of said vertical conductor part, said slot being sized so that a portion of said movable contact arm may pass through said vertical conductor part and said first conductor part in order to enter and leave a closed circuit position wherein said moving contact is in contact with said fixed contact.

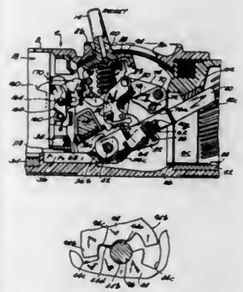
5,313,032
SWITCHING CONNECTOR FOR AUTOMOTIVE USE
D. Troy Alwine, Warren, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.
Continuation of Ser. No. 1,139, Jan. 6, 1993, abandoned, which is a division of Ser. No. 873,125, Apr. 24, 1992, Pat. No. 5,201,853, which is a continuation of Ser. No. 693,257, Apr. 29, 1991, Pat. No. 5,145,391. This application Dec. 1, 1993, Ser. No. 159,911
Int. Cl.[5] H01H *1/06*
U.S. Cl. 200—275 **3 Claims**

1. A switch element comprising: an electrically conductive, annular body having an outside edge and an inside edge separating first and second surfaces, said body having oppositely disposed, transversely projecting arms each including a reentrant portion located in a first plane remote from said first surface and a terminal portion which ends in a second plane remote from said first plane and on an opposite side of said body from said first plane and extending beyond said second



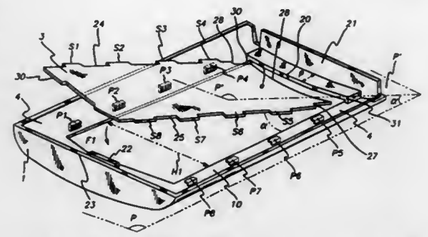
surface, said body further including retention means which extend from said outside edge.

5,313,033
MOLDED CASE CIRCUIT BREAKER HAVING CHANGING PIVOT LOCATIONS FOR THE OPERATING HANDLE
Donald A. Link, Hubertus, and Michael R. Larsen, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio
Division of Ser. No. 926,484, Aug. 6, 1992, Pat. No. 5,266,760. This application Jul. 29, 1993, Ser. No. 98,995
Int. Cl.[5] H01H *5/00, 23/00*
U.S. Cl. 200—401 **1 Claim**



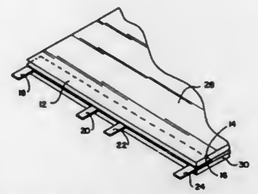
1. A circuit breaker comprising, in combination:
an insulating housing comprising a molded insulating base and molded insulating cover means, wherein said base and said cover means define a compartment with said housing;
a pair of terminals extending from said compartment to opposite exterior ends of said housing;
a stationary contact connected to one of said terminals within said compartment;
a movable contact finger movably connected to another of said pair of terminals within said compartment and having a movable contact movable into and out of engagement with said stationary contact;
an operating mechanism connected to said movable contact finger for moving said movable contact finger, said operating mechanism comprising an operating handle pivotally mounted within said housing, a collapsible toggle linkage connected at one end to said operating handle and at another end to a movable frame, wherein said movable frame connects said operating mechanism to said movable contact finger, said operating mechanism further including biasing springs connected to said operating handle and said collapsible toggle linkage for biasing said operating mechanism, and a latching mechanism for releasably engaging said toggle linkage, wherein said operating mechanism is capable of movement between an ON position, an OFF position, a TRIPPED position, and a RESET position, and
current responsive tripping means for releasing said latching mechanism, thereby effecting collapse of said toggle linkage and movement of said movable contact finger contact out of engagement with said stationary contact; wherein
said operating handle is pivotally mounted for movement about a first pivot between and ON and OFF positions of said operating mechanism and to said TRIPPED indicating position intermediate said ON and OFF positions, said operating handle being pivotally movable about a second pivot to a RESET position beyond said OFF position, said movement to said RESET position effecting movement of said operating handle from a first pivot to a second pivot located for effecting a reduced lateral force component of said springs on said handle, said lateral force component biasing said operating handle from said OFF position toward said RESET position, said lateral force component being reduced to a value less than other forces in said operating mechanism for moving said operating handle to said OFF position.

5,313,035
DOOR FOR HOUSEHOLD ELECTRIC OVEN
Pierre Chartrain, Soliers Bourguebus; Michel G. de Matteis, Cambes-En-Plaine, and Bernard M. Bois, Caen, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France
Filed Jan. 21, 1992, Ser. No. 822,987
Claims priority, application France, Jan. 25, 1991, 91 00847
Int. Cl.[5] H05B *6/76;* **F24C** *15/02*
U.S. Cl. 219—740 **6 Claims**



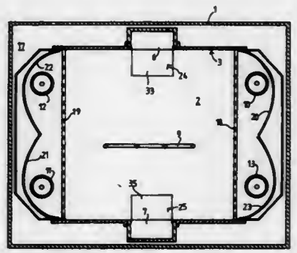
1. A door for a household electric oven, comprising a shell (1) of generally parallelepipedal shape whose forward wall (2) has a large opening (X) which has the general shape of a parallelogram and which is closed by a transparent plate (3) mounted on an inner edge (4) of the opening by means of securement members, said securement members being comprised by at least two holding tongues (7, 8) arranged respectively on two opposite sides (9, 10) of the inner edge (4) and each located at a distance from said inner edge so as to define a recess (5, 6) open in the direction of said opening, said transparent plate (3) having on its two opposite sides (24, 25), and parallel to the two sides bearing the tongues, at least two projections (5, 6) adapted to be secured by sliding of the plate (3) relative to the inner edge (4), respectively beneath the two holding tongues (7, 8), said inner edge (4) and said plate (3) including means for blocking said plate relative to said inner edge (4).

5,313,034
THERMOPLASTIC WELDING
Robert A. Grimm; David A. Grewell, both of Columbus; Marc St. John, Reynoldsburg; Wanda F. Wine, and John A. Molnar, both of Columbus, all of Ohio, assignors to Edison Welding Institute, Inc., Columbus, Ohio
Filed Jan. 15, 1992, Ser. No. 821,981
Int. Cl.[5] B23K *13/02*
U.S. Cl. 219—765 **36 Claims**



1. A method of thermoplastic welding comprising:
a. placing in a thermoplastic-containing bond line of bonding surfaces of at least one substrate, a-welding strip comprising:
1) an electric, current-conducting strip of a first resistance wherein said strip extends along said bond line of said bonding surfaces; and
2) a plurality of pairs of current-conducting, connector tabs of a second resistance in electrical contact with said strip, said first resistance being higher than said second resistance; said connector tabs extending from said strip and said bond line to enable electrical connection to an electrical potential and spaced to allow application of said electrical potential to segments of said current-conducting strip; and at least a portion of said connector tabs being spaced apart from each other; and
b. applying said electrical potential to a pair of said tabs to cause a current to flow through a portion of said strip thereby heating a segment of said strip to cause said thermoplastic to bond said bonding surfaces together.

5,313,036
APPARATUS FOR THAWING AND REHEATING A DEEP-FROZEN FOOD PREPARATION BY MICROWAVE AND INFRARED RADIATION, AND HEATING PROCESS RELATED THERETO
Pierre Chartrain, Soliers Bourguebus, and Jean-Louis M. R. Guilgue, Beny sur Mer, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France
Filed Jan. 19, 1993, Ser. No. 6,129
Claims priority, application France, Jan. 17, 1992, 92 00479
Int. Cl.[5] H05B *6/72*
U.S. Cl. 219—685 **10 Claims**



1. Apparatus for thawing and reheating a deep-frozen food

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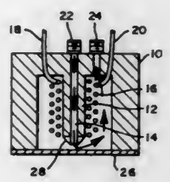
product, comprising a housing (1) enclosing a heating chamber (2) which is delimited by a tubular wall (3), a base (4) and a movable door (5), and which is subjected to microwave radiation exiting from two openings (6 and 7) formed in the tubular wall and connected to a pair of wave guides attached to a microwave generator (8), and to infrared radiation emitted by heating means, the said chamber being equipped with a support (9) for the deep-frozen food product, wherein the central region of the chamber receives the support (9), the openings (6 and 7) of the wave guides are distributed over two opposed regions of the said tubular wall (3) situated on either side of the central region, and the infrared heating means comprise a least two lamps (10 and 11) extending axially of the tubular wall (3) and distributed on either side of the central region in two opposed regions distinct from and disposed between those of the wave guide openings (6 and 7).

5,313,037

HIGH POWER INDUCTION WORK COIL FOR SMALL STRIP SUSCEPTORS

Karl A. Hansen, Seattle, and C. David Lunden, Federal Way, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 18, 1991, Ser. No. 780,752
Int. Cl.[5] H05B *6/36*
U.S. Cl. 219—632 **7 Claims**



1. A high power induction coil comprising:

a core of magnetic material having a central axis, first and second surfaces and a length therebetween, said core having an annular ring-shaped cavity extending from said second surface of said core to near the first surface of is core and having a central leg approximately in a center of said annular ring-shaped cavity connected to the first surface of the core, said central leg being shorter than the length of said core whereby a sectional view through said core along the central axis forms an E-shaped core with a central leg and opposing side legs;

a sole plate attached to the second surface of the core forming a closure for the annular ring-shaped cavity in the core with a space between a lower end of the central leg and the sole plate;

a first fluid conduit extending through said central leg;

a second fluid conduit for providing a communication between an outside surface of said core with the annular ring-shaped cavity and with said first conduit through the space between the lower end of the central leg and the sole plate;

first and second fluid connectors attached to the first surface of the core, each of said fluid connectors being connected to its respective fluid conduit; and

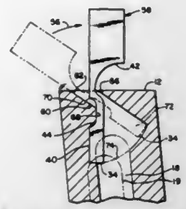
an inductive coil wound loosely around the central leg of said core, said coil having first and second ends extending through said first surface of said core.

5,313,038

EDM DRILLING OF LOW ANGLE HOLES

Robert J. Kildea, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1992, Ser. No. 994,800
Int. Cl.[5] B23H *9/10, 9/14*
U.S. Cl. 219—69.17 **4 Claims**



1. A method of producing low angle air directing slots in the tip of an airfoil in fluid communication with an internal pocket which is not axially aligned with the axis of said slots comprising:

forming an elongated electrode having a penetrating inboard end, an outboard end, and two substantially parallel edges comprising an outside edge and an inside edge;

forming a first notch in said outside edge;

forming a second notch in said inside edge at a location on the inboard side of first notch;

orienting said electrode at the desired low angle to the surface of the airfoil tip;

electrically energizing said electrode for electric discharge machining;

forming an air directing opening by axially advancing said electrode; and

thereafter rotating said electrode to a position increasingly perpendicular to the surface of said tip with said first notch located at the tip surface, said second notch located at the surface of said air directing opening formed by the inside edge of said electrode, with the inboard end of said electrode penetrating into said pocket.

5,313,039

SHIELDING GASES FOR ARC WELDING

Grant Harvey, Dorval; Jocelyn Turcot, Montreal; Jean-Pierre Larue, Outremont, and Vivek V. Vaidya, Pointe Claire, all of Canada, assignors to Canadian Liquid Air Ltd./Air Liquide Canada Ltee., Montreal, Canada

Filed Aug. 3, 1993, Ser. No. 101,300
Claims priority, application Canada, Aug. 14, 1992, 20762012
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—74 **7 Claims**

1. A method for gas metal arc welding with a consumable wire electrode, comprising:

(a) forming an arc between the consumable wire electrode and a workpiece;

(b) maintaining an arc voltage between said flux cored wire electrode and workpiece;

(c) transferring metal from the electrode to the workpiece; and

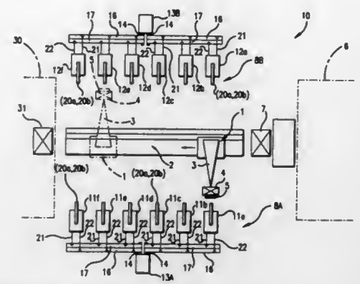
(d) shielding the arc with a gas mixture; the improvement comprising providing as said gas mixture approximately 5–15% by volume helium approximately 5–25% by volume carbon dioxide and the remainder argon.

5,313,040

MULTI-UNIT WELDING APPARATUS

Kenji Hayashi, Kure, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 23, 1993, Ser. No. 36,203
Claims priority, application Japan, Mar. 23, 1992, 4-064998
Int. Cl.[5] B23K *11/11, 11/24*
U.S. Cl. 219—87 **5 Claims**



1. In a multi-unit electric welding apparatus having a row of electric welding units, all of which are supplied with welding current from positive and negative terminals of a secondary winding of a single welding transformer through electric conductor means for delivering welding current to the electric welding units, the improvement comprising: said electric conductor means being comprised of (a) a pair of single strip electric conductors, each of said single strip electric conductors being connected at one end to one of the positive and negative terminals of the secondary winding of said single welding transformer and arranged to extend along said electric welding unit row in opposite directions, and (b) a pair of double-folded strip electrode conductors, each of said double-folded strip electrode conductors being connected at one end to the other one of said positive and negative terminals of the secondary winding of said single welding transformer and arranged to extend beside said pair of single strip electric conductors in said opposite directions, said electric welding units being connected in parallel to said pair of single strip electrode conductors and said pair of double-folded strip electrode conductors so that a total electric conductive length of both of said strips of electrode conductors between said welding transformer and each of said electric welding units is the same for all electric welding units.

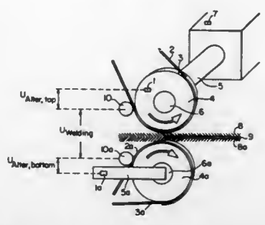
5,313,041

METHOD OF VOLTAGE MEASUREMENT OVER THE WELDING SEAM IN A ROLLER HEAD WELDING MACHINE AND DEVICE FOR PERFORMING THE METHOD

Gideon Levy, Orselina; Peter Baessler, Bellikon, and Theodor Lachmuth, Urdorf, all of Switzerland, assignors to Elpatronc AG, Zug, Switzerland

Filed Mar. 18, 1993, Ser. No. 33,048
Claims priority, application Switzerland, Apr. 24, 1992, 01330/92-3
Int. Cl.[5] B23K *11/25*
U.S. Cl. 219—109 **8 Claims**

1. Method for measuring the voltage over the welding seam in a roller head welding machine or spot welding machine with first and second wire electrodes guided respectively upon first and second rollers mounted at opposite sides of a welding seam, characterized in that a welding voltage is measured by placing a first voltage tap in sliding contact with the first wire electrode; and a parasitic voltage is measured by placing a



second voltage tap in contact with the first roller or mounting for the first roller guiding the first wire electrode.

5,313,042

LASER HARDENING DEVICE

Hidenobu Matsuyama; Kimihiro Shibata, both of Yokosuka, and Hiroki Sakamoto, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd, Japan

Filed Jun. 3, 1992, Ser. No. 892,886
Claims priority, application Japan, Jun. 7, 1991, 3-136515; Jun. 13, 1991, 3-142042; Jun. 18, 1991, 3-146131; Jun. 20, 1991, 3-148800
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.6 **8 Claims**

1. A laser hardening device for forming a hardened layer on an object by irradiating a surface of an object having a normal using a laser beam having an optic axis and optic path, comprising:

an oscillator for emitting a laser beam which is linearly polarized in an incidence plane containing said normal and said optic axis,

a first concave mirror for condensing the laser beam in said incidence plane, and

a second concave mirror for condensing the laser beam in a perpendicular plane to said incidence plane, wherein said first concave mirror is disposed closer than said second concave mirror to said oscillator in the path of the laser beam.

5,313,043

METHOD AND APPARATUS FOR LASER MACHINING

Yasuo Yamagishi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 28, 1992, Ser. No. 920,926
Claims priority, application Japan, Aug. 22, 1991, 3-211058
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 **15 Claims**

1. A laser machining method employing an ultraviolet ray emitted by a laser, comprising:

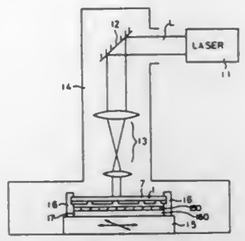
optically converting the ultraviolet ray emitted by the laser to a parallel ultraviolet ray, travelling in a first direction;

supporting an object for selective movement in desired

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directions in a plane substantially transverse to the first direction and such that an upper surface of the object, to be machined, is maintained substantially in parallel with the plane;

selectively moving the object in desired directions in the plane thereby to selectively change the position on the surface of the object on which the parallel ultraviolet ray is irradiated; and



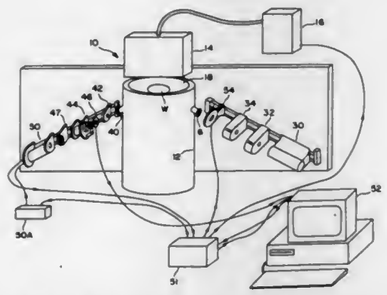
supporting a dielectric mirror mask of planar configuration in parallel relationship with respect to the upper surface of the object to be machined and with a space between the upper surface of the object and the lower surface of the planar dielectric mirror mask and such that the dielectric mirror mask remains in a fixed position relative to the upper surface of the object to be machined during selective movement of the object.

5,313,044

METHOD AND APPARATUS FOR REAL-TIME WAFER TEMPERATURE AND THIN FILM GROWTH MEASUREMENT AND CONTROL IN A LAMP-HEATED RAPID THERMAL PROCESSOR

Hisham Z. Massoud, and Ronald K. Sampson, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Apr. 28, 1992, Ser. No. 874,812
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.85 **9 Claims**



1. A method for determining and adjusting temperature of a semiconductor wafer in a rapid thermal processing system comprising the steps of:

(a) determining the ellipsometric parameters ψ and Δ in real-time with an ellipsometer;

(b) calculating the temperature and film thickness from said ellipsometric parameters of ψ and Δ of a semiconductor wafer positioned in a thermal processing chamber;

(c) comparing said measured temperature and film thickness to predetermined temperature and film thickness vs. time data; and

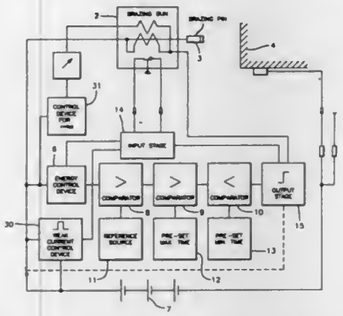
(d) adjusting the amount of heat provided to said semiconductor wafer by a lamp module in response to said steps (a)–(c).

5,313,045

METHOD AND APPARATUS FOR REDUCING ENERGY CONSUMPTION AND MINIMIZING MARTENSITE FORMATIONS WHEN JOINING A CONNECTING PIECE OF METAL WITH A METAL SURFACE BY PIN BRAZING

Torsten Baavhammar, Vellinge, Sweden, assignor to Safetrack Baavhammar AB, Arlov, Sweden

Filed Aug. 22, 1991, Ser. No. 748,210
Claims priority, application Sweden, Nov. 22, 1990, 9003708-6
Int. Cl.[5] B23K *1/00*
U.S. Cl. 219—129 **6 Claims**



1. A method for reducing energy consumption and minimizing martensite formations when joining a connecting piece of metal with a metal surface by pin brazing, comprising the steps of:

measuring the exact amount of energy required to melt a particular brazing pin against a certain workpiece surface;

applying a welding current through the particular brazing pin and the certain workpiece surface to effect pin brazing;

calculating the amount of energy which has passed through said particular brazing pin during pin brazing by multiplying the square of the welding current times the duration of said welding current;

advancing the brazing pin automatically toward the workpiece surface during pin brazing so that the distance between the brazing pin and the workpiece remains constant while the welding current is being applied;

terminating said welding current when said step of calculating the amount of energy which has passed through the particular brazing pin results in said exact amount of energy required to melt the particular pin; and

automatically interrupting said welding current if a predetermined period of time expires prior to said step of terminating.

5,313,046

WELDING TORCH

Frank Zamuner, 1110 Dundas Street West, Oakville, Ontario, Canada L6J 4Z2

Filed Sep. 28, 1992, Ser. No. 952,261
Int. Cl.[5] B23K *9/173*
U.S. Cl. 219—137.62 **3 Claims**

1. Water-cooled welding torch, wherein:

the torch includes an electrified welding-wire, suitable for creating a welding arc;

the torch includes a gas-feed-tube, for conveying anti-oxidation gas to the welding arc;

the torch includes a nose-piece, which is located forward, towards the arc, of the gas-feed-tube;

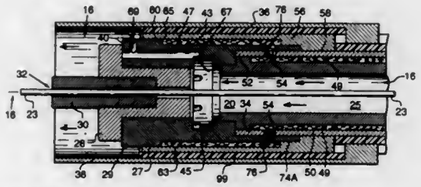
the nose-piece is formed with gas-spreading-holes, which are suitably positioned in the nose-piece for receiving gas in and from the gas-feed-tube, and for conveying the gas radially outwards and around the nose-piece;

the gas-spreading-holes have entry-mouths, into and through which the gas flows from the feed-tube into the gas-spreading-holes in the nose-piece;

the gas-spreading-holes have exit-mouths, from and through which the gas emerges from the nose-piece;

the gas-spreading-holes in the nose-piece are so folded and arranged that the exit-mouths thereof lie further forward in the nose-piece than the entry-mouths thereof;

the nose-piece includes a central wire-way, through which the welding wire passes, the wire-way in the nose-piece being of such narrow dimensions as to preclude the flow of the gas through the wire-way;



the toreh includes a jacket-piece, which lies outside and around the nose-piece;

the jacket-piece is radially spaced from the nose-piece, whereby a water jacket is defined between the nose-piece and an outer surface of the jacket-piece, the arrangement of which is such that water present in the water jacket is in direct contact with the material of the nose-piece;

the torch includes means for conducting cooling water into and out of the water jacket;

the jacket-piece is sealingly attached to the nose-piece, in such a manner as to define a sealed forward end of the water jacket;

and the arrangement of the torch is such that the said forward end of the water jacket lies further forward than the entry-mouths of the gas-spreading-holes, and the exit-mouths of the gas-spreading-holes lie further forward than the forward end of the water jacket.

5,313,047

ANALYTICAL SAMPLE PREPARATION SYSTEM

Larry S. O'Brien; Gordon C. Ford, both of St. Joseph; Peter M. Willis, and Ronald A. Klemm, both of Benton Harbor, all of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Continuation-in-part of Ser. No. 846,814, Mar. 6, 1992, Pat. No. 5,277,493, which is a continuation-in-part of Ser. No. 664,052, Mar. 1, 1991, Pat. No. 5,269,827. This application Mar. 2, 1993, Ser. No. 25,228
Int. Cl.[5] F27B *17/02*
U.S. Cl. 219—385 **12 Claims**

1. An electrical resistance heater module for heating a casting dish in a fluxer comprising:

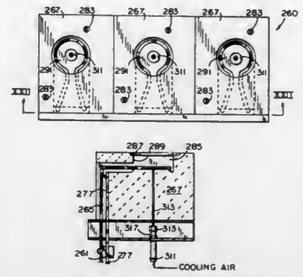
a frame member;

an insulating member on said frame member, said insulating member having an upper surface configured for supporting a casting dish;

a resistive heating element in said insulating member positioned to supply heat to a casting dish supported on said upper surface of said insulating member;

an electrical conductor supported by and electrically insulated from said frame member for supplying electrical energy to said resistive heating element; and

a heater module conduit supported by said frame member, said heater conduit including an outwardly extending end connectable to a fluxer conduit which is coupled to a source of cool air external to the fluxer such that the fluxer conduit and said heater conduit supply cooling air to a casting dish on said upper surface of said insulating member to cool the contents of a casting dish when heating is completed, said heater conduit extending through an aperture in said insulating member below the position occupied by a casting dish.

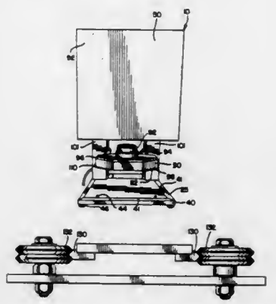


5,313,048

HIGH TEMPERATURE RESEARCH FURNACE WITH V-SHAPED GUIDE MEMBER

Morris Berg, and Patrick T. McGuire, both of Champaign, Ill., assignors to Morris Berg, Champaign, Ill.

Filed Jul. 7, 1992, Ser. No. 909,916
Int. Cl.[5] G01N *25/02*; F27B *5/00*
U.S. Cl. 219—390 **19 Claims**



1. A high temperature furnace for use in laboratories, comprising:

a control cabinet;

a support platform underneath the control cabinet, with a portion of the platform extending beyond the control cabinet;

an elevated furnace oven adjacent to the control cabinet positioned above the portion of the platform extending beyond the control cabinet, the elevated furnace oven having a top, sides, bottom, a chamber, and a door which opens from the bottom of the oven;

a support frame for securing the control panel, support platform and furnace oven in their respective positions relative to each other; and

a lifting mechanism for elevating the oven door to a closed position at the bottom of the oven, and for lowering the oven door to an open position below the bottom of the oven and above the support platform;

the lifting mechanism comprising a vertically disposed support panel securely fastened to the support frame, the

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support panel including two vertically disposed rectangular guide members mounted to a front surface of the support panel, each of the guide members having a V-track along a longitudinal edge thereof;

the lifting mechanism further comprising a carriage for carrying the oven door, the carriage having at least two V-wheels rotatably mounted thereto, with each of the two V-wheels engaging the V-track on one of the guide members;

the lifting mechanism further comprising means for raising and lowering the carriage.

5,313,049

COOKING TOP COVER WITH MOTORIZED RETRACTABLE CLOSURE MEANS ASSEMBLY

Georges Le Strat, Saint-Martin-Aux-Arbres; Michel Lefebvre, Rouen; Michel Emont, Moulineaux; Bernard Logel, Gundershoffen; Robert Strasser, Drachenbronn, and Claude Valentin, Reichshoffen, all of France, assignors to Butagaz, Neuilly-sur-Seine, France

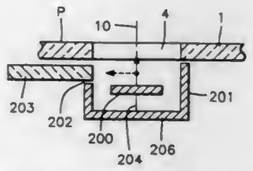
PCT No. PCT/FR91/00753, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO92/06335, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 26, 1919, Ser. No. 852,243

Claims priority, application France, Oct. 1, 1990, 9012060

Int. Cl.[5] F24C *15/10, 15/36*

U.S. Cl. 219—444 **27 Claims**



1. A cooking assembly for a cooker or a cooking top, the assembly comprising:

a cooking plate,

at least one heat generator enabling a receptacle to be heated on said cooking plate without coming directly into contact with said at least one heat generator,

the cooking plate including an opening associated with each heat generator and enabling said generator to act directly on a receptacle on said cooking plate via said opening when the corresponding heat generator is in use,

said heat generator being integrated in a well disposed beneath the cooking plate coaxially with the associated opening, and

retractable closure means associated with the opening, said retractable closure means including a moving plug for closing the associated opening when said heat generator is not in use,

said plug being displaceable by motorized displacement means for moving said plug between a closure position in which the heat generator is masked, with the plug then being flush with a top surface of said cooking plate, and a retracted position in which said heat generator is unmasked for use,

said motorized displacement means displacing the moving plug vertically when the plug is in line with the associated opening, and displacing said moving plug horizontally beneath the cooking plate when the plug is disengaged from the associated opening.

5,313,050

CASH MANAGING SYSTEM

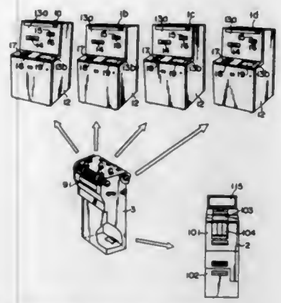
Hisayuki Hiroki, Yokohama; Takeo Hashimoto, Kawasaki, and Yoshitaka Sakoguchi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 21, 1993, Ser. No. 6,960

Claims priority, application Japan, Jan. 20, 1992, 4-7741

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **10 Claims**



1. A cash managing system comprising:

a plurality of automatic teller machines for receiving and dispensing cash;

a cash arrangement device for arranging cash to be handled in the teller machines; and

a plurality of loading safes each of which is selectively mounted in one of the teller machines and the cash arrangement device, for transferring cash between the teller machine and the cash arrangement device;

said cash arrangement device including:

memory means for storing cash data with respect to each teller machine, including denominations and the amount of cash to be loaded in each teller machine,

a mount section for detachably storing the loading safe, and

transfer means for transferring cash to the loading safe mounted in the mount section, based on the denomination and amount stored in the memory means.

5,313,051

PAPERLESS PARCEL TRACKING SYSTEM

David J. Brigida; Marvin K. Brown, both of Boca Raton; Francis Fado, Highland Beach; Victor S. Moore, Delray Beach; Thomas K. Pate, Boca Raton; James J. Tout, Jr., Boca Raton, all of Fla.; Patrick F. Camilleri, Minneapolis, Minn.; Robert L. Donaldson, and Michael N. Gray, both of Annapolis,, Md., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 6, 1992, Ser. No. 863,988

Int. Cl.[5] G06F *15/20*

U.S. Cl. 235—375 **13 Claims**

1. A paperless parcel tracking system which obtains signature and data information without paper records, comprising:

a processor for executing a parcel tracking program;

storage for storing signature information and parcel descriptive information;

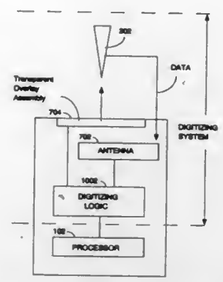
a bar code reader for reading parcel descriptive information from a bar code related to at least one selected parcel into the storage under control of the processor;

a stylus for entering information into the system;

a touch sensitive tablet display for detecting signature information written by the stylus on the tablet display which signature information is related to the selected parcel descriptive information and store the signature information into the storage;

means to display control information in predetermined fields of the tablet display;

means to detect input from manual contact with the tablet display; and



means to disable input from manual contact with the tablet display when the stylus is within a predetermined distance to the tablet display;

whereby signatures related to the tracking of parcels are obtained without paper documentation.

5,313,052

AIRCRAFT BAGGAGE MANAGING SYSTEM UTILIZING A RESPONSE CIRCUIT PROVIDED ON A BAGGAGE TAG

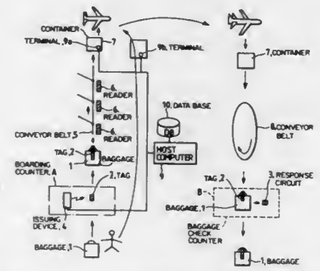
Atsushi Watanabe, Toyokawa, and Tatsuya Hirata, Ichinomiya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 26, 1992, Ser. No. 903,972

Claims priority, application Japan, Jun. 28, 1991, 3-158617

Int. Cl.[5] G06F *15/21*

U.S. Cl. 235—375 **8 Claims**



1. An aircraft baggage managing system for managing information of a baggage to be loaded in an aircraft, comprising:

a tag to be attached to said baggage and containing a verification slip;

response circuit means, attached to said tag, for inputting and storing baggage information, including:

means for receiving a first electromagnetic wave,

means, responsive to said first electromagnetic wave, for outputting a second electromagnetic wave indicative of said baggage information, and

means for stopping the operation of said response circuit means when said verification slip is removed from said tag; and

reader means for transmitting said first electromagnetic wave to said response circuit and receiving said second electromagnetic wave from said response circuit, and reading out said baggage information indicated by said second electromagnetic wave so that said baggage is classified in accordance with said baggage information.

5,313,053

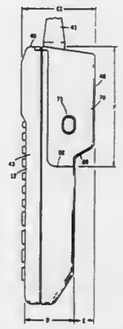
LASER SCANNER MODULE HAVING INTEGRAL INTERFACING WITH HAND-HELD DATA CAPTURE TERMINAL

Steven E. Koenck; Phillip Miller; George E. Hanson; Darald R. Schultz, and Jeffrey S. Krunnfusz, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 674,756, Mar. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 467,096, Jan. 18, 1990, Pat. No. 5,052,020, and a continuation-in-part of Ser. No. 660,615, Feb. 25, 1991, Pat. No. 5,218,187. This application Dec. 8, 1992, Ser. No. 987,574

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **11 Claims**



1. A motor assembly for a laser scanning apparatus comprising:

a printed circuit board;

a cylinder formed from a non-magnetic material, said cylinder having a central cavity;

a plurality of mirrors formed in a peripheral wall of said cylinder;

a magnetic element disposed in said central cavity, said magnetic member having a plurality of alternately disposed magnetic fields;

means for connecting said cylinder to said printed circuit board to allow rotation of said cylinder; and,

a plurality of coils disposed on said printed circuit board for forming magnetic fields which cooperate with said magnetic fields of said magnetic element to rotate said cylinder.

5,313,054

METHOD AND DEVICE FOR DETERMINING THE ORIENTATION OF A SOLID

Patrick Lach, Bordeaux, and Jean-Blaise Migozzi, Orsay, both of France, assignors to Sextant Avionique, Meudon La Foret, France

Filed Oct. 16, 1992, Ser. No. 963,403

Claims priority, application France, Oct. 25, 1991, 91 13219

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—206.2 **9 Claims**

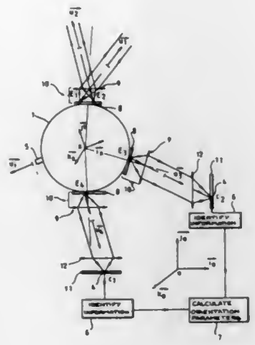
1. An optical method for determining parameters giving the orientation of a coordinate system R_s bound to a first solid with respect to a second coordinate system R_o bound to a second solid constituting a reference, independently of the position of coordinate system R_s within coordinate system R_o comprising the steps of:

projecting at least one beam of light rays from said first solid

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substantially parallel to a direction u known in coordinate system R_s, said beam of light rays containing an item of information that identifies said direction with respect to coordinate system R_s;

receiving at least partially a beam of light rays on at least one elementary sensor of said second solid, said sensor being capable of picking up light beams originating substantially from one single direction v known in coordinate system R_c;



reading the information contained in the beam received by said elementary sensor;

extracting the parameters of orientation of coordinate system R_s relative to coordinate system R_c, using calculation based on a knowledge of the elementary sensor that received said beam of light rays and the result of reading said information.

5,313,055

TWO-DIMENSIONAL IMAGE READ/DISPLAY DEVICE

Yoshiyuki Shiratsuki, and Yoshinori Yamaguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

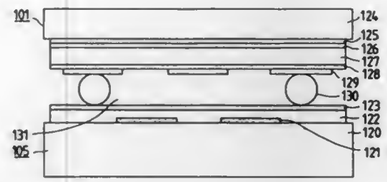
Filed Sep. 29, 1992, Ser. No. 953,112

Claims priority, application Japan, Sep. 30, 1991, 3-252007; Jan. 31, 1992, 4-40641

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **18 Claims**

1. A two-dimensional image read/display device comprising an image read means having a plurality of light receiving elements arranged two-dimensionally and display means having a plurality of light emitting elements arranged two-dimensionally, said image read means and display means being disposed in stacked relation transversely to respective reference planes through said light receiving elements and said light emitting elements, said image read means or said display means having an original document carrying surface, the light emitting elements disposed on the side of the original document carrying surface with a distance from an original document to the light receiving elements equal to Z which equals $ab/(a-c) \leqq Z \leqq 3ab(a+c)$, with a pixel pitch expressed as a (dot/nm), another distance from the original document to a light incident window expressed as b(μm), and a size of the light incident window expressed as c(μm), and each of said



light receiving elements being disposed at a position so as to receive light generated from each of said light emitting elements and reflected by the original document.

5,313,056

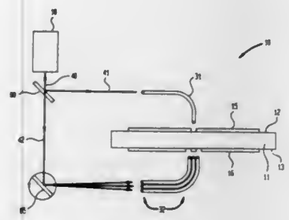
ELECTRONICALLY CONTROLLED FREQUENCY AGILE IMPULSE DEVICE

Anderson H. Kim, Toms River; Maurice Weiner, Ocean, both of N.J.; Louis J. Jasper, Jr., Fulton, Md.; Robert J. Youmans, Brick, and Lawrence E. Kingsley, Shrewsbury, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1993, Ser. No. 103,494

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.4 **1 Claim**



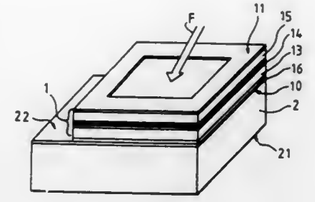
1. An electronically controlled, frequency agile impulse radiator, comprising;

a semiconductor substrate having at least two opposing surfaces each having a metalized electrode positioned such that electrostatic energy can be stored thereon;

a power supply means for applying an electric field in a predetermined direction across said electrodes such that said power is stored on said metalized electrodes; and

an optic means for triggering the discharge of said stored energy and abruptly terminating said discharge after a predetermined interval of time, said optic means comprising a laser light source, a beam splitter, and an electronically controlled rotatable mirror, said laser source directing light into said beam splitter such that a first beam is directed into a first fiber optic cable coupled to said top surface electrode, and a second beam is directed to said rotatable mirror electronically positioned such that it directs said second beam into a second fiber optic cable coupled to said bottom surface of said substrate, said second fiber being part of a fiber bundle having a predetermined amount of fibers therein, each fiber in said fiber bundle having different lengths by some predetermined amount greater than said first fiber.

a piezoelectric transducer mechanically coupled to said photodetector wherein a second face of said photoelectric substrate, opposed to said first face, is coupled to said



piezoelectric transducer and wherein said photodetector includes one of a transparent electrode and an electrode having an opening for receiving radiation to be detected.

5,313,059

Patent Not Issued For This Number

5,313,060

MULTI-SENSOR DOUBLED ROW DIRECTION SENSITIVE COUNTING AND SWITCHING DEVICE

Ralf Gast; Andreas Thun; André Haufe, and Andreas Wermke, all of Berlin, Fed. Rep. of Germany, assignors to Iris GmbH I.G. Infrared & Intelligent Sensors, Berlin, Fed. Rep. of Germany

Filed Oct. 14, 1992, Ser. No. 920,271

Claims priority, application Japan, Dec. 14, 1990, 4040811

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **15 Claims**



1. A direction sensitive counting and switching device, comprising:

an optical system including a convex lens and a passive infrared detector composed of a plurality of sensor elements arranged in at least one double row of sensor elements and disposed on one side of said convex lens for detecting radiation transmitted along a beam path from persons or objects moving through a detection area of said detector located on the other side of said convex lens and producing output signals in response to the detected radiation;

a preamplifier coupled to said detector for producing amplified output signals from the output signals from said sensor elements; and

an evaluation circuit means coupled to said preamplifier for processing the amplified output signals of said sensor elements and, if the amplified output signals permit a conclusion as to directional movement of a person or object in the detection area of the detector, initiating one of a counting and switching process which contains information about direction of movement of the respective person or object in the detection area.

5,313,057

NON-SELECTIVE PHOTORECEIVER FOR FREQUENCY-MODULATED OPTICAL SIGNALS AND OPTICAL LINK USING SAID RECEIVER

Hisao Nakajima, Bagneux, France, assignor to France Telecom Etablissement Autonome de Droit Public, Paris, France

Filed Nov. 30, 1992, Ser. No. 982,978

Claims priority, application France, Dec. 20, 1991, 91 15890

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 R **6 Claims**

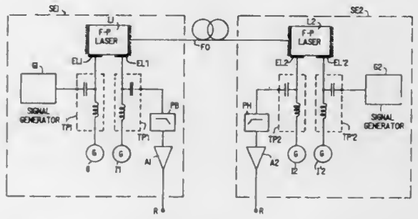
1. A photoreceiver for frequency-modulated optical signals, comprising:

a semiconductor laser with an active layer and terminals;

a polarization current supply for supplying the laser with current at a value above a threshold current, the laser functioning as an oscillator;

optical means for injecting a frequency modulated light beam in the active layer of the laser; and

means for sampling a voltage present at the laser terminals,



said photoreceiver being characterized in that the laser comprises a FABRY-PEROT-type resonator and oscillates on several longitudinal modes of different frequencies.

5,313,058

SEMICONDUCTOR OPTOELECTRONIC DETECTOR

Alain Friederich, Paris, and Pierre Leclerc, Voisins-le-Bretonneux, both of France, assignors to Thomson-CSF, Puteaux, France

Filed May 5, 1992, Ser. No. 849,366

Claims priority, application France, Nov. 9, 1990, 90 13946

Int. Cl.[5] H01J *40/14*; H01L *27/12*

U.S. Cl. 250—214.1 **3 Claims**

1. An optoelectronic detector comprising:

a photodetector having at least one quantum well situated on one face of a photoelectric substrate;

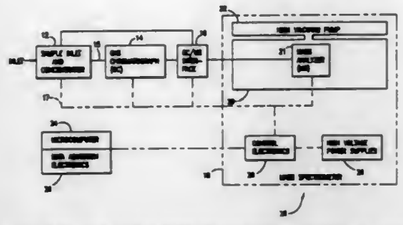
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,061

MINIATURIZED MASS SPECTROMETER SYSTEM

Russell C. Drew, Great Falls, and Thomas J. Kuehn, Sterling, both of Va., assignors to Viking Instrument, Reston, Va.

Continuation of Ser. No. 714,981, Jun. 14, 1991, abandoned, which is a continuation of Ser. No. 362,287, Jun. 6, 1989, abandoned. This application Dec. 6, 1991, Ser. No. 803,794
Int. Cl.[5] H01J *49/26*
U.S. Cl. 250—281 23 Claims



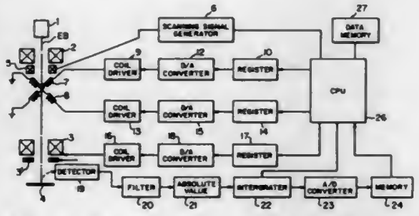
1. An analytical grade mass spectrometer system for testing a sample, said mass spectrometer system being contained in a single enclosure, comprising:
an analytical grade mass spectrometer, capable of achieving a resolution of greater than 1 AMU and having a mass range of greater than 100 AMU and which provides an output signal representative of the characteristics of said sample under test;
a gas chromatograph;
a sample inlet and concentrator assembly for interfacing said analytical grade mass spectrometer with said gas chromatograph;
a vacuum housing for containing said analytical grade mass spectrometer within a vacuum environment of at least 10^{-5} Torr;
means for maintaining said vacuum in said vacuum housing;
control means contained within said enclosure for operating and monitoring said analytical grade mass spectrometer;
means for processing the output signal from said analytical grade mass spectrometer in order to produce a representation of the mass spectrum characteristics of said sample under test; and
said single enclosure having an internal volume of less than one cubic yard.

5,313,062

AUTOMATIC FOCUSING AND ASTIGMATISM CORRECTION FOR ELECTRON BEAM APPARATUS

Atsushi Yamada, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,749
Claims priority, application Japan, Feb. 19, 1992, 4-031980
Int. Cl.[5] H01J *37/21*
U.S. Cl. 250—310 5 Claims



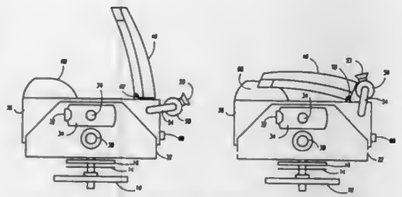
1. A method of automatically accomplishing focusing and astigmatism correction in an electron beam apparatus having an objective lens, a condenser leans for sharply focusing an electron beam directed to a surface of a specimen, deflecting means for scanning the electron beam in two dimensions in the x- and y-directions, and an astigmatism corrector disposed in the electron beam path, said method comprising the steps of:
scanning the electron beam horizontally on the specimen and shifting the scanning line vertically to scan the specimen in the two dimensions;
detecting electrons produced from the specimen by a detector and integrating an output signal from the detector by an integrator;
repeating the scan of the electron beam with different intensities of excitation of the objective lens; and
finding a curve representing variations in an output signal form the integrator caused by variations in the intensity of excitation of the objective lens;
wherein if the curve has two peaks, the intensity of excitation of the objective lens is adjusted to a positions midway between the two peaks, and then an astigmatism correction is made;
and wherein if only one peak is found in the curve, the electron beam is scanned vertically, the vertical scanning line is shifted horizontally to scan the specimen in the two dimensions, the electrons produced from the specimen in response to the scan are detected by the detector, the output signal from the detector is integrated, the scan is repeated with different intensities of excitation of the objective lens, a curve representing variations in the output signal from the integrator caused by variations in the intensity of excitation of the objective lens is found, the intensity of excitation of the objective lens is adjusted to a position midway between the peak of this curve and the peak of the curve already obtained by the previous tow-dimensional scan of the beam, and then an astigmatism correction is made.

5,313,063

FOLDABLE OPTICAL APPARATUS

Yishay Netzer, Yuvalim, Israel, assignor to State of Israel Ministry of Defense Armament Development Authority Rafael, Haifa, Israel

Filed Oct. 9, 1992, Ser. No. 960,111
Claims priority, application Ireland, Oct. 9, 1991, 99690
Int. Cl.[5] G02B *26/08, 27/04, 23/20*
U.S. Cl. 250—334 6 Claims



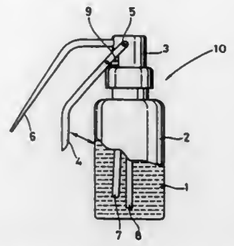
1. Forward looking infra-red apparatus comprising:
an enclosure; a reflector receiving infra-red energy from a field of view; and
a receiver, which receives the infra-red energy from the reflector and provides an output indication of an infra-red image of the field of view,
wherein the receiver is hermetically sealed within the enclosure; and
the reflector is disposed outside of the enclosure and is foldably mounted with respect thereto so as to assume a first orientation when the apparatus is in operation and a second folded and more compact orientation than the first orientation when the apparatus is not in use.

5,313,064

SOLID-LIQUID REVERSIBLE SCINTILLATOR AND METHOD OF USING THE SAME

Haruo Fujii, Tokyo, Japan, assignor to Packard Instrument B.V., Groningen, Netherlands

Continuation of Ser. No. 499,434, Jun. 21, 1990, Pat. No. 5,155,364. This application Aug. 7, 1992, Ser. No. 903,885
Claims priority, application Japan, Oct. 28, 1988, 63-270860
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] G01T *1/20*
U.S. Cl. 250—361 R 71 Claims



1. A method of measuring the radioactivity level of a radioactive sample in a scintillation counter, said method comprising
preparing a composition comprising a fluorescent substance for converting radiation into light, a solvent for said fluorescent substance, and a fixing substance which enables said solvent and said fluorescent substance to be fixed in a solid state and liquified upon heating, said fixing substance being capable of phase change reversibility,
placing said composition in a container defining a desired configuration while said composition is heated to a liquefying temperature, and then cooling said composition in said container to solidify said composition in said desired configuration,
attaching the sample to be measured to a filter medium,
re-heating said solidified composition to a liquefying temperature and applying the resulting liquid to said sample on said filter,
re-solidifying said liquid composition on the sample and the filter medium, and
counting the scintillations emitted by said solidified composition in a scintillation counter.

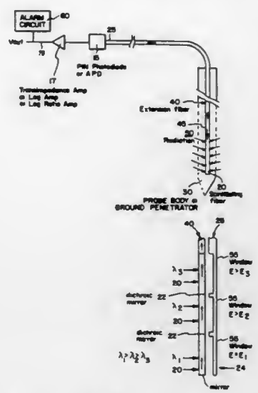
5,313,065

FIBER OPTIC RADIATION MONITOR

Stuart E. Reed, Homeworth, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 1, 1992, Ser. No. 938,722
Int. Cl.[5] G01T *1/20, 1/203*
U.S. Cl. 250—368 7 Claims

1. A sensor for detecting the presence of underground radiation, comprising:
a probe for penetrating an underground area of possible radiation;
a scintillating optical fiber housed within the probe for emitting light when exposed to radiation at the underground area, said scintillating optical fiber having a plurality of sections housed within the probe, each section of the scintillating optical fiber emitting a different wavelength corresponding to a selected radiation, said probe being provided with a plurality of windows such that each window is aligned with a corresponding section of the scintillating optical fiber, said windows providing energy discrimination;
a non-scintillating extension fiber having one end connected to the scintillating optical fiber for passing light emitted by the scintillating optical fiber;
photodetection means operatively connected to an opposite end of the extension fiber for receiving emitted light originating from the scintillating optical fiber and passed



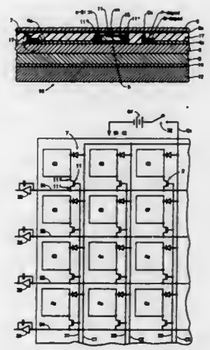
through the extension fiber, the photodetection means being for converting the light into a signal; and
electronic means for receiving the signal from the photodetection means and for indicating the presence of radiation at the underground area.

5,313,066

ELECTRONIC METHOD AND APPARATUS FOR ACQUIRING AN X-RAY IMAGE

Denny L. Y. Lee, West Chester, Pa., and Lothar S. Jeromin, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 886,661, May 20, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 44,427
Int. Cl.[5] G01N *23/04*
U.S. Cl. 250—370.09 9 Claims



1. An X-ray image capture element, comprising:
a first, electrically conductive, backing layer a second, photoconductive layer responsive to both actinic and X-ray radiation extending substantially over said backing layer a third, dielectric layer substantially transparent to both actinic and X-ray radiation, the dielectric layer having a

VOL 1162 ISS 3 MY 17 1994 UMI

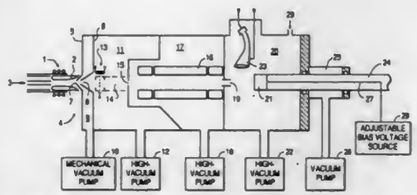
back surface extending substantially over and in contact with said photoconductive layer and a front surface;
a plurality of discrete conductive microplates substantially transparent to both actinic and X-ray radiation, said microplates arranged on said front surface with a space between adjacent microplates, each of said microplates having dimensions coextensive with a minimum resolvable picture element;
a first plurality of discrete conductive Xn address lines extending along the microplates;
a second plurality of interconnected conductive charge lines extending along said microplates;
a third plurality of discrete conductive Sn sense lines extending along said microplates; and
each microplate being connected to one adjacent of said plurality of charge lines with a diode and to said Xn address and sense lines via a transistor.

5,313,067

ION PROCESSING APPARATUS INCLUDING PLASMA ION SOURCE AND MASS SPECTROMETER FOR ION DEPOSITION, ION IMPLANTATION, OR ISOTOPE SEPARATION

Robert S. Houk, and Ke Hu, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 27, 1992, Ser. No. 888,613
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—452.21 **17 Claims**



1. An ion processing apparatus for processing a target with ions, comprising:
a plasma source for producing a plasma;
sample introducing means for introducing a sample into the plasma to vaporize and atomize the sample;
plasma sampling means for sampling the plasma containing the vaporized and atomized sample;
a mass spectrometer for analyzing ions from the sampled plasma to produce an ion beam to be directed onto a target so as to process the target with ions in the ion beam; and
an adjustable bias voltage source for applying a bias voltage to the target.

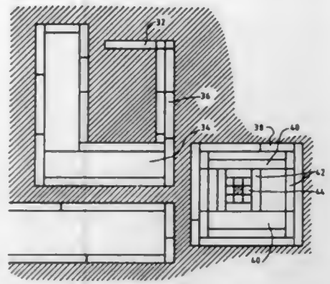
5,313,068

PARTITIONING METHOD FOR E-BEAM LITHOGRAPHY

Abraham Z. Meiri, Haifa; Dov Ramm, Menashe, and Uzi Shvadron, House, all of Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1992, Ser. No. 818,010
Claims priority, application Israel, Jan. 24, 1991, 097021
Int. Cl.[5] H01J *37/302*
U.S. Cl. 250—492.22 **8 Claims**

1. Method of partitioning, in an E-beam lithography system, a design pattern, comprising at least one design shape, into a plurality of subshapes to each of which a respective constant E-beam dose is applied, the method comprising the steps of:
(a) determining, at a plurality of points on the design, an indicator field indicative of the magnitude of a proximity effect;
(b) determining boundaries of the subshapes;
(c) assigning a constant indicator value to each subshape;
(d) assigning the respective constant E-beam dose to each subshape based on the value of the constant indicator value, and



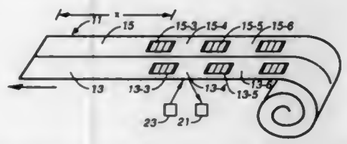
wherein the boundary determination and the constant indicator value assignment being such that, within each subshape, the constant indicator value represents an approximation to the indicator field, an error of the approximation being substantially equal to a predetermined value.

5,313,069

DISTANCE MEASURING SYSTEM OF AN EXTENDABLE STRIP HAVING LIGHT REFLECTING AND NON-REFLECTING POLYGONS

Joo L. Tham, Sunnyvale, Calif., assignor to Trimble Navigation, Sunnyvale, Calif.

Filed Dec. 31, 1991, Ser. No. 815,390
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **18 Claims**



1. Apparatus for determination of a distance or length between two spaced apart positions with an error of no more than 1 mm, the apparatus comprising:
an extendable strip of material having a length L in a strip longitudinal direction, having approximately uniform width, and having first and second sub-strips positioned adjacent to one another and extending in the strip longitudinal direction;
with the first sub-strip having a sequence of light-reflecting Polygons thereon, numbered consecutively m=1,2, . . . , M, where each such light reflecting Polygon has a center and has approximately the same shape and same width d_1 measured in the strip longitudinal direction, no two light-reflecting Polygons overlap, and Polygon number m (m=2, . . . , M−1) is spaced apart from Polygons number m−1 and m+1 along the longitudinal direction of the first sub-strip by a uniform distance d_2 measured in the strip longitudinal direction, where $d_1+d_2 \leqq 4$ mm, and the portion of the first sub-strip between two consecutive light-reflecting Polygons is a substantially non-reflecting region for incident light;
with the second sub-strip having a sequence of light-reflecting Polygons thereon, numbered consecutively n=1, 2, . . . , M where each such light reflecting Polygon has a center and has approximately the same shape and same width d_3 measured in the strip longitudinal direction, no

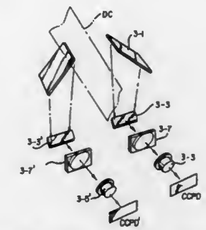
two light-reflecting Polygons overlap, and Polygon number n (n=2, . . . , M−1) is spaced apart from Polygons number n−1 and n+1 along the longitudinal direction of the first sub-strip by the uniform distance d_4, where $d_1+d_2=d_3+d_4$, and the portion of the second sub-strip between two consecutive light-reflecting Polygons is a substantially non-reflecting region for incident light, where the position of light-reflecting Polygon number p of the first sub-strip is translated by a selected distance d_5 ($0<d_5<d_3$) relative to the position of light-reflecting Polygon number p of the second sub-strip in the longitudinal direction of the strip;
a first light source positioned adjacent to the first sub-strip to illuminate a region on the first sub-strip that includes at most one of the light-reflecting Polygons of the first sub-strip;
a first light sensor positioned adjacent to the first sub-strip to receive and sense the amount of light that is received by and reflected from the first sub-strip and to issue an electrical voltage output signal indicating the amount of light received by the first light sensor;
a first comparator module to receive a selected first offset voltage signal and the first light sensor output voltage signal at two input terminals thereof, to compare the value of the first light sensor output voltage with the first offset voltage value, to issue as an output signal a first comparator first output signal if the first light sensor output voltage value is greater than the first offset voltage value, and to issue as an output signal a first comparator second output signal if the first light sensor output voltage value is less than the first offset voltage value;
a second light source positioned adjacent to the second sub-strip to illuminate a region on the second sub-strip that includes at most one of the light-reflecting Polygons of the second sub-strip;
a second light sensor positioned adjacent to the second sub-strip to receive and sense the amount of light that is received by and reflected from the second sub-strip and to issue an electrical signal indicating the amount of the light received by the second light sensor;
a second comparator module to receive a selected second offset voltage signal and the second light sensor output voltage signal at two input terminals thereof, to compare the value of the second light sensor output voltage with the second offset voltage value, to issue as an output signal a second comparator first output signal if the second light sensor output voltage value is greater than the second offset voltage value, and to issue as an output signal a second comparator second output signal if the second light sensor output voltage value is less than the second offset voltage value;
a decoder module to receive the output signals from the first and second comparators at first and second input terminals thereof, to receive a sequence of consecutive clock pulses at a third terminal thereof, where each clock pulse is separated from the preceding clock pulse by a selected time interval of fixed length Δt, to generate and issue as an output signal an up-count signal that counts the number of light-reflecting Polygons, or the number of non-reflecting regions, of each sub-strip that have passed the first and second light sensors moving in a first longitudinal direction and a down-count signal that counts the number of light-reflecting Polygons, or the number of non-reflecting regions, of each sub-strip that have passed the first and second light sensors moving in a second longitudinal direction that is opposite to the first longitudinal direction; and
signal display means for receiving the first and second counting signals, for forming the difference of the count represented by the up-count signal and the count represented by the down-count signal and for displaying this difference by a visually perceptible display.

5,313,070

CHECK IMAGING ILLUMINATION WITH FOCUS/DEFOCUS AND FIBRE OPTIC LIGHT GUIDE MEANS

John Vala, Plymouth, and Gerald Banks, Ann Arbor, both of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 651,887, Feb. 7, 1991, Pat. No. 5,089,713, which is a continuation of Ser. No. 419,572, Oct. 10, 1989, Pat. No. 5,003,189. This application Jan. 1, 1992, Ser. No. 811,337
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] G06K *7/10*; G01N *9/04*
U.S. Cl. 250—571 **11 Claims**



1. A method for illuminating checks in a check-processing system wherein a large number of checks are rapidly, continuously transported past two or more imaging stations, each station having a prescribed image-site, and being illuminated by prescribed source means which projects two or more illumination-beams, one to each station; said method for each said beam comprising:
providing focus means for each said beam;
providing a fibre-optic array intercepting each said beam path, to thereby define an input-beam thereto at or near the approximate focal point of said focus means, said array being arranged to exhibit an entry-face of prescribed diameter and an exit-face configured to illuminate the respective image-site relatively uniformly thus defining an exit beam, the fibres of the array being arranged and distributed, in uniform, random fashion completely across this exit-face; and,
with said focus means, de-focusing said input beam to change beam-diameter, at said entry-face, sufficient to spread the beam sufficiently beyond the entry-face to thus controllably reduce the amount of the beam entering said entry-face.

5,313,071

RIBBON ADVANCE MONITOR

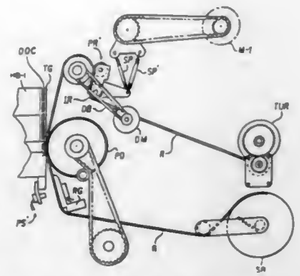
Thomas Dragon, Northville, and Paul McCarthy, Redford, both of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 691,892, Apr. 26, 1991, which is a division of Ser. No. 419,357, Oct. 10, 1989, Pat. No. 5,027,702. This application Nov. 16, 1992, Ser. No. 976,912
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—571 **10 Claims**

1. In an arrangement for monitoring the condition of print ribbon means in a printing apparatus including control means, ribbon advance means wherein print-command signals are issued to the advance means and wherein the advance means is required to advance the ribbon at least d minimum distance prior to each said print-command, the combination therewith of:
detect means adapted to monitor the advance-motion of said ribbon and issue a prescribed "GO" signal to said control means to enable printing upon sensing ribbon-advance of at least "d" distance, in the absence of which said advance means is adapted and controlled by said control means to

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execute a "retry", the result of which will either be issuance of said "GO" signal or of a "fault condition" signal at



said control means, which is adapted to responsively prevent printing.

5,313,072

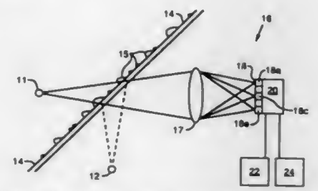
OPTICAL DETECTOR FOR WINDSHIELD WIPER CONTROL

Frederick Vachss, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 16, 1993, Ser. No. 18,689

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—573 **9 Claims**



1. A method of detecting obscuring moisture on a windshield of an automotive vehicle, comprising the steps of:
illuminating the windshield with a source of light;
imaging said source of light along an optical axis and onto an imaging plane;
providing a light detector array having a plurality of light sensors on said imaging plane and centered on said optical axis for detecting said imaged source of light;
detecting intensity of said light imaged on a central one of said light sensors located on said optical axis;
detecting intensity of said light imaged on other ones of said light sensors located off said optical axis; and
measuring the intensity of said detected off-axis light versus said detected on-axis light for determining the presence of obscuring moisture on said windshield.

5,313,073

LIGHT DETECTOR USING INTERSUB-VALENCE BAND TRANSITIONS WITH STRAINED BARRIERS

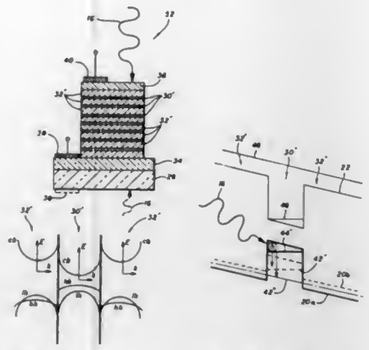
Roger T. Kuroda, Palos Verdes, and Elsa M. Garmire, Manhattan Beach, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Aug. 6, 1992, Ser. No. 926,850

Int. Cl.[5] H01L *31/04, 29/205*

U.S. Cl. 257—18 **15 Claims**

1. A detector for detecting light having a wavelength and comprising a plurality of alternating quantum wells and barriers formed either on a substrate or on a buffer layer formed on a supporting substrate, said quantum wells and barriers formed from semiconductor materials with p-doping within at least one of (a) said plurality of quantum wells and (b) said plurality of said barriers, having light holes generated by incident light from heavy holes due to intersubvalence band transitions, said detector operating by means of predominantely light holes which remain light holes in said barriers as a result of tensile



strain sufficient to induce an energy difference between said light holes and said heavy holes of greater than 0.5 k_BT, where k_B is the Boltzmann constant and T is the operating temperature in kelvins, with said light holes having a lower energy than said heavy holes.

5,313,074

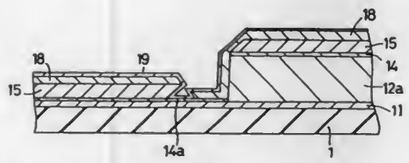
JOSEPHSON DEVICE FORMED OVER A RECESS STEP WITH PROTECTIVE LAYER

Itsuro Tamura, Kawachinagano; Satoshi Fujita, and Masao Wada, both of Osaka, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Nov. 27, 1991, Ser. No. 799,272

Int. Cl.[5] H01L *39/22;* **H01B** *12/00;* **C23C** *14/00;* **G11C** *11/44*

U.S. Cl. 257—34 **20 Claims**



1. A Josephson device, comprising:
a substrate;
a rectangular base disposed on part of said substrate, said rectangular base having a sidewall;
a thin film region formed of superconducting material disposed adjacent to said sidewall of said rectangular base so as to form a Josephson junction, said thin film region being formed by:
a first thin film layer formed on said substrate,
a second thin film layer formed on said first thin film layer having a surface thereon which extends in a direction approaching toward said substrate and going away from said rectangular base; and
a third thin film layer formed on said first thin film layer having a sidewall surface which extends in a direction approaching toward said substrate and going toward said rectangular base, said third thin film layer being further formed on said second thin film layer and said sidewall of said rectangular base, said third thin film layer being thinner than said first thin film layer;

wherein said substrate is made of a semiconducting material, and has a layer of ordinary conducting metal thereon between said semiconducting material and said first thin film layer.

5,313,075

THIN-FILM TRANSISTOR

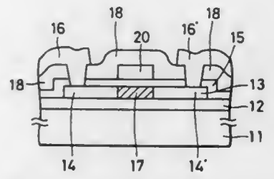
Hongyong Zhang, Paresu Miyagami 302, 1-10-15, Fukamidai, Yamato-shi, Kanagawa-ken 242, and Shunpei Yamazaki, 21-21, Kitakarasuyama, 7-chome, Setagaya-ku, Tokyo 157, both of Japan

Continuation of Ser. No. 704,103, May 22, 1991, abandoned. This application Apr. 9, 1993, Ser. No. 44,883

Claims priority, application Japan, May 29, 1990, 2-140580; Oct. 29, 1990, 2-293264

Int. Cl.[5] H01L *27/01*

U.S. Cl. 257—57 **21 Claims**



19. A thin film transistor of a stagger-type or a co-planar type comprising source, drain, and channel regions where at least said channel region is disposed at least partially within a non-single-crystalline semiconductor film, wherein a protective film is formed between said semiconductor film and a substrate for preventing said semiconductor film from being contaminated by an impurity from said substrate and wherein said protective film includes a halogen element.

5,313,076

THIN FILM TRANSISTOR AND SEMICONDUCTOR DEVICE INCLUDING A LASER CRYSTALLIZED SEMICONDUCTOR

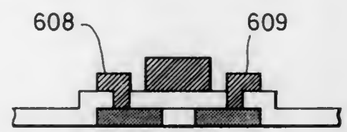
Shunpei Yamazaki, Tokyo; Hongyong Zhang, Kanagawa; Naoto Kusumoto, Kanagawa, and Yasuhiko Takemura, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1992, Ser. No. 853,690

Claims priority, application Japan, Mar. 18, 1991, 3-080800

Int. Cl.[5] H01L *29/04, 31/036, 29/12, 27/01*

U.S. Cl. 257—66 **16 Claims**



15. A thin film transistor comprising:
an intrinsic or substantially intrinsic semiconductor film included in a channel of said thin film transistor, said intrinsic or substantially intrinsic semiconductor film containing therein carbon, nitrogen and oxygen at a concentration of 5×10^{19} atoms-cm^{-3} or less respectively and having a Raman peak of 517 cm^{-1} or less in Raman spectroscopy thereof;
an insulated gate electrode formed on said semiconductor film; and
a source region and a drain region formed adjacent to said semiconductor film.

5,313,077

INSULATED GATE FIELD EFFECT TRANSISTOR AND ITS MANUFACTURING METHOD

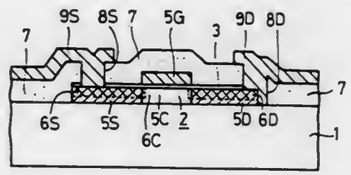
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 687,745, Apr. 19, 1991, abandoned, which is a division of Ser. No. 520,756, May 9, 1990, abandoned, which is a continuation of Ser. No. 153,477, Feb. 3, 1988, Pat. No. 4,959,700, which is a continuation of Ser. No. 735,697, May 20, 1985, abandoned. This application Apr. 30, 1993, Ser. No. 54,842

Claims priority, application Japan, May 18, 1984, 84-100250; May 18, 1984, 84-100251; May 18, 1984, 84-100252

Int. Cl.[5] H01L *45/00, 29/00*

U.S. Cl. 257—66 **12 Claims**



1. A thin film transistor comprising:
a semiconductor layer comprising a non-single crystalline silicon layer formed on an insulating surface of a substrate;
a gate electrode formed on said semiconductor layer;
a gate insulating film disposed between said gate electrode and said semiconductor layer;
a source region and a draining region formed in said semiconductor layer;
a channel region extending between said source and drain regions in said semiconductor layer, where said source and draining regions have a different conductivity type from said channel region; and
an interlayer insulating film covering at least said gate electrode and semiconductor layer except for a contact hole of at least one of said source and draining regions where said contact hole is disposed partially over said at least one of said source and drain regions;
wherein at least one of said source region and said drain region is provided with an electrode through said contact hole, said electrode being contacted with an upper surface of said substrate and an upper surface of one of said source region and said draining region.

5,313,078

MULTI-LAYER SILICON CARBIDE LIGHT EMITTING DIODE HAVING A PN JUNCTION

Yoshihisa Fujii; Hajime Saito, and Akira Suzuki, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1992, Ser. No. 984,984

Claims priority, application Japan, Dec. 4, 1991, 3-320228; May 1, 1992, 4-112628; May 26, 1992, 4-133986

Int. Cl.[5] H01L *33/00*

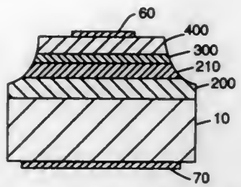
U.S. Cl. 257—77 **22 Claims**

1. A pn type SiC light emitting diode comprising:
an n-type SiC single-crystal substrate provided with an ohmic electrode on a rear surface thereof, the substrate having an electron concentration;
a first n-type SiC single-crystal layer overlaying said substrate;
a second n-type SiC single-crystal layer overlaying said first n-type SiC single-crystal layer; and

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a first p-type SiC single-crystal layer overlaying said second n-type layer;

said second n-type SiC single-crystal layer and said first p-type SiC layer being combined to form a pn junction layer;



said first n-type SiC layer having an electron concentration larger than 1×10^{15} cm^{-3} and smaller than the electron concentration of said substrate, said first n-type SiC single-crystal layer having a thickness of 0.1 to 20 μm;

wherein said n-type SiC single-crystal substrate has (0001) Si surface and is inclined by an angle of 2 to 15 degrees from the (0001) Si surface in the $<11\bar{2}0>$ direction.

5,313,079

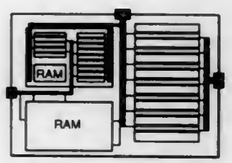
GATE ARRAY BASES WITH FLEXIBLE ROUTING

Daniel R. Brasen, San Jose; James D. Shiffer, II, Fremont; Mark R. Hartoog, Los Gatos, and Sunil Asktaputre, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 902,183, Jun. 22, 1992. This application Sep. 25, 1992, Ser. No. 953,032

Int. Cl.[5] H01L *27/10*

U.S. Cl. 257—206 **5 Claims**



1. A gate-array-implemented integrated circuit, comprising:

a gate array base having multiple transistor rows, each transistor row containing multiple transistors of a given-type, alternate transistor rows containing transistors of opposite types;

a plurality of hierarchical blocks formed on said gate-array base, each including a plurality of cell placement rows, each of which has a substantially uniform height, and a plurality of routing channels separating said placement rows and containing only logic interconnections between cell placement rows;

wherein placement rows in different hierarchical blocks are not aligned.

5,313,080

STRUCTURE OF A CCD IMAGE SENSOR PARTICULARLY ON AN INTERLINE TRANSFER METHOD

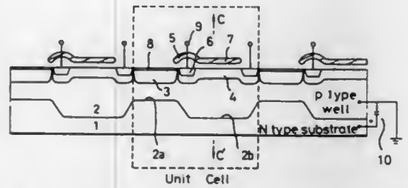
Hun J. Jung, Kyungki-do, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Continuation of Ser. No. 834,672, Feb. 12, 1992, abandoned. This application Jul. 27, 1993, Ser. No. 98,566

Claims priority, application Rep. of Korea, Feb. 13, 1991, 2472/1991

Int. Cl.[5] H01L *29/796, 27/14*

U.S. Cl. 257—223 **4 Claims**



1. A structure of a charge coupled device (CCD) image sensor comprising:

a second conductive type well formed on a first conductive type substrate;

a plurality of first conductive type optical detection regions and a plurality of first conductive type buried channel regions (BCCDs) repeatedly formed in turn adjacent to one another on a surface of the second conductive type well; and

second conductive type channel stop regions formed on each buried channel region at opposite edges of each buried channel region (BCCD) and adjacent to the optical detection regions.

5,313,081

SOLID-STATE IMAGING DEVICE WITH TRANSPORT CHANNELS BETWEEN PHOTOSENSITIVE ELEMENTS

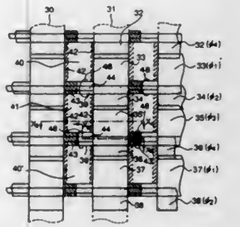
Tetsuo Yamada, Yokobama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 18, 1991, Ser. No. 732,093

Claims priority, application Japan, Jul. 19, 1990, 2-191282

Int. Cl.[5] H01L *29/78, 31/00;* **G11C** *19/28*

U.S. Cl. 257—232 **6 Claims**



1. A solid-state imaging device comprising:

a photosensitive element array in which photosensitive element trains are arranged in parallel with a predetermined spacing therebetween, each of said photosensitive element trains being such that a plurality of photosensitive elements at least partially isolated from each other by device isolation regions are arranged in a train form, and each of said photosensitive element trains being comprised of photosensitive elements arranged in a charge transfer direction,

charge transfer sections each including charge transfer channel layers and a plurality of transfer electrodes thereabove, arranged between said respective photosensitive element trains, and isolated from at least a portion adjacent to said photosensitive element array by said device isolation regions,

channel regions formed in the regions between said photosensitive elements of each of said trains, each of said channel regions being formed adjacent to two photosensitive elements in one of said trains, in a manner that they are adjacent to said device isolation regions and are connected to said charge transfer channel layers, and

interconnection layers for connecting the electrodes in phase of said transfer electrodes provided above said device isolation regions and said channel regions,

wherein by controlling voltages applied to said transfer electrodes and said interconnection layers, each of said channel regions between photosensitive elements is permitted to be used as a charge transport channel for transporting signal charges produced in said photosensitive elements to said charge transfer channel.

5,313,082

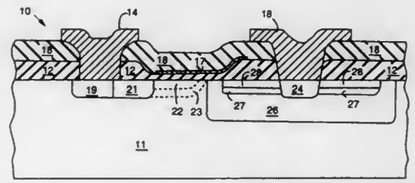
HIGH VOLTAGE MOS TRANSISTOR WITH A LOW ON-RESISTANCE

Klas H. Eklund, Sollentuna, Sweden, assignor to Power Integrations, Inc., Mountain View, Calif.

Filed Feb. 16, 1993, Ser. No. 18,080

Int. Cl.[5] H01L *27/085, 29/784, 29/808*

U.S. Cl. 257—262 **4 Claims**



1. An n-channel type high-voltage MOS transistor comprising:

a p− substrate (**11**) covered by a silicon dioxide layer (**12**);

a metal source contact (**14**) extending through said silicon dioxide layer (**12**) to the substrate (**11**);

a metal drain contact (**16**) extending through said silicon dioxide layer (**12**) to the substrate (**11**);

a polysilicon gate (**17**) positioned between the source contact (**14**) and the drain contact (**16**) at a location where said silicon dioxide layer (**12**) is at its thinnest thickness and where the gate (**17**) is positioned slightly apart from said substrate (**11**) and insulated by said silicon dioxide layer (**12**), wherein an IGFET or MOSFET type of transistor is thus contained within an area proximate to the source contact (**14**) and the drain contact (**16**) and the gate (**17**);

an insulation layer (**18**) covering the gate (**17**) and said silicon dioxide layer (**12**);

a diffused p+ well (**19**) and a first diffused n+ well (**21**) adjacently beneath the source contact (**14**) in the substrate (**11**), wherein the first diffused n+ well (**21**) extends to contact an enhancement mode channel positioned beneath the gate (**17**) for control by the gate (**17**) and including a p-type threshold voltage implant (**22**) for providing for adjustment of the transistor threshold voltage and a p−type punch-through implant (**23**) for providing for avoidance of a punch-through voltage breakdown;

a second diffused n+ well (**24**) in the substrate (**11**) adjacent to the metal drain contact (**16**);

an n−type extended drain region (**26**) laterally encircling the second + well (**24**) and reaching at its outer perimeter the surface of the substrate (**11**);

an n−top layer (**28**) laterally encircling the second n+ (**24**) and positioned at the surface of the substrate (**11**); and

a p−type JFET gate control layer (**27**) buried beneath the n-top layer (**28**), wherein the drain region (**26**) and n-top layer (**28**) form a channel for a JFET transistor of which the buried layer (**27**) is a gate and for providing for a splitting of a drain current around the gate control layer (**27**) and a recombining of said drain current in the second n+ well (**24**).

5,313,083

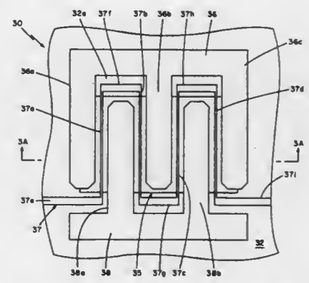
R.F. SWITCHING CIRCUITS

Manfred J. Schindler, Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 976,297, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 865,680, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 617,285, Nov. 16, 1990, abandoned, which is a continuation of Ser. No. 285,173, Dec. 16, 1988, abandoned. This application Jun. 28, 1993, Ser. No. 84,790

Int. Cl.[5] H01L *29/48, 29/56, 29/64*

U.S. Cl. 257—280 **2 Claims**



1. An r.f. switch having a common terminal and at least a pair of branch terminals comprising:

a plurality of metal semiconductor field effect transistors, each transistor having source, drain, and gate electrodes arranged to provide a low impedance path between said common terminal and a first one of said branch terminals and a high impedance path between said common terminal and a second one of said branch terminals in response to a first state of a control signal fed to the gate electrode of said transistors, and a low impedance path between said second branch terminal and said common terminal and a high impedance path between said common terminal and said first branch terminal in response to a second, different state control signal fed to the gate electrodes of said transistors, each of said metal semiconductor field effect transistors comprising:

an active region, comprising doped gallium arsenide supported by said substrate;

a plurality of drain electrode portions disposed in ohmic contact over said active region and spaced along said active region;

a second plurality of source electrode portions disposed in ohmic contact over said active region and spaced along said active region from said electrode portions to provide gate regions of said active layer;

a third plurality of gate electrodes extending along a first direction and disposed in Schottky barrier contact with said active region, with each one of said third plurality of gate electrodes having first and second ends and each of said electrodes being disposed on one of said gate regions of said active region; and

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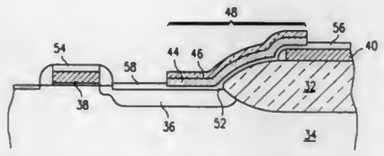
a plurality of interconnect sections extending along a direction perpendicular to the first direction and disposed between the source and drain electrodes in Schottky barrier contact with said active region, to interconnect said third plurality of gate electrodes in a series circuit, with a first one of said pluraliyt of interconnect sections, connected between respective first ends of an adjacent pair of said third plurality of gate electrodes, and with a second one of said plurality of interconnect sections connected to a second end of one of said pair of adjacent gate electrodes and to a corresponding second end of a succeeding one of said plurality of gate electrodes disposed adjacent said one of said pair of adjacent gate electrodes, said gate electrodes and interconnecting sections controlling the flow of carriers between the source and drain electrodes in both the first direction and in the direction perpendicular to the first direction.

5,313,084

INTERCONNECT STRUCTURE FOR AN INTEGRATED CIRCUIT

Che-Chia Wei, Plano, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 29, 1992, Ser. No. 891,450
Int. Cl.[5] H01L *29/540*
U.S. Cl. 257—382 **4 Claims**



1. An interconnect structure for an integrated circuit, comprising:
a semiconductor substrate;
a source/drain region within the substrate;
a field oxide region covering a portion of a surface of the substrate adjacent the source/drain region;
a conductive electrode lying on a portion of the field oxide region;
a local interconnect layer contacting the source drain region and the conductive electrode on the field oxide region, wherein the local interconnect layer is formed from a refractory metal silicide and has a relatively uniform thickness throughout;
a silicon buffer layer overlying and directly contacting the local interconnect layer and co-extensive therewith;
an oxide layer overlying and directly contacting the buffer layer and co-extensive therewith; and
refractory metal silicide regions overlying the source/drain region and the conductive electrode, wherein such refractory metal silicide regions have a thickness greater than the thickness of the local interconnect layer.

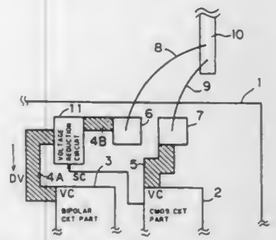
5,313,085

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Koichi Hasegawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1992, Ser. No. 894,299
Claims priority, application Japan, Jun. 4, 1991, 3-132659; Jan. 28, 1992, 4-012876
Int. Cl.[5] H01L *27/02*; H03K *3/01*
U.S. Cl. 257—370 **14 Claims**

1. A semiconductor integrated circuit device, comprising:
a semiconductor chip;
a CMOS circuit part formed by CMOS elements which are provided on said semiconductor chip, said CMOS circuit part including a control signal generation part for outputting a control signal in response to a data signal supplied thereto;
a bipolar circuit part formed by bipolar elements which are provided on said semiconductor chip;
an external power source terminal for receiving a predetermined power source voltage;
a first power supply pad mounted on said semiconductor chip, said first power supply pad being electrically interposed between a power source voltage supplying portion of said CMOS circuit part and said external power source terminal;
a second power supply pad mounted on said semiconductor chip, said second power supply pad being electrically



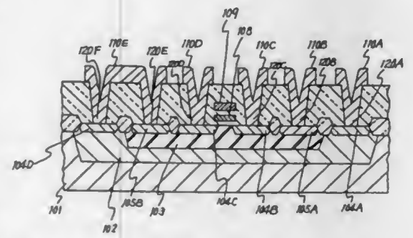
interposed between a power source voltage supplying portion of said bipolar circuit part and said external power source terminal; and
at least one voltage reduction circuit being inserted at least between said first power supply pad and said power source voltage supplying portion of said CMOS circuit part or between said second power supply pad and said power source voltage supplying portion of said bipolar circuit part, said at least one voltage reduction circuit reducing said power source voltage in accordance with said control signal thereby to obtain a reduced power source voltage and outputting said reduced power source voltage to said power source voltage supplying portion of said CMOS and/or bipolar circuit part to which said at least one voltage reduction circuit is connected.

5,313,086

SEMICONDUCTOR DEVICE

Toshikatsu Jinbo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,275
Claims priority, application Japan, Aug. 26, 1991, 3-212539
Int. Cl.[5] H01L *29/68, 29/78*
U.S. Cl. 257—355 **16 Claims**



1. A semiconductor device comprising:
a one conductivity type semiconductor substrate;

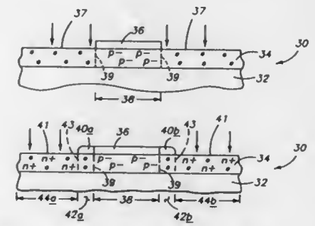
an opposite conductivity type well region formed on the surface of said semiconductor substrate;
a one conductivity type well region formed on said opposite conductivity type well region;
an insulated gate type field effect transistor formed in said one conductivity type well region; and
well voltage control means for applying a first pulse, having a voltage level sufficient for establishing a reverse bias at the PN junction between said opposite conductivity type well region and said one conductivity type well region, to a first portion of said opposite conductivity type well region for a given period, and applying a second pulse, having said voltage level, to a second portion of said one conductivity type well region in a period between the initiation timing and termination timing of said first pulse, which second pulse has an initiation timing later than the initiation timing of said first pulse and a termination timing earlier than the termination timing of said first pulse.

5,313,087

SEMICONDUCTOR DEVICE FOR MINIMIZING DIFFUSION OF CONDUCTIVITY ENHANCING IMPURITIES FROM ONE REGION OF A POLYSILICON LAYER TO ANOTHER

Hiang C. Chan; Pierre C. Fazan, and Bohr-Winn Shih, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 52,364, Apr. 23, 1993, Pat. No. 5,273,924, which is a division of Ser. No. 753,355, Aug. 30, 1991, Pat. No. 5,236,856. This application Sep. 30, 1993, Ser. No. 129,872
Int. Cl.[5] H01L *21/265, 29/04*; G11C *11/00, 11/36*
U.S. Cl. 257—538 **9 Claims**



1. A back-to-back diode resistor comprising:
a polysilicon layer having two n-type regions separated by a p-type region, the polysilicon layer having interfaces between the p-type region and each of the n-type regions; and
a diffusion barrier region disposed at each of the interfaces between the p-type region and the two n-type regions, the diffusion barrier regions having a selected width and containing a diffusion inhibiting impurity at a selected concentration, the p-type region being substantially void of the diffusion inhibiting impurity.

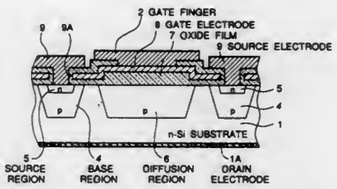
5,313,088

VERTICAL FIELD EFFECT TRANSISTOR WITH DIFFUSED PROTECTION DIODE

Nobumitsu Takahashi, and Mitsuasa Takahashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 19, 1991, Ser. No. 762,208
Claims priority, application Japan, Sep. 19, 1990, 2-249091; Jun. 3, 1991, 3-130123
Int. Cl.[5] H01L *29/10, 29/34*
U.S. Cl. 257—328 **5 Claims**

1. A vertical field effect transistor of the structure having a gate pad and a gate finger, the vertical field effect transistor including:
a semiconductor substrate of a first conduction type having an upper principal surface and a lower principal surface;
a drain electrode formed on said lower principal surface of said semiconductor substrate in electrical contact with said lower principal surface;
an insulating film coated to cover said upper principal surface of said semiconductor substrate, said gate pad and said gate finger being formed above said insulating film;
a first diffusion region of a second conduction type opposite to said first conduction type, formed in said upper principal surface of said substrate under said gate pad and said gate finger;
a base region of said second conduction type formed in said principal surface of said substrate, separated from said first diffusion region;
a source region of said first conduction type formed within said base region;
a source electrode formed on said insulating film and in



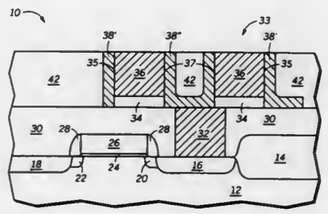
electrical contact with said source region through a contact hole formed in said insulating film;
a gate electrode formed on said insulating film to extend from said source region, over said base region and said upper principal surface of said substrate which are positioned between said source region and said first diffusion region, to a peripheral portion of said first diffusion region, said gate electrode being electrically connected to said gate pad and said gate finger; and
a second diffusion region of said second conduction type formed in said principal surface of said substrate and electrically connected to said source electrode so as to form a protection diode between said substrate and said second diffusion region, said second diffusion region being electrically isolated from said first diffusion region, so that said first diffusion region is floating.

5,313,089

CAPACITOR AND A MEMORY CELL FORMED THEREFROM

Robert E. Jones, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 26, 1992, Ser. No. 887,942
Int. Cl.[5] H01L *29/68*
U.S. Cl. 257—295 **32 Claims**



18. A capacitor comprising:
a substrate;
an annular high-permittivity dielectric region formed overlying the substrate, the annular high-permittivity dielectric region having an inner sidewall and an outer sidewall;

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a first capacitor electrode formed adjacent the inner sidewall of the annular high-permittivity dielectric region; and

a second capacitor electrode formed adjacent the outer sidewall of the annular high-permittivity dielectric region wherein the first and the second capacitor electrodes are formed by selectively removing portions of a single conductive layer.

5,313,090

BIPOLAR MEMORY CELL HAVING CAPACITORS

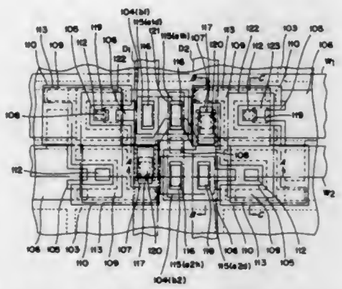
Takenori Morikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 1, 1991, Ser. No. 724,147

Claims priority, application Japan, Jun. 29, 1990, 2-173943

Int. Cl.[5] H01L *29/72, 27/02, 29/06*

U.S. Cl. 257—577 **4 Claims**



1. A semiconductor device comprising: a semiconductor substrate, first and second bipolar transistors formed at a major surface of said semiconductor substrate, a Schottky-barrier diode formed on a predetermined area of each of said first and second bipolar transistors, a capacitor formed on each of said first and second bipolar transistors, each said capacitor including an insulating layer covering a surface of a respective one of said first and second bipolar transistors, a polysilicon layer formed on said insulating layer in a pattern that extends around said predetermined area, a dielectric film formed covering said polysilicon layer, and a conductive film covering said dielectric film,

wherein each said polysilicon layer respectively extends and connects to a base region of one of said first and second bipolar transistors.

wherein one part of each said polysilicon layer serves as a resistor, and each said conductive film respectively extends and connects to a said resistor,

wherein each said conductive film respectively extends and connects to an anode of a said Schottky-barrier diode, and

wherein each said anode of each said Schottky-barrier diode is formed to have a substantially square shape in a respective said predetermined area, and each said polysilicon layer is respectively formed on a said insulating layer in a pattern that extends around at least two sides of said substantially square shape.

5,313,091

PACKAGE FOR A HIGH POWER ELECTRICAL COMPONENT

W. Kyle Anderson; Arthur Pershall; Lee Thomas; Stephen E. Jackson, all of Rockford, and Robert J. Sterling, Rockton, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 28, 1992, Ser. No. 952,553

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—584 **8 Claims**

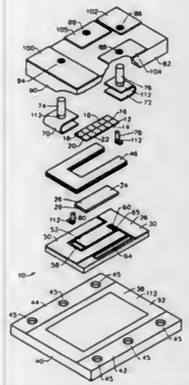
1. A package for a high power electrical component, comprising:

a base formed of a material having a coefficient of thermal expansion of a first magnitude and including a support surface;

a plate including an electrically insulative layer and first and second outer layers disposed on opposite faces of the electrically insulative layer wherein the first outer layer is disposed on the support surface and the second outer layer includes an electrically conductive portion and wherein the plate has a coefficient of thermal expansion greater than the first magnitude;

an electrically conductive pad disposed on the electrically conductive portion of the second outer layer so that electrical contact is established therebetween wherein the pad has a coefficient of thermal expansion less than the coefficient of thermal expansion of the plate;

wherein the electrical component is disposed on the pad and



includes a first electrode in electrical contact with the pad and a second electrode;

a cover disposed on the base and enclosing the plate, the pad and the electrical component, the cover being formed of a material having a coefficient of thermal expansion substantially equal to the first magnitude;

first and second electrically conductive terminals extending through first and second apertures in the cover, the first terminal being electrically coupled to the first electrode of the electrical component through the conductive pad and the electrically conductive portion of the second layer of the plate and the second terminal being electrically coupled to the second electrode; and

means for hermetically sealing the cover to the base and for hermetically sealing the first and second terminals to the first and second apertures, respectively.

5,313,092

SEMICONDUCTOR POWER DEVICE HAVING WALLS OF AN INVERTED MESA SHAPE TO IMPROVE POWER HANDLING CAPABILITY

Kazuhiro Tsuruta; Mitutaka Katada, both of Nishio; Seiji Fujino, and Masami Yamaoka, both of Anjyo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 521,730, May 11, 1990, abandoned.

This application Mar. 3, 1992, Ser. No. 844,889

Claims priority, application Japan, May 12, 1989, 1-119268; Oct. 30, 1989, 1-282396

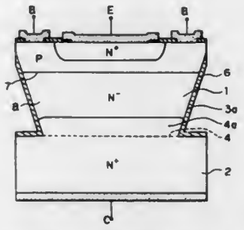
Int. Cl.[5] H01L *29/06*

U.S. Cl. 257—620 **19 Claims**

1. A vertically arranged semiconductor power device having a high withstanding voltage and including a region formed of a high-resistance layer with a predetermined impurity density and a low-resistance layer having an impurity density

higher than said predetermined impurity density of the high-resistance layer, comprising:

a first semiconductor substrate having a first main face, on a first side, a second main face and a side surface extending between said first and second main faces, a first conductivity type layer being provided in said first side thereof and a high-resistance layer of a second conductivity type layer and a PN junction core formed between said first conductivity type layer and said high resistance layer, wherein an area of said first main face is larger than an area of said second main face to form an inclined configuration at a contacting phase of said PN junction between said first conductivity layer and said high-resistance layer on said side surface thereof at a predetermined inclination angle, said side surface being inclined at an oblique angle relative to at least one of said first and second main faces by an amount sufficient to reduce a concentration of the electric field generated at an end of the PN-junction when a reverse bias is applied thereto;



a second semiconductor substrate forming a low-resistance layer having a third main face and a fourth main face, said third and fourth main faces each having an area larger than an area of said second main face of said first semiconductor substrate, and wherein said third main face is connected to said second main face of said first semiconductor substrate to integrate said first and second semiconductor substrate into one unit;

an insulation material layer coating said side surface and part of said third main face of said second semiconductor substrate to form an indented insulated area on an one side surface of said insulation material layer between insulation material layers of said side surface and said part of said third main face of said second semiconductor substrate;

a first electrode provided on said first main face of said first semiconductor substrate; and

a second electrode provided on said fourth main face of said second semiconductor substrate such that a current flows in a vertical direction relative to said device between said first and second electrodes.

5,313,093

COMPOUND SEMICONDUCTOR DEVICE

Yoshikazu Nakagawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Aug. 11, 1992, Ser. No. 929,883

Claims priority, application Japan, Oct. 29, 1991, 3-311828; Oct. 29, 1991, 3-311829

Int. Cl.[5] H01L *29/161*

U.S. Cl. 257—194 **5 Claims**

1. A compound semiconductor device, comprising:

an undoped semiconductor layer;

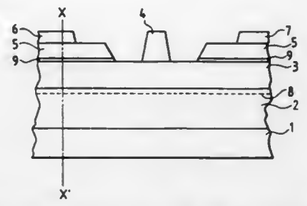
a doped semiconductor layer formed on said undoped semiconductor layer and having smaller electron affinity than said undoped semiconductor layer, impurities being doped in said doped semiconductor layer;

a gate electrode formed on said doped semi-conductor layer;

a cap layer formed on said doped semiconductor layer; and

a source electrode and a drain electrode formed on said cap layer;

and a source resistance decreasing layer comprising an undoped semiconductor material layer having greater electron affinity than said doped semiconductor layer and said cap layer for decreasing a source resistance of said com-



pound semiconductor device by making electrons remain in a center portion of said doped semiconductor layer formed between said doped semiconductor layer and said cap layer.

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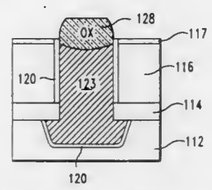
THERMAL DISSIPATION OF INTEGRATED CIRCUITS USING DIAMOND PATHS

Klaus D. Beyer, Poughkeepsie; Chang-Ming Hsieh; Louis L. Hsu, both of Fishkill; David E. Kotecki, and Tsoring-Dih Yuan, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corportion, Armonk, N.Y.

Filed Jan. 28, 1992, Ser. No. 827,195

Int. Cl.[5] H01L *29/06*

U.S. Cl. 257—622 **3 Claims**



1. A silicon-on-insulator heat dissipation apparatus comprising:

a silicon substrate;

an insulation layer disposed on said substrate;

an active semiconductor region disposed on said insulation layer;

a chemical vapor deposited (CVD) diamond filled trench having walls extending from top to bottom through said active semiconductor region, said insulation layer and into said substrate;

a CVD diamond filled cavity positioned below and in contact with the bottom of said CVD diamond filled trench, said CVD diamond filled cavity further having walls extending laterally beyond the diamond filled trench walls into said substrate; and,

a thin passivation layer on the order of 300 Å formed on the walls of said trench and said cavity, whereby said diamond filled trench and cavity provide a high thermal conductive path from said active semiconductor region to said substrate.

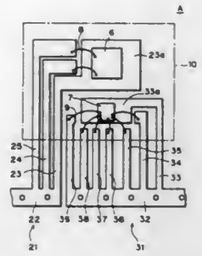
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,095

MULTIPLE-CHIP SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

Tomohide Tagawa; Takashi Takahashi, both of Kawanishi, and Takayoshi Kawakami, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,849
Claims priority, application Japan, Apr. 17, 1992, 4-097859
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—672 5 Claims



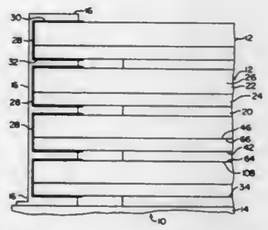
1. A multiple-chip semiconductor device, comprising:
a semiconductor power chip;
a control semiconductor chip for controlling said semiconductor power chip;
a first leadframe having a first external lead which includes a power chip mounting area for mounting said semiconductor power chip, wherein said first leadframe is made of a first metal material;
a second leadframe having a second external lead which includes a control chip mounting area for mounting said control chip, wherein said second leadframe is made of a second metal material which is processed easier than said first metal material, wherein the second leadframe is formed to be thinner than the first leadframe, and wherein the first metal material of the first leadframe has a larger heat conductivity than the second metal material of the second leadframe; and
a package for enveloping said semiconductor power chip which is mounted on said power chip mounting area and said control semiconductor chip which is mounted on said control chip mounting area.

5,313,096

IC CHIP PACKAGE HAVING CHIP ATTACHED TO AND WIRE BONDED WITHIN AN OVERLYING SUBSTRATE

Floyd K. Eide, Huntington Beach, Calif., assignor to Dense-Pac Microsystems, Inc., Garden Grove, Calif.

Division of Ser. No. 851,755, Mar. 16, 1992. This application Jul. 29, 1992, Ser. No. 920,763
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—686 19 Claims



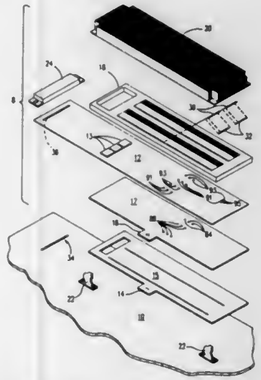
1. A chip package comprising the combination of:
a chip having a plurality of terminals on an active surface thereof;
a lower substrate layer having opposite upper and lower surfaces and at least one aperture extending between the upper and lower surfaces and a plurality of bonding pads on the upper surface, the lower surface of the lower substrate being coupled to the active surface of the chip;
a plurality of bonding wires, each extending through the at least one aperture in the lower substrate layer and coupling one of the plurality of terminals on the active surface of the chip to one of the plurality of bonding pads on the upper surface of the lower substrate layer; and
an upper substrate layer disposed on the upper surface of the lower substrate layer, the upper substrate layer having at least one aperture therein communicating with the at least one aperture in the lower substrate layer.

5,313,097

HIGH DENSITY MEMORY MODULE

Javad Haj-Ali-Ahmadi, Austin, Tex.; Paul A. Farrar, South Burlington, Vt.; Jerome A. Frankeny, Taylor; Richard F. Frankeny, Austin, both of Tex.; Karl Hermann, Romulus, N.Y.; Jacqueline A. Shorter-Beauchamp, Austin, and John A. Williamson, Round Rock, both of Tex., assignors to International Business Machines, Corp., Armonk, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,770
Int. Cl.[5] H01L *23/02;* H02B *1/00*
U.S. Cl. 257—706 20 Claims



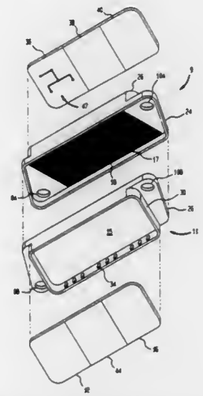
1. A high density memory module comprising:
an electronic circuit substrate comprising a plurality of circuit paths and electrical contact points for contact with electronic memory chips;
a plurality of electronic memory chips, each said chip having a plurality of faces and having a plurality of electrical contact points disposed on one face of said faces and adjacent one edge of said one face of each said chip;
an electrical power distribution means for distributing electrical power to said electronic memory chips, said power distribution means comprising a pair of capacitive plates spaced from each other and conductive paths connected to said electrical contact points on said substrate and contacting one of said plates;
a plurality of heat spreading means, with said memory chips thermally, conductively joined thereto, for spreading heat from said memory chips and for conducting said heat away from said memory chips;
a chip holding means for holding said chips and said heat spreading means in predefined positions relative to said contact points on said substrate, and said contact points of said memory chips in contact with said contact points on said substrate.

5,313,098

PACKAGING ARRANGEMENT FOR POWER SEMICONDUCTOR DEVICES

John J. Tumpey, Oakhurst; Raymond W. Borden, Farmingdale; Robert C. Eckenfelder, Point Pleasant, and Sampat S. Shekhawat, Tinton Falls, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 8, 1993, Ser. No. 43,688
Int. Cl.[5] H01L *25/04*
U.S. Cl. 257—712 13 Claims



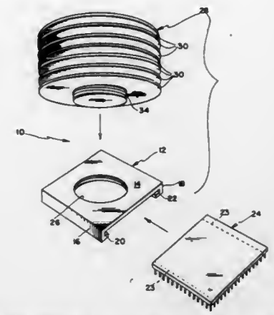
1. A packaging arrangement for power semiconductor devices, comprising:
a unitary case having two sides, each of said sides having two opposite surfaces;
one of the two opposite surfaces of each of the two sides having a wall secured thereto and extending continuously and peripherally therearound, said wall defining a heat sink on said one surface;
the other of the opposite surfaces of each of the two sides including longitudinally extending integral cooling fins;
at least two slots extending transversely across the longitudinally extending integral cooling fins on the other of the opposite surfaces of each of the two sides for providing cooling fluid turbulence;
the two sides arranged so that the integral cooling fins on the other of the opposite surfaces of each of the two sides cooperate to provide an integral fin arrangement;
each of the heat sinks on the one of the two opposite surfaces of each of the two sides having mounted thereto a plurality of substrates with a conductor mounted to each of the substrates;
power semiconductor devices disposed on the conductors so as to be conductively interconnected through said conductors;
each of the two sides of the case closed by a lid for hermetically sealing the case; and
a side of one of the walls on the one of the two opposite surfaces of one of the two sides having feedthrough holes for accepting feedthroughs connected to said power semiconductor devices.

5,313,099

HEAT SINK ASSEMBLY FOR SOLID STATE DEVICES

Peter D. Tata, Johnston, and William B. Rife, Greenville, both of R.I., assignors to Square Head, Inc., Warwick, R.I.

Filed Mar. 4, 1993, Ser. No. 26,515
Int. Cl.[5] H01L *23/02, 23/42, 23/44, 23/40*
U.S. Cl. 257—717 19 Claims



1. A heat sink assembly for removing heat from an electronic device package comprising
an adaptor having a top wall and having a pair of opposed side walls depending downwardly therefrom, a groove formed in each side wall extending generally parallel to the top wall in alignment with and facing each other and being capable of slidably receiving said electronic device package, first and second planes lying respectively in the top and bottom of the grooves defining a space therebetween, the groove being adapted to clampingly receive opposite marginal portions of an electronic device package when inserted therein, a bore centrally located in the top wall and extending therethrough,
a heat sink member having a cylindrical base member with a flat bottom surface adapted to be received through the bore in the top wall, the base member formed with means to engage with the periphery of the bore to secure and to attach the heat sink member to the adaptor with the flat bottom surface disposed in the space between the first and second planes whereby an electronic device package slidably inserted in the grooves will cause the top wall to bow through engagement with the flat bottom surface of the base.

5,313,100

MULTILAYER INTERCONNECTION STRUCTURE FOR A SEMICONDUCTOR DEVICE

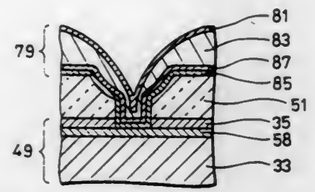
Atsushi Ishii; Yoshifumi Takata; Akihiko Ohsaki, and Kazuyoshi Maekawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,228
Claims priority, application Japan, Apr. 26, 1991, 3-097088; Nov. 7, 1991, 3-291296
Int. Cl.[5] H01L *29/400, 29/460*
U.S. Cl. 257—751 11 Claims

1. An interconnection structure of a semiconductor device having multilayer interconnection layers connected through a connection hole, comprising:
a first interconnection layer,
an insulating layer formed on said first interconnection layer having a through hole reaching the surface of said first interconnection layer, and
a second interconnection layer formed on said insulating layer, electrically connected to said first interconnection layer through said through hole,
wherein said first interconnection layer comprises

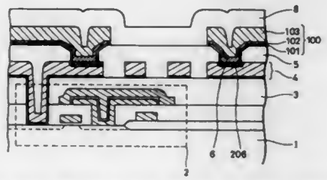
VOL 1162 ISS 3 MAY 17 1994 UMI

a first conductive layer containing aluminum or an aluminum alloy,
a second conductive layer formed on said first conductive layer, said second conductive layer comprising a material selected from the group consisting of tungsten, tungsten silicide and molybdenum silicide, and
a third conductive layer formed on said second conductive layer,
wherein said second interconnection layer further comprises a main conductive layer which becomes a main portion of said second interconnection layer, a first titanium nitride



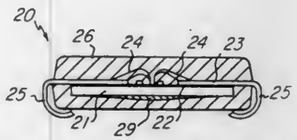
containing layer formed on said main conductive layer, a second titanium nitride containing layer formed beneath said main conductive layer, and a titanium containing layer formed beneath said second titanium nitride containing layer, having contact with said second conductive layer through said through hole,
wherein the etching speed of said second conductive layer is less than that of said third conductive layer under condition of etching said insulating layer with a selected etchant,
and further wherein light reflectivity of said third conductive layer is less than that of said second conductive layer.

5,313,101
INTERCONNECTION STRUCTURE OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Shigeru Harada; Junichi Arima, and Noriaki Fujiki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 748,216, Aug. 22, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 104,520
Claims priority, application Japan, Aug. 28, 1990, 2-227061
Int. Cl.[5] H01L *23/48, 29/40*
U.S. Cl. 257—758 **12 Claims**



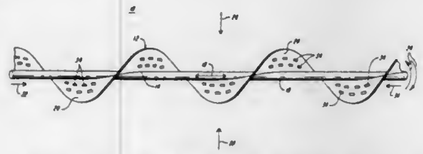
1. An interconnection structure for a semiconductor integrated circuit device comprising:
an interconnection layer including aluminum;
an insulating layer formed on said first interconnection layer, said insulating layer having a through hole extending from a surface of said insulating layer to said first aluminum interconnection layer; and
a second interconnection layer electrically connected to said first interconnection layer through said through hole; wherein said second interconnection layer includes:
a titanium layer formed on said insulating layer and extending through said through hole;
an intermetallic compound of titanium and aluminum at a contact interface between said titanium layer and said first interconnection layer;
a titanium compound layer formed on said titanium layer; and
a layer including aluminum formed on said titanium compound layer.

5,313,102
INTEGRATED CIRCUIT DEVICE HAVING A POLYIMIDE MOISTURE BARRIER COATING
Thiam B. Lim, Pasir Ris Gardens; Tadashi Saitoh, Mandarin Gardea, and Boon Q. Seow, Greenridge Crescent, all of Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 22, 1989, Ser. No. 455,210
Int. Cl.[5] H01L *23/28, 23/48, 29/44, 29/52*
U.S. Cl. 257—787 **21 Claims**



1. A semiconductor integrated circuit adapted for mounting to a leadframe comprising:
an integrated circuit having an active face and a backside, the active face attached to a leadframe;
a plastic encapsulant, encapsulating the integrated circuit; and
a polyimide coating on the backside of the integrated circuit between the backside and the encapsulant providing a moisture barrier and to prevent cracking of the encapsulant during mounting to a circuit board.

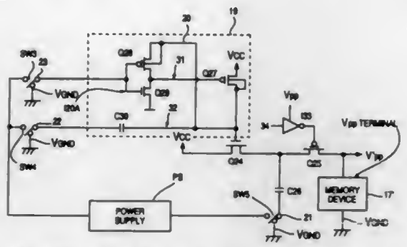
5,313,103
AUGER SHAPED FLUID MEDIUM ENGAGING MEMBER
John J. Hickey, 27 Bowdoin St., Boston, Mass. 02114
Filed Apr. 22, 1993, Ser. No. 52,123
Int. Cl.[5] F03D *5/00, 11/00*
U.S. Cl. 290—54 **12 Claims**


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portion having a section of narrowed cross section about which said current sensing means is disposed.

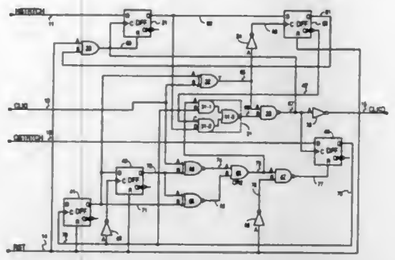
5,313,107
BOOSTER DEVICE
Nobuhiko Itoh, Teori, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 22, 1992, Ser. No. 994,824
Claims priority, application Japan, Dec. 25, 1991, 3-343474
Int. Cl.[5] H03K *17/12*
U.S. Cl. 307—246 **7 Claims**



1. A booster device for boosting a voltage applied to a semiconductor memory device, comprising:
a first capacitor for supplying a voltage to the semiconductor memory device;
a switching means for providing a charging current to the first capacitor;
a second capacitor for supplying a charge to the switching means, whereby the switching means uses the charge to perform the switching;
a first control means for switching a state of the switching means between a conducting state and a non-conducting state and for supplying a charge to the second capacitor; and
a second control means for controlling the first control means, the second control means being connected to the first control, the second capacitor and the switching means via a node, a potential at the node being applied to the second control means.

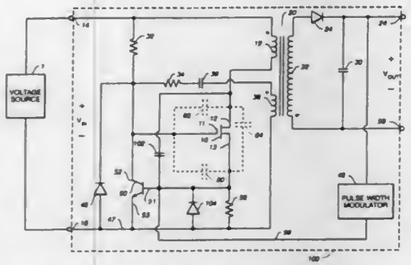
5,313,108
CIRCUIT FOR GENERATING A STRETCHED CLOCK SIGNAL BY ONE PERIOD OR ONE-HALF PERIOD
Robert H. J. Lee, Palo Alto, and John D. Kenny, Sunnyvale, both of Calif., assignors to Picopower Technology, Inc., San Jose, Calif.
Filed Apr. 17, 1992, Ser. No. 870,530
Int. Cl.[5] H03K *5/04*
U.S. Cl. 307—267 **5 Claims**

1. An apparatus for producing variable clock output signals for digital circuits comprising:
inputting means for accepting as in input signal a clock signal of a given frequency;
outputting means for outputting a clock signal which is identical to said input clock signal;
first and second input control means for accepting first and second input control signals respectively; and
control means having
a first output stretching means coupled to said first input control means and said inputting means for outputting a clock signal stretched by one period of the inputted clock signal in response to a signal being present at said direst input control means; and
second output stretching means coupled to said second input control means and said inputting means for outputting a clock signal stretched by one-half of the period of the



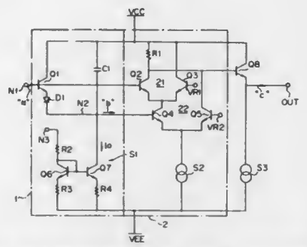
inputted clock signal in response to a signal being present at said second input control means.

5,313,109
CIRCUIT FOR THE FAST TURN OFF OF A FIELD EFFECT TRANSISTOR
David A. Smith, Kowloon, Hong Kong, assignor to Astec International, Ltd., Hong Kong
Filed Apr. 28, 1992, Ser. No. 875,631
Int. Cl.[5] H03K *3/01, 17/56, 3/30, 17/60*
U.S. Cl. 307—270 **7 Claims**



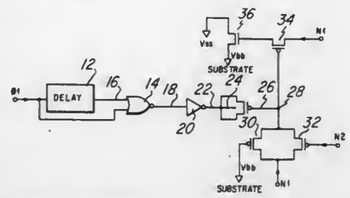
1. A device for the fast turn off of a field effect transistor having a gate terminal, a first conduction terminal, and a second conduction terminal, the voltage between said first conduction terminal and said second conduction terminal of said field effect transistor having a first voltage level when said field effect transistor is in a conductive ON state and having a second voltage level when said field effect transistor is in a nonconductive OFF state, said second voltage level being higher than said first voltage level during at least a portion of time when said field effect transistor is in said OFF state, and means for causing said field effect transistor to be switched to said ON state, said device comprising:
a gate current sink transistor having a modulation terminal, a first conduction terminal and a second conduction terminal, said first conduction terminal of said gate current sink transistor being coupled to said gate terminal, said gate current sink transistor being in a conductive current sink ON state when the voltage between said modulation terminal and said second conduction terminal of said gate current sink transistor is at a third voltage level, said gate current sink transistor being in a nonconductive current sink OFF state when the voltage between said modulation terminal and said second conduction terminal of the gate current sink transistor is at a fourth voltage level, said gate current sink transistor providing a conductive path for sinking a sink current from said gate terminal when said gate current sink transistor is in said current sink ON state, said sink current being a function of a current flowing to said modulation terminal;
means for causing said gate current sink transistor to cause said field effect transistor to switch to said OFF state, including means for coupling a current to said modulation terminal; and
a capacitor coupled between said modulation terminal of said gate current sink transistor and said first conduction terminal of said field effect transistor, said capacitor delivering an additional current to said modulation terminal in response to the turning off of said field effect transistor, for increasing the magnitude of said sink current while said field effect transistor is being switched to said OFF state.

5,313,110
MONOSTABLE MULTIVIBRATING CIRCUIT
Yoshio Watanabe, and Tatsuaki Kitta, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 854,838, Mar. 20, 1992, abandoned.
This application Sep. 10, 1993, Ser. No. 118,686
Claims priority, application Japan, Mar. 20, 1991, 3-057472
Int. Cl.[5] H03K *3/284*
U.S. Cl. 307—273 **26 Claims**



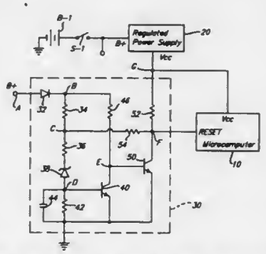
1. A monostable multivibrating circuit comprising:
a fall time setting circuit responsive to an input pulse signal, for outputting one signal rising in response to the input pulse signal and falling with a gentle slope, said fall time setting circuit including means for variably setting only a fall time of said one output signal; and
an emitter-coupled logic circuit outputting a one-shot pulse and including a first pair of transistors each having an emitter commonly connected to each other, a first base receiving the input pulse signal and a second base receiving a first reference signal, and a second pair of transistors each having an emitter commonly connected to each other, a first base receiving said output signal from said fall time setting circuit and a second base receiving a second reference signal,
the one-shot pulse defined by a pulse starting time corresponding to a change in level of the first base input of said first pair of transistors and a pulse stopping time corresponding to a change in level of the first base input of said second pair of transistors, and the one-shot pulse has a HIGH level only when the first base input of said first pair of transistors is at a LOW level and the first base input of said second pair of transistors is at the HIGH level.

5,313,111
SUBSTRATE SLEW CIRCUIT PROVIDING REDUCED ELECTRON INJECTION
Darryl Walker, and Daniel F. McLaughlin, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 4,215, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 843,781, Feb. 28, 1992, abandoned.
This application Aug. 11, 1993, Ser. No. 105,487
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.2 **13 Claims**



1. A device, comprising:
a semiconductor substrate;
one of a source/drain of a first transistor connected to said substrate, the other of a source/drain of said first transistor directly connected to a DC voltage;
one of a source/drain of a second transistor directly connected to a gate of said first transistor, the other of a source/drain of said second transistor coupled to receive an AC signal; and
a circuit connected to the gate of said second transistor for controlling the passage of current from said other of said source/drain of said second transistor to said one of a source/drain of said second transistor.

5,313,112
LOW VOLTAGE INHIBITING CIRCUIT FOR A MICROCOMPUTER
Harold R. Macks, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1991, Ser. No. 812,457
Int. Cl.[5] H03K *3/01;* **H01H** *37/76;* **G06G** *7/10*
U.S. Cl. 307—296.3 **9 Claims**



1. A circuit for inhibiting the operation of a microcomputer by applying a reset signal to a reset terminal of said microcomputer when voltage supplied by a DC source to a regulated power supply that is connected to said microcomputer drops below a first threshold level corresponding to a first predetermined minimum value, and for removing said reset signal following said voltage from said DC source being raised to a value that is above a second threshold level corresponding to a second predetermined minimum value that is greater than said first value, comprising:
a first voltage sensing means connected between said DC source and ground for providing a first output signal level when said DC source voltage is sensed as having raised

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above said second threshold level and remains continuously above said first threshold level and for providing a second output signal level that is distinguishable from said first output signal when said DC source voltage is sensed as having dropped below said first threshold level;

a second voltage sensing means connected between said regulated power supply and ground, and to said first voltage sensing means to provide a nonreset signal level to said reset terminal when said first output signal level is present and a reset signal when said second output signal level is present; and

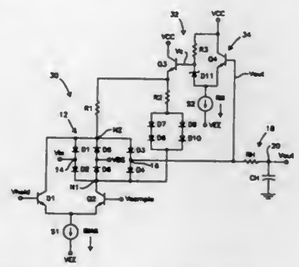
feedback means connected between said first and second means for causing said first means to sense when said DC source voltage is raised above said second threshold level when said reset signal is provided by said second means and causing said first means to sense when said DC source voltage drops below said first threshold level when said nonreset signal level is provided.

5,313,113

SAMPLE AND HOLD CIRCUIT WITH FULL SIGNAL MODULATION COMPENSATION USING BIPOLAR TRANSISTORS OF SINGLE CONDUCTIVITY TYPE

Lloyd F. Linder, Agora Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 17, 1992, Ser. No. 870,369
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—353 **30 Claims**



1. A sample and hold circuit, comprising:

voltage holding means;

diode bridge means having an input for receiving a voltage signal, an output connected in circuit to the holding means, a first bias current node and a second bias current node;

current drain means for causing a predetermined constant bias current to flow out of the bridge means;

first current source means for supplying a first bias current into the first node;

second current source means for supplying a second bias current into the second node;

switch means for selectively connecting the first node to the drain means and disconnecting the second node from the drain means, thereby biasing the bridge means for coupling the input to the output for sampling; or connecting the second node to the drain means and disconnecting the first node form the drain means, thereby biasing the bridge means for uncoupling the input from the output for holding; and

current regulator means responsive to the voltage signal for regulating at least one of said first and second bias currents to predetermined first and second constant values respectively in response to variation of the voltage signal; in which

the first current source means comprises a first resistor connected between the first node and a voltage source means;

the second current source means comprises a second resistor connected between the second node and the voltage source means; and

the current regulator means comprises:

transistor means having a current circuit and a control terminal, with said current circuit connected to induce respective currents through the first and second resistors; and

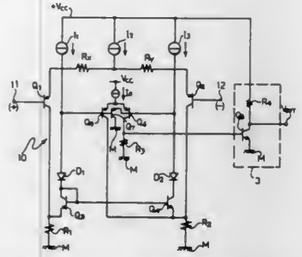
control means responsive to the voltage signal for applying a control signal to the transistor means' control terminal to adjustably control the current flow through the transistor means' current circuit and thereby regulate said first and second bias currents to said first and second constant values respectively.

5,313,114

COMPARATOR CIRCUIT WITH PRECISION HYSTERESIS AND HIGH INPUT IMPEDANCE

Vanni Poletto, Camino, and Michelangelo Mazzucco, Santa Maria Del Tempio, both of Italy, assignors to Marelli Autronica S.P.A. and SGS-Thomson Microelectronics s.r.l., both of Milan, Italy

Filed Dec. 31, 1991, Ser. No. 815,158
Claims priority, application Italy, Dec. 31, 1991, 68085 A/90
Int. Cl.[5] H03K *5/22, 17/56, 17/60, 3/01*
U.S. Cl. 307—355 **20 Claims**



1. A comparator circuit with hysteresis including:

an input stage with first and second transistors, the bases of which receive respective input signals which together define an input difference signal, respective resistors being connected to the emitters of the first and second so that the respective emitter resistors determine the intensities of the variations in the collector currents induced in the first and second transistors by variations in the input difference signal,

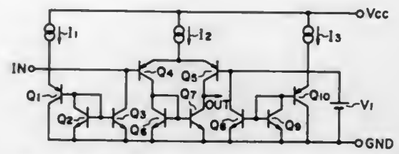
and a differential signal with first and second differential stage transistors, the bases of which are sensitive to the collector currents of the first and second transistors, respectively, the emitters of the first and second differential stage transistors being connected to a constant-current source and at least one of the first and second differential stage transistors driving the output of the circuit, the arrangement being such that the differential stage permits first and second operating conditions, in which the constant current passing respectively through the first and second differential stage transistors and the output of the circuit assumes two different respective levels, the switching between the first and second operating conditions and between the second and first operating conditions taking place respectively at a first level and at a second level of the input signal difference the difference between the first and second difference signal levels defining the hysteresis and being univocally determined by the resistances of the emitter resistors and by the value of the constant current.

5,313,115

COMPARATOR

Yasushi Matsuno, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 793,521
Claims priority, application Japan, Nov. 19, 1990, 2-311278
Int. Cl.[5] H03K *5/24, 5/153*
U.S. Cl. 307—362 **2 Claims**



1. A comparator comprising:

a pair of transistors (Q_4, Q_5) connected to an input terminal (IN) to which an input signal is supplied and to an output terminal (OUT) for supplying an output signal, a base of one of the pair of transistors being connected to the input terminal, and a collector of the other of the pair of transistors being connected to the output terminal;

a control circuit (Q_1, Q_2, Q_3, I_1) connected to the input terminal for controlling a potential of the input terminal responsive to a high impedance condition of the input terminal; and

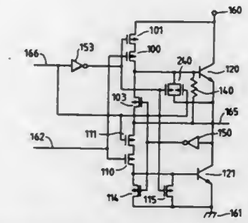
a circuit (Q_8, Q_9, Q_{10}, I_3) being identical with said control circuit, and being connected to one (Q_5) of the pair of the transistors connected to said output terminal.

5,313,116

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING BIPOLAR TRANSISTOR AND FIELD EFFECT TRANSISTOR

Fumio Murabayashi; Yoji Nishio, both of Hitachi; Shoichi Kotoku. Katsuta; Kozaburo Kurita, Hitachi, and Kazuo Kato, Tohkai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 649,854, Feb. 1, 1991, Pat. No. 5,059,821, which is a division of Ser. No. 325,911, Mar. 20, 1989, Pat. No. 5,001,365. This application Sep. 24, 1991, Ser. No. 765,018
Claims priority, application Japan, Mar. 18, 1988, 63-63338
Int. Cl.[5] H03K *19/01*
U.S. Cl. 307—446 **14 Claims**



1. A semiconductor integrated circuit device comprising a plurality of logic circuits integrated on a semiconductor substrate, wherein at least one of said logic circuits includes:

first and second power source terminals having an absolute value of potential difference substantially less than 5 V;

at least one input terminal;

an output terminal;

a bipolar transistor having a base, and having its collector-emitter current path coupled between said second power source terminal and said output terminal;

at least one field effect transistor having its gate responsive to an input signal applied to said input terminal and its source-drain current path coupled between said output terminal and the base of said bipolar transistor;

a semiconductor switch means responsive to the input signal applied to said input terminal for performing ON/OFF operations complementary to the ON/OFF operations of said bipolar transistor and having a pair of main terminals, wherein a current path between its paired main terminals is coupled between said first power source terminal and said output terminal; and

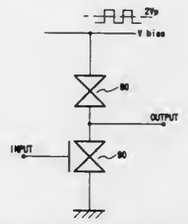
a potential difference reducing element having a pair of main terminals, wherein a current path between its paired main terminals is coupled between said output terminal and said second power source terminal for reducing a potential difference which is present between said output terminal and said second power source terminal based on the base-emitter forward voltage of said bipolar transistor when said bipolar transistor is in an ON state.

5,313,117

SEMICONDUCTOR LOGIC CIRCUIT USING TWO N-TYPE NEGATIVE RESISTANCE DEVICES

Koichi Maezawa, Kanagawa, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,108
Claims priority, application Japan, Jul. 22, 1991, 3-204607; Feb. 10, 1992, 4-056622
Int. Cl.[5] H03K *17/125*
U.S. Cl. 307—450 **10 Claims**



1. A semiconductor logic circuit device, wherein two semiconductor elements having N-type negative resistance characteristics are connected in series to obtain a series circuit, two ends of said series circuit serve as drive voltage terminals across which a periodic drive voltage is applied, at least one of said semiconductor elements has a control electrode to which a voltage is applied to change the peak current, and a connection point between said two semiconductor elements serves as an output terminal.

5,313,118

HIGH-SPEED, LOW-NOISE, CMOS OUTPUT DRIVER

James R. Lundberg, Austin, Tex., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 6, 1992, Ser. No. 909,549
Int. Cl.[5] H03K *19/003, 19/094*
U.S. Cl. 307—451 **19 Claims**

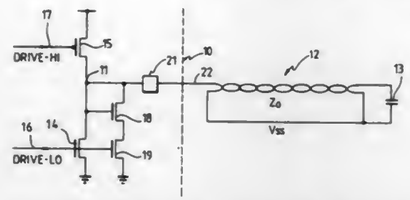
1. An output circuit, comprising:

a) a first pull-down transistor and a pull-up transistor, each of said transistors having a source-to-drain path and a gate; the source-to-drain path of said pull-up transistor being connected between one terminal of a voltage supply and an output node; the source-to-drain path of said first pull-down transistor being connected between another terminal of said voltage supply and said output node;

b) a second pull-down transistor and a series transistor, each of said transistors having a source-to-drain path and a gate; the source-to-drain paths of said second pull-down transistor and said series transistor being connected in

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series between another terminal of said voltage supply and said output node; the gates of said first and second pull-down transistors being connected to a logic voltage



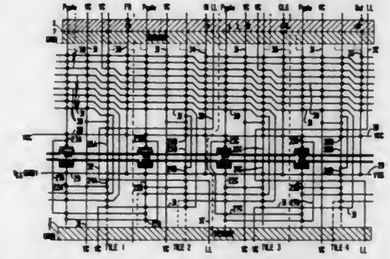
driver; the gate of said series transistor being connected to said output node; said first pull-down transistor being smaller than said second pull-down transistor.

5,313,119

FIELD PROGRAMMABLE GATE ARRAY

Laurence H. Cooke, San Jose, and David Marple, Palo Alto, both of Calif., assignors to Crosspoint Solutions, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 671,222, Mar. 18, 1991, abandoned. This application Oct. 28, 1991, Ser. No. 783,659
Int. Cl.[5] H03K *19/173, 19/094*
U.S. Cl. 307—465.1 **42 Claims**



1. A field programmable gate array integrated circuit in a semiconductor substrate, comprising

an array of at least four MOS transistors, each transistor having first and second source/drains in said substrate and a gate separating said first and second source/drains, said transistors connected in series with a first source/drain of one transistor merging into a second source/drain of another transistor;

a plurality of conducting line segments, each of said first and second source/drains and each of said gates connected to one of said line segments; and

a plurality of antifuses located at intersections of said conducting line segments, said conducting line segments connectable to each other at said intersections by the programming of antifuses therebetween;

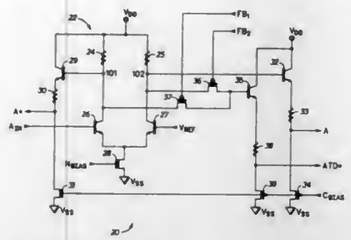
whereby said array of MOS transistors are configurable into a desired circuit by programming selected antifuses.

5,313,120

ADDRESS BUFFER WITH ATD GENERATION

Perry H. Pelley, III, Austin, Tex., assignor to Motorola, Inc., Schaomburg, Ill.

Filed Jan. 22, 1993, Ser. No. 7,879
Int. Cl.[5] H03K *19/096, 19/08, 19/086;* **G11C** *8/00*
U.S. Cl. 307—480 **16 Claims**



1. An input buffer, comprising:

a differential amplifier, having an input terminal for receiving an input signal, the input signal having first and second logic states, the differential amplifier having first and second output nodes;

a first MOS transistor having a first current electrode coupled to the first output node of the differential amplifier, a second current electrode, and a gate for receiving a first control signal;

a second MOS transistor having a first current electrode coupled to the second output node of the differential amplifier, a second current electrode, and a gate for receiving a second control signal; and

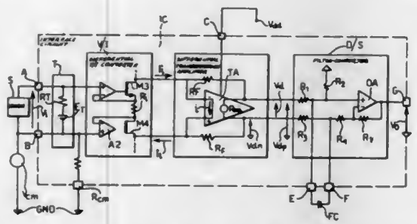
a first emitter-follower transistor having a base coupled to the second current electrodes of both the first and second MOS transistors, and an emitter for providing an output pulse in response to the input signal transitioning from the first logic state to the second logic state.

5,313,121

CIRCUIT FOR PROCESSING SIGNALS SUPPLIED BY A ZIRCONIUM-TYPE OXYGEN SENSOR

Cesario Cianci, Pianezza, and Franco Salerno, Alpignano, both of Italy, assignors to Marelli Autronica S.p.A., Milan, Italy

Filed Dec. 16, 1991, Ser. No. 807,513
Claims priority, application Italy, Dec. 27, 1990, 68063 A/90
Int. Cl.[5] G06G *7/12;* **H03K** *5/13*
U.S. Cl. 307—494 **7 Claims**



1. A circuit for processing signals supplied by a zirconium-dioxide oxygen sensor or lambda probe, particularly for use as an interface circuit between such a sensor and an electronic control unit in an emission control system of an internal combustion engine, the circuit including a voltage/current converter with two input terminals for connection to terminals of the oxygen sensor and an amplifier circuit connected to the output of the converter, wherein

the voltage/current converter is differential and has two output terminals which, in operation, output two equal and opposite currents whose intensity is proportional to the voltage between the inputs of the converter, and

the amplifier circuit is a differential trans-resistance amplifier with a high gain, having two inputs connected to the two output terminals of the converter and two output terminals between which there is a differential voltage proportional to the intensity of the currents output by the converter in operation;

wherein a double-ended/single-ended conversion circuit is connected to the two output terminals of the amplifier, and

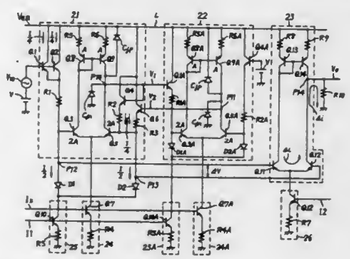
wherein the differential voltage-current converter has a differential input stage formed by N-channel CMOS P-well transistors each having its source connected to its P-well, the sources of the transistors acting as inputs for the converter.

5,313,122

CAPACITY GROUND TYPE FILTER CIRCUIT

Futao Yamaguchi, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 858,006, Mar. 26, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 52,451
Claims priority, application Japan, Mar. 31, 1991, 3-093600
Int. Cl.[5] H03K *9/06, 5/00;* **G06G** *7/00, 7/12*
U.S. Cl. 307—520 **15 Claims**



1. A filter circuit comprising:

a plurality of integrators in the number of N, where N≧2 with at least a first integrator and a second integrator respectively having first and second differential amplification circuits connected in series with each other with an output of said first differential amplification circuit being input to said second differential amplification circuit; and

a subtracter comprising a differential amplification circuit for subtracting output signals of said integrators from an input signal and for outputting the results of the subtraction as a filter output signal;

wherein each integrator has a first stray capacitance formed between the output of said integrator and ground and a second stray capacitance formed between the output of said integrator and a power source.

5,313,123

AUTOMOBILE HAVING THE MAGNETOHYDRODYNAMIC ENGINE

Leonid Simuni, 1056 Neilson St. Apt. 6A, Far Rockaway, N.Y. 11691

Filed Nov. 23, 1992, Ser. No. 981,741
Int. Cl.[5] H02K *44/00*
U.S. Cl. 310—11 **9 Claims**

1. A magnetohydrodynamic system for powering an electro-automobile, said system comprising in combination:

a magnetohydrodynamic engine;

an expansion gas turbine for expanding combustion products;

an electrical generator means comprising an electrical machine adapted to generate an electric current by driving said gas turbine, said electrical machine having a rotor mechanically connected to the expansion gas turbine;

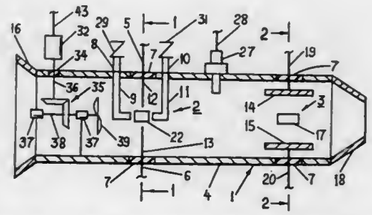
an inlet means;

a propeller being mounted on a propeller shaft, said propeller located inside of said engine;

an electric motor driving said propeller through propeller shaft;

a combustion chamber associated with a body of said engine;

the magnetohydrodynamic generator of electro-current associated with said body having a nozzle, said combustion chamber comprising in combination a generator for providing instantaneous electro-impulses, electrodes separately secured to a body of said engine, electromagnets, a control system, inlet means for introducing a fuel mixture



and an oxidizer respectively into said combustion chamber, said generator of instantaneous electro-impulses having means to accumulate the electro-energy, said electrodes are connected to said generator of electro-impulses, said generator of electro-impulses is adapted to provide the electrical discharges between said electrodes so as to ignite the fuel/oxidizer mixture, to cause dissociation of hydrogen molecules in said chamber to hydrogen atoms, to ionize hydrogen atoms and to cause a liberation of heat energy in said combustion chamber; said electromagnets and said electromagnets and said electrodes forming a magnetohydrodynamic drive, said combustion chamber is adapted to produce the ionic media;

said magnetohydrodynamic generator comprising electrodes and electromagnets arranged so as to generate the electro current by electro-magnetic induction in result of passing said combustion products having an ionic media across the magnetic field,

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5,313,124

RETURN PLATE FOR A VOICE COIL MOTOR IN A DISK DRIVE

Aaron S. Macpherson, Fort Collins, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Dec. 28, 1992, Ser. No. 997,776
Int. Cl.[5] H02K *41/02, 15/14;* **G11B** *33/00*
U.S. Cl. 310—13 **16 Claims**

1. A voice coil motor return plate for a disk drive, comprising:

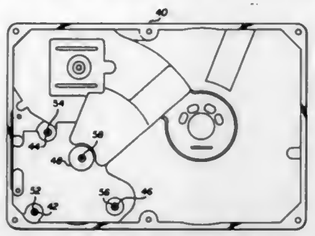
a bottom plate comprising a first hole and an alignment hole, the first hole for anchoring an angular position of the bottom plate to a base plate of the disk drive, the alignment hole for setting an angular position of the bottom plate;

a top plate comprising a second hole and an alignment standoff, the second hole for anchoring an angular position of the top plate to the base plate, the alignment standoff for setting an angular position of the top plate;

an alignment boss formed in the base plate, the alignment

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hole and the alignment standoff receiving the alignment boss such that the alignment boss determines the angular



position of the bottom plate and the angular position of the top plate.

5,313,125

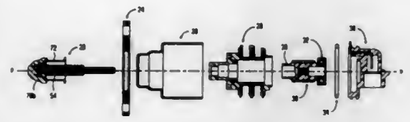
STEPPER MOTOR WITH INTEGRATED ASSEMBLY

Edward T. Bosman, Cheshire; Karla C. Pratt, Wolcott; Philip G. Atiyeh, Cheshire, and John F. Rutledge, Plantsville, all of Conn., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 817,034, Dec. 30, 1991. This application Sep. 10, 1992, Ser. No. 943,362

Int. Cl.[5] H02K *37/12*

U.S. Cl. 310—49 R **7 Claims**



1. A stepper motor including a stator having a central axis and at least one winding disposed about the axis for producing a plurality of magnetic poles in the stator, a permanent-magnet rotor having a plurality of magnetic poles and being mounted for rotation about the axis, a housing disposed around the stator, and a shaft coupled to the rotor such that rotation of the rotor effects linear motion of the shaft, characterized in that:

a. the shaft extends axially out of an opening in a tubular end of the stator and includes first and second ends, said first end being coupled to the rotor;

b. an operative member is attached to the second end of the shaft;

c. the tubular end of the stator has an outer surface of predefined cross-sectional shape; and

d. a tubular member having said predefined cross-sectional shape extends axially from the operative member and around the tubular portion of the stator, said tubular member, said tubular end of the stator, and said opening in the tubular end defining a labyrinthal path that inhibits the passage of contaminants from outside of the motor into the rotor.

5,313,126

ELECTROMAGNETIC INTERFERENCE SUPPRESSING DC INTERCONNECT

Jeffry A. Forsythe; Jeffrey A. Kipp, both of Vancouver; Robert R. Osborn, Brush Prairie, and Todd L. Russell, Camas, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 30, 1992, Ser. No. 954,954

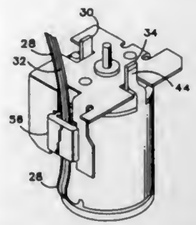
Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—51 **12 Claims**

1. A flexible, unitary EMI suppressing interconnect for connecting a DC motor to a DC source, said interconnect comprising:

a first conductive sheet having a conductive lead for being connected to a positive terminal of a direct current source, and having a connector for being electrically connected to a first terminal of said motor;

a pair of insulative sheets permanently affixed to opposed sides of the first conductive sheet;



a second conductive sheet having a conductive lead for being connected to a negative terminal of a direct current source, and having a connector for being electrically connected to a second terminal of said motor;

a pair of insulative sheets permanently affixed to opposed sides of the second conductive sheet;

each of said first and second conductive sheets and said insulative sheets adapted for enveloping a portion of a housing of said DC motor for reducing EMI generated by the commutating action of the motor.

5,313,127

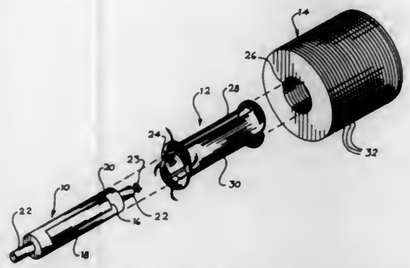
MOVING MAGNET MOTOR

Thomas J. Danley, Highland Park, and Charles A. Rey, Riverwoods, both of Ill., assignors to Intersonics, Inc., Northbrook, Ill.

Filed Feb. 5, 1993, Ser. No. 14,217

Int. Cl.[5] H02K *33/00*

U.S. Cl. 310—36 **7 Claims**



1. An electric motor having limited rotation, said motor comprising a rotor comprising a permanent magnet with opposite poles, said rotor being rotatable about an axis, a coil around said rotor and coextensive therewith, said coil comprising a pair of spaced coil portions in opposition to the poles of said magnet and having a plurality of conductors extending substantially radially uniformly and in parallel with the axis of the rotor, means for supplying said coil portions with current, said coil being wired such that current moves in one direction in one of said portions while moving in the opposite direction in the other of said portions, said coil portions providing substantially uniform axial current sheets relative to said rotor and providing a constant torque per unit of current, and a continuous magnetic return structure around said coil.

5,313,128

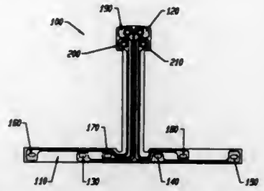
LEAD WIRE ELIMINATION FOR ENCLOSED SPINDLE MOTOR

Peter G. Robinson, Capitola; James S. Bowdoin, Santa Cruz, and Robert A. Nottingham, Capitola, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 3, 1993, Ser. No. 12,897

Int. Cl.[5] H01B *07/08;* **H02K** *15/00*

U.S. Cl. 310—71 **6 Claims**



1. An apparatus for electrically mating respective starting ends and finishing ends of a plurality of windings of a stator assembly to outside circuitry, said stator assembly having a plurality of poles and a shaft, and said stator assembly being enclosed within a housing defining a housing opening for said shaft, said apparatus comprising:

a plurality of electrical paths;

a sheath of flexible insulating material substantially surrounding said electrical paths as a unit, and having a base portion extending circumferentially around a portion of said shaft and an elongated portion formed to fit along said shaft when said housing encloses said stator assembly, said elongated portion defining circuitry openings for each electrical path proximate one end thereof to provide electrical connection to said outside circuitry, and said base portion defining at least one winding end opening for each electrical path spaced along said base portion to provide electrical connection with each of the starting ends and finishing ends of each of said windings, said winding end openings further being circumferentially spaced-apart about said base portion and relative said shaft such that the lengths of each winding between respective winding starting ends and respective winding finishing ends are substantially equal;

a means for securing said base portion and said elongated portion to said shaft.

5,313,129

SLEEVE BEARING GROUND LEAD FOR MOTORS

Timothy J. Stewart, Akron, Ohio, assignor to Ametek Technical Motor Division, Kent, Ohio

Filed Aug. 5, 1993, Ser. No. 102,192

Int. Cl.[5] H02K *5/16*

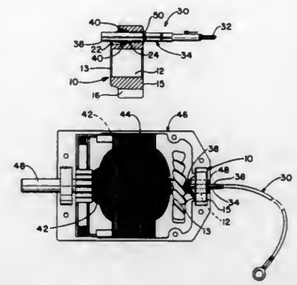
U.S. Cl. 310—90 **5 Claims**

1. In a ground lead connection for a motor, the improvement, comprising:

a motor housing;

a sleeve bearing mounted in said housing, said sleeve bearing having a socket comprising a bore and a counter bore concentric with said bore, said counter bore forming a seat relative to said bore;

an armature shaft journaled in said bearing; and



grounding means for said armature shaft received within said socket and connected to said bearing.

5,313,130

SUPERCONDUCTION BEARING

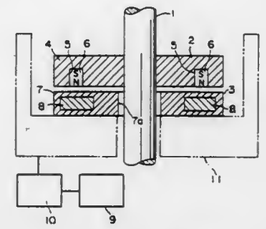
Motoaki Shibayama; Takenori Tada; Terutsugu Oyama; Fumihiko Ishikawa, and Hiromasa Higasa, all of Kagawa, Japan, assignors to Kabushiki Kaisha Shikoku Sogo Kenkyusho; Shikoku Denryoku Kabushiki Kaisha, both of Kagawa; Mitsubishi Denki Kabushiki Kaisha and Seiko Epson Corporation, both of Tokyo, all of Japan

Filed Jul. 30, 1992, Ser. No. 921,659

Claims priority, application Japan, Jul. 30, 1991, 3-190353

Int. Cl.[5] H02K *7/09;* **G11B** *5/55*

U.S. Cl. 310—90.5 **4 Claims**



1. A superconduction bearing comprising:

a rotor including an axle-like rotary member and a disk disposed around said axle-like rotary member;

a supporting means, cooled by cooling medium, for supporting a plurality of superconductors, said supporting means including at least a horizontally extending flat plate having a central hole formed therein and an upstanding circumferential wall provided on said flat plate;

said disk including a ring-shaped series of recesses formed therein;

superconductors arranged, at even intervals, in a concentric circle surrounding said axle-like rotary member;

said axle-like rotary member being oriented in a vertical direction so that a lower end of said axle-like rotary member is passed through said central hole;

said disk being placed above said flat plate and radially inside of said circumferential wall; and

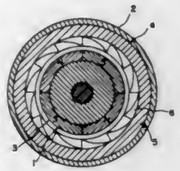
a plurality of permanent magnets disposed at a distance from said superconductors, each of said magnets disposed in one of said series of recesses;

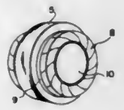
each of said permanent magnets having a top surface and a bottom surface, said top surface and said bottom surface of

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each of said permanent magnets being oppositely magnetized relative to each other, each of said permanent magnets having a width which is 5 to 10 times as large as said distance between said superconductors and permanent magnets.

5,313,131
SLOTLESS MOTOR
Sadayoshi Hibino, Mie; Motoyasu Mochizuki, and Yoshinobu Nakamura, both of Aichi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 19, 1992, Ser. No. 962,662
Claims priority, application Japan, Oct. 22, 1991, 3-273851
Int. Cl.[5] H02K 1/12
U.S. Cl. 310—254 **13 Claims**

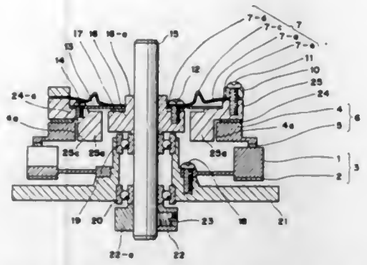




1. A slotless motor having stator cores comprising:
a plurality of coils cylindrically disposed along the stator cores, each coil having a formed part which decreases a number of turns of the coil in the direction of a diameter of the stator cores, and adjoining coils piled on each other at the formed part in the direction of the diameter of the stator cores;
a stator having m phases and p poles;
the plurality of coils being a product of multiplying m by p; and
the coils being arranged in order in a circumferential direction of the stator cores in $(2\pi/p)$ degrees in mechanical angles along the stator cores cylindrically.

5,313,132
ELASTIC SUPPORTING MEMBER FOR A VIBRATION DRIVEN MOTOR
Tohru Nakanishi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1992, Ser. No. 884,172
Claims priority, application Japan, May 20, 1991, 3-114597
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—348 **14 Claims**

1. A vibration driven motor, comprising:
a ring-shaped vibrating member having a surface portion, and generating a travelling vibration wave therein;
a ring-shaped rotor having a surface portion in frictional contact with the surface portion of said vibrating member, said rotor being rotated by said travelling vibration wave;
a rotary axle for outputting a rotary force;
a ring-shaped connection member having a first end portion engaging said rotor, and a second end portion functionally engaging said axle, said connection member having a bent portion that is deformed in an axial direction of said axle at a portion between said first and second portions; and



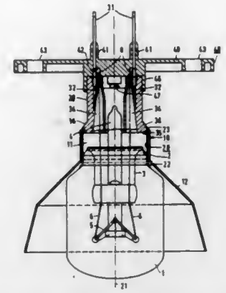
an elastic flat plate provided between said rotor and said axle for receiving a rotating torque generated between said rotor and said axle.

5,313,133
ELECTRON GUN FOR CATHODE RAY TUBE WITH IMPROVED CATHODE STRUCTURE
Gong S. Park, Gumi-City, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 20, 1992, Ser. No. 853,969
Claims priority, application Rep. of Korea, Mar. 22, 1991, 91-4561
Int. Cl.[5] H01J 29/04, 29/48
U.S. Cl. 313—270 **3 Claims**



1. A cathode structure in an electron gun for a cathode ray tube comprising:
a metallic sleeve having a cylindrical shape, said sleeve having an upper portion;
a metallic cap disposed at the upper portion of the sleeve, said cap having an outer top surface;
an electron-emitting material layer coated on the outer top surface of the cap to emit thermal electrons; and
a heater disposed in the interior of the sleeve, said heater having an outer surface, such that a predetermined dimension of gap is defined between the inner surface of the sleeve and the outer surface of the heater, to heat the electron emitting material layer by radiant energy applied directly to the cap, said gap having a dimension that is substantially 13.5% to 15.5% of the inner diameter of the sleeve, thereby improving an overshoot in emission of electrons in the initial operation state of the heater.

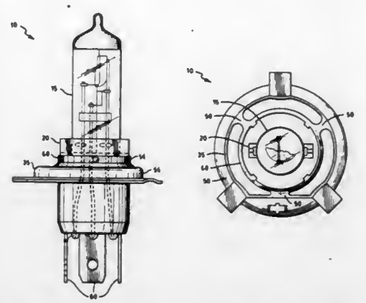
5,313,134
CAPPED ELECTRIC LAMP FOR OPERATION AT MAINS VOLTAGE AND LAMP CAP UNIT FOR USE THEREIN
Livio Borgis, S. Antonio di Susa, and Marco V. P. Piacibello, Turin, both of Italy, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 11, 1992, Ser. No. 834,074
Claims priority, application Netherlands, Feb. 28, 1991, 9100369; European Pat. Off., Aug. 22, 1991, 91202148
Int. Cl.[5] H01J 5/48, 5/50
U.S. Cl. 313—318 **17 Claims**



1. A capped electric lamp for operation at mains voltage, comprising:
a lamp vessel which is vacuum sealed and has an end portion (2) which is fused to a stem (3) which projects into the lamp vessel and surrounds an exhaust tube (4);
an electric element in the lamp vessel connected to at least two current supply conductors (6) which extend from the lamp vessel alongside the exhaust tube;
a lamp cap (10) comprising a shell (20) and an insulator body (30), the shell having an axis (21), a first end (22) of the shell being fixed around said end portion (2) of the lamp vessel with an adhesive compound, a second end (23) of the shell being secured to the insulator body (30);
at least two contact pins (31) fixed in the insulator body and extending to the exterior therefrom;
the current supply conductors (6) being respectively connected to the respective contact pins (31) where said contact pins extend from the insulator body (30); and
a mounting member (40) of synthetic resin, said mounting member being secured to the insulator body (30), only the contact pins (31) projecting through said mounting member to the exterior.

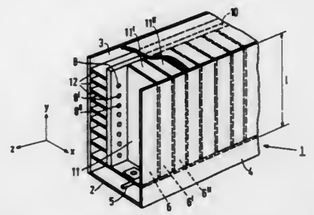
5,313,135
HEADLAMP CAPSULE
William S. Fletcher, Westmoreland, N.H., assignor to Osram Sylvania Inc., Danvers, Mass.
Filed Jan. 2, 1992, Ser. No. 816,163
Int. Cl.[5] H01J 05/60
U.S. Cl. 313—318 **10 Claims**

1. A headlamp capsule comprising:
a) a lamp capsule having an envelope, a light source enclosed in the envelope, at least two leads for powering the light source extending through an envelope seal for the leads,
b) a base, including a first coupling means for coupling the base to the lamp capsule, and a second coupling means for coupling the base to the web,
c) web having a first support side coupled to the second coupling means of the base, a second support side for coupling the web to a headlamp capsule support, and at least two adjustable cross linkages coupled intermediate the first support side and the second support side, and



d) at least two electrical connectors held in place by the base, and electrically connected to the lamp capsule leads.

5,313,136
THIN-TYPE PICTURE DISPLAY DEVICE
Gerardus G. P. Van Gorkom, and Petrus H. F. Tormpenaars, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 528,677, May 24, 1990, abandoned.
This application Feb. 6, 1992, Ser. No. 830,951
Claims priority, application Netherlands, Jun. 1, 1989, 8901391; Jan. 10, 1990, 9000060
Int. Cl.[5] H01J 29/70
U.S. Cl. 313—422 **49 Claims**

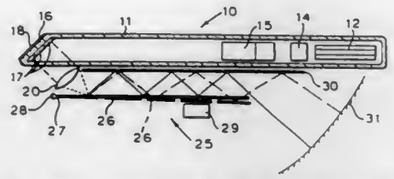


1. A display device comprising an envelope including a surface bearing a luminescent screen having a multiplicity of predefined areas and electron source means for selectively energizing respective ones of said areas to produce an image, characterized in that said display device comprises:
a. at least one electron current transport duct defined by at least one wall means of a material having a predetermined secondary emission coefficient;
b. first electrode means arranged for producing a predetermined electric field within the at least one duct;
c. electron producing means arranged for emitting electrons into the at least one duct;
said predetermined secondary emission coefficient and the arrangement of said first electrode means being chosen to effect an electron current in an operative length of the at least one duct;
d. apertured wall means facing the luminescent screen, the apertures in said apertured wall means being disposed in communication with said predefined screen areas and the at least one duct;
e. second electrode means proximate the apertures for selectively effecting extraction of electron currents from the at least one duct and through said apertures; and
f. means arranged between the apertured wall means and the

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luminescent screen bearing surface for effecting transport of the extracted electron currents toward said screen.

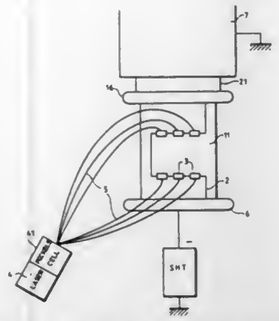
5,313,137
DISPLAY DEVICES
Malcolm G. Wittey, Tamarisk Cottage, Church Road, Penn, Buckinghamshire HP10 8NX, United Kingdom
Filed May 22, 1992, Ser. No. 859,393
Claims priority, application United Kingdom, Nov. 30, 1989, 8927053; Dec. 14, 1989, 8928264; Jun. 14, 1990, 9013262
Int. Cl.[5] H04N *5/74*
U.S. Cl. 313—478 **8 Claims**



1. A display system comprising a cathode ray tube including an electron gun, a strip of phosphor, means for focusing a beam of electrons emitted from the gun onto the strip of phosphor, means for scanning the beam of electrons along the strip of phosphor and means for modulating the beam of electrons emitted from the gun and thus the excitation of the strip of phosphor to provide a linear display; and optical scanning means for viewing successive images of the linear display in axially aligned juxtaposed relationship, to produce a two dimensional display, the optical scanning means including first and second mirrors mounted for angular vibrational movement about parallel axes defined by opposite edges of each mirror, the mirrors being interconnected at positions equally spaced from their pivotal axes, so that angular vibrational movement of one mirror will be transmitted to the other mirror but movement of one mirror will be in the opposite angular direction to that of the other mirror, a transducer being provided to vibrate the mirrors, and means for focusing the image of the linear display at an angle onto the first mirror so that it is reflected onto the second mirror and back onto the first mirror.

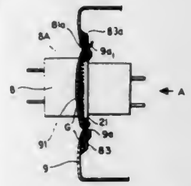
5,313,138
ELECTRON GUN MODULATED BY OPTOELECTRONIC SWITCHING
Henri Desmur, Fontenay Aux Roses, France, assignor to Thomson Tubes Electroniques, Boulogne Billancourt, France
Filed Oct. 9, 1991, Ser. No. 774,708
Claims priority, application France, Nov. 9, 1990, 90 13938
Int. Cl.[5] H01J *23/06*
U.S. Cl. 315—3 **15 Claims**

4. An electron gun generating a modulated electron beam at a predetermined frequency comprising, a cathode for emitting electrons of the beam toward an electrode; an energy source for generating an electric field in a space including the cathode and the electrode in order to extract the electrons from the cathode, said energy source being coupled to the cathode through an optoelectronic switch having alternate conductive and insulating states; means for modulating the electron beam comprising at least a modulated light source operated at the predetermined frequency for modulating said optoelectronic switch, said modulated light source being connected to said optoelectronic switch so that, in response to the modulation imparted on the optoelectronic switch, optoelectronically switching between the conductive and insulating states, and



thus the electric field in the space is correspondingly modulated to effect the modulated electron beam.

5,313,139
CONDENSER UNIT FOR A MAGNETRON CAPABLE OF PREVENTING THE LEAKAGE OF MICROWAVE ENERGY
Yong G. Yoon, Kyungsangbook, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 27, 1991, Ser. No. 721,979
Claims priority, application Rep. of Korea, Jun. 30, 1990, 9796/1990
Int. Cl.[5] H01J *23/15, 25/50*
U.S. Cl. 315—39.51 **2 Claims**



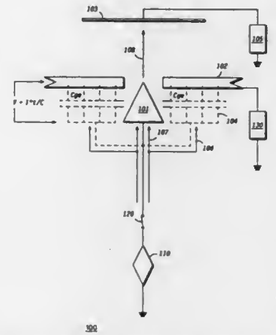
1. A magnetron assembly, operable with an electric power source, said magnetron assembly comprising: a housing, a cathode having a filament for emitting thermions, an anode vane assembly having an anode and a plurality of cavities disposed therein to which said thermions from said filament are directed, a permanent magnet mounted to said housing to rotate and accelerate said thermions between said anode and cathode such that said thermions interact with said cavities to generate electromagnetic wave energy at a high frequency, a radiating antenna mounted to and extending from said housing for radiating said high-frequency electromagnetic wave energy from said magnetron, a plurality of radiant tubes mounted to said housing to radiate heat from said anode vane assembly in order to cool said anode vane assembly, a lead connected between said filament and said power source so as to direct electric power from said power source to said filament, upper and lower filter boxes joined to one another and connected to said housing, and a condensor unit mounted to penetrate said upper filter box, said condenser unit comprises:

a condenser comprising a terminal connected to said lead to receive electrical power; and

a mounting plate defining a plane and fixedly mounting said condenser to said upper filter box, said mounting plate having a periphery and an elastic periphery member mounted to said periphery to extend outwardly therefrom,

said elastic periphery member extending in a direction that is inclined at an angle with respect to said plane of said mounting plate, said elastic periphery member comprising a plurality of slender pieces separated by slits and completely elastically covering a gap between said mounting plate of said condenser unit and said upper filter box, said elastic periphery member and each said slit having a predetermined height and a predetermined width.

5,313,140
FIELD EMISSION DEVICE WITH INTEGRAL CHARGE STORAGE ELEMENT AND METHOD FOR OPERATION
Robert T. Smith, Mesa; Lawrence Dworsky, and Robert C. Kane, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 22, 1993, Ser. No. 7,880
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.1 **8 Claims**



1. A field emission device apparatus comprising:

a supporting substrate;

a conductive element disposed on the supporting substrate;

an insulator layer having a prescribed relative permittivity and resistivity disposed on the supporting substrate;

a gate extraction electrode disposed on the insulator layer;

an aperture defined through the gate extraction electrode and the insulator layer;

an electron emitter, for emitting electrons, disposed on and operably coupled to the conductive element and disposed within the aperture;

an integrally formed capacitance having a first conductor comprised of the gate extraction electrode and a second conductor comprised of the conductive element and the electron emitter;

a switch operably coupled to at least the conductive element an anode for collecting the emitted electrons;

a first potential source operably coupled between the anode and a reference potential;

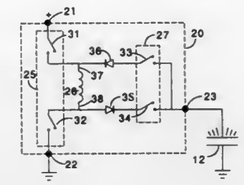
a second potential source operably coupled between the gate extraction electrode and the reference potential;

a controlled current source operably coupled between the switch and the reference potential.

5,313,141
THREE TERMINAL INVERTER FOR ELECTROLUMINESCENT LAMPS
Robert A. Kimball, Scottsdale, Ariz., assignor to Durel Corporation, Tempe, Ariz.
Filed Apr. 22, 1993, Ser. No. 50,600
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.3 **15 Claims**

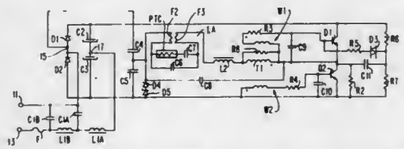
1. An inverter for powering an electroluminescent lamp, said inverter including a supply terminal, a ground terminal, a high voltage terminal, and an inductor having a first terminal and a second terminal, wherein said inverter further comprises:

a first switching circuit connected to said supply terminal and said inductor, said first switching circuit pumping electrical energy from said supply terminal to said inductor;



a second switching circuit connected to said first terminal, said second terminal, and to said high voltage terminal, said second switching circuit alternately connecting said first terminal and said second terminal to said high voltage terminal.

5,313,142
COMPACT FLUORESCENT LAMP WITH IMPROVED POWER FACTOR
John M. Wong, Buffalo Grove, Ill., assignor to North American Philips Corporation, New York, N.Y.
Continuation of Ser. No. 846,370, Mar. 5, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 1,940
Int. Cl.[5] H05B *41/29*
U.S. Cl. 315—205 **25 Claims**



1. In combination, a compact fluorescent lamp with a high frequency DC-AC converter, said converter including a pair of AC input terminals for coupling to a low frequency mains source of AC voltage, said AC input terminals having rectifying means coupled across them, said converter including two switching elements for switching current through said lamp during operation thereof at said high frequency, said switching elements being connected across said rectifying means, said rectifying means having a first junction point, a first capacitor connected to said first junction point, a pair of capacitors with a second junction point therebetween, said pair of capacitors being coupled across said rectifying means, a first inductor connected to said second junction point, said first capacitor and said first inductor being coupled to said AC input terminals.

19. A converter comprising:

input means for receiving an AC voltage,

inverter means for producing an output signal,

a rectifier circuit having an input coupled to said input means and an output coupled to said inverter means, and

feedback means for coupling a feedback signal indicative of said output signal to said input of the rectifier circuit.

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5,313,143

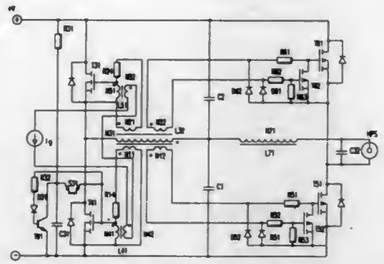
MASTER-SLAVE HALF-BRIDGE DC-TO-AC SWITCHMODE POWER CONVERTER

Oscar Vila-Masot, Puerto La Cruz, Venezuela, and Janos Melis, Miami, Fla., assignors to LED Corporation N.V., St. Maarten, Netherlands Antilles

Continuation-in-part of Ser. No. 720,676, Jun. 25, 1991, Pat. No. 5,097,183. This application Mar. 17, 1992, Ser. No. 852,512

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **8 Claims**



1. A master-slave half-bridge DC-to-AC switchmode power converter comprising:

a DC power supply;

a self-oscillating half-bridge switchmode converter acting as a low power master converter connected to said DC power supply, said master converter provided with a master control transformer having at least five windings, two controlled master switches, first and second self-saturated transformers, each of said self-saturated transformers connected between said master control transformer and each of said master switches; and

a half bridge switchmode converter acting as a controlled slave power converter connected to said DC power supply and said low power master converter, said slave power converter provided with two slave switches, first and second electronic control means for controlling said slave switches, each of said electronic control means connected between said control transformer and each of said slave switches, said slave power converter further including a load impedance;

a pair of voltage divider capacitors common to said master converter and said slave converter; and

a low power current source connected between said first and second self-saturated transformers for providing a power controlled and frequency modulated high frequency ballast for said load impedance and for providing said first and second self-saturated transformers with an equal biasing magnetizing force;

wherein the ON and OFF states of each of said master and slave switches are controlled by said self-oscillating half-bridge switchmode converter.

5,313,144

POWER BALANCED COUPLING STRUCTURE FOR ELECTRODELESS DISCHARGE LAMP

Scott J. Butler, North Oxford; Walter P. Lapatovich, Marlborough, both of Mass., and Jason R. Bochinski, Springfield, Oreg., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 31, 1992, Ser. No. 999,636

Int. Cl.[5] H05B *41/16*

U.S. Cl. 315—248 **18 Claims**

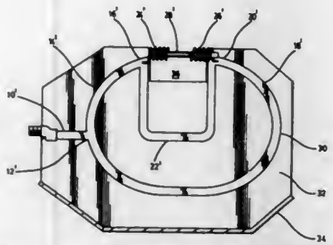
1. An electrodeless lamp having a power balanced coupling structure comprising:

a) a microwave power input line for receiving input microwave power with an operating frequency,

b) a first transmission line receiving power from the input power line, having a first electrical length and coupling at a first connection,

c) a second transmission line receiving power from the input power line, having a second electrical length and coupling at a second junction, wherein the differential electrical length between the first transmission line and the electrical length of the second transmission line is a first odd number of half wave lengths of the operating frequency,

d) a strap line coupling between the first connection and the second junction and having a third electrical length being a second odd multiple of half wavelengths of the operating frequency,



e) a first applicator coupled at the first connection to received microwave power from the first transmission line,

f) a second applicator coupled at the second junction to received microwave power from the second transmission line, and

g) a discharge capsule receiving microwave power from the first applicator, and the second applicator to excite the chemical species contained therein and thereby emit useful electromagnetic radiation in the wavelength region between a hundred nanometers and a thousand nanaometers, generally known to be ultraviolet, visible and infrared light.

5,313,145

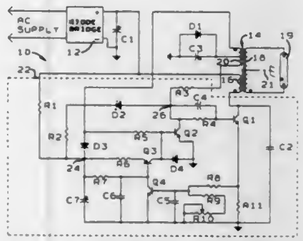
POWER SUPPLY FOR A GAS DISCHARGE DEVICE

Ralph M. Francis, Jr., 1505 Crabapple Dr., Racine, Wis. 53405, and Michael Garjian, 417 Turnpike St., Stoughton, Mass. 02072

Filed Aug. 31, 1992, Ser. No. 938,902

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—307 **13 Claims**



1. A power supply for a gas discharge device comprising:

a source of direct current having a first and second output terminals;

a transformer having a primary winding, a first secondary winding across which a high voltage is produced for the gas discharge device, and a second secondary winding;

a reactive element coupled to the primary winding to form a resonant circuit;

a solid state switch having a conduction path and a control electrode which when properly biased renders the conduction path conductive;

means for coupling the primary winding and the conduction path of said solid state switch in series between the first and second output terminals;

a sensor which provides an indication of how much current is flowing through the primary winding; and

a bias circuit coupled to the second secondary winding for applying a bias potential to the control electrode of said solid state switch to render the conduction path conductive, said bias circuit also connected to said sensor and removing the bias potential from the control electrode in response to the current flowing through the primary winding exceeding a predefined magnitude.

5,313,146

CIRCUIT ARRANGEMENT FOR PRODUCING A VERTICAL FREQUENCY DEFLECTION CURRENT

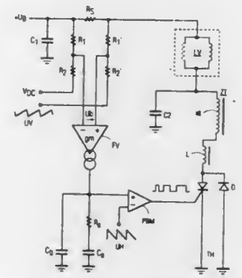
Rudolf Koblitz, Meylan, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 974,012

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1990, 4009920

Int. Cl.[5] H01J *29/70, 29/76*

U.S. Cl. 315—403 **5 Claims**



1. In a circuit for generating a vertical frequency deflection current for the electron beams in the picture tube of a television receiver, said circuit including a current sensor resistor having a first end connected to direct voltage potential by first and second resistors connected in series at a first junction and a second end connected to a vertical frequency sawtooth signal by third and fourth resistors connected in series at a second junction, an error amplifier having a first input terminal connected to said first junction and a second input terminal connected to said second junction, said circuit having an output stage for supplying said deflection current, an output terminal of said error amplifier being connected to an input terminal of said output stage, an improvement wherein:

said error amplifier comprises a transconductance amplifier and wherein said output terminal of said error amplifier is coupled via an RC network formed by a series connection of a resistor and a capacitor to a reference potential.

5,313,147

DIGITAL SERVO-CONTROL APPARATUS

Takao Yoneda, Nagoya; Tomonari Kato, Kariya, and Toshihiro Yonezu, Nishio, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 24, 1991, Ser. No. 764,825

Claims priority, application Japan, Sep. 27, 1990, 2-259229

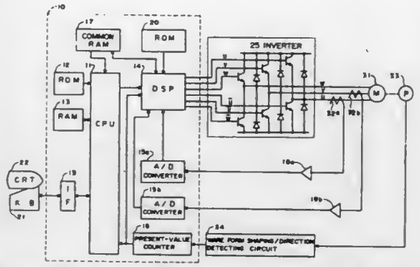
Int. Cl.[5] G05B *11/32*

U.S. Cl. 318—569 **4 Claims**

1. A digital servo-control apparatus which controls the rotation of a servomotor on the basis of a digital position command value representative of a target position and a digital position feedback value output from position detecting means, comprising:

means for calculating a feedforward value at intervals of a predetermined period on the basis of the amount of change of said position command value;

means for delaying said position command value by a period of time corresponding to an operation delay in said feedforward value calculating means;



means for calculating a velocity command value by adding said feedforward value to a deviation of said position feedback value from said position command value delayed by said delay means; and

means for driving said servomotor according to the velocity command value calculated by said calculating means.

5,313,148

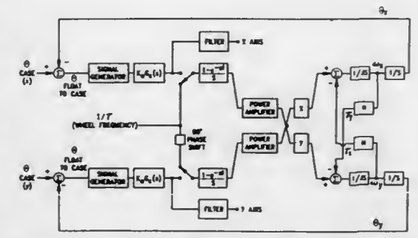
ELECTRONICALLY COMMUTATED TWO-AXIS GYRO CONTROL SYSTEM

Jerome Sears, Wycoff; Walter Parfomak, Wallington, and Walter J. Kluss, Kearny, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 933,277, Aug. 21, 1992. This application Dec. 2, 1992, Ser. No. 985,091

Int. Cl.[5] G05B *17/00*

U.S. Cl. 318—689 **3 Claims**



1. A two degree of freedom gyroscope having a motor with a stator and a permanent magnet rotor connected to rotate the rotatable portion of the gyroscope around a null spin axis comprising:

motor drive means for driving the permanent magnet rotor to rotate around an actual spin axis including a pair of Hall effect elements disposed in the motor stator for providing output signals of the position of the permanent magnet rotor poles for motor commutation;

sensing means for optically sensing the X-axis and Y-axis deviations of the actual spin axis of the rotor from the null spin axis and providing an X-axis signal and a Y-axis signal which are a function of the deviation;

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a torquer coil having at least one loop which lies in a plane orthogonal to the null spin axis and which is disposed in proximity to the permanent magnet rotor;

torquer drive means responsive to the X-axis signal and the Y-axis signal when the actual spin axis of the permanent magnet rotor is displaced from the null spin axis for providing drive current, at the proper time and with the proper polarity, to said torquer coil to urge the permanent magnet rotor to a position wherein the actual spin axis coincides with the null spin axis; and wherein,

said torquer drive means includes an X-axis commutation switch and a Y-axis commutation switch both responsive the output signal from one of the Hall effect elements which provide the commutation angle and summing means for combining the outputs of said X-axis commutation switch and said Y-axis commutation switch.

5,313,149

CURRENT SUPPLY CONTROL APPARATUS FOR INDUCTANCE LOAD

Itsuki Bahn, Tokyo, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

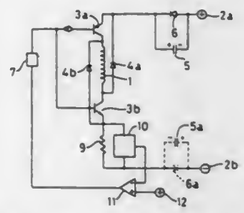
PCT No. PCT/JP91/01605, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO92/10025, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 22, 1991, Ser. No. 910,150

Claims priority, application Japan, Nov. 22, 1990, 2-316063; Nov. 22, 1990, 2-317676

Int. Cl.[5] H02P *1/24*

U.S. Cl. 318—727 **5 Claims**



1. A current supply control apparatus for an inductance load comprising:

first and second switching elements interposed between a DC electric power source and the inductance load;

first and second diodes inversely connected to respective ones of said first and second switching elements and the inductance load;

current detecting means for generating a detecting voltage representing a current flowing in the inductance load;

a back-flow preventing diode connected in a forward direction with respect to the DC electric power source on the DC electric power source side;

a capacitor connected to said back-flow preventing diode; and

a chopper circuit for comparing said detecting voltage from said current detecting means with a standard voltage variably set in a voltage waveform for turning on or off said first and second switching elements depending on the result of the comparison, said chopper circuit including:

an absolute value circuit, connected to said current detecting means, for detecting a voltage drop in said current detecting means;

when the detecting voltage exceeds the standard voltage, said first and second switching elements are turned off, during the turning-off period of said switching elements, a magnetic energy stored in the inductance load is prevented from being returned to the DC electric power source by said back-flow preventing diode, the magnetic energy is supplied to said capacitor through said first and second diodes to charge said capacitor, thereby causing a current flowing in the inductance load to be quickly reduced after said switching elements have been turned off, and when the detecting voltage decreases to a predetermined value, said first and second switching elements are turned on to cause a high voltage equal to a sum of a voltage charged in said capacitor and a voltage of the DC electric power source to be applied to the inductance load so that a current flowing in the inductance load can be increased sharply.

5,313,150

DRIVE CONTROL APPARATUS FOR AN AIR CONDITIONER HAVING A MODULAR INVERTER AND A CONTROL CIRCUIT MOUNTED ON A COMMON SUBSTRATE

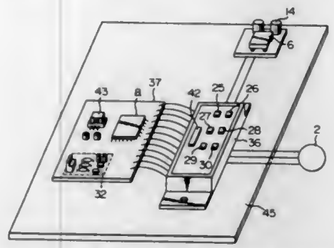
Noriaki Arakawa, Tochigi, and Makoto Isii, Utsunomiya, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,556

Claims priority, application Japan, Jul. 5, 1991, 3-191129

Int. Cl.[5] H02M *5/458*

U.S. Cl. 318—768 **7 Claims**



1. A drive control apparatus for controlling a motor which drives a compressor of an air conditioner, comprising:

a rectifying circuit for converting an AC voltage into a DC voltage;

an inverter, having a combination of a plurality of power controlling semiconductor devices, for controlling said DC voltage from said rectifying circuit in accordance with a drive signal supplied to said combination of said semiconductor devices so as to produce an AC drive current to said motor; and

a drive circuit for generating said drive signal to said inverter,

said drive circuit being formed as a monolithic integrated circuit surrounded by a dielectric separation structure, and said monolithic integrated circuit, said inverter and said rectifying circuit being mounted on a common substrate of a module.

5,313,151

INDUCTION TYPE ELECTRIC MOTOR DRIVE ACTUATOR SYSTEM

Graham M. Ogden, Bath, and Robert Pearce, Bristol, both of United Kingdom, assignors to Rotork Controls Limited, United Kingdom

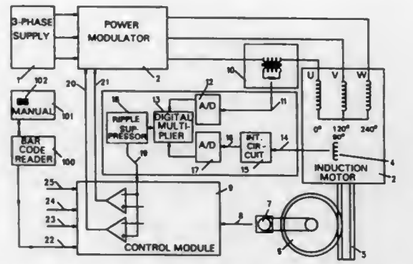
Filed Apr. 29, 1992, Ser. No. 875,699

Claims priority, application United Kingdom, May 14, 1991, 9110389

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—805 **21 Claims**

1. An actuator comprising an electric motor of the polyphase induction type having a stator with power windings and slots therefore and also having a rotor, and in which only a single flux sensor is provided, the flux sensor being a single sensing coil wound in the stator slots and independent of the power windings, the sensing coil being so arranged that voltages induced therein represent a measure of the magnetic flux existing in an air gap between said stator and said rotor of the motor; the actuator further comprising current sensing means associated with one or more of the stator power windings, and



means responsive to signals from the current sensing means and the flux sensor to obtain a motor torque signal representing the instantaneous output torque produced by the induction motor.

5,313,152

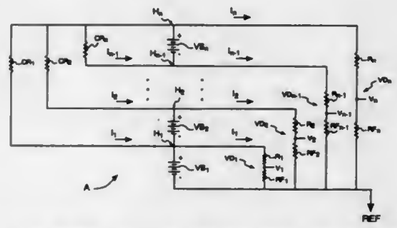
NETWORK FOR MINIMIZING CURRENT IMBALANCES IN A FARADAIC BATTERY

Walter Wozniak, Dearborn, and Harold J. Haskins, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 19, 1992, Ser. No. 901,002

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—6 **9 Claims**



7. In combination with a faradaic battery and means for monitoring the condition of the battery, said battery comprising a plurality of serially connected modules including at least first, second, third and fourth modules, each having positive and negative terminals, the negative terminal of said first module and the positive terminal of said second module being connected together and to a reference node to establish a reference voltage equal to one-half the total battery voltage, a circuit comprising:

first and second voltage divider networks, connected across said first and second modules respectively, said first network including first and second resistor means, with a first monitoring node therebetween, said second network including third and fourth resistor means, with a second monitoring node therebetween;

a third voltage divider network connected across said first and third serially connected modules, said third network including fifth and sixth resistor means, with a third monitoring node therebetween;

a fourth voltage divider networks connected across said second and fourth serially connected modules, said fourth network including seventh and eighth resistor means, with a fourth monitoring node therebetween;

first and second compensating resistor means connected across said third and fourth modules respectively;

means connecting said first, second, third and fourth monitoring nodes to said monitoring means;

said compensating resistor means and the resistor means in said networks being sized to insure that current drawn by said monitoring means from said first, second, third and fourth modules is substantially equal.

5,313,153

CIRCUIT ARRANGEMENT FOR CYCLIC SUPPLY

Johannes Locher, Stuttgart; Werner Fischer, Ditzingen, and Joachim Tauscher, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

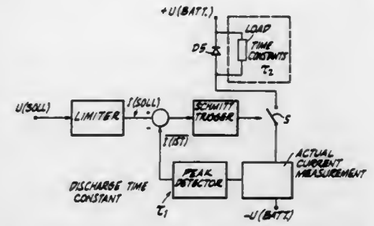
PCT No. PCT/DE88/00786, § 371 Date Sep. 6, 1990, § 102(e) Date Sep. 6, 1990, PCT Pub. No. WO89/07831, PCT Pub. Date Aug. 24, 1989

PCT Filed Dec. 30, 1988, Ser. No. 566,366

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3805031

Int. Cl.[5] G05B *11/00*; G05F *1/613*

U.S. Cl. 323—284 **5 Claims**



1. A control circuit for controlling an electromagnetic load in accordance with an input signal, the control circuit comprising:

a frequency/voltrage transformer for receiving a control signal of a given frequency;

an integrator, an input of the integrator being coupled to an output of the frequency/voltage transformer and an output signal of the integrator being indicative of the deviation of the frequency of the control signal from a predetermined value;

comparison means, a first input of the comparison means receiving a first current signal indicative of a current through the load, a second input of the comparison means receiving the input signal, the comparison means generating the control signal in accordance with the comparison of the first current signal and the input signal, and the comparison means having a hysteresis which can be altered as a function of the output signal of the integrator so that the control signal has a frequency that corresponds substantially to the predetermined value; and

a switching device coupled to the electromagnetic load and controlled by the control signal, thereby controlling the electromagnetic load.

5,313,154

APPARATUS FOR DETECTING A FREQUENCY DEVIATION BETWEEN TWO FREQUENCY SOURCES

Joseph P. Norris, Mount Laurel, N.J., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 28, 1992, Ser. No. 967,356

Int. Cl.[5] H03D *13/00*

U.S. Cl. 324—76.48 **5 Claims**

1. An apparatus for detecting a difference of frequency between a first signal having a first frequency and a second

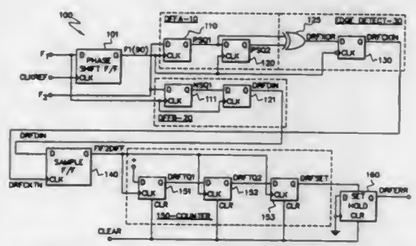
VOL 1162 ISS 3 MY 17 1994 UMI

signal having a second frequency, said first signal and said second signal being digital signals, said apparatus comprising:

a) phase shift means, for shifting the first signal a predetermined quantity phase-wise, such that the first signal and the shifted first signal are sufficiently out of phase with each other where in the rising and falling edges of each of said first signal and said shifted first signal do not occur at essentially the same time thereby avoiding subsequent simultaneous triggering conditions and jitter conditions between the first and second signals;

b) first gate means, having first and second input terminals, said first input terminal adapted to receive said second signal and said second input terminal coupled to said phase shift means to receive said shifted first signal, for sampling the second signal by the shifted first signal at predetermined times to output a first sampled signal, said first gate means being a double ranked D-type flip flop arrangement;

c) second gate means, having first and second input terminals, said first input terminal of the second gate means



adapted to receive said second signal and said second input terminal of said second gate means adapted to receive said first signal, for sampling the second signal by the first signal at predetermined times to output a second sampled signal;

d) sample gate means, having first and second input terminals, the first input terminal of said sample gate means coupled to said second gate means to receive the second sampled signal and the second input terminal of said sample gate mans coupled to said first gate means to receive the first sampled signal, for sampling the first sampled signal and the second sampled signal to generate a difference signal, the difference signal containing a difference value of the frequency difference between the first signal and the second signal; and

e) edge detection means, interposed between said first gate means and sad second terminal of said sample gate means, for detecting rising and falling edges between the shifted first signal and second signal, to output the first sampled signal having clean sharp edges.

5,313,155

DRIVING APPARATUS FOR CROSS-COIL TYPE ANALOG INDICATING INSTRUMENT HAVING REDUCED RIPPLE

Tomohisa Yamamoto, and Hiroyuki Ban, both of Aichi, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 19, 1992, Ser. No. 885,730

Claims priority, application Japan, May 27, 1991, 3-152528

Int. Cl.[5] G01R *11/36; G01P 3/48*

U.S. Cl. 324—143 **8 Claims**

1. A driving apparatus for an analog instrument having a pointer that indicates a process quantity by deflecting through an angle in response to driven cross coils, said driving apparatus comprising:

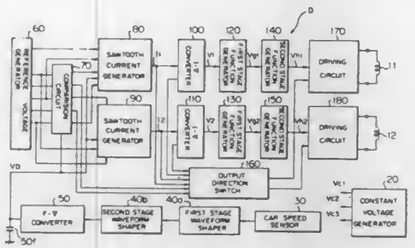
pulse signal generating means for generating a pulse signal at a frequency proportional to said process quantity;

frequency-voltage conversion means connected tot he pulse signal generating means for generating an analog voltage proportional to the frequency of said pulse signal; and

driving means connected to the frequency-voltage conversion means for driving said cross coils in accordance with said analog voltage;

wherein said frequency-voltage conversion means comprises:

voltage generating means connected to said pulse signal



generating means for generating a ripple voltage proportional to the frequency of said pulse signal, said ripple voltage having ripple-voltage ripple;

a hold means for generating the analog voltage; and

voltage control means connected to said voltage generating means and to said hold circuit for controlling said controllable circuit so that the analog voltage tracks said ripple voltage with an amount of analog-voltage ripple less than said ripple-voltage ripple.

5,313,156

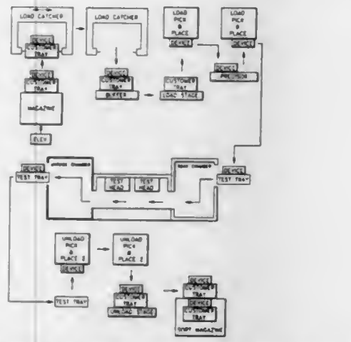
APPARATUS FOR AUTOMATIC HANDLING

Mark W. Klug; Thomas E. Toth; Theodore C. Guenther, all of San Diego; Martin Twite, Coronado, all of Calif.; Kazuyuki Tsurishima, Saitama, Japan; Mitsuaki Tani, Saitama, Japan; Minoru Baba, Saitama, Japan, and Teruaki Sakurada, Saitama, Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Dec. 4, 1991, Ser. No. 803,159

Int. Cl.[5] G01R *31/28;* **B07C** *5/344*

U.S. Cl. 324—158 F **24 Claims**



1. An automatic test handler using test trays and customer trays for testing integrated circuits ("ICs") arranged on said test trays and received by said test handler in magazines containing a plurality of said customer trays, the handler comprising:

a magazine input area for receiving at least one magazine containing said customer trays and having arranged on said customer trays said ICs to be tested;

a loader for transferring said customer trays from said magazines to a position for access to said ICs to be tested;

a loop-like path formed in said test handler for circulating said test trays therethrough;

a first pick and place mechanism for transferring said ICs to be tested from said customer trays at said position to said test trays;

at least one test chamber arranged in said loop-like path for receiving said test trays and for testing said ICs arranged thereon;

a second pick and place mechanism for transferring said ICs following testing from said test trays to said customer trays in accordance with the results of said testing; and

an unloader for transferring said customer trays containing said ICs which have been tested and returning said customer trays to magazines arranged in said unloader in accordance with the test results.

5,313,157

PROBE FOR JESTING AN ELECTRICAL CIRCUIT CHIP

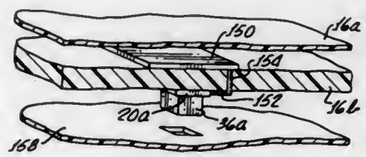
John Pasiecznik, Jr., Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 606,676, Oct. 31, 1990, Pat. No. 5,148,103.

This application Apr. 29, 1992, Ser. No. 875,511

Int. Cl.[5] G01R *31/00*

U.S. Cl. 324—158 P **22 Claims**



11. A probe for testing an electrical circuit chip carried on a circuit wafer, said probe comprising:

a substrate having a dimension and configuration like said circuit wafer, and an edge section means for enabling handling and orientation,

a flexible membrane carried by said substrate,

a plurality of contact pads on said membrane,

a plurality of electrical conductors on said membrane and electrically connected to said contact pads, and

means defined by said probe for detachably connecting said probe by vacuum both mechanically and electrically to a test fixture.

5,313,158

TEST SYSTEM INTEGRATED ON A SUBSTRATE AND A METHOD FOR USING SUCH A TEST SYSTEM

Johannes J. M. Joosten, and Cornelis L. M. van der Klauw, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 619,275, Nov. 28, 1990, abandoned.

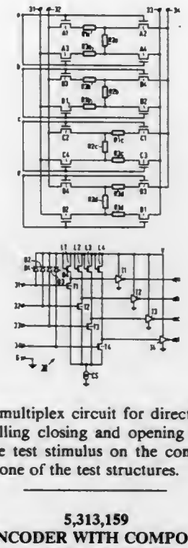
This application Jan. 12, 1993, Ser. No. 4,477

Claims priority, application Netherlands, Dec. 1, 1989, 8902964

Int. Cl.[5] G06F *11/00;* **G01R** *31/28*

U.S. Cl. 324—158 R **6 Claims**

1. A test system integrated on a substrate, for at least one of measuring and testing of parameters of respective test structures, the system having externally-accessible connection terminals coupled to the respective test structures via respective switches, for passing a test stimulus from the connection terminals to stimulate a selectable one of the test structures, the system comprising a multiplex circuit having amplifiers having the inputs coupled to said connection terminals and their outputs coupled for controlling closing and opening of the respective switches, the connection terminals being connected concurrently both to the respective test structures and to input



terminals of the multiplex circuit for directing the multiplex circuit in controlling closing and opening of the respective switches, and the test stimulus on the connection terminals serving to select one of the test structures.

5,313,159

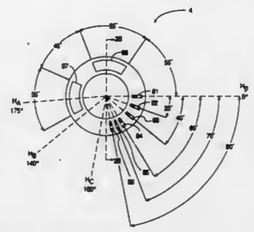
MAGNETIC ENCODER WITH COMPOSITE MAGNET

Elmer C. Allwine, Jr., 450 Harvard Ave. No. 9-C, Santa Clara, Calif. 95051

Division of Ser. No. 784,207, Oct. 28, 1991. This application Nov. 25, 1992, Ser. No. 982,204

Int. Cl.[5] G01B *7/30;* **G01P** *3/487;* **H01F** *7/02;* **H03M** *1/00*

U.S. Cl. 324—207.2 **32 Claims**



1. A magnetic encoder for detecting a movement or a position of an object comprising:

a composite magnet for coupling to said object, said composite magnet including:

a first piece of magnetized material having a projection thereon; and

a second piece of magnetized material with an aperture formed therein, said first and second pieces being magnetized in opposite axial directions along a common axis such that after said projection on said first piece is mated to said aperture of said second piece, a pattern of north-south poles is formed on one surface of said composite magnet, said pattern determined by said aperture and said projection; and

means for detecting a movement or a position of said composite magnet, wherein said means for detecting is placed in operative relation to said composite magnet.

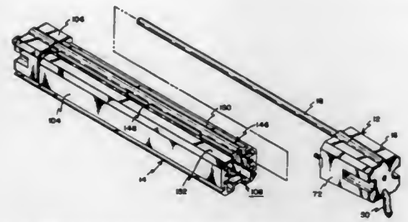
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,160

MODULAR MAGNETOSTRICTIVE DISPLACEMENT SENSOR HAVING A WAVEGUIDE PROTECTED BY A MATERIAL WITH A THERMAL COEFFICIENT OF EXPANSION THE SAME AS THE WAVEGUIDE

Michael L. Gloden, Apex; Wade D. Peterson, Morrisville, and Lawrence J. Russell, Knightdale, all of N.C., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Feb. 3, 1992, Ser. No. 829,443
Int. Cl.[5] G01B *7/26*
U.S. Cl. 324—207.13 **6 Claims**



1. A magnetostrictive displacement sensor comprising:
a first housing;
a waveguide formed of magnetostrictive material and having a first and second ends;
means for mounting said first end of said waveguide in said first housing with said waveguide extending from said first housing;
a protected member surrounding said waveguide, said protective member formed of material having the thermal coefficient of expansion substantially the same as the thermal coefficient of expansion of said waveguide magnetostrictive material;
at least one magnet disposed proximate said waveguide;
means for generating electrical pulses in a direction along said waveguide;
a converter means mounted in said first housing for generating an electrical signal in response to a torsion pulse in said waveguide caused by said at least one magnet when an electrical current pulse passes along said waveguide, at least one of said waveguide and said at least one magnet movable with respect to each other;
means responsive to said electrical signal for indicating the position of said at least one magnet along said waveguide.

5,313,161

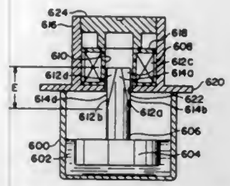
DISPLACEMENT SENSOR WITH A MOVABLE ELEMENT SHAPED TO PROVIDE A LINEAR RESPONSE CURVE

Shozo Miyazawa, and Takanori Kobayashi, both of Suzaka, Japan, assignors to Techno Excel Kabushiki Kaisha, Suzaka, Japan

Division of Ser. No. 415,333, Sep. 14, 1989, Pat. No. 5,046,702. This application Apr. 2, 1991, Ser. No. 661,171
Claims priority, application Japan, Mar. 14, 1987, 62-59898; Mar. 20, 1987, 62-67605
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.16 **5 Claims**

1. A displacement sensor comprising a sensor body, an electromagnetic coil, said coil having an inward facing surface surrounding the central cavity thereof and an axial direction, an electric current supply means for supplying electric current to said coil, a plunger, said plunger being made of magnetizable material, being disposed within the central cavity of said coil, and being capable of moving in said axial direction of said coil, a displacement body, said displacement body being movable with movement of said displacement body causing proportional movement of said plunger along said axial direction, said coil reflecting the amount of displacement of said displacement body via the movement of said plunger by change of reactance, and a detection means for detecting the change of reactance of said coil as said plunger changes position along said axial direction, and

wherein said plunger includes a middle section, said middle



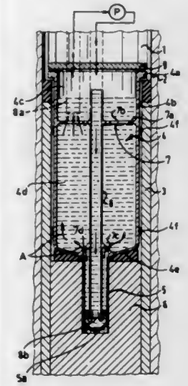
section having a predetermined width, an upper end section having an upper end face, a parallel peripheral surface, said parallel peripheral surface extending parallel to the longitudinal axis of said plunger from said middle section to intersect with said upper end face to form more than one portion of a peripheral edge of said upper end face.

5,313,162

APPARATUS FOR THROUGHFLOW NMR SPECTROSCOPY, ESPECIALLY FOR CELL SUSPENSIONS

Albert De Graaf, Heerlen, Netherlands, and Ulrich Probst, Aachen, Fed. Rep. of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Fed. Rep. of Germany

Filed Apr. 24, 1992, Ser. No. 874,339
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113864
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—307 **15 Claims**



1. An apparatus for through-flow nuclear magnetic resonance spectroscopy, comprising:
a wide-bore cryogenic magnet having a vertical bore formed with a large-diameter upper section and a small-diameter lower section, said lower section being formed with a measurement element defining a measuring region;
a measuring tube formed with a closed bottom and received in said lower section of said vertical bore and having a volumetric capacity in said measuring region of 3 to 20 ml;
a premagnetization reservoir of a cross section greater than

a cross section of said measuring tube and received in said upper section and communicating with said measuring tube at a lower end of said reservoir, said premagnetization reservoir having a volumetric capacity of at least 100 ml over a portion of said reservoir which extends upwardly from said lower end and over zone of the bore in which a magnetic field strength of said magnet is at least 50% of a magnetic field strength in said measuring region; and

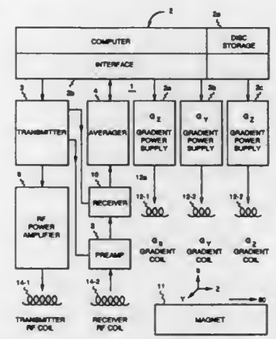
means for continuously circulating a liquid carrying a cell suspension between said reservoir and said measuring tube, providing a throughflow in the measuring tube of between 5 and 250 ml/s.

5,313,163

SAMPLING-RING SATURATION PULSE FOR TWO-DIMENSIONAL MAGNETIC RESONANCE SELECTIVE EXCITATION

Christopher J. Hardy, and Edward J. Nieters, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 12, 1992, Ser. No. 928,390
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **8 Claims**



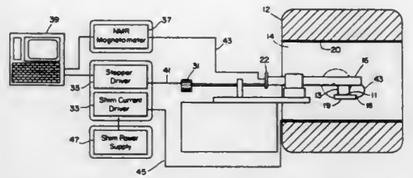
1. A method of magnetic resonance (MR) imaging of a region of a subject while suppressing ring artifacts, comprising the steps of:
a) defining a target annular region which covers ring artifacts, and excludes a central region;
b) calculating a pair of time-varying magnetic field gradient waveforms $g_x(t)$, $g_y(t)$ along an "X" and "Y" axis respectively that, when applied with a predetermined radiofrequency (RF) pulse to the subject, will excite magnetization of the target annular region of the subject;
c) calculating a time-varying RF pulse $b_1(t)$ that when applied to the subject with time-varying magnetic field gradient waveforms $g_x(t)$, $g_y(t)$ will excite magnetization of the target annular region of the subject;
e) simultaneously applying the magnetic field gradient waveforms $g_x(t)$, $g_y(t)$ and the RF pulse $b_1(t)$ to the subject to excite magnetization of the target annular region of the subject;
f) subsequently applying 'crusher' gradient pulses to dephase the excited magnetization in the annular region;
g) applying a two-dimensional (2D) MR excitation pulse to said region to be imaged;
h) receiving an MR response signal from the region to be imaged such that relatively little signal is contributed from the target annular region of said subject; and
i) reconstructing an image of the region to be imaged having minimal sampling-ring artifacts from the MR response signal.

5,313,164

APPARATUS FOR MAPPING STATIC MAGNETIC FIELDS

Piotr M. Starewicz, North Plainfield, N.J., and David Hillenbrand, Groveland, Mass., assignors to Resonance Research Inc., Billerica, Mass.

Filed Nov. 27, 1992, Ser. No. 982,481
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **9 Claims**



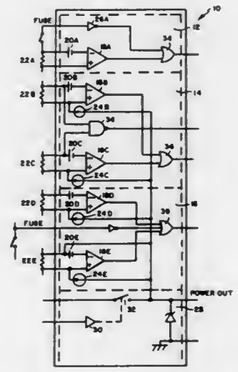
1. Apparatus for mapping a static magnetic field generated by a static magnet which comprises:
at least one sample of non-zero nuclear spin mounted on a magnetic field probe adapted to generate an alternating magnetic field and for measuring an induced signal from said sample, said signal being generated by said alternating magnetic field,
means for generating said alternating magnetic field,
means for moving said sample to discrete locations along a helispherical or heliellipsoidal path within said static magnetic field, and
means for recording said induced signal from said discrete locations.

5,313,165

TEMPERATURE-COMPENSATED APPARATUS FOR MONITORING CURRENT HAVING CONTROLLED SENSITIVITY TO SUPPLY VOLTAGE

A. Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 410,988, Sep. 22, 1989, Pat. No. 5,095,274. This application Jul. 17, 1991, Ser. No. 731,525
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] G01R *31/00, 17/02, 1/44*
U.S. Cl. 324—414 **20 Claims**



6. In a circuit for connection to a resistance shunt, an appara-

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tus for monitoring current through the shunt, the improvement comprising:

a comparator having two output states in relation to a threshold switching voltage, and having inputs for connection to the resistance shunt wherein the comparator is responsive to a voltage developed across the shunt, so that a voltage across the shunt larger than the threshold switching voltage causes the comparator output to assume a first one of the two output states and a voltage across the shunt smaller than the threshold switching voltage causes the comparator output to assume the second one of the two output states; and

a sensitivity control means, connected to the comparator, for controlling a sensitivity of the threshold switching voltage to changes in a supply voltage of the circuit.

5,313,166

METHOD OF CALIBRATING A NETWORK ANALYZER

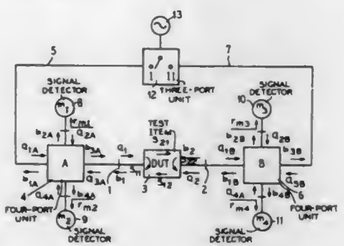
Hermann-Josef Eul, Oberschleissheim, and Burkhard Schiek, Bochum, both of Fed. Rep. of Germany, assignors to Rohde & Schwarz GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 10, 1991, Ser. No. 774,604

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1990, 4038045; Aug. 2, 1991, 4125624

Int. Cl.[5] G01R *27/04*

U.S. Cl. 324—601 **8 Claims**



1. A method for calibrating a network analyzer, comprising steps of:

providing a network analyzer having two test ports;

performing calibration measurements successively in any desired order on different calibration standards connected between the two test ports;

when performing the calibration measurements, using as a first calibration standard two-port unit having known complex scattering parameters, said two-port unit being connected between the two test ports; and

using as further calibration standards three one-port units of known, reflection characteristics and which are connected to only one of either of the two test ports.

5,313,167

MOISTURE MEASUREMENT APPARATUS, SYSTEM AND METHOD UTILIZING MICROWAVE OR HIGH FREQUENCY ENERGY

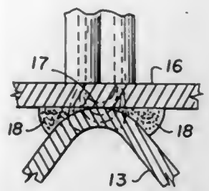
Noel H. C. Marshall, Star Rte. 46, Woodside, Calif. 94062

Filed Oct. 4, 1991, Ser. No. 771,450

Int. Cl.[5] F26B *3/34*

U.S. Cl. 324—632 **15 Claims**

1. In apparatus for sensing the amount of glue being applied to the peaks of a corrugated sheet to be disposed between upper and lower sheets to form cardboard having first and second substantially parallel surfaces, a sensor device comprising first and second substantially parallel coaxial lines having distal extremities in relatively close proximity to each other and adapted to be disposed in close proximity to the cardboard solely on one side of the cardboard adjacent said first surface, transmitter means coupled to the first coaxial line for introducing electrical energy in the high frequency to a microwave range into the first coaxial line to cause a fringe radiation field to be established at the distal extremity of the first coaxial line and to extend into the cardboard, receiving means coupled to the second coaxial line for detecting any of the fringe radiation



field coupled into it from the first coaxial line and measurement means coupled to the receiving means for ascertaining when any change occurs in the coupling of the fringe radiation field from the first coaxial line to the second coaxial line.

5,313,168

APPARATUS FOR DETECTING FUEL DIELECTRIC CONSTANT

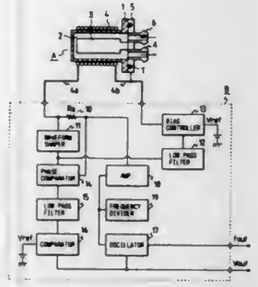
Kenji Ogawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,852

Claims priority, application Japan, Nov. 6, 1991, 3-289778; Nov. 6, 1991, 3-289844

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—663 **8 Claims**



1. An apparatus for detecting dielectric constant of a fuel, said apparatus comprising:

means for applying a high frequency voltage signal;

means for subjecting the high frequency voltage signal from said applying means to resonance corresponding to the dielectric constant of the fuel;

a resistor having one end connected in series to said subjecting means and the other end to which the high frequency voltage signal is applied from said applying means;

bias control means connected to the other terminal of said subjecting means for applying a bias DC voltage to said subjecting means;

detecting means connected between said one and the other ends of said resistor for detecting a phase shift between said high frequency voltage signal of said applying means and a voltage signal provided in a connecting line between said subjecting means and said resistor;

control means for controlling the high frequency voltage signal from said applying means to adjust the phase shift detected by said detecting means to a first predetermined value, at least one of said applying means and control means producing a signal representative of the dielectric constant of the fuel.

5,313,169

METHOD OF REALIGNING THE LOCAL OSCILLATORS OF A RECEIVER AND DEVICE FOR IMPLEMENTING THE METHOD

Yvon Fouche, Chatenay Malabry; Jean-Bernard Rault, Acigne; Tristan de Couasnon, Rennes, and Raoul Monnier, Noyal S/Vilaine, all of France, assignors to Thomson-CSF, Puteaux, France

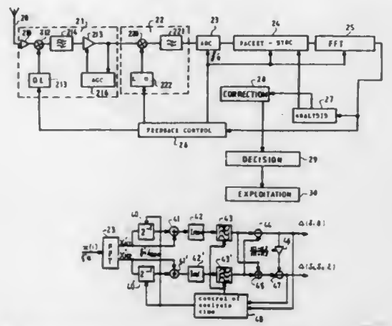
PCT No. PCT/FR91/00951, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/10043, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 890,605

Claims priority, application France, Nov. 30, 1990, 90 15015

Int. Cl.[5] H03D *3/00*

U.S. Cl. 329—302 **8 Claims**



1. Method of realigning the oscillators of a receiver comprising a high frequency/intermediate frequency translation oscillator, an intermediate frequency/baseband translation oscillator, and a sampling oscillator receiving a signal modulated according to multicarrier modulation of OFDM (Orthogonal Frequency Division Multiplexing) type using inverse fast Fourier transform FFT^{-1} computation the spectrum of the said signal comprising two master spectral lines having a fixed frequency difference between them, the method comprising computation of the variation of the phase of the two spectral lines as a function of time with the aid of fast Fourier transform on reception, then said oscillators being frequency adjustable and setting the frequency of the sampling oscillator and the frequency of at least one of the other two oscillators according to the result of said computations.

5,313,170

DIFFERENTIAL DETECTION DEMODULATOR

Toshiharu Kojima, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 997,768

Claims priority, application Japan, Dec. 27, 1991, 3-347245; Mar. 12, 1992, 4-053583; Mar. 25, 1992, 4-067124

Int. Cl.[5] H04L *27/22*

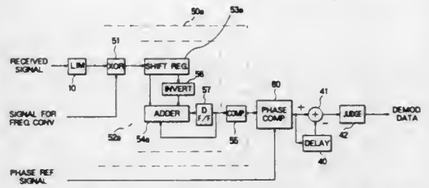
U.S. Cl. 329—306 **15 Claims**

1. A differential detection demodulator for demodulating a 2-level quantized received signal using a phase reference signal having a fixed frequency practically equal to a frequency of said received signal, said differential detection demodulator comprising:

half-period detection means for generating, in response to said received signal, a half-period detection signal at each half-period of said received signal;

phase reference signal generation means for generating said phase reference signal in response to a clock having a frequency not less than twice said frequency of said received signal;

phase shift measurement means, coupled to said half-period detection means and phase reference signal generation means and including phase inversion correction means for correcting said phase reference signal for a phase inversion thereof at each alternate half-period of said received signal, said phase shift measurement means outputting a relative phase signal representing a relative phase of said received signal with respect to said phase reference signal



at each half-period of said received signal, on the basis of said phase reference signal corrected by said phase inversion correction means and said half-period detection signal output from said half-period detection means;

a delay element coupled to said phase shift measurement means, for delaying said relative phase signal output from said phase shift measurement means by one symbol period of said received signal; and

a subtractor coupled to said phase shift measurement means and said delay element, for subtracting an output of said delay element from said relative phase signal.

5,313,171

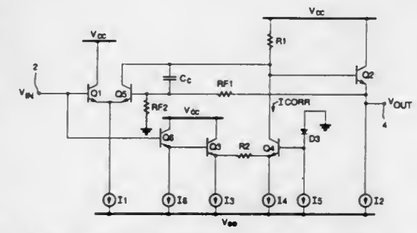
HIGH SPEED, LOW DISTORTION AMPLIFIER DESIGN AND METHOD

Lawrence M. Burns, El Segundo, and Robert Tso, South San Gabriel, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 9, 1992, Ser. No. 973,500

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—252 **20 Claims**



1. A high speed, low distortion amplifier, comprising:

a main amplifier stage that includes a resistive load and is connected to receive an input voltage and to produce an output voltage signal, said resistive load modulating the current through said main amplifier stage in response to changes in the input voltage and thus adding a DC nonlinearity to the main amplifier stage's voltage transfer function,

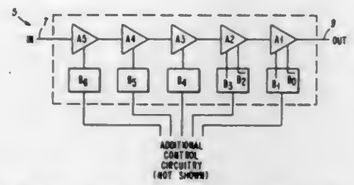
an auxiliary amplifier stage that responds to said input voltage signal to produce a correction current that substantially matches said current modulation through the main amplifier stage during normal operation of the low distortion amplifier, and

a connection circuit that connects said auxiliary amplifier stage to said resistive load so that said correction current

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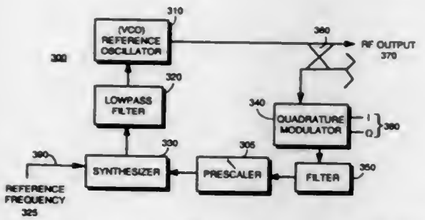
substantially supplies said current modulation, thereby alleviating said DC nonlinearity in the main amplifier stage's voltage transfer function.

5,313,172
DIGITALLY SWITCHED GAIN AMPLIFIER FOR DIGITALLY CONTROLLED AUTOMATIC GAIN CONTROL AMPLIFIER APPLICATIONS
Michael R. Vagher, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Dec. 11, 1992, Ser. No. 989,607
Int. Cl.[5] H03G 3/30
U.S. Cl. 330—254 **7 Claims**



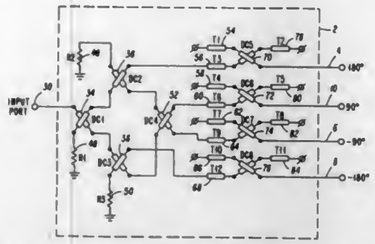
1. A digitally switched gain amplifier designed for use in binary controlled systems comprising:
a plurality of amplifier gain cells serially coupled to each other, said amplifier gain cells comprising paired transistors and paired emitter resistors and load resistors and of alternating gain of four states and two states, respectively; and
control circuitry coupled to each amplifier gain cell said contol circuitry including switching means responsive to a first control signal for enabling the amplifier cells in predetermined configurations, where the gain is provided approximately by the ration of the active emitter resistor to the active load resistor.

5,313,173
QUADRATURE MODULATED PHASE-LOCKED LOOP
Ross W. Lampe, Raleigh, N.C., assignor to Ericsson GE Mobile Communications Inc., Lynchburg, Va.
Filed Apr. 26, 1993, Ser. No. 51,875
Int. Cl.[5] H03C 3/00; H03L 7/081
U.S. Cl. 332—103 **35 Claims**



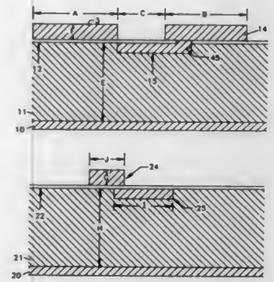
1. A phase-locked loop (PLL) phase modulator comprising:
an oscillator for generating a phase modulated carrier signal in response to a regulating signal;
a quadrature modulator for combining the phase modulated carrier signal and information signals to produce a quadrature modulated signal; and
a phase comparator for comparing the phase of the quadrature modulated signal with the phase of a reference frequency signal to produce the regulating signal.

5,313,174
2:1 BANDWIDTH, 4-WAY, COMBINER/SPLITTER
Richard C. Edwards, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 18, 1992, Ser. No. 947,860
Int. Cl.[5] H01P 5/12
U.S. Cl. 333—109 **8 Claims**



1. An apparatus for splitting an RF signal into four equal outputs and establishing a ninety degree phase relationship among said four equal parts, comprising:
means for splitting an input signal into four output signals; and
means for establishing a ninety degree phase relationship among the four output signals;
wherein said means for establishing a ninety degree phase relationship among said four output signals, accepts inputs of relative equal amplitude with relative phase delays of approximately −90°, 37.8°, −132.6°, and −90° and produces outputs with relative equal amplitude and relative phase delays of approximately 180°, 90°, −90°, and 180°.

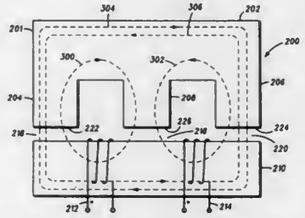
5,313,175
BROADBAND TIGHT COUPLED MICROSTRIP LINE STRUCTURES
Inder J. Bahl, Roanoke, and David A. Willems, Salem, both of Va., assignors to ITT Corporation, New York, N.Y.
Filed Jan. 11, 1993, Ser. No. 2,622
Int. Cl.[5] H01P 5/18
U.S. Cl. 333—116 **13 Claims**



1. A microwave coupled line apparatus for providing tight coupling at microwave frequencies, comprising:
a substrate formed of a semiconductor material and having a top surface, a bottom surface, a first end, and a second end;
a first embedded metal line located on said top surface of said substrate and extending from said first end of said substrate to said second end of said substrate;
a dielectric layer covering said first metal line and said top surface of said substrate;

a second metal line positioned on said dielectric layer also extending from said first end of said substrate to said second end of said substrate and positioned such that; a first portion of said first metal line is overlapped by a first portion of said second metal line, a second portion of said first metal line and a second portion of said second metal line not overlapping; and
a ground plane on said bottom surface of said substrate.

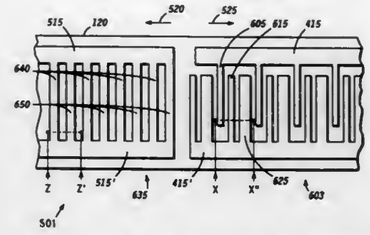
5,313,176
INTEGRATED COMMON MODE AND DIFFERENTIAL MODE INDUCTOR DEVICE
Anand K. Upadhyay, Libertyville, Ill., assignor to Motorola Lighting, Inc., Buffalo Grove, Ill.
Filed Oct. 30, 1992, Ser. No. 968,759
Int. Cl.[5] H03H 7/09; H01F 17/04
U.S. Cl. 333—181 **6 Claims**



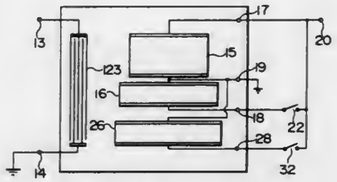
1. An inductor assembly for an EMI/RFI filter comprising:
an E-core having a body, a first outer E-core leg, a second outer E-core leg, a center E-core leg, each E-core leg having an end surface distal from the E-core body;
a second core positioned proximal to the end-surface of each E-core leg;
a first coil winding wound around the second core and between the first outer E-core leg and the center E-core leg;
a second coil winding wound around the second core and between the second outer E-core leg and the center E-core leg;
the second core and the E-core forming at least two closed magnetic paths for each windings, such that the first coil winding has a first independent magnetic path, the second coil winding has a second independent magnetic path, and the first coil winding and the second coil winding have a joint magnetic path;
the combination of the first coil and the second coil forming a common mode inductor and either the first coil winding or the second coil winding forming a differential mode inductor;
the distance between the end-surface of each E-core leg and the second core being fixedly adjustable whereby the inductance of the common mode inductor and the inductance of the differential inductor are independent of the other.

5,313,177
METHOD AND APPARATUS FOR AN ACOUSTIC WAVE FILTER
Thomas S. Hickernell, Tempe, and David Penunuri, Fountain Hills, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 6, 1992, Ser. No. 864,263
Int. Cl.[5] H03H 9/00, 9/64
U.S. Cl. 333—193 **22 Claims**

1. A method for making an acoustic wave device, said method comprising steps of:
providing an acoustic wave propagating substrate;
forming a first acoustic wave reflector on said acoustic wave propagating substrate; and
forming a first weakly unidirectional acoustic wave transducer on said acoustic wave propagating substrate adjacent to said first acoustic wave reflector in a first direction of acoustic wave propagation, the weakly unidirectional acoustic wave transducer having a directivity of less than six decibels, the acoustic wave reflector and the weakly unidirectional acoustic wave transducer thereby forming a first low-loss acoustic wave transducer having a directivity of more than ten decibels.



5,313,178
SAW FILTER USING DIFFERENCE FINGER WEIGHTING
Yasushi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 996,141
Claims priority, application Japan, Dec. 27, 1991, 3-346551
Int. Cl.[5] H03H 9/64
U.S. Cl. 333—193 **1 Claim**

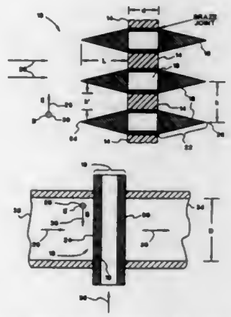


1. A surface acoustic wave filter comprising:
a piezoelectric substrate;
an input port supplied with an input electric signal;
an input interdigital transducer mounted on said piezoelectric substrate and connected to said input port for converting said input electric signal into an input surface acoustic wave, said input interdigital transducer making said piezoelectric substrate propagate said input surface acoustic wave as a propagated surface acoustic wave thereon;
a plurality of output interdigital transducers mounted on said piezoelectric substrate with said output interdigital transducers opposed to said input interdigital transducer apart therefrom, said output interdigital transducers having weighting factors which are different from one another, said output interdigital tranducers receiving said propagated surface acoustic wave as received surface acoustic waves and converting said received surface acoustic waves into output electric signals:
a plurality of output ports connected to said output interdigital transducers for producing said output electric signals;
a filter output terminal directly connected to one of said output ports; and
switching means connected between said filter output terminal and remaining output ports except for said one of said

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output ports for selectively connecting one of said remaining output ports to said filter output terminal to make said filter output terminal produce a filtered output signal which is equal to a sum of at least one of said output electric signals, wherein one of said output interdigital transducers that is connected to said one of the output ports has a primary weighting factor, each of remaining output interdigital transducers except for said one of the output interdigital transducers having difference weighting factor.

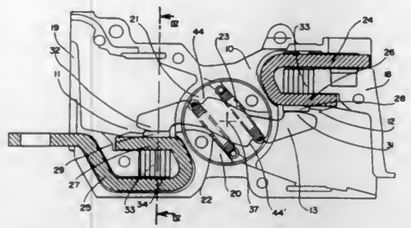
5,313,179
DISTRIBUTED WINDOW FOR LARGE DIAMETER WAVEGUIDES
Charles P. Moeller, Del Mar, Calif., assignor to General Atomics, San Diego, Calif.
Filed Oct. 7, 1992, Ser. No. 958,029
Int. Cl.[5] H01P *1/08*
U.S. Cl. 333—252 **20 Claims**



1. A distributed microwave window for use within a microwave waveguide comprising:
a plurality of alternating dielectric and metallic strips stacked and sealed to form a vacuum barrier;
said vacuum barrier being positioned and sealed so as to provide a physical barrier within the interior of said waveguide;
each of said plurality of dielectric strips having a substantially rectangular cross-sectional shape; with a first set of opposing sides being sealed to respective sides of adjacent ones of said metallic strips, and with a second set of opposing sides fronting the interior of said waveguide; and
each of said metallic strips having a substantially hexagonal cross-sectional shape, with a first set of opposing sides being sealed to respective sides of adjacent ones of said dielectric strips, and with a second and third set of opposing sides of said hexagonal-shaped metallic strip being exposed to the interior of said waveguide to form a taper.

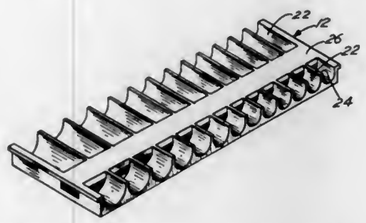
5,313,180
MOLDED CASE CIRCUIT BREAKER CONTACT
Denis Vial, Fontaine; Jean Bofils, Seyssins, and Marc Rival, Panissage, all of France, assignors to Merlin Gerin, France
Filed Mar. 4, 1993, Ser. No. 26,300
Claims priority, application France, Mar. 13, 1992, 92 03141
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **4 Claims**

1. A low-voltage limiting circuit breaker having an outer case, comprising:
a rotary contact bridge;
a pair of stationary contacts cooperating with said contact bridge;
a conductor for current input to each of said stationary contacts, each conductor extending in the plane of movement of said contact bridge and shaped as a half-loop having a first and a second parallel strand spaced apart, the first strand bearing a stationary contact part;
a bar having a transverse opening, a central part of the contract bridge being located in said transverse opening, said contact bridge being rotatably mounted with respect to said bar toward an opening direction; and
a rigid metal block inserted between the first and second



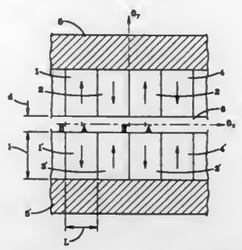
strands of each conductor, said rigid metal block being adjoined to the first strand opposite from the stationary contact part, wherein an air-gap is formed between the rigid metal block and the second strand, portions of the metal block extending into grooves provided in side walls of the outer case so as to rigidly secure the rigid metal block to the outer case and prevent movement therebetween, the rigid metal block being made of ferromagntic material to strengthen a magnetic field for arc blowout.

5,313,181
MAGNETIC SOCKET HOLDER
Joel A. Negus, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa
Filed Jan. 7, 1993, Ser. No. 1,534
Int. Cl.[5] H01F *7/20*; A45F *5/00*
U.S. Cl. 335—285 **11 Claims**



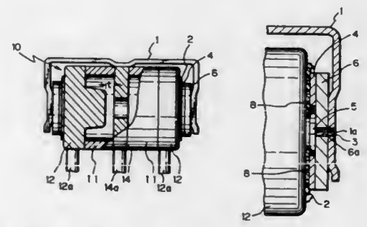
1. An improved magnetic socket holder comprising, in combination:
a non-magnetic material tray including a plurality of generally parallel troughs, the top of each trough being open to receive a socket, said tray including a transverse magnet support channel abutting one end of each trough, said channel being open at said one end of each trough; and
a first magnet in the magnet support channel, said first magnet having a top surface and a bottom surface, a longitudinal dimension generally transverse to said one end of the trough, said first magnet extending across the said one end of all the troughs, said first magnet having one pole along the top surface and another pole along the bottom surface whereby a socket of magnetically responsive material in any trough will bridge the poles and form a closed magnetic circuit.

5,313,182
MAGNET STRUCTURE FOR A DISPLACEMENT SENSOR
Claire Blache, Echirolles, France, assignor to The Torrington Company, Torrington, Conn.
Filed Feb. 26, 1993, Ser. No. 23,646
Int. Cl.[5] H01F *7/02*
U.S. Cl. 335—306 **14 Claims**



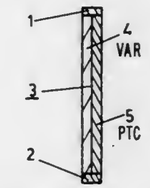
1. A magnet structure for a linear displacement sensor, the magnet structure comprising:
two magnetic circuits separated by an air gap and respectively made up of a series of permanent magnets attached and rigidly held together by flux return yokes, one side of each of the magnetic circuits facing the air gap such that magnets of one magnetic circuit face opposing magnets of the other magnetic circuit, directions of magnetization of the opposing magnets being antiparallel with respect to opposed magnets, directions of magnetization of magnets of each magnetic circuit being antiparallel with respect to adjacent magnets of the same magnetic circuit, each of the magnets having a length approximately two times larger than the air gap.

5,313,183
GAS-TUBE ARRESTER
Masataka Kasahara, Nagano, Japan, assignor to Shinko Electric Industries Co., Inc., Nagano, Japan
Filed Aug. 20, 1993, Ser. No. 109,267
Claims priority, application Japan, Aug. 22, 1992, 4-245786
Int. Cl.[5] H01H *83/10*; H02H *7/24*
U.S. Cl. 337—32 **15 Claims**



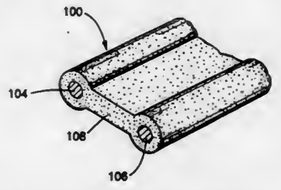
1. A gas-tube arrester comprising:
an arrester body containing an inert gas and having first and second electrodes positioned in spaced, facing relationship to each other with an insulator therebetween;
an insulating, heat-resistant film in contact with said first electrode, said insulating film having an opening and a plurality of small holes arranged around said opening;
a first metal plate layered on said insulating film, said first metal plate having an opening communicating with said opening of said insulating film;
a second, low-melting point metal plate layered on said first metal plate to cover said openings, said second metal plate having a melting point lower than a softening temperature of said insulating film;
a conductive leaf spring electrically connected to said second electrode and pressing said second metal plate toward said first metal plate, so that, when a high voltage is applied between said first and second electrodes, an electrical discharge occurs between said first electrode and said first metal plate through said small holes of the insulating films, and whereby when said second metal plate is fused by heat of said arrester body, the fused metal thereof flows through said openings to electrically connect said leaf spring to said first electrode.

5,313,184
RESISTOR WITH PTC BEHAVIOR
Felix Greuter, Baden-Rütihof; Claus Schüler, Widen, and Ralf Strümpler, Baden, all of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland
Filed Dec. 11, 1992, Ser. No. 989,555
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142523
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—21 **17 Claims**



1. An electric resistor comprising: a resistor core which is arranged between two contact terminals and including a material which has PTC behavior and, below a material-specific temperature, forms at least one electrically conducting path running between the two contact terminals, wherein the resistor core additionally includes a material having varistor behavior, and wherein the varistor material is electrically connected in parallel with at least one subsection of the at least one electrically conductive path, forming at least one varistor, and is brought into intimate electric contact with the part of the PTC material forming the at least one subsection.

5,313,185
TEMPERATURE SENSING CABLE DEVICE AND METHOD OF MAKING SAME
Robert M. DeChurch, Canfield, Ohio, assignor to Furon Company, Aurora
Division of Ser. No. 703,282, May 20, 1991, Pat. No. 5,185,594.
This application Feb. 8, 1993, Ser. No. 15,351
Int. Cl.[5] H01C *3/04, 7/10*
U.S. Cl. 338—22 R **31 Claims**



1. A temperature sensing element comprising:
an extruded composition having a negative temperature coefficient of electrical resistance above an anomaly temperature and containing at least one polymeric component and an amount of electrically conductive particles therein

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to promote said negative temperature coefficient characteristic of the composition when above the anomaly temperature and in a presence of an electric field sufficient to promote tunneling conduction in said composition; and,

at least two spaced-apart electrical conductors electrically interconnected by means of the extruded composition.

5,313,186

SENSOR OF WEAK MAGNETIC FIELDS, WITH MAGNETORESISTIVE EFFECT

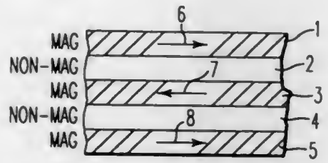
Alain Schuhl, Clamart, and Stephane Tyc, Paris, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Dec. 16, 1992, Ser. No. 991,589

Claims priority, application France, Dec. 23, 1991, 91 16042

Int. Cl.[5] H01L *43/00*; G01R *33/02*

U.S. Cl. 338—32 R **4 Claims**



1. A sensor of magnetic fields with magnetoresistive effect comprising:

a first layer of magnetic material being magnetized in a first predetermined direction;

a second layer of magnetic material being magnetized in a second predetermined direction opposite to the first predetermined direction;

a third layer of magnetic material being magnetized in a first predetermined direction;

wherein the second layer of magnetic material is formed between the first and third layers of magnetic material;

a first layer of non-magnetic material formed between the first and second layers of magnetic material;

a second layer of non-magnetic material formed between the second and third layers of magnetic material; and

wherein a thickness of the first layer of non-magnetic material is different than a thickness of the second layer of non-magnetic material, thereby the first and second layers of magnetic material being anti-ferromagnetically coupled together and the second and third layers of magnetic material being ferromagnetically coupled together.

5,313,187

BATTERY-POWERED FLASHING SUPERLUMINESCENT LIGHT EMITTING DIODE SAFETY WARNING LIGHT

Robert S. Choi, Landisville; C. Kwai Kong, Mount Joy, and Oong Choi, Lancaster, all of Pa., assignors to Bell Sports, Inc., Calif.

Continuation-in-part of Ser. No. 420,068, Oct. 11, 1989, abandoned. This application Sep. 6, 1990, Ser. No. 578,504

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] G08B *5/00*; B60Q *7/00*

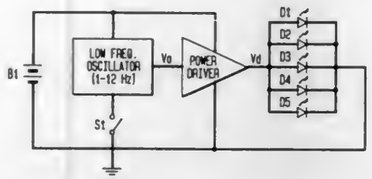
U.S. Cl. 340—331 **16 Claims**

1. A battery-powered flashing superluminescent light emitting diode safety-warning light, comprising:

at least one superluminescent light emitting diode;

battery means for supplying direct current; and

drive means operably connected with said at least one superluminescent light emitting diode and with said battery means for driving said at least one superluminescent light emitting diode with a drive signal Vd consisting of pulses



of direct current at a frequency in the range of 1Hz to 12Hz and a pulse duty cycle in the range of 5% to 10%.

5,313,188

BATTERY-POWERED FLASHING SUPERLUMINESCENT LIGHT EMITTING DIODE SAFETY WARNING LIGHT

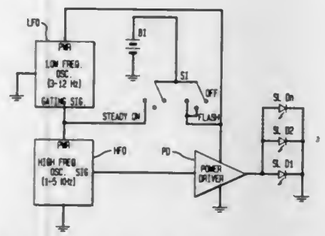
Robert S. Choi, Landisville; C. Kwai Kong, Mount Joy, and Oong Choi, Lancaster, all of Pa., assignors to Bell Sports, Inc., Calif.

Division of Ser. No. 742,205, Aug. 5, 1991, Pat. No. 5,175,528, which is a continuation of Ser. No. 420,068, Oct. 11, 1989, abandoned. This application Dec. 28, 1992, Ser. No. 997,201

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] G08B *5/00*; B60Q *7/00*

U.S. Cl. 340—331 **5 Claims**



1. A flashing safety warning light, comprising:

a light source comprising at least one superluminescent light emitting diode;

a power source for activating said superluminescent light emitting diode; and

a gating means for gating the application of power rom said power source to said light source in pulses at a frequency in the range of 3–12 Hz and with a pulse duty cycle in the range from 10–60%, to thereby cause said light source to be illuminated and extinguished at a visually perceptible rate.

5,313,189

VEHICLE WHEEL SAFETY BARRIER SYSTEM USING PRESSURE AND INFRARED SENSORS

Ian Dodd, Rigaud, and James Anglehart, Montreal, both of Canada, assignors to BBI Fibre Technologies, Inc., Quebec, Canada

Filed Sep. 30, 1992, Ser. No. 954,529

Int. Cl.[5] B60Q *1/26*

U.S. Cl. 340—433 **10 Claims**

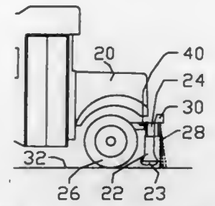
1. A vehicle wheel safety barrier system comprising:

a barrier member for blocking an object from reaching at least one wheel of the vehicle as the vehicle is moving;

motor mount means for raising and lowering the barrier member, and for connecting the barrier member to a frame of the vehicle;

first sensing means for detecting when an object comes in contact with the barrier member and for producing a first output signal in response to the presence of an object;

infrared sensing means for detecting infrared radiation in a zone in front of the barrier member and for producing an infrared output signal in response to the presence of an object;



selecting means for providing a climate condition signal indicative of at least a first and second weather condition outside the vehicle; and

means for generating a warning alarm when the barrier member is lowered, as a function of the climate condition signal wherein said generating means is responsive to the infrared output signal of the infrared sensing means when the first weather condition is selected and said generating means is responsive to the first sensing means when the second weather condition is selection.

5,313,190

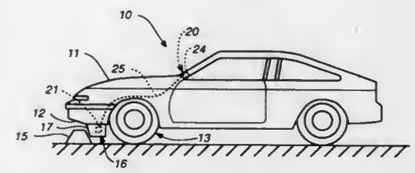
DETECTOR FOR PROTECTING AIR DAMS OF MOTOR VEHICLES

Ruben E. Clayton, 34338 Kenwood Dr., Fremont, Calif. 94555, and John M. Mueller, 6621 W. Roosevelt, Phoenix, Ariz. 85043

Filed Jun. 5, 1992, Ser. No. 894,452

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—436 **11 Claims**



1. In combination, a motor vehicle having an air dam and a front end structure to which said air dam is mounted upon and beneath, said air dam including a deflector panel subject to engagement with an object to be avoided and being damaged by such engagement, an antenna mounted to said motor vehicle adjacent to said air dam to capacitively detect positional proximity of said object to be avoided, a resistance-capacitance balance circuit connected to said antenna, a pair of monolithically structured Schmitt sensing and reference triggers each having an output leg and an inlet leg connected to said balance circuit through a toggle point wherein said toggle point of each varies as a function of loading of said balance circuit, a third monolithically structured Schmitt trigger having an input leg connected to ground through a capacitor and to said balance circuit through a resistor, said capacitor and said resistor forming a free running oscillator to drive said pair of Schmitt sensing and reference triggers through said balance circuit with a drive waveform having a frequency F, said output legs of said pair of Schmitt sensing and reference triggers being connected to a common junction point where a compared output signal is generated as a function of distance of said object to be avoided to said antenna, a signal comparator in circuit with said junction point and having an output leg, said signal comparator being responsive to said compared output signal at said common junction point to generate an alert signal, and means responsive to said alert signal for activating an alarm.

5,313,191

WARNING DEVICE FOR AN ELECTRIC VEHICLE

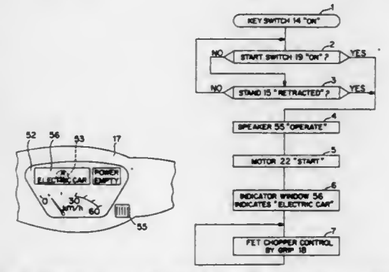
Shoji Yamashita; Shoji Motodate; Yoshihiro Nakazawa; Satoshi Honda, and Kenji Tamaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1991, Ser. No. 774,595

Claims priority, application Japan, Nov. 26, 1990, 2-123953[U]; Mar. 22, 1991, 3-059218

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—439 **23 Claims**



1. A warning device for use in an electric vehicle comprising:

a frame member;

ground engaging wheels operatively mounted relative to said frame member;

an electric motor operatively connected to said frame member and said ground engaging wheels for supplying rotational motion to said ground engaging wheels;

a first switch means for selectively energizing the electric motor; and

an indicator means for indicating to an operator that the preparation for starting the electric vehicle has been completed for avoiding a discomfort to the operator during initial movement of the electric vehicle, said indicating means being responsive to a rotational speed of said motor and being deactuated during a running condition.

5,313,192

DEACTIVATABLE/REACTIVATABLE MAGNETIC MARKER HAVING A STEP CHANGE IN MAGNETIC FLUX

Wing Ho, Deerfield Beach, Fla., and Jiro Yamasaki, Fukuoka, Japan, assignors to Sensormatic Electronics Corp., Deerfield Beach, Fla.

Filed Jul. 2, 1992, Ser. No. 907,600

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—551 **69 Claims**

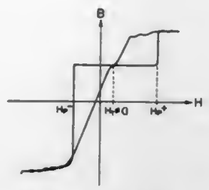
1. A marker for use in an article surveillance system in which an applied alternating magnetic field is established in a surveillance zone and an alarm is activated when a predetermined perturbation to said field is detected, said marker comprising:

a) a marker element including first and second integral components, said first component comprising a soft magnetic material and said second component comprising a hard or semi-hard magnetic material;

b) said marker element having an active state wherein said marker element exhibits a hysteresis characteristic upon

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being subjected to the applied alternating magnetic field such that the magnetic flux of said marker element undergoes substantially no change during the time from when the applied field passes through a preselected offset field value toward and until the applied field reaches a predetermined threshold value, undergoes a regenerative step change at the time when the applied field reaches the predetermined threshold value and undergoes a gradual change during the time from when the applied field passes through the predetermined threshold value toward and until the applied field reaches the preselected offset field value;



c) said marker element having a deactivated state wherein said marker element exhibits a different hysteresis characteristic from the hysteresis characteristic exhibited by said marker element in the active state;

d) said second component of said marker element having an activating state which places said marker element in said active state and a deactivating state which places said marker element in said deactivated state;

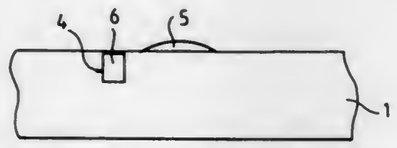
whereby the marker element is switched between said active state and said deactivated state by switching said second component between said activating state and said deactivating state, respectively.

5,313,193

OBJECT-MARKING MEANS, METHOD FOR MAKING SUCH MEANS AND READING DEVICE

Jean-Clude Dubois, St Remy les Chevreuses, and John Magarshack, Rueil Malmaison, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Jun. 21, 1991, Ser. No. 718,983
Claims priority, application France, Jun. 29, 1990, 90 08225
Int. Cl.[5] G02B *21/00*
U.S. Cl. 340—572 **10 Claims**



1. An identification system for identifying an object to which it is attached, comprising:

an etching on a surface of the object; and

a marking means for locating the etching, said marking means being attached to the object and disposed near the etching;

an electronic circuit for storing an identification data associated with said object; and

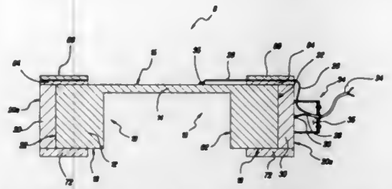
a wave emitter-receiver antenna connected to said electronic circuit.

5,313,194

RUPTURE DISK SENSING ASSEMBLY

Richard V. Varos, 820 Coy La., Chagrin Falls, Ohio 44022

Filed Apr. 14, 1992, Ser. No. 868,450
Int. Cl.[5] G08B *21/00*; F16K *17/14*; H01H *85/00*
U.S. Cl. 340—626 **17 Claims**



1. An integral rupture disk and sensor assembly comprising:

a) a rupture disk of conductive material comprising a pressure sensitive membrane portion and an outer circumferential surface;

b) a first conductor secured to said pressure sensitive membrane portion; and

c) a second conductor secured to said outer circumferential surface,

wherein said first and second conductors are adapted to form a complete circuit through said disk.

5,313,195

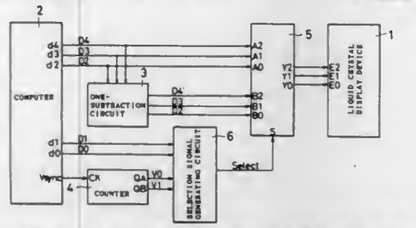
Patent Not Issued For This Number

5,313,196

METHOD AND APPARATUS FOR DRIVING A DISPLAY DEVICE

Hiroshi Tanaka, Higashiosaka, and Kaoru Nakanishi, Izumisano, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1991, Ser. No. 757,333
Claims priority, application Japan, Sep. 17, 1990, 2-247846
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—147 **4 Claims**



1. A method of driving a display device for applying digital values to pixels arranged in matrix on a display panel as corresponding display data, and illuminating the pixels at a brightness corresponding to the magnitude of the digital values to achieve gradation display, the method comprising

setting plural display frame periods as one cycle,

giving digital value α as display data in several display frames selectively determined within the cycle,

giving digital value $\beta=\alpha\pm M$ (M being a positive integer) as display data in other display frames in the same cycle, and

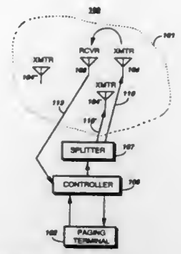
displaying a halftone gradation between the gradation corresponding to the digital value α and the gradation corresponding to the digital value β in plural stages corresponding to the rate of the number of display frames provided with the digital value α and the number of display frames provided with the digital value β.

5,313,197

SELF-DIAGNOSTIC PAGING SYSTEM

William M. Barr, Lake Worth, and Steven J. Goldberg, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 27, 1991, Ser. No. 766,371
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.44 **27 Claims**



1. A paging system, comprising:

transmitting means for transmitting first information comprising a transmitted page into a paging channel while maintaining the paging system on-line, the transmitted page being destined for a customer paging receiver;

receiving means other than the customer paging receiver for receiving second information from the paging channel while the transmitting means is transmitting the first information into the paging channel, the second information corresponding to the first information comprising the transmitted page; and

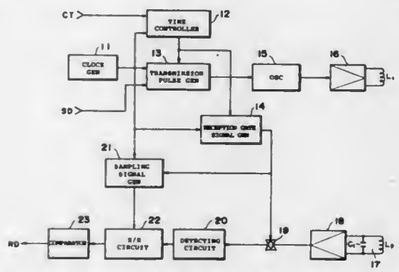
diagnostic means, coupled to the transmitting means and the receiving means, for monitoring the first and second information to determine whether the transmitted page was correctly received by the receiving means while maintaining the paging system on-line.

5,313,198

DATA COMMUNICATION APPARATUS

Iichi Hirao; Kazunori Morikawa; Hisato Fujisaka, all of Kyoto, and Ryoichi Miyake, Kameoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 641,806, Jan. 16, 1991, abandoned, which is a continuation of Ser. No. 280,498, Dec. 6, 1988, abandoned. This application May 28, 1993, Ser. No. 68,263
Int. Cl.[5] G08C *19/00*
U.S. Cl. 340—825.54 **12 Claims**



1. A data communicating apparatus for performing a half-duplex transmission of serial data between a first device and a second device, wherein

said first device comprises:

(a) an oscillator which has a first coil arranged on a surface which can face said second device;

(b) transmission pulse generating means for generating a transmission pulse signal of a predetermined period having a first or second duty ratio in correspondence to a transmission data signal upon data transmission and a predetermined third duty upon data reception, and for giving the transmission pulse signal of the predetermined period to said oscillator to cause said oscillator to intermittently oscillate in accordance with the duty ratio provided by said transmission pulse generating means;

(c) a first resonance circuit which has a resonance frequency that is substantially equal to an oscillating frequency of said oscillator and which includes a second coil arranged on the surface that can face the second device;

(d) a timing control circuit for providing a signal which causes said transmission pulse generating means to provide said transmission pulse signals to said oscillator;

(e) reception gate signal generating means connected to said timing control circuit for receiving said timing control circuit signal and for generating a reception gate signal having a timing corresponding to when the oscillation of said oscillator is stopped;

(f) a first detecting circuit switchingly connected to said first resonance circuit for detecting an electromagnetic induction signal obtained in said first resonance circuit for a time when said reception gate signal of said reception gate signal generating means switchingly connects said detecting circuit to said first resonance circuit;

(g) a sample and hold circuit for sampling an output of said first detecting circuit at a predetermined timing of the reception gate signal; and

(h) a first comparator for comparing a signal held by said sample and hold circuit with a predetermined level,

and said second device comprises:

(i) a second resonance circuit which has a resonance frequency that is substantially equal to the oscillating frequency of said oscillator of said first device and which includes a third coil arranged on a surface that can face said first device;

(ii) a second detecting circuit for detecting a signal obtained in said second resonance circuit;

(iii) a second comparator for reproducing a transmission pulse signal received by said second resonance circuit and transmitted by said first device by comparing a detection output of said second detecting circuit with a predetermined threshold level;

(iv) a data demodulating means for demodulating a transmission data signal represented by the first and second duty ratios of said transmission pulse signal on the basis of an output of said second comparator upon data reception from said first device; and

(v) memory control means for writing/reading a transmission data signal in/out of a memory; and

(vi) reverberation control means which has switching elements connected between said second resonance circuit and ground and which upon receiving transmission data from said memory control means controls a reverberation that is caused in said second resonance circuit by turning on/off said switching elements in correspondence to transmission data at the timing of the cessation of the oscillation of said oscillator on the basis of reception of a transmission pulse signal having the third duty ratio which is derived from said second comparator upon data transmission to said first device.

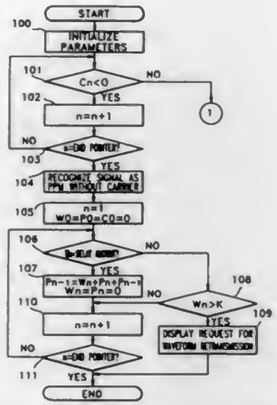
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,199

METHOD FOR DETECTING AND CORRECTING PULSE NOISE IN MULTIFUNCTIONAL REMOTE CONTROL TRANSMITTER

Sun-don Kwon, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 16, 1991, Ser. No. 777,630
Claims priority, application D.P.R. of Korea, Oct. 27, 1990, 90-17285
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.57 29 Claims



1. A method for detecting and correcting pulse noise in a multifunctional remote control transmitter, said method comprising the steps of:

comparing a number of carrier pulses included in a received pulse-phase modulation signal with a set number to determine existence of a carrier in said received pulse-phase modulation signal on the basis of the comparison;

detecting a pulse width of a noise signal based on a comparison to a reference value to detect a certain noise level when said received pulse-phase modulation signal is a pulse-phase modulation signal without a carrier;

correcting the detected noise signal if detected in said noise signal detecting step;

generating a request for retransmission in response to determining said received pulse-phase modulation signal as an unrestorable signal when said pulse width of said noise signal is larger than a maximum set value;

comparing said number of carrier pulses included in said received pulse-phase modulation signal with said set number when said received pulse-phase modulation signal is determined to be a pulse-phase modulation signal with a carrier in said step of determining the existence of said carrier in said received pulse-phase modulation signal;

comparing an "ON" pulse width of said received pulse-phase modulation signal with said carrier to a certain width when said number of carrier pulses is less than said set number and generating a request for retransmission when said "ON" pulse width is greater than said certain width, and correcting a noise signal when said "ON" pulse width is smaller than said certain width; and

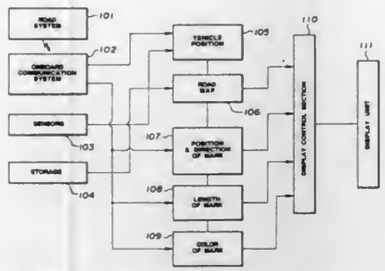
connecting an "OFF" pulse width occurring from a weakened received signal when said "OFF" pulse width is smaller than a certain value, and generating a request for retransmission when said "ON" pulse width is greater than the maximum set value and said "OFF" pulse width is greater than said certain value.

5,313,200

ROAD TRAFFIC CONGESTION DISPLAY SYSTEM

Gaku Sone, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 11, 1992, Ser. No. 849,561
Claims priority, application Japan, Mar. 28, 1991, 3-90044
Int. Cl.[5] G08G *1/09, 1/00*
U.S. Cl. 340—905 11 Claims



1. A traffic congestion display system comprising:

a communicating means for receiving radio signals and for transmitting traffic information; and

a displaying means for displaying a road map image on a screen, and a directional congestion mark indicating a direction of a road congestion in a road section on said road map image; wherein

said communicating means and said displaying means are both mounted on a vehicle,

said displaying means comprises a display unit comprising said screen, and an image processing means for controlling said display unit to display said road map image and said directional congestion mark which indicates a position of a congested road section and a congested traffic direction which is one of up and down directions in said congested road section, said up and down directions being opposite traffic directions along said congested road section,

said direction congestion mark comprises at least one arrow and further indicates a length of a road traffic congestion with the number of said at least one arrow, and

when the number of said at least one arrow is greater than one, said directional congestion mark comprises a plurality of the arrows which are arranged in a line segment at regular intervals and all directed to one end of said line segment.

5,313,201

VEHICULAR DISPLAY SYSTEM

Timothy D. Ryan, Darnestown, Md., assignor to Logistics Development Corporation, Darnestown, Md.

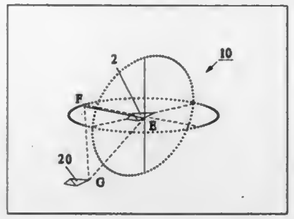
Filed Aug. 31, 1990, Ser. No. 575,605
Int. Cl.[5] G08G *5/04*
U.S. Cl. 340—961 34 Claims

1. A display system comprising the combination of:

means for obtaining coordinates of a host craft and other objects situated within a predetermined distance from the host craft; and

means for dynamically displaying said host craft and said other objects on a two-dimensional screen,

wherein said host craft is displayed as being stationary and all objects on the screen are displayed at positions given by projections onto a principal plane of the screen of their positions in a three-dimensional coordinate system having an origin located at the position of the host craft and three mutually perpendicular coordinate axes, at least two of which appear to a viewer to be located outside the principal plane of the screen and such that all objects within a predetermined distance from the host craft, on all sides of the host craft, are therefore displayed relative to the three axes in a purely graphical manner which conveys to a user of the system the exact position of the other objects relative to the host craft without necessitating inclusion of alphanumeric characters in the display, said display system further comprising means for transforming said coordinates obtained by said host craft coordinate obtaining means into said three-dimensional coordinate system having said origin located at the position of the host craft, and



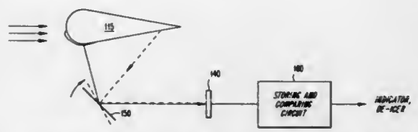
wherein said display means further comprises means for indicating the direction of movement of said host craft and said other objects in relation to said coordinate system, said direction indicating means further comprising means for representing the host craft by four points connected by at most six lines to form a tetrahedron, one vertex of which points in the direction of movement of the host craft, the triangular side opposite said vertex having a smaller area than the other sides of the tetrahedron.

5,313,202

METHOD OF AND APPARATUS FOR DETECTION OF ICE ACCRETION

Robert J. Hansman, Jr., Cambridge, Mass., and Adam L. Dershowitz, New York, N.Y., assignors to Massachusetts Institute of Technology, Mass.

Continuation of Ser. No. 635,888, Jan. 4, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,822
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—962 19 Claims



1. Apparatus for detecting ice on a surface, said apparatus comprising:

passive infrared sensor means for receiving infrared radiation emitted by an ice accretion region on the surface and for generating a signal indicative of a characteristic of said infrared radiation; and

means, responsive to said passive infrared sensor means, for detecting ice in said ice accretion region at least partially on the basis of said signal,

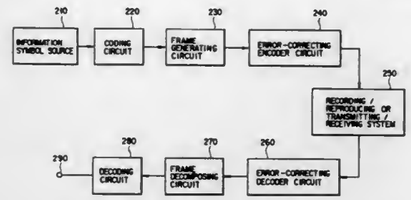
wherein the surface is at least part of a surface of an airfoil of an aircraft, the ice accretion region occurring at a leading edge of the airfoil, and wherein the passive infrared sensor means comprises a passive infrared sensor mounted on a fuselage of the aircraft.

5,313,203

CODING APPARATUS AND METHOD FOR CODING INFORMATION SYMBOL STRINGS BY ASSIGNING FIXED LENGTH CODES THERETO

Hiroshi Sun, Chigasaki; Tomoo Yamakage, Kawasaki, and Katsumi Takahashi, Oosaka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 26, 1992, Ser. No. 935,872
Claims priority, application Japan, Aug. 26, 1991, 3-213626; Sep. 30, 1991, 3-278712; Mar. 16, 1992, 4-55963
Int. Cl.[5] H03M *7/40*
U.S. Cl. 341—50 18 Claims



1. A coding apparatus for coding information signals symbolized to at least one of information symbols, comprising:

coding means for assigning fixed-length code words to a plurality of information symbol strings consisting of at least one type of a given number of said information symbols and outputting said fixed-length code words acquired on the basis of said assignment;

control information adding means for adding control information containing information for performing word synchronization; and

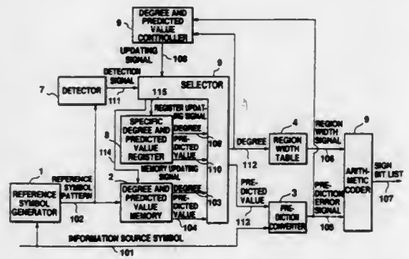
transmitting/recording means including at least one of means for transmitting and means for recording said fixed-length code words added with said control information.

5,313,204

ENCODING AND DECODING DEVICES WITH PREDICTOR AND DETECTOR

Takayoshi Semasa; Makoto Matsumoto; Yukiyasu Kawahata; Tomohiro Kimura, and Fumitaka Ono, all of Kamukura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,083
Claims priority, application Japan, Apr. 25, 1991, 3-122672; Oct. 30, 1991, 3-311910
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—107 19 Claims



1. An encoding device for encoding symbols in an output symbol stream which is output from an information source by predicting a value for each symbol to be encoded from values of a plurality of reference symbols at predetermined positions

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in said output symbol stream resulting in a predicted value, and by encoding a prediction error signal which indicates a difference between said predicted value and an actual value of said symbol to be encoded, said encoding device comprising:

(a) a reloadable order and predicted value memory for storing the predicted value of said symbol to be encoded, and an order which is an indicator of a percentage of accurate prediction;

(b) a specific pattern detector for detecting that the values of said plurality of reference symbols are a predetermined specific reference symbol pattern or one of a number of predetermined specific reference symbol patterns and for providing a detection signal;

(c) at least one specific reloadable order and predicted value register for storing said order and said predicted value when said specific reference symbol pattern is detected, said register being accessible at a higher speed than said order and predicted value memory;

(d) a selector for choosing between an output of said order and predicted value memory and an output of said specific order and predicted value register in accordance with the detection signal;

(e) a prediction converter for outputting a prediction error signal which indicates a difference between said predicted value selected and output by said selector, and said actual value of said symbol to be encoded;

(f) an arithmetic coder for encoding said prediction error signal on the basis of the information on said predicted value and said order which are selected and output by said selector; and

(g) an order and predicted value controller for judging whether or not said actual value of the encoding symbol is coincident with said predicted value, and for updating said predicted value and said order which correspond to the values of said plurality of reference symbols in said order and predicted value memory or in said specific order and predicted value register in accordance with the result of said judgment.

5,313,205

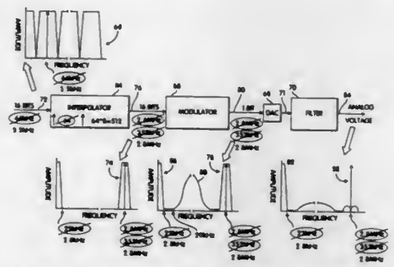
METHOD FOR VARYING THE INTERPOLATION RATIO OF A DIGITAL OVERSAMPLING DIGITAL-TO-ANALOG CONVERTER SYSTEM AND APPARATUS THEREFOR

James Wilson, Sharon, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 6, 1993, Ser. No. 43,408

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **20 Claims**



1. A digital oversampling DAC system comprising:

an interpolator receiving a digital input signal having an input sampling frequency and upsampling the digital input signal to produce an upsampled signal, the interpolator having an interpolation ratio, and including control circuitry to set the interpolation ratio such that quantization noise is moved substantially outside of a passband of the input signal;

a noise shaping modulator, coupled to the interpolator, operating at a clock rate, receiving the upsampled signal and outputting a noise-shaped n-bit digital stream;

an n-bit DAC, coupled to the modulator, receiving the n-bit digital stream and converting the n-bit digital stream to an analog signal; and

a low pass filter, coupled to the n-bit DAC, receiving the analog signal and reducing high frequency quantization noise.

5,313,206

SUB-RANGING ANALOGUE TO DIGITAL CONVERTER USING DIFFERENTIAL SIGNALS AND DIRECT CURRENT SUBTRACTION

Christopher Davies, and James D. Y. Collier, both of Cambridge, England, assignors to Cambridge Consultants Limited, Cambridge, England

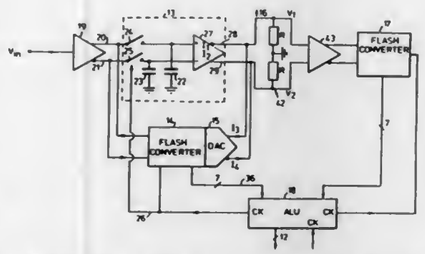
PCT No. PCT/GB91/00508, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO91/15899, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 2, 1991, Ser. No. 927,472

Claims priority, application United Kingdom, Apr. 3, 1990, 9007465

Int. Cl.[5] H03M *1/14*

U.S. Cl. 341—156 **6 Claims**



1. An analogue to digital converter comprising a first analogue to digital conversion stage for performing a relatively coarse conversion on a sample of an analogue input signal; a sample and hold stage for holding the sample of the analogue signal fed to the first conversion stage while it is converted by the first conversion stage; a digital to analogue conversion stage to which the digital output from the first conversion stage is fed; difference means for generating an analogue difference signal representing the difference between the signal held by the sample and hold stage and the output from the digital to analogue conversion stage; a second analogue to digital conversion stage for generating a digital output corresponding to the difference signal; and combining means for combining the digital outputs of the first and second conversion stages to generate a digital output representing the sampled analogue input signal characterized in that the sample and hold stage and the first and second analogue to digital conversion stages each responds to a respective pair of differential input signals; in that each of the sample and hold and digital to analogue conversion stages generates output signals in the form of differential pairs of currents; and in that the difference means arithmetically combines appropriate pairs of the currents from the sample and hold and digital to analogue conversion stages to generate a differential current pair for input to the second analogue to digital conversion stage.

5,313,207

DIFFERENTIAL SUBTRACTER IMPROVED FOR HIGHER ACCURACY AND A/D CONVERTER INCLUDING THE SAME

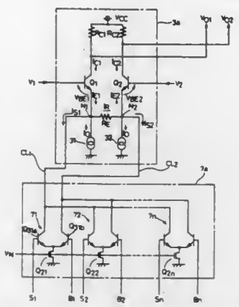
Hiroyuki Kouno; Takahiro Miki, and Toshio Kumamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 71,497

Claims priority, application Japan, Dec. 22, 1992, 4-342091

Int. Cl.[5] H03M *1/12*

U.S. Cl. 341—156 **16 Claims**



1. A differential subtracter circuit for subtracting a second differential signal defined by third and fourth input signals from a first differential signal defined by first and second input signals, comprising:

a first bipolar transistor having a base electrode connected to receive said first input signal and an emitter electrode connected to receive said third input signal;

a second bipolar transistor having a base electrode connected to receive said second input signal and an emitter electrode connected to receive said fourth input signal;

a first constant current source connected between a first supply potential and said emitter electrode of said first bipolar transistor;

a second constant current source connected between said first supply potential and said emitter electrode of said second bipolar transistor;

first resistor means connected between a second supply potential and a collector electrode of said first bipolar transistor;

second resistor means connected between said second supply potential and a collector electrode of said second bipolar transistor; and

emitter resistor means connected between said emitter electrodes of said first and second bipolar transistors, wherein

a subtraction differential signal indicative of a result of subtraction is outputted through said collector electrodes of said first and second bipolar transistors.

5,313,208

METHOD OF TRANSMITTING ANALOG SIGNALS IN DIGITAL FORM

Mario Bellini, Via Stretta, 196, Brescia, Italy 25060

Filed Jun. 26, 1992, Ser. No. 916,060

Claims priority, application Italy, Jul. 26, 1991, MI91A 002083

Int. Cl.[5] H03M *1/50*

U.S. Cl. 341—166 **8 Claims**

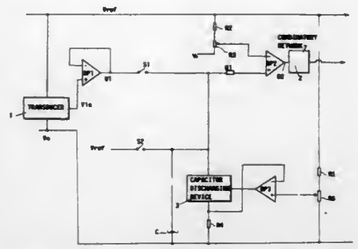
1. Method of transmitting analog signals in digital form, particularly for industry automation applications, comprising the steps of:

comparing the analog signal to be transmitted with a reference and fixed analog signal;

forming, based on this comparison, a digital information in the form of two square signals having a constant and fixed amplitude and a duration directly determined by said comparison,

transmitting on a single two-wire cable said digital information; and

converting said digital information transmitted on said single two-wire cable into a binary value corresponding to the original analog signals by measuring the square signal duration, calculating the ratio therebetween and multiplying the so obtained value by the digital number corresponding to the conversion of the value of the reference analog signal.



5,313,209

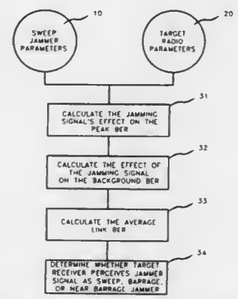
SWEEP JAMMER IDENTIFICATION PROCESS

Paul A. Michaels, Jr., Ocean Grove; Ralph J. Romano, Jackson, both of N.J., and Francis Giordano, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 12, 1993, Ser. No. 152,601

Int. Cl.[5] G01S *7/38*

U.S. Cl. 342—13 **4 Claims**



1. A method for predicting the effect of a sweep jamming signal on a targeted radio receiver by calculating said jamming signal's effect on the average link Bit Error Rate of said receiver, comprising the steps of:

calculating said receiver's peak Bit Error Rate which indicates said sweep jamming signal's effect on said target receiver's average Bit Error Rate when the peak of said sweep jamming signal is present within said receiver's bandwidth, said peak Bit Error Rate calculation comprising the steps of calculating the attenuation of said sweep jammer pulse, calculating said receiver's signal to noise ratio during the presence of said sweep jammer pulse, and calculating the associated bit error rate from the signaling curve of said targeted receiver; and

calculating said receiver's background Bit Error Rate which indicates said sweep jamming signal's effect on said target receiver's average link Bit Error Rate when said sweep jamming signal is sweeping outside said receiver's band-

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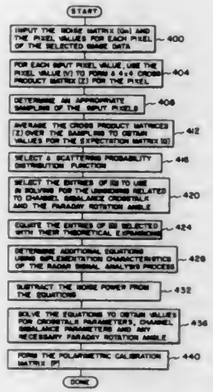
width, said background bit error rate calculation comprising the steps of determining a residual sweep jammer signal level during said jamming signal's sweep outside said receiver's bandwidth, calculating the increase in said receivers background noise floor due to said residual signal, calculating the signal to noise ratio due to said increased background noise floor, and calculating the associated bit error rate from said receiver's signaling curve.

5,313,210

POLARIMETRIC RADAR SIGNAL MAPPING PROCESS

William B. Gail, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Feb. 23, 1993, Ser. No. 21,310
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **23 Claims**



1. A process for obtaining information regarding a region of interest comprising the steps of:

transmitting a first polarized polarimetric signal toward a first region using a first channel transmission means;

receiving a first scattering signal of the first polarized polarimetric signal scattered from within a plurality of subregions of the first region, for each subregion, the first scattering signal having a first polarimetric signal portion, B_1, received by a first channel receiving means, and having a second polarimetric signal portion, B_2, received by a second channel receiving means;

transmitting a second polarized polarimetric signal, distinct from said first polarized polarimetric signal, toward the first region using a second channel transmission means;

receiving a second scattering signal of the second polarized polarimetric signal scattered from each of the plurality of subregions, for each subregion, the second scattering signal having a third polarimetric signal portion, B_3, received by a third channel receiving means, and having a fourth polarimetric signal portion, B_4, received by a fourth channel receiving means;

generating a plurality of pixels, each said pixel including data corresponding to a subregion of said plurality of subregions, each said pixel generated using data corresponding with at least one collection of said signal portions B_i, $1 \leq i \leq 4$, where each B_i includes signals scattered from the subregion corresponding to the pixel;

selecting a sample collection of the plurality of pixels;

determining statistical expectation values representing entries of a predetermined expectation matrix using the data of at least one pixel from said sample collection;

obtaining values for one or more signal calibration variables by solving substantially simultaneously a first plurality of real valued equations for the values of a plurality of real unknowns corresponding to the real and imaginary portions of said plurality of signal calibration variables, said first plurality of real valued equations including a plurality of expectation equations, each expectation equation obtained by equating one of said expectation values, determined in said step of determining, to a theoretical expansion of the corresponding entry in the predetermined expectation matrix, said calibration variables relating to:

(1) corresponding zero or more channel imbalances between:

(a) said first channel transmission means and said second channel transmission means when transmitting said first polarized polarimetric signal and said second polarized polarimetric signal;

(b) said first channel receiving means and said second channel receiving means when receiving said first scattering signal;

(c) said third channel receiving means and said fourth channel receiving means when receiving said second scattering signal; and

(2) corresponding zero or more cross-talk polarimetric signal distortions between:

(d) said first channel receiving means and said second channel receiving means when receiving the first scattering signal;

(e) said third channel receiving means and said fourth channel receiving means when receiving the second scattering signal;

(f) said first channel transmission means and said second channel transmission means when transmitting the first polarized polarimetric signal;

(g) said first channel transmission means and said second channel transmission means when transmitting the second polarized polarimetric signal; and

(3) corresponding to a Faraday rotation angle;

calibrating one or more pixels using the values for said plurality of the signal calibration variables obtained in said step of obtaining;

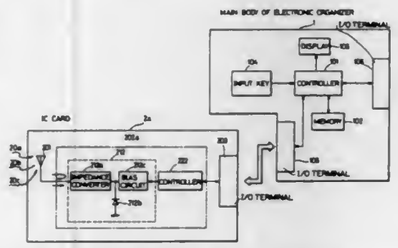
using the calibrated pixels to obtain information regarding the region.

5,313,211

PORTABLE DATA PROCESSING DEVICE CAPABLE OF TRANSMITTING PROCESSED DATA ON A RADIO BY REFLECTION OF UNMODULATED CARRIER SIGNAL EXTERNALLY APPLIED

Masamori Tokuda, Tenri; Hiroshi Nakano, Nara, and Tomozo Ohta, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1991, Ser. No. 741,608
Claims priority, application Japan, Aug. 13, 1990, 2-214837
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—50 **15 Claims**



1. A portable data processing device, comprising:

receiving means for receiving via radio transmission an unmodulated carrier signal;

data signal generating means for processing externally applied data and generating a transmission data signal;

reflecting means, coupled to said receiving means, for reflecting the unmodulated carrier signal in accordance with the transmission data signal; and

radiating means, coupled to said reflecting means, for radiating the signal reflected by said reflecting means via radio transmission as a modulated carrier,

said reflecting means comprising

variable impedance means coupled to a predetermined reference potential, an impedance of said variable impedance means changing in response to an applied reverse bias voltage,

impedance conversion means coupled between said receiving means and said variable impedance means, and

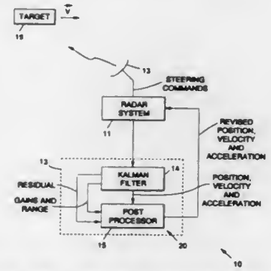
impedance varying means for varying an impedance value of said variable impedance means by applying the reverse bias voltage in response to the transmission data signal applied from said data signal generating means.

5,313,212

TRACK FILTER BIAS ESTIMATION

George J. Ruzicka, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 19, 1992, Ser. No. 964,181
Int. Cl.[5] G01S *13/68, 13/72*
U.S. Cl. 342—101 **4 Claims**



1. An angle-based maneuver detection method adapted to process bias-corrected estimates a_{TE}' and a_{TD}' and velocity signals $\hat{V}_T$, $\hat{V}_{TE}$, and $\hat{V}_{TD}$ to provide an acceleration estimate output signal $\hat{a}_T$ that is indicative of a true acceleration of a target, said angle-based maneuver detection method comprising the steps of:

computing a cross acceleration magnetude A of the target in accordance with a predefined relationship;

delaying the $\hat{V}_{TE}$, and $\hat{V}_{TD}$ velocity signals;

computing a beam aspect distance W from the delayed values of $\hat{V}_{TE}$, and $\hat{V}_{TD}$ and $\hat{V}_T$ in accordance with a second predefined relationship;

thresholding W to bound it away from zero;

weighting W using a predetermined weighting equation to produce alpha (α);

dividing the cross acceleration magnitude A by the beam aspect distance W to produce a cross acceleration magnitude;

thresholding the cross acceleration magnitude to ensure that the estimates are within predetermined bounds; and

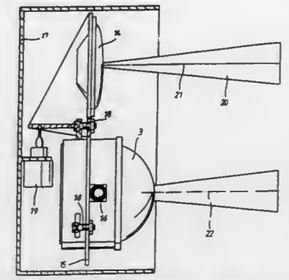
low pass filtering the thresholded cross acceleration magnitude to produce the target acceleration estimate output signal $\hat{a}_T$.

5,313,213

DEVICE FOR ALIGNING A DIRECTIONAL ANTENNA OF A RADAR DISTANCE WARNING DEVICE OF A VEHICLE

Frank Neumann, and Dieter Hotz, both of Stuttgart, Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 15, 1993, Ser. No. 2,848
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, 4201214
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—165 **11 Claims**



1. Device for aligning a directional antenna of a radar distance warning device of a vehicle, comprising:

an alignment spotlight separate and distinct from the directional antenna, having a light cone with an optical axis; and

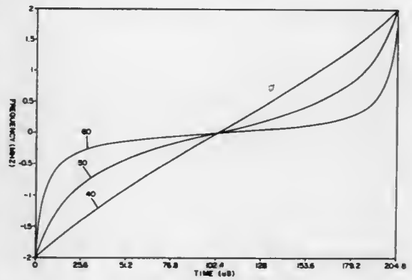
an adjusting board coupled to the alignment spotlight and to the directional antenna to form a rigid unit that is adjustably mounted on the vehicle, wherein the rigid unit is alignable by aligning the optical axis of the light cone of the alignment spotlight using a vehicle-related optical verification device.

5,313,214

SCALED MULTIPLE FUNCTION NONLINEAR FM WAVEFORM

Robert F. Graziano, Coram, and Russell Singer, New York, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 8, 1993, Ser. No. 44,018
Int. Cl.[5] G01S *13/00*
U.S. Cl. 342—200 **18 Claims**



1. A method for generating a scaled multiple non-linear FM waveform for use in digitally implemented low frequency radar, said method comprising the steps of:

(a) generating at least first and second functions, wherein said first function having a characteristic for providing a

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compressed pulse with a predetermined mainlobe to sidelobe ratio and said second function having a characteristic for providing a compressed pulse with a predetermined pulse width; and

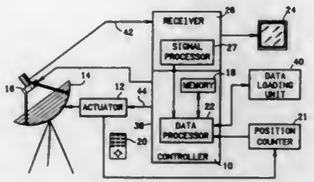
(b) optimally combining said at least first and second functions into a single waveform.

5,313,215

SATELLITE IDENTIFICATION AND ANTENNA ALIGNMENT

Gordon K. Walker, Escondido, and John K. Taylor, San Diego, both of Calif., assignors to General Instrument Corporation, Chicago, Ill.

Filed Jul. 10, 1992, Ser. No. 911,460
Int. Cl.[5] H04B *7/185*
U.S. Cl. 342—352 **16 Claims**



1. A system for identifying a communications satellite from which a broadcast communication signal is being received by an antenna, wherein the communication signal includes data that can be correlated with the identity of the communications satellite, the system comprising

a memory storing a look-up table correlating satellite identification data for a plurality of satellites with said signal-included data for said plurality of satellites;

means for detecting said signal-included data from a said communication signal received by the antenna from one of said plurality of satellites; and

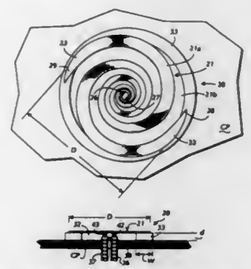
means for accessing the look-up table in response to the detected signal-included data to retrieve said satellite identification data for the satellite from which the communication signal is received.

5,313,216

MULTIOCTAVE MICROSTRIP ANTENNA

Johnson J. H. Wang, Marietta, and Victor K. Tripp, Tucker, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 695,686, May 3, 1991, abandoned. This application Oct. 15, 1992, Ser. No. 962,029
Int. Cl.[5] H01Q *1/380, 11/080, 11/100*
U.S. Cl. 343—700 MS **18 Claims**



16. A multioctave microstrip antenna for mounting to one side of a surface of a structure, comprising:

a conducting ground surface;

a spiral-mode antenna element including at least two metal foil arms formed in a geometric pattern and adapted to generate at least one spiral mode when excited, said antenna element being positioned generally parallel to and spaced apart from said conducting ground surface; and

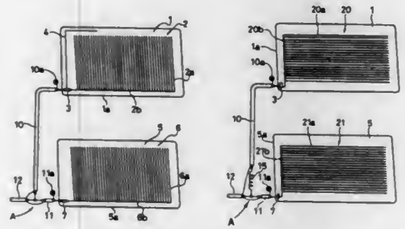
a substrate positioned between said antenna element and said conducting ground surface for spacing said antenna element a selected distance from said ground surface, said selected distance being between $0.02\lambda_c$ and $0.1\lambda_c$, where λ_c is the wavelength at the arithmetic mean frequency between the minimum and maximum operating frequencies, said substrate having a dielectric constant of between 1.0 and 4.3.

5,313,217

WINDOW GLASS ANTENNA FOR A MOTOR VEHICLE

Hitoshi Kakizawa, Osaka, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jul. 9, 1991, Ser. No. 727,485
Claims priority, application Japan, Jul. 16, 1990, 2-187769
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—713 **7 Claims**



1. A window glass antenna for a motor vehicle, comprising:

a plurality of separate window glasses in said motor vehicle,

a plurality of separate antenna patterns, each said pattern consisting of antenna conductors arranged on a respective window glass,

connecting means disposed between said antenna patterns for mixing reception outputs of said antenna patterns through paths which connect said antenna patterns, one of said paths including an FM cut/AM pass coil for filtering out an FM frequency reception component and passing an AM frequency reception component from a first predetermined antenna pattern, another of said paths for passing said FM and AM frequency reception components.

5,313,218

ANTENNA ASSEMBLY

Erik B. Busking, Den Haag, Netherlands, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 633,705, Dec. 24, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 962,172
Claims priority, application United Kingdom, Sep. 6, 1990, 9019486
Int. Cl.[5] H01Q *21/240, 9/004, 1/520*
U.S. Cl. 343—727 **15 Claims**

10. An antenna assembly comprising:

first and second antennas laterally disposed on a planar surface and each having different polarization directions; said first antenna having first and second elements;

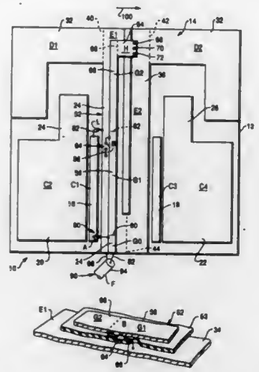
a feed line having an inner and an outer conductor for supplying signals to said antennas;

a transmission line having first, second, third, and fourth transmission line portions; said fourth transmission line portion disposed between said first and second elements and connected to said outer conductor; said first, second,

and third transmission line portions connected in series, with said third transmission line portion connected to said fourth transmission line portion, and with said first transmission line portion connected to said inner conductor;

a switching means having first and second switching devices;

said second switching device connected between said second transmission line portion and said fourth transmission line portion; said second switching device, when closed,



coupling said second and third transmission line portions to said outer conductor via said fourth transmission line portion thereby enabling said third transmission line portion to detune said first antenna; and

said first switching device connected between said first transmission line portion and said second antenna; said first switching device, when closed, coupling said signals to said second antenna via said first transmission line portion.

5,313,219

SHIPBOARD STABILIZED RADIO ANTENNA MOUNT SYSTEM

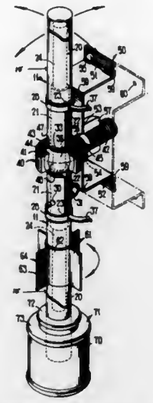
Wallace Shakun, Atlanta, and Richard A. Levy, East Point, both of Ga., assignors to International Tele-Marine Company, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 826,017, Jan. 27, 1992. This application Mar. 6, 1992, Ser. No. 847,313
Int. Cl.[5] H01Q *3/08*
U.S. Cl. 343—765 **34 Claims**

24. An antenna angular rotation reducing system adapted for use with an antenna assembly, wherein the antenna assembly comprises an upper antenna subassembly and a lower antenna subassembly, said system comprising:

means located between said upper antenna subassembly and said lower antenna subassembly for allowing angular rotation of said antenna assembly about said angular rotation allowing means; and

means for equalizing the effect of wind on each of said upper antenna subassembly and said lower antenna subassembly,



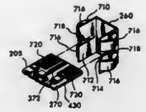
wherein said means for equalizing the effect of wind is coupled to the antenna assembly.

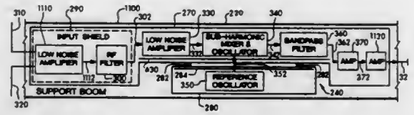
5,313,220

LOW NOISE INTEGRATED MMDS ANTENNA AND DOWN CONVERTER

Dale L. Hemmie, and Marc D. Mills, both of Burlington, Iowa, assignors to Conifer Corporation, Burlington, Iowa

Continuation-in-part of Ser. No. 4,968, Jan. 5, 1993, which is a continuation of Ser. No. 707,918, May 30, 1991, Pat. No. 5,202,699. This application May 27, 1993, Ser. No. 68,643
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] H01Q *19/13, 9/20*
U.S. Cl. 343—840 **11 Claims**





9. An integrated semi-parabolic antenna/down converter MMDS receiving system comprising:

a semi-parabolic antenna,

a pair of driven feed elements,

a support boom formed of conductive material connected to said semi-parabolic antenna for holding said driven feed elements in the focal area of said semi-parabolic antenna, said support boom having a formed hollow interior,

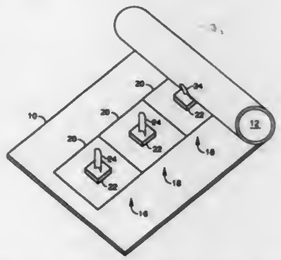
a down converter connected to said pair of driven feed elements and formed in an elongated shape to fit within said formed hollow interior of said support boom, said down converter having an output end, said down converter at least comprising:

(a) a printed circuit board, said printed circuit board having a bottom ground plane and an output end,

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(b) two output amplifiers serially connected on the output end of said printed circuit board,
(c) an output connection connected to the output of the last serially connected output amplifier,
(d) an output ground shield engaging said circuit board, said output ground shield being electrically connected to at least said bottom ground plane of said printed circuit board so as to minimize interfering radiation, said output ground shield having:
(i) output grounding means on sides of said output ground shield so as to (1) establish an electrical ground connection to said conductive material of said support boom and (2) position said output end of said down converter within said formed hollow interior,
(ii) means connected to said last serially connected output amplifier for providing said output connection,
a connector connected to said output connection.

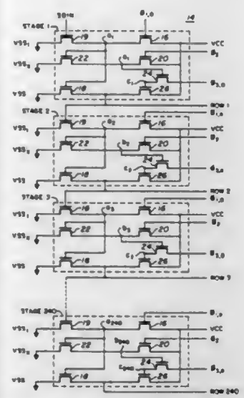
5,313,221
SELF-DEPLOYABLE PHASED ARRAY RADAR ANTENNA
Robert J. Denton, Jr., Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 22, 1992, Ser. No. 902,107
Int. Cl.[5] H01Q *1/48*
U.S. Cl. 343—846 **2 Claims**



1. An improved space-based phased array radar, said improvement comprising:
means for deployment of an antenna, said antenna stored upon a drum within said means for deployment;
said antenna comprising:
a flexible membrane, said membrane being a space-fed aperture membrane; and
a plurality of antenna units each antenna unit comprising;
a ground plane, said ground plane attached to said membrane;
an antenna mounting base, said mounting base fixedly connected to said ground plane; and
an antenna blade, said blade being a monopole radiator, said antenna blade being curved about an axis perpendicular to the ground plane, said antenna blade being made of a flexible material whereby said blade bends over when said membrane is rolled onto said drum and said blade springs up when said membrane is unrolled from said drum.

5,313,222
SELECT DRIVER CIRCUIT FOR AN LCD DISPLAY
Sywe N. Lee, Taipei, Taiwan, assignor to Yuen Foong Yu H. K. Co., Ltd., Hong Kong
Filed Dec. 24, 1992, Ser. No. 996,979
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—58 **14 Claims**

1. A circuit for use with a display device wherein said display device contains a first number of pixel columns and a second number of pixel rows on a substrate, said circuit comprising:
a plurality of row select driver circuits (stage 1-240) corresponding to said number of pixel rows for electrically energizing said pixel rows, said row select driver circuits being deposited on the display substrate, wherein an output of each of said row select driver circuits is electrically connected to a corresponding pixel row and to a successive row select driver circuit as an activating input; and
switching means external to the display device and having leads electrically connected to said row select driver

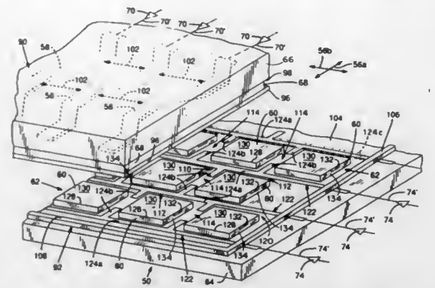


circuits for providing a first clock signal (Φ_2) to all row select driver circuits, a second clock signal ($\Phi_{1,o}$) coupled only to all odd row select driver circuits, a third clock signal ($\Phi_{1,e}$) coupled only to all even row select driver circuits, a fourth clock signal ($\Phi_{3,o}$) coupled only to all odd row select driver circuits, a fifth clock signal ($\Phi_{3,e}$) coupled only to all even row select driver circuits, and a sixth clock signal coupled to only the first row select driver circuit as a shift signal, the six clock signals causing an output signal from each row select driver circuit such that each pixel row is sequentially energized.

5,313,223
CHANNEL ARRANGEMENT FOR PLASMA ADDRESSING STRUCTURE
Thomas S. Buzak, Aloha; Dennis W. Prince, Banks; William W. Stein, Beaverton, all of Oreg., and Paul C. Martin, Vancouver, Wash., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Aug. 26, 1992, Ser. No. 935,608
Int. Cl.[5] G09G *3/10*; H01J *17/49*
U.S. Cl. 345—60 **15 Claims**

1. In an addressing structure with plural data elements and a layer of electro-optical material in electrical communication with an ionizable gaseous medium captured between first and second substrate structures having respective first and second major surfaces in face-to-face relation, the layer of electro-optical material being responsive to selective ionization of the gaseous medium to address selected ones of the data elements, the improvement comprising:
multiple intersecting first and second channels within which the gaseous medium is captured, the first and second channels extending longitudinally in respective first and second transverse directions along the first major surface and being delimited by an array of plural spaced-apart islands projecting outwardly from the first major surface, each of the islands being aligned with a data element;
an ionizing structure that includes an elongated electrode positioned in each of the first channels and extending

longitudinally in the first direction for selectively ionizing the gaseous medium; and
ionizing drive means for delivering ionizing drive signals to the elongated electrodes in an immediately adjacent pair



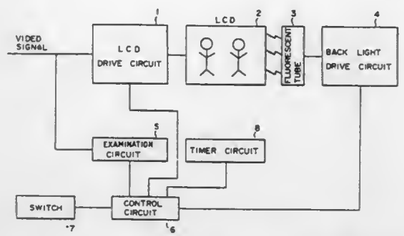
of first channels to ionize the gaseous medium in the vicinity of islands delimiting the immediately adjacent pair of first channels, thereby to address the data elements aligned with the islands.

5,313,224
APPARATUS FOR SHADE GRADATION ENHANCEMENT AND FLICKER REDUCTION IN MULTISHADE DISPLAYS
Dave M. Singhal, San Jose; Chester F. Bassetti, Jr., Pleasanton; Bryan Richter, and Jihad Y. Abudayyeh, both of Fremont, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 335,622, Apr. 10, 1989, Pat. No. 5,185,602. This application Apr. 8, 1992, Ser. No. 865,091
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—89 **7 Claims**

1. In a display system having a multishade display panel in which a plurality of pels are arranged as dots within a plurality of lines, so that each pel is identifiable by a line number and a dot number, wherein the shade of each pel is selectable from N different native shade levels, where N is greater than two, and the shade of each pel can be selected on a frame by frame basis in a sequence of frames, an apparatus for increasing the number of selectable shade levels comprising
means for specifying from the N different native shades a first native shade to which a pel is to be driven; and
means coupled to the specifying means and responsive to the dot and line number of the pel being driven and to the frame number in the sequence of frames for selecting a second shade different from the first shade so that the pel is driven to the second shade over selected frames in the sequence of frames, and so that, with respect to neighboring pels which are being driven with more than one shade during the sequence of frames, the change between the native shades in any one pel is out of phase with the change between native shades in neighboring pels.

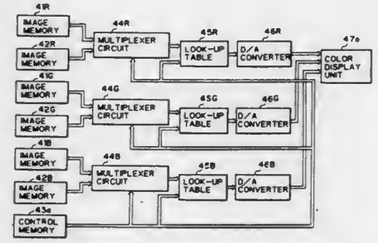
5,313,225
LIQUID CRYSTAL DISPLAY DEVICE
Shunichi Miyadera, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 531,242, May 31, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 900,757
Claims priority, application Japan, Jun. 6, 1989, 1-143496
Int. Cl.[5] C09G *3/36*
U.S. Cl. 345—102 **15 Claims**

1. A liquid crystal display device for displaying an image having a liquid crystal display member for displaying an image corresponding to a received video signal having at least a luminance signal, means for irradiating light to said liquid crystal display member, and switch means for turning ON and OFF said irradiating means, said liquid crystal display device comprising:
means for examining said received video signal having at least a luminance signal, said examination means examining said signal based upon an average level of the luminance signal contained in said video signal;
timer means for measuring a period of time, said timer means



being reset when said average level of said luminance signal contained in said video signal is not within a predetermined range; and
control means for controlling said timer means to start measuring said period of time based upon a result of said examination means and for turning OFF said irradiating means if a predetermined period of time has passed since said timer means started measuring said period of time.

5,313,226
IMAGE SYNTHESIZING APPARATUS
Masaki Takakura, Higashi-Osaka; Yasukuni Yamane, Shiki, and Noritoshi Kako, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 704,976, May 24, 1991, abandoned. This application May 11, 1993, Ser. No. 59,346
Claims priority, application Japan, Jun. 4, 1990, 2-145638
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—115 **9 Claims**



1. An image synthesizing apparatus for synthesizing two images in a given ratio, the apparatus comprising:
a first storage means for storing first image data;
a second storage means for storing second image data;
a third storage means for storing data of a synthesizing ratio of said first image data to second image data;
a fourth storage means for storing a plurality of sets of bit selection data, the plurality of sets respectively corresponding to a plurality of synthesizing ratios, for selecting a part of bit data from the first image data and a part of bit data from the second image data so as to minimize a difference between an image synthesized in each of said synthesizing ratios by said first image data and said second image data as a whole, and an image synthesized by each of said synthesizing ratios by said part of bit data of said first image data and said part of bit data of said second image

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data, and for outputting one set of bit selection data corresponding to said stored synthesizing ratio in said third storage means;

a selecting means for selecting said part of bit data of said first image data and said part of bit data of said second image data on the basis of said one set of bit selection data outputted from said fourth storage means;

a synthesizing means stored with synthesized image data of said first image data to said second image data for all combination of said selected part of bit data and said synthesizing ratio, and for outputting said synthesized image data corresponding to said selected part of bit data and said synthesizing ratio stored in said third storage means; and

wherein said bit selection data stored in said fourth storage means is obtained by minimizing the following equation:

$$(2^{\delta a}\times C+2^{(D-\delta a)}\times(Cm-C))/Cm$$

where $\delta a+\delta b=D$ (D is a constant),

$\beta=C/Cm$,

δa denotes the error of the first image data,

δb denotes the error of the second image data,

βdenotes the synthesizing ratio,

C denotes the control data,

Cm denotes the maximum control data.

5,313,227

GRAPHIC DISPLAY SYSTEM CAPABLE OF CUTTING OUT PARTIAL IMAGES

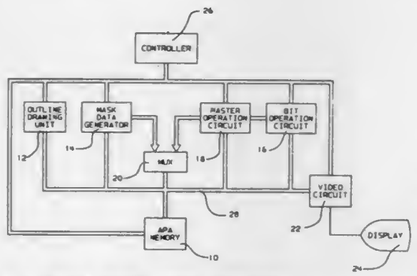
Yataka Aoki, Fujisawa, and Kazunori Takayanagi, Sagamihara, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 794,349, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 331,932, Mar. 31, 1989, abandoned. This application Sep. 9, 1993, Ser. No. 119,445

Claims priority, application Japan, Apr. 15, 1988, 63-91913

Int. Cl.[5] G09G *1/16*

U.S. Cl. 345—118 **7 Claims**



1. A graphic display system comprising:

storage means for storing a plurality of image defining bits, said storage means having a first storage area for storing a source image, a second storage area for storing a dot pattern defining a partial image area outline of a partial image to be cut out from said source image, and a third storage area for storing said cut out partial image, said third storage area being displaced from said first storage area;

mask data generator means for reading a fixed size block of bits of said second storage area and generating a fixed size mask data block defining a non-masked state in a region enclosed by said dot pattern and a masked state in the remainder;

bit block transfer means for transferring fixed size blocks of bits of said source image from said first storage area to said third storage area, said fixed size blocks being the same size as said fixed size mask data block;

raster operation means for logically manipulating each of said bits of said fixed size blocks of said source image being transferred to produce a modified fixed size block;

said bit block transfer means, said mask generator means and said raster operation means synchronously operating such that each fixed size block of said source image is manipulated by said raster operation means and written to said third storage means before a next fixed size block is manipulated;

write control means for controlling writing into said third storage means, said write control means responsive to said fixed size mask data block so that said bit block transfer means transfers into said third storage area only the portion of said modified fixed size block corresponding to the non-masked state of said fixed size mask data block; and

multiplexer means for alternately connecting said fixed size mask and said modified fixed size block to said write control means.

5,313,228

METHOD AND APPARATUS FOR INTERACTIVELY GENERATING ELECTRONIC IMAGE CREATION TOOLS

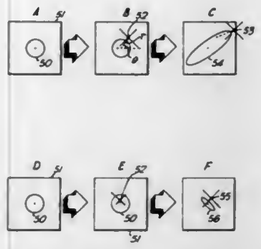
Stephen Freeman, Bedfordshire, England, assignor to Crosfield Electronics Limited, Herts, England

Continuation of Ser. No. 644,667, Jan. 23, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 949,363

Claims priority, application United Kingdom, Jan. 23, 1990, 9001516

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—145 **5 Claims**



1. A method of interactively generating a three-dimensional profile for an electronic image creation tool, the method comprising the steps of: displaying an initial form of the three dimensional profile which, in cross-section, defines a boundary in the form of a circle or ellipse; positioning an indicator at a desired position relative to the displayed profile; determining a distance of said indicator position from a datum position and a direction of said indicator position relative to said datum direction; comparing a current distance to said indicator from said datum position with an initial distance of said indicator, and,

a) if said current distance is greater than said initial distance, generating a resultant elliptical profile having a major axis extending in a direction of the current indicator position relative to said datum direction and with a dimension increased by a factor defined as said current distance divided by said initial distance while a minor axis dimension is unchanged; and

b) if said current distance is less than said initial distance, creating a resultant elliptical profile whose minor axis, is parallel with a direction of the current indicator position relative to said datum direction and whose dimension is reduced by a factor defined as said current distance divided by said initial distance while a major axis dimension is unchanged.

5,313,229

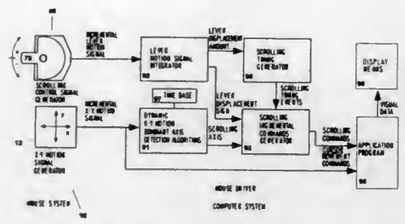
MOUSE AND METHOD FOR CONCURRENT CURSOR POSITION AND SCROLLING CONTROL

Federico G. Gilligan, and Fernando D. Falcon, both of Lavelle 682, 1047 Buenos Aires, Argentina

Filed Feb. 5, 1993, Ser. No. 14,388

Int. Cl.[5] G09G *5/08*

U.S. Cl. 345—157 **17 Claims**



1. Mouse for interactive operation of a computer, said computer having display means for displaying information to an operator of said computer, said mouse comprising

a first transducer means for generating x-y position signals for controlling movement of a cursor on said display means in response to movement of said first transducer means by a hand of an operator, and

supplementary control means including a second transducer means for generating supplementary control signals for controlling scrolling operations for moving information entities displayed on said display means, said second transducer means including a displaceable body and spring means connected to said displaceable body to spring-load said displaceable body so that said body is urged into an initial equilibrium position by said spring means but is displaceable from said equilibrium position in either of two directions by a digit of said hand of said user, said second transducer means being structured so that said supplementary control signals vary with a displacement amount and displacement direction of said body from said equilibrium position so that a rate of moving said information entities on said display means can be varied with said displacement amount and a direction of moving said information entities can be selected according to said displacement direction.

5,313,230

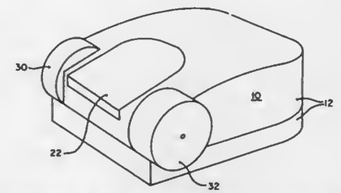
THREE DEGREE OF FREEDOM GRAPHIC OBJECT CONTROLLER

Daniel S. Venolia, Foster City, and Shinpei Ishikawa, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 24, 1992, Ser. No. 918,956

Int. Cl.[5] G09G *5/00*

U.S. Cl. 345—163 **13 Claims**



9. An apparatus for generating signals indicative of the three-dimensional position of an object, comprising:

an external housing;

a first translation position indicating means mounted to said housing for producing a first signal indicative of a first position of said object with respect to a first axis;

a second translation position indicating means mounted to said housing for producing a second signal indicative of a second position of said object with respect to a second axis; and

a third translation position indicating means mounted to said housing, said third translation position indicating means comprising at least two bidirectional finger wheels, for producing a third signal indicative of a third position of said object with respect to a third axis;

whereby movement of said apparatus over a surface results in said first and second positions of said object being defined, and whereby movement of any of said bidirectional finger wheels results in said third position of said object being defined.

5,313,231

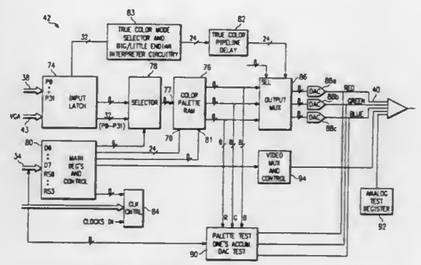
COLOR PALETTE DEVICE HAVING BIG/LITTLE ENDIAN INTERFACING, SYSTEMS AND METHODS

Chenwei J. Yin, Richardson; Richard C. Nail; Louis J. Izzi, both of Plano, and Edison H. Chiu, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 24, 1992, Ser. No. 856,431

Int. Cl.[5] G09G *1/28*

U.S. Cl. 345—199 **22 Claims**



1. A color palette comprising:

a plurality of ordered input terminals for receiving a plurality of bits of data having an order; and

a true color data path comprising:

first circuitry coupled to said input terminals for selectively reversing the order of said plurality of bits of data;

second circuitry coupled to said first circuitry and operable in a first mode to pass all of said plurality bits of data received from said first circuitry and in a second mode pass at least one word comprising selected ones of said plurality of bits, said selected ones of said bits having a bit order;

third circuitry coupled to said second circuitry and operable to pass all of said bits of data received from said second circuitry in said first mode and operable to selectively reverse said ordering of said selected ones of said bits and pass said at least one word received from the second circuitry in said second mode; and

fourth circuitry coupled to said third circuitry and operable to receive bits of data passed from said third circuitry and select for output as at least one word of true color data at least some of said bits.

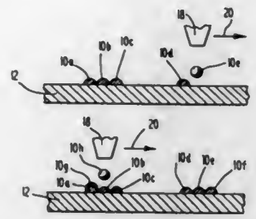
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,232

METHOD OF JETTING PHASE CHANGE INK

Thomas R. Peer, Londonderry, N.H., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 606,732, Oct. 31, 1990, abandoned, which is a divisioe of Ser. No. 131,318, Dec. 8, 1987, Pat. No. 4,992,806, which is a continuation of Ser. No. 830,345, Jan. 17, 1986, abandoned. This application Dec. 7, 1992, Ser. No. 987,100
The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.
Int. Cl.[5] G01D *15/16*; B41J *2/17*
U.S. Cl. 346—140 R **9 Claims**



1. A method of operating a system for jetting ink capable of undergoing a thermally-reversible liquid-to-solid phase transition, the method comprising the following steps:
elevating the temperature of the ink so as to effect a solid-to-liquid phase transition;
ejecting a first volume of ink in the liquid state toward a target;
contacting the target with said first volume;
lowering the temperature of said first volume of ink so as to effect a liquid-to-solid phase transition after contact with said target;
ejecting a second volume of ink in the liquid state toward the target;
contacting said first volume of ink with said second volume of ink such that said second volume of ink is at least partially superimposed on the first volume of ink; and
lowering the temperature of the ink of said second volume so as to effect a liquid-to-solid phase transition after contact with said first volume.

5,313,233

IMAGE FORMING APPARATUS

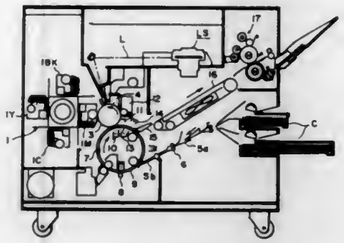
Yukio Nagase, Kawasaki; Yuji Sakemi; Akira Watanabe, both of Yokohama; Masahiro Itoh, Sagamihara; Kenichi Takeda, Yokohama, and Kazuhisa Kemmochi, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 938,531, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 530,175, May 29, 1990, abandoned. This applicatioo May 10, 1993, Ser. No. 58,661
Claims priority, application Japan, May 30, 1989, 1-136375; May 31, 1989, 1-138781
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 **19 Claims**

1. An image forming apparatus, comprising:
an electrophotographic photosensitive member;
a light source for producing a beam;
control means for controlling an on-period of the beam per picture element of said light source in accordance with an image signal to be recorded;
an optical system for scanning said photosensitive member with the beam from said light source in a main scan direction, wherein the beam provides a spot having a size, measured in the main scan direction, which is not more than 0.7 times a size of a unit picture element and which is not more than 42 microns;
developing means for developing the electrostatic latent image formed on said photosensitive member by said optical system scanning it, said developing means supplies a developer containing toner particles;
wherein not less than 90% by volume of the toner particles satisfy:

$$(\frac{1}{2})M < r < (3/2)M, \text{ and}$$

not less than 99% by volume of the toner particles satisfy:



$$0 < r < 2M,$$

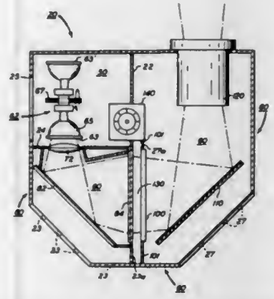
where M is a volume average particle size of the toner, and r is a particle size of the toner particle; and
image transfer means for transferring the developed image from said photosensitive member to a transfer material.

5,313,234

LIQUID CRYSTAL PROJECTOR

Orvan Edmonson, Eagan, Minn., and Christopher Mathewson, Rochester, N.Y., assignors to Sayett Group, Inc., Rochester, N.Y.

Continuation of Ser. No. 736,246, Jul. 26, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,144
Int. Cl.[5] G03B *21/16*
U.S. Cl. 353—61 **7 Claims**



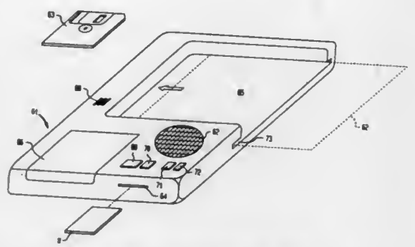
1. A liquid crystal display projector comprising:
(a) a housing having a hot compartment including a fluid inlet and a fluid outlet spaced apart from the fluid inlet and a cold compartment including a fluid inlet and a fluid outlet wherein the cold compartment is at least partially thermally isolated from the hot compartment, and the fluid outlet of the cold compartment is in communication with the fluid inlet of the hot compartment;
(b) an illumination source within the hot compartment between the fluid inlet and the fluid outlet so that fluid flow through the hot compartment from the fluid inlet to the fluid outlet cools the illumination source, the source producing an illumination beam, and means in the illumination beam for removing heat from the beam before it passes from the hot compartment to the cold compartment;
(c) a fluid flow path extending from the inlet in the cold compartment through the cold compartment then through the inlet in the hot compartment past the illumination source to the outlet in the hot compartment;
(d) a liquid crystal display panel in the cold compartment the display panel having a first and a second side, at least one of the sides in the thermal contact with the flow path;
(e) means for conducting a cooling fluid through the flow path from the inlet in the cold compartment to the outlet in the hot compartment; and
(f) means for directing the illumination beam from the illumination source to the display panel to produce an image beam.

5,313,235

SOUND PLAYBACK APPARATUS CAPABLE OF PLAYING BACK SOUNDS RELEVANT TO PHOTOGRAPHS

Manabu Inoue; Nobuyuki Taniguchi; Hiroshi Ueda; Yujiro Mima; Masakazu Yagi, and Masayasu Hirano, all of Azuchi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 525,965, May 11, 1990, Pat. No. 5,128,700. This application Feb. 28, 1992, Ser. No. 843,720
Claims priority, application Japan, May 12, 1989, 1-119362; May 12, 1989, 1-119363; May 12, 1989, 1-119364; May 12, 1989, 1-119365; May 12, 1989, 1-119366
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—76 **1 Claim**



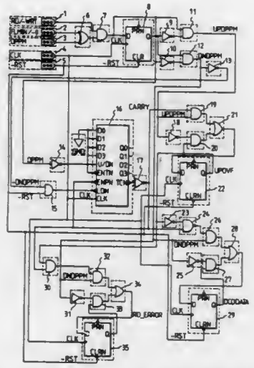
1. A sound playback apparatus comprising:
a sound recording medium attaching section to which a sound recording medium is to be attached, said sound recording medium having a plurality of recording areas and wherein said sound recording medium is capable of recording sound data in each of said recording areas;
an image recording medium attaching section to which an image recording medium is to be attached, said image recording medium having codes indicating the sound recording areas and wherein the image recording medium records photographed images;
reading means for reading said codes of the image recording medium;
detecting means for detecting recording areas in the sound recording medium corresponding to said codes read by the reading means; and
playback means for playing back sound data corresponding to the recording areas detected by the detecting means.

5,313,236

DEMODULATION PROCESSING CIRCUIT WITH TIME INTERVAL COUNTING FEATURE

Kazuhiro Izukawa, Misato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,404
Claims priority, application Japan, Nov. 28, 1991, 3-337871; May 21, 1992, 4-153080
Int. Cl.[5] G03B *17/24*; H03K *7/06*; G11B *20/10*; H03D *7/00*
U.S. Cl. 354—106 **6 Claims**



1. A camera having a data processing apparatus for determining data on the basis of an interval between trailing and leading edge positions of a continuous signal, comprising:
(a) a processing circuit having count means for counting a time interval between the trailing edge timing and the leading edge timing of the signal in a first direction, said count means generating a first signal when a count value of said count means reaches a predetermined count value within the time interval, said processing circuit having a first function of latching the first signal, and a second function of causing said count means to count a time interval between the leading edge timing and the trailing edge timing of the signal from the predetermined count value in a direction opposite to the first direction, and judging whether or not the count value of said count means reaches a predetermined second count value, and said processing circuit determining data on the basis of the latched first signal and a judgment result of the second function.

5,313,237

CAMERA APPARATUS FOR RECORDING DATA IN A FILM MAGNETIC RECORDING LAYER

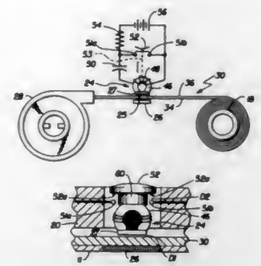
Gilbert E. Kammerer, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1993, Ser. No. 21,400
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 **8 Claims**

7. Apparatus for recording data on a film magnetic recording layer in a camera comprising:
an anhysteretic recording device bearing magnetically prerecorded data and positioned adjacent a film exposure gate in the camera; and

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means for activating said device at a time when film is stationary in the camera to effect anhysteretic recording of



said pre-recorded data onto said film magnetic recording layer.

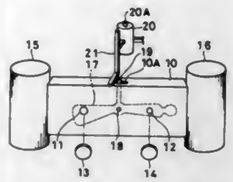
5,313,238
CAMERA FOCUS ADJUSTMENT MECHANISM
James P. Kelley, Milpitas, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Nov. 22, 1991, Ser. No. 798,299
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.1 **16 Claims**



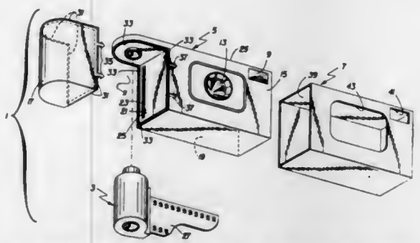
1. A camera focus adjustment mechanism comprising:
base means;
clamping means for securing a barrel of a camera lens assembly, said clamping means including a carriage plate and a clamping plate, wherein said clamping plate is arranged to secure the camera lens barrel and is adjustably coupled to said carriage plate such that said clamping plate can move in an adjustment direction substantially perpendicular to a focusing axis of said camera lens assembly; and
screw means coupling said clamping means to said base means, said screw mean having an axis of rotation which is parallel to said focusing axis of said camera lens assembly, such that rotation of said screw means causes said camera lens assembly to move along said focusing axis in a direction substantially perpendicular to said adjustment direction.

5,313,239
SHUTTER APPARATUS FOR STEREOSCOPIC CAMERAS
Shigeo Mizukawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Nov. 12, 1992, Ser. No. 974,462
Claims priority, application Japan, Nov. 12, 1991, 3-325163
Int. Cl.[5] G03B *9/10*
U.S. Cl. 354—250 **8 Claims**

1. A shutter apparatus for stereoscopic cameras provided with stops having different apertures at two photographing portions so as to simultaneously take a pair of pictures, said shutter apparatus comprising:
a coupled shutter leaf which is obtained by integrally connecting two shutter leaves, said shutter leaf of said coupled shutter leaf disposed at said photographing portion provided with said stop having a smaller aperture has a smaller width than the other shutter leaf; and
a connection portion for rotatably supporting said coupled shutter leaf;
said coupled shutter leaf simultaneously executes shutter releasing operations at said two photographing portions so that the operating time of the shutter leaf disposed at the photographing portion provided with the stop having a smaller aperture is shorter than the operating time of the shutter leaf disposed at the photographing portion provided with the stop having a larger aperture.

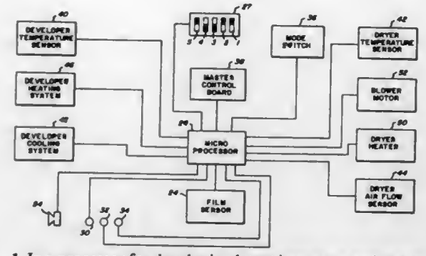


5,313,240
SINGLE-USE CAMERA WITH REMOVABLE END PORTION FOR CARTRIDGE ACCESS
Ralph M. Lyon, Rochester, and William H. Goddard, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 11, 1993, Ser. No. 16,400
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—288 **2 Claims**



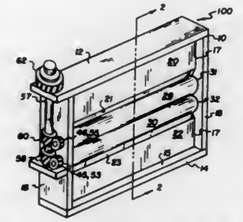
1. A single-use camera comprising an exterior decorative cardboard casing having an open end and a cut-out, and a plastic light-tight camera housing having an end portion with a film cartridge receiving chamber located outside said exterior casing adjacent said open end and a remaining portion including a taking lens located inside the exterior casing with said taking lens at said cut-out, is characterized in that:
said end portion and said remaining portion of the camera housing include respective cooperating means for removably connecting the end portion to the remaining portion to permit the end portion to be disconnected from the remaining portion to uncover said cartridge receiving chamber without being obstructed by said exterior casing, whereby a film cartridge may be removed from said cartridge receiving chamber without first taking said exterior casing off said camera housing.

5,313,241
PROCESSOR DIAGNOSTICS USING SWITCH SETTINGS
April M. Seim, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 25, 1992, Ser. No. 981,807
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—298 **12 Claims**



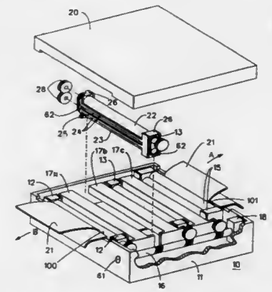
1. In a processor for developing latent images on a photosensitive material, the processor having at least one processing station wherein a processing solution engages the material and a drying station wherein the material is dried, means for initiating a plurality of diagnostic tests for activating components of the processor, the improvement comprising:
control means coupled to the components of the processor for selectively activating one or more of the components according to a selected one of a plurality of predetermined diagnostic tests;
switch means connected to the control means for selecting from among the plurality of diagnostic tests;
initiation means for starting the selected test a predetermined time after the switch means are set; and
in which the control means includes means responsive to the switch means for terminating a diagnostic test and resetting the initiation means when the switch means is changed to select another diagnostic test.

5,313,242
THRU-WALL WEB PROCESSING APPARATUS
Mark J. Devaney, Jr., and John S. Lercher, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 27, 1993, Ser. No. 54,487
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—319 **26 Claims**



1. An internal wall structure for use in an apparatus for processing photosensitive material, said apparatus having at least one chamber for containing a processing fluid, said wall structure forming a portion of said chamber and for allowing said photosensitive material to pass therethrough, said wall structure comprising a top and a bottom surface and a pair of side surfaces defining a first opening, and
at least one pair of substantially parallel contacting rollers, comprising a first and a second roller, said roller pair being positioned in said first opening so that said rollers central longitudinal axis is aligned with the centerline of the wall structure, the combined outer diameters of said roller pair being slightly greater than said first opening when said rollers are not positioned in said wall structure, said rollers being radially deformable so as to fit said roller pair within said first opening, said side surfaces each having a recessed portion for receiving the roller ends, each said recessed portion defining a second opening which is slightly smaller than the outer diameter of said roller ends.

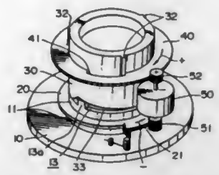
5,313,243
COUNTER CROSS FLOW FOR AN AUTOMATIC TRAY PROCESSOR
John H. Rosenburgh, Hilton; Ralph L. Piccinino, Jr., Rush; David L. Patton, Webster, and Joseph A. Manico, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 3, 1993, Ser. No. 56,447
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **12 Claims**



1. An apparatus for processing photosensitive materials, said apparatus is characterized by:
a container which contains a channel through which a processing solution flows, the entrance and exit of said channel are upturned to contain processing solution within said channel;
means coupled to said channel for transporting the photosensitive material from the channel entrance, through said channel, to the channel exit, said channel and said means are relatively dimensioned so that a small volume for holding processing solution and photosensitive material is formed between said channel and said means;
means for circulating the processing solution through the small volume and said container;
at least a first and a second slot nozzle coupled to said circulating means and forming a portion of said channel for controlling the velocity and amount of processing solution that dynamically impinges on the surface of the photosensitive material;
a first conduit that is connected to one end of said first slot nozzle and said circulating means so that processing solution may travel in said first slot nozzle in a first direction; and
a second conduit that is connected to the other end of said second slot nozzle and said circulation means so that processing solution may travel in said second slot nozzle in a second direction.

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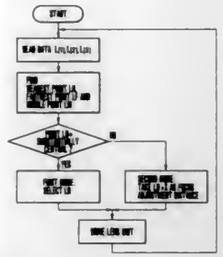
5,313,244
CAMERA
Akihiro Arai, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 831,741, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 544,867, Jun. 28, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 922,506
Claims priority, application Japan, Jun. 28, 1989, 1-165597
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—400 **13 Claims**



1. A camera using film, said camera comprising a focusing device and a shutter device, which further comprises:
first driving means for driving said focusing device;
second driving means for driving said shutter device;
a single drive source for supplying driving force;
transmitting means for transmitting said driving force from said single drive source selectively to one of said first and second driving means;
wherein said focusing device comprises a rotatably mounted cylindrical lens barrel carrying a focusing lens, said lens barrel having at least one cam surface formed on an axial-end surface; and
wherein said first driving means comprises a fixed sleeve receiving said lens barrel and having at least one protrusion at an axial end surface of said sleeve adapted to contact said cam surface of said lens barrel for moving said lens barrel in the direction of the optical axis of said focusing lens upon rotation of said lens barrel.

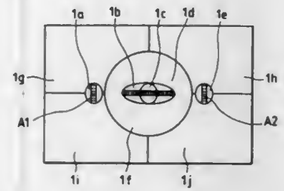
5,313,245
AUTOMATIC FOCUSING DEVICE
Kazuki Konishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 715,747, Jun. 18, 1991, abandoned, which is a continuation of Ser. No. 579,096, Sep. 7, 1990, abandoned, which is a continuation of Ser. No. 443,038, Dec. 4, 1989, abandoned, which is a continuation of Ser. No. 184,931, Apr. 21, 1988, abandoned. This application Jun. 7, 1993, Ser. No. 72,860
Claims priority, application Japan, Apr. 24, 1987, 62-101382; Apr. 24, 1987, 62-101384; May 11, 1987, 62-114052; May 25, 1987, 62-127343; Jun. 24, 1987, 62-155342; Aug. 18, 1987, 62-204613; Aug. 18, 1987, 62-204614; Aug. 18, 1987, 62-204615
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **210 Claims**

1. An automatic focusing device capable of measuring distances to objects corresponding to plurality of points in a picture frame, comprising:
(A) distance measuring means for measuring the distances to the objects corresponding to the plurality of points in the picture frame to produce a plurality of distance measuring information values of said respectively plurality corresponding to points;
(B) focusing information forming means for forming focusing information on the basis of an output of said distance measuring means; and
(C) operation means for operating said focusing information forming means on the basis of a value obtained by factoring said distance measuring information values with exclusion of those which are farther than a distance measuring information value of a substantially central point in said picture frame into said distance measuring information



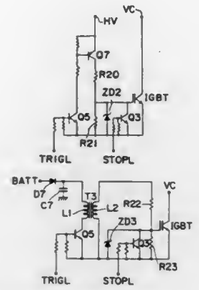
value of said substantially central point to form said focusing information.

5,313,246
EXPOSURE CONTROL DEVICE IN A CAMERA
Tadao Takagi, Yokohama; Tadao Kai, Kawasaki; Shigeyuki Uchiyama, and Hiroyuki Iwasaki, both of Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 886,317, May 22, 1992, abandoned, which is a continuation of Ser. No. 577,157, Sep. 4, 1990, abandoned. This application Dec. 22, 1992, Ser. No. 995,528
Claims priority, application Japan, Sep. 6, 1989, 1-231041
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—408 **18 Claims**



1. An exposure control device in a camera comprising:
focus detection means for detecting a focus state with respect to each of a plurality of focus detection areas and producing a corresponding plurality of defocus amounts;
weight producing means for producing a plurality of weights corresponding to said plurality of focus detection areas on the basis of said plurality of defocus amounts, said weight producing means being capable of producing at least three different weights;
light metering means for light-metering a plurality of light metering areas at least partly overlapping with said plurality of focus detection areas and producing a plurality of light metering outputs; and
exposure amount calculating means for calculating a proper exposure amount on the basis of said plurality of weights and said plurality of light metering outputs;
wherein for two defocus amounts having the same absolute value, and indicative, respectively, of the fact that an object image is on the object side relative to a film surface and of the fact that an object image is on the camera side relative to the film surface, said weight producing means produces two different weights, respectively.

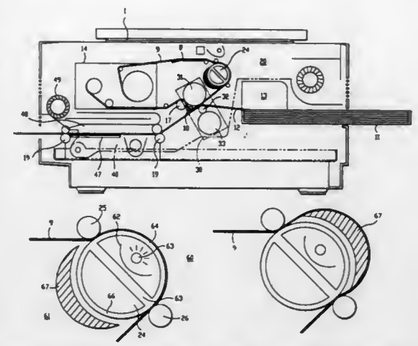
5,313,247
FLASH DEVICE
Hiroshi Hosomizu; Tsutomu Ichikawa; Makoto Kamiya; Masatoshi Yoneyama, and Kenzi Tuzi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 554,423, Jul. 19, 1990, abandoned, which is a division of Ser. No. 216,381, Jul. 8, 1988, Pat. No. 4,951,081. This application Sep. 10, 1992, Ser. No. 943,151
Claims priority, application Japan, Jul. 10, 1987, 62-173466
Int. Cl.[5] G03B *15/05*
U.S. Cl. 354—415 **6 Claims**



1. A flash device which comprises:
power supply means;
boosting means for boosting power supplied by the power supplying means and generating a first voltage;
a main capacitor adapted to be charged by the first voltage;
a flash firing unit operable to consume charge stored in the main capacitor to emit a flash light;
trigger means for exciting the flash firing unit in response to a flash firing command;
an insulated gate bipolar transistor disposed in a discharge loop for the main capacitor through the flash firing unit;
signal output means for generating a control signal necessary to control the insulated gate bipolar transistor; and
switch control means powered by the first voltage generated by said boosting means for applying a predetermined voltage to a gate of the insulated gate bipolar transistor and for interrupting the application of the predetermined voltage to the gate of the insulated gate bipolar transistor, in response to the control signal.

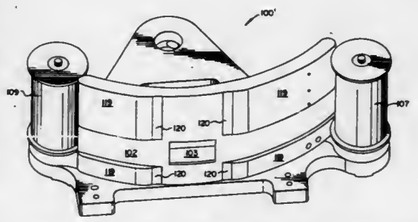
5,313,248
HEAT PROTECTION OF PHOTOSENSITIVE ELEMENTS IN IMAGE FORMATION APPARATUS
Yasuhiro Mita; Atsushi Kobayashi; Nobumasa Abe; Takashi Suzuki; Kazutoshi Fujisawa; Eiji Kumai, and Saburo Furukawa, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
PCT No. PCT/JP91/00685, § 371 Date Mar. 11, 1991, § 102(e) Date Mar. 11, 1991, PCT Pub. No. WO91/18328, PCT Pub. Date Nov. 28, 1991
PCT Filed May 23, 1991, Ser. No. 809,560
Claims priority, application Japan, May 24, 1990, 2-134662; Jun. 18, 1990, 2-159422; Feb. 19, 1991, 3-024936; Feb. 20, 1991, 3-026027
Int. Cl.[5] G03B *27/32, 27/52*
U.S. Cl. 355—27 **17 Claims**

1. An image formation apparatus, comprising:
a continuous form photosensitive member positioned to move along a predefined transfer path;
exposure means disposed along said transfer path for exposing an image onto a portion of said photosensitive member;
heat developing means disposed along said transfer path for heating said exposed image portion and for intercepting heat to an unexposed portion of said photosensitive member;
pressure transfer means for superposing, under pressure, said exposed image portion of said photosensitive member and an image transfer member; and



one or more cylindrical path guides disposed in said photosensitive member transfer path in contact therewith, and being movable transverse to said path between at least a first position guiding said photosensitive member into contact with said heating means and a second position preventing photosensitive member contact with said heating means.

5,313,249
ARC-SEGMENT-SHAPED GATE FOR PHOTOGRAPHIC FILM SCANNING APPARATUS
Eric P. Hochreiter, Bergen; Franklin D. Ehrne, Rochester, and Gary L. Erck, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 14, 1992, Ser. No. 943,425
Int. Cl.[5] G03B *27/58, 27/62*
U.S. Cl. 355—47 **18 Claims**



1. A gate for a photographic film scanning apparatus, comprising an arcuate segment shaped member having an arcuate scanning surface located at a lower portion thereof with a scanning aperture therethrough, means for pivoting the member, idler rollers located near each end of the arcuate scanning surface so as to maintain photographic film to be scanned in close proximity to the arcuate scanning surface, and means for preventing scratches on an image area of the photographic film as it passes over the arcuate scanning surface except in the region of the scanning aperture.

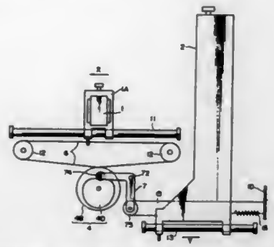
VOL 1162 ISS 3 MAY 17 1994 UMI

5,313,250

MOVEMENT CONTROLLING DEVICE

Masaaki Miura, Sakado, and Minoru Suzuki, Omiya, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 687,095, Apr. 19, 1991, abandoned, which is a continuation of Ser. No. 386,230, Jul. 28, 1989, abandoned. This application Jun. 10, 1992, Ser. No. 896,890
Claims priority, application Japan, Aug. 1, 1988, 63-192220
Int. Cl.[5] G03B *27/34*
U.S. Cl. 355—57 **42 Claims**



1. A movement controlling device for controlling a movement of a first moving member that is movable along a predetermined direction and a movement of a second moving member that is movable along another predetermined direction, said movement controlling device comprising:

means for driving said first moving member so as to move said first moving member along said predetermined direction;

a cam member comprising a cam portion, a gear portion, and a pulley coaxially arranged for rotation in response to a driving operation executed by said driving means, said cam portion comprising means for driving said second moving member so as to move in accordance with a first function based upon a cam groove formed on said cam portion, whereby a distance between said first moving member and said second moving member is varied in accordance with said first function;

said gear member comprising means for transmitting drive from said drive means to said cam member, said pulley comprising means for transmitting drive to said first moving member; and

means for converting a variation of said distance to another variation in accordance with a second function, said converting means being arranged between said cam member and said second moving member, wherein said distances varied in response to said second function having been varied in accordance with said first function, said cam groove being shaped so as to vary a contact angle between said converting means and a tangential line at a point at which said converting means contacts said cam portion as said first moving member is driven.

5,313,251

PRODUCTION OF SECOND-GENERATION CAMERA-ORIGINAL CONTROL TOOL PHOTOGRAPHS VIA PHOTOGRAPHY OF DIGITALLY GENERATED TRANSPARENCY OF A COMPUTER-ORIGINATED IMAGE

William E. Fierstein, Rochester, and Thomas E. Madden, East Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 664,151, Mar. 4, 1991, Pat. No. 5,223,891. This application Aug. 7, 1992, Ser. No. 926,470
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—77 **15 Claims**

1. A method for making product second-generation reproduction images from digital images, said reproduction images exhibiting desired image attributes, comprising the steps of:

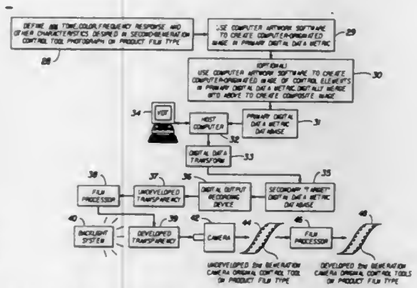
a. creating a first digital image in terms of a first digital data metric using a computer image rendering means;

b. producing a first intermediate image on a first imaging means from said first digital image using a digital image-producing means;

c. measuring said first intermediate image to determine the image attributes of said image;

d. forming an initial second-generation reproduction image on a second imaging means by capturing said first intermediate image;

e. measuring said initial second-generation reproduction image to determine the image attributes of said image;



f. deriving at least one digital image data transform based upon the relationship among the attributes of said initial second-generation reproduction image, said initial intermediate image, and the desired image attributes for the product second-generation reproduction image;

g. applying said transform to said first digital image to create a second digital image in terms of a second digital data metric;

h. producing a second intermediate image on said first imaging means from said second digital image using said digital image-producing means; and

i. forming the product second-generation reproduction image on said second imaging means by capturing said second intermediate image.

5,313,252

APPARATUS AND METHOD FOR MEASURING AND CORRECTING IMAGE TRANSFER SMEAR

Vittorio Castelli, Yorktown Heights, N.Y.; Steven A. Buhler, Redondo Beach, and Harold M. Anderson, Rancho Palos Verdes, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1993, Ser. No. 128,176
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—203 **12 Claims**

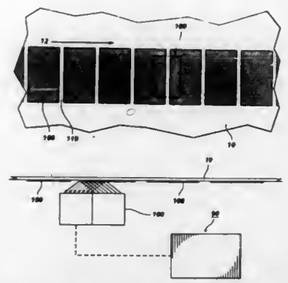
1. An apparatus for detecting and correcting image transfer smear comprising:

an image carrying member moving at a first velocity along a predetermined path;

means, moving at a second velocity, for applying a developed toner image in a selected pattern to said image carrying member;

means for detecting the pattern of the toner image on said image carrying member and generating a signal indicative thereof; and

a controller coupled to said applying means, said controller being responsive to the signal generated by said detecting means, to adjust the second velocity of said applying means to substantially match the first velocity of said image carrying member so as to minimize the relative velocity mismatch therebetween.

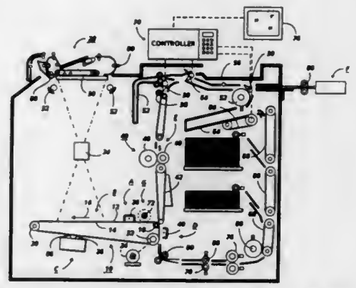


5,313,253

PAPER PATH SIGNATURE ANALYSIS APPARATUS

Michael J. Martin; Steve R. Moore; Russell J. Sokac, all of Rochester; Kathleen Laffey, Hamlin; Robert P. Siegel, Penfield; Gerald M. Garavuso, Rochester, and Lloyd W. Durfey, Palmyra, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 17, 1992, Ser. No. 930,258
Int. Cl.[5] G03G *21/00, 15/00*
U.S. Cl. 355—205 **19 Claims**



1. An apparatus for monitoring the velocity of a sheet handling device for advancing individual cut sheets, comprising:

means for advancing individual cut sheets independently of and relative to one another;

means for measuring a velocity profile of said advancing means as individual sheets are advanced thereby and generating a signal indicative thereof; and

means for comparing the signal from said measuring means with a reference signal to generate an error signal.

5,313,254

MOTION CONTROL SYSTEM FOR PRINTING MACHINES

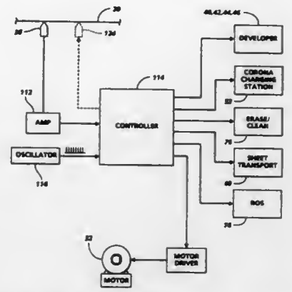
Donald M. Temple, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1992, Ser. No. 995,500
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **16 Claims**

1. An apparatus for regulating the velocity of a belt moving in a recirculating path, comprising:

a magnetic strip, located on a surface of the belt, having a plurality of magnetic signals recorded thereon, wherein the magnetic signals are prerecorded on said magnetic strip in a predetermined varying fashion;

a magnetic detector, positioned in proximity to said magnetic strip, for sensing the magnetic signals recorded thereon, during movement of the belt, and producing an output signal in response to the magnetic signals;



means for driving the belt; and

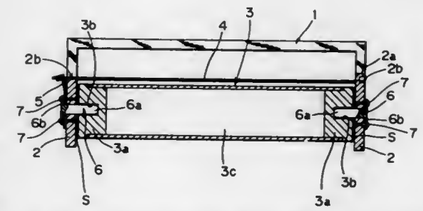
control means, responsive to the output signal, for regulating said driving means so as to produce a varying frequency output signal when the belt is driven at a constant velocity.

5,313,255

STRUCTURE OF SUPPORTING AN IMAGE BEARING MEMBER

Susumu Taniguchi, and Hiroshi Kubota, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd, Osaka, Japan

Filed Jul. 8, 1993, Ser. No. 87,410
Claims priority, application Japan, Jul. 13, 1992, 4-185546
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—211 **9 Claims**



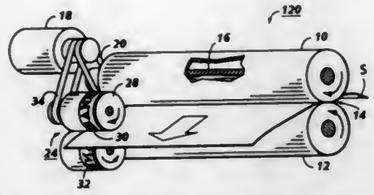
1. A structure of supporting the image bearing member of an image bearing unit in an image forming apparatus, in which said image bearing member is supported at opposite sides thereof by a pair of side plates formed at the housing of said image bearing unit and in which a grid electrode for a corona discharger is installed between said side plates, characterized in that:

support pins as restrained from being axially moved, inwardly project from said side plates and are introduced into support-pin introducing holes formed in flange portions of said image bearing member at opposite sides thereof, so that said image bearing member is rotatably supported; and

the tips of said support pins come in contact with the bottoms of said support-pin introducing holes with gaps formed between said side plates and said flange portions.

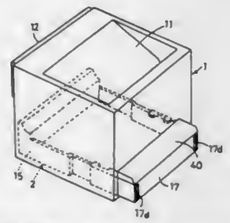
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5,313,256
ELECTROPHOTOGRAPHIC PRINTER WITH ASSOCIATED EMBOSSING DEVICE
Raphael F. Bov, Jr., Pittsford, and William C. Howe, Walworth, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 10, 1993, Ser. No. 15,188
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—282 **9 Claims**



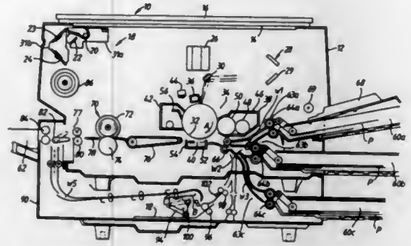
1. In an electrophotographic printer, of the type in which a latent image recorded on a photoreceptor is developed with magnetic particles and the magnetic particles are transferred to a sheet, the improvement comprising:
means for permanently fusing the magnetic particles to the sheet; and
means, operatively associated with the fusing means, for embossing an embossed image in the sheet after the magnetic particles have been fused to the sheet.

5,313,257
PAPER CASSETTE FOR USE IN AN IMAGE FORMING DEVICE
Hiroyuki Kashima; Naohisa Kinoshita, both of Nagoya, and Mitsuaki Inoue, Tsu, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jun. 29, 1992, Ser. No. 905,294
Claims priority, applicatioo Japan, Aug. 22, 1991, 3-210601
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—309 **17 Claims**



1. A paper cassette for use with an image forming device, the paper cassette comprising:
a main frame open on an upper side and having an end wall and two side walls mounted to a bottom surface and an auxiliary frame open on an upper surface and having an end wall and two side walls mounted to a bottom surface, said auxiliary frame mounted to the main frame so as to be movable forwardly and rearwardly relative to the main frame in accordance with a desired longitudinal size of sheets of paper to be stored in a thereby formed paper cassette, wherein the paper cassette is removably mounted in a paper feed section of the image forming device.

5,313,258
IMAGE FORMING APPARATUS FOR PERFORMING A DOUBLE-SIDED COPYING OPERATION
Takayuki Nishi, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Sep. 18, 1992, Ser. No. 947,260
Claims priority, application Japan, Sep. 30, 1991, 3-250696
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—314 **27 Claims**

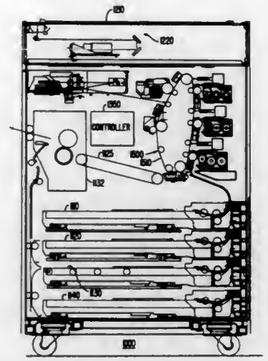


1. An image forming apparatus comprising:
forming means for forming an image on a recording medium, the medium having a first and a second side;
mode setting means for setting at least a double-sided image forming mode, wherein said double-sided image forming mode controls said forming means to form the image on said first and second sides of said recording medium;
feeding means for providing said recording medium to said forming means to form the image on said second side of said recording medium when said double-sided image forming mode is set by said mode setting means said feeding means having stacking means for temporarily stacking said recording medium;
tray means for receiving said recording medium provided to said forming means by said feeding means; and
control means for automatically ejecting said recording medium to said tray means when said recording medium is temporarily stacked in said stacking means and said double-sided image forming mode is changed by said mode setting means.

5,313,259
SYSTEM AND METHOD FOR OPERATING A MULTITONE IMAGING APPARATUS
Richard E. Smith, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 18, 1992, Ser. No. 992,684
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R **20 Claims**

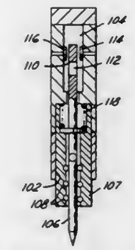
1. An imaging apparatus comprising:
a photoreceptor;
a plurality of station groups, each station group including
charge depositing means for depositing charge on the photoreceptor,
exposing means for selectively exposing the photoreceptor to radiation;
means for operating in one of
a first mode for concurrently enabling the depositing means of each station group to deposit charge at a common polarity, enabling the exposing means in a one of the station groups, enabling the exposing means in another one of the station groups, and moving the photoreceptor at a first speed relative to the plurality of stations, and
a second mode for concurrently enabling the depositing means of each station group to deposit charge at the common polarity, disabling the exposing means in the

one of the station groups, enabling the exposing means in the other one of the station groups, and moving the



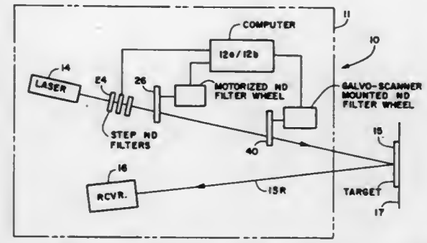
photoreceptor at a speed higher than the first speed relative to the plurality of stations.

5,313,260
PHOTOSENSITIVE PROBES
Peter F. Magyar, Jr., deceased, late of Port Huron, and by Sheila Magyar, legal representative, Lansing, both of Mich., assignors to High Tech Concepts & Inventions Corporation, Roseville, Mich.
Filed Oct. 12, 1989, Ser. No. 420,419
Int. Cl.[5] G01C *3/08;* G01B *11/24*
U.S. Cl. 356—4 **3 Claims**



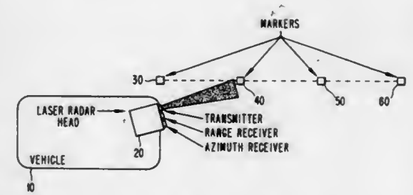
1. A measurement probe for determining distance between the probe and a workpiece within a predetermined measurement range comprising:
a housing,
a light source in said housing radiating a beam of light,
a photosensitive receiver in said housing sensing said beam of light, and
means for uniformly controlling an illumination area of said beam incident said photosensitive receiver in response to the distance of said housing from said workpiece,
said controlling means including a shade and a plunger attached to said shade,
said plunger being slidably mounted in said housing and having a contact point resiliently biased to a position extending outwardly of said housing,
said shade being adapted to variably interrupt said beam when in movement,
whereby said photosensitive receiver is responsive to said illumination area of said incident beam throughout the predetermined measurement range between the probe and said workpiece.

5,313,261
METHOD AND APPARATUS FOR FAITHFUL GRAY SCALE REPRESENTATION OF UNDER WATER LASER IMAGES
James G. Leatham, Cardiff by the Sea, and Raymond H. Bratton, Santee, both of Calif., assignors to Applied Remote Technology Inc., San Diego, Calif.
Filed Jul. 13, 1992, Ser. No. 912,880
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—4 **14 Claims**



1. An improved under water viewing system for viewing an object at various distances therefrom in water of varying turbidity comprising:
a light source;
said object being illuminated by said light source;
a receiver for receiving reflected light from said object illuminated by said light source;
light attenuation means; and
control means for selectively varying said light attenuation means for controlling the effective intensity of said reflected light received by said receiver from said illuminated object within said selected dynamic light receiving range regardless of the distance said system is from said object or the degree of turbidity of said water.

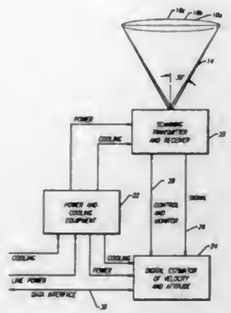
5,313,262
SYSTEMS AND METHODS FOR OBJECT DETECTION USING BEAM WIDENING OPTICS
Carl D. Leonard, Ann Arbor, Mich., assignor to IMRA America, Inc., Ann Arbor, Mich.
Filed Sep. 30, 1992, Ser. No. 953,250
Int. Cl.[5] G01C *3/08, 3/00;* G01B *11/26;* B60T *7/16*
U.S. Cl. 356—5 **23 Claims**



1. System for detecting an object comprising:
means for generating a beam of light;
means for separating said beam of light into a plurality of sub-fields, each of said sub-fields being transmitted with a different intensity, each different intensity being proportional to a distance from said light beam generating means to an expected location of said object; and
means for receiving portions of at least one of said sub-fields to detect said object.

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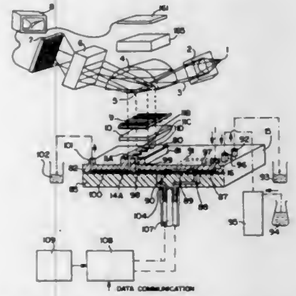
5,313,263
SYSTEM FOR, AND METHOD OF, DETERMINING THE SPEED OF AN AIRBORNE VEHICLE
John B. Abbiss, Irvine, and Anthony E. Smart, Costa Mesa, both of Calif., assignors to The Titan Corporation, San Diego, Calif.
Filed Aug. 21, 1992, Ser. No. 933,226
Int. Cl.[5] G01P *3/36*
U.S. Cl. 356—28.5 **38 Claims**



1. In combination for use in an airborne vehicle for determining the speed of the airborne vehicle relative to aerosol particles in the vicinity of the airborne vehicle,
first means for providing pulses of coherent energy at a particular frequency,
second means responsive to the pulses of coherent energy from the first means for generating pulses of coherent energy along a particular optical axis for scattering by the particles,
third means for receiving the energy scattered in the pulses by the aerosol particles as a result of the generation of the energy pulses by the second means, and
fourth means for operating upon pulses of coherent energy from the first means and the energy received in the pulses from the third means, during the generation of the energy in the pulses by the second means, for determining the speed of the airborne vehicle relative to the aerosol particles.

5,313,264
OPTICAL BIOSENSOR SYSTEM
Bengt Ivarsson, Bälinge; Jönsson Ulf, Upsala; Stefan Sjölander, Upsala; Ralph Ståhlberg, Upsala, and Hakan Sjödin, Uppsala, all of Sweden, assignors to Pharmacia Biosensor AB, Upsala, Sweden
PCT No. PCT/SE89/00641, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991, PCT Pub. No. WO90/05295, PCT Pub. Date May 17, 1990
PCT Filed Nov. 9, 1989, Ser. No. 681,533
Claims priority, application Switzerland, Nov. 10, 1988, 8804075-3
Int. Cl.[5] G01N *21/17, 33/53*
U.S. Cl. 356—73 **53 Claims**

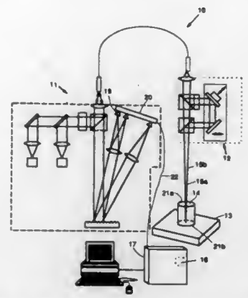
1. An optical biosensor system using an internal reflection versus angle of incidence determination for detecting a specific biomolecule, comprising:
a sensor unit including a transparent plate, at least a portion of one of the faces of said plate having a dielectric film adhered thereto, or being primarily coated with a metal film to which has been adhered a dielectric film, said dielectric film having an affinity for the specific biomolecule at the time the measurement is carried out;
a light source, including first lens means, for directing a beam of light at an interface of the transparent plate and said metal film or said dielectric film directly adhered thereto to produce an evanescent wave at a sensing surface of said dielectric film when a sample solution contacts said dielectric film on the transparent plate;
optical imaging instrumentation including second lens means by which one of light reflected from said sensing surface of the transparent plate, light originating from the sample through evanescent wave stimulated fluorescence or phosphorescence, and light originating from scattering at said sensing surface, is imaged on a photodetector device; and
an evaluation unit for determining at least one of an angle of minimum reflectance, a state of polarization, and a collected light intensity;
wherein at least one sensing surface is arranged on the sensor unit;
wherein said at least one sensing surface, in order to form an elongated flow cell, is pressed over an upwardly open portion of at least one channel for the sample solution which is to be analyzed and affects at least one of the angle of minimum reflectance, the polarization state for minimum reflectance, and the collected light intensity, at which the evanescent wave interacts with the sample;
wherein said first lens means forms a convergent beam of light focused in a wedge-shape fashion to form a streak of light extending transversely over all of said at least one sensing surface;
wherein the photodetector device, at least in the case of more than one sensing surface, is a two-dimensional matrix of individual photodetectors;
wherein said second lens means is a lens system for imaging rays of one of said reflected light from said at least one sensing surface, said light emitted from the sample, and said light originating from scattering at the sensing surface onto a corresponding column of photodetectors, so that said at least one sensing surface has at least one corresponding column of photodetectors;
wherein said evaluation unit determines at least one of the angle of minimum reflectance, the state of polarization, and the collected light intensity, for said at least one sensing surface.



5,313,265
NON-CONTACT NON-DESTRUCTIVE LATENT IMAGE SCANNER
Guy H. Hayes, New Hartford, and Robert M. Dixon, New Milford, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 2, 1992, Ser. No. 844,357
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **14 Claims**

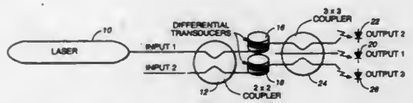
1. A method for detecting and recording the information resulting from a latent image residue place on a surface, comprising the steps of:

a) focusing an image scanner on a spot of the surface where a latent image is located;
b) measuring the height of the surface of the latent image residue on the spot;
c) recording the height measurement and location coordinates of the spot;



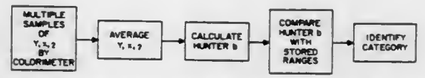
d) moving the focus of said latent image scanner to a new spot having different coordinates on the surface of said object in a predetermined manner; and
e) repeating steps a through d so as to detect and record the height information of at least a portion of the latent image residue, wherein said image scanner comprises a three-color laser-diode interferometer.

5,313,266
DEMODULATORS FOR OPTICAL FIBER INTERFEROMETERS WITH [3×3] OUTPUTS
Robert M. Keolian, 1176 Josselyn Canyon Rd., Monterey, Calif. 93940; Steven L. Garrett, 25101 Aguajito Rd., Carmel, Calif. 93923, and Charles B. Cameron, 1528 Westerfield Rd., Virginia Beach, Va. 23455-4359
Filed Aug. 17, 1992, Ser. No. 931,228
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **7 Claims**



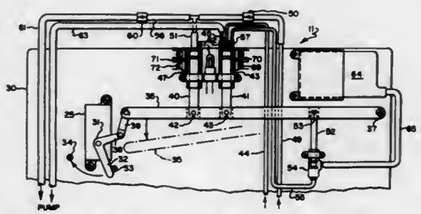
1. A highly sensitive interferometer sensor comprising:
a radiation source means for generating a coherent beam of radiation,
a first coupler means for splitting said beam into two beams,
a differential transducer means for converting a signal of interest into phase shift in said two beams,
a second coupler means for recombining said two beams to produce three phase-modulated signals x, y and z,
a radiation converter means for converting the three phase modulated signals into a set of three electrical signals, a, b, and c,
a symmetric demodulator circuit for converting the set of three electrical signals a, b and c into a single electrical signal ξ which is proportional to the signal of interest.

5,313,267
METHOD AND INSTRUMENT FOR SELECTING PERSONAL COMPATIBLE COLORS
Darby S. MacFarlane; David K. MacFarlane, both of Hastings On Hudson, and Fred W. Billmeyer, Schenectady, all of N.Y., assignors to Chromatics Color Sciences International Inc., Hastings on Hudson, N.Y.
Continuation of Ser. No. 818,448, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 402,815, Aug. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 306,286, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 204,938, Jun. 6, 1988, abandoned, which is a continuation of Ser. No. 904,369, Sep. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 833,661, Feb. 21, 1986, abandoned, which is a continuation of Ser. No. 514,618, Jul. 18, 1983, abandoned. This application Feb. 22, 1993, Ser. No. 21,657
Int. Cl.[5] G01J *3/50, 3/52*
U.S. Cl. 356—405 **87 Claims**



1. The process of identifying skin color categories for compatibility with colors of non-skin materials based on skin color undertones of an individual person including the steps of determining the value of a yellow-blue factor of the skin color of the individual person using a color measuring device, the yellow-blue factor comprising a first function weighted in a first portion of the spectrum, a second function weighted in a second portion of the spectrum, and a weighting term that is a function of the lightness of the color and that decreases the value of the yellow-blue factor with increasing lightness, classifying the skin color of the individual person into one of plural categories of skin color in dependence upon the location of the determined value in one of plural value numerical ranges defining said categories, and selecting as compatible with the skin color of the individual person one or more preselected colors assigned to said categories.

5,313,268
APPARATUS AND METHOD FOR TESTING THE LEVEL OF AN ITEM IN LIQUID
Robert J. Doll, Lockport, N.Y., assignor to Richard L. Lindemuth, North Tonawanda, N.Y., a part interest
Filed Mar. 20, 1992, Ser. No. 854,240
Int. Cl.[5] G01N *1/14, 21/59*
U.S. Cl. 356—435 **6 Claims**



1. Apparatus for measuring the level of an item in a liquid comprising first and second light-transmitting cylinders, first and second pistons associated with said first and second cylinders, respectively, a third cylinder, a third piston associated with said third cylinder, lever means, means coupling said first and second and third pistons to said lever means, first and second conduit means in communication with said first and second cylinders, respectively, a source of indicator solution,

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third conduit means for effecting communication between said second and third cylinders, fourth conduit means for effecting communication between said source of indicator solution and said third cylinder, motor means for actuating said lever means to cause said first and second pistons to draw liquid into said first and second cylinders, respectively, through said first and second conduit means, respectively, and for causing said third piston to eject indicator solution into said second cylinder through said third conduit means, and for causing said first and second pistons to eject said liquid and a mixture of said liquid and indicator solution from said first and second cylinders, respectively, and for causing said third piston to draw indicator solution into said third cylinder through said fourth conduit means from said source of indicator solution, light source means for transmitting light through said first and second cylinders, and detector circuit means for providing an output based on the different light transmissions through solutions in said first and second cylinders.

5,313,269

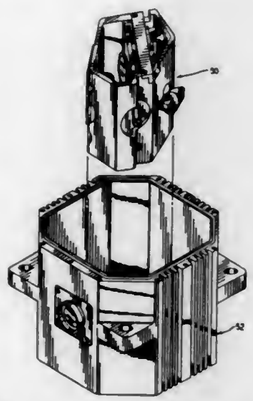
THREE-DIMENSIONAL REFRACTIVELY SCANNING INTERFEROMETER HAVING REMOVABLE OPTICAL CARTRIDGE

Fred H. Ponce, Garden Grove; D. Warren Vidrine, San Juan Capistrano, and Carlos H. Pareja, Costa Mesa, all of Calif., assignors to Research-Cottrell Technologies, Inc., Irvine, Calif.

Continuation of Ser. No. 827,987, Jan. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 663,592, Mar. 1, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,427

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—346 **42 Claims**



1. An interferometer structure, for an interferometer of the type having two optical arms, comprising:

a supporting shell having lower and side surfaces adapted to support optical elements of the interferometer;

a fixed wedge-shaped prism mounted inside the shell, which is supported throughout its vertical dimension by the shell, and which has a beamsplitter coating on its inner side;

a movable wedge-shaped prism mounted inside the shell adjacent to the fixed prism, which is supported throughout its vertical dimension by the shell, and which is adapted to move transversely back and forth across one optical arm of the interferometer;

a first retroreflecting mirror, which is fixedly supported on an inner wall of the supporting shell, and which constitutes the end of one optical arm of the interferometer;

a second retroreflecting mirror, which is fixedly supported on an inner wall of the supporting shell, and which constitutes the end of the other optical arm of the interferometer;

an outer shell inside which the supporting shell is secured; and

means for hermetically sealing the outer shell.

5,313,270

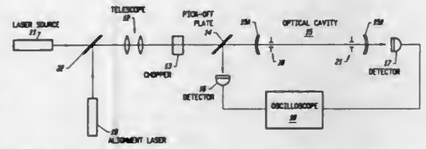
METHOD AND APPARATUS FOR MEASUREMENT OF REFLECTIVITY FOR HIGH QUALITY MIRRORS

Ilya M. Fishman, and Paul P. Haar, both of Palo Alto, Calif., assignors to the Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed May 7, 1992, Ser. No. 879,809

Int. Cl.[5] G01N *21/55*

U.S. Cl. 356—352 **30 Claims**



1. A method for measurement of reflectivity of high quality mirrors comprising the steps of:

defining a first optical cavity by commonly disposing first and second mutually spaced mirrors placed along a longitudinal axis with reflecting surfaces perpendicular to said longitudinal axis and facing each other, said first mirror having predetermined reflectivity;

directing a radiation beam into said first optical cavity along said longitudinal axis, said radiation beam produced by a radiation source and transmitted through a beamsplitter which is interposed between said first optical cavity and said radiation source on said longitudinal axis;

measuring a first optical transmission signal of said first optical cavity by a first detector, said first detector positioned on said longitudinal axis behind said second mirror;

measuring a first relative reflection signal of said first optical cavity by a second detector, said second detector located in a deflection plane of said beamsplitter;

forming a second optical cavity by reversing the position of said first and said second mirrors respectively;

aligning said second optical cavity to obtain a second optical transmission signal from said first detector;

measuring a second relative reflection signal of said second optical cavity by said second detector; and

determining a reflection coefficient of said second mirror as a function of said predetermined reflectivity and said first and second relative reflection signals.

5,313,271

ABSOLUTE GAS REFRACTOMETER WHEREIN THE OPTICAL PATH DIFFERENCE OF SAID REFRACTOMETER IS FIXED

Raymond J. Chaney, Berkeley, United Kingdom, assignor to Renishaw Transducer Systems Limited, Gloucestershire, United Kingdom

Filed Mar. 4, 1992, Ser. No. 845,711

Claims priority, application United Kingdom, Mar. 8, 1991, 9104897; Aug. 20, 1991, 9117921

Int. Cl.[5] G01B *9/02*

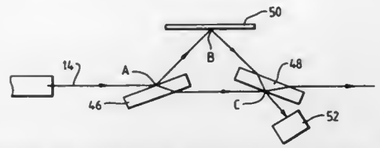
U.S. Cl. 356—361 **18 Claims**

1. A gas refractometer comprising:

a light source for providing a light beam of known nominal frequency;

an interferometer system including at least one interferometer, said system having beam splitting means for splitting said light beam into a plurality of beam parts, and for combining said split beam parts into at least one outgoing beam from the interferometer system; and

a detector system for receiving said at least one outgoing beam, and for deriving from said at least one outgoing beam an output in the form of a fringe count corresponding to a change in wavelength of said beam parts in the interferometer system,



wherein the interferometer system includes means for defining beam paths of unequal physical path lengths, the difference in said physical beam path lengths being fixed, so that, depending on said nominal frequency of said light beam, the maximum change in wavelength of said beam parts due to variations in at least one of said nominal frequency and a refractive index of the atmosphere will change the detector system output by less than one fringe count.

5,313,272

METHOD AND APPARATUS FOR MEASURING DEVIATION BETWEEN PATTERNS ON A SEMICONDUCTOR WAFER

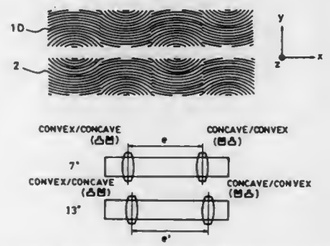
Noriyuki Nose, Atsugi; Kenji Saitoh; Hiroshi Osawa, both of Yokohama, and Masanobu Hasegawa, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,500

Claims priority, application Japan, Aug. 5, 1991, 3-219241

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—375 **8 Claims**



1. A method for measuring the deviation between elements on an object, comprising the steps of:

forming at least a first physicooptical element on the object;

forming at least a second physicooptical element on the object, said first and second physicooptical elements having lens functions;

projecting light beams onto the first and second physicooptical elements on the object, and detecting the incident positions of two light beams, travelling from the first and second physicooptical elements and having been subjected to the lens functions of the first and second physicooptical elements on a predetermined surface; and

detecting the deviation between the first and second physicooptical elements on the object from the relationship between the detected incident positions of two light beams.

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APPARATUS FOR CALIBRATING AN ANALOGUE SCREEN DISPLAY SYSTEM

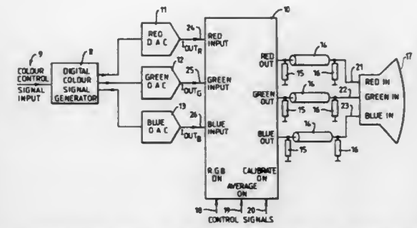
Richard Griffin, and Graham C. Evelin, both of Herts., England, assignors to Crosfield Electronics Limited, Herts, England

Filed Oct. 30, 1992, Ser. No. 969,398

Claims priority, application United Kingdom, Oct. 31, 1991, 9123105

Int. Cl.[5] H04N *17/02*

U.S. Cl. 348—189 **7 Claims**



1. Apparatus for use in calibrating an analogue display system comprising:

digital-to-analogue conversion (D.A.C.) means for converting digital color control signals to analogue colour component signals suitable for controlling an electronic display, and analogue signal modifying means for modifying the analogue colour component signals from the D.A.C. means and connected to a screen of the analogue display system; the apparatus further comprising:

switch means connected to said D.A.C. means and said analogue signal modifying means said switch means including means for producing analogue calibration color component signals, said switch means being operable in a first simultaneous display mode to pass said analogue colour component signals from said D.A.C. means directly to said analogue signal modifying means and operable in a second simultaneous display mode to pass said analogue calibration colour component signals to said analogue signal modifying means such that an appearance of said analogue colour component signals from said D.A.C. means and an appearance of said analogue calibration colour component signals can be visually compared on the screen of the analogue display system to determine whether any reproduction errors are in said D.A.C. means or in said analogue signal modifying means.

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COLOR SIGNAL MATRIX CIRCUIT

Masato Abe, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Aug. 20, 1991, Ser. No. 747,856

Claims priority, application Japan, Aug. 21, 1990, 2-220551

Int. Cl.[5] H04N *9/67*

U.S. Cl. 358—21 R **7 Claims**

1. A color signal matrix circuit for generating a plurality of output signals by modifying a plurality of input signals, using signal multiplier circuits comprising:

a plurality of color matrix signal element calculating means, each of said color matrix signal element calculating means receiving one of a plurality of color input signals and modifying each of said color input signals with a corresponding coefficient to obtain a color matrix signal element;

an output signal calculating means, operatively connected to said plurality of color matrix signal element calculating means, for adding/subtracting the color matrix signal elements obtained by said plurality of color matrix signal

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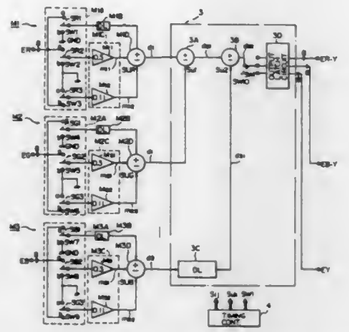
element calculating means to obtain one of said output signals; and

a coefficient changing means, operatively connected to said plurality of color matrix signal element calculating means, for changing said coefficient;

said output signal calculating means being controlled by said coefficient changing means and thereby generating said plurality of output signals in a time-divisional manner,

each of said matrix element calculating means including:

a plurality of signal switching circuits, each responsive to a



control signal from the coefficient changing means for selectively coupling the corresponding color input signal or a ground level signal therethrough;

a plurality of signal multiplier circuits, each connected to a corresponding one of said switching circuits, for modifying an output signal of the corresponding switching circuit by a predetermined signal multiplier; and

a signal adding/subtracting circuit, operatively connected to said signal multipliers and controlled by said coefficient changing means, for adding/subtracting the output signals of said signal multipliers.

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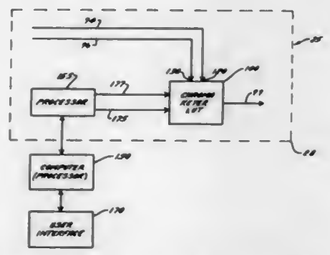
CHROMA PROCESSOR INCLUDING A LOOK-UP TABLE OR MEMORY

Richard T. Daly; Robert N. Stabler; Paul C. Post, and Randy Wiggins, all of Madison, Wis., assignors to Colorgraphics Systems, Inc., Madison, Wis.

Filed Sep. 30, 1992, Ser. No. 954,366

Int. Cl.[5] H04N *9/74*

U.S. Cl. 348—592 **31 Claims**



29. A digital chroma processor for providing first output chrominance signals and second output chrominance signals in response to first input chrominance signals and second input chrominance signals, the chroma processor comprising:

a user interface;

a processor;

a memory, the memory storing the first output chrominance signals and the second output chrominance signals, the memory providing the first output chrominance signals and the second output chrominance signals in response to the first input chrominance signals and the second input chrominance signals; and

wherein the processor is coupled to the user interface, the processor producing the first output chrominance signals and the second output chrominance signals for storage in the memory in response to commands from the user interface.

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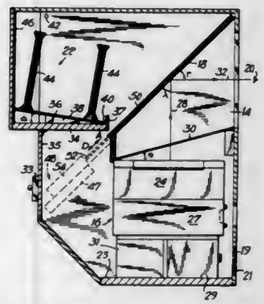
METHOD FOR PREPARING THREE DIMENSIONAL IMAGES AND AUDIOVISUAL SYSTEM FOR DISPLAYING THEREOF

Kelly Taaffe, 1423 S. Howard Ave., Tampa, Fla. 33606

Filed May 11, 1992, Ser. No. 882,180

Int. Cl.[5] H04N *5/64*

U.S. Cl. 348—51 **28 Claims**



1. An audiovisual display system for displaying three dimensional images along a line of sight to be viewed by a viewer comprising image source means for projecting a video image in a predetetermined direction; stage means for providing a setting; transparent screen means disposed between the predetermined direction of said video image and said stage means and being oriented at an angle less than 90° to said line of sight and less than 90° from the predetermined direction of said video image so that said viewer is able to view said stage means and said video image projected on said transparent screen means so that said video image appears to be positioned on said stage means to said viewer.

5,313,277

IMAGE PICKUP DEVICE HAVING WHITE BALANCE CONTROL FUNCTION

Masao Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1991, Ser. No. 782,135

Claims priority, application Japan, Oct. 30, 1990, 2-290821; Oct. 30, 1990, 2-290822

Int. Cl.[5] H04N *9/73*

U.S. Cl. 348—223 **22 Claims**

1. An image pickup device comprising:

(a) image pickup means for forming a video signal from an object light;

(b) adjusting means for adjusting a white balance of the video signal which is generated from the image pickup means;

(c) discriminating means for discriminating a size of an area

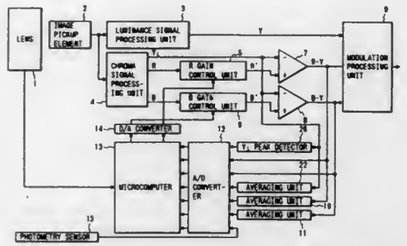
which is occupied by a single object in a picture with respect to the video signal, said discriminating means detecting a correlation of color signals on a plurality of sampling points which are distribnted and arranged on the picture plane; and

(d) control means for controlling the operation of the adjusting means in accordance with an output of the discriminating means.

16. An image pickup device comprising:

(a) image pickup means for forming a video signal from an object light;

(b) adjusting means for adjusting a white balance of the video signal which is generated from the image pickup



means, said adjusting means including signal processing means for forming color temperature information in accordance with levels of said plurality of color signals in the video signal which is generated from the image pickup means;

(c) detecting means for detecting whether a macro photographing is performed by the image pickup means or not; and

(d) control means for controlling the operation of the adjusting means in accordance with a detection result of said detection means, said control means controlling a field angle for picking up an image of said image pickup means in accordance with whether the macro photographing is performed by the image pickup means or not.

5,313,278

SYSTEM FOR PROOFING

Isak Duenyas, Tel Aviv, Israel, and Eliezer Baron, Brussels, Belgium, assignors to Scitex Corporation Ltd., Herzliya, Israel

Filed Aug. 26, 1991, Ser. No. 749,915

Claims priority, application Israel, Jul. 21, 1991, 98902

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—527 **15 Claims**

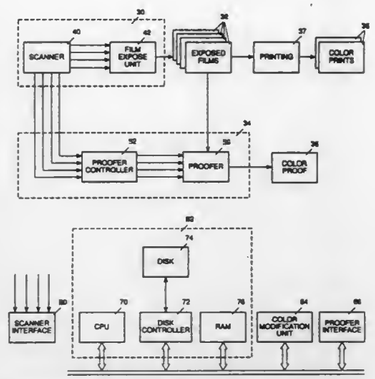
1. A system for proofing comprising:

color scanning means for scanning an input image and for producing a plurality of color separation signals corresponding to color values in said input image;

proofing means for producing a proof of said input image;

color modification means, connected between said color scanning means and said proofing means, for capturing said color separation signals while said color scanning means scans said input image and for modifying said color separation signals to produce said proof; and

exposing means for exposing a plurality of films for use in producing an output print of said input image, each film corresponding to one of said color separation signals, and



wherein said proofing means and said exposing means operate at at least partially overlapping times.

5,313,279

DIGITAL CARRIER COMBINING APPARATUS IN A MULTIPLE QAM DIGITAL TELEVISION SIGNAL RECEIVER

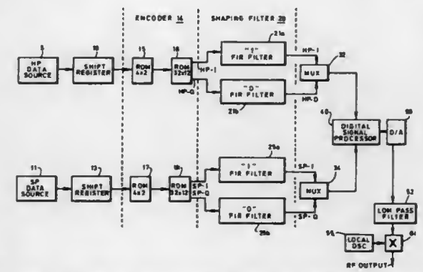
Tian J. Wang, and Lauren A. Christopher, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Indianapolis, Ind.

Filed Dec. 16, 1992, Ser. No. 991,625

Claims priority, application United Kingdom, Sep. 10, 1992, 9219185.7

Int. Cl.[5] H04N *7/12, 7/00*

U.S. Cl. 348—426 **9 Claims**



1. In a system for processing a high definition television signal, apparatus comprising:

means for providing a first digital signal representing first information and having quadrature components;

means for providing a second digital signal representing second information and having quadrature components;

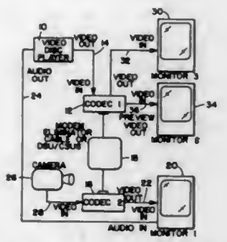
first digital signal processing means responsive to said first and second digital signals for providing a first carrier quadrature amplitude modulated (QAM) with said first information and having a first data rate, and a second carrier quadrature amplitude modulated with said second information and having a second data rate different from said first data rate; and

second digital signal processing means including means for converting said first data rate of said first modulated carrier to said second data rate of said second modulated

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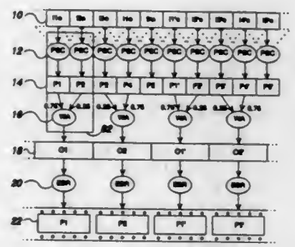
carrier to produce a data rate converted modulated first carrier, and means for combining said data rate converted modulated first carrier and said modulated second carrier, in digital form, to produce a composite multiple QAM carrier output signal.

5,313,280
METHOD AND APPARATUS FOR TESTING CODEC DEVICES
Marvin J. Straus, Bonider, Colo., assignor to U S WEST Advanced Technologies, Inc., Boulder, Colo.
Filed Jul. 13, 1992, Ser. No. 912,877
Int. Cl.[5] H04N *17/02, 17/04*
U.S. Cl. 348—181 **18 Claims**



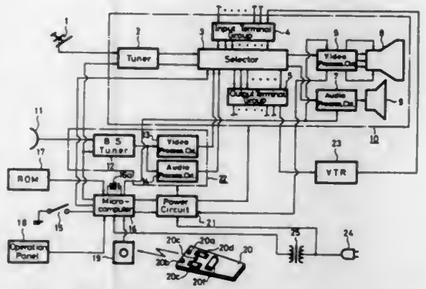
1. A method of testing the ability of a codec to process data corresponding to a video scene that contains motion, comprising the steps of transmitting a test pattern which includes a moving video image of varying motion content and an accompanying audible scoring criteria, utilizing at least one codec for encoding and decoding the image, and displaying the image while concurrently reproducing the audible scoring criteria in order to provide a codec score at a time of occurrence of motion artifacts in a displayed image.

5,313,281
VIDEO TO FILM CONVERSION
John W. Richards, Stockbridge, United Kingdom, assignor to Sony United Kingdom Ltd., Staines, United Kingdom
Filed Jun. 23, 1993, Ser. No. 80,204
Claims priority, application United Kingdom, Sep. 29, 1992, 9220527
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—443 **32 Claims**



1. A method of converting a 60 field/s 2:1 interlaced digital video signal comprising a plurality of sequences of five input fields to 24 frame/s film, comprising the steps, for each said sequence of five input fields, of:
progressive scan converting each of one pair of the five input fields to form one pair of intermediate frames, each intermediate frame comprising an array of pixels each having a respective value and a respective location in said intermediate frame;
combining the intermediate frames of said one pair to form one output video frame, each output video frame comprising an array of pixels each having a respective value and a respective location in said output frame corresponding to respective locations in said intermediate frames, said value of each pixel in said one output frame being a weighted combination of said values of said pixels at the corresponding locations in said intermediate frames of said one pair;
progressive scan converting each of another pair of the five input fields to form another pair of intermediate frames, each intermediate frame comprising an array of pixels each having a respective value and a respective location in said intermediate frame;
combining the intermediate frames of said other pair to form another output video frame, each output video frame comprising an array of pixels each having a respective value and a respective location in said output frame corresponding to respective locations in said intermediate frames, said value of each pixel in said other output frame being a weighted combination of said values of said pixels at the corresponding locations in said intermediate frames of said other pair; and
recording said one and said other output video frames on film.

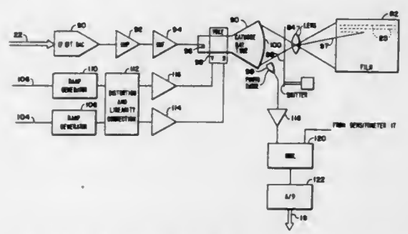
5,313,282
DEVICE FOR CONTROLLING POWER SUPPLIED TO A SATELLITE BROADCAST RECEIVER IN A TELEVISION
Toshihide Hayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 3, 1992, Ser. No. 939,829
Claims priority, application Japan, Sep. 10, 1991, 3-230363
Int. Cl.[5] H04N *5/63*
U.S. Cl. 348—729 **8 Claims**



1. A television device, comprising:
a satellite broadcast receiver for receiving a satellite broadcast and for recording said satellite broadcast;
a television receiver for receiving a television broadcast; and
power supply means for independently supplying power to said satellite broadcast receiver and said television receiver wherein during the recording of said satellite broadcast said satellite broadcast receiver is continuously powered by said power supply means when said television receiver is not supplied with said power.

7. A method of controlling electrical power to a satellite broadcast receiver forming a part of a television device, comprising the steps of:
receiving a command to turn off electrical power;
determining if broadcast satellite recording is being executed;
if broadcast satellite recording is being executed, turning off power to a portion of said television device while retaining electrical power to said satellite broadcast receiver;
if said broadcast satellite recording is not being executed, turning off power to said broadcast satellite receiver.

5,313,283
SYSTEM AND METHOD FOR CONTROLLING EXPOSURE FORMAT FOR AN APPARATUS FOR EXPOSING PHOTOGRAPHIC FILM WITH IMAGE DATA
Richard C. Rice, Oconomowoc; Barry N. Stone, Hartland, and Lynn J. Orendorff, Wankesha, all of Wis., assignors to Camtronics, Ltd., Delafield, Wis.
Filed Apr. 21, 1989, Ser. No. 341,730
Int. Cl.[5] H04N *5/84*
U.S. Cl. 358—350 **17 Claims**

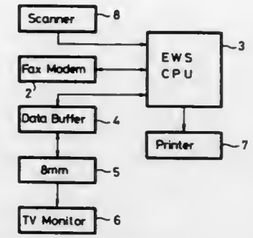


1. A system for controlling an apparatus of the type for exposing photographic film with image data in any one of a plurality of different imaging formats, each of said formats being defined by a unique pixel array comprising a predetermined number of lines and a predetermined number of pixels per line which serve to reconstruct an image represented by said image data, said system comprising:
means for determining the imaging format of a particular set of image data, including the number of lines and the number of pixels per line of said format;
means for determining an exposure format defining the manner in which the film is exposed in response to the determined imaging format for the image data so as to produce an image of predetermined size on the film; and
means, responsive to the determined exposure format, for calibrating the exposure intensity created by the apparatus when exposing the film in accordance with the determined exposure format.

5,313,284
TENSION BAND AND CATHODE RAY TUBE FASTENED THEREWITH
Hveong-sub Lim, Pusan, and Young-min Hwang, Kyungsangnam, both of Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea
Filed Sep. 20, 1990, Ser. No. 585,788
Claims priority, application D.P.R. of Korea, Sep. 20, 1989, 89-13714[U]; Jun. 2, 1990, 90-8165
Int. Cl.[5] H04N *5/65*
U.S. Cl. 348—822 **13 Claims**

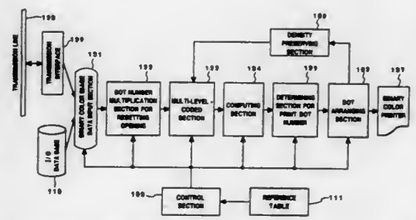
1. A tension band for a cathode ray tube, comprising a single band unit having no seam therein, and being made of synthetic resin containing polyamide and glass fiber, wherein the length of said glass fiber is in the range of 3–12 mm and the diameter thereof is in the range of 6–13 μm.

5,313,285
FACSIMILE APPARATUS HAVING A HELICAL SCAN VCR
Eiichi Yokoyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 23, 1992, Ser. No. 855,940
Claims priority, application Japan, Mar. 29, 1991, 3-066728
Int. Cl.[5] G09G *3/36*
U.S. Cl. 358—400 **5 Claims**



1. A facsimile apparatus comprising:
a helical scan VTR;
means for recording binary data of a received facsimile signal on a first area of a recording medium in the VTR;
means for converting the received facsimile signal into a television signal and for recording the converted television signal on a second area of the same recording medium;
a printer connected to said recording and converting means; and
a TV monitor connected to said recording and converting means;
whereby said received facsimile signal can be optionally viewed on said TV monitor or printed out by said printer.

5,313,286
IMAGE DATA PROCESSING APPARATUS AND METHOD THEREOF
Susumu Sugiura, Atsugi, and Shigetada Kobayashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1990, Ser. No. 539,343
Claims priority, application Japan, Jun. 21, 1989, 1-159316
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—443 **11 Claims**

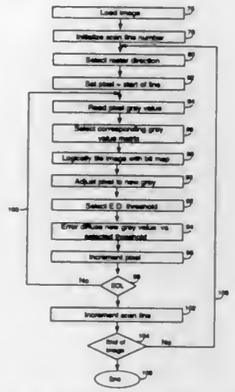


7. An image date processing method, wherein l-level image data is coded into m-level coded image data, comprising the steps of:
providing a window of a predetermined size;
processing l-level image data into m-level coded image data;
calculating the number of dots to be rearranged in accordance with the processed m-level coded image data;
re-arranging data of the calculated number within a window

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of a predetermined size in accordance with a dot arrangement of said l-level image data; and
diffusing errors which are generated in the calculations.

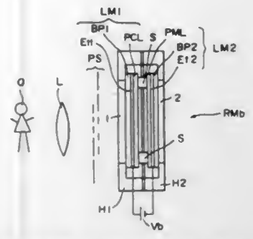
5,313,287
IMPOSED WEIGHT MATRIX ERROR DIFFUSION HALFTONING OF IMAGE DATA
David C. Barton, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 30, 1993, Ser. No. 55,628
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—458 **20 Claims**



1. A method of halftoning a digital image formed of a rectangular array of scan lines of pixels, each pixel having a gray value, for forming an output image, the method comprising the steps of:
for each scan line of pixels selecting a corresponding processing direction such that the selected processing direction varies from each scan line to the next according to a blue noise function; and
sequentially processing the scan lines of pixels, the individual pixels in each scan line being processed in the corresponding processing direction, whereby directional and start-up delay artifacts in the output image are reduced.

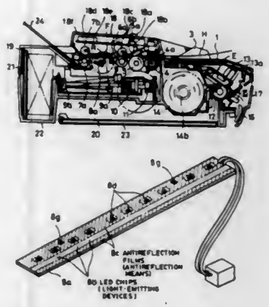
5,313,288
RECORDING MEDIUM AND RECORDING/REPRODUCTION APPARATUS THEREOF
Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Miura; Tsutou Asakura; Masato Furuya, both of Yokohama; Yoshihisa Koyama, Yokosuka, and Yuji Uchiyama, Chigasaki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Mar. 4, 1992, Ser. No. 846,800
Claims priority, application Japan, Mar. 6, 1991, 3-065657
Int. Cl.[5] H04N *1/028, 3/15;* **G02F** *1/135*
U.S. Cl. 358—471 **2 Claims**

1. A recording medium having first and second transparent electrodes, a photoconductive layer member and a photomodulation member, comprising:
a first lamination member having a first transparent substrate on which the first transparent electrode and the photoconductive layer member are laminated in order;
a second lamination member having a second transparent substrate on which the second transparent electrode and the photomodulation layer member are laminated in order; and
coupling members for unifying the first and second lamination members within said recording medium to establish a fixed spaced apart relationship between said members with an air gap of specific width in such a manner that the



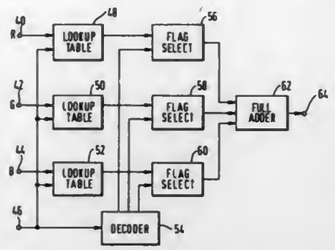
photoconductor and photomodulation layer members face each other to permit an aerial discharge across said gap upon the application of a voltage between said electrodes.

5,313,289
ORIGINAL ILLUMINATING DEVICE AND ORIGINAL READING DEVICE PREVENTING RANDOM REFLECTED LIGHT
Hiromichi Nagane, and Koji Takahashi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 6, 1991, Ser. No. 759,901
Claims priority, application Japan, Mar. 8, 1990, 2-57393; Apr. 6, 1990, 2-91790; Apr. 6, 1990, 2-91791
Int. Cl.[5] G02F *1/13*
U.S. Cl. 358—475 **22 Claims**



1. An original illuminating device comprising:
a substrate;
a plurality of light-emitting devices, disposed on said substrate, for emitting light to illuminate an original;
a plurality of electrodes, disposed on said substrate, for passing current through said plurality of light-emitting devices, said plurality of light-emitting devices and said plurality of electrodes being provided on a same surface of said substrate; and
anti-reflection means, provided on said plurality of electrodes, for preventing light from being reflected from said plurality of electrodes.

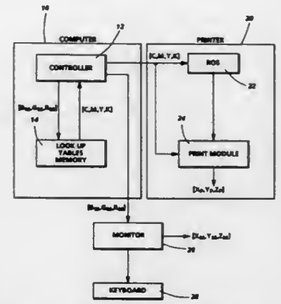
5,313,290
HUE COMPENSATION APPARATUS FOR A COLOR HARD COPY MACHINE
Toshio Machida, Gunma, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 679,183, Apr. 2, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 48,214
Claims priority, application Japan, Apr. 2, 1990, 2-84913
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—500 **10 Claims**



1. A hue compensation apparatus, which outputs hue-compensated data of a color designated by an input color selection signal of red, green and blue, responsive to red, green and blue input signals, comprising:
first lookup table means for outputting only a single hue-compensated red output signal in response to an input red signal;
second lookup table means for outputting only a single hue-compensated green output signal in response to an input green signal;
third lookup table means for outputting only a single hue-compensated blue output signal in response to an input blue signal;
decoder means for decoding an input color selection signal, and for outputting output signals responsive to said decoded input color selection signal;
polarizing means for polarizing said hue-compensated output signals from said first, second, and third lookup table means according to said output of said decoder means, said polarizing means comprising a plurality of polarity circuits connected respectively to said first, second, and third lookup table means, and said plurality of polarity circuits each having an input which is an output signal from said decoder means; and
synthesizing means for synthesizing said polarized output signals from said first, second and third lookup table means.

5,313,291
METHOD FOR MATCHING COLOR PRINTS TO COLOR IMAGES ON A MONITOR SCREEN
James J. Appel, Brighton; John A. Durbin, Webster, all of N.Y., and Richard F. Lehman, Nashua, N.H., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 25, 1991, Ser. No. 797,671
Int. Cl.[5] H04N *1/46;* **G03F** *3/08*
U.S. Cl. 358—501 **9 Claims**

1. A method for calibrating a color printing system which includes a color CRT monitor, color printer, and source of digital color signals including the steps of:
storing in a controller memory, a predetermined number of sets of C, M, Y, K print codes, each set associated with a specific color value to be printed,
applying each of said print codes sequentially to the color printer for producing color output prints carrying color patches, each color patch corresponding to a specific C, M, Y, K print code applied to said printer,
measuring each said color patch under a particular set of spectral illumination conditions and establishing tristimulus values Xp, Yp, Zp, for each measured color patch,
correlating each measured Xp, Yp, Zp value with the associated C, M, Y, K print code, and storing each correlation in a memory look up table,
storing in said controller memory, a predetermined number of sets of coded digital signals Bm, Gm, Rm, representative of all possible colors capable of being created on a particular color CRT monitor,
applying said sets of coded digital signals sequentially to an associated electron gun of said color CRT monitor, each coded digital signal set creating a color image with a specific Bm, Gm, Rm gun code value,
measuring each said color image in an environment which closely approximates the actual viewing condition of an



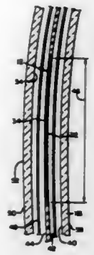
operator observing the color image at a specific distance from the monitor, each measurement establishing a set of tristimulus values, Xm, Ym, Zm, and
correlating each measured Xm, Ym, Zm set with the associated Bm, Gm, Rm set, and storing each correlation in said memory look up table.
comparing the color range of the printer to the color range of the monitor and limiting the Xm, Ym, Zm range to the Xp, Yp, Zp range, whereby upon selection by an operator of a print operation to print a specific color image displayed on the monitor, a print code C, M, Y, K is generated which is correlated with the stored monitor gun code that produced that particular color image on the monitor resulting in an output print that has the same tristimulus values as the color image on the screen.

5,313,292
WINDSHIELD DISPLAY SYSTEM FOR AN AUTOMOBILE
Robert B. Wood, Hillsboro; Mark A. Thomas, Beaverton, both of Oreg.; James L. Valimont, Cheswick, Pa.; H. Edward Littell, Jr., Gibsonia, Pa., and Glenn F. Freeman, Tarentum, Pa., assignors to Flight Dynamics, Portland, Oreg.
Continuation-in-part of Ser. No. 62,447, Jun. 12, 1987, Pat. No. 4,842,389. This application Jun. 9, 1989, Ser. No. 364,022
Claims priority, application Canada, Jun. 13, 1988, 569315
The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.
Int. Cl.[5] G02B *5/32;* **G03H** *1/04*
U.S. Cl. 359—13 **14 Claims**

1. A windshield display system, comprising:
an optically transparent windshield ply having an inner surface;
exposed photosensitive material mounted adjacent to the inner surface of the optically transparent windshield ply, the photosensitive material having wavelength selective properties; and
an optically transparent interlayer positioned to cover the photosensitive material that is mounted adjacent to the

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inner surface of the optically transparent windshield ply, the optically transparent windshield ply and the photosen-



sitive material and the optically transparent interlayer being bonded together to form a unitary article.

5,313,293

DOT-MATRIX TYPE DISPLAY DEVICE

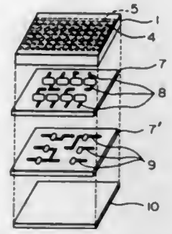
Jun-ichi Hirakata, Hitachi; Katsumi Kondo, Katsuta; Shuichi Ohara, Hitachi; Masato Isogai, Mito; Satoru Ogihara, Hitachi, and Naoki Kikuchi, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,993

Claims priority, application Japan, Aug. 20, 1991, 3-207998

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—54 **16 Claims**



1. A dot-matrix type display device comprising:

a first transparent substrate and a second substrate which are arranged to be opposite to each other;

groups of scanning electrodes and groups of signal electrodes provided respectively on surfaces of said first and second substrates facing each other, one of said scanning electrodes and one of said signal electrodes intersecting each other to define a display portion, each of said signal electrodes being formed independently of other signal electrodes in order to define a different display portion, and said groups of signal electrodes being provided for at least three signal systems;

a material which is sandwiched between one of said scanning electrodes and one of said signal electrodes, the light transmitting quantity of said material being changed by an electric field applied between said one scanning electrode and said one signal electrode; and

outside leads from said respective signal electrodes being arranged to pass through said second substrate and to be led out to a back surface of said second substrate.

5,313,294

BEAM CURRENT LIMITING ARRANGEMENT HAVING A PEAK AMPLITUDE, RESPONSIVE THRESHOLD

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

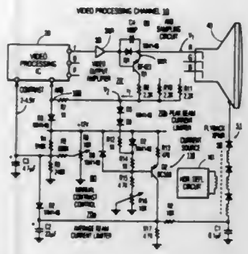
PCT No. PCT/US91/01808, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/15080, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 19, 1991, Ser. No. 820,902

Claims priority, application United Kingdom, Mar. 20, 1990, 9006250

Int. Cl.[5] H04N *9/16*

U.S. Cl. 348—377 **12 Claims**



1. In a display system, apparatus comprising:

a video signal processing channel for processing an video input signal to produce an video output signal suitable for display;

a power supply;

an image display device coupled to said video signal processing channel and to said power supply and drawing current from said power supply in response to said video output signal;

means coupled to said power supply for sensing the average current drawn by said display device from said power supply;

means coupled between said video signal processing channel and said average current sensing means for reducing an image property determining characteristic of said video output signal when said average current drawn by said display device from said power supply exceeds a controllable threshold;

means coupled to said video signal processing channel for sensing the amplitude of said video output signal; and

means coupled to said reducing means for setting said threshold of said reducing means in response to the amplitude of video output signal.

5,313,295

MOVING BODY MEASURING DEVICE AND AN IMAGE PROCESSING DEVICE FOR MEASURING TRAFFIC FLOWS

Hiroyasu Taniguchi; Haruki Furusawa; Jun Hatakenaka, and Akinobu Seki, all of Tsukaguchi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,652

Claims priority, application Japan, Mar. 19, 1991, 3-054281; Mar. 26, 1991, 3-061964; Jun. 28, 1991, 3-158300; Nov. 21, 1991, 3-306295

Int. Cl.[5] H04N *7/18*

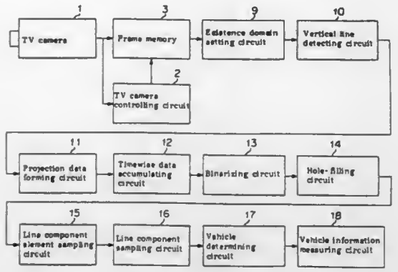
U.S. Cl. 348—149 **11 Claims**

1. A moving body measuring device, having an image taking unit for taking an image of a moving body, a controlling means for controlling the image taking unit, and a frame memory for storing image data from the image taking unit, the device comprising:

existence domain setting means for setting an existence domain extended along a distance of the moving path of the moving body based on the image data;

sampling means for sampling data showing the moving body based on the image data in the existence domain; and

timewise data accumulating means for timewisely and continuously accumulating, at a constant period, sampled data showing the moving body indicating a timewise change of



the moving body moving along at least a portion of the distance in the existence domain to produce a two-dimensional locus of the moving body in a two-dimensional plane of the distance that the moving body travels versus the traveling time.

5,313,296

IMAGE INFORMATION PROCESSOR IN WHICH RESIDUAL INFORMATION IS STORED IN A BLANK AREA OF A FIELD MEMORY

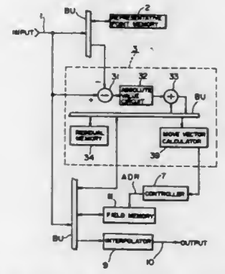
Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,396

Claims priority, application Japan, Jul. 16, 1991, 3-175345

Int. Cl.[5] H04N *1/41, 1/417*

U.S. Cl. 348—208 **6 Claims**



1. An image information processing apparatus comprising:

a field memory for storing a field of image information;

means for detecting a move vector of an image of a present field of image information relative to that of a preceding field of image information;

a circuit for processing on the basis of said move vector an image of the present field stored in said field memory; and

a residual memory storing residual information calculated during a period in which image information of one horizontal scanning lien is input;

wherein the residual information stored in said residual memory is shunted into a blank area of said field memory during a predetermined interval after a period in which said image information is input.

5,313,297

SYSTEM FOR PROVIDING PICTURES RESPONDING TO USERS' REMOTE CONTROL

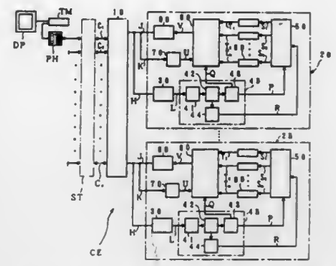
Satoshi Fukui, Osaka, and Masato Hata, Toyonaka, both of Japan, assignors to Costem Inc., Japan

Filed Mar. 24, 1992, Ser. No. 856,670

Claims priority, application Japan, Sep. 19, 1991, 3-84425

Int. Cl.[5] H04H *1/08;* H04M *11/00*

U.S. Cl. 348—7 **5 Claims**



1. A system for providing pictures responding to users' remote control which is connected to plural external communication lines and provides digital signals of pictures of respective programs specified by operation signals transmitted through said communication lines, individually, in accordance with remote control by the operation signals, said system comprising;

line control means for connecting the communication line through which the operation signals are transmitted, to its corresponding internal signal line among plural internal signal lines corresponding to the plural communication lines, respectively; and

plural picture providing means connected to the plural internal signal lines, respectively; each of which comprises;

plural picture storing/reproducing means, each of which includes picture storage media storing picture signals of a program including pictures of one or plural items, and is capable of reproducing the picture signals;

operation signal analysis means for analyzing the operation signals inputted to the internal signal line and then outputting control signals including signals for specifying one of the picture storing/reproducing means and signals for operating it; and

picture output means for making the picture storing/reproducing means storing the pictures of specified program, outputting the picture signals of the program on the basis of the operation signals, and then converting the picture signals into digital picture data, and then outputting the digital picture data to the line control means through the internal signal line.

5,313,298

VIDEO COMPANDING METHOD AND SYSTEM

G. William Meeker, Silver Spring, Md., assignor to Rubin, Bednarek and Associates, Inc., Washington, D.C.

Filed Mar. 5, 1992, Ser. No. 846,681

Int. Cl.[5] H04N *7/133, 7/137*

U.S. Cl. 348—384 **29 Claims**

1. A method in a signal processing system for processing of video data comprising performing a forward encode process of the steps of:

calculating a local average A_i of a portion V_i of a video input V, which portion corresponds to a portion P_i of a video frame;

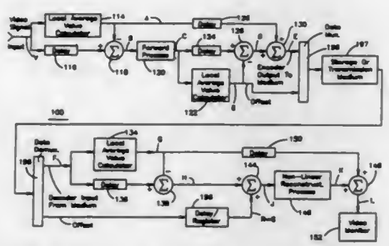
subtracting said local average A_i from at least part of said portion V_i to generate a signal B_i;

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subjecting said signal B_i to a non-linear forward process to generate a signal C_i which emphasizes any values of B_i which correspond to any values of V_i having relatively small differences from the local average A_i and which de-emphasizes any values of B_i which correspond to any values of V_i having relatively large differences from the local average A_i;

using said signal C_i to provide and apply an encoded output E_i to a medium; and

repeating the above steps for i running at least from 1 to m where m is an integer larger than 1 and is the number of portions of the video frame for which the local average A_i is calculated; and



such that said encoded output E_i is recoverable from said medium to reconstruct the video frame with relatively low contrast parts of the video frame having an increased signal-to-noise ratio, the increased signal-to-noise ratio for a particular low contrast part being increased relative to a signal-to-noise ratio for that low contrast part in the absence of the forward encode process, and relatively high contrast parts of the video frame having a decreased signal-to-noise ratio, the decrease signal-to-noise ratio for a particular high contrast part being decreased relative to a signal-to-noise ratio for that high contrast part in the absence of the forward encode process.

5,313,299

SCAN CONVERTER CONTROL CIRCUIT HAVING MEMORIES AND ADDRESS GENERATOR FOR GENERATING ZIGZAG ADDRESS SIGNAL SUPPLIED TO THE MEMORIES

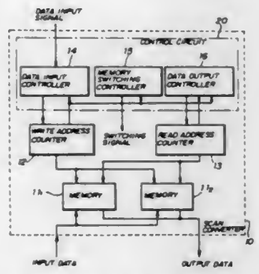
Teruo Ishihara, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 2, 1990, Ser. No. 561,826

Claims priority, application Japan, Aug. 2, 1989, 1-199362; Mar. 20, 1990, 2-71231

Int. Cl.[5] H04N *5/14, 7/12*

U.S. Cl. 348—714 **11 Claims**



1. A scan converter control circuit comprising:

first and second memories, each having a data write mode and a data read mode which are selected in response to a switching signal so that said first memory is in said data write mode when said second memory is in said data read mode and said first memory is in said data read mode when said second memory is in said data write mode;

write address counter means, operatively coupled to said first and second memories, for generating a write address which is to be alternately supplied to said first and second memories and for generating a write completion signal when the write address becomes equal to a predetermined count value;

read address counter means, operatively coupled to said first and second memories, for generating a read address which is to be alternately supplied to said first and second memories and for generating a read completion signal when the read address becomes equal to a predetermined count value;

data input control means, operatively coupled to said write address counter means, for enabling said write address counter means in response to a data input signal supplied from an external circuit and for disabling said write address counter means when receiving said write completion signal;

memory switching control means, operatively coupled to said first and second memories, for generating said switching signal having a logic value which is changed in response to said write completion signal; and

data output control means, operatively coupled to said write address counter means; said read address counter means and said first and second memories, for enabling said read address counter means in response to said write completion signal and for disabling said read address counter means in response to said read completion signal;

data is alternately written into and read out from said first and second memories for every n×n block having n×n pixel data, n being an integer,

said write address counter means generates said write address which scans said n×n block formed in one of said first and second memories which is in said write mode in a vertical direction of said n×n block; and

said read address counter means generates said read address which zigzag scans said n×n block formed in the other one of said first and second memories which is in said read mode along a diagonal of said n×n block.

5,313,300

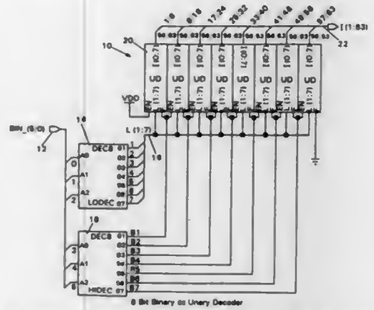
BINARY TO UNARY DECODER FOR A VIDEO DIGITAL TO ANALOG CONVERTER

Robert J. Rabile, West Chester, Pa., assignor to Commodore Electronics Limited, Nassau, The Bahamas

Filed Aug. 10, 1992, Ser. No. 927,683

Int. Cl.[5] H04N *5/14*

U.S. Cl. 348—572 **8 Claims**



1. A binary to unary decoder for a video digital to analog converter which is cascadeable in both a horizontal and a vertical direction, the decoder comprising:

video data means for transmitting video data from a video data source, said video data comprising a predetermined number of binary input bits;

a plurality of unary decoders for receiving said video data and converting said video data to a corresponding number of unary digits having comparable value, said unary decoders being arranged in a number of cascaded levels, the number of levels of cascaded unary decoders being related to the number of binary input bits received in the following relationship:

$$N=[x/D]$$

wherein N=the number of levels of unary decoders

x=the total number of binary input bits;

D=number of binary input bits contained within a single unary decoder;

[ ]=greatest integer number;

a plurality of cascaded unary block drivers for receiving the unary digits and transmitting unary output digits to a video data bus, the plurality of unary block drivers being arranged in a number of tiers having a predetermined number of individual unary block drivers, the number of unary block drivers in each tier being determined by the following relationship:

$$U_t=2^{dt} \text{ for } t=1 \text{ to } (N-1)$$

wherein U_t=the number of individual unary block drivers in a given tier;

2^d=the number of unary digits in an individual unary block driver which is less than or equal to 2^D;

t=particular tier; and

activating means for activating a predetermined number of cascaded unary block drivers corresponding to the numerical value of the video data.

5,313,301

NOISE REDUCTION AND SIGNAL COMPENSATING CIRCUIT FOR VIDEO IMAGES

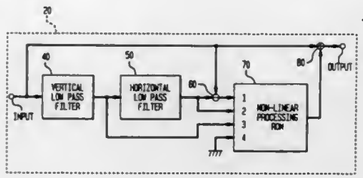
Kee S. Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd.

Filed Oct. 28, 1992, Ser. No. 967,769

Claims priority, application Rep. of Korea, Oct. 28, 1991, 91-18992

Int. Cl.[5] H04N *5/14, 5/208, 9/64, 5/202*

U.S. Cl. 348—607 **10 Claims**



1. A circuit for removing noise from a video image and compensating the quality thereof, comprising:

a tuning circuit for tuning a video signal received from an antenna;

an analog to digital converter for converting said signal tuned by said tuning circuit into a digital signal;

a picture compensating circuit for compensating said digital signal, wherein noise of said digital signal is reduced automatically based upon noise components of said digital signal, and deterioration of a video image caused by variable image reproduction rate is reduced automatically,

said picture compensating circuit includes a vertical low pass filter for limiting a vertical frequency band of said digital signal to depress high frequency noise in a vertical direction, a horizontal low pass filter for limiting a horizontal frequency band of said digital signal to depress a high frequency noise in a horizontal direction, a subtracter for obtaining a difference between said digital signal inputted through an input terminal and said horizontally and vertically band-limited signals to produce horizontal and vertical high frequency filtering characteristics, a non-linear processor ROM for non-linearly processing said signals from said horizontal and vertical low pass filters and said subtracter and then selecting processed signals by a selection control switch, and an adder for adding said signal outputted from said ROM with said signal at said input terminal and outputting said added signal through a terminal output;

said non-linear processor ROM includes a first control switch for selectively controlling signal components inputted from terminals INPUT1 to INPUT4, Lookup tables LUT1 to LUT4 for non-linearly processing a signal selected from said control switch and a second control switch for selectively outputting said non-linearly processed signal; and

a digital to analog converter for converting said digital signal processed by said picture compensating circuit into an analog signal and outputting said analog-converted signal through a compensated video output terminal.

5,313,302

APPARATUS FOR SUPERIMPOSING CHARACTER PATTERNS IN ACCORDANCE WITH DOT-MATRIX ON VIDEO SIGNALS

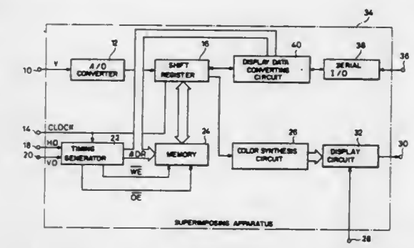
Akio Ohta, and Michiharu Nishihara, both of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1990, Ser. No. 531,451

Claims priority, application Japan, May 30, 1989, 1-137744

Int. Cl.[5] H04N *5/268, 5/272*

U.S. Cl. 348—586 **9 Claims**



1. A superimposing apparatus for superimposing a predetermined image signal on a video signal to form a superimposing video signal, comprising:

inputting means for inputting a binary signal including a first predetermined plurality of bit information having a predetermined order;

storing means for storing said binary signal and having an arrangement of at least a first plurality of storage blocks;

each of said first plurality of storage blocks including an arrangement of a second plurality of unit storage cells, each of the second plurality of unit storage cells for storing one bit of said first predetermined plurality of bit information;

storage block selecting means, responsive to said inputted bit information, for selecting one of said first plurality of storage blocks based on said predetermined order to store each one bit of said inputted bit information in all of said unit storage cells included in the arrangement of said one selected storage block; and

signal switching means for sequentially reading said bit information stored in said unit storage cells in synchronization with said video signal, in a predetermined order, to

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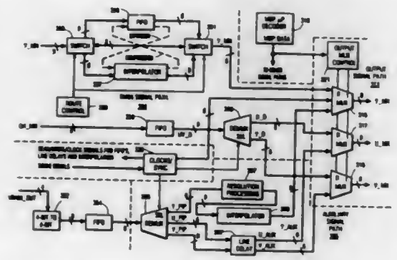
selectively switch between said video signal and the predetermined superimposing video signal and output the selectively switched video singal and predetermined superimposing video signal in response to said bit information read by said signal switching means.

5,313,303

ASPECT RATIO CONTROL FOR PICTURE OVERLAYS

Nathaniel H. Ersoz, Brownsburg, and Timothy W. Saeger, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Indianapolis, Ind.

PCT No. PCT/US91/03816, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992
PCT Filed May 30, 1991, Ser. No. 938,224
Claims priority, application United Kingdom, Jun. 1, 1990, 9012326
Int. Cl.[5] H04N *5/262, 9/74, 3/223*
U.S. Cl. 348—439 **10 Claims**



1. A display system, comprising:
a video memory;
means for writing and reading video data information from a first video signal into and out of said video memory;
means for supplying said information from said video memory synchronously with a display means for a second video signal; and,
an interpolator for selectively horizontally compressing and expanding said video data information of said first video signal read from said video memory independently of any vertical compression or expansion of said second video signal, which might also vertically compress or expand said video data information of said first video signal.

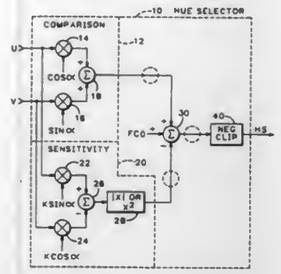
5,313,304

CHROMA KEYER WITH FRINGE CONTROL OFFSET

Daniel J. Chaplin, Nevada City, Calif., assignor to The Grass Valley, Group, Inc., Nevada City, Calif.

Filed Jun. 21, 1993, Ser. No. 80,162
Int. Cl.[5] H04N *9/75*
U.S. Cl. 348—587 **4 Claims**

1. An improved chroma keyer of the type having a hue selector for generating a hue select signal that represents the correlation between the hues of an input foreground image, the input foreground image representing a foreground object in front of a reference background, and a reference hue corresponding to the hue of the reference background, the hue selector having means for comparing the input foreground image with the reference hue signal to produce a correlation output and having means for clipping the negative values of the correlation output to produce the hue select signal, wherein the improvement comprises means for adding a fringe offset value to the correlation output prior to the clipping means so that the hue select signal includes portions of the



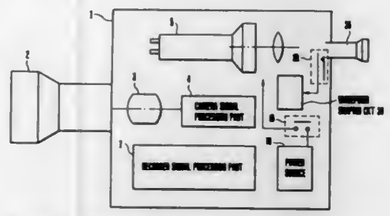
foreground object that are mixed with the hue of the reference background.

5,313,305

VIDEO CAMERA HAVING VIEWFINDER AND A POWER SAVING FUNCTION FEATURE

Isao Harigaya, and Koji Takahashi, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaishi, Tokyo, Japan

Filed Jun. 25, 1991, Ser. No. 720,921
Int. Cl.[5] H04N *5/30*
U.S. Cl. 348—214 **15 Claims**



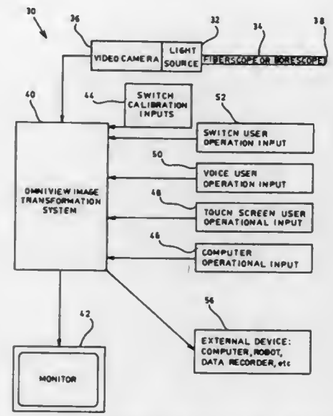
1. A video camera comprising:
a) image sensing means for converting an object image into a video signal;
b) recording means for recording said video signal on a recording medium;
c) a viewfinder for visually showing the object image;
d) detecting means for detecting a physical non-access of a user to said viewfinder;
e) a power source; and
f) control means having a first control function for controlling the supply of electric power from said power source to said viewfinder according to an output of said detecting means and a second control function for controlling a recording action of said recording means according to the output of said detecting means, said control means being arranged to start the operation of said second control function after starting of the operation of said first control function.

5,313,306

OMNIVIEW MOTIONLESS CAMERA ENDOSCOPY SYSTEM

Daniel P. Kuban, Roane County; H. Lee Martin, and Steven D. Zimmermann, both of Knox County, all of Tenn., assignors to TeleRobotics International, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 14,508, Feb. 8, 1993, which is a continuation-in-part of Ser. No. 699,366, May 13, 1991, Pat. No. 5,185,667. This application Jnn. 1, 1993, Ser. No. 68,776
Int. Cl.[5] H04N *5/30*
U.S. Cl. 348—65 **19 Claims**



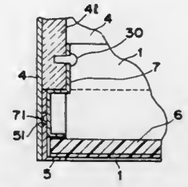
1. A device for providing perspective and distortion corrected views, in a desired format, of a selected portion of a field of view in an environment, said device comprising:
an imaging system for receiving selected optical and infrared images of said selected portion of a field of view and for producing output signals corresponding to said selected optical and infrared images, said imaging system including a light source, an image conduit to conduct light from said light source into the environment and return said images from the environment, and a video camera to create said output signals;
a lens attached to a distal end of said image conduit of said imaging system, said distal end for placement in the environment, for conveyance of said selected optical and infrared images through said image conduit of said imaging system;
image capture circuitry for receiving and providing digitized signals from said output signals from said imaging system;
image transform circuitry for processing said digitized signals from said image capture circuitry according to selected viewing angles of pan, tilt, and rotation and percentage of magnification, and for producing output signals according to a combination of said digitized signals and said selected viewing angles of pan, tilt, and rotation and percentage of magnification;
an input for selected user and external computer input to select said angles of pan, tilt, and rotation and percentage of magnification, and for converting said selected viewing angles of pan, tilt, and rotation and percentage of magnification for input to said image transform circuitry to control said processing of said image transform circuitry; and
an output connected to said image transform circuitry for recording said perspective and distortion corrected views according to said selected viewing angles of pan, tilt, and rotation and percentage of magnification.

5,313,307

CASING FOR PROJECTION TELEVISION RECEIVER AND SCREEN MOUNTING METHOD

Katumi Gotou, Takatsuki; Satoshi Aoki, Kadoma, and Tsuyoshi Shimatani, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 29, 1992, Ser. No. 905,885
Claims priority, application Japan, Jun. 28, 1991, 3-158538
Int. Cl.[5] H04N *5/64, 5/65*
U.S. Cl. 348—789 **8 Claims**



1. A casing for use in a projection television receiver having a transmission-type screen comprising:
a cabinet means for accommodating said screen therein, said cabinet means having a first side, a second side, a third side and a fourth side for configuring said cabinet means to have a rectangular opening, said first and second sides and said third and fourth sides being opposed to each other, respectively;
a first frame means having a first fix portion for being secured to said first side and a first free portion having a channel for catching said screen;
a second frame means having a second fix portion for being secured to said second side and a second free portion for receiving said screen, said second free portion having a plurality of first projections for keeping said second free portion apart from said second side by a first predetermined distance to obtain a first slight gap therebetween; and
a first insert means having a first insert portion being inserted to said first slight gap and a first hold portion for holding said screen between said second free portion and said first hold portion, said first insert portion being provided with a first notch for an engagement with said first projection when said first insert portion is inserted to said first slight gap.

5,313,308

IMAGE FORMING APPARATUS WHICH CHANGES ITS TONE REPRODUCING PROPERTY IN ACCORDANCE WITH AMBIENT CONDITIONS

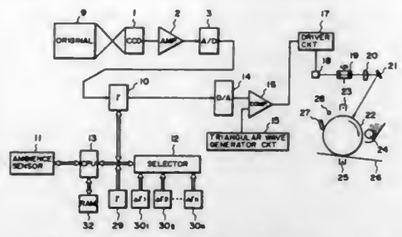
Takashi Hasegawa, Matsudo, and Sono Gu, Ohmiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1990, Ser. No. 574,050
Claims priority, application Japan, Aug. 31, 1989, 1-225353; Aug. 31, 1989, 1-225370
Int. Cl.[5] H04N *1/29, 1/46*
U.S. Cl. 358—406 **36 Claims**

1. An image forming apparatus, comprising:
means for forming an image from image input data on a recording material with a tone reproducing property;
means for detecting an ambient condition; and
means for changing the tone reproducing property of said image forming means in accordance with a parameter determined by predetermined tables made for a plurality

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of predetermined ambient conditions, wherein when the detected ambient condition is deviated from any of said



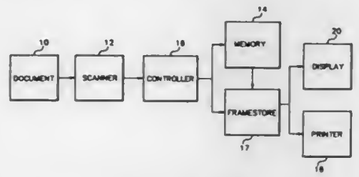
predetermined ambient conditions, the parameter is determined by interpolation using said tables.

5,313,309

METHOD AND APPARATUS FOR PRINTING HALFTONES WITH A GRAY LEVEL PRINTER WITH CONTOUR SUPPRESSION AND/OR MINIMIZATION OF MOIRE PATTERNS

Hwai-Tzuu Tai, Rochester, and Yee S. Ng, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1992, Ser. No. 894,859
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 **11 Claims**





1. An apparatus for reproducing an original image, comprising:

a scanner which scans and digitizes the original image into pixels;

a controller coupled to the scanner to receive the digitized original image, and which produces a first signal corresponding to a gray level halftoned representation of the digitized original image;

a printer coupled to the controller to receive said first signal and which produces a gray level halftoned reproduction of the original image;

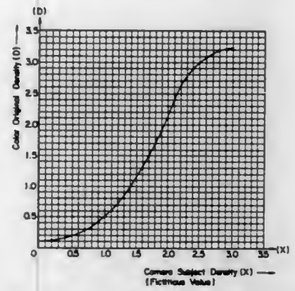
wherein the controller includes means for operating the printer in a mode wherein contour suppression is applied to every pixel of said original image and wherein in said mode each pixel has an input pixel gray value and is assigned an output gray level and wherein the contour suppression includes assigning for each pixel having an input pixel gray value that is between first and second threshold levels a probability of having the first output gray level and a probability of having the second output gray level, said first and second threshold values being selected from a set of threshold values representing possible threshold values assigned for a pixel matrix location corresponding to a position of the pixel in a halftone matrix cell and wherein the number of members of the set corresponds to the number of output gray values.

5,313,310

TONAL CONVERSION METHOD FOR PICTURES

Takashi Numakura, and Iwao Numakura, both of Tokyo, Japan, assignors to Yamatoya & Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1990, Ser. No. 481,054
Claims priority, application Japan, May 31, 1989, 1-135825
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **13 Claims**



1. A tonal conversion method for producing a tonal converted reproduced picture from an original picture recorded on a given recording medium, the original being an image of a camera subject, which comprises the steps of:

(i) determining a density characteristic curve which represents a correlation between density information values of the original picture plotted along the D axis of an X-D coordinate system and pictorial information values of the cameral subject plotted along the X axis of the X-D coordinate system;

(ii) reproducing the original picture from the recording medium and determining an image density of picture elements of the original picture to obtain corresponding density information values D of the picture elements of the original picture;

(iii) determining, from the density information values (D_n) of a desired picture element on the original picture, the pictorial information value X_n of a corresponding picture element on the camera subject in accordance with said density characteristic curve;

(iv) converting the thus-obtained pictorial information value X_n of the camera subject into a tone intensity value (y) by using the following tonal conversion formula:

$$y = y_H + \frac{\alpha(1 - 10^{-kx})}{\alpha - \beta} \cdot (y_S - y_H)$$

(v) generating and recording the tonal converted reproduced picture having picture elements in accordance with thus obtained corresponding tone intensity values;

where

x: a basic density value ($X_n - X_{Hn}$) obtained by subtracting the pictorial information value (X_{Hn}) of the camera subject set by the density value (D_{Hn}) of the brightest area (H) on the original picture from the pictorial information value (X_n) of the camera subject set by the pictorial information value (D_n) relating to the density information of the desired picture element on the original in accordance with the density characteristic curve;

y: a tone intensity value of the picture element on the reproduced picture corresponding to the desired picture element on the original picture;

y_H: a tone intensity values set for the brightest area (H) on the original picture or on the corresponding area of the camera subject;

y_S: a tone intensity value such as a dot area percentage set for the darkest area (S) on the original picture or on the corresponding area of the camera subject;

α: a surface reflectance of a base material used for expressing the reproduced picture thereon;

β: a value determined by $\beta = 10^{-\gamma}$;

k: $\gamma/(X_{Sn} - X_{Hn})$, where X_{Sn} represents the pictorial information value (X_{Sn}) of the camera subject determined by the density value (D_{Sn}) of the darkest area (S) on the original picture in accordance with density characteristic curve; and

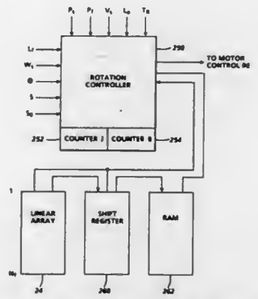
γ: a desired optional factor.

5,313,311

HYBRID MECHANICAL AND ELECTRONIC DESKEW OF SCANNED IMAGES IN AN IMAGE INPUT TERMINAL

Warren F. Brandkamp, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1992, Ser. No. 995,732
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—474 **3 Claims**



1. An image input scanner for deriving an electronic representation of a document including a platen for supporting a document to be scanned; a scanning system including an array of photosensitive elements which produce an ordered set of electrical responses to sensed reflected light, said array supported parallel to said platen and acquiring data across the document in a fast scan direction, a light source providing illumination of a document supported on the platen, and an optical system directing and focusing light reflected from a document to the array; means supporting the scanning system and providing relative motion in a slow scan direction between the scanning system and the document; and a deskewing system sensing skew of a document and providing a deskewed representation thereof, said deskewing system comprising:

a document skew detector measuring relative skew between the array and the document on the platen for scanning, and producing a measurement signal indicative thereof;

said scanning system supported for rotation on the relative motion providing means, about an rotational axis perpendicular to said document;

a drive means, for moving the scanning system in rotation about the rotational axis responsive to a control signal;

a rotation controller, operative to control an amount of rotation of said scanning system in accordance with a skew measurement signal, whereby upon relative movement of the scanning system and the document in the slow scan direction, any skew effects in the direction of relative movement are removed from the electronic representation of the image; and

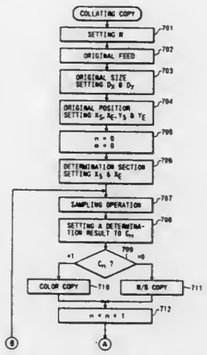
said rotation controller also operative for shifting positions of derived electrical responses in the ordered set by a distance related to a position of the electrical response in the page, and the skew of the scanned document.

5,313,312

COLOR IMAGE PROCESSING APPARATUS CAPABLE OF DISCRIMINATING ATTRIBUTES OF ORIGINALS FED BY A FEEDER

Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 560,768, Jul. 31, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,259
Claims priority, application Japan, Aug. 2, 1989, 1-200487
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—505 **21 Claims**



1. A color image processing apparatus for processing a plurality of originals, comprising:

scanning means for scanning each one of the plurality of originals one by one when the originals are fed by a feeder a first time and fed by the feeder at least one subsequent time, each of the plurality of originals having an image thereon;

discriminating means for discriminating attributes of each image of each one of the plurality of originals scanned by said scanning means when the plurality of originals are fed the first time;

memory means for storing a plurality of attribute data representing the attributes of each image of the plurality of originals discriminated by said discriminating means;

read out means for reading out from said memory means the attribute data associated with each one of the plurality of originals scanned by said scanning means when the plurality of originals are fed the subsequent time; and

processing means for processing each image of the plurality of originals scanned by said scanning means in accordance with the attribute data read out from said memory means by said read out means when the plurality of originals are fed the subsequent time.

5,313,313

IMAGE PROCESSING APPARATUS

Takako Sato, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1991, Ser. No. 784,889
Claims priority, application Japan, Oct. 30, 1990, 2-290812
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—514 **6 Claims**

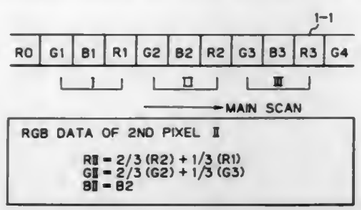
1. An image processing apparatus comprising:

unidimensional color scanning means comprising a plurality of pixels each having a plurality of kinds of photoelectric

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transducer elements with each kind converting a different color of light, said elements being arranged regularly in a unidimensional direction with a first color transducer element at the center of each pixel and second and third color transducer elements being at a point other than the center of each pixel;

said color scanning means outputting for a subject pixel a first color signal equal to the output from said first color transducer element and second and third color signals



which are equal to the sums of the outputs from two of the second and third transducer elements, respectively, which are closest to the center of the subject pixel, divided by their relative distances from the center of the subject pixel;

smoothing filter for correcting said first color signal such that the MTF characteristics of color signals from said unidimensional color scanner means coincide; and

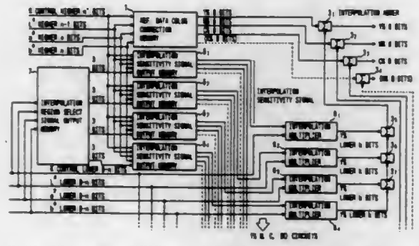
image processing means for processing an image by said first said color signal corrected by said smoothing filter and said second and third color signals.

5,313,314

METHOD FOR TRANSFORMING COLOR SIGNAL AND APPARATUS FOR EXECUTING THE METHOD

Hiroaki Ikegami, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,351
Claims priority, application Japan, Oct. 17, 1991, 3-296660
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—518 **9 Claims**



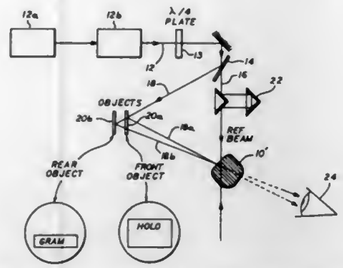
1. A method for transforming color signals in which each of four input signals is divided into the higher bits and the lower bits, so that the higher bits are combined to form basic data and the combined higher bits and lower bits are combined to form interpolation data, and the combination of the higher bits and the interpolation data are calculated together to produce output signals, comprising the steps of dividing a 16-vertex body of each object to be interpolated into twenty-four 5-vertex bodies each passing through one of sixteen lattice points constituting the 16-vertex body, and assigning the different combinations of interpolation data to the 5-vertex bodies in one-to-one correspondence manner.

5,313,315

METHOD OF IMAGING THROUGH A SCATTERING MEDIUM USING COHERENT LIGHT

Jack L. Feinberg, Manhattan Beach, Calif., and Alexander Rebane, Zürich, Switzerland, assignors to University of Southern California, Los Angeles, Calif.

Filed May 6, 1992, Ser. No. 880,170
Int. Cl.[5] G03H *1/02, 1/14;* **G03C** *1/00*
U.S. Cl. 359—4 **22 Claims**



1. A method of recording an image of an object obscured by a light-scattering medium, comprising storing said image in a spectral hole-burning material by:

(a) providing a spatially coherent source of light of sufficiently broad spectral content to illuminate said spectral hole-burning material, said source of light generating a source beam,

(b) splitting said source beam into two portions, a reference beam and an object beam,

(c) directing said reference beam onto said spectral hole-burning material,

(d) directing said object beam onto said light-scattering medium to generate an image-bearing beam which is by predetermined choice either transmitted through said light-scattering medium or reflected thereby, said image-bearing beam comprising an image portion and an extraneous portion,

(e) delaying one of said beams relative to the other of said beams for a period of time greater than the coherence time of said beams and less than the phase-decay time of said spectral hole burning material so that said reference beam arrives on said spectral hole-burning material at a time in between the arrival of said image portion and said extraneous portion of said image-bearing beam, and

(f) directing said image-bearing beam onto said spectral hole-burning material in a manner so as to interact with said reference beam within a predetermined time related to $1/\Delta\omega$ for a time sufficient to alter said hole-burning material to cause the appearance of a plurality of narrow spectral holes, having a width $\Delta\omega$, in its absorption spectrum to thereby expose said hole-burning material and store said image therein.

5,313,316

MIRROR AND CADDY FOR USE IN SHOWERS

Gregory M. Davidge, Maui, Hi., assignor to Tortoise Proudcts, Inc., Kula, Hi.

Filed Nov. 23, 1992, Ser. No. 980,540
Int. Cl.[5] G02B *7/195, 5/08*
U.S. Cl. 359—509 **22 Claims**

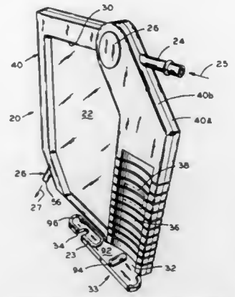
1. A mirror and caddy for use in steamy environments, said mirror and caddy comprising:

a mirror and a frame surrounding said mirror, said frame having a channel for receiving water, conveying said water past said mirror, and exiting said water from said frame, said channel having an inlet near the top of said frame and an exit near the bottom of said frame;

said channel having means for directing a stream of water onto a surface of a mirror in order to equalize the temperature of said mirror with the temperature of the surroundings;

stream diverting means at the channel exit for directing water leaving said channel in a selected direction;

said frame having a recess in which a can may set with a portion of the can projecting outwardly from the frame for easy grasping;



a shelf on the bottom of said mirror, said shelf having an area formed thereon to fit into said frame recess in order to receive and support a portion of a surface of said can, and to receive a hanging razor; and

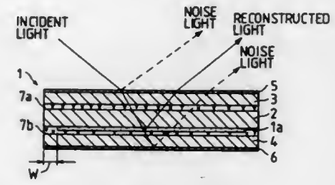
holding means for securing said can while it is disposed in said recess.

5,313,317

HOLOGRAM

Toshiki Saburi, Inazawa; Minoru Ohta, Okazaki; Hirokatsu Mukai, Kuwana; Yasuhiro Mizutani, Mie, and Tetsuya Kato, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 9, 1992, Ser. No. 958,262
Claims priority, application Japan, Oct. 9, 1991, 3-262008
Int. Cl.[5] G02B *5/32;* **G03H** *1/00;* **C02B** *1/10*
U.S. Cl. 359—13 **18 Claims**



1. A hologram comprising:

an optically transparent base plate having first and second opposite surfaces;

a hologram element provided on the first surface of the base plate, where the hologram element has a predetermined holographic pattern;

an optically transparent member having first and second opposite surfaces, wherein the first surface of the optically transparent member faces the hologram element; and

means for preventing light, which is reflected at a boundary between the second surface of the optically transparent member and atmosphere after it has successively passed through the transparent base plate, the hologram element, and the optically transparent member, from travelling back to the hologram element,

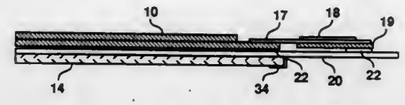
wherein the preventing means comprises an anti-scattering film which is comprised of a mixture of predetermined pigment and predetermined synthetic resin binder provided on the second surface of the optically transparent member.

5,313,318

INTERNAL FRAME FOR A LIQUID CRYSTAL DISPLAY NOT EXTENDING TO THE UPPER SURFACE THEREOF, LIGHT GUIDE AND CIRCUITRY ASSEMBLY

Eric I. Gruenberg, Soquel, and Troy Huliek, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Nov. 4, 1991, Ser. No. 787,293
Int. Cl.[5] G02F *1/1335, 1/1333*
U.S. Cl. 359—49 **11 Claims**



1. A liquid crystal display, light guide and circuitry assembly comprising:

an internal frame with a central opening above which is mounted a display and below which is loosely mounted a light guide for directing light through said opening into said display;

said display having a top side and a bottom side, said display mounted to said internal frame with mounting means located between said display bottom side and said internal frame, with no portion of said internal frame extending onto said display top side;

a light bulb mounted to one side of said light guide, and positioned for introducing light into said light guide; and

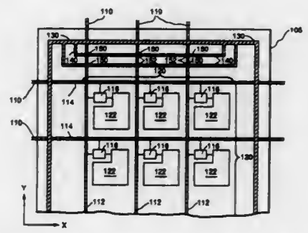
circuitry mounted to one side of said frame and coupled to said display.

5,313,319

ACTIVE ARRAY STATIC PROTECTION DEVICES

Roger S. Salisbury, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 17, 1992, Ser. No. 899,976
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—60 **10 Claims**



1. An electrical-array wafer protected against damage due to static voltages, comprising:

a substrate;

a first plurality of electrically conductive address lines disposed on said substrate in a first layer;

a second plurality of electrically conductive address lines disposed on said substrate in a second layer, said first and second pluralities of address lines comprising a plurality of data and scan lines respectively, said data and scan lines being electrically insulated from one another;

at least one static capacitor electrically coupled to said first plurality of electrically conductive address lines, each of said at least one static capacitors comprising a first elec-

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trode, a second electrode, and a dielectric layer disposed therebetween, said first electrode comprising a portion of one of said address lines; and

a plurality of electrically conductive static protection lines, each of said static protections lines being disposed in spaced relation to respective ones of said address lines and separated therefrom by said dielectric layer, each of said static protection lines being disposed so that portions thereof cross over respective ones of said address lines at respective crossover points to comprise said second electrode in respective ones of said static capacitors;

each of said static capacitors having a predetermined capacitance and being adapted to electrically break down at a selected threshold static potential so as to short the electrically conductive address line exposed to the static potential to one of said static protection lines to thereby prevent dissipation of static potential between said first and second plurality of electrically conductive components.

5,313,320

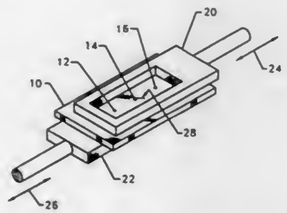
METHOD FOR ALIGNING SIDE-GROUP LIQUID-CRYSTALLINE POLYMERS

Julia A. Kornfield; Rangaramanujam M. Kannan, both of Pasadena, Calif., and Norbert Schwenk, Wiesbaden, Fed. Rep. of Germany, assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 18, 1993, Ser. No. 33,045

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—76 **23 Claims**



1. A method for converting an opaque portion of a side-group liquid crystalline polymer body into a transparent portion, said method comprising the step of applying sufficient shear force to said opaque portion of said side-group liquid crystalline polymer body for a sufficient time to convert said opaque portion into a transparent portion.

5,313,321

OPTICALLY SWITCHING FERROELECTRIC LIQUID CRYSTAL LIGHT VALVE HAVING A PRE-TILT ANGLE OF 60 TO 80 DEGREES

Shuhei Yamamoto, and Naoki Kato, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Continuation of Ser. No. 328,118, Mar. 23, 1989, Pat. No. 5,085,498. This application Nov. 15, 1991, Ser. No. 794,139

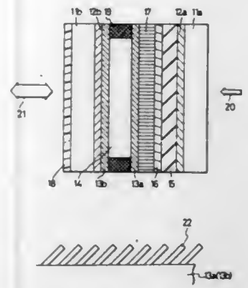
Claims priority, application Japan, Mar. 23, 1988, 63-68967; Mar. 23, 1988, 63-68970; Sep. 28, 1988, 63-242999

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—77 **8 Claims**

1. A liquid crystal device comprising; a liquid crystal layer having front and rear sides and being composed of liquid crystal molecules; front and rear alignment layers sandwiching the liquid crystal layer to impart thereto two stable states of different optical transmissivity or reflectivity, the alignment layers being effective to orient the molecules of the liquid crystal layer at a pre-tilt angle of 60 to 80 degrees to the normal to the plane of the liquid crystal layer; an optical reflecting layer adjacent the rear alignment layer; a photoconductive layer of hydrogenated amorphous silicon film adjacent the reflecting layer and having an electroconductivity which varies in dependence on incident light; a front electrode adjacent the front alignment layer; a rear electrode adjacent the photoconductive



layer and cooperative with the front electrode for applying a bias voltage to effect switching of the liquid crystal layer between the two stable states; and front and rear transparent substrates adjacent the front and rear electrodes for receiving incident light.

5,313,322

METHOD OF PRODUCING LIQUID CRYSTAL DISPLAY DEVICE INCLUDING DEGASSING SUBSTRATES BEFORE FORMING ELECTRODE, SEALING, OR INJECTING LIQUID CRYSTAL

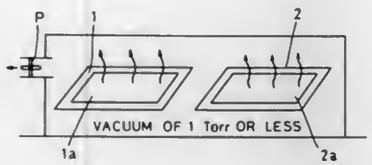
Hiroshi Takanashi, Souraku; Shunsei Fukuchi, Nara; Kenji Misono, Nara, and Makoto Iwamoto, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 967,702

Claims priority, application Japan, Oct. 28, 1991, 3-309880

Int. Cl.[5] G02F *1/1333, 1/1335, 1/13339*

U.S. Cl. 359—82 **8 Claims**



1. A method of producing a liquid crystal display device comprising the steps of opposing two substrates, which are composed of a transparent electrode formed on a plastic substrate, with a specified space therebetween, sealing the circumferential ends of the substrates with a sealant so as to form a sealed space, and injecting a liquid crystal to the sealed space, wherein a degassing treatment is conducted by heating each of the plastic substrates in a vacuum atmosphere to release gas adsorbed on the surface of the plastic substrate prior to either the step of forming the electrodes or the sealing step.

5,313,323

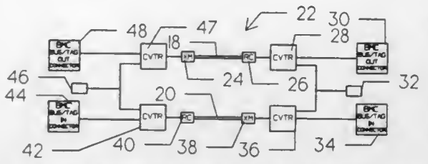
FIBER OPTIC BUS AND TAG ADAPTER FOR BLOCK MULTIPLEXER CHANNEL

Narottam N. Patel, New Brighton, Minn., assignor to Unisys Corporation, Roseville, Minn.

Filed Jul. 10, 1992, Ser. No. 912,972

Int. Cl.[5] H04J *14/00*

U.S. Cl. 359—115 **17 Claims**



1. In a data processing system having a host computer with a block multiplexer channel and having a peripheral device having a block multiplexer channel, the improvement comprising:

a. a first interface adapter coupled to said block multiplexer channel of said host computer for converting host computer data from said block multiplexer channel into an electrical serial stream of single bit data;

b. an optical transmitter coupled to said first interface adapter for converting said electrical serial stream of single bit data to a first modulated beam of light and optically transmitting said first modulated beam of light;

c. an optical receiver for optically receiving said first modulated beam of light and converting said first modulated beam of light into an electrical serial stream of single bit data;

d. a second interface adapter coupled to said optical receiver and to said block multiplexer channel of said peripheral device for converting said electrical serial stream of single bit data into said host computer data; and

e. a fiber optic cable coupled to said optical transmitter and to said optical receiver for transferring said first modulated beam of light from said optical transmitter to said optical receiver.

5,313,324

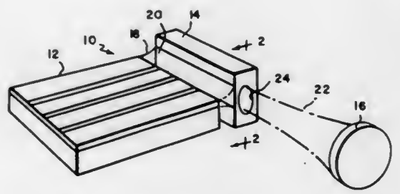
SOLID STATE OPTICAL CONVERTER

Han Q. Le, Newton, and William D. Goodhue, Chelmsford, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 27, 1991, Ser. No. 676,269

Int. Cl.[5] G02B *5/14*

U.S. Cl. 359—344 **19 Claims**



1. A solid state optical converter comprising:

at least two optical converter elements, each of said elements including an absorber layer having an energy gap, and a radiator layer having a lower energy gap and a lesser width than said absorber layer, said radiator layer being positioned relative to said absorber layer to receive energy therefrom; and dielectric layers sandwiching and separating said optical converter elements.

5,313,325

BLACKBODY MATERIAL

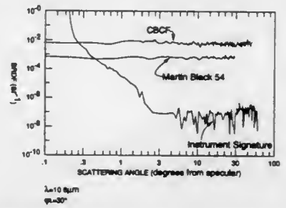
Robert J. Lauf, Oak Ridge; Clyde Hamby, Jr., Harriman; M. Alfred Akerman, Knoxville, and Alvin W. Trivelpiece, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 916,808, Jul. 20, 1992, Pat. No. 5,243,464. This application Jun. 10, 1993, Ser. No. 74,910

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] G02B *27/00*

U.S. Cl. 359—614 **35 Claims**



1. A light emitting article comprising a composite of carbon-bonded carbon fibers, said composite having a bulk density of not more than about 1 g/cm^3, said composite having the form of a light emitting article.

5,313,326

CAR HEAD-UP DISPLAY INCLUDING A FRESNEL MIRROR AND A CURVED MIRROR

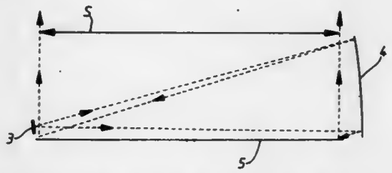
Andrew P. Ramsbottom, Bolton, United Kingdom, assignor to Pilkington plc, St. Helens, United Kingdom

Filed Sep. 30, 1992, Ser. No. 953,263

Claims priority, application United Kingdom, Oct. 4, 1991, 9121154

Int. Cl.[5] G02B *27/10, 5/10*

U.S. Cl. 359—631 **10 Claims**



1. A projection unit for a car head-up display, the projection unit comprising a display source, a curved mirror which provides the optical power of the projection unit and, in use, receives light from the display source, and a Fresnel mirror extending generally between the display source and the curved mirror and disposed to receive reflected light from the curved mirror and the reflect that light in a desired direction.

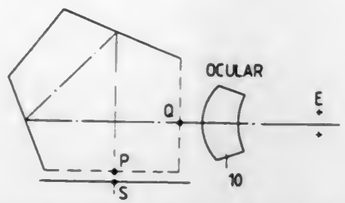
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5,313,327

OCULAR LENS

Takayuki Ito, and Sachio Hasushita, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 795,028
Claims priority, application Japan, Nov. 30, 1990, 2-335940; Nov. 30, 1990, 2-335941; Nov. 30, 1990, 2-335942
Int. Cl.[5] G02B *25/00, 13/02, 13/18, 17/00*
U.S. Cl. 359—646 25 Claims



1. An ocular lens system comprising a single positive meniscus lens having aspherical surfaces on both sides, wherein a concave surface of said meniscus lens is directed toward the pupil, said meniscus lens is disposed at a position closest to the pupil, and each of said aspherical surfaces are offset toward the pupil from a respective spherical virtual reference surface which is defined by a paraxial radius of curvature of a respective one of said aspherical surfaces, said meniscus lens satisfying the following conditions,

$$0.001 < \Delta Xs/f < 0.009$$

$$0.001 < \Delta Xe/f < 0.009$$

where

ΔXs is the distance from the one of said virtual reference surfaces which is on the screen side to the corresponding one of said aspherical surfaces (at a co-ordinate of Y=0.112f);

ΔXe is the distance from the one of said virtual reference surfaces which is on the pupil side to the corresponding one of said aspherical surfaces (at a co-ordinate of Y=0.086f);

Y is the height from the optical axis; and

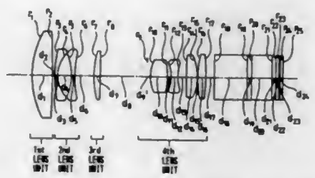
f is the focal length of the ocular lens system.

5,313,328

OPTICAL SYSTEM COMPRISING GRADED REFRACTIVE INDEX LENS ELEMENT

Norihiko Aoki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 514,546, Apr. 26, 1990, abandoned. This application May 8, 1992, Ser. No. 882,254
Claims priority, application Japan, Apr. 27, 1989, 1-105940
Int. Cl.[5] G02B *9/10, 15/14*
U.S. Cl. 359—654 7 Claims



1. An optical system comprising, in the order from the object side:

at least a first lens unit having a positive refractive power; and

a second lens unit having a negative refractive power with an airspace between said first and second lens units, said second lens unit and said first lens unit disposed next to one another so that no other lens components are disposed between the first and second lens units;

wherein said optical system varies focal length thereof by varying the airspace reserved between the first and the second lens unit; and

wherein said first lens unit includes at least one graded refractive index lens element satisfying the following conditions (1) and (4):

$$n(r) = n_0 + \Sigma n_1 r^{21} \quad (1)$$

$$\Phi_S \Phi_M < 0 \quad (4)$$

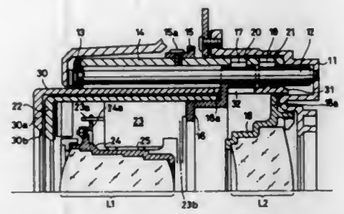
wherein the reference symbol n_0 represents the refractive index of said graded refractive index lens element as measured on an optical axis thereof, the reference symbol r designates distance as measured in a radial direction from the optical axis, the reference symbol n(r) denotes the refractive index of said graded refractive index lens element as measured at a distance r from the optical axis, the reference symbols n_1, n_2, n_3, . . . represent refractive index distribution coefficients of the second, fourth, sixth, . . . orders respectively, the reference symbol Φ_S designates the refractive power of a surface of said graded refractive index lens element, and the reference symbol Φ_M denotes the refractive power of a medium of said graded refractive index lens element and is expressed as $\Phi_M = -2n_1 d_G$, where d_G is the thickness of said graded refractive lens element as measured on the optical axis.

5,313,329

LENS HOOD ASSEMBLY FOR ZOOM LENS

Toshiaki Ueda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 233,602, Aug. 18, 1988, abandoned. This application Nov. 15, 1990, Ser. No. 613,959
Claims priority, application Japan, Aug. 21, 1987, 62-127091
Int. Cl.[5] G02B *15/00*
U.S. Cl. 359—676 41 Claims



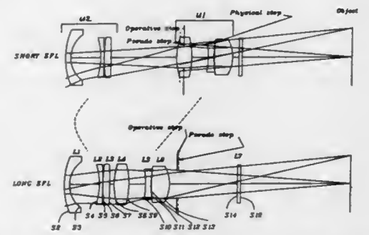
1. A lens assembly for a zoom lens having an optical axis and having a group of variable lenses for varying focal length, at least one lens of said group of lenses being movable in the optical axis direction of a zoom lens, said assembly comprising a lens hood which is movable in the optical axis direction of the zoom lens and which is provided with a center opening through which incident light passes through the zoom lens, said lens hood being secured for movement together with said movable one of said lenses, whereby the lens hood is moved forwardly at a long focal length of the zoom lens and is moved rearwardly at a short focal length of the zoom lens, said group of variable power lenses comprising at least front and rear groups of lenses which are moved forwardly at the long focal length of the zoom lens, so as to approach each other, and which are moved rearwardly at the short focal length of the zoom lens so as to distance themselves from each other, said rear group of lenses being provided with a rear lens frame for supporting said rear group of lenses, said lens hood being connected to the rear lens frame so as to move together with said rear lens frame, and a barrier frame integral with the front group of lenses, said barrier frame being provided, on a front end of said barrier frame, with an opening located inside the center opening of the lens hood and an inwardly and radially projecting restriction wall which defines said opening of said barrier frame, said barrier frame having a plurality of moveable barrier elements defining a restricted incident opening for incident light with respect to the center opening of the lens hood.

5,313,330

ZOOM PROJECTION LENS SYSTEMS

Ellis I. Betensky, Redding, Conn., assignor to U.S. Precision Lens Incorporated, Cincinnati, Ohio

Filed Aug. 31, 1992, Ser. No. 938,381
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—676 36 Claims



1. A zoom projection lens system for use with a predetermined illumination means, said system forming a well-corrected, real image of an object and having an optical axis, an entrance pupil, a physical aperture stop which defines the system's numerical aperture, and an operative aperture stop whose location is defined by the intersection with the optical axis of a ray from the illumination means aimed at the center of the entrance pupil, said system comprising:

(a) at least two lens units each comprising at least one lens element, said at least two lens units being separated by at least one axial space; and

(b) zoom means for varying the system's magnification between a maximum and a minimum magnification by changing the at least one axial space;

wherein as the zoom means varies the system's magnification between the maximum and minimum magnifications:

(i) the entrance pupil remains at a substantially fixed position relative to the illumination means over the zoom range;

(ii) the operative aperture stop moves through at least one lens element surface; and

(iii) the physical aperture stop and the operative aperture stop are at different locations for at least one magnification between said maximum and minimum magnifications.

5,313,331

ZOOM LENS SYSTEM HAVING A SHORT TOTAL LENGTH

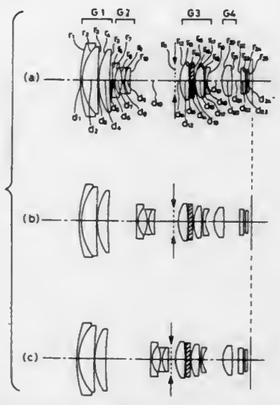
Shinichi Mihara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 939,597, Sep. 2, 1992, abandoned. This application Feb. 12, 1993, Ser. No. 17,370
Claims priority, application Japan, Sep. 2, 1991, 3-221698
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—687 4 Claims

1. A zoom lens system including, in order from the object side, a first lens unit having a positive refracting power, a second lens unit having a negative refracting power and movable along the optical axis for zooming, a third lens unit having a positive refracting power and a fourth lens unit having a positive refracting power and movable along the optical axis for zooming and focusing,

said third lens unit comprising, in order from the object side,

a positive lens in which the object-side surface is an aspherical surface whose amount of displacement form the reference spherical surface to the object side increases monotonically as it is spaced away from the optical axis, a positive lens and a negative lens in which the image-side surface has a stronger curvature,



said forth lens unit comprising a positive single lens in which the object-side surface takes an aspherical surface whose amount of displacement from the reference spherical surface to the object side increases monotonically as it is spaced away from the optical axis, and

said zoom lens system further including an optical member such as a moire-preventing or infrared-cutting filter between the two positive lenses of said third lens unit and meeting the following conditions:

$$0.45 < f_{34S}/(f_W f_T)^{\frac{1}{2}} < 0.9, \quad (1)$$

$$0.3 < \beta_{IV} < 0.6, \quad (2)$$

$$0.6 < r_{31}/\{(n_{31} - 1)(f_W f_T)^{\frac{1}{2}}\} < 1.2, \quad (3)$$

$$0.28 < r_{36}/\{(n_{36} - 1)(f_W f_T)^{\frac{1}{2}}\} < 0.56, \quad (4)$$

and

$$0.38 < D_{III}/(f_W f_T)^{\frac{1}{2}} < 0.76, \quad (5)$$

where:

f_W and f_T are the focal lengths of the total system at the wide angle and telephoto ends, respectively,

f_{34S} is the composite focal length of the third and fourth lens units when the focal length of the total system lies at $(f_W f_T)^{\frac{1}{2}}$ and the object point at infinity is focused,

β_{IV} is the magnification of the fourth lens unit at the telephoto end and the object point at infinity is focused,

r_{31} is the radius of curvature of the reference spherical surface of the third lens unit proximate to the object side,

r_{36} is the radius of curvature of the surface of the third lens unit proximate to the image side,

n_{31} and n_{36} ar the refractive indices of the positive and negative lenses of the third lens unit proximate to the object and image sides, respectively, and

D_{III} is the distance between the apices of the surfaces of the

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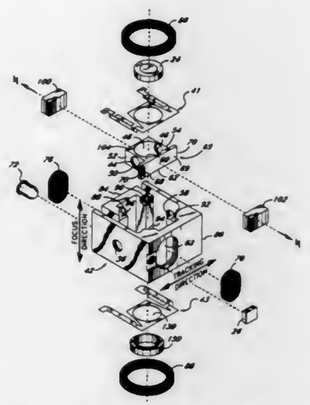
third lens unit proximate to the object and image sides, respectively.

5,313,332

FLEXURE SUSPENSION FOR TWO AXIS ACTUATOR

David L. Schell, Colorado Springs; Leonardus J. Grassens, Monument, and Kurt W. Getreuer, Colorado Springs, all of Colo., assignors to Applied Magnetics Corporation, Goleta, Calif.

Continuation of Ser. No. 614,831, Nov. 16, 1990, abandoned. This application Jul. 26, 1993, Ser. No. 98,212
Int. Cl.[5] G11B 7/00
U.S. Cl. 359—813 19 Claims



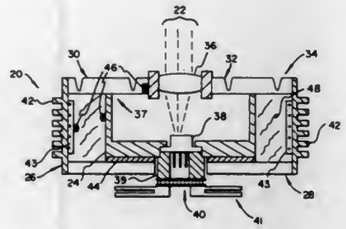
1. A support system for an optical lens having an optical axis, comprising:
a base;
a holder having a top and a bottom, within which said lens is rigidly mounted, said top defining an aperture through which light may pass;
a first generally U-shaped flexure having an open end and a closed end, said closed end being secured to said top of said holder and including a projection which defines an opening aligned with said aperture having a size and shape which permits the essentially unobstructed passage of light from said aperture, said open end including a pair of arms the distal ends of which are secured to said base; and
a second generally U-shaped flexure having an open end and a closed end, said closed end being secured to said bottom of said holder, said open end including a pair of arms the distal ends of which are secured to said base at a location offset from said first flexure, each of said arms of said first flexure and said second flexure comprising:
a control beam section, wherein said control beam section is formed by bending a portion of said arm into an L-shape to form an area of increased stiffness;
a pair of tracking hinges, one of which is located outward from each end of said control beam section, each of said tracking hinges permitting said arm to bend about an axis parallel to said optical axis of said lens;
a pair of focusing hinges, one of which is located outward from each end of said control beam section, each of said focusing hinges permitting said arm to bend about an axis perpendicular to said optical axis of said lens; and
a pair of spacing beam sections, one of which is located outward from each end of said control beam between one of said tracking hinges and one of said focusing hinges, wherein said beam sections provide the stiffness to impede unwanted motion of said lens, wherein each of said spacing beam sections is formed by bending a portion of said arm into an L-shape to form an area of increased stiffness.

5,313,333

METHOD AND APPARATUS FOR COMBINED ACTIVE AND PASSIVE ATHERMALIZATION OF AN OPTICAL ASSEMBLY

Michael J. O'Brien, and William B. Smith, both of Rochester, N.Y., assignors to Estman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 993,887
Int. Cl.[5] G02B 7/02
U.S. Cl. 352—820 12 Claims



1. Apparatus for providing athermalized collimation of a beam source by a beam collimating means, comprising:
support means including a beam source mount for fixing the beam source at a predetermined position thereon and for thereby defining a light beam optical axis, said beam source mount having a coefficient of expansion α_1 and being thermally isolated from said support means;
a flexure plate adapted for aligning the beam collimating means at a beam collimating means position on the optical axis, and having a kinematic hinge operable to displace the collimating means along the optical axis;
thermal compensation means located with respect to the kinematic hinge so as to provide a combination of active and passive operation of the kinematic hinge to thereby displace the collimating means, including:
a) an inner compensation ring, thermally integrated with the beam source mount, operatively connected between the support means and the flexure plate at a first predetermined radius R_1 from the optical axis, and having the coefficient of expansion α_1;
b) first thermal element means operatively connected to the inner compensation ring and the beam source mount for establishing a first temperature T_1 therein;
c) an outer compensation ring, operatively connected between the support means and the flexure plate at a second predetermined radius R_2 from the optical axis, and having a selected coefficient of expansion α_2; and
d) second thermal element means operatively connected to the outer compensation ring for establishing a second temperature T_2 therein.

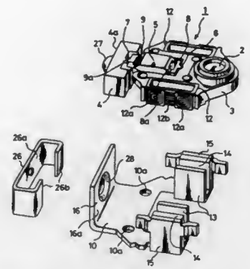
5,313,334

OBJECTIVE LENS MOVING ACTUATOR

Takamichi Tomiyama, Tokyo, and Takatoshi Hirata, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 919,015
Claims priority, application Japan, Jul. 29, 1991, 3-211606; Aug. 2, 1991, 3-216282
Int. Cl.[5] G02B 7/02
U.S. Cl. 359—824 13 Claims

7. An objective lens moving actuator comprising:
(1) a movable member for supporting an objective lens;
(2) resilient supporting means for resiliently supporting said movable member together with said objective lens such that said movable member having said objective lens can be moved in a first direction parallel to an optical axis of said objective lens and in a second direction perpendicular to said optical axis of said objective lens;
(3) a fixing member having a first plane portion and a second plane portion formed vertically with respect to said first plane portion, a base end of said resilient supporting means being fixed to said second plane portion; and



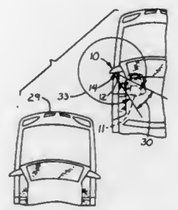
(4) electromagnetic drive means for moving said resilient supporting means in said first and second directions together with said objective lens, wherein said resilient supporting means is rotatably attached to said second plane portion so that the optical axis of said objective lens has a predetermined skew angle.

5,313,335

BLINDZONE SIGNAL INDICATOR

Craig S. Gray, Walton, Ind., and Christopher M. Hogge, Albuquerque, N. Mex., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 5, 1992, Ser. No. 894,672
Int. Cl.[5] G02B 5/08, 5/20, 27/00; B60R 1/12
U.S. Cl. 359—839 10 Claims



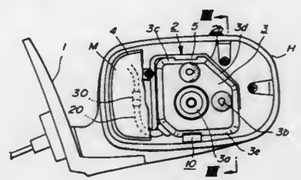
1. A display apparatus for blindzone signal indication, comprising;
an exterior rear view mirror housing;
an exterior rear view mirror disposed in the exterior rear view mirror housing defining a first portion from which light is reflected and a second portion through which light may be transmitted from inside the rear view mirror housing;
a light source mounted within the housing located at the second portion of the mirror; and
a directional filter located at the second portion of the mirror so that when the light source emits light, a signal from the light source may be seen from the interior of the vehicle, but may not be seen by drivers of other vehicles, wherein the second portion of the mirror includes a hole defined by the mirror and wherein the directional filter is a flat panel directional filter laminated to the mirror over the hole.

5,313,336

REARVIEW MIRROR ASSEMBLY FOR MOTOR VEHICLE

Masahito Sakao, and Masaharu Tsuruoka, both of Saitama, Japan, assignors to Kabushiki Kaisha Matsuyama Seisakusho, Japan

Continuation of Ser. No. 677,591, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 480,549, Feb. 15, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,240
Claims priority, application Japan, Feb. 15, 1989, 1-16651
Int. Cl.[5] B60R 1/06; G02B 7/18
U.S. Cl. 359—841 5 Claims



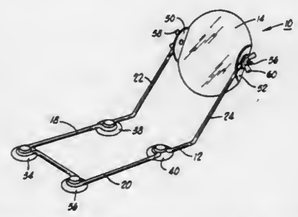
1. A side rearview mirror assembly for a motor vehicle comprising:
bracket means mountable to a vehicle body and having a periphery defining a rearward facing space therein;
mirror support means disposed within said space of the bracket means and having spaced apart forward and rearward facing surfaces, said mirror support means being detachably mounted within said bracket means;
mirror means tiltably supported on said mirror support means at the rear facing surface thereof; and
a housing for containing said bracket means, said mirror support means and said mirror means therein, said bracket means including first and second spaced apart engagement means adjacent the space defined therein and engageable with said spaced apart forward and rearward facing surfaces of said mirror support means, respectively, and resilient means disposed in spaced apart relation to said first and second engagement means, wherein the resilient means comprises a finger member for urging said mirror support means against said first and second engagement means so as to resiliently hold said mirror support means within said bracket means.

5,313,337

ATTACHABLE VEHICLE MIRROR

Thomas L. Byers, 5840 Stewart Dr., Mustang, Okla. 73064

Filed Jan. 21, 1993, Ser. No. 6,765
Int. Cl.[5] B60R 1/08; G02B 7/182
U.S. Cl. 359—872 4 Claims

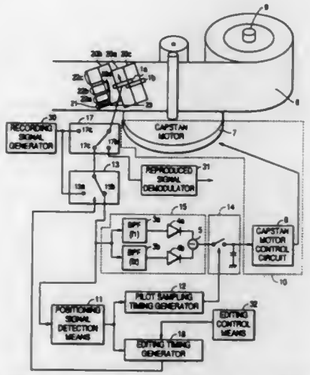


1. An attachable rear viewing device for motor vehicles, comprising:
a support frame consisting of a unitary wire frame formed to have first and second parallel side rails and an end rail in a first plane having plural suction cups retained thereon in a uniplanar array;

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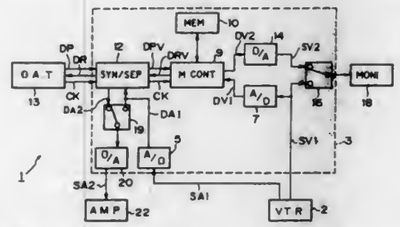
first and second support arms extending at an angle of approximately 120° and in parallel from said support frame;
first and second eye loops formed on said respective first and second support arms;
a mirror having first and second opposite side, axially aligned, threaded posts which are received in said respective first and second eye loops; and
first and second thumb screws threadedly received on said respective threaded posts to adjust and secure the angle of reflectance of said mirror relative to said support frame.

5,313,338
EDITING DEVICE WHICH SELECTIVELY EDITS A SECTION OF A HELICAL TRACK
Kei Ichikawa, Osaka; Haruo Isaka, Yahata; Yoshio Sakakibara, Neyagawa, and Makoto Gotou, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan
Filed Apr. 9, 1992, Ser. No. 865,584
Claims priority, application Japan, Apr. 11, 1991, 3-078864; Feb. 5, 1992, 4-019755; Mar. 18, 1992, 4-061651
Int. Cl.[5] G11B *27/036, 5/584*
U.S. Cl. 360—13 **8 Claims**



1. An editing device for editing a tape recording medium which has formed thereon a plurality or recording tracks, each recording track being divided into a plurality of recording areas which are separated from one another by a plurality of gaps, the first one of the recording areas of each recording track carrying a positioning signal for identifying the position of a recorded data and a pilot signal for tracking control which both are multiplexed, said device comprising:
recording information signal generating means for generating a recording information signal for editing;
recording and reproducing head for recording and reproducing said recording information signal on the tape recording medium;
selecting means for selecting between a first mode in which said recording information signal is fed to said recording and reproducing head for recording onto the tape recording medium and a second mode in which said recording information signal is retrieved by said recording and reproducing head from the tape recording medium;
editing control means for informing said selecting means of a location to be edited;
positioning signal detecting means for picking up said positioning signal from said recording information signal retrieved with said selecting means held in the second mode;
tracking error detecting means for producing a tracking error signal by examining said pilot signals of two adjacent recording tracks extracted from said recording information signal retrieved with said selecting means in the second mode;
timing signal generating means for producing a sampling signal from said positioning signal given by said positioning signal detecting means;
sampling means for sampling said tracking error signal with said sampling signal to produce a sampled tracking error signal; and
tracking control means for eliminating tracking errors created during scanning of said recording and reproducing head over the recording tracks of the recording medium using said sampled tracking error signal of said sampling means;
said selecting means arranged to select the second mode during scanning of said recording and reproducing head across said first recording area of the target recording track so that the tracking control with said tracking error signal of said tracking control means is carried out and to select the first mode for recording said recording information signal of said recording information signal generating means onto a predetermined edit location of the recording medium instructed by said editing control means according to said positioning signal of said positioning signal detecting means.

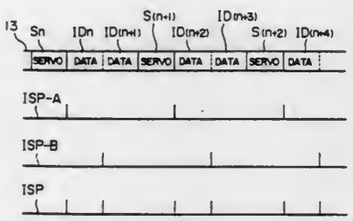
5,313,339
APPARATUS USING A ROTARY HEAD FOR RECORDING DIGITAL VIDEO AND AUDIO SIGNALS AT DOUBLE SPEED
Tadashi Fukami; Shinichi Fukuda, both of Kanagawa; Masayoshi Noguchi, Chiba, and Makoto Yamada, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 21, 1991, Ser. No. 795,751
Claims priority, application Japan, Nov. 30, 1990, 02-339763
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—19.1 **5 Claims**



1. Apparatus for causing a magnetic recording and reproducing apparatus to record both audio and video signals input thereto on sequential slant tracks on a tape formed by a rotary drum having a magnetic head rotating at a predetermined rotation speed relative to the tape wrapped therearound and moving at a predetermined running speed, so that both audio and video signals are recorded in each of the sequential slant tracks, comprising:
a system control circuit;
a signal preprocessing circuit for preprocessing the audio and video signals to be recorded and including means for receiving a left and right channel audio signal and a stationary image video signal for recording, memory means for accumulating the received video signal and outputting an accumulated video signal at a predetermined transmission rate, and synthesizing and separating means receiving the left and right channel audio signal from said means for receiving and the accumulated video signal from said memory means for producing a synthesized combined audio and video signal for recording having the left and right channel audio signal and the accumulated video signal alternately successively arranged and output in a recording signal at a predetermined transmission rate

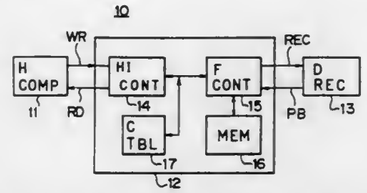
twice the transmission rate of the output of said memory means;
a servo circuit responsive to said system control circuit and connected to said rotating head and tape drive for causing said head to rotate at a high speed substantially twice said predetermined rotation speed and for causing said tape to run at a high running speed substantially twice said predetermined running speed, so that said tracks are formed on said tape in such a manner that said tracks have a pitch substantially equal to 15 msec; and
digital signal processing means responsive to said system control circuit and receiving said synthesized combined audio and video signal for recording from said synthesizing and separating means for producing an output signal fed to the rotary magnetic head rotating at the high speed for recording in slant tracks on the magnetic tape running at the high running speed so that the left and right audio signal and the video signal are alternately recorded in respective first and second portions of each successive slant track on the magnetic tape.

5,313,340
READ/WRITE CONTROLLING APPARATUS FOR ADJUSTING THE DATA LENGTH OF A MAGNETIC DISK
Norikazu Takayama; Tsuneo Hirose, and Akira Kojima, all of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 21, 1992, Ser. No. 823,299
Claims priority, application Japan, Jan. 23, 1991, 3-006073
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—48 **20 Claims**



1. A data read/write controlling apparatus for adjusting a data length of a magnetic disk in which a recording track is defined, said track having alternating control and data regions, a control region indicating a beginning of a data region and having a servo signal recorded therein, the a data region having a predetermined physical data length for recording data, the apparatus comprising:
(a) a reader serially reading out a signal series of said servo signal and said data which have been recorded on said recording track;
(b) a first controller being coupled to the reader, and generating a first read/write control signal in response to said servo signal of said signal series;
(c) a second controller being coupled to the reader, and generating a second read/write control signal after said servo signal is read out by the reader but before a next servo signal is read out by the reader, whereby the second read/write control signal provides a timing signal for separating said data region into at least two parts;
(d) a writer being coupled to the first and second controllers writing given data into said data region in response to the generation of said first or second read/write control signals, whereby given data can be written into either of said at least two parts of the data region; and
(e) a converter being coupled to said reader, and said first and second controllers, and outputting only that data read out from said reader after said first or second read/write control signals corresponding to said servo signal are generated.

5,313,341
DEVICE FOR PROCESSING FILE DATA WITH ERASING IDENTIFICATION DATA
Daijirou Okihara, and Yukio Taniyama, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo and Fujitsu Limited, Kawasaki, both of Japan
Continuation of Ser. No. 966,884, Oct. 27, 1992, abandoned.
This application Jun. 14, 1993, Ser. No. 76,144
Claims priority, application Japan, Oct. 31, 1991, 3-313512
Int. Cl.[5] G11B *5/09, 20/14, 20/16*
U.S. Cl. 360—48 **6 Claims**



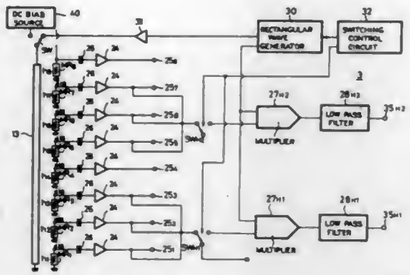
1. A device for processing prescribed file data for serial recording in a plurality of file data helical recording tracks on a magnetic tape, comprising:
first recording means for recording identification data in each of said file data helical recording tracks for identifying the file data recorded in said file data recording track; and
first updating means for selectively updating said identification data in a file data recording track with erasing identification data in response to an external erasing command, whereby said erasing identification data indicates that the file data in said file data recording track is meaningless data.

5,313,342
ANALOG/DIGITAL COMPATIBLE REPRODUCING SYSTEM
Yutaka Soda; Keisuke Fujiwara; Hiroaki Yada; Satoru Seko; Munekatsu Fukuyama, and Tetsuo Sekiya, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 619,522, Nov. 29, 1990, abandoned.
This application Nov. 20, 1992, Ser. No. 979,483
Claims priority, application Japan, Nov. 29, 1989, 1-310449; Nov. 29, 1989, 1-310451
Int. Cl.[5] G11B *15/12, 5/265*
U.S. Cl. 360—63 **12 Claims**

1. An analog/digital compatible reproducing head system for use with either a digital recorded magnetic tape having a plurality of digital data recorded tracks or an analog recorded magnetic tape having first and second analog recorded tracks with a guard band therebetween of given width, comprising:
a magnetic head element for each of the digital data recorded tracks, each of said magnetic head elements being positioned for alignment with each respective digital data recorded tracks;
first means for providing a first combined output of a first group of some of said magnetic head elements which are positioned for alignment with said first analog recorded track of said analog recorded magnetic tape;
second means for providing a second combined output of a second group of other of said magnetic head elements which are positioned for alignment with said second analog recorded track of said analog recorded magnetic tape; and
switching means for inhibiting use of the first and second

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outputs when a digital recorded magnetic tape is being reproduced and for utilizing said first and second com-



bined outputs when said analog recorded magnetic tape is being reproduced.

5,313,343

MAGNETIC RECORDING OR REPRODUCING APPARATUS

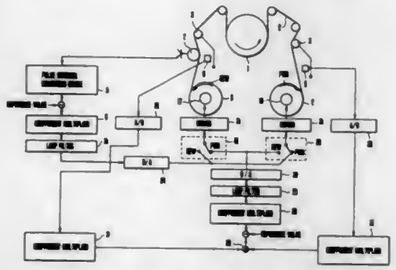
Toshiya Yatomi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1991, Ser. No. 720,749

Claims priority, application Japan, Jun. 28, 1990, 2-168328; Jun. 28, 1990, 2-168329

Int. Cl.[5] G11B *15/18, 15/46*

U.S. Cl. 360—71 **24 Claims**



1. A magnetic recording or reproducing apparatus for recording a reproducing a signal on or from a magnetic tape while causing the magnetic tape to travel in the state of being wrapped around a rotary head drum provided with a magnetic head, comprising:

(a) speed detecting means for detecting a speed of the magnetic tape;

(b) supply-reel-side tension detecting means for detecting a tension of the magnetic tape between the rotary head drum and a supply reel which is operative as a magnetic-tape sending side;

(c) take-up-reel-side tension detecting means for detecting a tension of the magnetic tape between the rotary head drum and a take-up reel;

(d) first driving means for driving the supply reel;

(e) second driving means for driving the take-up reel;

(f) control signal switching means for switching control signal for control of said first and second driving means in accordance with whether the magnetic tape is made to travel in a forward or rearward direction;

(g) a first comparing means for comparing a detection result provided by said speed detecting means with a predetermined reference value;

(h) first transmitting means for transmitting a result provided by said first comparing means to said control signal switching means as a first control signal;

(i) adding means for adding a detection result provided by said supply-reel-side tension detecting means to a detection result provided by said take-up-reel-side tension detecting means to provide a tape tension as a sum;

(j) second comparing means for comparing the tape tension provided by said adding means with a predetermined reference value; and

(k) second transmitting means for transmitting a result provides by said second comparing means to said control signal switching means as a second control signal.

5,313,344

STAND-BY MODE SETTING/RELEASING DEVICE FOR VIDEO CASSETTE RECORDER

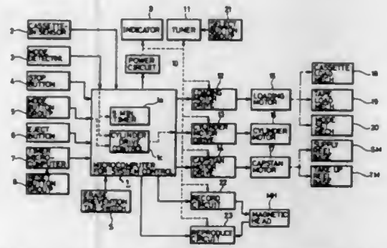
Hiroshi Sakaguchi, Amagasaki, and Sigekazu Morikawa, Tondabayashi, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 707,976, May 23, 1991, abandoned, which is a continuation of Ser. No. 343,717, Apr. 27, 1989, abandoned. This application Feb. 8, 1993, Ser. No. 15,053

Claims priority, application Japan, Apr. 28, 1988, 63-106834

Int. Cl.[5] G11B *15/18*

U.S. Cl. 360—71 **6 Claims**



1. A device for setting/releasing a stand-by mode for a video cassette recorder, said video cassette recorder including a cylinder provided with a magnetic head, rotating means for rotating said cylinder, signal recording/reproducing means connected to said magnetic head for recording/reproducing a signal from a tape stored in a video cassette, a cassette loading unit loading said video cassette into said video cassette recorder, a tape loading unit extracting tape from the loaded video cassette to achieve a tape loading state while driving said rotating means, direction/speed means for causing the tape in the tape loading state to feed in a specified direction and at a specified speed across said cylinder, reproducing mode responsive means for executing a reproducing mode, in which said signal is reproduced, in response to a designation of a reproduce mode by operation keys, said reproducing mode responsive means including a capstan, a pinch roller and a tension means for tensioning said tape, said reproducing mode responsive means pressuring said pinch roller toward said capstan and tensioning said tape to execute said reproducing mode, said device for setting/releasing the stand-by mode comprising:

tape loading executing means for executing loading of the tape by driving said tape loading unit in response to completion of loading of said video cassette by said cassette loading unit;

stand-by mode means for executing a stand-by mode, said stand-by mode means continuously drives said rotating means after said tape loading state is achieved;

stand-by releasing means for releasing said stand-by mode by terminating the driving of said rotating mean after a lapse of a first predetermined time period during the stand-by mode; and

reactivating means for reactivating driving of said rotating

means in response to selection of one of a fast forward operation and a rewind operation after said stand-by mode is released and then causing the tape in the tape loading state to feed in one of fast forward and rewind direction after a lapse of a second predetermined time period from selection of one of said first forward operation and said rewind operation.

5,313,345

SYSTEM FOR ADJUSTING TENSION IN A TAPE

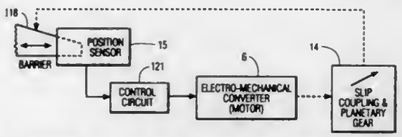
Hartmut Schandl, Wien, and Fritz Weisser, St. Georgen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jun. 24, 1992, Ser. No. 903,676

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1989, 3939521

Int. Cl.[5] G11B *15/48*

U.S. Cl. 360—74.1 **4 Claims**



1. A system for adjusting the tension of a tape in a magnetic tape record/playback device comprising:

a feed spool, a take-up spool and a motor for feeding said tape between said spools in a forward direction or a reverse direction;

tension sensing means for sensing the tension in said tape as said tape is fed in said forward or reverse direction;

means for maintaining said tension at a predetermined value when said tape direction is changed from said forward direction to said reverse direction;

a gear set having a slip coupling;

said slip coupling for applying a desired tape tension to said tape; and

an electro-mechanical converter means coupled to said slip coupling to control a slip coupling effect responsive to said sensed tension to produce said desired tape tension when said tape is fed in said reverse direction.

5,313,346

TRACKING ERROR DETECTION SYSTEM HAVING AT LEAST TWO MAGNETIC HEADS WITH OPPOSITE AZIMUTHS AND CIRCUITRY FOR DETECTING TRACKING ERROR BY DETERMINING A PHASE DIFFERENCE OF OUTPUT SIGNALS FROM ALL CIRCUITS BASED ON SIGNALS PRODUCED BY THE MAGNETIC HEADS

Masafumi Shimotashiro, Neyagawa; Tetsuya Mizushima, Yawata; Hiroshi Okamoto, Nara, and Souichiro Fujioka, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 552,515, Jul. 16, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,356

Claims priority, application Japan, Jul. 21, 1989, 1-189702; Sep. 20, 1989, 1-243784

Int. Cl.[5] G11B *5/584, 5/09*

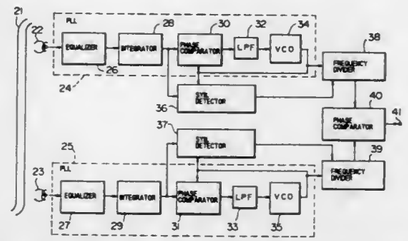
U.S. Cl. 360—77.130 **2 Claims**

1. A tracking error detection system, for a digital magnetic recording/reproducing apparatus for recording/reproducing digital signals on/from first and second recording tracks on a magnetic tape, said system comprising:

a multi-head magnetic head assembly having a single base, a first head and a second head disposed in a multiple configuration on said base, said first head for recording/reproducing a first digital signal on/from said first recording track and said second head for recording/reproducing a second digital signal on/from said second recording track, said first head being oriented to have a first azimuth having any angle between zero and thirty degrees for outputting a first reproduction signal and said second head being oriented to have a second azimuth having any angle between zero and thirty degrees in an opposite direction to said first azimuth for outputting a second reproduction signal;

a first PLL circuit for generating a first clock signal on the basis of said first reproduction signal;

a second PLL circuit for generating a second clock signal on the basis of said second reproduction signal; and



a phase comparator unit for comparing the respective phases of the first and second clock signals,

wherein said phase comparator unit comprises a first frequency dividing circuit receiving and frequency dividing said first clock signal so as to have a first low frequency in a dynamic range for detecting tracking errors and providing a first output signal, a second frequency dividing circuit receiving and frequency dividing said second clock signal to have a second low frequency in said dynamic range and providing a second output signal and a phase comparator circuit for comparing phases of said first output signal and said second output signal to determine a phase difference therebetween.

5,313,347

ROTATING MAGNETIC HEAD FOR A MAGNETIC RECORDING REPRODUCTION SYSTEM

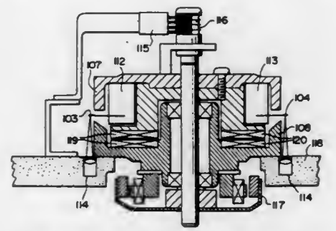
Yasuo Mitsuhashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1991, Ser. No. 638,764

Claims priority, application Japan, Jan. 12, 1990, 2-5186; Jan. 19, 1990, 2-11499

Int. Cl.[5] G11B *5/596, 21/02, 5/56, 7/00*

U.S. Cl. 360—77.16 **20 Claims**



1. A rotating magnetic head unit for a magnetic recording reproduction system comprising:

rotating drum means rotating at a designated speed, the magnetic tape being transported in contact around a periphery of said rotating drum means, an axis of rotation of

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said rotating drum means having a designated angle with respect to a width direction of the magnetic tape;

movable head means, mounted to project radially from the periphery of said rotating drum means to contact the magnetic tape, for recording and reproducing signals on the magnetic tape, said movable head means being movably supported along the axis of rotation of said rotating drum means;

fixed head means, mounted to project radially from the periphery of said rotating drum means to contact the magnetic tape, for recording and reproducing signals on the magnetic tape, said fixed head means being mounted relative to said movable head means a designated angle around the periphery of said rotating drum means;

head position detector means for detecting a position of said movable head means along the axis of rotation of said rotating drum means;

head position controller means, coupled to said head position detector means, for generating a control signal indicative of a difference between the detected position and a designated standard position of said movable head means during normal recording; and

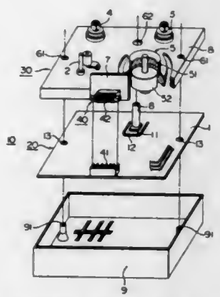
head driver means, operatively coupled to said movable head means, for driving said movable head means along the axis of rotation of said rotating drum means to the designated standard position, in accordance with the control signal.

5,313,348

MAGNETIC RECORDING/REPRODUCING APPARATUS

Kazufumi Oouchi, and Shinichi Yasui, both of Saijo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1992, Ser. No. 894,921
Claims priority, application Japan, Jun. 13, 1991, 3-141623
Int. Cl.[5] H04N *7/10*
U.S. Cl. 360—84 **3 Claims**



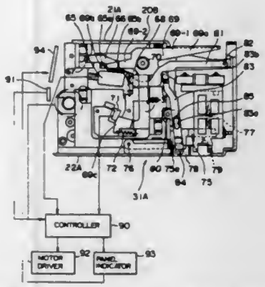
1. A magnetic recording/reproducing apparatus comprising:
a rotary head cylinder carrying a magnetic head for reading/writing data on a magnetic tape;
a main printed circuit board on which at least a part of a circuit for processing signals from said magnetic head is provided;
a frame on which said main printed circuit board is fixed;
a chassis on which said rotary head cylinder, a supply reel table, a take-up reel table, and at least one motor for driving said cylinder, said supply reel table, and said take-up reel table are mounted;
a second printed circuit board electrically connected to said driving motor and said magnetic head and fixed to one side edge of said chassis; and
a hinge mechanism for providing an electrical connection between said main printed circuit board and said second printed circuit board, said hinge mechanism including a first hinge member attached to said main printed circuit board and a second hinge member attached to said second printed circuit board, said first and second hinge members being detachably engaged with each other and permitting said chassis to pivot between a first position in which said chassis contacts said main printed circuit board at a part of a bottom of said chassis which is parallel to said main printed circuit board and a second position in which the chassis is spaced apart from the main printed circuit board to project out from the frame.

5,313,349

CARTRIDGE AUTOLOADING APPARATUS HAVING TWO SAFETY LOCK MECHANISMS

Yoshio Kotaki; Hiroyuki Sugihara, and Tetsuo Nagahori, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Mar. 18, 1992, Ser. No. 853,472
Claims priority, application Japan, Mar. 18, 1991, 3-052812; Apr. 18, 1991, 3-086814
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **7 Claims**



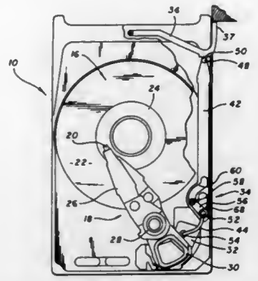
1. A cartridge autoloading apparatus attached to a cartridge recording and retrieval apparatus, said cartridge autoloading apparatus comprising:
a body which includes;
a crown plate,
a bottom plate, and
a perforation path perforated in a vertical direction of said body;
a magazine set in the perforation path, said magazine accommodating a plurality of cartridges;
magazine ascending and descending means, provided in said body, for ascending and descending said magazine via the perforation path;
cartridge loading means, provided in said body, for loading one of the cartridges in the magazine, into the cartridge recording and retrieval apparatus;
first safety lock means, located at the crown plate of said body, for stopping an operation of said magazine ascending and descending means if the magazine is made to descend with an abnormal condition;
secood safety lock means, located at the bottom plate of said body, for stopping an operation of said magazine ascending and descending means if the magazine is made to ascend with the abnormal condition; and
switch means, responsive to said first safety lock means and to said second safety lock means, for stopping the operation of said magazine ascending and descending means.

5,313,350

PLUG-IN ACTUATOR LATCH MECHANISM

F. Eugene Dion, Longmont, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Nov. 13, 1992, Ser. No. 975,846
Int. Cl.[5] G11B *17/02, 21/22*
U.S. Cl. 360—97.01 **12 Claims**



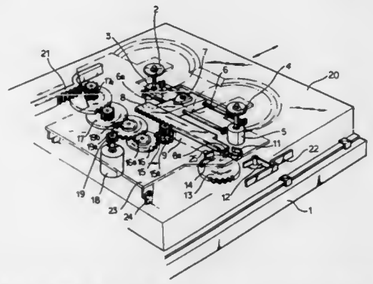
1. A hard disk drive card unit that can be coupled to a first connector of a computer, comprising:
a housing having a second connector adapted to be mated with the first connector;
a magnetic disk operatively connected to said housing, said magnetic disk having a read/write zone and a landing zone;
an actuator arm assembly coupled to said housing and adapted to move a magnetic head between said read/write zone and said landing zone of said magnetic disk; and,
latch means for securing said magnetic head within said landing zone of said magnetic disk when said second connector is detached from the first connector.

5,313,351

TWIN DISK PLAYER

Chung-Geu Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1989, Ser. No. 456,860
Claims priority, application Rep. of Korea, May 31, 1989, 89-7428
Int. Cl.[5] G11B *17/04, 5/012, 33/02*
U.S. Cl. 360—99.07 **12 Claims**



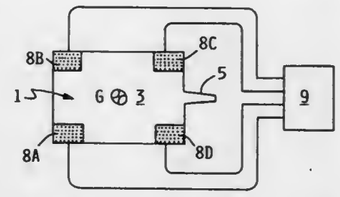
1. A twin disk player having a pair of turn tables and a pair of motors for driving the turntables on a main chassis, comprising:
a single driving motor being able to rotate in both the clockwise and counterclockwise direction;
transmitting means being engaged with a gear rotatably mounted on a shaft of said driving motor for transmitting the power of said driving motor;
operating means being moved by said transmitting means, for applying force on a disk holder raising and lowering means in dependence upon said movement;
said disk holder raising and lowering means being rotated by the force applied by said operating means, for raising and lowering a disk holder adapted to load a plurality of disks on the turntables;
door opening and shutting means for moving a door between a door open state wherein the plurality of disks are loaded into the disk player and a door closed state to allow a pair of disks to be loaded onto the turntables, in response to the movement by said operating means, and
said operating means comprising a moving rack for driving the disk holder raising and lowering means and said door opening and shutting means, and a driving rack being moved together with said moving rack for selectively driving a reproduction pickup.

5,313,352

MAGNETIC DISK SLIDER HAVING PIEZO-ELECTRIC VIBRATION ELEMENTS

Takao Chikazawa, Fujisawa; Akihiko Aoyagi, Yamato, and Atsushi Tobari, Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1992, Ser. No. 943,612
Claims priority, application Japan, Sep. 12, 1991, 3-260502
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 **16 Claims**



1. A slider for moving a transducer above a recording surface comprising:
a leading edge;
a trailing edge;
a first side;
a second side;
a plurality of piezo-electric elements disposed on said slider; and
means for supplying AC voltages to a plurality of the piezo-electric elements to induce vibration of said slider.

5,313,353

MAGNETIC HEAD SUSPENSION UNITED SUPPORT ARM WITH RIBBED CUT-OUT

Hiroshi Kohso, Fujiidera; Makoto Kuwamoto, Hirakata, and Michiro Tanaka, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 24, 1992, Ser. No. 918,962
Claims priority, application Japan, Jul. 25, 1991, 3-186117
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 **7 Claims**

1. A magnetic head slider support device for use in a magnetic disc apparatus which comprises:
a magnetic head,
a head slider having said magnetic head,
a support arm portion which supports said head slider by causing a gap-formed side of said magnetic head to confront a recording layer-formed surface of a hard disc at one end side thereof, and
a gimbal spring fixed to a forward end side of said support

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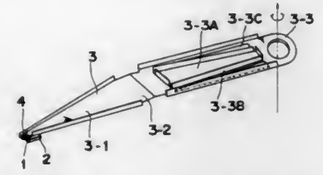
arm portion so as to attach said head slider thereto, wherein:

(a) said support arm portion further includes:

(1) a load beam support portion for supporting said head slider and said gimbal spring,

(2) a load beam plate spring portion for applying depressing force towards said recording layer-formed surface, to said head slider, and

(3) a pivotal support arm portion having a pivotal movement center for pivotally moving said magnetic head slider support device about said pivotal movement center, and for pivotally supporting said load beam support portion and said load beam plate spring portion at a rear end of said support arm portion,



(b) said load beam support portion, said load beam plate spring portion and said pivotal support arm portion are formed from a single piece of material that has a constant thickness, and

(c) said pivotal support arm portion has:

(1) a flat face and a side face, said side face having a rib formed by folding a part of said flat face approximately perpendicular to a remainder of said flat face, and

(2) a cut-out portion formed in the flat face, said cut-out portion having first and second sides, the first side closer to the pivotal movement center than the second side, the first side being smaller than the second side, and said cut-out portion having a further fib.

5,313,354

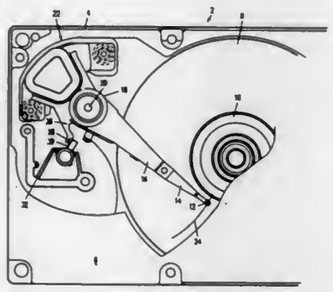
DISC DRIVE LATCH HOUSING HAVING IMPROVED VIBRATION DAMPENING

Joseph M. Sampietro, Tarzana; Richard G. Krum, Thousand Oaks, and Khosrow Mahajerani, Newbury Park, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 12, 1992, Ser. No. 976,247

Int. Cl.[5] G11B *5/54, 21/22, 5/48, 21/16*

U.S. Cl. 360—105 **3 Claims**



1. A disc drive data storage device including:

actuator means;

a first contact member integral to and movable with said actuator means, and;

a one piece crash stop/latching member comprising

a first resilient beam means having one end fixed and the other end positioned relative to a path of movement of said first contact member for substantially cantilevered deflection;

a second resilient beam means having one end fixed and the other end positioned relative to said path of movement of said first contact member for substantially buckled deflection; and

a second contact member mounted to the other ends of both said first resilient beam means and said second resilient beam means for cooperation with said first contact member;

whereby the cantilever deflection and buckling deflection of the respective resilient beam means acts to stop the motion of said actuator means along said path while the second resilient beam means acts to limit the return motion of said second contact member when said second resilient beam means has reached its at rest, unbuckled position.

5,313,355

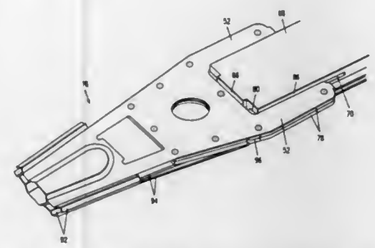
FLEXURE MOUNTING SYSTEM FOR HARD DISC DRIVES

Tracy M. Hagen, Edina, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 17, 1992, Ser. No. 977,944

Int. Cl.[5] G11B *5/50, 21/16*

U.S. Cl. 360—104 **6 Claims**



1. In a disc drive data storage device comprising at least one disc member and an array of heads mounted to flexures for encouraging the heads into cooperative engagement with the disc member, the disc drive data storage device comprising an actuator for moving the heads to desired locations on the surfaces of the disc member and the actuator comprising a plurality of head mounting arms, each arm having top, bottom and lateral side surfaces and a proximal end to which flexures are mounted, wherein the invention comprises:

a system for mounting the flexures to the head mounting arms comprising:

mounting plates fastened to the flexures, the mounting plates comprising a pair of elongated lateral legs extending substantially parallel with a longitudinal centerline of the mounting plates and in a direction away from the heads, each of said lateral legs being substantially planar, lying in a common plane and having edges parallel to said centerline wherein the edges the edges of said legs closest to said centerline comprising facing edges; and

a pair of slots the lateral surfaces of the head mounting arms, the slots with one slot in each of extending parallel to the centerline and to the proximal end of the arm;

a respective leg of said pair of legs being mounted in a corresponding of said slots, with substantially the entire length of a facing leg edge lying within a slot;

whereby the mounting plate lateral legs are brought into engagement with the slots in an interference fit to secure the flexures to the head mounting arms.

5,313,356

THIN FILM MAGNETIC HEAD HAVING A MAGNETIC/NON-MAGNETIC LAMINATE STRUCTURE WITH THE NON-MAGNETIC MATERIAL BEING A METAL OR AN INSULATING NITRIDE

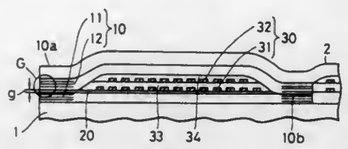
Keiji Ohkubo; Hisashi Yamazaki; Kiyoto Yamaguchi, and Yoshiharu Kashiwakura, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 10, 1991, Ser. No. 804,331

Claims priority, application Japan, Dec. 12, 1990, 2-401439

Int. Cl.[5] G11B *5/31*

U.S. Cl. 360—126 **14 Claims**



1. In a thin-film magnetic head comprising a magnetic core composed of upper and lower magnetic pole films spaced apart to define a read-write gap and a coil disposed between the upper and lower magnetic pole films in an area outside of the gap, the improvement wherein:

said upper and lower magnetic pole films each comprise a thin-film laminate having alternating magnetic and non-magnetic thin films, said magnetic thin-film comprising an amorphous Co alloy having a soft magnetic property and a thickness within a range of 0.1 μm to 0.5 μm and said non-magnetic thin-film comprising a non-magnetic metal having a thickness within a range from 0.005 μm to 0.05 μm.

5,313,357

MAGNETIC STORAGE DEVICE AND MANUFACTURING METHOD THEREOF

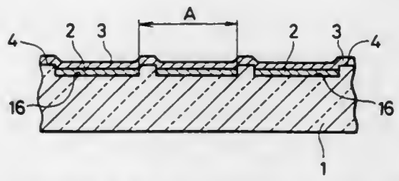
Kenji Obta; Junichiro Nakayama, and Tetsurou Muramatsu, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 17, 1991, Ser. No. 761,251

Claims priority, application Japan, Sep. 21, 1990, 2-253740

Int. Cl.[5] G11B *5/78*

U.S. Cl. 360—134 **18 Claims**



1. A magnetic storage device on and from which recording and reproduction of information are carried out using a magnetic head, said magnetic storage device comprising:

a substrate having grooves formed in a surface thereof; and

a magnetic film formed in each of the grooves,

film thickness of the magnetic film being set to be less than a depth of each of the grooves,

the information being recorded on the magnetic film.

5,313,358

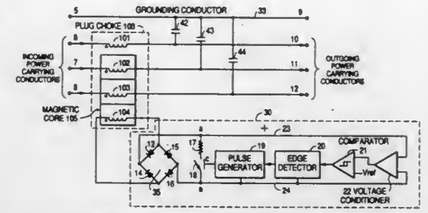
MULTIPHASE COMMON MODE TRANSIENT SUPPRESSOR

Alex J. Severinsky, Silver Spring, Md., assignor to Premier Power, Inc., McLean, Va.

Filed Dec. 13, 1991, Ser. No. 806,284

Int. Cl.[5] H02H *3/20*

U.S. Cl. 361—118 **11 Claims**



1. A multiphase common mode transient suppressor comprising:

a plurality of input terminals for receiving incoming electrical power, said input terminals corresponding to a plurality of input power conductors;

a plurality of corresponding power output terminals for providing outgoing electrical power, said output terminals corresponding to a plurality of output conductors;

an input ground terminal for connection to an input ground conductor and an output ground terminal for connection to an output ground conductor, said input and output ground terminals being connected together;

current storage means coupled between said input terminals and said output terminals for storing current from said incoming power, said current storage means being formed of a core and a plurality of electrical coils wound around said core, each of said coils having a beginning end and an ending end, each of said input terminals and their respective said corresponding output terminals being connected to said beginning and said ending end respectively of a respective said coil;

electrical charge storage means for storing an electrical charge, said charge storage means being coupled between respective ones of said plurality of output terminals and said output ground terminal;

catcher coil means formed of an electrical coil wound around said core for dampening oscillations produced by said current storage means and said charge storage means; and

control means coupled to said catcher coil means for controlling the operating of said catcher coil.

5,313,359

EXCESSIVE CURRENT PREVENTING DEVICE FOR THE CONTACT CHARGING OF A PHOTOSENSITIVE LAYER

Shinji Imagawa, Yso, and Koichi Inui, Higashiosaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed May 29, 1992, Ser. No. 890,673

Claims priority, application Japan, May 30, 1991, 3-127690

Int. Cl.[5] G03G *15/02*

U.S. Cl. 361—225 **24 Claims**

1. A contact charger for uniformly charging a photosensitive layer having a photoconductivity formed on a surface of an electrically conductive base of a photoreceptor, comprising:

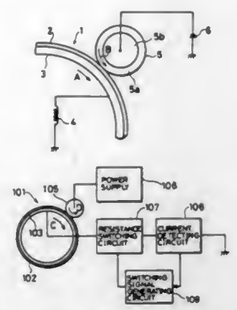
charging means for charging the photosensitive layer, said charging means being in contact therewith;

power supply means for supplying voltage to said charging means; and

excessive current protection means being connected between the base and a ground for reducing current flowing between the base and ground to substantially none when

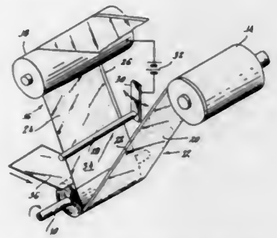
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there is a continuity between the base and said charging means, said excessive current protection means including



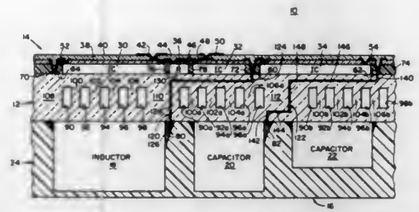
induced electromotive force generation means having an inductance.

5,313,360
DUAL CAPACITOR
Robert M. Stockman, St. Augustine, Fla., assignor to American Radionic Co., Inc., Palm Coast, Fla.
Filed Jun. 28, 1993, Ser. No. 84,355
Int. Cl.[5] H01G *4/38*
U.S. Cl. 361—328 **4 Claims**



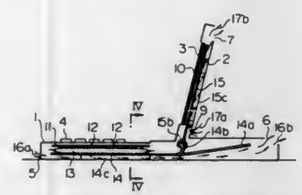
1. A dual capacitor having improved life test capacitance loss characteristics which comprises:
- a capacitor section wound from first and second lengths of metallized dielectric film to form respective first and second layers of metal separated by dielectric film, the metallized first layer extending to the first end of said section and the metallized second layer extending to the second end of said section, a portion of the metallized first layer being removed at a region intermediate the ends of said first length for a distance sufficient to encircle said section at least once;
- a non-conductive strip inserted between said lengths, extending outwardly from the first end of said section adjacent said region to form a circular barrier separating the metallized portions of said first length, and extending into said section a distance no greater than approximately 35% of said section length;
- means for making electrical contact with said first metallic layer within said barrier;
- means for making electrical contact with said first metallic layer without said barrier; and
- means for making electrical contact with said second metallic layer.

5,313,361
CERAMIC SUBSTRATE
Jacob H. Martin, Wellesley, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Mar. 29, 1993, Ser. No. 38,028
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—699 **6 Claims**



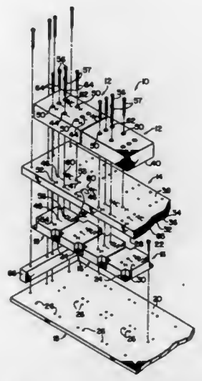
1. An improved ceramic substrate for supporting, cooling and interconnecting components disposed on opposite surfaces of the substrate, comprising:
- a plurality of coolant carrying channels separated by fins and enclosed within the interior of said substrate between the components on opposite surfaces and extending through said substrate generally parallel to said surfaces of said substrate; and
- a plurality of routed vias for interconnecting said components disposed on opposite surfaces of the substrate by component terminations which are not aligned with each other and with a fin, each said routed via including an internal via extending through a fin, a surface blind via extending inwardly from each surface, and at least one transverse segment interconnecting one end of said internal via to one of said surface blind vias.

5,313,362
PACKAGING STRUCTURE OF SMALL-SIZED COMPUTER
Toshio Hatada, Tsuchiura; Hiroshi Inouye, Ibaraki; Takao Ohba, and Susumu Iwai, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Japan
Filed May 20, 1992, Ser. No. 885,979
Claims priority, application Japan, May 31, 1991, 3-129850
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—709 **8 Claims**



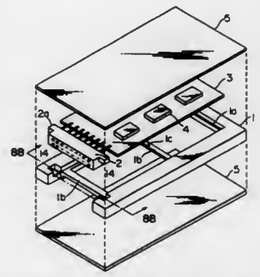
1. A portable computer having an air natural convection and heat radiation structure including computer component parts which generate heat and are provided in a casing,
- wherein a high-temperature radiator is heat-conductively connected to said heat generating computer component parts via a heat-conductive member inside said casing,
- a low-temperature radiator is formed by at least one part of said casing thermally connected to said high-temperature radiator,
- an air passage in said casing is formed between said high-temperature radiator and said low-temperature radiator, and
- each of said high-temperature and low-temperature radiators is formed so as to have a respective area of heat radiation larger than an area of a surface of said heat generating computer component parts.

5,313,363
LOW IMPEDANCE INTERCONNECTION ASSEMBLY FOR HIGH FREQUENCY SWITCHING POWER SEMICONDUCTOR DEVICES AND LOW INDUCTANCE MODULAR CAPACITOR
Zeljko Arbanas, Marlboro, Mass., assignor to EML Research, Inc., Hudson, Mass.
Filed Jul. 28, 1993, Ser. No. 98,739
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—710 **1 Claim**



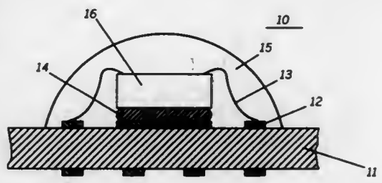
1. A low impedance interconnection assembly for use with high frequency switching power semiconductor devices, said assembly comprising:
- a heat sink mounting plate having an outwardly facing substantially flat surface;
- a plurality of semiconductor switching devices having along an outwardly facing upper surface a means forming a positive polarity DC voltage input, means forming a negative polarity DC voltage input and means forming AC voltage output; and an outwardly facing lower surface having means for attachment to said heat sink mounting plate;
- means forming a multi-layer planar bus structure having an outwardly facing lower surface in contact with said outwardly facing upper surface of said semiconductor switching devices, an outwardly facing upper surface, a first layer carrying a positive DC voltage potential, a second layer, carrying a negative DC voltage potential, a dielectric layer separating said first and second layers and a thermal layer of conductive material dielectrically isolated from said first and second layers;
- at least one modular capacitor having at least one positive electrode connection means and at least one negative electrode connection means, said modular capacitor having an outwardly facing lower surface in contact with said outwardly facing upper surface of said multi-layer bus structure;
- first means for electrically coupling said modular capacitor positive electrode to said first layer of said multi-layer bus structure and said semiconductor positive polarity DC voltage input means;
- second means for electrically coupling said modular capacitor negative electrode to said second layer of said multi-layer bus structure and said semiconductor negative polarity DC voltage input means;
- said first and second electrical coupling means further forming attachment means for holding said modular capacitor, multi-layer bus structure and said semiconductor switching devices in a laminated assembly;
- thermally conductive means for mechanically connecting the thermal layer of said multi-layer bus structure to said heat sink mounting plate.

5,313,364
IC CARD AND METHOD OF MANUFACTURING THE IC CARD
Makoto Omori; Jun Ohbuchi; Hajime Maeda, all of Itami; Hiroshi Miura, Sanda; Tomomi Hamada, Sanda, and Takeshi Uenaka, Sanda, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 3, 1992, Ser. No. 985,152
Claims priority, application Japan, Sep. 29, 1992, 4-260110
Int. Cl.[5] H05K *1/14*
U.S. Cl. 361—737 **10 Claims**



1. An IC card for insertion into and connection to an external unit, said IC card comprising:
- a circuit board having a major surface and at least one edge;
- electronic parts mounted on the major surface;
- at least one connector fixed on the edge of said circuit board and electrically connected to said electronic parts;
- a frame receiving said circuit board and said connector, laterally surrounding said circuit board and said connector with said circuit board fixed to said frame and a face of said connector exposed;
- connector fixation means fixing said connector to said frame; and
- a pair of panels attached to obverse and reverse surfaces of said frame, covering said circuit board and said connector.

5,313,365
ENCAPSULATED ELECTRONIC PACKAGE
Robert W. Pennisi, Boca Raton; Glenn E. Gold, Coconut Creek; Frank J. Juskey, and Glenn F. Urbish, both of Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 30, 1992, Ser. No. 906,346
Int. Cl.[5] H05K *7/02*; H01L *23/28*
U.S. Cl. 361—760 **4 Claims**

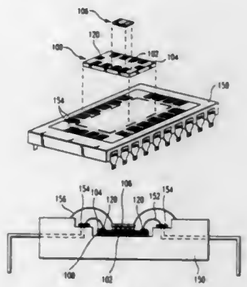


1. An electronic package, comprising:

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a printed circuit board having a metal circuit pattern disposed on a first major surface thereof;
a semiconductor device attached to the printed circuit board by means of an adhesive;
an encapsulant covering the semiconductor device and portions of the printed circuit board major surface; and
the adhesive and the encapsulant comprising an organosilicon polymer comprised substantially of alternating polycyclic hydrocarbon residues and cyclic polysiloxane or siloxysilane residues linked through carbon-silicon bonds.

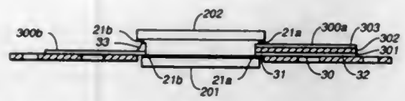
5,313,366
DIRECT CHIP ATTACH MODULE (DCAM)
Gene J. Gaudenzi, Purdy's, and Perwaiz Nihal, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 12, 1992, Ser. No. 929,631
Int. Cl.[5] H05K 7/02
U.S. Cl. 361—760 **15 Claims**



1. An integrated circuit module comprising:
a carrier, said carrier comprising:
chip mounting means for fixedly mounting at least one integrated circuit chip to said carrier, and
distribution means for distributing said power and said signals to said at least one integrated circuit chip, said distribution means comprised of a plurality of carrier pads connected to a plurality of chip bonding pads by carrier wiring on at least one conductive plane, said conductive plane being on at least one layer of resin fiberglass composite material;
said carrier being selected from at least two carriers with different distribution means, whereby two chips with identical function, but incompatible footprints, become interchangeable in an integrated circuit chip;
the integrated circuit chip package; and,
bonding means for mounting and connecting the carrier to said package.

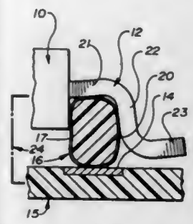
5,313,367
SEMICONDUCTOR DEVICE HAVING A MULTILAYER INTERCONNECTION STRUCTURE
Hisanobu Ishiyama, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
PCT No. PCT/JP91/00786, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO92/00603, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 11, 1991, Ser. No. 836,285
Claims priority, application Japan, Jun. 26, 1990, 2-167371
Int. Cl.[5] H01R 9/00, 43/00
U.S. Cl. 361—772 **18 Claims**

1. A semiconductor device comprising:
a multi-layer interconnection structure arranged on a substrate comprising
a first layer of first electrically conducting fingers,
a second layer of second electrically conducting fingers, and
an electrically insulating material arranged between said first and second layers; and
a second interconnection structure arranged on the substrate comprising a plurality of third electrically conducting fingers,
said first electrically conducting fingers of said multi-layer interconnection structure being in electrical communication with corresponding first electrodes of a first inte-



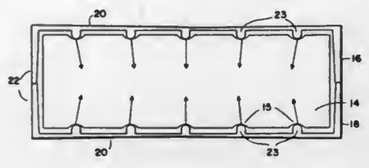
grated circuit, said second electrically conducting fingers of said multi-layer interconnection structure being in electrical communication with corresponding first electrodes of a second integrated circuit, and said third electrically conducting fingers of said second interconnection structure being in electrical communication with corresponding second electrodes of the first and second integrated circuits.

5,313,368
ELECTRICAL CONNECTIONS BETWEEN PRINTED CIRCUIT BOARDS AND INTEGRATED CIRCUITS SURFACE MOUNTED THEREON
Keith L. Volz, Jamestown; Frederick R. Deak, Kernersville; Robert M. Renn, Pfafftown; David C. Johnson, Winston Salem, and Robert D. Irlbeck, Greensboro, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Feb. 2, 1993, Ser. No. 12,170
Int. Cl.[5] H01R 9/00
U.S. Cl. 361—774 **8 Claims**



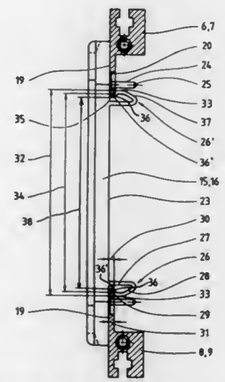
1. A combination of an integrated circuit package having a plurality of bent leads protruding therefrom, where the bent leads have a relatively small pitch laterally therebetween, and a printed circuit board having a plurality of circuit pads thereon, and wherein the integrated circuit package is surface mounted to said printed circuit board, the combination including means for mounting the integrated circuit package on the printed circuit board, and at least one flexible electrical connector between the bent leads on the integrated circuit package and the circuit pads on the printed circuit board, where the flexible electrical connector comprises an elastomeric core having a plurality of relatively closely-spaced conductive traces thereon, the traces providing a circuit interface between the bent leads on the integrated circuit package and the circuit pads on the printed circuit board, and the elastomeric core providing a resilient loading therebetween, whereby to provide the circuit interface with a substantially zero insertion force between the integrated circuit package and the printed circuit board to compensate for any irregularities and tolerance accumulations in the bent leads with respect to the integrated circuit package.

5,313,369
REDUCED TOLERANCE INTERCONNECT SYSTEM
Mark S. Lewis; Lori A. Treseder; Reuben Martinez, all of Colorado Springs, and Ralph M. Tusler, Monument, all of Colo., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Nov. 3, 1992, Ser. No. 970,721
Int. Cl.[5] H05K 7/14
U.S. Cl. 361—796 **9 Claims**



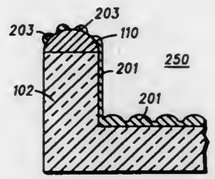
1. An enclosure comprising:
a backplane having spaced apart recesses on opposing edges;
two flexible enclosure sections, each enclosure section comprising a center portion and end portions, such end portions extending laterally from the same side of the center portion, the center portion comprising alignment protrusions spaced apart to engage the backplane recesses and extending from the side of the center portion from which the end portions extend, the protrusions having, curved apex regions and a height greater than the depth of the recesses;
means that latch the end portions of the enclosure sections together, the enclosure sections being dimensioned such that the enclosure sections are closed around the backplane and the protrusions from the enclosure sections are urged against the recesses on the backplane.

5,313,370
COMPONENT CARRIER FOR INSERTABLE CIRCUIT BOARDS
Hans M. Schwenk; Friedrich Werling, both of Straubenhardt, and Hans-Ulrich Güther, Pfinztal, all of Fed. Rep. of Germany, assignors to Schroff GmbH, Straubenhardt, Fed. Rep. of Germany
Filed Jun. 22, 1992, Ser. No. 901,839
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120873
Int. Cl.[5] H05K 7/12, 7/14
U.S. Cl. 361—802 **4 Claims**



1. In a component carrier for insertably receiving printed circuit boards on which electronic components are mounted; the component carrier including
two fixedly held, parallel support rails each having a longitudinally extending, lateral web; said webs having respective facing longitudinal edges being spaced at a first clearance from one another; each said web having a thickness;
a longitudinal guide rail extending transversely to said support rails and having an underside oriented towards said support rails and a top side oriented away from said support rails; an upwardly open, longitudinal groove provided in the top face of said guide rail for receiving a marginal edge zone of a printed circuit board therein;
resilient securing means for holding said guide rail against said support rails by a snap-in engagement;
the improvement wherein said resilient securing means comprises a first and a second U-shaped spring bar affixed to said underside of said guide rail at opposite first and second end portions thereof, respectively; each said spring bar including
(a) a first leg affixed to and extending perpendicularly away from said underside of said guide rail;
(b) a resilient second leg adjoining said first leg and extending towards said underside; said resilient second leg including a free end portion having an outer face oriented towards an adjacent end of said guide rail; a distance between the outer face of said second leg of said first spring bar and the outer face of said second leg of said second spring bar being greater than said first clearance;
(c) a contact face formed on said free end portion and extending parallel to said underside of said guide rail and being at a second clearance therefrom; said engagement face being in a face-to-face contact with an underside of said web whereby pulling away of said guide rail from said webs is being resisted; said second clearance being more than said thickness of said web; and
(d) a contact strip formed on the free end portion of said second leg adjacent said engagement face; said contact strip having an outer face; said outer face of said contact strip of said first spring bar and said outer face of said contact strip of said second spring bar being oriented toward one another and being separated from one another by a clearance less than said first clearance.

5,313,371
SHIELDING APPARATUS FOR NON-CONDUCTIVE ELECTRONIC CIRCUIT PACKAGES
Thomas A. Knecht, Crystal Lake; Brian M. Mancini, Carol Stream; Jean-Robert Achille, Bloomingdale, and David J. Sieben, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 663,979, Mar. 4, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,775
Int. Cl.[5] H05K 9/00
U.S. Cl. 361—818 **11 Claims**



1. A shielding apparatus for an insulating lid having an edge and an interior surface, the edge being retained in contact with a substrate having the electrical circuit disposed thereon, the shielding apparatus comprising:
a film disposed on the edge of the insulated lid;
a first conductive flash selectively disposed on the first

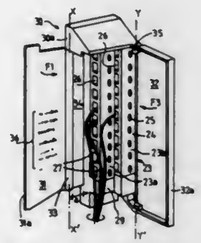
VOL 1162 ISS 3 MY 17 1994 UMI

interior surface, such that a substantially non-uniform, contiguous conduction layer is disposed thereon;

a second conductive flash selectively disposed on said film, to produce a conduction layer which partially covers said film; and

means, disposed on the substrate and substantially aligned with said film disposed on the edge of the insulated lid, for hermetically affixing the insulated lid to the substrate, whereby a hermetically sealed enclosure for isolating the electrical circuit from extraneous radio frequency energy is produced.

5,313,372
TERMINAL BLOCK FOR AUTOMATION DEVICE
Jean-Marie Chabert, Valbonne, and André Goletto, Antibes, both of France, assignors to Telemecanique, France
Filed Dec. 30, 1992, Ser. No. 998,342
Claims priority, application France, Dec. 30, 1991, 91 16397
Int. Cl.[5] H01R *9/00*
U.S. Cl. 361—823 **7 Claims**



1. A terminal block for an automated system, comprising:

a terminal block body that can be mounted movably on and electrically connected to an electronic processing module and which comprises terminals for connecting connection elements of said module to ends of a bundle of flexible leads for connecting devices of said automated system,

said terminals comprising, towards a front face, openings for access by a tool, and towards a lateral face, lateral openings for insertion of the lead ends,

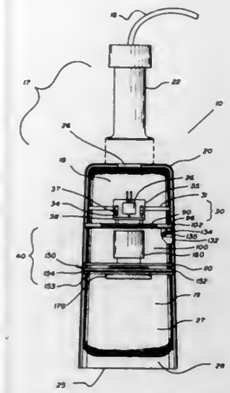
a vertical gorge for housing the bundle of leads,

a closing front wall and lateral walls, wherein the lateral wall situated on the side of said lateral openings for insertion of the leads comprises a laterally pivoting flap.

5,313,373
APPARATUS FOR THE UNIFORM ILLUMINATION OF A SURFACE
Johannes A. S. Bjorner, Woodbury; Kevin Y. Hamada, and Kenneth A. Lais, both of Danbury, all of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.
Filed Nov. 25, 1992, Ser. No. 981,242
Int. Cl.[5] F21V *9/14*
U.S. Cl. 362—19 **19 Claims**

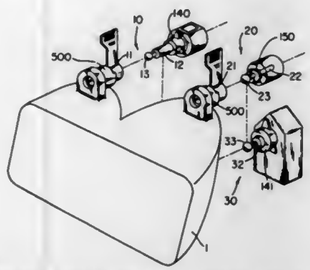
1. An apparatus for providing highly uniform illumination of an area within a predetermined range on a surface, comprising:

(a) a chamber, defined by a wall, said wall having an opaque portion and a partially transparent portion, said partially transparent portion comprising a first section having a first average transparency and a second section having a second average transparency, an interior surface of said wall being reflective of light; and



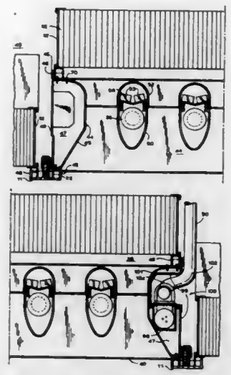
(b) a light source disposed interior to said chamber wherein a camera receiving aperture is defined in said wall, said wall substantially enclosing said chamber.

5,313,374
MOUNTING DEVICE FOR A PART OF A MOTOR VEHICLE HEADLAMP
Ghislaine Pinson, Villeneuve la Garenne, France, assignor to Valeo Vision, Bobigny Cedex, France
Filed Apr. 6, 1993, Ser. No. 43,266
Claims priority, application France, Apr. 6, 1992, 92 04164
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 **11 Claims**



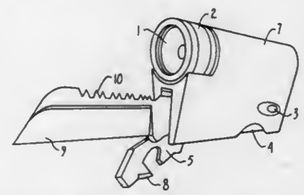
1. A unit for a motor vehicle for coupling a lighting unit to a vehicle, comprising a mounting device for securing the lighting unit to the vehicle, at least one bar, an essentially spherical head carried by said bar, and at least one retaining means for engaging said bar and said essentially spherical head in order to couple the lighting unit to the vehicle, retaining means have a recess substantially complementary to said head for receiving said head therein, said recess having a transverse opening for receiving said head and said bar, said recess defining a transverse axis passing substantially through said recess center, whereby said retaining means is pivotable about said axis between a first position in which said head can be fitted in said recess and a second position in which said head is retained in said recess to couple the lighting unit to the vehicle.

5,313,375
FLOW-THRU TROFFER
Ryan D. Jones, St. Louis, Mo., assignor to Guth Lighting Inc., St. Louis, Mo.
Filed Nov. 10, 1993, Ser. No. 974,093
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—96 **41 Claims**



1. A light fixture comprising a frame, means in the frame for mounting an air filter/distribution device therein to direct air in a predetermined direction from the air filter/distribution device to a space below it, and a plurality of individual lighting elements in the frame beneath said mounting means in the direction of air flow, said individual lighting elements each comprising an upper generally semi-cylindrical elongated shield positioned to be directly beneath an air filter/distribution device in the frame and arranged to open downwardly in the direction of air flow, means for mounting an elongated light bulb beneath the shield in the direction of air flow; and an elongated lens having a generally teardrop shape in transverse cross-section mounted on the shield for enclosing the bulb positioned beneath the shield, whereby air flowing from an air filter/distribution device in the frame flows over and around said shield and lens in a generally laminar flow.

5,313,376
MULTIPURPOSE KNIFE/LIGHT
Kirk W. McIntosh, P.O. Box 370678, San Diego, Calif. 92137
Continuation of Ser. No. 271,591, Nov. 14, 1988, abandoned.
This application Jan. 25, 1993, Ser. No. 8,400
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—119 **13 Claims**



1. A multipurpose knife for cutting, said knife comprising:

a handle;

means for cutting attached to said handle;

a flashlight having a substantially cylindrical body portion, said flashlight being attachable to said handle to illuminate said cutting means, said flashlight being operable when detached from said handle, said flashlight being attached to said handle by said body portion being inserted into a substantially cylindrical recess formed in said handle, said recess being sized to internally receive said flashlight and being positioned to allow said flashlight to illuminate said cutting means during attachment of said flashlight to said handle; and

means for retaining said illuminating means in said recess wherein said retaining means is a narrowing in the substantially cylindrical recess to frictionally grip said body potion of said flash light during attachment of flashlight to said handle thereby retaining said flashlight in said handle recess.

5,313,377
LIGHTING UNIT
George C. Kasboske, 2820 N. Whipple, Chicago, Ill. 60618
Filed Apr. 15, 1993, Ser. No. 48,360
Int. Cl.[5] F21Y *33/00*
U.S. Cl. 362—122 **19 Claims**



1. A lighting unit comprising:

a source of illumination;

a support for said illumination source;

means for connecting the illumination source to the support; and

means on the support for simulating vegetation,

said support including a base simulating a natural stem for the simulated vegetation,

said base having a peripheral surface bounding a space,

said source of illumination residing at least partially within the space bounded by the peripheral surface so that light from the illumination source projects from within the space bounded by the peripheral surface to externally of the base,

whereby the lighting unit serves the dual purpose of a) producing the appearance of natural vegetation and b) providing illumination.

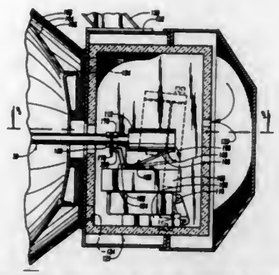
5,313,378
MOBILE LIGHTING SYSTEM
Myron K. Gordin; Robert D. Jones; George P. Glass; David M. Crookham, all of Oskaloosa; Bradley M. Chelesvig, Des Moines, and James A. Witson, Oskaloosa, all of Iowa, assignors to Musco Corporation, Oskaloosa, Iowa
Division of Ser. No. 685,296, Apr. 12, 1991, Pat. No. 5,207,747.
This application Apr. 30, 1993, Ser. No. 56,360
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—226 **12 Claims**

1. A quick release axially mounted metal halide lamp having an elongated lamp body positioned along a longitudinal axis, a center bulb surrounding arc electrodes, and end caps over end seals at opposite ends of the body, the lamp being axially mountable in a light fixture mount comprising:

a connection means attached to one end of the lamp, the connection means including a portion extending away from the longitudinal axis of the body; and

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a quick release receiving means mounted in the light fixture mount, the receiving means comprising a clamp means movable by a control arm between an open position and a closed position, the clamp means allowing insertion or



removal of the connection means when in the open position, and clamping and locking the connection means to the receiving means in the closed position, the receiving means also including biasing means to urge the clamp means to the closed position.

5,313,379

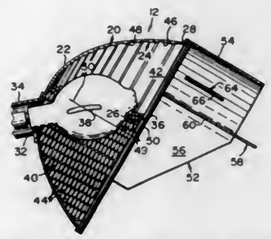
ASYMMETRIC SPORT LIGHTING LUMINAIRE

Thomas M. Lemons, Marblehead, Mass., and Kenneth M. Spink, Jerome, Mich., assignors to Qualite Sports Lighting, Inc., Hillsdale, Mich.

Continuation-in-part of Ser. No. 915,240, Jul. 20, 1992, abandoned. This application Mar. 11, 1993, Ser. No. 31,073

Int. Cl.[5] F21V *7/00*

U.S. Cl. 362—298 **6 Claims**



1. A lighting luminaire characterized by its confinement of stray light comprising, in combination, a convex-concave reflector having an inner concave light reflecting surface and a peripheral rim having upper and lateral portions, said reflecting surface having a longitudinal axis, a focal point, an upper portion and a lower portion, a tubular neck defined on said reflector having an axis inclined substantially 45° relative to said reflecting surface axis, a lamp having an axis and having an elongated arc light source having a longitudinal axis substantially parallel to said lamp axis and located within said reflector, said arc light source being located adjacent said reflecting surface focal point and its axis being inclined substantially 45° relative to said reflecting surface axis, said arc light being located within the confines of said reflecting surface as defined by said peripheral rim, a visor attached to said reflector at said peripheral rim having an upper portion extending from said reflector rim upper portion and lateral portions extending from said rim lateral portions, and a first flat light source shield mounted on said visor extending between said visor lateral portions and spaced from said visor upper portion having a plane substantially parallel to said reflecting surface axis, said reflecting surface lower portion including a plurality of adjacent convex elliptical ridges having a substantially vertical major axis whereby light reflected by said ridges will be confined to a beam of restricted height.

5,313,380

LIGHTING ASSEMBLY

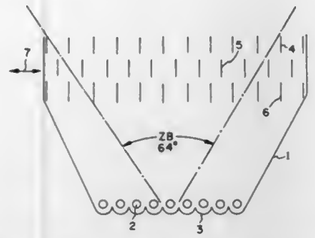
Dedo A. Weigert, München, Fed. Rep. of Germany, assignor to Dedo Weigert Film GmbH, Munich, Fed. Rep. of Germany

Filed May 4, 1993, Ser. No. 56,388

Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4215382

Int. Cl.[5] F21V *17/02*

U.S. Cl. 362—325 **7 Claims**



1. A lightning assembly to be used generally for scene illumination, said assembly comprising:

a housing defining a light outlet opening;

a generally broad light-source means arranged in said housing for producing substantially unfocused light from an area extending laterally to light travelling from said light source through said light outlet opening; and

grids arranged at said light outlet opening for affecting light from said light source passing through said light opening, said grids being formed of slats with relatively wide width dimensions thereof extending approximately in the direction of light passing through said light opening and relatively thin thickness dimensions thereof facing light travelling from said light source through said light outlet opening;

wherein said lighting assembly further includes an adjusting means coupled to at least one of said grids for allowing adjustment of the position of said at least one grid; and

wherein there are at least two grids arranged in the light outlet opening one behind the other in the direction of light rays passing through the outlet opening, said adjusting means allowing relative adjustment of the positions of the grids to one another lateral to the direction of light rays passing through the outlet opening for thereby changing an area being illuminated by said lighting assembly.

5,313,381

THREE-TERMINAL SWITCHED MODE POWER SUPPLY INTEGRATED CIRCUIT

Balu Balakrishnan, Saratoga, Calif., assignor to Power Integrations, Inc., Mountain View, Calif.

Filed Sep. 1, 1992, Ser. No. 938,704

Int. Cl.[5] H02M *1/00*

U.S. Cl. 363—147 **11 Claims**

1. A switched-mode power supply chip having exactly three electrical connections, comprising:

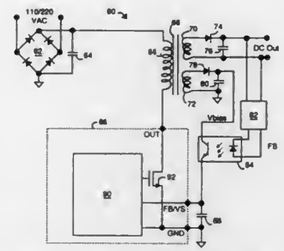
a first electrical connection terminal providing for a connection to a first end of a primary winding of a transformer with a second end of said primary winding connected to a source of direct current (DC) power;

a second electrical connection terminal providing for a ground reference for said source of DC power;

a third electrical connection terminal providing for a connection to a source of feedback current derived from a secondary winding of said transformer with a second end of said secondary winding connected to said ground reference for said source of DC power, wherein a combined feedback signal (Ifb) and internal low voltage supply current (Is) may be accepted on a single pin of said chip, such that said low voltage supply current may provide the operating power necessary for voltage regulation after a startup phase and during an operation phase of said chip;

a junction-type field effect transistor (JFET) having a drain electrode connected to the first electrical connection terminal, a gate electrode connected to the second electrical connection terminal, and a source electrode for providing a bias voltage that is reduced substantially from a voltage appearing at the first electrical connection terminal;

a metal oxide semiconductor field effect transistor (MOSFET) having a drain electrode connected to said source



electrode of the JFET and thereby placing the MOSFET and JFET in series connection, a gate electrode for controlling a switching current through both the JFET and MOSFET in series, and a source electrode connected to the second electrical connection terminal;

voltage regulation means having an input connected to the third electrical connection terminal and an output connected to said gate of the MOSFET and having a bias voltage power supply connection to said source electrode of the JFET for switching the MOSFET and JFET on and off according to a feedback current received at the third electrical connection terminal, wherein a voltage output by said transformer is thereby regulated; and

input means connected to the third electrical connection terminal for accepting a combined feedback signal (Ifb) and internal low voltage supply current (Is) on a single pin, wherein said low voltage supply current provides operating power for the voltage regulation means after said startup and during said operation of said chip.

5,313,382

REDUCED VOLTAGE/ZERO CURRENT TRANSITION BOOST POWER CONVERTER

Richard W. Farrington, Mesquite, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 18, 1993, Ser. No. 63,397

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—16 **12 Claims**

1. A reduced-voltage/zero-current transition (RV/ZCT)PWM converter, comprising:

an input to accept a voltage;

an output for coupling voltage to a load;

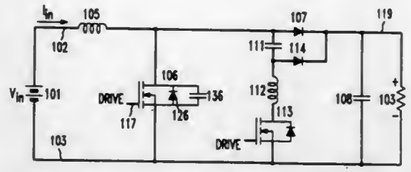
power processing circuitry connecting the input to the output and including:

at least a discrete inductive energy storage element;

rectifying circuitry including a passive switch rectifying diode;

an active power switch connecting the storage element to the rectifying circuitry;

an added active resonant network to minimize the switching losses in both active and passive switches, having a resonant capacitor, a resonant inductor, and an auxiliary active switch connected in series circuit, the series circuit being connected in parallel with the power switch; an auxiliary diode, the resonant capacitor having a first terminal and second terminal with the first terminal connected to the rectifying circuitry and its second terminal connected to



the auxiliary diode which is connected in turn to the output; and

whereby the active switch turns-on under a reduced voltage reduced from the voltage across the switch in its off state, the auxiliary switch turns off at zero current and the rectifier diode turns-off under substantially zero-current.

5,313,383

DC—DC CONVERTER

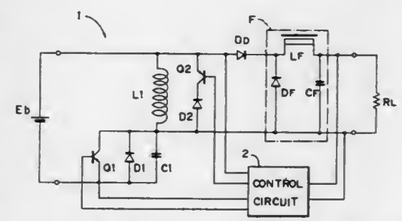
Hiroshi Ikeuchi, Yokosuka, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 797,751, Nov. 25, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 988,890

Claims priority, application Japan, Nov. 30, 1990, 2-337371

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—21 **4 Claims**



1. A DC—DC converter comprising a DC power supply having first and second terminals, a coil having first and second ends, means connecting said first end to said first terminal, a main switch, a resonant capacitor, means connecting said main switch in parallel with said capacitor to form a circuit having third and fourth ends, means connecting said second end to said third end, means connecting said fourth end to said second terminal, an output circuit a control circuit for said main switch, means coupling said output circuit to said first and second ends and a rectifier poled to conduct current to said output circuit when said main switch is turned ON by said control circuit a control switch, means connecting said control switch in parallel with said coil and means for controlling said control switch to allow current due to energy accumulated in the aforesaid coil to flow when said main switch is OFF.

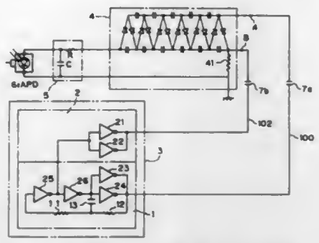
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5,313,384

HIGH VOLTAGE GENERATING CIRCUITS INCLUDING A TRANSFORMERLESS VOLTAGE MULTIPLIER

Kazuro Takeda, and Katsuhiro Ishimura, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,833
Claims priority, application Japan, May 30, 1991, 3-127592
Int. Cl.[5] H02M *7/10*
U.S. Cl. 363—60 **6 Claims**



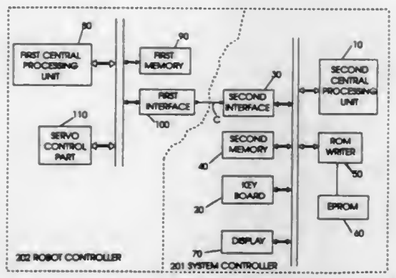
1. A high-voltage generating circuit comprising:
a pulse generating circuit for producing a first train of repetitive pulses;
a first current drive circuit for amplifying a second train of repetitive pulses which are in phase opposition to said first train of repetitive pulses from said pulse generating circuit;
a first capacitor having a first and second terminal, the first terminal connected to said pulse generating circuit;
a second capacitor having a first and second terminal, the first terminal connected to said current drive circuit; and
a voltage boosting and rectifying circuit connected to the second terminal of each of said first and second capacitors for producing a high direct-current voltage;
wherein said pulse generating circuit comprises three inverters connected in series and a fourth inverter connected in parallel with one of said three inverters, and
wherein said current drive circuit is connected in parallel with two of said three inverters.

5,313,385

UTILITY PROGRAM BACKUP APPARATUS

Chan-Yeong Whang, Suwon, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 13, 1991, Ser. No. 698,985
Claims priority, application Rep. of Korea, Dec. 28, 1990, 90-21413
Int. Cl.[5] G05B *9/02, 19/42*
U.S. Cl. 364—184 **19 Claims**



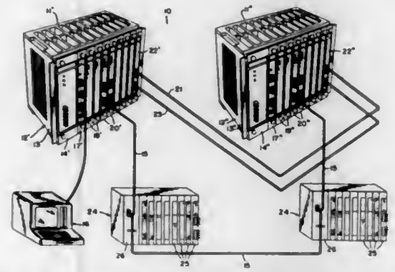
5. A method for backing up a utility program for a robot controller connected to a system controller, said robot controller comprising a first memory and a first interface, said system controller comprising a second memory, a second interface and an EPROM, said method comprising the steps of:
transmitting a backup command in series from said second interface of said system controller to said first interface of said robot controller;
converting a utility program retrieved from said first memory of said robot controller from parallel to series format in said first interface;
transferring said converted utility program from said first interface to said second interface;
storing said converted utility program from the second interface to said second memory of said system controller; and
writing said utility program stored in said second memory onto said EPROM.

5,313,386

PROGRAMMABLE CONTROLLER WITH BACKUP CAPABILITY

William B. Cook, Northfield, and Robert D. Eaton, North Ridgeville, both of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jun. 11, 1992, Ser. No. 897,172
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—187 **13 Claims**



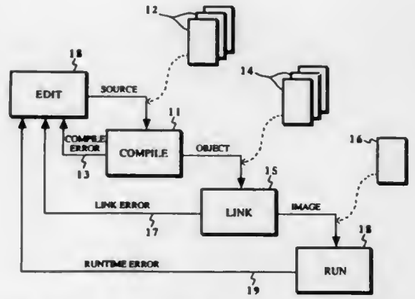
1. In a programmable controller having a memory which stores a control program and data, and a processor for executing the control program to receive data from input/output circuits which connect to a machine being controlled and for sending data to the input/output circuits for operating devices on the machine; wherein the improvement comprises:
an input means for receiving a first signal indicating that another programmable controller, which is connected to the same input/output circuits, requests to operate in an active mode;
a first terminal for receiving a second signal indicating that the programmable controller is to operate in the active mode when a plurality of programmable controllers are requesting to operate in the active mode at substantially the same time;
mode indicator means for designating that the programmable controller is to operate in the active mode in response to said input means not receiving the first signal, and in response to said input means receiving the first signal and to said first terminal receiving the second signal, otherwise said mode indicator means designating that the programmable controller is to operate in a backup mode; and
an output means for transmitting a third signal to the other programmable controller when said mode indicator means designates that the programmable controller is to operate in the active mode, the third signal not being transmitted when said mode indicator means designates that the programmable controller is to operate in the backup mode.

5,313,387

RE-EXECUTION OF EDIT-COMPILE-RUN CYCLES FOR CHANGED LINES OF SOURCE CODE, WITH STORAGE OF ASSOCIATED DATA IN BUFFERS

William M. McKeeman, Hollis, and Shota Aki, Weare, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1989, Ser. No. 735,384
Int. Cl.[5] G06F *15/00, 9/30*
U.S. Cl. 364—400 **14 Claims**
MICROFICHE APPENDIX INCLUDED
(202 Microfiche, 5 Pages)



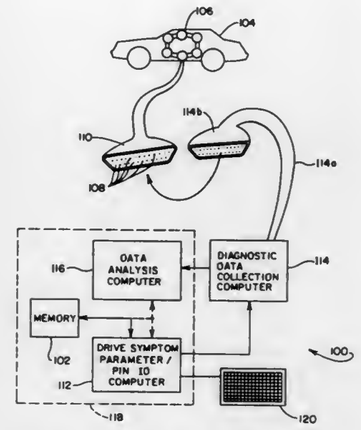
1. A method of developing source code, comprising the steps of:
a) editing selected lines of each of a plurality of modules of source text using an editor, said modules of source text being stored in memory in a plurality of source-text buffers, each one of the source-text buffers containing a plurality of lines of said source text;
b) compiling each of said source-text buffers to produce in memory a plurality of code tables, one code table for each one of said buffers;
c) linking said code tables to produce in memory a link table and storing said code tables and said link table as a code image in a buffer in memory;
d) running the code from said code image in said buffer; and
e) holding said source-text buffers, said code tables, and said link table, in memory, for re-using;
f) re-editing other selected lines of each of said plurality of modules of source text using said editor, said re-edited modules of source text being again stored in memory in said plurality of source-text buffers;
g) re-compiling each of said re-edited source-text buffers to again produce in memory a plurality of updated code tables;
h) re-linking said updated code tables to again produce in memory an updated link table and storing said updated code tables and said updated link table as an updated code image in a buffer in said memory;
i) again running the code from said updated code image in said buffer;
wherein each line of said source-text buffers has an associated change-tag to indicate whether or not said line of source code is changed in said steps of editing and re-editing; and said steps of compiling and re-compiling only compiles lines of said source text buffers indicated to have been changed by said change-tag of each line.

5,313,388

METHOD AND APPARATUS FOR DIAGNOSING ENGINE AND/OR VEHICLE SYSTEM FAULTS BASED ON VEHICLE OPERATING OR DRIVE SYMPTOMS

Gregory J. Cortis, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 711,843, Jun. 7, 1991, abandoned. This application May 12, 1993, Ser. No. 61,331
Int. Cl.[5] G01M *15/00;* **G06F** *11/32*
U.S. Cl. 364—424.04 **3 Claims**



1. A diagnostic system for the analysis of motor vehicle operating problems, said system comprising:
a memory for storing data representative of a plurality of motor vehicles to be serviced using said system, said data including a data point directory containing information identifying data access points for obtaining vehicle operating data representative of the operation of a plurality of systems within each of said plurality of motor vehicles, said data access points corresponding to pins of multipin connectors within motor vehicles to be serviced;
a drive symptom parameter/pin identification computer for accessing said data point directory stored in said memory in response to motor vehicle identification data to retrieve relevant data identifying pins of a multipin connector for the identified motor vehicle through which specific data for the identified motor vehicle can be retrieved, said drive symptom parameter/pin identification computer further accessing said retrieved relevant data for the identified motor vehicle in response to motor vehicle driveability symptoms indicative of said operating problems to retrieve vehicle specific information identifying appropriate ones of said pins of said multipin connector for the identified motor vehicle to be monitored for collecting vehicle operating data for analysis of one or more systems most likely responsible for said vehicle driveability symptoms;
a diagnostic data collection computer responsive to said vehicle specific information for collecting data only from pins of said multipin connector for the identified motor vehicle; and
a data analysis computer responsive to the data collected by said diagnostic data collection computer for identifying one or more faults of one or more of said plurality of systems of the motor vehicle identified by said motor vehicle identification data.

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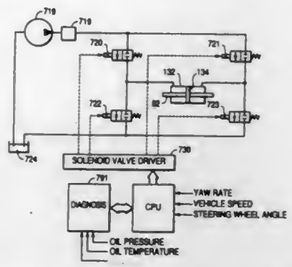
FAIL-SAFE MECHANISM FOR VEHICLE STABILITY AUGMENTATION STEERING SYSTEM

Yoshiyuki Yasui, Kariya City, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Continuation-in-part of Ser. No. 475,899, Feb. 6, 1990, Pat. No. 5,159,553, which is a continuation-in-part of Ser. No. 243,822, Sep. 13, 1988, Pat. No. 941,097. This application Jul. 11, 1990, Ser. No. 551,127

Int. Cl.[5] B62D *5/22*

U.S. Cl. 364—424.05 **27 Claims**



1. A vehicle steering apparatus for providing adaptive steering control and including a fail-safe mechanism, said apparatus comprising:

steering rod means mounted for lateral movement with respect to the vehicle, said steering rod means linked at both ends to steerable wheels of the vehicle, said steering rod means for steering the vehicle by undergoing lateral movement and causing pivoting motion of the steerable wheels;

steering means for steering the vehicle by causing lateral movement of said steering rod means relative to the vehicle, said steering means including a steering wheel connected to said steering rod means;

means for providing adaptive steering control to the vehicle by causing said steering rod means to undergo lateral movement relative to the vehicle in addition to the lateral movement provided by the steering means, said means for providing adaptive steering control detecting an actual steering condition of the vehicle and comparing it with a desired steering condition of the vehicle, said additional lateral movement provided in accordance with the comparison of the actual and desired steering conditions so as to cause them to be equal, said means for providing adaptive steering control including a fluid pressure responsive means for providing the additional lateral movement to said steering rod means, fluid pressure source means for providing fluid pressure to said fluid pressure responsive means, and fail-safe valve means for controlling the flow of fluid between said fluid pressure source means and said fluid pressure responsive means, said fail-safe vale means biased so as to prevent the flow of fluid to the fluid pressure responsive means from the fluid pressure source means; and

a diagnosis circuit means for measuring the pressure and temperature of the fluid flowing between said fluid pressure responsive means and said fluid pressure source means, said diagnosis circuit means storing a threshold fluid temperature and fluid pressure, said diagnosis circuit means comparing the measured fluid temperature and fluid pressure with the stored temperature and pressure, respectively, said diagnosis circuit means causing said fail-safe valve means to prevent the flow of fluid if the measured temperature exceeds the threshold temperature or if the measured pressure is less than the threshold pressure.

5,313,390

METHOD AND APPARATUS FOR CONTROL AND REGULATION OF A VEHICLE CHASSIS HAVING AN ADJUSTABLE DAMPER

Wolfgang Schramm, Leonberg, and René Schenk, Tamm-Hohensstange, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

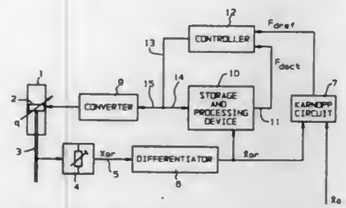
PCT No. PCT/DE90/00732, § 371 Date May 29, 1991, § 102(e) Date May 29, 1991, PCT Pub. No. WO91/06439, PCT Pub. Date May 16, 1991

PCT Filed Sep. 27, 1990, Ser. No. 689,821

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1989, 3935376

Int. Cl.[5] B60G *11/26, 17/00*

U.S. Cl. 364—424.05 **13 Claims**



1. A method for at least one of control and regulation of a suspension system on a vehicle, said suspension system including at least one adjustable damper having a piston and an adjustable flow cross section, said method comprising the steps of:

calculating a reference damping force for said damper, said reference damping force dependent on at least one variable of state, said variable of state including an actual value of a velocity of a said piston;

transmitting said actual value of said piston velocity to a storage and processing device (**8**, **10**) including mapped data representing characteristic curves of an actual damping force (Fdact), said storage and processing device simulating said actual damping force (Fdact) in said damper utilizing said mapped data;

generating a control signal with a controller, said control signal dependent on said reference damping force (Fdref) and said actual damping force (Fdact); and

transmitting said control signal to said damper for adjusting of said adjustable flow cross section, and to said storage and processing device (**8**, **10**) as an input thereto.

5,313,391

DRIVE SLIP REGULATING SYSTEM WHEREIN A SLIPPAGE THRESHOLD IS DETERMINED FROM THE SPEED AND ACCELERATION OF NON-DRIVEN WHEELS

Alfred Sigl, Sersheim; Manfred Meissner, Unterriexingen; Jocben Schäfer, Ludwigsburg, and Johannes Schmitt, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP88/00885, § 371 Date Jul. 2, 1990, § 102(e) Date Jul. 2, 1990, PCT Pub. No. WO89/04263, PCT Pub. Date May 18, 1989

PCT Filed Oct. 5, 1988, Ser. No. 466,330

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1987, 3737689

Int. Cl.[5] B60T *8/60, 8/82*

U.S. Cl. 364—426.03 **18 Claims**

1. Drive slip control system for a vehicle having two driven wheels, two non-driven wheels, brakes associated with said wheels, an operator controlled accelerator pedal, and an engine which develops torque, said system comprising

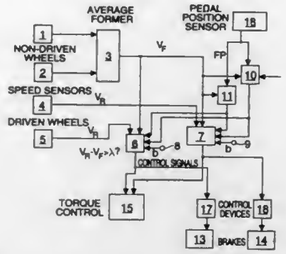
means for generating wheel speed values representing speeds of the driven wheels,

means for determining speeds of the non-driven wheels,

means for generating a reference speed value V_F from the speeds of the non-driven wheels,

means for differentiating V_F to form an acceleration value dV_F/dt,

means for forming a threshold slippage value λ by adding a first factor which is a fraction of V_F, a second factor which is a constant, and a third factor formed by the relation $(dV_F/dt-d)/e$, where d and e are constants,



means for generating a control signal for each driven wheel when the difference between the wheel speed value for the respective driven wheel and the reference speed value exceeds said threshold slippage value λ, and

means for applying the brake of each driven wheel when a control signal for the respective driven wheel is generated.

5,313,392

METHOD FOR SUPPORTING MERCHANDISE MANAGEMENT OPERATION AND SYSTEM THEREFOR

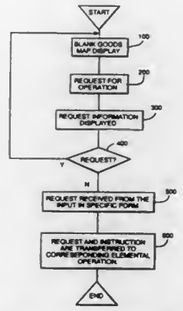
Tadashi Temma, Sagamihara; Kichizo Akashi, Ebina; Tatsumi Nishimoto, Ayase; Tetsuo Kusuzaki, Kawasaki, and Isao Tsushima, Yamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,889

Claims priority, application Japan, Mar. 16, 1990, 2-64187; Oct. 24, 1990, 2-284233

Int. Cl.[5] G06F *15/22, 15/24*; G06G *7/52*

U.S. Cl. 364—401 **39 Claims**



1. A computer implemented method for retail store merchandise management for a merchandise management cycle comprising a plurality of elemental operations, including:

displaying on a computer screen a blank goods layout map of a goods holding gondola showing different kinds of goods by contours as objects of management;

receiving in memory a user entered information request for displaying on the computer screen information required for the merchandise management;

displaying on the computer screen a plurality of choices of the elemental operations and the information responding to the information request in accordance with the goods layout map of the gondola;

receiving in memory a user entered selection request of an elemental operation from among the plurality of displayed choices of elemental operations; and

executing in the computer system the elemental operation of the selected request.

5,313,393

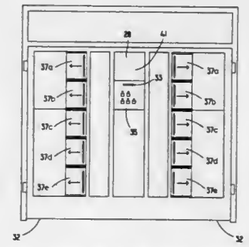
INVENTORY CONTROL SYSTEM FOR AUTOMATIC DISPENSING

Clem Varley, Heathersett, 110 Gregories Road, Beaconsfield, Bucks HP 9 1HN; John A. Varley, Forester, Lower Church Street, Stokenchurch, Bucks, and Richard P. Varley, 19 Blossom Chase, Ealing, London W.5., all of England

Filed Jun. 10, 1992, Ser. No. 895,372

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—403 **7 Claims**



1. Apparatus for controlling the dissemination of garments comprising:

first and second rotatable cassettes, each cassette including a plurality of shelf segments and supported in a respective frame, said first cassette serving as a container for clean garments, and said second cassette serving as a depository for soiled garments;

first and second enclosures for enclosing said cassettes, each having a door covering an opening to a shelf segment of each of said cassettes;

first and second actuator operated door locks for maintaining said doors closed until a respective actuating signal is received;

electronic circuit means for supplying first and second actuating signals to said first and second actuator operated door locks comprising:

a card reader for reading a user access card;

a memory for storing user account data;

a menu display means for displaying instructions to a user;

a keyboard entry means to enter garment selection data and garment deposit data;

a microprocessor connected to said card reader, said menu display means and said memory, said microprocessor being programmed to:

provide instructions to said menu display means, instructing said user to enter garment selection data or garment deposit data on said keyboard entry means;

read said keyboard entry means to obtain said garment selection or deposit data;

compare said garment selection data with account data in said memory identified by an account number on said user card;

supplying an actuator signal to said first actuator operated door lock if selection data is received which agrees with said account data, and supplying an actuation signal to

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said second actuator operated door lock if said user enters garment deposit data;

updating said account data with data which indicates whether a garment has been selected from said first rotatable cassette or deposited in said second rotatable cassette.

5,313,394

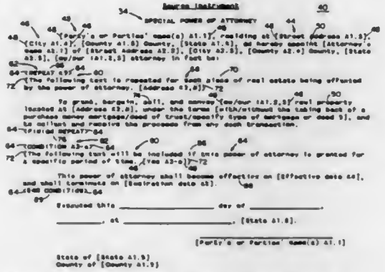
DOCUMENT ASSEMBLY CUSTOMIZATION SYSTEM FOR MODIFYING A SOURCE INSTRUMENT INCLUDING TEXT AND DECISIONAL COMMANDS

Barbara Clapp, 4 Flintlock Dr., Acton, Mass. 01720

Continuation-in-part of Ser. No. 625,881, Dec. 11, 1990, abandoned. This application Jul. 3, 1991, Ser. No. 725,191

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—419.1 **10 Claims**



1. A document assembly customization system for modifying a source instrument including text and decisional commands and their associated decisional clauses, comprising:

means for indicating each decisional command and its associated decisional clause in the instrument;

means for moving and deleting decisional commands and their associated decisional clauses;

means for generating a new template from the) modified source instrument; and

means for generating a decision index identifying each decisional command and its associated decisional clause and their location in the text of the modified source instrument.

5,313,395

SPEED CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Katsuhiko Kawai, Kariya; Tasunori Kato, Nagoya; Katsuhiko Nakabayashi, Handa; Shigenori Isomura, Kariya; Hisashi Iida, Ama, and Toshio Kondo, Kariya, all of Japan, assignors to Nippondenso Co. Ltd., Aichi, Japan

PCT No. PCT/JP90/01684, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO91/10057, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 25, 1990, Ser. No. 752,655

Claims priority, applicatioo Japan, Dec. 25, 1989, 1-336090

Int. Cl.[5] F02D *41/16;* **G06F** *15/20*

U.S. Cl. 364—431.07 **17 Claims**

1. A speed control unit for an internal combustion engine which operates at an engine speed, comprising:

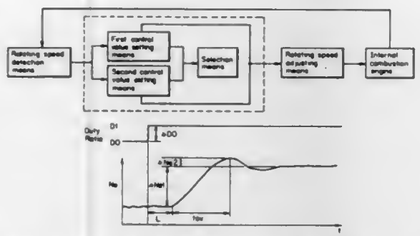
detecting means for outputting a first signal indicative of a detected engine speed of the internal combustion engine;

control means for receiving the first signal, for calculating first and second values of a present control variable and for outputting a control signal indicative of a selected one of the first or second values of the present control variable to an adjusting means,

the control means comprising first means for determining whether the internal combustion engine is operating in a first or second state,

first control variable setting means (1) for setting a state variable to a first present value in accordance with the first signal, a first previous value of the state variable and the first value of the present control variable and (2) for setting the present control variable to a value corresponding to the first value thereof;

second control variable setting means (1) for setting the state variable to a second present value in accordance with the first signal, a second previous value of the state variable and the second value of the present control variable and (2) for setting the present control variable to a value independent of the second value thereof;



first selecting means for selecting (1) the first control variable setting means when the internal combustion engine operates in the first state so that the control signal is indicative of the first value of the present control variable or (2) the second control variable setting means when the internal combustion engine operates in the second state so that the control signal is indicative of the second value of the present control variable; and

the adjusting means responsive to the control signal such that the adjusting means is controlled at a predetermined cycle for causing the engine speed to coincide with a target engine speed.

5,313,396

METHOD OF OPERATION OF A NAVIGATIONAL CALCULATOR

James E. Terpstra, Highlands Ranch; Donald R. Sellars, Aurora; William A. King, Jr., Aurora, and Karel R. Hajda, Aurora, all of Colo., assignors to Jeppesen Sanderson, Inc., Englewood, Colo.

Filed Apr. 16, 1991, Ser. No. 687,040

Int. Cl.[5] G01C *21/20*

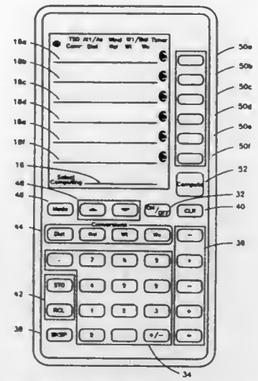
U.S. Cl. 364—443 **32 Claims**

1. A method of operation of a navigational calculator having an input device for use in entering navigational information that is required to make a navigational calculation and an output device for use in displaying flight information, comprising:

selecting a navigational parameter that can be calculated by the navigational calculator using the input device, wherein said navigational parameter requires that the values of a plurality of variables be defined before said navigational parameter can be calculated;

associating, following said step of selecting, a previously entered value with each of said plurality of variables in any order that is convenient using the input device;

calculating the value of said navigational parameter using the values of said plurality of variables, and



displaying the value of said navigational parameter using the output device.

5,313,397

AUTOPILOT SYSTEM FOR A VESSEL

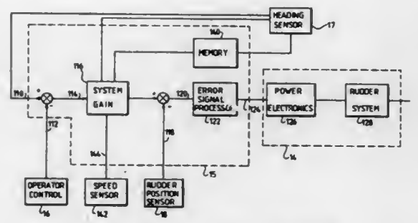
Harjit Singh, Hayling Island, and Andrew W. Clark, Portsmouth, both of United Kingdom, assignors to Nautech Limited, Portsmouth, England

Filed Feb. 8, 1991, Ser. No. 652,523

Claims priority, application United Kingdom, Feb. 9, 1990, 9002949

Int. Cl.[5] G05D *1/00*

U.S. Cl. 364—457 **19 Claims**



1. An autopilot system for a vessel, comprising:

memory means for storing at least one pre-set heading direction;

heading means for determining an apparent orientation of said vessel relative to a reference direction;

steering correction means for:

(i) generating a correction value dependent on the difference between said apparent orientation and said pre-set heading direction,

(ii) generating a modification value dependent on the difference between said apparent orientation and said reference direction, said modification value being independent of said correction value, and

(iii) generating a correction signal, said correction signal being the product of said correction value and a gain value, which gain value is variable in dependence on said modification value; and

steering means for controlling the actual orientation of said vessel, said steering means including movable vessel-direction setting means for setting the actual orientation of said vessel in dependence on the current position of said movable vessel-direction setting means, and means for varying the position of said movable vessel-direction setting means in dependence on said correction signal.

5,313,398

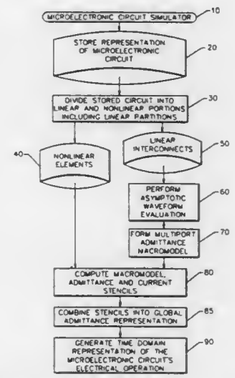
METHOD AND APPARATUS FOR SIMULATING A MICROELECTRONIC CIRCUIT

Ronald A. Rohrer, Sewickley; Vivek Raghavan, Pittsburgh, and J. Eric Bracken, Irwin, all of Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Jul. 23, 1992, Ser. No. 919,160

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—468 **24 Claims**



1. A method for simulating operation of a microelectronic circuit during a time interval, said microelectronic circuit having a plurality of interconnected linear and nonlinear electronic elements, comprising the following steps performed in a computer system:

storing a representation of said microelectronic circuit in said computer system;

dividing the stored representation into a first circuit comprising linear elements and a second circuit comprising nonlinear elements;

determining moments for a portion of said first circuit;

determining poles from the moments;

forming a multiport macromodel of said portion of said first circuit from the poles;

forming a linearized transient representation of said second circuit; and

combining said multiport macromodel and said linearized transient representation at time points in the time interval to produce a time domain simulation of the operation of said microelectronic circuit during the time interval.

5,313,399

ADAPTIVE SYNCHRONOUS VIBRATION SUPPRESSION APPARATUS

Stuart R. Beale, Boston, Mass., assignor to The Charles Stark Draper Laboratories, Inc., Cambridge, Mass.

Filed Jan. 21, 1992, Ser. No. 822,701

Int. Cl.[5] G05B *19/02;* **H02K** *7/09*

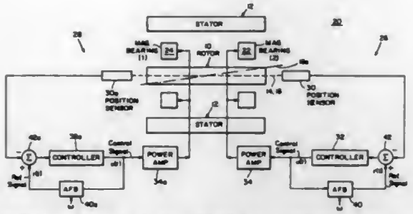
U.S. Cl. 364—463 **16 Claims**

1. An adaptive forced balancing system for a rotor magnetic bearing suspension apparatus having a magnetic bearing control signal, comprising:

means, responsive to the magnetic bearing control signal, for detecting the energy representative of the mass-unbalance of the rotor;

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means, responsive to said means for detecting, for computing two Fourier coefficients of the energy representative of the mass-unbalance of the rotor; and



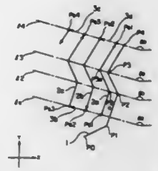
means responsive to said means for computing said two Fourier coefficients, for generating a position command to the rotor magnetic bearing suspension apparatus to define the orbit of the geometric center of the rotor to effect rotation of the rotor about its center of mass.

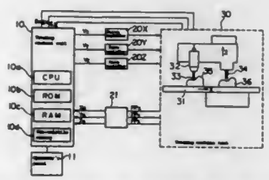
5,313,400

TRACING METHOD

Osamu Tsukamoto, Minamitsuru, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 573,128, Sep. 18, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,153
Claims priority, application Japan, Feb. 14, 1989, 1-34862
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.03 **1 Claim**





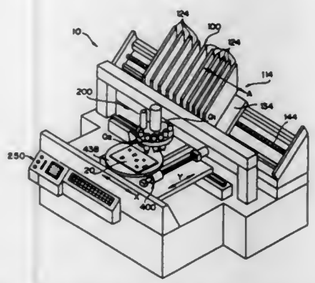
1. A method of carrying out a tracing operation in a region designated by a wire limit defined by limit line segments connecting a plurality of limit points, comprising the steps of:
(a) determining a first limit point, nearest to a first tracing point, from among the limit points;
(b) setting a pick feed angle relative to a first coordinate axis;
(c) determining a second tracing point lying on a straight line passing through a second limit point adjacent the first limit point and forming the pick feed angle with the first coordinate axis, so that a first tracing line segment connecting the first and second tracing points is parallel to a first limit line segment connecting the first and second limit points;
(d) tracing a stylus in a first tracing direction along the first tracing line segment;
(e) repeating steps (c) and (d) until the stylus reaches an end point of a first tracing path;
(f) performing a pick feed to move the stylus a predetermined distance in a pick feed direction along a first pick feed line forming the pick feed angle with the first coordinate axis, to position the stylus at a new tracing start point;
(g) repeating steps (c)–(f) to trace the stylus along a second tracing path in a second direction opposite to the first direction until an end point of the second tracing path is reached and the pick feed is performed in the pick feed direction along a second pick feed line parallel to the first pick feed line; and
(h) repeating steps (c)–(g) alternating the first and second tracing direction and the pick feed along the first and second pick feed lines.

5,313,401

MOUNTING SYSTEM INCLUDING A PLURALITY OF HAND MECHANISMS FOR PICKING UP, MOVING AND MOUNTING WORKS ON AN OBJECT BOARD

Shozo Kasai, Kawasaki; Yusaku Azuma; Yasushi Aoki, both of Yokohama; Makoto Akahira, Kawasaki; Takeshi Yakou, Tokyo, and Katsumi Ishihara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1990, Ser. No. 552,126
Claims priority, application Japan, Jul. 17, 1989, 1-182432; Dec. 25, 1989, 1-332788; Dec. 25, 1989, 1-332789; Jul. 5, 1990, 2-176254; Jul. 5, 1990, 2-176255; Jul. 5, 1990, 2-176256; Jul. 5, 1990, 2-176257
Int. Cl.[5] G06F *15/46*; H05K *3/30*
U.S. Cl. 364—474.02 **21 Claims**



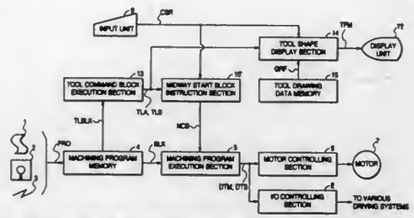
1. A mounting system for picking up one of several different types of works from a pickup position where the different type works are selectively fed, and for moving a picked up work to an insertion position to mount the work on an object board, which comprises:
a rotary member arranged to be rotatable;
a plurality of head means mounted on said rotary member for picking up one of the plurality of works at the pickup position, for holding the picked up works and for inserting the held work on the board at the insertion position;
means for storing a pickup order in which designated works are sequentially picked-up at the pickup position and an insertion order in which the designated held works are sequentially inserted onto the object board at the insertion position;
driving means for rotating and stopping said rotary member;
determining means for determining whether or not one of said head means, which is the closest and is approaching the pickup or insertion position, is designated by the pickup or insertion order as being driven to pickup or insert the work, on the basis of the content of the storing means; and
control means for controlling the driving means to continue to rotate the rotary member passed the pickup or insertion position, if one head means, which is determined not to be designated by the pickup or insertion order to pickup or insert the work, is approaching the pickup or insertion position.

5,313,402

MIDWAY START METHOD IN NUMERICAL CONTROL SYSTEM

Kenji Ito, Niwa, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed Dec. 1, 1992, Ser. No. 983,757
Claims priority, application Japan, Dec. 5, 1991, 3-348690
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.23 **4 Claims**



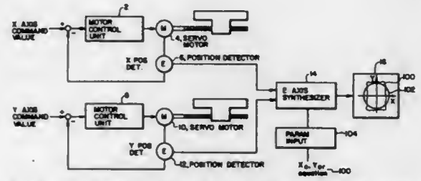
1. A midway start method in a numerical control system wherein a specified block is selected as a midway start block out of the blocks of a machining program to execute the machining program from said selected midway start block, which comprises the steps of extracting a tool command block wherein a tool exchange command is written from said machining program, displaying the tool numbers or tool offset numbers in the unit of said tool command block, selecting a specified tool number or the tool offset number out of said tool numbers or the tool offset numbers, and determining the tool command block wherein said specific tool number or the specific tool offset number is written as said midway start block.

5,313,403

NUMERICAL CONTROL APPARATUS HAVING A CIRCULAR INTERPOLATION LOCUS DISPLAY FUNCTION AND CONTROL METHOD THEREOF

Jun Fujita; Teturo Kurokawa, and Sadaji Hayama, all of Shizuoka, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 643,587, Jan. 22, 1991, abandoned. This application May 11, 1993, Ser. No. 59,416
Claims priority, application Japan, Jan. 23, 1990, 2-14656
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.26 **17 Claims**



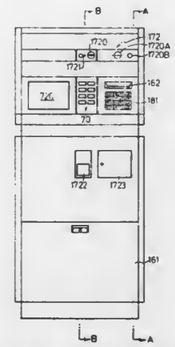
1. A method for displaying a circular interpolation locus of a numerical control apparatus, comprising the steps of:
obtaining a commanded circular interpolation locus in a form suitable for display;
detecting movements of two axes that are controlled by said numerical control apparatus responsive to said commanded circular interpolation locus and generating detected signals related to said movements;
synthesizing signals from said detected signals generated in said detecting step into a form suitable for display; and
displaying said commanded circular interpolation locus on a display and displaying the movement locus of said two axes as a circular interpolation locus on the display, superimposed on said displayed commanded circular interpolation locus, using signals synthesized in said synthesized step to thereby simultaneously display a command circle and a measured circle,
wherein said displaying step includes the steps of:
calculating a difference between values of said commanded circular interpolation locus, and values of said measured circular interpolation locus;
exaggerating an amount of said difference, and
displaying said command circle and said measured circle in their entirety while displaying an exaggerated difference between an actual value from a command circuit and said circular interpolation locus which emphasizes the difference therebetween on the same display.

5,313,404

AUTOMATIC POSTAL TELLER MACHINE

Sheng J. Wu, P.O. Box 1-79, Taipei, Taiwan

Continuation-in-part of Ser. No. 920,648, Oct. 20, 1986, Pat. No. 4,940,887. This application Jun. 11, 1990, Ser. No. 536,496
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—478 **29 Claims**



1. An automatic postal teller machine comprising:
a housing having a front face, a mail drop, mail returning opening, coin slot and coin returning opening;
a microprocessor for controlling said teller machine disposed inside said housing;
a keyboard system operatively connected to said microprocessor for inputting operation commands to said microprocessor;
a display disposed on said front face of said housing and operatively connected to said microprocessor for communicating with the mailer;
an automatic weighing device operatively connected to said microprocessor for receiving the mail dropped from the mail drop and conveying the mail to a weighing area for weighing, said automatic weighing device including an automatic conveying means, a weighing scale and a movable and vertically displaceable stand for supporting the mail, the mail being completely separated from said conveying means when the mail is weighed by said weighing scale, wherein said microprocessor calculates postage due according to said operation commands and the weight of the mail;
an automatic postal stamp device adjacent to said automatic weighing device, having postage stamp numeral wheel means and date stamp numeral wheel means; and
a money receiving means disposed behind said coin slot for receiving the postage paid by the mailer.

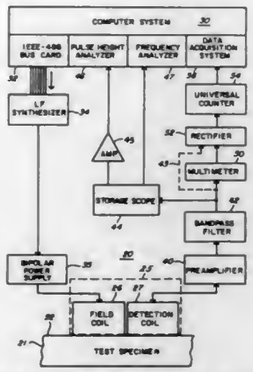
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,405

SYSTEM AND METHOD FOR NON-DESTRUCTIVE EVALUATION OF SURFACE CHARACTERISTICS OF A MAGNETIC MATERIAL

David C. Jiles, and Levent B. Sipahi, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 4, 1991, Ser. No. 754,904
Int. Cl.[5] G01B 7/24
U.S. Cl. 324—209 **12 Claims**



1. A system for producing information characterizing the properties of a sample of magnetic material near the surface of the sample comprising, in combination:

probe means magnetically coupled to the sample for (a) imposing a magnetic field on the sample and (b) detecting the magnetic response of the sample,

energizing means driving the probe means for applying an alternating magnetic field at a plurality of frequencies selected to excite Barkhausen domains at different levels near but below the surface of the sample,

detecting means coupled to the probe for detecting a complex magnetic Barkhausen response of the sample for more than one frequency selected to excite the Barkhausen domains, and

processor means coupled to said energizing and detecting means for analyzing the characteristics of the respective detected complex Barkhausen responses at the applied frequencies to isolate at least frequency and amplitude information from each said response for determination of the surface characteristics of the magnetic sample excited by the alternating frequencies.

5,313,406

PROCEDURES FOR ANALYZING MULTICOMPONENT FT-IR SPECTRA FOR UNKNOWN MIXTURES OF GASES

Jyrki Kauppinen, and Pekka Saarinen, both of Helsinki, Finland, assignors to Temet Instruments Oy, Helsinki, Finland

Filed Jun. 10, 1992, Ser. No. 896,689
Int. Cl.[5] G06F 15/20
U.S. Cl. 364—498 **5 Claims**

1. A procedure for analyzing a multicomponent FT-IR spectrum of an unknown mixture of gases, the procedure comprising the steps of:

providing a gas spectrum analyzer in which a set of FT-IR library spectra of pure molecular gases, measured in known pressures, are stored as vectors k having N components and by which analyzer inner products for all possible combinations of two vectors k are calculated and stored;

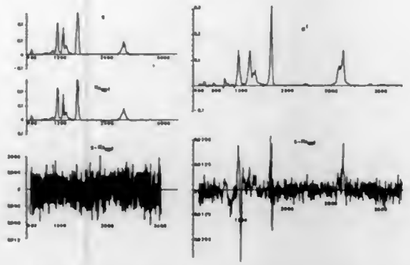
measuring an FT-IR spectrum s for the unknown mixture of gases;

storing by said gas spectrum analyzer the FT-IR spectrum s as a vector having N components;

selecting from said set of stored FT-IR library spectra of pure molecular gases those M gases which are expected to be contained in the unknown mixture of gases;

forming from the library vectors k of the selected M gases a basis matrix K;

forming an orthogonal basis matrix K' by deforming the vectors k chosen for the matrix K to orthogonal vectors k'



so that inner products of these vectors k' with each other but not with themselves are zero;

calculating and storing the inner products of said orthogonal vectors k' with themselves;

forming and storing a basis transformation matrix Q so that $K=K'Q$;

forming and storing an inverse matrix Q^{-1} of the matrix Q;

calculating an optimal coefficient vector x' for the spectrum s of the unknown mixture of gases in the orthogonal basis by using for its components x_j' the equation

$$x_j' = \frac{(k^j|s)}{(k^j|k^j)};$$

calculating a coefficient vector x so that $x=Q^{-1}X'$;

calculating partial pressures of the pure gases in the unknown mixture of gases by multiplying the measuring pressures of the selected library spectra by their coefficients x_j thus forming an analysis result for the unknown mixture of gases in the form of the partial pressures of those pure molecular gases expected to be contained in said unknown mixture of gases; and

comparing the vector representing the measured spectrum s to its analysis result in order to evaluate the analysis result and thus the successfulness of selection of the pure molecular gases expected to be contained in said unknown mixture of gases.

5,313,407

INTEGRATED ACTIVE VIBRATION CANCELLATION AND MACHINE DIAGNOSTIC SYSTEM

Timothy A. Tiernan; Earl R. Geddes, and Mark L. Mollon, all of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

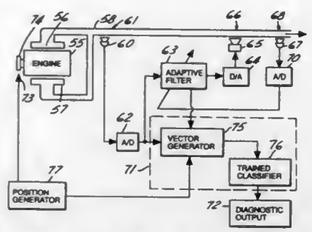
Filed Jun. 3, 1992, Ser. No. 892,882
Int. Cl.[5] G06F 15/20; G06G 9/68
U.S. Cl. 364—508 **21 Claims**

1. A method for detecting a status of a machine having relatively moving parts wherein operation of said machine creates vibrations, said method comprising the steps of:

actively cancelling said vibrations with a transducer controlled by an adaptive controller;

sensing residual vibrations remaining after said active cancellation;

adapting said adaptive controller in response to said residual vibrations; and



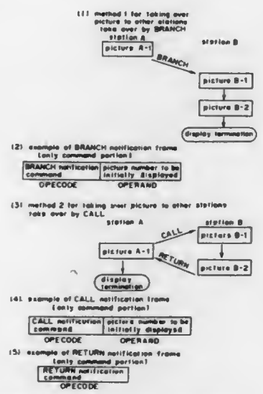
comparing the adapted state of said adaptive controller with predetermined states to classify said status.

5,313,408

MULTISTATION DISPLAY SYSTEM FOR CONTROLLING A DISPLAY MONITOR ASSOCIATED WITH PLURAL AUDIO VIDEO DEVICES

Takeshi Goto, Shijonawate, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1991, Ser. No. 675,525
Claims priority, application Japan, Mar. 26, 1990, 2-76052
Int. Cl.[5] G06F 15/16
U.S. Cl. 364—514 **2 Claims**



1. A multistation display system comprising:

a plurality of information display stations each for executing respective data processings and generating corresponding display information; and,

an information transmission path commonly connected to said plurality of information display stations for transmitting data frames among said plurality of information display stations to provide data communication between said plurality of information display stations;

wherein at least one of said plurality of information display stations comprises

(a) a communication control portion coupled to said information transmission path and including (i) communication processing means for transmitting data frames onto and receiving data frames from said information transmission path, (ii) frame decoding means for decoding data frames received by said communication processing means from said information transmission path, and (iii) frame generating means for generating data frames transmitted onto said information transmission path by said communication processing means,

(b) an operation processing portion coupled to said communication control portion and including (i) a central processor means for executing display processing operations, and (ii) a memory means for storing data used by said central processor means upon executing the display processing operations,

(c) a display processing portion coupled to said operation processing portion and including (i) a display data accommodation means for storing display information data indicative of the display contents of display information, (ii) a display number accommodating means for accommodating a display number associated with each display of each display information, and (iii) an address accommodation means for selectively storing addresses of other ones of said plurality of information display stations associated with display information data stored in said display data accommodation means,

(d) a display monitor coupled to said operation processing portion, and

(e) an input means, coupled to said operation processing portion, for inputting user commands,

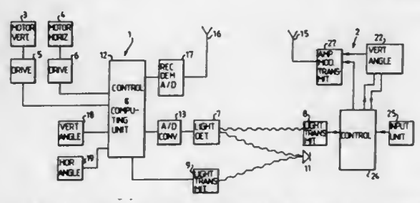
wherein said operation processing portion is responsive to a user command from said input means to execute a CALL NOTIFICATION sequence for transferring a display displayed on said display monitor from a first display associated with said at least one station to a second display associated with another of said plurality of information display stations, said CALL NOTIFICATION sequence including transmitting to the other station a display transfer notification and an operand information specifying a display number of the second display, wherein a control right of the display of said display monitor is transferred to the other station and the second display is displayed on said display monitor, and then receiving a return notification which is transmitted by the other station upon completion of display processing specified by the transfer notification and operand information, and, responsive to the return notification, restoring the control right of the display of said display monitor to said at least one station and display the first display on said display monitor.

5,313,409

ARRANGEMENT FOR PERFORMING POSITION DETERMINATION

Rudolf Wiklund, Täby; Mikael Herztman, Sollentuna; Leif Andersson, Täby; Olle Engdahl, Enebyberg, and Lars Ericsson, Täby, all of Sweden, assignors to Geotronics, Danderyd, Sweden

PCT No. PCT/SE90/00233, § 371 Date Oct. 4, 1991, § 102(e) Date Oct. 4, 1991, PCT Pub. No. WO90/12284, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 6, 1990, Ser. No. 768,668
Claims priority, application Sweden, Apr. 6, 1989, 8901221-5
Int. Cl.[5] G01N 21/01
U.S. Cl. 364—556 **13 Claims**



1. An arrangement for performing position-determining and/or setting-out work for one-man surveying, which locks a measuring station on a target unit comprising:

(a) a measuring station (1) provided with an instrument

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which can be rotated about a horizontal axis with the aid of a steerable vertical-angle motor (3) and about a vertical axis with the aid of a steerable horizontal-angle motor (4);

(b) a steering and computing unit (12) in said instrument having memory and being connected to said motors (3, 4);

(c) a target unit (2); and

a seeking and locating arrangement for positioning said measuring arrangement with respect to said target unit comprising:

(d) a first sighting-marker unit comprising a light source (8) placed on said target unit (2) and arranged to be directed towards said measuring station (1) and having a first light characteristic;

(e) an indicator arrangement (7) which is adapted to detect transmitted light from said first sighting-marker unit on said measuring station for detecting said first sighting-marker unit when said instrument is in alignment with said target unit; and

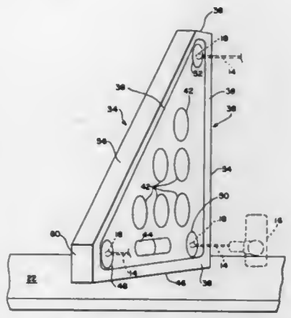
(f) a second sighting-marker unit (8, 9, 11) comprising a light source (9) placed on said measuring station (1) and having a second light characteristic, a reflector (11) placed on said target unit (2), the light beam reflected by said reflector (11) being detectable by said indicator arrangement (7) on said measuring station;

(g) said steering and computing unit steering said motors to turn said measuring station to be directed to said target unit (2) when said indicator arrangement (7) does not detect said first and second sighting-marker units in accordance with predetermined rules, and switching into a target tracking mode with servo control directed towards said target unit when said indicator arrangement indicates said sighting-marker first and second units.

5,313,410
ARTIFACT AND METHOD FOR VERIFYING ACCURACY OF A POSITIONING APPARATUS

William A. Watts, Colchester, Conn., assignor to Alpha Q, Inc., Colchester, Conn.

Filed Mar. 28, 1991, Ser. No. 677,640
Int. Cl.[5] G01B *5/03, 5/00*
U.S. Cl. 364—571.01 **3 Claims**



1. For use in verifying calibration of a positioning apparatus having a work-contacting touch probe and computer programmed calibration data established for different probe orientations, a gage master artifact comprising

a flat rigid plate having a generally triangular peripheral configuration, and

an array of probe contact apertures formed in the plate with each of the probe contact apertures being formed adjacent a corner of the plate,

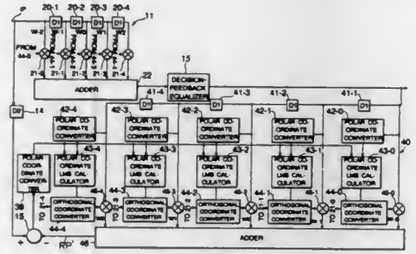
the probe contact apertures comprising three circular openings formed to extend through the plate and defining a corresponding pattern of preselected points spaced apart from one another at precisely predetermined linear distances establishing standard dimensional values wherein line projections between such points form a right angle at one of said preselected points,

the probe contact apertures each having a circular wall defining a peripheral profile engageable with a probe of a positioning apparatus for comparing its measurements with the known configuration of the artifact for verifying the integrity of the positioning apparatus calibration.

5,313,411
ADAPTIVE RECEIVER CAPABLE OF ACHIEVING BOTH OF MATCHED FILTERING FUNCTION AND CARRIER RECOVERY FUNCTION

Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 25, 1993, Ser. No. 22,137
Claims priority, application Japan, Feb. 26, 1992, 4-039767
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.19 **3 Claims**



1. An adaptive receiver comprising:

a matched filter for filtering an input signal into a primary filtered signal in accordance with a plurality of tap coefficients;

a decision-feedback equalizer connected to said matched filter for producing a decision signal in response to said primary filtered signal;

processing means connected to said decision-feedback equalizer and supplied with an error signal for processing said decision signal by the use of said error signal in accordance with a polar coordinate LMS (least mean square) algorithm to produce a replica signal representative of replica of said input signal and a plurality of tap coefficient signals representative of said plurality of tap coefficients;

an input delay circuit supplied with said input signal for giving a predetermined delay to said input signal to produce a delayed input signal having said predetermined delay;

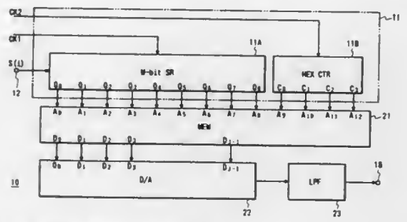
a difference calculator connected to said input delay circuit and said processing means for calculating a difference between said delayed input signal and said replica signal to produce a difference signal representative of said difference, said difference signal being defined by orthogonal coordinates; and

a difference signal converting circuit connected to said difference calculator for carrying out polar coordinate conversion to convert said difference signal defined by said orthogonal coordinates into a converted difference signal defined by polar coordinates, said converted difference signal being supplied to said processing means as said error signal.

5,313,412
OVERSAMPLING TYPE FINITE IMPULSE RESPONSIVE FILTER

Yoshihiro Nukui, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Continuation of Ser. No. 812,272, Dec. 23, 1991, abandoned.
This application Jun. 24, 1993, Ser. No. 80,974
Claims priority, application Japan, Dec. 28, 1990, 2-409094
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.16 **6 Claims**



1. A digital filter comprising:

M-bit shift register means, for sequentially receiving pieces of an input pulse train signal having a fixed symbol rate in synchronization with a first clock equal to the symbol rate of said input pulse train signal, M being the smallest integer larger than N/K, N being an integer defined substantially by $N=2n+1$, where n is a positive integer, and K is an integer greater than 1;

counter means for resetting upon each counting of K second clocks of a rate K times higher than that of said first clock;

memory means for receiving, as a readout address, a combination of outputs expressed by Q(0), Q(1), . . . Q(M−1), from respective shift stages of said shift register means and a count output of said counter means expressed by C(0), C(1), . . . C(K−1), where k is an integer greater than 1, said memory means having stored at each address a value of a total sum of N multiplied values defined by

$$\Omega = \sum_{i=0}^{N-1} Q\left(\left\lceil \frac{i-C}{K} \right\rceil\right) h(i-n)$$

where C is a decimal value of the count output C(0), . . . C(k−1), h(i-n) represents an ith one of 2n+1 coefficients defining a predetermined impulse response of an N-order filter, and [(i-C)/k] represents a smallest integer larger than (i-C)/K; and

D/A converting means for converting the value of said total sum read out of said memory means to an analog signal.

5,313,413
APPARATUS AND METHOD FOR PREVENTING I/O BANDWIDTH LIMITATIONS IN FAST FOURIER TRANSFORM PROCESSORS

Rohit Bhatia, Vancouver, Wash., and Masaru Furuta, Tenri, Japan, assignors to Sharp Microelectronics Technology Inc., Camas, Wash. and Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 687,289, Apr. 18, 1991, abandoned.
This application Mar. 8, 1993, Ser. No. 27,934
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—726 **12 Claims**

1. In a digital signal processor in which the I/O data bandwidth, memory capacity and execution unit throughput are each limited and mutually dependent, and the input/output ("I/O") data bandwidth and the execution unit throughput are comparable, a processor for performing fast Fourier transforms comprising:

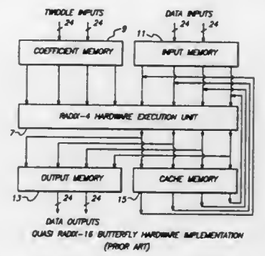
an input memory having inputs and outputs for storing data;

an output memory having inputs and outputs for storing data;

an internal cache memory having inputs and outputs for storing data;

a coefficient memory having inputs and outputs for storing data; and

an execution unit having inputs and outputs for performing logical and arithmetic operations on real and imaginary numbers, the outputs of said execution unit coupled to the



QUAD RADIX-16 BUTTERFLY HARDWARE IMPLEMENTATION (PRIOR ART)

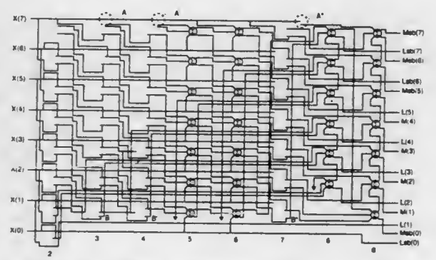
inputs of the output memory and the internal cache memory, the inputs of said execution unit coupled to the outputs of the input memory, the outputs of the coefficient memory and the outputs of the internal cache memory;

wherein the internal cache memory is of a size sufficient to hold the output of the execution unit and which corresponds to the bus widths of the input memory and the output memory, such that the execution unit is continuously active and not limited by the bus widths of the input memory or the output memory.

5,313,414
CANONICAL SIGNED TWO'S COMPLEMENT CONSTANT MULTIPLIER COMPILER

Lin Yang, Fremont, and Chun-Ling Liu, Milpitas, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 12, 1992, Ser. No. 976,164
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—757 **1 Claim**



1. A modified canonical signed two's complement constant multiplier circuit for computing a product of a multi-bit multiplicand and a multi-bit constant that uses full adders each having three input terminals and two output terminals, a Sum output terminal and a Carry output terminal, certain ones of said input terminals and said output terminals being weighted so as to represent positive and negative numbers, other certain ones of said input terminals being of an inverting type for complementing said multi-bit multiplicand, the circuit comprising:

an interconnected array of full adders logically arranged in rows and columns, full adders in an input column each

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receiving different ones of said bits of said multi-bit multiplicand, full adders in each of two output columns each producing a product bit, each column besides said output columns producing a partial product, with each full adder in each row in columns besides said output columns receiving a same one of said bits of said multi-bit multiplicand;

wherein, for multi-bit constants that are neither all ones nor all zeros, a number of columns is less than said number of bits of said multiplicand, said array of full adders being interconnected such that partial products corresponding to zeros in said multi-bit constant are not produced.

5,313,415

METHOD AND APPARATUS FOR PERFORMING FLOATING POINT ARITHMETIC OPERATION AND ROUNDING THE RESULT THEREOF

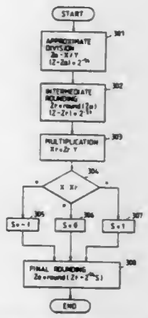
Takashi Taniguchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 596,116, Oct. 11, 1990, Pat. No. 5,212,661. This application Feb. 2, 1993, Ser. No. 12,220

Claims priority, application Japan, Oct. 16, 1989, 1-268447

Int. Cl.[5] G06F *7/52, 7/38*

U.S. Cl. 364—761 **3 Claims**



1. A computer implemented method of calculating a quotient Z=X/Y with respect to given values X and Y in an arithmetic processing apparatus including an adder, comprising the steps of:

using the processing apparatus for deriving an approximate quotient Za at an accuracy at which an error between the approximate quotient Za and an infinitely precise quotient Z is smaller than a weight of a digit in a digit place which is lower by two digit places than a least significant digit place for a final quotient;

using the processing apparatus for rounding the approximate quotient Za to an interim quotient Zr equal to one of possible interim quotients which is closest to the approximate quotient Za, the possible interim quotients being represented by digits in predetermined digit places, wherein a lowest order digit place of said predetermined digit places is arbitrarily selected from a range starting from a digit place lower by at least one digit place than the lowest significant digit place for the final quotient and ending at a digit place higher by at least one digit place than a digit place of a minimal weight, wherein a weight of a digit in the minimal-weight digit place is greater than a maximum of an error of the approximate quotient Za;

using the processing apparatus for deriving a product Xr=Y×Zr from the interim quotient Zr;

using the processing apparatus for setting a sticky digit S to one of **1**, **0**, and **−1** in response to a relation in magnitude between the values X and Xr and to signs of the values X and Y;

using the adder for adding the sticky digit S to a digit place having an order immediately lower than a lowest order digit place of the interim quotient Zr; and

using the processing apparatus for rounding a result of the adding in a designated rounding mode to obtain the final quotient.

5,313,416

SEMICONDUCTOR MEMORY CONTROL DEVICE AND METHOD OF MOUNTING SAME IN HIGH DENSITY

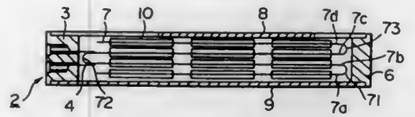
Masatoshi Kimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,041

Claims priority, application Japan, Jul. 3, 1991, 3-162547

Int. Cl.[5] G11C *5/04;* **G06K** *19/07*

U.S. Cl. 365—52 **24 Claims**



1. A semiconductor memory control device comprising:

a flexible circuit board folded to form layers of panels stacked relative to one another;

a plurality of semiconductor elements mounted on the flexible circuit board; and

a package body enclosing the flexible circuit board and the plurality of semiconductor elements and including a sheathing frame having grooves engaging edges of the panels of the flexible circuit board.

5,313,417

SEMICONDUCTOR MEMORY DEVICE

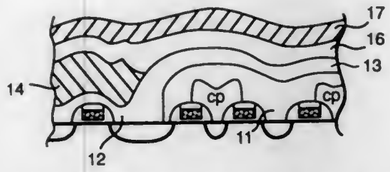
Masahiko Yanagi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 733,685, Jul. 22, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,737

Claims priority, application Japan, Jul. 25, 1990, 2-196562

Int. Cl.[5] H01L *29/78, 21/90, 21/88*

U.S. Cl. 365—52 **4 Claims**



1. A method of forming a semiconductor memory device having a substantially even surface, said method comprising:

forming a memory cell array portion and a peripheral circuit portion on a semiconductor substrate wherein the height of the surface of said memory cell array portion above the substrate exceeds that of said peripheral circuit portion;

forming a first insulating film of a material having a first etching rate on the surfaces of said memory cell array portion and said peripheral circuit portion;

forming a glass layer on the entire surface of said first insulating layer, said glass layer having a second etching rate and having a predetermined thickness sufficient to offset the difference in surface heights of said memory cell array and peripheral circuit portions;

isotropically etching said glass layer to remove that portion of said glass layer formed on the said memory cell array portion so that the surface heights of said glass layer and said first insulating layer formed on said memory cell array portion are substantially flush with each other; and

forming a metal wiring for said memory cell array portion and said peripheral circuit portion on said substantially flush surfaces.

5,313,418

SEMICONDUCTOR MEMORY AND MEMORIZING METHOD TO READ ONLY SEMICONDUCTOR MEMORY

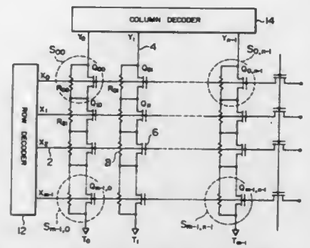
Toshio Wada, and Yuichi Egawa, both of Sagamihara, Japan, assignors to Nippon Steel, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,430

Claims priority, application Japan, Oct. 31, 1991, 3-313460

Int. Cl.[5] G11C *17/10*

U.S. Cl. 365—104 **16 Claims**



1. A semiconductor memory device comprising:

a plurality of switching elements arranged in a matrix of rows and columns, each switching element having a control terminal and a current path, the current paths of the switching elements of a column being connected in series;

a plurality of row lines, each being connected to the control terminals of the switching elements in one of the rows;

a column decoder connected to said switching elements of the respective columns for selecting the switching elements connected in one of the columns;

a row decoder connected to said plurality of row lines for selecting one of the row lines; and

impedance means connected in parallel to the current paths of selected ones of said plurality of switching elements.

5,313,419

SELF-ALIGNED TRENCH ISOLATION SCHEME FOR SELECT TRANSISTORS IN AN ALTERNATE METAL VIRTUAL GROUND (AMG) EPROM ARRAY

Ming-Bing Chang, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 1, 1993, Ser. No. 12,037

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—182 **4 Claims**

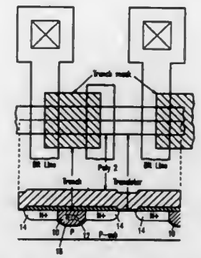
1. An alternate metal virtual ground (AMG) EPROM device structure formed in a silicon substrate of P-type conductivity, the device structure including both a cell array portion that includes a matrix of rows and columns of EPROM cells and a select transistor portion formed adjacent to the cell array portion and electrically connected to the cell array portion for controlling operations of the cell array portion, the AMG EPROM device structure comprising:

a layer of silicon dioxide formed on the surface of the silicon substrate in both the cell array portion and the select transistor portion of the device structure;

a plurality of spaced-apart, parallel islands of oxide/nitride/oxide (ONO) and underlying floating gate polysilicon (poly1) formed on the silicon dioxide layer in the cell array portion of the device structure;

a plurality of parallel buried bit lines of N-type conductivity formed in the silicon substrate in the cell array portion between the parallel ONO/poly1 islands, each of the bit lines having a section that extends into the select transistor portion of the device structure, alternating bit lines being contacted by conductive contacts to provide drain bit lines of the EPROM cell matrix, the non-contacted bit lines providing source bit lines of the EPROM cell matrix;

a plurality of spaced-apart, parallel polysilicon word lines (poly2) formed perpendicular to and overlying the ONO/poly1 islands such that the polysilicon word lines are separated from the floating gate poly1 by the ONO,



and such that the combination of a selected drain bit line, a selected source bit line adjacent to the selected drain bit line, the ONO/poly1 islands formed between the selected drain bit line and the selected source bit line and the poly2 word lines overlying said ONO/poly1 islands define a segment of EPROM cells in the EPROM cell matrix;

polysilicon select lines formed on the silicon dioxide layer in the select transistor portion of the device structure and perpendicular to and overlying the bit line extending into the select transistor portion to thereby define first and second rows of MOS select transistors; and

localized isolation trenches formed in the silicon substrate between adjacent MOS select transistors in each of the first and second rows of select transistors to electrically isolate said adjacent MOS select transistors.

5,313,420

PROGRAMMABLE SEMICONDUCTOR MEMORY

Fujio Masuoka, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Division of Ser. No. 184,951, Apr. 22, 1988, abandoned. This application Mar. 28, 1991, Ser. No. 676,281

Claims priority, application Japan, Apr. 24, 1987, 62-101426; Apr. 24, 1987, 62-101427

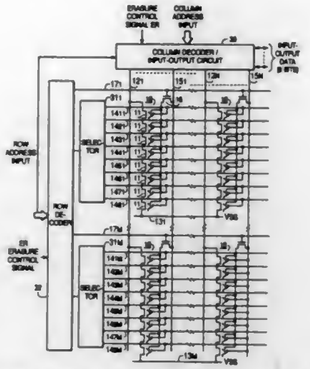
Int. Cl.[5] G11C *16/02*

U.S. Cl. 365—185 **16 Claims**

1. A method of reading data from a circuit unit comprising

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at least two memory cells connected in series, said method comprising the steps of:



sequentially latching data stored in each of said memory cells of said circuit unit into respective corresponding ones of a plurality of latch circuits; and

outputting in parallel the data latched in said latch circuits.

5,313,421

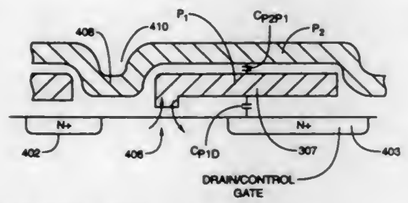
EEPROM WITH SPLIT GATE SOURCE SIDE INJECTION

Daniel C. Guterman, Fremont; Gheorghe Samachisa, San Jose; Yupin K. Fong, Fremont, and Eliyahou Harrai, Los Gatos, all of Calif., assignors to Sundisk Corporation, Santa Clara, Calif.

Filed Jan. 14, 1992, Ser. No. 820,364

Int. Cl.[5] H01L *29/68, 29/78*

U.S. Cl. 365—185 **42 Claims**



1. A memory structure comprising:

a source region of a first conductivity type;

a drain region of said first conductivity type;

a first channel region of a second conductivity type opposite said first conductivity type, located adjacent said source region;

a second channel region of said second conductivity type, located between said drain region and said first channel region;

a floating gate located above said second channel region;

a first control gate located above said floating gate, serving as a steering element for a memory transistor;

a second control gate located above said first channel region, serving as a control gate of an access transistor;

a tunneling zone formed between said floating gate and said second control gate, and including one or more of edges, side wall, corners of the top edge, portions of the top, and portions of the bottom of said floating gate; and

a portion of said second channel region adjacent said drain region, said portion being doped to said second conductivity type to a dopant concentration greater than that of said second channel region.

5,313,422

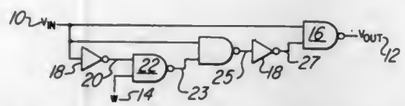
DIGITALLY CONTROLLED DELAY APPLIED TO ADDRESS DECODER FOR WRITE VS. READ

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1991, Ser. No. 706,621

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—194 **16 Claims**



1. An address buffer circuit, having a digitally controlled delay comprising:

a first logic circuit, connected to receive an address signal input;

a second logic circuit, having a digital WRITE/READ control signal input;

a delay circuit wherein said delay circuit output is coupled to said second logic circuit, and wherein said address signal is coupled to said delay circuit, and;

wherein the output of said second logic circuit is coupled to said first logic circuit and wherein further said address signal is an output signal from an address pre-decode circuitry in a memory.

5,313,423

SEMICONDUCTOR MEMORY DEVICE

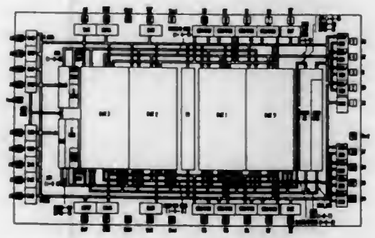
Katsuyuki Sato, Akishima; Miki Matsumoto; Sadayuki Ohkuma, both of Ohme; Masahiro Ogata, Fussa, and Masahiro Yoshida, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Continuation of Ser. No. 496,258, Mar. 20, 1990, Pat. No. 5,115,413. This application Sep. 3, 1991, Ser. No. 754,019

Claims priority, application Japan, Mar. 20, 1989, 1-65843

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **6 Claims**



1. A semiconductor memory device comprising:

a serial memory array having a plurality of address locations;

a spare serial memory array having a plurality of spare address locations;

addressing means for receiving address data;

selecting means coupled between said addressing means and said serial memory array to sequentially select predetermined address locations within said serial memory array in accordance with said address data;

means for selectively coupling predetermined address locations in said serial memory array with an input/output buffer in accordance with outputs of said selecting means;

a comparator including means for storing data regarding known defective address locations in said serial memory array, means for comparing an output of said addressing means with said known defective address locations, and means for generating a first signal if said output of said addressing means matches one of said known defective address location; and

means coupled to said comparator for coupling a predetermined one of said spare memory locations in said spare serial memory array with said input/output buffer instead of a predetermined one of said address locations in said serial memory array when said first signal is generated by said generating means, wherein said selecting means includes a Gray Code Counter for converting said address data into a Gray Code sequence.

5,313,424

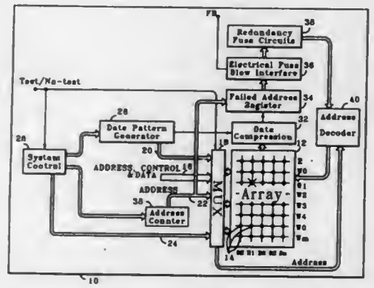
MODULE LEVEL ELECTRONIC REDUNDANCY

Robert D. Adams, Essex Junction; Henry A. Bonges, III, Milton, both of Vt.; James W. Dawson, Poughkeepsie, N.Y., and Erik L. Hedberg, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1992, Ser. No. 852,587

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **10 Claims**



7. An array built in self test (ABIST) system formed on a semiconductor chip having a pad disposed thereon comprising

a memory array including a plurality of word lines, one of which is a faulty word line, and a redundant word line,

data compression means for providing a signal to identify said faulty word line,

failed address register means responsive to said signal for storing an address of said faulty word line,

electrical fuse blow interface means responsive to said signal applied to said pad,

redundancy fuse circuit means including a plurality of fuses coupled to outputs of said electrical fuse blow interface means for blowing selected fuses of said plurality of fuses depending upon the address of said faulty word line, and

address decoder means coupled to said redundancy fuse circuit means for substituting said redundant word line for said faulty word line.

5,313,425

SEMICONDUCTOR MEMORY DEVICE HAVING AN IMPROVED ERROR CORRECTION CAPABILITY

Hyong-Gon Lee; Sung-Hee Cho, and Se-Jin Kim, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 23, 1993, Ser. No. 51,408

Claims priority, application Rep. of Korea, Nov. 23, 1992, 1992-22114

Int. Cl.[5] G11C *13/00*

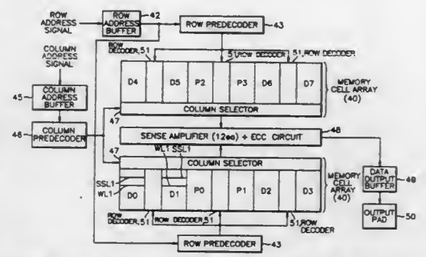
U.S. Cl. 365—201 **20 Claims**

1. A semiconductor memory device, comprising:

a plurality m of electrically isolated data memory sub-arrays for storing data bits;

a plurality k of electrically isolated parity memory sub-arrays for storing parity bits;

wherein each of said data and parity memory sub-arrays includes a plurality of memory cells arranged in a matrix of rows and columns, with the memory cells in each row connected to a common word line and the memory cells in each column connected to a common bit line;



row decoding means for selecting a word line in each of said data and parity memory sub-arrays;

column decoding means for selecting a bit line in each of said data and parity memory sub-arrays;

a plurality of sense amplifiers for sensing the voltage level of respective ones of said selected bit lines, and for producing output data and parity bits representative of the sensed voltage levels of said selected bit lines; and,

an error checking and correction circuit for detecting and correcting errors in said output data bits.

5,313,426

SEMICONDUCTOR MEMORY DEVICE

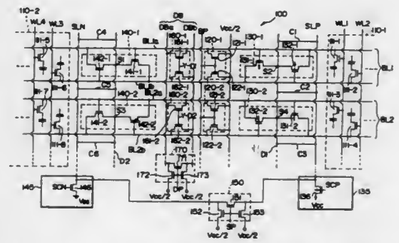
Shinzo Sakuma, and Sampei Miyamoto, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,998

Claims priority, application Japan, Dec. 9, 1991, 3-324811

Int. Cl.[5] G11C *11/40, 5/06*

U.S. Cl. 365—205 **10 Claims**



1. A semiconductor memory device having a semiconductor substrate having a major surface thereof, comprising:

a first pair of bit lines, formed over the major surface, having first and second bit lines, said first pair of bit lines being coupled to a first memory cell, said first memory cell causing a first potential difference between said first and second bit lines;

a second pair of bit lines, formed over the major surface, having third and fourth bit lines, said second pair of bit lines being coupled to a second memory cell, said second memory cell causing a second potential difference between said third and fourth bit lines;

a first sense amplifier having first and second transistors each having first, second and gate electrodes, said first and

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second transistors each being of a first conductivity type, the gate electrode of said first transistor being connected to said first bit line, the first electrode of the first transistor being connected to the second bit line, the gate electrode of the second transistor being connected to said second bit line, the first electrode of the second transistor being connected to the first bit line;

a second sense amplifier having third and fourth transistors each having first, second and gate electrodes, said third and fourth transistors each being of the first conductivity type, the gate electrode of said third transistor being connected to the third bit line, the first electrode of said third transistor being connected to the fourth bit line, the gate electrode of said fourth transistor being connected to the fourth bit line, the first electrode of said fourth transistor being connected to the third bit line; and

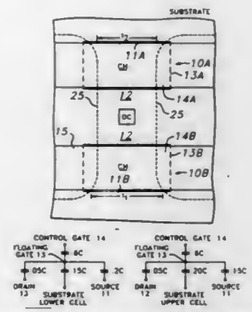
the second electrodes of said first, second, third and fourth transistors constituting a first common diffusion region formed in a first area of the major surface.

5,313,427

EEPROM ARRAY WITH NARROW MARGIN OF VOLTAGE THRESHOLDS AFTER ERASE

John F. Schreck, Houston; David J. McElroy, Allen, and Pradeep L. Shah, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 20, 1991, Ser. No. 763,105
Int. Cl.[5] G11C *16/06, 11/34*
U.S. Cl. 365—218 **34 Claims**



1. A nonvolatile memory having at least one reference potential, and having pairs of cells, each cell having a control gate, a floating gate and a source/drain diffusion, a first cell of each of said pairs having a first value of floating-gate to diffusion capacitance, a second cell of each of said pairs having a second value of floating-gate to diffusion capacitance, said memory comprising;

a first circuit for applying a first erasing pulse to each of said control gates and said diffusions of said first cells of said pairs;

a second circuit for applying a second erasing pulse to each of said control gates and said diffusions of said second cells of said pairs, said first erasing pulse adjustable to have a different magnitude than said second erasing pulse to narrow the threshold voltage margin caused by any difference between said first value and said second value; and

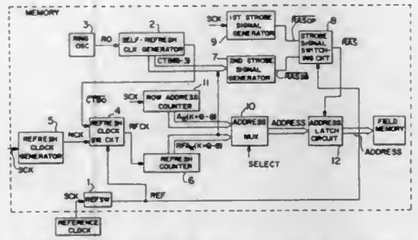
one of said first and second circuits including an input for varying said reference potential applied to one of said control gates and said diffusions.

5,313,428

FIELD MEMORY SELF-REFRESHING DEVICE UTILIZING A REFRESH CLOCK SIGNAL SELECTED FROM TWO SEPARATE CLOCK SIGNALS

Kouji Inoue, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 643,689, Jan. 19, 1991, abandoned, which is a continuation of Ser. No. 269,353, Nov. 10, 1988, abandoned. This application Aug. 17, 1992, Ser. No. 928,659
Claims priority, application Japan, Nov. 12, 1987, 62-287605
Int. Cl.[5] G11C *11/406, 8/00*
U.S. Cl. 365—222 **17 Claims**



1. A field memory self-refreshing device for self-refreshing a field memory according to a refresh clock signal based on an operational state of a reference clock, comprising:

reference clock stop determination means for detecting when the reference clock has stopped and for outputting a reference clock stop signal when the reference clock has stopped;

self-refresh clock generating means, connected to said reference clock stop determination means, for generating a self-refresh clock signal for self-refreshing the field memory when the reference clock has stopped; and

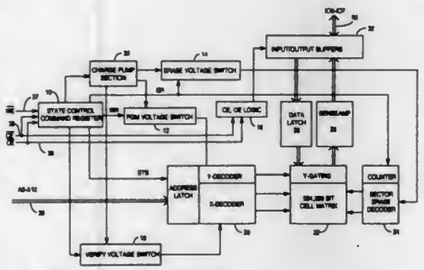
refresh clock switching means, connected to said self-refresh clock generating means, for selecting a normal refresh clock signal to be outputted when the reference clock has not stopped or for selecting said self-refresh clock signal outputted from said self-refresh clock generating means to be outputted when the reference clock has stopped.

5,313,429

MEMORY CIRCUIT WITH PUMPED VOLTAGE FOR ERASE AND PROGRAM OPERATIONS

Christophe J. Chevallier, Mountain View; Asim A. Bajwa, San Jose; Darrell D. Rinerson, Cupertino, and Steve K. Hsia, Saratoga, all of Calif., assignors to Catalyst Semiconductor, Inc., Santa Clara, Calif.

Filed Feb. 14, 1992, Ser. No. 837,303
Int. Cl.[5] G11C *16/02*
U.S. Cl. 365—226 **24 Claims**



6. A memory device comprising:

a memory cell matrix including a plurality of memory locations;

an input power supply terminal for providing power to said memory device;

an erase decoder coupled to said memory cell matrix for erasing selected ones of said plurality of memory locations; and

a charge pump circuit coupled to said input power supply terminal and to said erase decoder for converting a voltage signal provided at said input power supply terminal to a higher voltage signal and for providing said higher voltage signal to said memory cell matrix;

wherein said charge pump circuit comprises:

a ring oscillator circuit for providing a plurality of clocking signals, each of said clocking signals having an unequal phase with respect to the others;

a plurality of clock control units each coupled to receive a separate clocking signal from said ring oscillator circuit and for generating a corresponding pump control signal;

a plurality of voltage pump units each coupled to a separate one of said plurality of clock control units and including means for generating a voltage output signal in response to said corresponding pump control signal; and

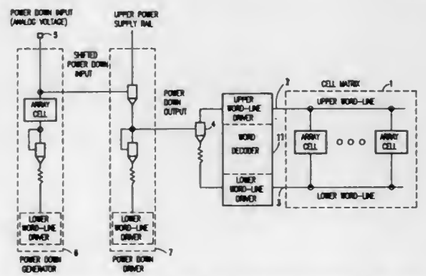
a voltage output line coupled to each of said plurality of voltage pump units.

5,313,430

POWER DOWN CIRCUIT FOR TESTING MEMORY ARRAYS

John R. Rawlins, Wallkill, and Carlos G. Rivadeneira, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1992, Ser. No. 987,923
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—229 **5 Claims**



1. A fault detection circuit for locating defective memory array cells, comprising:

at least one pair of current busses, wherein the first bus functions as a word-line bus and the second bus functions as a drain-line bus;

a plurality of parallel IC memory array cells coupled across the busses, whereby a standby current is provided at the word-line bus for the memory array;

a word decoder coupled across the word-line and drain-line busses, and a word driver coupled to the word-line bus, which jointly provide word-line selection in the memory array cells;

means for varying the array memory cell standby current in a power down operation; and

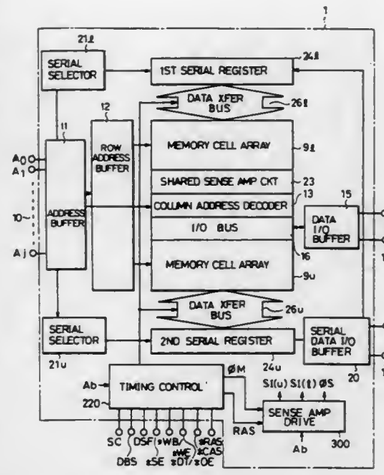
means for diverting said standby current around the memory array cells to said drain-line bus during the power down operation.

5,313,431

MULTIPORT SEMICONDUCTOR MEMORY DEVICE

Koji Uruma; Kazunari Inoue, and Junko Matsumoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,333
Claims priority, application Japan, Feb. 13, 1992, 4-26881
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.05 **5 Claims**



1. A multiport memory device comprising:

a first memory cell array accessible in a random sequence and having a plurality of memory cells arranged in rows and columns;

a second memory cell array accessible in a random sequence and having a plurality of memory cells arranged in rows and columns;

sense amplifying means commonly employed for said first and second memory cell arrays and for sensing and amplifying data of memory cells on a row selected in said first or second memory cell arrays;

connection means for connecting the memory cells on the selected row to said sense amplifying means;

a first data storage means accessible in a serial sequence and having a storage capacity sufficient for storing data of memory cells on a row in said first memory cell array;

a second data storage means accessible in a serial sequence and having a storage capacity sufficient for storing data of memory cells on a row in said second memory cell array;

a first data transfer means for transferring data between said first memory cell array and said first data storage means;

a second data transfer means for transferring data between said second memory cell array and said second data storage means; and

control means responsive to a transfer control signal for controlling the connection means, the first data transfer means and the second data transfer means such that data of memory cells of the row selected in said first or second memory cell arrays are transferred both to said first and second data storage means.

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5,313,432

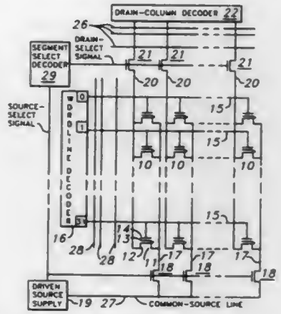
SEGMENTED, MULTIPLE-DECODER MEMORY ARRAY AND METHOD FOR PROGRAMMING A MEMORY ARRAY

Sung-Wei Lin; John F. Schreck; Phat C. Truong, all of Houston; David J. McElroy, Lubbock; Harvey J. Stiegler; Benjamin H. Ashmore, Jr., both of Houston, and Manzur Gill, Arcola, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 518,394, May 23, 1990, abandoned. This application Nov. 12, 1991, Ser. No. 790,122

Int. Cl.[5] G11C *16/06, 16/04*

U.S. Cl. 365—230.06 30 Claims



1. A memory array comprising

a plurality of segments of memory cells, each segment including

a plurality of memory cells arranged in rows and columns, each memory cell including a control electrode, a first electrode, a second electrode, and a current path between the first and second electrodes;

a plurality of wordlines, control electrodes of memory cells in the same row being connected to a respective one of said wordlines;

a plurality of source-column lines, first electrodes of memory cells in the same column being connected to a corresponding one of said source-column lines;

a plurality of drain-column lines, second electrodes of memory cells in the same column being connected to an associated one of said drain-column lines;

a first wordline decoder circuit for selecting and accessing said wordlines;

a drain-column decoder circuit for selecting and accessing said drain-column lines, said drain-column decoder circuit having a plurality of output terminals;

a driven source supply for supplying electric potentials to said source-column lines, said driven source supply having at least one output terminal;

a segment-select decoder circuit having a drain-select terminal and a source-select terminal;

a first logic switch connected between each source-column line and said at least one output terminal of said driven source supply, each first logic switch having a control electrode, each control electrode of each first logic switch in the same segment being connected to said source-select terminal of said segment-select decoder circuit;

a second logic switch connected between each drain-column line and one of said plurality of output terminals of said drain-column decoder circuit, each second logic switch having a control electrode, each control electrode of each second logic switch in the same segment being connected to said drain-select terminal of said segment-select decoder circuit.

5,313,433

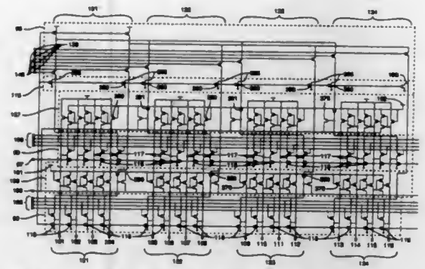
WINDOWED FLASH WRITE CIRCUIT

William K. Waller, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 11, 1992, Ser. No. 943,970

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.06 28 Claims



14. A decoder having a plurality of decoder outputs (101–116), comprising:

a) start address input nodes for receiving a start address;

b) stop address input nodes for receiving a stop address;

c) start select circuitry interposed between said start address input nodes and said plurality of decoder outputs, said start select circuitry selecting a start decoder output in response to said start address, said start decoder output having an active start output signal;

d) stop select circuitry interposed between said stop address input nodes and said plurality of decoder outputs, said stop select circuitry selecting a stop decoder output in response to said stop address, said stop decoder output having an active stop output signal;

e) start ripple circuitry (156) coupled to the plurality of decoder outputs, said start ripple circuitry enabling all of said decoder outputs in a first direction in response to said active start output signal, said first direction initiated at said start decoder output and progressing toward said stop decoder output;

f) stop ripple circuitry (157) coupled to the plurality of decoder outputs for enabling all of said decoder outputs in a second direction in response to said active stop output signal, said second direction initiated at said stop decoder output and progressing toward said start decoder output; and

g) AND circuitry coupled to said start and said stop ripple circuitries, said AND circuitry activating all of said decoder outputs interposed between said start and said stop decoder outputs.

5,313,434

SEMICONDUCTOR MEMORY DEVICE

Kazuhiko Abe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 896,860

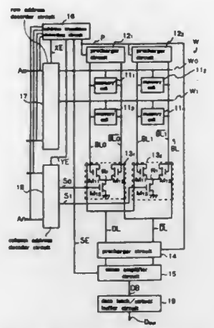
Claims priority, application Japan, Jun. 27, 1991, 3-183110

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—233.5 9 Claims

1. A semiconductor memory device comprising a plurality of memory cells disposed in the form of a matrix, a data line pair, a plurality of bit lie pairs each corresponding to a specific column, a plurality of word lines each corresponding to a specific row, a plurality of column switch circuits each provided for each of said bit line pairs with their one end connected to a corresponding bit lien pair and their other end connected to said data line pair for changing the potential difference between the lines of said data line pair according to

the potential difference between the lines of said corresponding bit line pair, a plurality of precharger circuits for electrically charging said data line pair, an address transition detecting circuit for generating an output pulse signal in response to any change in a column address signal or a row address signal, and a column address decoder circuit for generating a selecting signal to select one of said column switch circuits in accordance with said column address signal, each memory cell being



connected to one of said bit line paris and to one of said word lines, one of said word lines being selected in accordance with said row address signal, said column switch circuit selected by said selecting signal being activated when said output pulse signal is in an active state, so that said selected column switch circuit is both activated for a predetermined period and is disabled after said predetermined period at least when said row address signal changes.

5,313,435

SEMICONDUCTOR MEMORY DEVICE HAVING ADDRESS TRANSITION DETECTOR

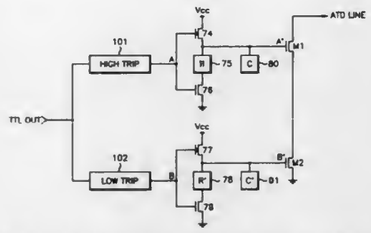
Bon-Kyoung Kim, and Woong-Mu Lee, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 10, 1992, Ser. No. 866,852

Claims priority, application Rep. of Korea, Jul. 31, 1991, 13273

Int. Cl.[5] G11C *11/413*

U.S. Cl. 365—233.5 10 Claims



1. An address transition detector circuit for use in a semiconductor memory device having an address buffer circuit for amplifying an external input address signal, a row decoder circuit for selecting a word line among a plurality of word lines, a sense amplifier for sensing data of a cell, and a pulse generator for precharging or equalizing each memory device of an integrated circuit, said address transition detector circuit comprising:

first input means connected to receive an output of said address buffer and having a first trip ratio;

second input means connected to receive said output of said address buffer and having a second trip ratio substantially lower than said first trip ratio;

first output means connected to receive an output of said first input means, for delaying its output only when said output of said first input means is transited from a first state to a second state; and

second output means connected to receive an output of said second input means, for delaying its output only when said output of said second input means is transited from the first state to the second state.

5,313,436

ADDRESS TRANSITION DETECTING CIRCUIT

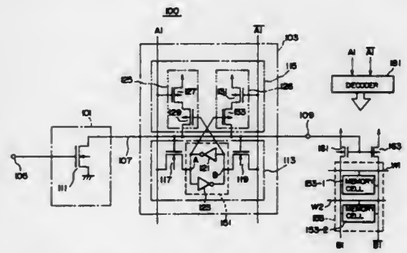
Noritsugu Matsubishi, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,693

Claims priority, application Japan, Dec. 10, 1991, 3-326120

Int. Cl.[5] G11C *7/00, 8/00*

U.S. Cl. 365—233.5 10 Claims



1. An address transition detecting circuit coupled to a word line and a pair of address signal lines which receives a pair of complementary address signals comprising:

a word line control circuit coupled to the word line for discharging the word line;

an address data storing circuit coupled to the word line and the pair of address signal lines for storing an address data in response to the address signals; and

a comparing circuit coupled to the pair of address signal lines, the word line and the address data storing circuit for comparing the address signals with the stored address data in the address data storing circuit and for outputting an address transition signal to the word line in response to the result of the comparison.

5,313,437

SEMICONDUCTOR MEMORY DEVICE

Haruki Toda; Shozo Saito, and Kaoru Tokushige, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 15, 1991, Ser. No. 775,602

Claims priority, application Japan, Oct. 15, 1990, 2-273170; Oct. 2, 1991, 3-255354

Int. Cl.[5] G11C *7/00, 14/00*

U.S. Cl. 365—236 13 Claims

1. A semiconductor memory device, comprising:

a memory cell group comprising a plurality of memory cells arranged in a matrix;

specification means for specifying a plurality of memory cells addressed by sequential addresses in the memory cells, and for entering the memory cells in an active state;

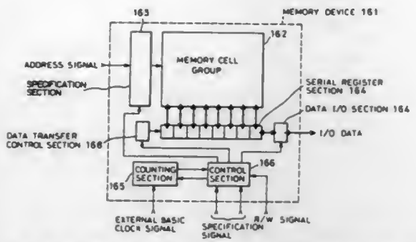
data input/output (I/O) means for performing a data read-out/write-in operation (data I/O operation) for the memory cells specified by the specification means under a control based on a read-out/write-in signal provided from an external section;

count means for counting the number of cycles in response

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to a basic clock signal provided from an external section; and

control means for receiving at least one or more specification signals provided from an external section; for outputting a control signal per specification signal, for specifying a particular cycle as a starting cycle to count the number



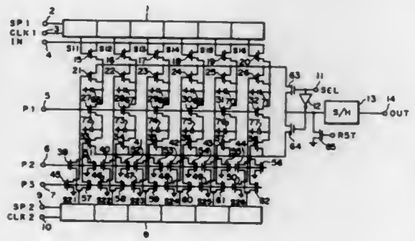
of the cycles in response to the basic clock signal, for instructing the count means to count the number of cycles in response to the basic clock signal based on said control signal, and for controlling a specification operation executed by the specification means and the data I/O operation of the data I/O means in accordance with the number of cycles in response to the basic clock.

5,313,438

DELAY APPARATUS

Teruo Hieda, Kawasaki, and Hidetoshi Wada, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 614,288, Nov. 16, 1990, abandoned. This application Jun. 16, 1993, Ser. No. 78,781
Claims priority, application Japan, Nov. 20, 1989, 1-299634
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—238 **12 Claims**



1. A delay apparatus comprising:

at least one shift register;

a first group of a plurality of capacitors connected to transfer transistors respectively, each for accumulating a signal;

a plurality of write switches each of which is arranged between an input terminal and each of said plurality of capacitors of the first group and is controlled by an output of the shift register, for writing signals inputs to said input terminal into said plurality of capacitors of the first group, respectively;

a second group of a plurality of capacitors connected to said transfer transistors respectively, each for accumulating a signal divided from the signal accumulated in each of said plurality of capacitors of the first group; and

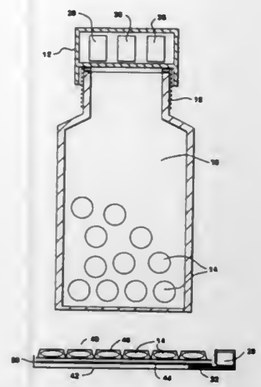
output means for outputting the signal accumulated in said plurality of capacitors of the first group and the signal accumulated in said plurality of capacitors of the second group, in a predetermined period.

5,313,439

TIMER DEVICE FOR MEDICATIONS

Dan Albeck, 10 David Elazar Street, 51905 Givat Shmuel, Israel

Filed Jul. 17, 1992, Ser. No. 914,343
Int. Cl.[5] G04B *47/00*
U.S. Cl. 368—10 **21 Claims**



1. A medication packaging system capable of reminding a user when it is time to take the medication, comprising:

(a) a container for holding the medication, said container having electrically conducting material on a portion of its surface; and

(b) a cap for closing of f said container, said cap including:

(A) a timer means;

(B) an output means for outputting information from said timer means;

(C) a power source capable of powering said timer means and said output means; and

(D) a circuit closing means for electrically connecting said power source and said timer and output means whenever said cap is closed on said container so that said circuit closing means makes electrical contact with said electrically conducting material of said container.

5,313,440

TRACK CROSSING METHOD USING DUAL COUNTERS

Friedrich Füldner; Günter Gleim, and Bernd Rekla, all of Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

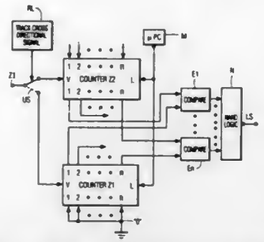
Filed Apr. 21, 1992, Ser. No. 871,442
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1989, 3932833
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 **6 Claims**

1. A method of controlling the tracking head in a recording/playback device to cause said tracking head to cross a selected number of data tracks in a data medium when traveling in a desired direction comprising the steps of:

establishing a first count value representative of said selected number and incrementing/(decrementing) said count value each time said tracking head crosses a data track when traveling in a direction opposite said desired direction;

establishing a second count value which is different from said first count value by an amount equal to said selected number and incrementing/(decrementing) said second count value each time said tracking head crosses a data track when traveling in said desired direction;

comparing the incremented/(decremented) first and second count values and providing a control signal to said track-



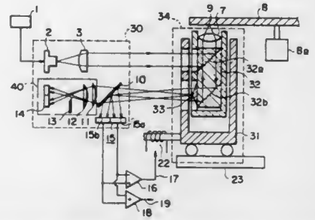
ing head when said incremented/(decremented) first and second count values are equal.

5,313,441

OPTICAL RECORDING AND REPRODUCING APPARATUS HAVING A PICKUP HEAD INCLUDING A MAIN PRISM WITH REFLECTING SURFACES FOR SPLITTING THE REFLECTED BEAM

Hitoshi Imai, and Michihiro Tadokoro, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1990, Ser. No. 499,640
Claims priority, application Japan, Apr. 6, 1989, 1-85763
Int. Cl.[5] G11B *7/12*
U.S. Cl. 369—44.14 **6 Claims**



1. An optical recording and reproducing apparatus for optically recording information on and reproducing recorded information from a disk comprising:

light source means for generating a beam of parallel rays;

a movable optical system spaced from the light source means and comprising a stationary rail, a carriage radially movable along the rail relative to a disk, condensing means for condensing the beam of parallel rays from the light source means onto the disk, parallel ray forming means for forming light reflected from the disk into a beam of parallel rays, and splitting means for splitting the beam of parallel rays of light reflected from the disk into two different beams, the condensing means and the parallel ray forming means comprising an objective lens mounted on the carriage facing the disk for forming the beam of parallel rays, the splitting means comprising a prism having a beam splitting surface receiving the beam reflected from the disk, two reflecting surfaces for splitting that part of the beam reflected from the disk transmitted through the beam splitting surface into the two different beams, and a step disposed between and connecting the reflecting surfaces;

split-beam detecting means spaced from the movable optical system and having two light sensing surfaces for receiving the two different beams from the movable optical system and for generating corresponding, respective output signals in response to receiving the two different beams; and

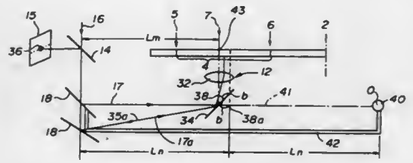
control means for controlling tracking by moving the movable optical system in the radial direction relative to the disk in accordance with the respective output signals generated by the two light sensing surfaces.

5,313,442

OPTICAL DISK DRIVE HAVING TRACKING CONTROL AND MIRROR SUPPORTED ON A CIRCULAR PATH

Shin'ichi Ohtsuka, and Yasuyuki Ozawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 26, 1993, Ser. No. 25,404
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.16 **8 Claims**



1. An optical disk drive for reproducing an information signal from a rotary optical disk, comprising:

revolving means mounted on a body of said optical disk drive for revolving said optical disk about a central axis;

optical source means for producing an optical beam;

an optical system for focusing said optical beam on a recording surface of said optical disk, said optical system having a separated construction and comprising a stationary part fixed against said body of said optical disk drive and a movable part that is provided movable with respect to said body;

said stationary part including first mirror means for reflecting said optical beam produced by said optical source means toward said movable part;

said movable part being disposed such that said optical beam from said stationary part is focused upon a data region that is defined on said recording surface of said optical disk as a region extending between an outer periphery and an inner periphery both being defined concentrically about said central axis, said movable part including an objective lens for focusing said optical beam on said recording surface of said optical disk in correspondence to said data region and second mirror means for receiving said optical beam from said stationary means after reflection at said first mirror means and for deflecting the same to said objective lens;

said optical disk drive further including:

support means for supporting said first mirror means in a manner movable about a circular path in a plane substantially perpendicular to said optical disk, with a center of said circular path being located on a hypothetical line that extends from said first mirror means toward said second mirror means and further beyond said second mirror means, said center being located at a position away from said first mirror means by a distance that is twice as large as a distance between said first mirror means and a reference point located on said hypothetical line immediately below a point that is included in said data region of said optical disk; and

tilting means for causing a tilt of said first mirror means while said first mirror means is supported by said support means.

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5,313,443

DATA PLAYBACK APPARATUS FOR REALIZING HIGH TRANSFER RATE

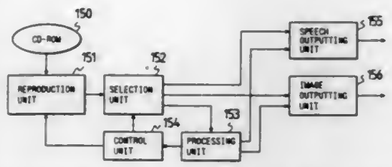
Hiroyuki Iitsuka, Osaka, Japan, assignor to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Continuation of Ser. No. 648,109, Jan. 31, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,469

Claims priority, application Japan, Feb. 1, 1990, 2-22432; Feb. 1, 1990, 2-22433

Int. Cl.[5] G11B *15/52*; H04N *5/76*

U.S. Cl. 369—50 5 Claims



1. A data playback apparatus for reproduction of data recorded in a recording medium, comprising:

reproduction means for reproducing said data from said recording medium and outputting the reproduced data;

selection means coupled to said reproduction means for selectively supplying said data, outputted from said reproduction means, to one of a first destination and a second destination;

processing means, being the first destination of said data to be supplied by said selection means, coupled to said selection means for once storing therein the data supplied from said selection means during a time when said selection means supplies the data said reproduction means reproduces from said recording medium to said processing means and, after completion of data supply from said selection means, processing and/or outputting the data stored therein;

at least one output means, being the second destination of said data to be supplied by said selection means, coupled to said selection means and said processing means for inputting data supplied from said selection means and the data outputted from said processing means so as to immediately convert the inputted data, in order of input, into a form which is to be outputted from said data playback apparatus; and

control means coupled to said processing means, said processing means instructing said control means as to a destination of said data outputted from said reproduction means, and said control means further coupled to said reproduction means and said selection means for controlling said reproduction means and said selection means, wherein

when said processing means indicates that the destination of said data to be outputted from said reproduction means is said at least one output means, said control means controls said reproduction means so that the data is reproduced from said recording medium at a first predetermined constant reproduction speed and controls said selection means so that the data outputted from said reproduction means is supplied to one of said at least one output means, and

when said processing means indicates that the destination of said data to be outputted from said reproduction means is said processing means, said control means controls said reproduction means so that the data is reproduced from said recording medium at a second reproduction speed higher than said first predetermined constant reproduction speed and controls said selection means so that the data outputted from said reproduction means is supplied to said processing means.

5,313,444

EXTERNAL MAGNETIC FIELD GENERATION APPARATUS CAPABLE OF LIGHT INTENSITY MODULATION AND MAGNETIC FIELD MODULATION

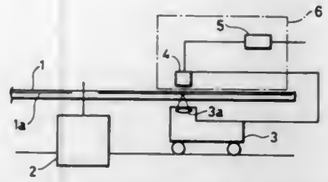
Mitsuo Ishii, Nabari, and Tomoyuki Miyake, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 969,451

Claims priority, application Japan, Nov. 18, 1991, 3-301838

Int. Cl.[5] G11B *11/00, 5/02, 5/17*

U.S. Cl. 369—13 14 Claims



1. An external magnetic field generation apparatus for use in a recording and reproduction apparatus which records information on a magneto-optical recording medium based on a magnetic field modulation system and a light modulation system, and said apparatus applying a magnetic field to a portion of the magneto-optical recording medium where the light beam is projected, comprising:

first magnetic field generation means for generating an a.c. magnetic field which is reversed at a high speed, said first magnetic field generation means being used for the magnetic field modulation system;

second magnetic field generation means for generating a strong d.c. magnetic field such that power consumption coincides with that of said first magnetic field generation means, said second magnetic field generation means being integral with said first magnetic field generation means, said second magnetic field generation means being used for the light modulation system; and

power supply means for selecting one of said first magnetic field generation means and said second magnetic field generation means responsive to a switching signal, and for supplying power to said selected magnetic field generation means.

5,313,445

REPRODUCING APPARATUS WITH SUSPENSION SUPPORTING A FLOATING-TYPE HEAD WITH A BEVELLED SLIDER

Katsuo Wada, Yao; Miyuki Onishi, Higashiosaka; Junichiro Nakayama, Shiki; Tomoyuki Miyake; Takashi Iwaki, both of Nara, and Takeshi Yamaguchi, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1992, Ser. No. 840,905

Claims priority, application Japan, Mar. 1, 1991, 3-036336; Mar. 5, 1991, 3-038714; Mar. 13, 1991, 3-048386; May 23, 1991, 3-118855; May 31, 1991, 3-129727; May 31, 1991, 3-129731; May 31, 1991, 3-129741

Int. Cl.[5] G11B *7/12*

U.S. Cl. 369—53 16 Claims

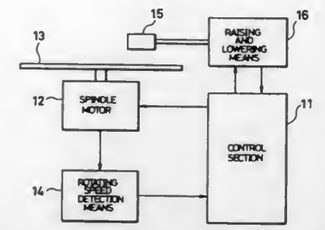
1. An information reproducing apparatus comprising:

a rotative driving means for rotating a disc-shaped recording medium;

a floating-type head for reproducing information recorded in the recording medium while floating above the disc-shaped recording medium that is being rotated by the rotative driving means; and

a suspension, made of an elastic member, for supporting the floating-type head,

wherein the floating-type head comprises a slider which is floated by an air flow that is directed near the surface of the rotating disc-shaped recording medium, the slider being comprised of a bevelled portion at one side that faces the outer edge of the disc-shaped recording medium



in such a manner that the slider is virtually free from contacting a ridge that exists along the outer edge area of the disc-shaped recording medium.

5,313,446

DISC DRIVE DEVICE HAVING A HEAD CARRIAGE

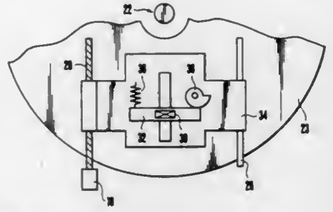
Kaneyoshi Tokano, Tokyo, and Sunao Kurahashi, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1991, Ser. No. 674,665

Claims priority, application Japan, Mar. 30, 1990, 2-83483; Mar. 30, 1990, 2-83484; Jul. 6, 1990, 2-178767

Int. Cl.[5] G11B *21/02*

U.S. Cl. 369—111 16 Claims



1. A disc drive device comprising:

a) a head arranged to perform recording or reproduction on a disc-shaped recording medium;

b) a head carriage arranged to change a recording or reproducing track from one track to another by radially moving said head over said disc-shaped recording medium while said disc is rotating;

c) driving means for moving said head carriage; and

d) head support means for carrying said head, said head support means being mounted on said head carriage with moving means which is arranged to be capable of moving said head relative to said head carriage as much as a distance corresponding to a predetermined pitch of recording or reproducing tracks on said recording medium.

5,313,447

OPTICAL HEAD

Nobuo Takeshita; Kenjiro Kime; Teruo Fujita, all of Nagaokakyo; Hiroo Shimegi, and Kazuo Okada, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 686,440, Apr. 17, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 77,969

Claims priority, application Japan, Apr. 28, 1990, 2-114806

Int. Cl.[5] G11B *7/135*

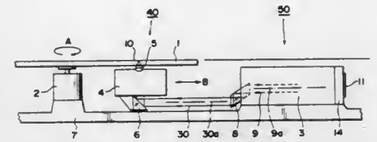
U.S. Cl. 369—112 14 Claims

1. An optical head for optically recording, reproducing, or erasing data by condensing an irradiated light beam onto a recording medium and by forming minute optical spots thereon, said optical head comprising:

(a) light emitting means for emitting the light beam along a first optical axis, parallel to the recording medium;

(b) light condensing means for condensing the light beam onto the recording medium so as to form minute optical spots on the recording medium;

(c) optical axis shifting means including a first reflective surface for reflecting the light beam traveling along the first optical axis in a direction away from the recording



medium and a second reflective surface for reflecting the light beam reflected by the first reflective surface so as to form a second optical axis parallel to said first optical axis; and

(d) a light reflecting means for reflecting the light beam forming the second optical axis in a perpendicular direction toward the recording medium;

wherein the optical axis shifting means and the light reflecting means are disposed in the optical path between the light emitting means and the light condensing means.

5,313,448

LASER DEVICE DRIVEN BY A PERIODIC WAVEFORM OPTIMIZED FOR REDUCING LASER NOISE

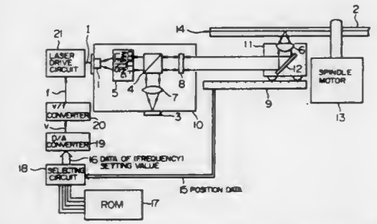
Hirofumi Sukeda, Kodaira, and Shigeru Nakamura, Tachikawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 903,926

Claims priority, application Japan, Jun. 28, 1991, 3-158483

Int. Cl.[5] G11B *7/00, 7/12*

U.S. Cl. 369—121 17 Claims



7. An optical information recording and reproducing apparatus, comprising:

measuring means for measuring an optical length between a light source and a recording medium;

driving frequency control means for controlling a driving frequency for driving said light source based on said optical length; and

optical means for conducting a light beam, having the driving frequency, from said light source to said recording medium.

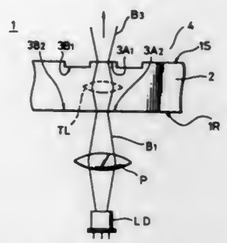
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,449

OPTICAL RECORDING MEDIUM AND METHOD OF OPTICALLY PLAYING BACK SAME INCLUDING RECORDING MEDIUM STRUCTURE OPERATING AS OPTICAL RESONATORS EMITTING APPLIED PUMPING LIGHT AT A VARIABLE FREQUENCY

Yushi Kaneda; Shigeo Kubota, both of Kanagawa, and Hisashi Masuda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,611
Claims priority, application Japan, Sep. 19, 1991, 3-239753
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—121 **8 Claims**



7. A method of optically playing back an optical recording medium having a recording region at least partly composed of a laser medium extending thicknesswise thereof, said recording region having pits and lands formed on a surface thereof as representing recorded information, said pits and lands having respective first surfaces parallel to corresponding second surfaces on an opposite surface of the recording region, said first and second surfaces providing different thicknesses of the recording region, whereby said recording region can operate as optical resonators between said first and second surfaces for emitting laser signal light of a variable frequency depending on said recorded information in response to pumping light applied to the recording region, said optical resonators having respective optical axes extending thicknesswise of said recording region, said method comprising the steps of:

applying pumping light to said recording region to cause the recording region to operate as optical resonators between said first and second surfaces for emitting laser signal light of a variable frequency depending on said recorded information; and

detecting a change in the frequency of said signal light to reproduce said recorded information.

5,313,450

OPTICAL DISK DRIVE

Seiji Nishiwaki, Osaka; Junichi Asada, Ibaraki, and Shinji Uchida, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 28, 1992, Ser. No. 997,569
Claims priority, application Japan, Dec. 27, 1991, 3-346029; May 27, 1992, 4-134699
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—124 **9 Claims**

1. An optical disk drive comprising:

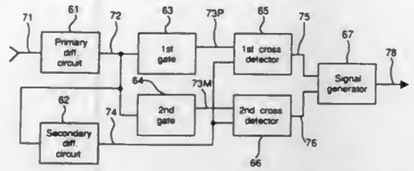
a laser light source for emitting a laser beam;

an optical system for converging the laser beam from the laser light source on a signal plane of an optical disk on which signal marks are formed and for transmitting a light reflected from the signal plane;

at least one optical component, arranged in the optical path between the laser light source and the optical disk, for converging the distribution of the laser beam by the optical system into a ring belt located just after the passage of an aperture plane of the optical system;

a detection means for detecting the light reflected from the optical disk and for producing a signal; and

a signal processing circuit for generating a primary differential signal and a secondary differential signal by differentiating the signal detected by the detection means and for detecting the edge positions of the signal marks by comparing the secondary differential signal with a detection level.

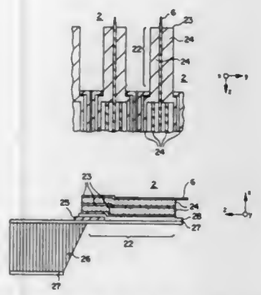


5,313,451

INFORMATION RECORDING/REPRODUCING APPARATUS WITH STM CANTILEVER PROBE HAVING A STRAIN GAUGE

Takayuki Yagi, Machida, and Toshiyuki Komatsu, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 685,048, Apr. 15, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 942,821
Claims priority, application Japan, Apr. 18, 1990, 2-104061
Int. Cl.[5] G11B *9/00;* **G01B** *7/34;* **H01J** *37/28*
U.S. Cl. 369—126 **20 Claims**



10. An apparatus for effecting at least one of recording of information on a recording medium and reproduction of information from the recording medium, comprising:

a substrate;

a cantilever which is formed by etching said substrate and which is displaceable;

a probe electrode supported on a free end of said cantilever;

a piezoelectric film formed on said cantilever by film formation;

detection means for detecting displacement amount of said cantilever on the basis of a charge amount generated in said piezoelectric film and for outputting an output corresponding to said displacement;

correction means for correcting said displacement amount of said cantilever on the basis of said output of said detection means; and

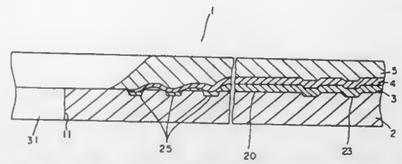
means for effecting at least one of recording of information on the recording medium and reproduction of information from the recording medium by use of said probe electrode.

5,313,452

OPTICAL RECORDING DISK

Mamoru Usami, and Toshiki Aoi, both of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,815
Claims priority, application Japan, May 30, 1991, 3-155876
Int. Cl.[5] G11B *7/09, 7/26*
U.S. Cl. 369—275.1 **5 Claims**



1. In an optical recording disk comprising an annular substrate having an inner peripheral edge and an outer peripheral edge and a recording layer which is formed as a plurality of recording channels between the inner and outer peripheral edges by spin coating composition containing a dye to the rotating substrate,

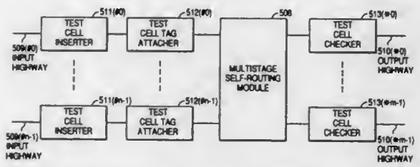
the improvement comprising at least one substantially curved channel formed in said substrate in proximity to and between the inner peripheral edge and the innermost of the recording channels for defining an inner boundary of the recording layer.

5,313,453

APPARATUS FOR TESTING ATM CHANNELS

Yoshihiro Uchida; Satoshi Kaknma; Naoyuki Izawa; Yasuhiro Aso; Shuji Yoshimura, and Masami Murayama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 750,451, Aug. 27, 1991, abandoned. This application Mar. 20, 1992, Ser. No. 854,888
Claims priority, application Japan, Mar. 20, 1991, 3-057132
Int. Cl.[5] H04L *12/56;* **H04Q** *11/04;* **H04J** *3/14*
U.S. Cl. 370—13 **18 Claims**



18. An asynchronous transfer mode channel testing apparatus for testing an asynchronous transfer mode channel formed by self-routing modules connected in multiple stages for switching cells supplied from a plurality of input highways respectively to a plurality of output highways, comprising:

test cell inserting means, provided respectively in said input highways, for sequentially generating a plurality of test cells carrying virtual identifiers indicating test cells in their headers and test data in their payloads, wherein

said test cell inserting means, generates successively in a predetermined number and attaches to respective octets of payloads of respective test cells, consecutive values sequentially incremented or decremented from the values in the header octets of the payload of a first test cell of said predetermined number of test cells, wherein

test cell tag attaching means, provided respectively in said input highways, for attaching, to test cells multiplexed respectively over to said input highways by said test cell inserting means, tags enabling switching operations to be performed at desired crossing points in said self-routing modules, wherein

said test cell tag attaching means attaches the same tag to each of said predetermined number of test cells multiplexed successively over to said input highways by said test cell inserting means; and

test cell checking means, provided respectively in said output highways, for extracting test cells by identifying virtual identifiers attached to the headers of cells outputted to said output highways from said self-routing modules, and for examining test data attached to the payloads to said test cells thus extracted, wherein

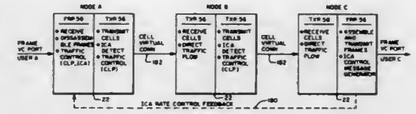
said test cell checking means examines the payload abnormality and loss of each of said test cells by judging whether said test data values attached to respective octets of the payloads in each of said test cells successively extracted are consecutive values sequentially incrementing or decrementing starting from the test data values in the header octet.

5,313,454

CONGESTION CONTROL FOR CELL NETWORKS

Lionel A. Bustini, Campbell; Patrick D. Daley, Belmont, and Charles M. Corbalis, Milpitas, all of Calif., assignors to Stratacom, Inc., San Jose, Calif.

Filed Apr. 1, 1992, Ser. No. 861,761
Int. Cl.[5] H04L *12/56, 12/02*
U.S. Cl. 370—13 **47 Claims**



1. A feedback control system for congestion prevention control on a virtual connection of a cell switching communications network handling bursty traffic, the feedback control system comprising:

a) a source node for accepting, queuing, and buffering user framed bursty data, for formatting the bursty data into bursty data cells, and for transmitting the bursty data cells over the virtual circuit connection through the cell switching communications network at an incrementally variable controllable transmission rate in response to a rate control signal to avoid congestion, wherein the source node and any intermediate node comprising the virtual connection include means for accepting, queuing, and buffering, the bursty data cells, means for detecting incipient congestion in the virtual connection queues and buffers, means for setting an incipient congestion indicator to a first state if incipient congestion is detected and setting the incipient congestion indicator to a second state if incipient congestion is not detected, and means for forwarding the bursty data cells over the virtual connection together with the incipient congestion indicator; and

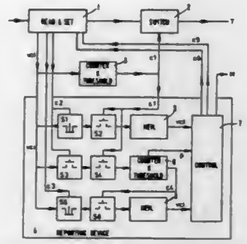
b) a destination node, which is a terminus of the virtual connection, for accepting the bursty data cells and the incipient congestion indicator, for reconstructing, formatting, and outputting the framed bursty data, for monitoring the incipient congestion indicator, for generating the rate control signal based on the incipient congestion indicator, for transmitting the rate control signal back to the source node.

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5,313,455
TRANSMISSION SYSTEM WITH RECORDING OF UNTRANSMITTED PACKETS

Jacob C. van der Wal, Delft; Dick Brandt, Voorburg, and Gerrit J. van Loo, Delft, all of Netherlands, assignors to Koninklijke PTT Nederland N.V., AC Groningen, Netherlands

Continuation-in-part of Ser. No. 687,338, Apr. 18, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 960,937
Claims priority, application Netherlands, Apr. 23, 1990, 9000962
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—13 **9 Claims**

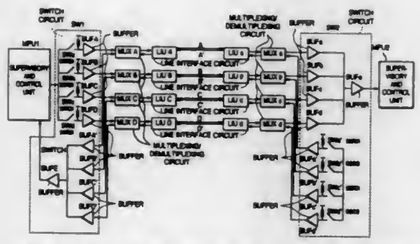


1. Transmission system for transmitting packets which comprise an information word group and a control word group, the control word group comprising an identification of the packet type by an identification information regarding the virtual transmission channel via which the packet is being transmitted, which transmission system comprises access control means for granting or refusing said packets access to the part of the transmission system situated downstream of the access control means, depending on the rate of arrival of incoming packets, characterized by an error reporting device (4) for recording, processing and reporting the rate of arrival per packet type (vci) of those packets which are refused access to said downstream situated part by the access control means (2, 3), said error reporting device having inputs from a plurality of said virtual channels via a read-out and set device (1) and from said access control means (2, 3) and having outputs for providing an error message for further processing thereof or to supply said message to means (5) for converting it into intelligible visible form.

5,313,456
DATA LINK PROTECTING SYSTEM

Eiji Sugawara, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 488,217, Mar. 5, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 860,118
Claims priority, application Japan, Mar. 3, 1989, 1-051398
Int. Cl.[5] H04J *1/16*
U.S. Cl. 370—16 **6 Claims**



1. A data link protecting system for a data link providing communication between supervisory and control units using communication lines, supervised by the supervisory and control units, which transmit main data signals between terminals using multiplexing by multiplexing/demultiplexing circuits, each having unmultiplexed ports operatively connected to the terminals and a multiplexed port operatively connected to one of the communication lines, said data link protecting system comprising:

buffering means connected to a first unmultiplexed port of one of the multiplexing/demultiplexing circuits on a transmit side of the communication lines;

switching means for selectively connecting each of the supervisory and control units to said buffering means;

automatic supervisory and control signal means, each connected to a second unmultiplexed port of each of the multiplexing/demultiplexing circuits on a receiving side of the communication lines and to one of the supervisory and control units, for supplying all signals output from the second unmultiplexed port of all of the multiplexing-/demultiplexing circuits connected thereto to the one of the supervisory and control units connected thereto;

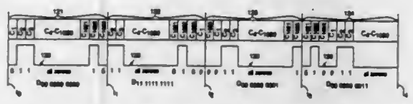
line interface units connected between the communication lines and the multiplexing/demultiplexing circuits for detecting a failure in a communication line and informing the supervisory and control units of the failure; and

means for controlling the supervisory and control units to switch two of the unmultiplexed ports of different multiplexing/demultiplexing circuits using said switching means to continue data link communication via another communication line.

5,313,457
CODE POSITION MODULATION SYSTEM AND METHOD FOR MULTIPLE USER SATELLITE COMMUNICATIONS

George R. Hostetter, Santa Clara, and Daniel Babitch, San Jose, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Apr. 14, 1992, Ser. No. 868,985
Int. Cl.[5] H04J *13/00*
U.S. Cl. 370—18 **6 Claims**



1. A non-multiplexing method of code position modulation multiple access (CPMMA) communications, the method comprising the steps of:

defining a maximal length code (MLC) having "n" number of chips C_0 through C_n;

defining a time period having "n" number of subperiods t_i beginning at times t_0 through t_n, each subperiod having at least one code chips;

assigning said "n" subperiods to an "n" number of different user transmitters;

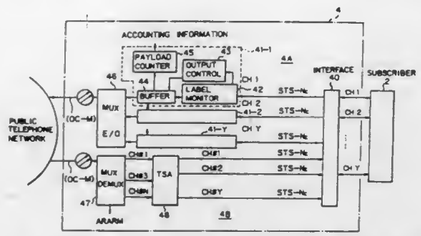
transmitting for respective users said MLC in chip sequence such that a first chip of said MLC starts within said time period and within their assigned subperiods, wherein a correlation peak of each transmitter's code falls within an assigned subperiod as seen at a master/hub receiver and enabling a continuous sending of code from each transmitter with non-overlapping correlation peaks that are discriminable from one another;

modulating for respective users the transmission of each MLC in chip sequence in respective subperiods such that a particular chip c_m that begins in a particular subperiod is controlled by a data-to-be-transmitted, the modulation and transmitting being such that the c_m through c_n chip are immediately followed by the chips C_0 through C_{m-1}.

5,313,458
TRAFFIC CONTROL SYSTEM

Hiroyuki Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 2, 1992, Ser. No. 892,193
Claims priority, application Japan, Jnn. 3, 1991, 3-160038
Int. Cl.[5] H04J *3/17, 3/24*
U.S. Cl. 370—56 **10 Claims**



1. A traffic control system for controlling traffic in data frames transmitted between a public network and a subscriber through a plurality of channels; each of said data frames consisting of a header and a payload; said header including a predetermined bit indicating whether or not said payload includes traffic data,

said traffic control system comprising, between said public network and said subscriber, a traffic control unit;

said traffic control unit comprising:

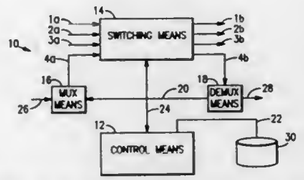
a plurality of channel filters each for receiving said data frames from said subscriber through the corresponding channel, and for transmitting to said public network only the data frames in which said predetermined bit in said header thereof indicates that said payload includes traffic data and discarding the data frames in which said predetermined bit indicates that said payload does not include traffic data; and

a channel reproducing unit for receiving data frames from said public network, and for generating a discarded empty data frame when said reproducing what does not receive a data frame from a corresponding channel, to transmit the data frames received from said public network and the data frame generated in said reproducing unit to said subscriber.

5,313,459
PRIVATE BRANCH EXCHANGE SYSTEM AND METHODS FOR OPERATING SAME

William T. Matern, Newton, N.H., assignor to Newton Communications, Inc., Newton, N.H.

Filed Oct. 8, 1992, Ser. No. 958,310
Int. Cl.[5] H04M *3/22*
U.S. Cl. 370—58.1 **42 Claims**



1. A digital/private branch exchange system having a plurality of input and output ports including feedback receiving and transmitting ports, each of said ports having at least one time slot, said system comprising:

a. control means for controlling operation of said system and for generating supervisory data corresponding to a plurality of supervisory signals;

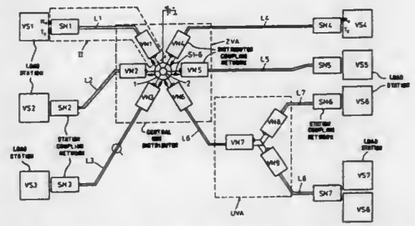
b. switch means for interconnecting any of said plurality of time slots of said ports, and for receiving supervisory data from said control means; and

c. feedback bus means connecting said at least one feedback receiving and transmitting ports and being able to receive into respective time slots said supervisory data generated by said control means from said switch means, said feedback bus being adapted to continuously providing said supervisory data to said at least one feedback receiving port to permit supply by said switch means of said supervisory data to any of said time slots of said of input and output ports.

5,313,460
MULTIPLEX CIRCUIT ARRANGEMENT, PARTICULARLY FOR THE ACTUATION OF LOAD STATIONS IN MOTOR VEHICLES

Johann Schmid, Cham, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

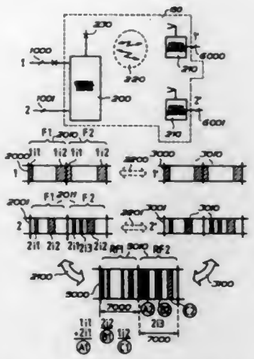
PCT No. PCT/DE90/00784, § 371 Date Apr. 10, 1992, § 102(e) Date Apr. 10, 1992, PCT Pub. No. WO91/06448, PCT Pub. Date May 16, 1991
PCT Filed Oct. 16, 1990, Ser. No. 839,771
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1989, 3936894
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.1 **12 Claims**



1. A multiplex circuit arrangement, particularly for the actuation of load stations in motor vehicles, with each station including a hardware processor for the rapid serial exchange of data and a driver circuit, the multiplex circuit arrangement comprising a bus system operating with an active voltage level and a passive voltage level and with the individual load stations being connected together by a network structure of line sections each including a data line and a load line, and wherein: each end of each said data line is provided with a respective bidirectional bus coupling network, including a bus coupling station network at a respective said end of a data line connected to a station and a distributor network at the other said end of a respective said data line; each said coupling network comprises a first analog amplifier and a second analog amplifier which is oppositely connected with said first analog amplifier; and at least a plurality of central ones of said bus coupling distributor networks are combined into a central bus distributor arrangement.

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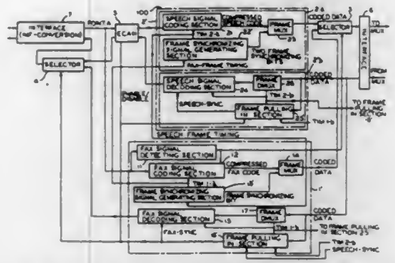
5,313,461
METHOD AND DEVICE IN A DIGITAL COMMUNICATION NETWORK
Karl-Axel Ahl, Malmo; Joakim Nelson, Lund, and Kaj G. Lindfors, Haninge, all of Sweden, assignors to Inventahl AB, Malmo, Sweden
Filed Jun. 8, 1992, Ser. No. 859,517
Claims priority, application Sweden, Oct. 19, 1989, 8903455-7
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—94.2 **4 Claims**



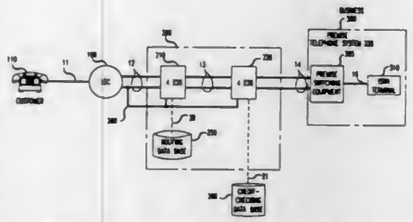
1. Method in a radio communications system for transferring digital signals consisting of segments of user data between a transmitting station and a receiving station through a radio channel, including the steps of:
analyzing consecutive segments of said data with respect to content and amount of data that is to be transferred;
adaptively assigning channel capacity based on said analyzing;
applying said signals to a time frame structure, each frame having a predetermined number of time slices;
transmitting data included in said time slices as packages through said radio channel;
transmitting control data from said transmitting station to said receiving station, said control data being provided in control packages in time slices of said time frame structure; and
assigning dynamically and selectively to said signals time slices in said frame structure, said slices of user data signals being transmitted as information packages.

5,313,462
SYNCHRONISM ESTABLISHING METHOD AND APPARATUS
Naoji Fujino; Koji Okazaki; Mitsuru Tsuboi; Naoshi Matsuo, all of Kawasaki; Naomi Suga, Yokohama, and Toshiaki Nobumoto, Fukuoka, all of Japan, assignors to Fujitsu Limited, Japan
Filed Jan. 27, 1993, Ser. No. 9,652
Claims priority, application Japan, Jan. 29, 1992, 4-013663
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—103 **13 Claims**

1. A synchronism establishing method for a system which includes a combination of two or more modules of different types having independent synchronism establishing means, the modules including at least one master side module and at least one slave side module, the synchronism establishing method selectively switching an operating one of said modules to effect transmission of a signal through a selected module, the signal having a succession of information frames, and the modules responding to different frame patterns, with synchronism being established by a predetermined number of protection stages, each protection stage including at least one of said information frames, wherein,
when the master side module detects establishment of synchronism with its frame pattern, the master side module delivers a notification of establishment of synchronism to the slave side module or modules, and
each of the slave side module or modules operates such that if the slave side module is in a condition wherein synchronism is established and the slave side module is in a pulled in phase when the synchronism establishment notification is received from the master side module, the slave side module puts its synchronizing operation into a waiting mode, in which, even if a number of abnormal synchronization patterns greater than the number of protection stages are detected, the slave side module does not determine a pull out condition and maintains the pulled in phase, and
if the slave side module detects a notification from the master side module that a pull out condition has occurred, and the slave side module determines a normal synchronization pattern at several stages just prior to such reception of the notification, wherein the number of the stages is smaller than the number of protection stages for pull in from any condition wherein synchronism is not entered other than during a waiting mode, then the slave side module resumes its processing operation.

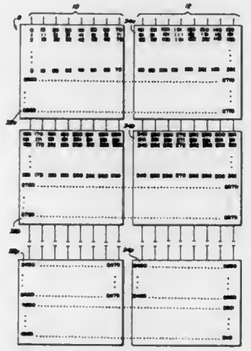


5,313,463
ISDN CREDIT CHECKING
Angela R. Gore, Ocean; Barbara J. Kittredge, Jackson; Julie M. Ladieu-Walton, Lawrenceville, and Pamela J. Lauber, Middletown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 613,035, Nov. 15, 1990, abandoned. This application Mar. 25, 1993, Ser. No. 38,563
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **15 Claims**



1. A method for validating credit information, the method comprising the steps of:
receiving the credit information from a customer on a B-channel of an ISDN facility at a business terminal;
sending the credit information on a D-channel of the ISDN facility to a telecommunications network;
validating the credit information provided by the D-channel of the ISDN facility;
providing a result of the validation from the telecommunications network on the D-channel of the ISDN facility; and
receiving a result of the validation from the D-channel of the ISDN facility at the business terminal;
where said credit information and said result are embedded within a respective D-channel signaling message to and from the telecommunications network.

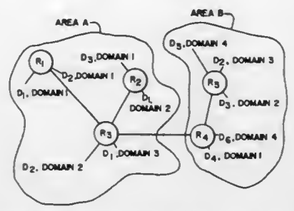
5,313,464
FAULT TOLERANT MEMORY USING BUS BIT ALIGNED REED-SOLOMON ERROR CORRECTION CODE SYMBOLS
Francis H. Reiff, Manitou Springs, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation-in-part of Ser. No. 376,357, Jul. 6, 1989. This application May 5, 1992, Ser. No. 878,749
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—2.1 **5 Claims**



1. In a memory having a plurality of random access memory devices and being adapted to receive over a multi-bit data bus multiple bit Reed-Solomon error correction code symbols corresponding to a block of data, a symbol level interleaving method for organizing said multiple bit Reed-Solomon error correction code symbols in said memory to maximize resistance to failure of bit paths of said data bus or failure of said memory devices, said method comprising the steps of:
conveying the bits of a predetermined number of said Reed-Solomon error correction code symbols to each one of said memory devices via the bit paths of said data bus; and
storing the bits of each of said Reed-Solomon error correction code symbols in like bit positions of a plurality of memory bytes in said memory devices, the number of memory bytes being equal to the number of bits in each of said symbols.

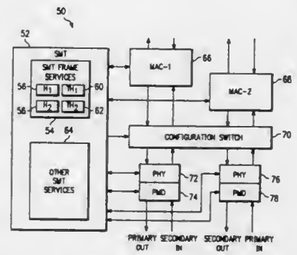
5,313,465
METHOD OF MERGING NETWORKS ACROSS A COMMON BACKBONE NETWORK
Radia J. Perlman, Acton, and Christopher W. Gunner, Harvard, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed May 13, 1992, Ser. No. 882,510
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.13 **9 Claims**

1. A method of merging at least some of a plurality of destinations across a common backbone network of said destinations operating under a first protocol and having a unique destination number associated therewith, said backbone network operating under a second protocol and having at least one router located therein, said at least one router transmitting routing control packets, said method comprising the steps of:
encoding the routing control packets of said at least one router with destination numbers and domain numbers to each of a plurality of destinations;



transmitting said routing control packets to at least one other router, wherein said at least one other router receives the routing control packets; and
transmitting data packets between destinations having the same domain number based on said routing control packets, said data packets being encapsulated with information indicative of said domain number.

5,313,466
LOCAL SYNCHRONOUS BANDWIDTH ALLOCATION IN A TOKEN RING NETWORK
Wei Zhao; Biao Chen, and Gopal Agrawal, all of College Station, Tex., assignors to The Texas A&M University System, College Station, Tex.
Filed Sep. 22, 1992, Ser. No. 949,450
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—85.4 **10 Claims**



1. A method for real time message transmission in a token ring network having a plurality of nodes, comprising the steps of:
initializing each node in the network, including setting a maximum message transmission time H_i for each node i,

$$H_i = \frac{C_i}{\left\lfloor a \cdot \frac{P_i}{TTRT} + 1 - 2a \right\rfloor}$$

where C_i is a transmission time of a message in a message stream, P_i is the period length of the message stream, TTRT is a target token rotation time, and a is a non-negative constant; and
transmitting said message stream when a token arrives at a node for duration of H_i.

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5,313,467

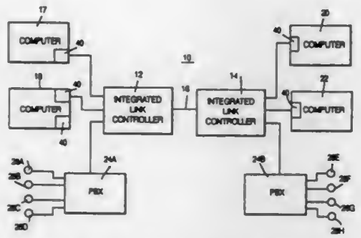
INTEGRATED COMMUNICATION LINK HAVING A DYNAMICALLY ALLOCOATABLE BANDWIDTH AND PROTOCOL FOR TRANSMISSION OF ALLOCATION INFORMATION OVER THE LINK

George Varghese, Bradford, Mass.; Richard L. Szmauz, New Ipswich, N.H.; Andrew J. Smith, Watertown, Mass., and Michael Fine, San Francisco, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 436,742, Nov. 15, 1989, abandoned. This application Dec. 2, 1992, Ser. No. 985,249

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—94.1 68 Claims



1. A system to carry multiple types of information in a multiplexed manner in a framed format, on a multiplexed integrated link, each frame of the framed format being divided into portions, comprising:

at least two integrated link controllers, each integrated link controller operable as a transmitter and a receiver to transmit and receive a plurality of information signals in each frame, each information signal occupying an allocated amount of bandwidth in at least one portion of each frame;

means for dynamically changing the allocation of the bandwidth of each information signal;

means for generating error control information that is transmitted from an integrated link controller operating as a transmitter to an integrated link controller operating as a receiver;

means for allocating the bandwidth of each individual information signal among a plurality of contiguous portions of said frame when the bandwidth of the individual information signal is at least as small as any unoccupied contiguous portions of said frame and among a plurality of non-contiguous portions of said frame when the bandwidth of the individual information signal is larger than all unoccupied contiguous portions of said frame.

5,313,468

SELF-DIAGNOSING SYSTEM FOR RECORDING APPARATUS

Takashi Hoshi; Toshiyuki Koshiji; Yukie Iseki; Yoshiaki Sato, and Kiichiro Ohgo, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

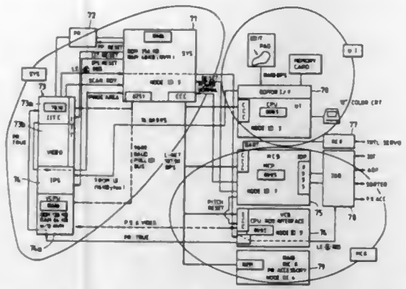
Continuation of Ser. No. 630,587, Dec. 20, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 111,376

Claims priority, application Japan, Dec. 21, 1989, 1-331945

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—16.4 14 Claims

1. An image recording system having a plurality of system elements including an image input terminal, an image processing system, an image output terminal, a user interface, and a control system including a central processing unit (CPU) for controlling operation of said system elements, said CPU including testing means for performing a fault check on said image recording system during a predetermined period in an activation sequence when a power supply of said image recording system has been turned on, wherein said fault check is an I/O function test performed on an input/output (I/O) port of an I/O controller of boards on which the respective system elements are mounted, and said testing means includes means



for transmitting an output of predetermined bits from said output port of said I/O controller to said input port of said I/O controller.

5,313,469

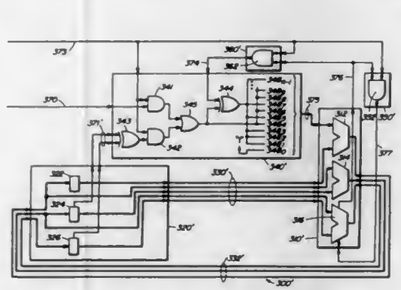
SELF-TESTABLE DIGITAL INTEGRATOR

Saman Adham, Kanata; Janusz Rajski, Montreal West; Jerzy Tyszer, Montreal, and Mark Kassab, Westmount, all of Canada, assignors to Nortbern Telecom Limited, Montreal, Canada

Filed Jun. 11, 1993, Ser. No. 75,629

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.1 19 Claims



1. A self-testable digital integrator comprising:

adding apparatus for performing binary addition of digital words and storage apparatus for storing digital words, the adding apparatus and the storage apparatus being functionally interconnected such that the storage apparatus feeds digital words to the adding apparatus for addition thereof and the adding apparatus feeds resulting digital words to the storage apparatus for storage thereof to perform a digital integration operation;

a first combinational network responsive to a first state of a test mode signal to feed an external input signal to the adding apparatus for integration thereof, and responsive to a second state of the test mode signal to feed to the adding apparatus a test pattern signal derived from selected bits of the digital words fed from the adding apparatus to the storage apparatus; and

a second combinational network responsive to the second state of the test mode signal to feed back a carry-out bit of the adding apparatus to a carry-in port of the adding apparatus, and responsive to the first state of the test mode signal to block such feedback.

5,313,470

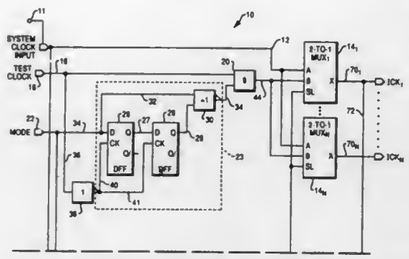
BOUNDARY-SCAN INPUT CELL FOR A CLOCK PIN

David L. Simpson, West Columbia, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 17, 1991, Ser. No. 761,126

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.3 16 Claims



1. A logic circuit for switching between a relatively high frequency clock signal and a relatively low frequency clock signal comprising:

first input means for receiving a relatively high frequency clock signal;

second input means for receiving a relatively low frequency clock signal, each of said high frequency and low frequency clock signals being characterized by alternate logically high and logically low states;

a multiplexer having at least two signal input terminals coupled to respective ones of said first and second input means for receiving said clock signals, said multiplexer further having a control signal input terminal and an output terminal, said multiplexer being responsive to a signal applied to said control signal input terminal for selectively coupling signals applied to one of said two input terminals to said output terminal; and

first synchronizer means responsive to a command to switch between said high and low frequency clock signals for coupling a control signal to said control input terminal of said multiplexer only during a time period when said high frequency clock signal is in a logically low state.

5,313,471

ERROR CONCEALING METHOD

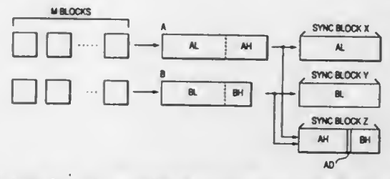
Hideki Otaka, Neyagawa; Masakazu Nishino, Kashiwara, and Tatsuro Juri, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1992, Ser. No. 840,756

Claims priority, application Japan, Feb. 26, 1991, 3-30639; Oct. 23, 1991, 3-275160

Int. Cl.[5] G06F *11/00*; H04L *1/00*

U.S. Cl. 371—31 16 Claims



9. A method of concealing a record unit of coded video data which has been reproduced from a recording medium and has sequentially arranged first recording block containing low frequency components of a coded video data A which has been obtained by coding m blocks of video data among a plurality of blocks of video data divided from video data of one page, second recording block containing low frequency components of a coded video data B which has been obtained by coding other m blocks of video data among said plurality of blocks of video data and third recording block containing in a first part thereof high frequency components of said coded video data A and in a second part thereof high frequency components of said coded video data B, said record unit also containing an address data indicating an address of a border of said first and second parts of said third recording block, said method comprising the steps of:

detecting an error position where an error of coded video data exists in said record unit;

detecting said address data contained in said record unit;

comparing the detected address data with an address data contained in a corresponding record unit of a previous page;

determining which part of said record unit should be replaced by a corresponding part of said corresponding record unit of said previous page according to said error position and a comparison result of said comparing step; and

replacing the part of said record unit determined in said determining step by a corresponding part of said corresponding record unit of said previous page to thereby conceal said record unit.

5,313,472

BIT DETECTING METHOD AND APPARATUS

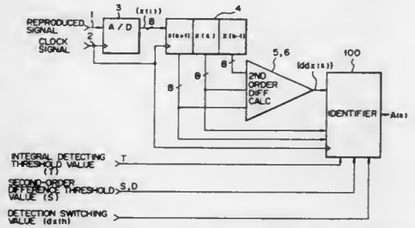
Masaaki Hara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 894,340

Claims priority, application Japan, Jun. 14, 1991, 3-170489; Oct. 16, 1991, 3-296389

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—31 10 Claims



1. A bit detecting process for identifying binary bit values of digitized signals whose bit amplitudes may be distorted, said process comprising the steps of:

generating a digital signal representing the amplitude of a bit at discrete clock intervals;

determining a difference between a threshold value and the value of said digital signal;

providing a first integral method algorithm for identifying the binary value of said bit;

providing a second second-order difference method algorithm for identifying the binary value of said bit; and

selecting either said first integral method algorithm or said second second-order difference method algorithm as a function of said determined difference, thereby identifying the binary value of said bit.

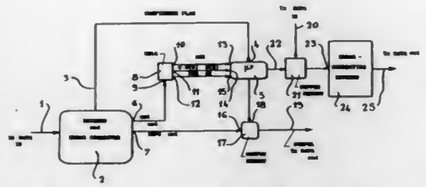
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,473

METHOD AND APPARATUS FOR DIGITAL DATA TRANSMISSION WITH AUTOMATIC REPEAT REQUEST

Marc Darmon, Paris; Marc Pontif, Villennes Sur Seine, and Philippe Sadot, Paris, all of France, assignors to Alcatel Transmission Par Faisceaux Hertziens A.T.F.H., Lavallion Perret Cedex, France

Continuation of Ser. No. 606,990, Oct. 30, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 942,109
Claims priority, application France, Nov. 28, 1989, 89 15630
Int. Cl.[5] H04L *1/16*
U.S. Cl. 371—35 7 Claims



1. A method of transmitting digital data with automatic repeat requests (ARQ), and with error detecting or correcting encoding being used on the transmitted blocks, and with a "confidence flag" (3) being provided representative of the reliability of decoding, the method being characterized in that it consists in providing an additional location in each frame to be transmitted, said additional location being large enough for it to be possible, in the event of delay reaching a predetermined value (r) judged to be excessive and due to repeat transmissions, to absorb this excessive delay by transmitting a plurality (n) of information blocks simultaneously in a single frame instead of transmitting only one at a time as when the delay is not excessive, such a frame comprising a plurality of information blocks thus comprising, prior to encoding, at least:

a conventional frame locking word (MVT);

a command block (COM) which includes the information required by the repeat transmission protocol, which information includes a mention (C) of the number (n) of useful information blocks being transmitted simultaneously in the frame, namely a single block when the delay (r) is zero or not excessive, and two or more blocks (n) when the delay (r) is judged to be excessive; and

an information block (INFO) which includes, inter alia, useful information bits per se, with the size of the information block being sufficient, in the event of a delay (r) judged to be excessive, to contain two or more (n) successive blocks of useful information, each of which would otherwise have been transmitted in a respective frame.

5,313,474

METHOD AND APPARATUS TO DETERMINE THE LOG OF AN ELEMENT IN GF(2[m]) WITH THE HELP OF A SMALL ADJUSTABLE SIZE TABLE

Alok Gupta, Irvine, Calif., assignor to QLogic Corporation, Costa Mesa, Calif.

Filed Jul. 26, 1991, Ser. No. 736,461
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 12 Claims

1. A method for determining the logarithm of a predetermined element of a Galois field GF(2[m]) utilizing a table stored in a device, the table having a plurality of logarithm values for a predetermined range of the GF(2[m]) elements stored therein, the predetermined element having a power n such that $0 \leq n \leq (2^m - 1)$, the method comprising the steps of:

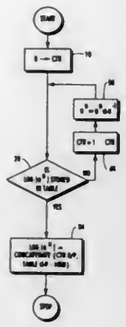
a. initializing a counter to a preset value;

b. using the predetermined element as an address to the table, wherein the table produces (1) a first predetermined output if the predetermined element is not a valid address to the table and (2) a second predetermined output if the predetermined element is a valid address to the table;

c. if the output from the table is the first predeterimined output, then:

i. incrementing the counter;

ii. reducing the power of the predetermined element by an amount equal to the number of logarithm values stored in the table; and



iii. returning to step b;

d. if the output from the table is the second predetermined output, then:

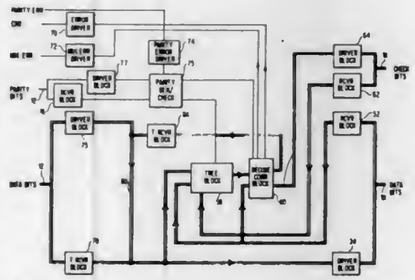
i. combining the value of the counter with at least a portion of the output of the table to produce a combined output, wherein the combined output is the logarithm of the predetermined element.

5,313,475

ECC FUNCTION WITH SELF-CONTAINED HIGH PERFORMANCE PARTIAL WRITE OR READ/MODIFY/WRITE AND PARITY LOOK-AHEAD INTERFACE SCHEME

Daryl C. Cromer, Boca Raton, Fla.; Gene J. Gaudenzi, Purdys, N.Y.; Paul C. King, Boca Raton, Fla.; Kevin G. Kramer, Wappingers Falls, N.Y., and Timothy J. Louie, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,558
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.1 11 Claims



1. A computer system comprising:

a processor and a plurality of components connected to a system bus;

a memory connected to a memory bus;

means interfacing said system and memory buses, said processor and said components communicating in words composed of differing numbers of bytes over said system bus, said interfacing means including error checking and correcting logic connected to said memory bus and providing a partial write function that permits a read/modify/write operation, said interfacing means comprising:

a first receiver connected to said memory bus for receiving data bits and check bits read out of said memory;

a first driver connected to said memory bus for transferring data bits and check bits from the system bus to said memory;

a second receiver connected to said system bus for receiving data bits from said processor and components, said first driver being connected to said second receiver;

a second driver connected to said system bus for transferring data bits to said processor and components;

said error checking and correcting logic connected to said first and second receiver for receiving data bits and check bits and generating corrected data bits and corrected check bits, said first driver being connected to receive said corrected check bits from said error checking and correcting logic, said error checking and correcting logic generating a first error flag upon the detection and correction of a single bit error and a multiple error flag upon the detection of multiple bit errors;

an internal receiver connected to receive corrected data bits from said error checking and correcting logic and supplying said corrected data bits to said second driver; and

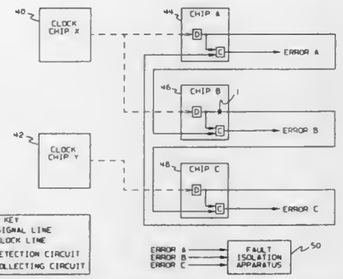
an internal bus connected to said internal receiver and to said second receiver for transferring corrected data bits subject to a partial write function to said memory via said first driver, said internal receiver being active for all bytes of data that are not changing and said second receiver being active for all bytes of data that are changing during a partial write so as to allow desired bits to appear on said internal bus.

5,313,476

CLOCK SECURITY RING

William E. Haberkorn, Jr., Kingston, and Harold E. Roman, Highland, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,284
Int. Cl.[5] G11B *11/00*
U.S. Cl. 371—61 11 Claims



4. A clock security ring for clock system error detection and alternating current fault isolation comprising:

a plurality of fault detection circuits;

a plurality of error collection circuits each receiving inputs from respective subsets of said plurality of fault detection circuits, each of said subsets including an arbitrary grouping of fault detection circuits plus one fault detection circuit from an adjacent subset to thereby form a ring structure; and

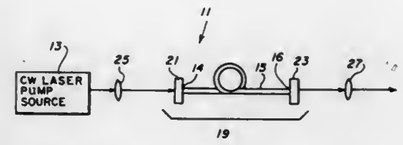
means for analyzing outputs from said error collection circuits to provide fault isolation.

5,313,477

RARE EARTH ION DOPED CW CASCADE FIBER LASER

Leon Esterowitz, Springfield, and Roger E. Allen, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1992, Ser. No. 968,890
Int. Cl.[5] H01S *3/07, 3/094*
U.S. Cl. 372—6 23 Claims



1. A fiber laser system for producing a continuous wave (CW) fiber laser output, said fiber laser system comprising:

a fiber host medium doped with a preselected concentration of activator ions to form a fiber;

first and second reflective means butt-coupled to first and second opposite ends of said fiber to cooperatively form a fiber laser, said reflective means having reflectivities sufficient for producing continuous wave (CW) lasing at first and second preselected wavelengths when pumped by a pump beam; and

a laser pumping means directed at said fiber for providing a continuous wave (CW) pump beam operating at a preselected pump wavelength sufficient for promoting electrons of said activator ions to the upper energy level of a self-terminating laser transition;

said second reflective means operating as a fiber laser output coupler through which passes said CW fiber laser output at said preselected first wavelength corresponding to said self-terminating laser transition of said activator ions from said fiber at a slope efficiency greater than that achieved by a self-terminating fiber laser.

5,313,478

METHOD OF OPERATING A SEMICONDUCTOR LASER AS A MODE-LOCKED SEMICONDUCTOR LASER AND DEVICES FOR IMPLEMENTING THE METHOD

Dieter Baums, Ludwigsburg; Kaspar Dütting; Olaf Hildebrand, both of Stuttgart; Wilfried Idler, Asperg; Gert Laube, Stuttgart; Michael Schilling, Stuttgart; Heinz Schweizer, Stuttgart, and Klaus Wünstel, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed May 18, 1992, Ser. No. 884,341
Claims priority, application Fed. Rep. of Germany, May 31, 1991, 4117866
Int. Cl.[5] H01S *3/098, 3/10*
U.S. Cl. 372—26 12 Claims

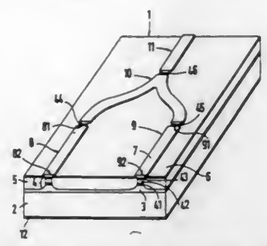
1. A method of operating a semiconductor laser including a branched cavity that extends over at least four individually actuatable regions, as a mode-locked semiconductor laser, the method comprising:

providing a direct current to at least one of said regions, said direct current being greater than a transparency current; and

providing an alternating current through said at least one of said regions, the amplitude of said alternating current together with the amplitude of said direct current exceed-

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ing a laser threshold current, said alternating current having a frequency related to the reciprocal of the round-



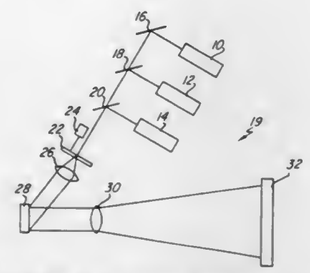
trip time of light pulses generated in said cavity by said alternating current.

5,313,479

SPECKLE-FREE DISPLAY SYSTEM USING COHERENT LIGHT

James M. Florence, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 29, 1992, Ser. No. 921,869
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—26 **15 Claims**



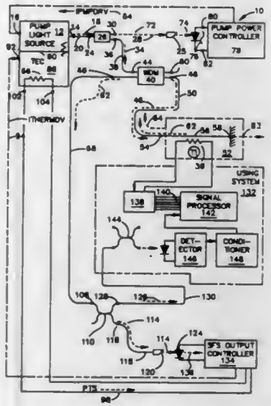
1. A speckle-free display system comprising:
a. at least one coherent light source generating at least one coherent light beam;
b. a diffusing element located in a plane intercepts said coherent light beam such that light leaves said diffusing element as a diffused light beam which includes interference patterns;
c. a means for moving said diffusing element in said plane while said diffusing element is intercepting said coherent light beam;
d. a spatial light modulator for receiving said diffused light beam and for generating an image light beam; and
e. a viewing surface located such that said image bearing light beam impinges thereon to produce a visible image, and wherein said movement of said diffusing element causes said speckle interference pattern to move on said viewing surface so that said speckle pattern is substantially and thereby an improved image is provided.

5,313,480

STABILIZATION APPARATUS AND METHOD FOR AN SFS

Bernard G. Fidric, Los Angeles County, and David F. Libman, Ventura County, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 585,712, Sep. 18, 1990, Pat. No. 5,136,600. This application Aug. 4, 1992, Ser. No. 926,007
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—32 **18 Claims**



1. A wavelength stabilization apparatus for a superfluorescent fiber source comprising:
a SFS (superfluorescent source) means for producing SFS light having an SFS wavelength when pumped with pump light from a pump light source having a pump light wavelength;
an output controller means responsive to a sample of SFS light for maximizing the power of said sample of SFS light by automatically adjusting said pump light wavelength, said output controller means having;
a pump power controller means responsive to a broadband, non-wavelength dependent sample of the pump light from said pump light source for stabilizing the output power of the sample of said pump light with respect to a predetermined reference output power level.

5,313,481

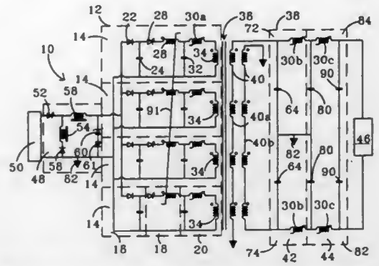
COPPER LASER MODULATOR DRIVING ASSEMBLY INCLUDING A MAGNETIC COMPRESSION LASER

Edward G. Cook, Livermore; Daniel L. Birx, Oakley, and Don G. Ball, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1993, Ser. No. 128,185
Int. Cl.[5] H01S *3/00, 3/22*
U.S. Cl. 372—37 **19 Claims**

1. A magnetic compression laser driving assembly, comprising:

a first compression stage including a plurality of first stage magnetic switches, each of said magnetic switches having



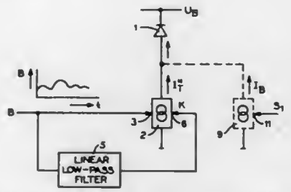
associated therewith a magnetic assist coil with a core common to each of the magnetic assist coils.

5,313,482

METHOD AND CIRCUIT ARRANGEMENT FOR CORRECTING THE LIGHT POWER OUTPUT OF A LASER DIODE

Thomas Zelenka, Moenkeberg; Thomas Jacobsen, Kiel, and Dietrich Asbach, Klausdorf, all of Fed. Rep. of Germany, assignors to Linotype-Hell AG, Fed. Rep. of Germany

PCT No. PCT/DE91/00641, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO92/03861, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 10, 1991, Ser. No. 975,538
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1990, 4025497
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **13 Claims**



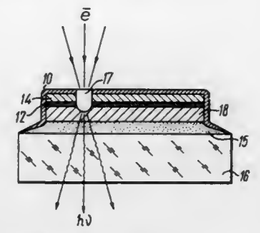
1. A method for correcting light power P of a laser diode comprising the steps of:
modulating a driver current I_T which drives the laser diode with a modulation signal, said driver current defining the light power P output by the laser diode;
approximately electrically simulating a chronological temperature curve of the laser diode by a linear low-pass filter which outputs a correction signal dependent on said modulation signal;
to enhance compensation precision, calculating a non-linear re-correction function by identifying a function $P=f_1(T,I_T)$ of the light power P of the laser diode dependent on temperature T of the laser diode and on the driver current I_T;
acquiring from this identified function an inverse function $I_T=f_2(T,P)$ as said re-correction function;
re-correcting said correction signal output by the low-pass filter according to the acquired re-correction function; and
employing the re-corrected output signal for correcting the driver current I_T.

5,313,483

LASER SCREEN FOR A CATHODE-RAY TUBE AND METHOD FOR MAKING SAME

Vladimir I. Kozlovsky, Moscow, and Andrey A. Kolchin, Moscow, both of U.S.S.R., assignors to Principia Optics, Inc., Los Angeles, Calif. and P.N. Lebedev Institute of Physics, Moscow, U.S.S.R.

Filed Apr. 30, 1992, Ser. No. 875,816
Claims priority, application U.S.S.R., Dec. 26, 1991, 5016146
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—15 **7 Claims**



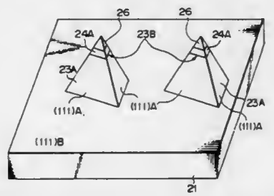
1. A laser screen, comprising:
a heat removing support member;
an optical cavity comprising a partly transparent mirror and a reflecting mirror, operable in response to an applied electron beam for generating laser radiation;
an active semiconductor member constructed of a semiconductor compound positioned between said partly transparent mirror and said reflecting mirror;
an intermediate member made of a semiconductor material transparent for radiation generated in said optical cavity having a bandgap width which is at least 0.98 times as great as the bandgap width of the material of said semiconductor member;
said partly transparent mirror being formed on said semiconductor member;
said intermediate member being grown on said partly transparent mirror; and
said heat removing support member being cemented to said intermediate member.

5,313,484

QUANTUM BOX OR QUANTUM WIRE SEMICONDUCTOR STRUCTURE AND METHODS OF PRODUCING SAME

Hiroshi Arimoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 15, 1992, Ser. No. 898,541
Claims priority, application Japan, Jun. 13, 1991, 3-141808
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **24 Claims**



1. A quantum box semiconductor structure comprising:
a III-V compound semiconductor substrate having a main surface comprising the (111) B plane;
truncated triangular pyramid base portions made of a first III-V compound semiconductor, each having a corresponding triangular top surface of a substantially common

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size and three (111) A sides, formed on the main surface of said substrate; and

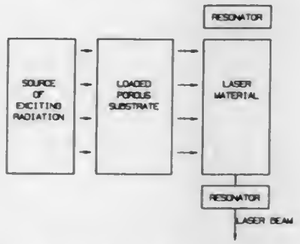
triangular pyramid quantum boxes respectively corresponding to and formed on the corresponding triangle top surfaces of said truncated triangular pyramid base portion, each thereof having three (111) A sides lying in corresponding, common planes with the three (111) A sides of the respective truncated triangular pyramid base portions, of a second III-V compound semiconductor having a narrower energy band gap and a larger electron affinity than the energy band gap and electron affinity of said first III-V compound semiconductor.

5,313,485

LUMINESCENT LIGHT SOURCE FOR LASER PUMPING AND LASER SYSTEM CONTAINING SAME

Roy A. Hamil, Tijeras; Carol S. Ashley, Albuquerque; C. Jeffrey Brinker, Albuquerque; Scott Reed, Albuquerque, and Robert J. Walko, Albuqoerque, all of N. Mex., assignors to Sandia Corporatioo, Albuquerque, N. Mex.

Filed Oct. 26, 1992, Ser. No. 966,473
Int. Cl.[5] H01S *3/0915*
U.S. Cl. 372—69 **31 Claims**



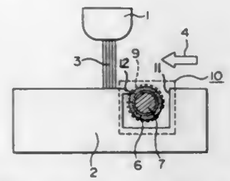
1. In a laser apparatus for use in generating a laser beam, said apparatus comprising a lasing material and pumping means, the improvement wherein said pumping means comprises a porous substrate loaded with a component capable of emitting light upon interaction of the component with exciting radiation.

5,313,486

DISCHARGE EXCITATION PULSED LASER OSCILLATION DEVICE

Hajime Nakatani, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,455
Claims priority, application Japan, Apr. 25, 1991, 3-095193
Int. Cl.[5] H01S *3/097*
U.S. Cl. 372—86 **10 Claims**



1. A discharge excitation pulsed laser oscillation device comprising:

a pair of main electrodes having main surfaces opposing each other across a main discharge gap region and extending along an optical axis of said pulsed laser oscillation device;

laser gas supply means for supplying a laser gas to the main discharge gap region between said pair of main electrodes; and

preionizer means for preionizing the laser gas in the main discharge gap region, said preionizer means being exclusively disposed on an upstream side of the main discharge gap region with respect to a flow direction of the laser gas;

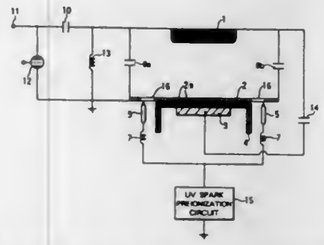
wherein one of said main electrodes has a recess formed on the main surface thereof on an upstream side of a location where a base of a main discharge across said main electrodes is formed, said preionizer means being substantially disposed within the recess formed on said one of said main electrodes.

5,313,487

DISCHARGE EXCITATION GAS LASER APPARATUS

Shuichi Fujikawa; Mitsuo Inoue; Yukio Sato, and Haruhiko Nagai, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1992, Ser. No. 887,770
Claims priority, application Japan, May 23, 1991, 3-118513; Oct. 7, 1991, 3-258944
Int. Cl.[5] H01S *3/097*
U.S. Cl. 372—86 **16 Claims**



1. A discharge excitation laser apparatus comprising:

a pair of first and second primary electrodes disposed in a spaced opposed relation with respect to each other and having a main discharge space defined therebetween;

excitation means connected to said first and second primary electrodes for causing a main discharge therebetween to thereby generate laser oscillations of a laser gas in the main discharge space between said first and second primary electrodes; and

preionization means disposed behind said second primary electrode in relation to the main discharge space, said preionization means being provided for preionizing the laser gas in the main discharge space prior to the main discharge between said first and second primary electrodes, and said preionization means comprising at least two different types of preionization systems, said preionization systems generating a substantially uniform region and a high density region of preionized electrons in the main discharge space.

5,313,488

RING LASER DISCHARGE STARTING CONCEPT

Theodore J. Podgorski, St. Paul, assignor to Honeywell Inc., Minneapolis, Minn.

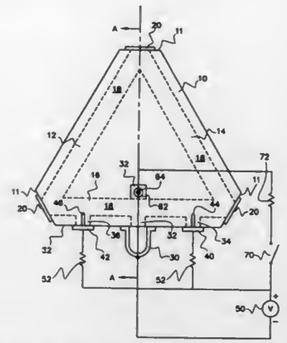
Filed Feb. 4, 1993, Ser. No. 13,449
Int. Cl.[5] H01S *3/083, 3/097*
U.S. Cl. 372—94 **16 Claims**

1. A gas discharge device, comprising:

a block containing a gas filled cavity, the block having a plurality of communication ports extending from an exterior surface of the block for communication between the cavity and the surface of the block;

a cathode attached to a first exterior surface of the block and positioned above a first communication port so as to allow communication between the cathode and the gas within the gas filled chamber;

a pin anode having a post member, the pin anode attached to the first exterior surface of the block and positioned such that the post member of the pin anode extends into the gas filled cavity through a second communication port but is not in direct line with the cathode; and



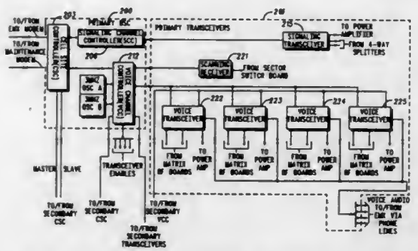
a trigger pin anode having a post member, the trigger pin anode attached to a second exterior surface of the block such that the post member of the trigger pin anode extends into the gas filled cavity, the trigger pin anode being positioned in close proximity to and in direct line with the cathode.

5,313,489

SIGNAL PROCESSING IN COMMUNICATION SYSTEMS

Barry J. Menich, Schaumburg, and Michael D. Kotzin, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1993, Ser. No. 83,118
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **16 Claims**



1. A method of signal processing comprising the steps of:

detecting, in a first communication system, a level of a signal transmitted by a mobile station;

generating a signal compatible with a second communication system;

adjusting the level of the generated signal compatible with a second communication system to be substantially proportional to the detected level of the signal transmitted by the mobile station in the first communication system; and

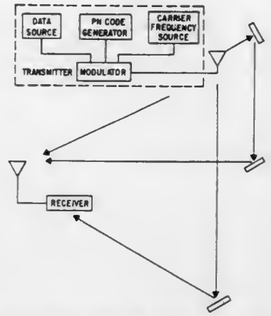
inputting the adjusted generated signal into the second communication system for processing related to functions of the second communication system.

5,313,490

ACQUISITION APPARATUS FOR DSSS COMMUNICATIONS

Karen M. Schramm, Needham; William E. DeLisle, Milford, and John W. Lovell, Sherborn, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Dec. 31, 1992, Ser. No. 999,643
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **2 Claims**



1. Apparatus for indicating the end of an acquisition procedure between a transmitter and receiver in a direct sequence spread spectrum communications system, comprising:

a transmitter;

means for generating at said transmitter a first acquisition code having a first acquisition code period and comprised of digital bits at a first bit rate;

means for modulating said first digital acquisition code by a pseudo-noise code repeating at a pseudo-noise code period and consisting of a sequence of chips at a chip rate greater than said first bit rate, and wherein said first acquisition code period is an integer multiple of said pseudo-noise code period;

means for modulating a carrier by said first digital acquisition code modulated by said pseudo-noise code;

means for transmitting for a first period of time, said carrier modulated by said first digital acquisition code modulated by said pseudo-noise code;

a receiver;

means for synchronizing a receiver to said chip rate and carrier frequency;

means for synchronizing said receiver to said pseudo-noise code period;

means for synchronizing said receiver to said period of said data bit rate;

means for synchronizing said receiver to said first acquisition code period;

means for generating at said transmitter a second acquisition code having a second acquisition code period and comprised of digital bits at a second bit rate, said second bit rate equal to the bit rate of said first acquisition code period;

means for modulating said second digital acquisition code by said pseudo-noise code;

means for modulating said carrier by said second digital acquisition code modulated by said pseudo-noise code;

means for transmitting for a second period of time equal to said second acquisition code period said carrier modulated by said second acquisition code modulated by said pseudo-noise code; and

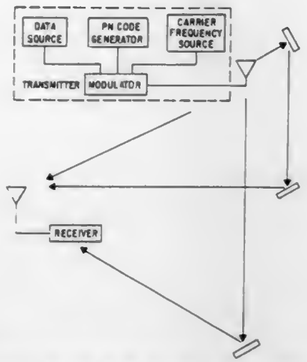
means for synchronizing said receiver to said second acquisition code, the end of said second acquisition code indicating the end of said acquisition procedure.

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5,313,491
ACQUISITION METHOD FOR DSSS COMMUNICATIONS

Karen M. Schramm, Needham; William E. DeLisle, Milford, and John W. Lovell, Sherborn, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Dec. 31, 1992, Ser. No. 999,242
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **2 Claims**



1. A method for indicating the end of an acquisition procedure between a transmitter and receiver in a direct sequence spread spectrum communications system, comprising the following steps:

generating at a transmitter a first acquisition code having a first acquisition code period and comprised of digital bits at a first bit rate;

modulating said first digital acquisition code by a pseudo-noise code repeating at a pseudo-noise code period and consisting of a sequence of chips at a chip rate greater than said first bit rate, and wherein said first acquisition code period is an integer multiple of said pseudo-noise code period;

modulating a carrier frequency by said first digital acquisition code modulated by said pseudo-noise code;

transmitting for a first period of time, said carrier modulated by said first digital acquisition code modulated by said pseudo-noise code;

synchronizing a receiver to said chip rate and carrier frequency;

synchronizing said receiver to said pseudo-noise code period;

synchronizing said receiver to said period of said data bit rate;

synchronizing said receiver to said first acquisition code period;

generating at said transmitter a second acquisition code having a second acquisition code period and comprised of digital bits at a second bit rate, said second bit rate equal to the bit rate of said first acquisition code period;

modulating said second digital acquisition code by said pseudo-noise code;

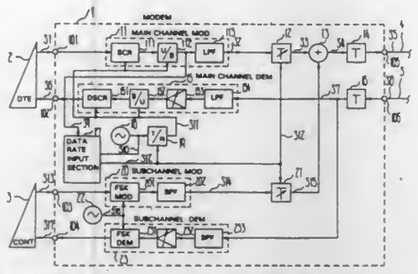
modulating said carrier frequency by said second digital acquisition code modulated by said pseudo-noise code; transmitting for a second period of time equal to said second acquisition code period said carrier modulated by said second acquisition code modulated by said pseudo-noise code;

synchronizing said receiver to said second acquisition code, the end of said second acquisition code indicating the end of said acquisition procedure

5,313,492
DATA MODULATOR/DEMODULATOR

Akira Hashimoto, Tokyo, and Yusuke Nishimura, Shizuoka, both of Japan, assignors to NEC Corporation, Japan

Filed Feb. 12, 1992, Ser. No. 835,708
Claims priority, application Japan, Feb. 12, 1991, 3-038899
Int. Cl.[5] H03K *7/00*
U.S. Cl. 375—8 **10 Claims**



1. A data modulator/demodulator (MODEM) for a bidirectional data communication system, comprising:

main channel modulating means for modulating input first main data to a first main channel signal;

subchannel modulating means for modulating input first subdata to a first subchannel signal having a frequency spectrum different from a frequency spectrum of said first main channel signal;

multiplexing means for frequency division multiplexing said first main channel signal and said first subchannel signal to thereby produce a first transmit signal;

transmitting means for transmitting said first transmit signal over a first metallic cable;

splitting means for receiving a second transmit signal identical in format with said first transmit signal over a second metallic cable having substantially the same attenuation characteristic as said first metallic cable and splitting said second transmit signal into a second main channel signal and a second subchannel signal;

main channel demodulating means for regenerating second main data from said second main channel signal;

subchannel demodulating means for regenerating second subdata from said second subchannel signal;

said first main data selectively having one of a plurality of predetermined data rates;

data rate information inputting means for generating a control signal matching said one data rate of said first main data;

first level controlling means for controlling the output level of said first main channel signal to a predetermined level in response to said control signal; and

second level controlling means for controlling the output level of said first subchannel signal to a predetermined level in response to said control signal.

5,313,493
PLURAL-DIFFERENTIAL, PHASE-SHIFT-KEYED MODULATION, COMMUNICATION SYSTEM

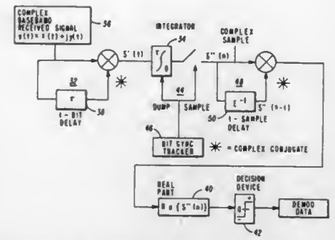
Santanu Dutta, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 1, 1990, Ser. No. 532,283
Int. Cl.[5] H04L *27/10*
U.S. Cl. 375—56 **17 Claims**

1. A plural-differential, phase shift keyed digital communication system comprising:

a plural-differential phase shift keying transmitter for transmission of a carrier with each of a succession of data words of a digital signal encoded therein as at least three differentials of phase between at least four channel symbols of the carrier;

a plural-differential phase shift keyed receiver for decoding the at least three phase differentials into the data word encoded by the transmitter; and,

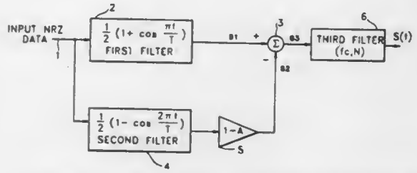


said transmitter includes means for transmitting at least three reference phase signals at the beginning of each transmission of a digital signal from which a first three words of the digital signal are decoded by the receiver.

5,313,494
COMPACT SUPERPOSED MODULATED SIGNAL GENERATOR

Il-geun Park, and Jong-su Seo, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Nov. 22, 1991, Ser. No. 796,619
Claims priority, application Rep. of Korea, May 28, 1991, 91-8743
Int. Cl.[5] H04L *27/04, 27/12, 27/20*
U.S. Cl. 375—59 **7 Claims**



1. A compact superposed modulated signal generator for use in a digital signal transmission system for transmitting digital information, said generator comprising:

a first filter for converting an input non-return-to-zero (NRZ) digital data signal to a double interval raised cosine pulse signal;

a second filter for converting said input NRZ digital data signal to a single interval raised cosine pulse signal;

an attenuator for attenuating a signal output from said second filter;

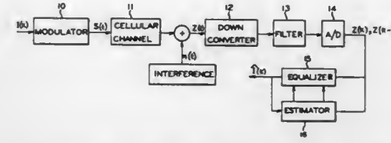
an adder/substractor for superposing a signal generated by said first filter on a signal attenuated by said attenuator; and

a third filter for controlling the occupied bandwidth of a signal superposed by said adder/substractor wherein said third filter has a predetermined low ripple and a constant group delay within the passband for minimizing intersymbol interference and decreasing errors.

5,313,495
DEMODULATOR FOR SYMBOLS TRANSMITTED OVER A CELLULAR CHANNEL

Youngky Kim, Potomac, Md., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 12, 1992, Ser. No. 881,938
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **7 Claims**



1. A circuit for processing a data signal transmitted as symbols in a multipath fading transmission channel comprising:

a sampling circuit for producing a sampled data signal at a rate of substantially twice the rate of symbols being transmitted to obtain signal samples of a transmitted symbol signal and an interference symbol signal;

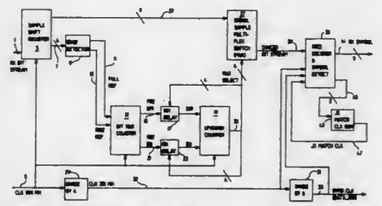
a channel estimator connected to receive said sampled signal, computing a frequency offset function, an amplitude fading function and a phase function, occurring in said transmission channel on a two sample per symbol basis; and,

a Viterbi equalizer for estimating the value of each received symbol from said sampled data, representing a transmitted symbol signal and an interference symbol signal, including calculating a branch metric for each possible state of said symbol based upon two samples per symbol and based upon a frequency offset, amplitude fading, and phase determined from said channel estimator, said equalizer providing from said sampled data signal an estimate of said symbol from energy contained in said symbol signal and interference symbol signal.

5,313,496
DIGITAL DEMODULATOR CIRCUIT

Grant M. de Goede, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 26, 1990, Ser. No. 633,926
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—95 **28 Claims**



1. An improved wholly digital demodulator for recovering data symbols from bits in a serial data stream transmitted at a predetermined clock rate, each data symbol being defined by a N-bit digital word comprising:

feedback means for sampling the duration of the bits in the serial data stream at a sampling rate substantially greater than said clock rate and transforming sampled bits of irregular duration into bits having a preselected uniform duration defining the N-bit data symbol wherein the feedback means does not require every bit in the serial data stream to have either a rising edge or a falling edge; and

output means for outputting said data symbol in parallel data

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format, with said demodulator means being formed within a single substrate of semiconductor material.

5,313,497

METHOD OF DETECTING A DISTURBING SIGNAL FOR A DIGITAL DATA DEMODULATOR, AND APPARATUS IMPLEMENTING SUCH A METHOD

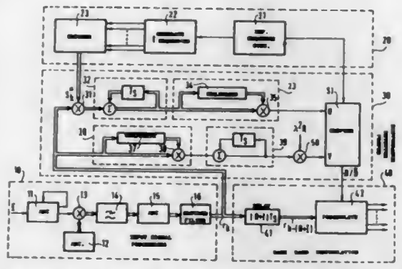
Philippe Sadot, Paris; Bertrand Thebault, Asnieres; Marc Darmon, Paris, and Jacques Eudes, Mesnil le Roi, all of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Jan. 30, 1992, Ser. No. 828,176

Claims priority, application France, Jan. 31, 1991, 91 01078

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—99 **7 Claims**



1. A method of detecting a disturbing signal for demodulating a modulated input signal (E) containing digital data, wherein, on the modulated input signal transposed into a baseband modulated signal (r_k), the disturbing signal is detected by periodically inserting reference symbols by means of a fixed guard time delay applied to the received signal prior to demodulation, and wherein said method further comprises:

a first step of estimating the square of the modulus of the cross-correlation of a received signal and of an expected baseband modulated signal (r_k) at a determined instant when the reference symbols are assumed to be present;

a second step of estimating the square of the correlation of the baseband modulated signal (r_k) at the same instant, of multiplying by a coefficient which represents the square of the threshold for the estimated correlation coefficient, and of multiplying by the number of reference symbols used in a reference signal burst; and

a third step of comparing with each other the two quantities obtained simultaneously during the preceding two steps.

5,313,498

METHOD AND ARRANGEMENT OF ECHO ELIMINATION IN DIGITAL TELECOMMUNICATIONS SYSTEM

Hideo Sano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,847

Claims priority, application Japan, Jun. 13, 1991, 3-168818; Apr. 28, 1992, 4-109419

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—103 **2 Claims**

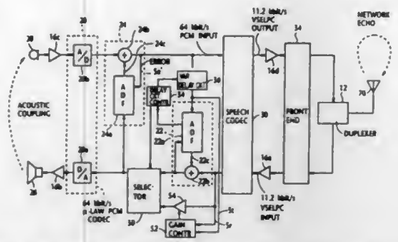
1. An arrangement for eliminating a network echo in a telecommunication system, said arrangement including a speech codec for encoding a first signal to be transmitted and for decoding a second signal received from a telecommunications network, said arrangement comprising:

first means for variably delaying said first signal and for producing a delayed first signal;

second means for canceling said network echo, said second means being arranged to receive said delayed first signal and an output of said speech codec;

third means for controlling attenuation of said output of said speech codec, said third means being arranged in parallel with said second means;

fourth means for detecting a delay time of said network echo, said fourth means being coupled to said second means and controlling said first means using the detected delay time; and



fifth means for selecting one of the outputs of said second and third means, said fifth means selecting the output of said third means when said fourth means detects that the delay of said network echo exceeds an adaptive filtering capacity of said second means.

5,313,499

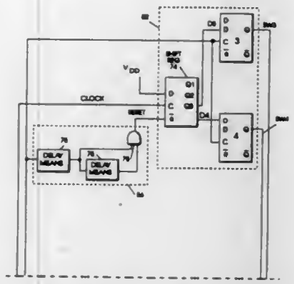
CONSTANT GAIN PHASE LOCK-LOOP

Ronald L. Coburn, Fuquay-Varina, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1992, Ser. No. 875,879

Int. Cl.[5] H04L *7/00, 25/36, 25/40;* **H03D** *3/24*

U.S. Cl. 375—110 **6 Claims**



1. An improved phase lock loop (PLL) circuitry for extracting clock pulses from Manchester encoded signals packaged in frames according to 802.5 IEEE standard for token ring and using said clock pulses for gating data in said Manchester encoded signals comprising:

a first circuit means for correlating the Manchester encoded signals from a communications network with clock pulses and to output a first control signal and a second control signal representative of misalignment between said incoming Manchester encoded signals and said clock pulses;

a second circuit means for generating at its output a quantum of current in response to the first control signal or the second control signal;

said second circuit means including a first section having at least three current supply sources with each current supply source having one terminal connected to a common supply voltage source, a second terminal of one of said three current sources connected to a first common node, a first switch means coupling a second one of the three current supply sources to the first common node;

a second switch means coupling the third one of the current supply sources to the first common node, and

a second section having at least three current sink sources with each current sink sources having one terminal connected to a common voltage level, a second terminal of a first one of the three current sink sources connected to a second common node, a third switch means coupling a one of the three current sink sources coupled to the second common node, a fourth switch means coupling a third one of the three current sink sources to the second common node, a fourth switch means coupling the first common node to an output node and a fifth switch means coupling the second common node to the output node;

a first D latch circuitry having a Q output terminal coupled to selected switch means in the first section and the second section and a second D latch circuitry having a Q output terminal coupled to selected switch means in the first section and the second section; with each D latch circuitry having a D input and a C input;

a shift register means having selected ones of its outputs connected to the D input of each D latch circuitry; and a reset means connected to an R input of said shift register means

a loop filter means for receiving scaled quantums of current from the second circuit means and for generating error signals therefrom; and

a fourth circuit means generating the clock pulses in response to the error signals.

5,313,500

FRAME SYNCHRONIZATION CIRCUIT COMPRISING A SERIES-TO-PARALLEL CONVERTER

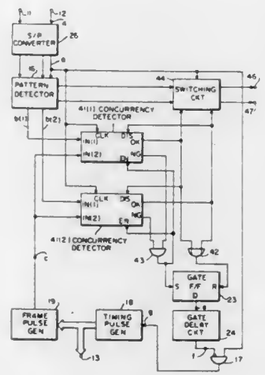
Hiroki Rikiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 25, 1991, Ser. No. 735,732

Claims priority, application Japan, Jul. 25, 1990, 2-197559

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—114 **8 Claims**



1. A frame synchronization circuit for adjusting generation of a frame pulse by using a frame synchronization pattern included in an input code sequence, said frame synchronization circuit comprising:

a series-to-parallel converter for converting said input code sequence to first through N-th code sequences with said frame synchronization pattern converted to first through N-th synchronization patterns in said first through said N-th code sequences, where N represents a predetermined integer, said series-to-parallel converter being for frequency dividing circuit input clock pulses by N into gate input clock pulses;

a pattern detecting circuit for producing first through N-th detection signals collectively as said pattern detection signal only when said first through said N-th synchronization patterns are detected, respectively, and for outputting said first through N-th code sequences received from said series-to-parallel converter;

first through N-th concurrency detectors supplied with said frame pulse and said first through said N-th detection signals, respectively, for detecting concurrency of said frame pulse with said first through said N-th detection signals to produce first through N-th concurrent results, one of said first through N-th concurrency detectors generating a first concurrent result as an earliest concurrent result and means responsive to said first concurrent result for causing the remaining concurrency detectors to be disabled;

gate means for allowing passage of said gate input clock pulses as gate output clock pulses and for inhibiting passage of said gate input clock pulses in accordance with said first through said N-th concurrent results, said gate means allowing passage of said gate input clock pulses when said gate means receives one of said first through said N-th concurrent results;

frame pulse generating means for generating said frame pulse in compliance with said gate output clock pulses; and

a switching circuit for switching a sequential order of said first through said N-th code sequences received from said pattern detecting circuit in accordance with said first through said N-th concurrent results into first through N-th output code sequences.

5,313,501

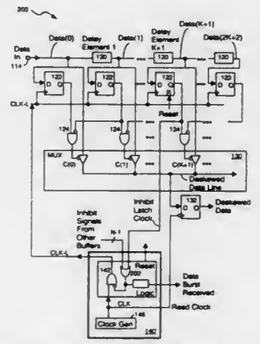
METHOD AND APPARATUS FOR DESKEWING DIGITAL DATA

Charles P. Thacker, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 15, 1992, Ser. No. 898,335

Int. Cl.[5] H04L *25/38*

U.S. Cl. 375—117 **4 Claims**



2. A receiver circuit for deskewing N parallel digital data signals that are transmitted in bursts, each burst beginning with a predefined start bit in each said parallel digital data signal, the receiver circuit comprising:

a receiver clock circuit for generating a latch clock signal; and a read clock signal that is synchronized with said latch clock signal;

N deskewing buffers, each buffer receiving a distinct one of said N parallel digital data signals, where N is a positive integer greater than one; each deskewing buffer comprising:

a data port for receiving one of said digital data signals;

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a chain of J delay elements through which said digital data signal received by said data port is transmitted, said chain of J delay elements generating J delayed digital signals Data(i), for i=1 to J, at signal taps located after each of said delay elements;

a latch that latches said J delayed digital signals Data(i) at a predefined time during each cycle of said latch clock signal, thereby generating J latched digital signals LData(i);

a logic circuit coupled to said latch for comparing said latched digital signals LData(i) with the latched digital signals LData(i+1) for i=1 to J=1, generating J=1 comparison signals C(i); wherein when said predefined start bit is received and latched into said latch, one of comparison signals will have a predefined value distinct from all the other ones of said comparison signals; and

a multiplexer which receives said data signals Data(i) and outputs one of said data signals Data(i) in accordance with the one of said comparison signals having said predefined value; and

a latch clock inhibiting circuit for inhibiting generation of said latch clock signal after said predefined start bit has been received by all of said deskewing buffers;

whereby said data signals output by the multiplexers in said deskewing buffers are synchronized with said read clock signal and with each other.

5,313,502

ARRANGEMENT FOR IMAGING A USEFUL SIGNAL FROM THE FRAME OF A FIRST DIGITAL SIGNAL AT A FIRST BITE RATE INTO THE FRAME OF A SECOND DIGITAL SIGNAL AT A SECOND BITE RATE

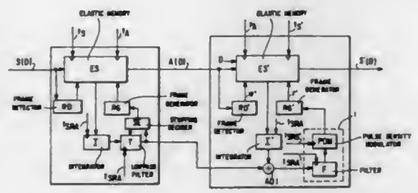
Rainer Nawrocki, Hamburg; Siegfried Brünle, Esslingen, and Wolfgang Ehrlich, Allmersbach, all of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed May 9, 1991, Ser. No. 697,778

Claims priority, application Fed. Rep. of Germany, May 9, 1990, 4014813; May 9, 1990, 4014814

Int. Cl.[5] H04L *25/36*

U.S. Cl. 375—118 **6 Claims**



1. An arrangement for imaging a useful digital signal from a frame of a first digital signal having a first bit rate into a frame of a second digital signal having a second bit rate, the useful digital signal having been previously written into a first elastic memory, and read out of the first elastic memory in the frame of the first digital signal using a pulse stuffing technique, the arrangement comprising:

(a) a second elastic memory;

(b) a frame detector for detecting the frame of the first digital signal and controlling an activation of write-in of the useful digital signal from the frame of the first digital signal into said second elastic memory, the frame of the first digital signal containing data representative of an average value of a fill level of the first elastic memory;

(c) a frame generator, coupled to the second elastic memory, for generating the frame of the second digital signal and controlling an activation of a read-out of the useful digital signal from the second elastic memory into the frame of the second digital signal, said frame generator being responsive to a stuffing decision to perform pulse stuffing in the frame of the second digital signal;

(d) an integrator means, coupled to the second elastic memory, for determining an average value of a fill level of the second elastic memory;

(e) a subtraction means, coupled to said integrator means, for determining a difference between the average value determined by said integrator means and the average value of the fill level of the first elastic memory represented in the frame of the first digital signal, and outputting a digital difference signal representative of said difference;

(f) a digital filter, coupled to said subtraction means, for filtering said difference signal and outputting a filtered difference signal; and

(g) a pulse density modulator, coupled to said digital filter, for making the stuffing decision as a function of a value of the filtered difference signal and outputting the stuffing decision to said frame detector.

5,313,503

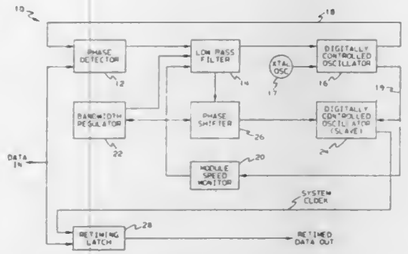
PROGRAMMABLE HIGH SPEED DIGITAL PHASE LOCKED LOOP

Timothy D. Jones, Kingston, and Peter P. Klinger, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,360

Int. Cl.[5] H03D *3/24*

U.S. Cl. 375—120 **12 Claims**



1. A digital phase locked loop comprising:

a phase detector receiving input digital data at a first input, a low pass filter connected to an output of the phase detector, and a digitally controlled oscillator connected to an output of said low pass filter, an output of the digitally controlled oscillator being connected to a second input of the phase detector to form a loop with said digitally controlled oscillator generating a clock output and said phase detector comparing said clock output with input digital data;

a delay string connected to said digitally controlled oscillator; and

speed monitoring means responsive to said delay string for determining variations in circuit speed of the digital phase locked loop due to at least one of manufacturing and environmental conditions, said speed monitoring means generating a first control digital word used by said low pass filter to adjust dynamic characteristics of the low pass filter.

5,313,504

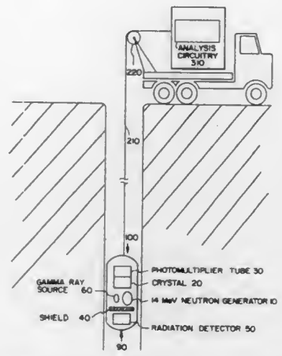
NEUTRON AND PHOTON MONITOR FOR SUBSURFACE SURVEYING

John B. Czirr, Mapleton, Utah, assignor to David B. Merrill, Salt Lake City; J. L. Carroll, Bountiful and Shanna Lee Czirr, Mapleton, all of Utah, a part interest to each

Filed Oct. 22, 1992, Ser. No. 964,966

Int. Cl.[5] G01T *3/00;* **G01V** *5/00*

U.S. Cl. 376—153 **17 Claims**



1. An apparatus to survey subsurface formations, said apparatus comprising:

(a) a sonde configured to move through a borehole, said sonde including a neutron generator that emits neutrons into said subsurface formations; and

(b) a lanthanum phosphate crystal detector, connected to said sonde, to monitor the neutron output of said neutron generator.

5,313,505

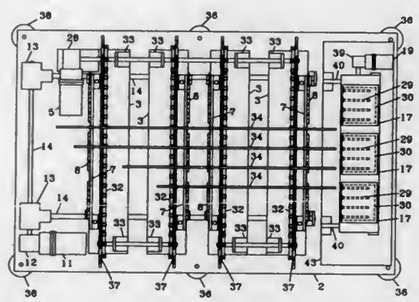
ROD HANDLING APPARATUS

William R. Salvesen, P.O. Box 626, Palisades Park, N.J. 07650

Filed Apr. 29, 1993, Ser. No. 55,669

Int. Cl.[5] G21C *19/00, 21/00*

U.S. Cl. 376—261 **8 Claims**



2. A powered apparatus with provisions for horizontal and vertical movement to transport multiple articles to and from processing units for simultaneously processing their ends, comprising;

(a) a base;

(b) a frame attached to the base;

(c) a mounting plate connected to the frame;

(d) a conveyor affixed to the mounting plate;

(e) conveyor chains attached to the conveyor such that sufficient chains are installed to support the articles to keep them from bending and flexing;

(f) conveyor V-blocks attached to the conveyor chains, spaced to line up with receptacles in the processing units, and to hold the articles for transport;

(g) an infeed ramp connected to the frame to load multiple articles individually onto the conveyor V-blocks for transport to the processing units for simultaneous processing;

(h) an end guide plate mounted on the infeed ramp to even up the ends of the articles;

(i) infeed ramp fingers connected to the infeed ramp to feed the articles individually to the conveyor V-blocks;

(j) conveyor drive means to move the conveyor chains longitudinally and horizontally so that a multiple of the articles are loaded individually from the infeed ramp onto the conveyor V-blocks at predetermined spacing and moved to align the vertical axes (y axes) of both the articles and receptacles in the processing units, to stop to process the articles and, after such processing, to move the articles for unloading;

(k) conveyor controller means to program the action of the conveyor drive means;

(l) lift plates attached to the frame, straddling the conveyor chains;

(m) lift plate V-blocks mounted on the lift plates, aligned with the receptacles in the processing units and spaced the same as the conveyor V-blocks, to support the articles when they are raised and lowered vertically, each lift plate V-block holding one article;

(n) eccentric arms attached to the lift plates to raise and lower the lift plate V-blocks vertically;

(o) lift plate drive means attached to the eccentric arms to rotate the eccentric arms a predetermined angle and raise the lift plate V-blocks vertically which remove the articles from the conveyor V-blocks when the articles are to be raised and align the articles for insertion into the receptacles of the processing units, thus compensating for various cross-sectional sizes of the articles and for the difference in height between the receptacles and the conveyor V-blocks, then lower the multiple articles after they have been processed simultaneously and restore them to the conveyor V-blocks;

(p) lift plate controller means to program the action of the lift plate drive means;

(q) exit ramp attached to the frame to unload the articles which have been processed.

5,313,506

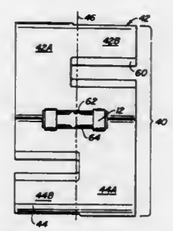
REDUCED PRESSURE DROP FERRULE SPACER

Bruce Matzner, San Jose, Calif., and Eric B. Johansson, Wrightsville Beach, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 25, 1992, Ser. No. 857,153

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—441 **14 Claims**



14. In a fuel bundle including:

a lower tie plate for supporting a plurality of upstanding fuel

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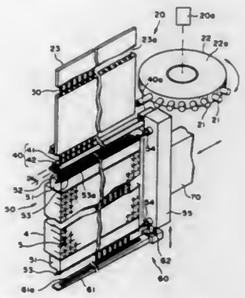
rods and permitting the entry of water coolant around said fuel rods;
an upper tie plate for holding the upper end of at least some of said fuel rods and permitting the exit of water coolant and generated steam from said fuel bundle;
a channel surrounding said fuel bundle including said lower tie plate, said fuel rods and said upper tie plate to define an isolated flow path through said fuel bundle; and
at least one improved ferrule spacer for use with fuel rod arrays within boiling water reactor fuel bundles comprising in combination;
a matrix of ferrules for surrounding fuel rods at selected elevations within said fuel bundle, said matrix of ferrules constructed from first and second ferrules arrayed in discrete mating ferrule pairs with said first and second ferrules of said pair thereof extending along spaced parallel axes;
each said ferrule being divided into upper and lower ferrule halves with at least one ferrule half having walls removed therefrom;
the other ferrule half having ferrule walls present;
each said ferrule half with walls removed being laterally juxtaposed to a ferrule half having said walls present whereby said ferrule pair at said respective ferrule halves together define solely a single wall between adjacent fuel rods along a line extending parallel to said axis and along a tangency between the ferrule pair;
fuel rod stops carried by said first and second ferrules; and
means carried by said spacer for receiving and confining a spring for biasing fuel rods within said ferrules toward said stops.

5,313,507

APPARATUS FOR ATTACHING KEY MEMBER TO NUCLEAR FUEL ASSEMBLY GRID AND DETACHING SAME THEREFROM

Katsunori Obuchi; Junichi Oyama, and Akio Sando, all of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 972,370
Claims priority, application Japan, Nov. 8, 1991, 3-293438
Int. Cl.[5] G21C *3/00*
U.S. Cl. 376—462 **7 Claims**



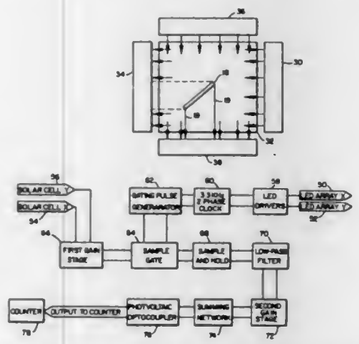
1. An apparatus for attaching a key member to a nuclear fuel assembly grid and detaching the same therefrom, said key member having a longitudinal axis and being adapted to be detachably attached to the grid by rotating the same about the longitudinal axis, said apparatus comprising:
(a) supply and recovery means for supplying the key member to a prescribed position adjacent to the grid and recovering the same;
(b) inserting and removing means disposed between said supply and recovery means and said grid for inserting the key member supplied from said supply and recovery means into the grid and removing the key member from the grid to recover the same to said supply and recovery means; and
(c) rotating means disposed adjacent to said inserting and removing means for rotating the key member inserted in the grid in a prescribed direction about said longitudinal axis to attach the same to the grid and rotating the same in a direction opposite to said prescribed direction to detach the same from the grid.

5,313,508

METHOD OF AND APPARATUS FOR DETECTING AND COUNTING ARTICLES

John L. Ditman, Buckeystown, and David J. Holmes, III, Annapolis, both of Md., assignors to Batching Systems, Inc., Owings, Md.

Filed Dec. 23, 1991, Ser. No. 812,010
Int. Cl.[5] G06M *7/00*
U.S. Cl. 377—6 **8 Claims**



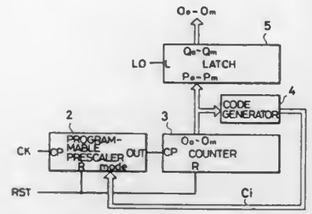
1. A method of detecting and counting articles of arbitrary size, shape, and orientation that travel along a passageway, said method comprising:
a. providing first and second light sources, each light source providing an elongated light beam that extends across a passageway through which pass articles to be detected and counted, the light sources each oriented to provide a respective light beam that extends across the passageway at an angle to the other light beam to define a sensing plane within the passageway;
b. providing first and second light detectors, each detector spaced from, positioned opposite to and adapted to receive light from a respective one of the first and second light sources to provide an individual output signal representative of the amount of light reaching the respective detector when an article to be counted passes through the light beam;
c. operating the first and second light sources alternately so that only one of the first and second light sources is operative at a given time;
d. alternately sensing the quantity of light that impinges upon the respective light detectors as an article passes through the sensing plane defined by the respective light beams and providing an output signal from each light detector that is representative of the quantity of light impinging on the respective detector;
e. adding together the individual output signals form the respective detectors to provide a combined detector output signal;
f. counting successive combined output signals that differ in a predetermined magnitude form a predetermined combined detector output signal level to provide a count of the number of articles passing the first and second light detectors in the passageway.

5,313,509

PULSE COUNTER WITH ARBITRARY OUTPUT CHARACTERISTIC

Shozo Tomita, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1992, Ser. No. 851,780
Claims priority, application Japan, Mar. 22, 1991, 3-059206
Int. Cl.[5] H03K *21/38*
U.S. Cl. 377—44 **18 Claims**



1. A pulse counter comprising:
a first counter including a clock terminal for receiving an input clock signal having a plurality of clock pulses and a reset terminal for receiving a prescaled clock signal having a plurality of prescaled clock pulses, said first counter counting the clock pulses of the input clock signal to produce a first count signal, and being initialized by the prescaled clock pulses of the prescaled clock signal;
a decoder for receiving a code signal and producing a prescale mode signal in response to the code signal;
a mode selecting circuit, coupled to said first counter and said decoder, for producing an instruction signal in response to the prescale mode signal and the first count signal;
a divided clock pulse output circuit, coupled to said mode selecting circuit and said first counter, for producing the prescaled clock pulses of the prescaled clock signal in response to the clock pulses of the input clock signal and the instruction signal;
a second counter, coupled to said divided clock pulse output circuit, for counting the prescaled clock pulses of the prescaled clock signal to produce a second count signal;
a code generator, coupled between said second counter and said decoder, for producing the code signal in response to the second count signal; and
a latch circuit, coupled to said second counter, for receiving a latch signal and the second count signal, and for latching the second count signal in response to the latch signal.

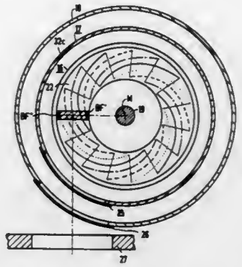
5,313,510

X-RAY TUBE FOR COMPUTER TOMOGRAPHY

Johannes Ebersberger, Erlangen, and Heinrich Stoehr, Adelsdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 913,912
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1991, 4124294
Int. Cl.[5] H01J *35/30*
U.S. Cl. 378—12 **68 Claims**

22. A method for operating an x-ray tube in a computer tomography system comprising the steps of:
in an x-ray tube, generating an electron beam and directing said electron beam to a rotating anode having an anode surface with an incident area on which said electron beam is incident on a focal spot to cause the generation of x-rays, said anode surface having a circumferential direction;
directing said x-rays onto a radiation detector with an examination subject disposed between said x-ray tube and said radiation detector and generating output signals from said detector corresponding to the radiation incident on said detector;
moving said x-ray tube and said radiation detector through a plurality of successive scanning positions relative to said examination subject;
sampling said output signals in said plurality of successive scanning positions; and



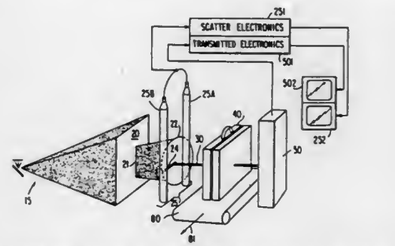
periodically radially deflecting said electron beam in a deflection direction intersecting said circumferential direction for moving said focal spot radially on said anode surface from an initial position to a final position once per scanning position.

5,313,511

X-RAY IMAGING PARTICULARLY ADAPTED FOR LOW Z MATERIALS

Martin Annis, Cambridge, and Paul J. Bjorkholm, Sharon, both of Mass., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Continuation of Ser. No. 216,586, Jul. 8, 1988, abandoned, which is a continuation of Ser. No. 876,632, Jun. 20, 1986, Pat. No. 4,799,247. This application Dec. 18, 1991, Ser. No. 809,246
Int. Cl.[5] G01N *23/201*
U.S. Cl. 378—87 **8 Claims**



1. An imaging system for inspecting an object to detect the presence and shape of high Z and low Z material components of said object to facilitate simultaneous detection of high z components such as metal weapons and low z components such as narcotics, explosives and plastic weapons, said system comprising:
a) a source of penetrating radiation,
b) means for forming radiation emitted by said source into a beam of predetermined cross-section,
c) means for scanning said beam across said object to be inspected,
d) means for moving said object relative to said source of radiation,
e) first radiant energy detector means located to be responsive to radiant energy penetrating said object and emerging from said object, substantially unchanged in direction,

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for producing first electrical signals primarily representative of high Z material components of said object,

f) second radiant energy detector means responsive to radiant energy scattered by said object for producing second electrical signals primarily representative of low Z material components of said object, and

g) display means responsive to said first and second electrical signals for separately, independently and simultaneously producing first and second separate visual displays, said display means including a first display means responsive only to said first electrical signals to produce said first visual display representative of the high z material components of the object, a second display means responsive only to said second electrical signals to produce said second visual display representative of the low z material components of the object, said first and second display means located closely adjacent to one another to facilitate comparison of said first and second visual displays with one another,

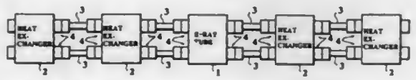
wherein said first radiant energy detector means includes a radiant energy detector with the dimension of an effective active region substantially identical to one dimension of said beam cross-section and in which said second radiant energy detector means includes a radiant energy detector with all dimensions of an effective active region substantially larger than any dimension of said beam cross-section.

5,313,512

X-RAY TUBE DEVICE WITH DETACHABLE HEAT EXCHANGER

Shigeru Tanaka, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 666,718, Mar. 8, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,667
Claims priority, application Japan, Mar. 8, 1990, 2-059097
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—200 **10 Claims**



1. An X-ray tube device, comprising:

an X-ray tube;

at least one heat exchanger means for cooling the X-ray tube by using a circulation of insulating oil;

a plurality of oil hoses for transmitting the insulating oil between the X-ray tube and the heat exchanger means; and

at least one coupler means for connecting the X-ray tube and the heat exchanger means through the oil hoses by being in a coupled state, and for disconnecting the X-ray tube and the heat exchanger means through the oil hoses by being in a decoupled state, each coupler means having one coupling end equipped with an oil pan to be filled with the insulating oil at a time of forming the coupled state with another coupling end.

5,313,513

ANNULAR COMPUTED TOMOGRAPHY

James E. Prindiville, Antioch; Michael P. Skipalis, Vallejo, and Hayden G. Martin, Dublin, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

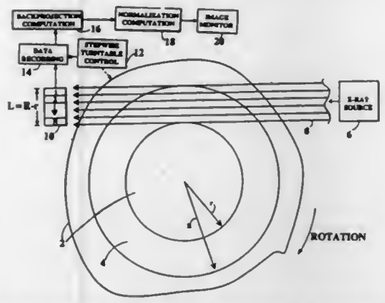
Filed May 11, 1993, Ser. No. 59,846
Int. Cl.[5] G01N *23/18*; G01B *15/06*
U.S. Cl. 378—4 **8 Claims**

1. A method of conducting computed tomography examination of an annulus of interest in an object, said annulus having a radial thickness which is substantially shorter than its radius, while ignoring the core of the object, the radius of the annulus defining, in rotation, a plane, comprising the steps of

a. passing a group of x-ray beams in said plane through the object,

b. detecting the attenuation of said x-ray beams at an array of points in said plane after the x-ray beams have passed through the annulus of interest, the array of points extending across the path of the x-ray beams for a distance substantially shorter than said radius,

c. causing stepwise relative rotational motion between the x-ray beams and the object,



d. recording data defining said attenuation for each of the points in said array of points for each step of said stepwise rotational motion,

e. backprojecting the recorded attenuation data onto an array defining a recorded interim reconstructed image, and

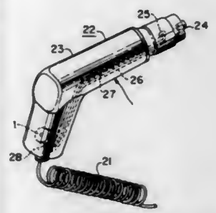
f. normalizing the array defining the interim reconstructed image to compensate for the varying number of items of recorded attenuation data used in constructing the interim image by backprojection, thereby to generate the final reconstructed image.

5,313,514

HANDS FREE APPARATUS FOR LAND MOBILE RADIO TELEPHONE

Hisanori Kanasashi, Yamato, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 19, 1992, Ser. No. 836,954
Claims priority, application Japan, May 7, 1991, 3-101270; May 7, 1991, 3-101282; May 21, 1991, 3-116111; Aug. 21, 1991, 3-209176; Aug. 21, 1991, 3-209177; Aug. 21, 1991, 3-209187
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **6 Claims**



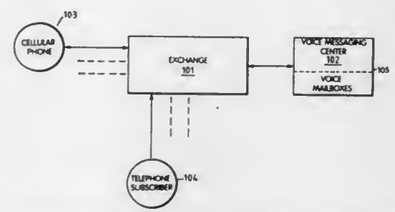
4. A land mobile radio telephone apparatus comprising a radio telephone apparatus body disposed in a vehicle, power being supplied to said apparatus body via cables from a cigar lighter plug for insertion into a cigar lighter socket provided in front of a driver's seat in the vehicle, a microphone unit incorporated in said cigar lighter plug for inputting speeches to be transmitted, and a speaker unit for outputting received speeches and a circuit unit for suppressing sound coupling of said microphone unit and said speaker unit, said speaker unit and said suppressing circuit being provided in said radio telephone apparatus body, wherein the microphone unit for inputting speeches to be transmitted, said microphone unit having an adjustable directivity, is provided in said cigar lighter plug by means of a directivity adjusting mechanism.

5,313,515

CALL COMPLETION SYSTEM WITH MESSAGE WRITING INDICATION UPON REGISTRATION OF MOBILE WITH BASESTATION

Michael Allen, Pirbright; John Garrett, Ipswich; Howard Green, London, and Andrew Holland, Southend-on-Sea, all of England, assignors to Telecom Securicor Cellular Radio Limited, London, England

Filed Aug. 24, 1990, Ser. No. 571,863
Claims priority, application United Kingdom, Aug. 25, 1989, 8919323
Int. Cl.[5] H04M *11/10*
U.S. Cl. 379—59 **32 Claims**



1. A communications system for connecting calls from a first user terminal to a desired one of a plurality of second user terminals via a network and operable if the system is unable so as to connect the first user terminal to the desired second user terminal, to store a message from the first user terminal, characterised in that the system includes means for detecting the registration of the second user terminal with the network, where registration is the transition from a state where the second user terminal is unable to make or receive calls to a state where it is able to do so, and means for automatically transmitting a message indication signal to the second user terminal when the second user terminal registers with the network, in the event that such a message has been stored, and wherein the system establishes a call to the second user terminal to deliver said message indication signal, which comprises a recorded voiced message.

5,313,516

TELEPHONE ANSWERING DEVICE WITH AUTOMATIC FUNCTION

Eskandar Afshar, Lomita, and Mark Karnowski, Garden Grove, both of Calif., assignors to PhoneMate Inc., Torrance, Calif.

Continuation of Ser. No. 531,143, May 31, 1990, abandoned. This application May 7, 1992, Ser. No. 883,045
Int. Cl.[5] H04M *1/57, 1/65*
U.S. Cl. 379—67 **14 Claims**

1. A telephone answering device comprising:

incoming message recording means for recording and playing back messages from a caller;

outgoing message recording means for recording and playing back a plurality of messages prerecorded by an owner, including a transfer message for audibly indicating that a message has been recorded on said incoming message recording means by a caller;

automatic dialing means including means for storing at least one message transfer telephone number of a remote telephone and means for automatically dialing said at least one message transfer telephone number;

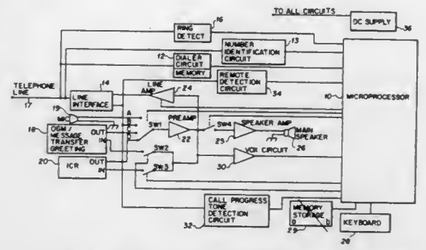
telephone number memory storage means for storing a plurality of telephone numbers of potential callers; and

control means including:

means for activating said automatic dialing means to dial said at least one message transfer telephone number when an incoming message from a caller, having a telephone number matching one of said plurality of telephone numbers stored in said telephone number memory storage means, is recorded in said incoming message recording means;

means for controlling playback of said transfer message recorded in said outgoing message recording means when a voice signal from the remote telephone is detected;

means for sensing a busy tone indicating an in-use condition of a telephone line to which the remote telephone is connected;



means for sensing and counting a predetermined number of ringback tones indicating that the called party is unavailable;

means for automatically redialing said at least one message transfer telephone number at a predetermined time after a busy tone or said predetermined number of ringback tones is sensed and counted; and

means for permitting remote control of at least one function relating to transfer of messages recorded in said outgoing message recording means and incoming recording means, said at least one function including remotely changing said at least one message transfer telephone number which said automatic dialing means automatically dials when activated by said control means in response to a recording of an incoming message on said incoming recording means.

5,313,517

AUTOMATIC BUSY MESSAGE SENDING SYSTEM FOR TELEPHONE COMMUNICATION

Teruaki Inaguma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 896,863
Claims priority, application Japan, Jun. 12, 1991, 3-139374
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—67 **3 Claims**

1. An electronic switching system comprising:

a plurality of subscriber telephone sets;

a switching means;

line circuits for respectively connecting said subscriber telephone sets to said switching means;

a central processing unit for controlling said switching means to selectively form a communication path between the telephone set of a calling subscriber and the telephone set of a called subscriber designated as desired with a dial signal from the telephone set of the calling subscriber;

a supplying means for supplying a busy signal representing busy status, when the telephone set of said called sub-

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scriber is busy, to the telephone set of said calling subscriber;

detecting means for detecting, in cooperation with said line circuits, a beginning and an end of an off-hook status of each of said subscriber telephone sets;

a pulsing means for allowing said detecting means to supply probe pulses with a predetermined period to said line circuits;

a first memory for storing status indicating signals supplied from each of said line circuits in response to said probe pulses;

a second memory to which the stored contents of said first memory is transferred before said period has lapsed;

means for comparing the stored contents of said first and second memories;

BUSY STAT. DURATION	CHANNEL NUMBER	BUSY MESSAGE
IDLE	0	———
00'00"–00'59"	1	THIS LINE BECAME BUSY JUST NOW
01'00"–01'59"	2	THIS LINE HAS BEEN BUSY FOR OVER 1 MINUTE
02'00"–02'59"	3	THIS LINE HAS BEEN BUSY FOR OVER 2 MINUTES
03'00"–03'59"	4	THIS LINE HAS BEEN BUSY FOR OVER 3 MINUTES
. . .	. . .	. . .
OVER 14'00"	15	THIS LINE HAS BEEN BUSY FOR OVER 14 MINUTES

standard time means for generating a time signal;

memory means for memorizing a beginning time of said off-hook status based on said time signal;

calculating means for calculating, when a dial signal corresponding to the telephone number of said subscriber telephone set in said off-hook status has been received, the duration of the busy status from the beginning of said off-hook status until said dial signal was received, said calculation performed on the basis of said time signal and the output of said memory means; and

voice message signal generating means responsive to the output of said calculating means for generating a voice message signal corresponding to said duration of the busy status and supplying said voice message signal to said supplying means.

5,313,518

ELECTRONIC LOCKING DEVICES

Toshihiko Yamashita, 4-43 chome, Shibata, Kita-ku, Osaka 530, Japan

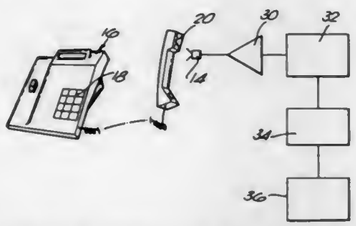
PCT No. PCT/GB90/00408, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO90/11423, PCT Pub. Date Oct. 4, 1990

PCT Filed Mar. 19, 1990, Ser. No. 768,620

Claims priority, application United Kingdom, Mar. 28, 1989, 8906983

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—102 **7 Claims**



1. A method for releasing a lock comprising the steps of:

providing a piece of furniture having a lockable compartment;

placing a handset of a telephone near a sound receiver attached to the piece of furniture;

dialing a coded number on the telephone so that audible tones corresponding to the coded number are produced by the telephone;

receiving the audible tones with the sound receiver;

comparing the audible tones with a preselected code for releasing the lock; and

releasing the lock if the audible tones correspond with the preselected code.

5,313,519

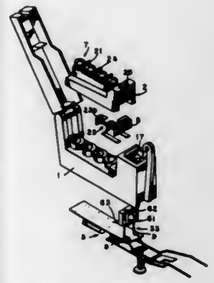
PROTECTED TELEPHONE NETWORK INTERFACE DEVICE

N. Peter Mickelson, Gorham; John J. Napiorkowski, Cape Elizabeth, both of Me., and Kelley L. Chico, Uniontown, Pa., assignors to Siecor Puerto Rico, Inc., Hickory, N.C.

Continuation of Ser. No. 956,144, Oct. 5, 1992, which is a continuation of Ser. No. 844,887, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 523,457, May 15, 1990, Pat. No. 5,153,910. This application Apr. 15, 1993, Ser. No. 46,902

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—399 **22 Claims**



1. A jack unit for stackable assembly in telephone network interface apparatus, comprising:

a base structure body having generally rectangularly arranged, vertically disposed, integrally formed sides adapted for close side-by-side disposition with correspondingly configured base structure bodies in said telephone network interface apparatus;

means for connecting telephone company wiring to said base structure body;

means for connecting subscriber wiring to said base structure body;

means including a jack for selectively electrically interconnecting said telephone company wiring and said subscriber wiring;

means on said base structure body for removable securing it in said telephone network interface apparatus;

means forming a protector assembly carried by said base structure body within said vertically disposed sides thereof, said protector assembly including means for protecting said unit against excessive voltages conducted by said telephone company wiring;

said protector assembly including switching means and a ground contact operatively connect in parallel with said telephone company wiring for protecting said unit against excessive voltages;

said base structure body including an enclosed chamber, defined by the sides of said base structure body; a circuit board mountedly disposed in said chamber; a ground plate secured to said base structure body in spaced relation to said circuit board; and said protector assembly containing

conductor pins extending between and connecting said circuit board and said round plate for securing said protector assembly in said chamber.

5,313,520

METHOD AND DEVICE FOR PROTECTING DATA OF ROM

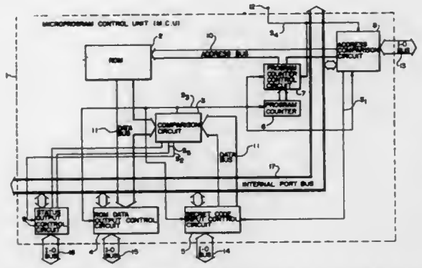
Dae K. Han, Kyungki, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Chungcheongbuk, Rep. of Korea

Continuation of Ser. No. 665,987, Mar. 7, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,105

Claims priority, application Rep. of Korea, Mar. 9, 1990, 3159/1990

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **10 Claims**



2. A device for protecting data stored in a ROM of a microprogram control unit comprising:

a) a code address comparison circuit which, after receiving a mode control signal from outside of the microprogram control unit indicating an attempt to read the data stored in the ROM,

i) checks whether a code address inputted from outside the microprogram control unit agrees with a predetermined code address previously stored in the code address comparison circuit, and then

ii) outputs an address matching signal and the stored predetermined code address when the inputted code address agrees with the stored predetermined code address;

b) a ROM which outputs predetermined code data stored at the predetermined code address after the ROM receives the predetermined code address outputted from the code address comparison control circuit;

c) a comparison circuit which

i) compares the predetermined code data outputted from the ROM with code data inputted from outside the microprogram control unit, and when the predetermined code data and the inputted code data agree with each other,

ii) outputs a code data matching signal to cause a status bit, which is outputted outside the microprogram control unit and which has two states, to change from one state to the other state and, at the same time,

iii) checks the state of the status bit and, when the status bit is set to a predetermined state, then

iv) outputs an address reset signal to enable data stored in the ROM to be read to outside the microprogram control unit; and

d) a program counter which

i) deactivates when the program counter receives the mode control signal, and which

ii) activates and resets an internal address counter to zero when the program counter receives the address reset signal.

5,313,521

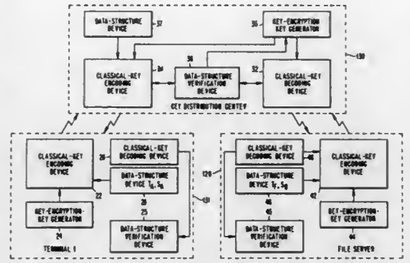
KEY DISTRIBUTION PROTOCOL FOR FILE TRANSFER IN THE LOCAL AREA NETWORK

Naoya Torii, Kawasaki, Japan, and David B. Newman, Jr., La Plata, Md., assignors to Fujitsu Limited, Japan

Filed Apr. 15, 1992, Ser. No. 868,571

Int. Cl.[5] H04L *9/08*

U.S. Cl. 380—21 **28 Claims**



1. A cryptographic communications system for use with a first terminal, a file server, a key-distribution center, and a communications channel, comprising:

first generating means, located at said first terminal, for generating a first identification signal and a request signal;

first encoding means, located at said first terminal and coupled to said first generating means and said communications channel, for transforming, using a Data Encryption Standard (DES) encryption algorithm with a first encryption-key signal, the first identification signal and the request signal, to a first ciphertext signal, and for transmitting the first ciphertext signal over said communications channel;

first decoding means, located at said key-distribution center and coupled to said communications channel, for decoding, using a Data Encryption Standard (DES) decryption algorithm with the first encryption-key signal, the first ciphertext signal, thereby generating the first identification signal and the request signal;

first verifying means, located at said key-distribution center and coupled to said first decoding means, for verifying the first identification signal, and responsive to verifying the first identification signal, for generating a first verification signal;

second generating means, located at said key-distribution center and coupled to said first verifying means, and, responsive to the first verification signal, for generating a second identification signal;

second encoding means, located at said key-distribution center and coupled to said second generating means and said communications channel, for transforming, using the DES encryption algorithm with a second encryption-key signal, the first identification signal, the second identification signal and the request signal, to a second ciphertext signal, and for transmitting the second ciphertext signal over said communications channel;

second decoding means, located at said file server and coupled to said communications channel, for decoding, using the DES decryption algorithm with the second encryption-key signal, the second ciphertext signal, thereby generating the first identification signal, the second identification signal and the request signal;

second verifying means, located at said file server and coupled to said second decoding means, for verifying the second identification signal and for verifying access rights of the first identification signal for the request signal, and, responsive to verifying the second identification signal

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and the access rights, for generating a second verification signal;

third generating means, located at said file server and responsive to the second verification signal and the request signal, for generating a third identification signal, an answer signal and a communication-encryption-key signal;

third encoding means, located at said file server and coupled to said third generating means, said second decoding means and said communications channel for transforming, using the DES encryption algorithm with the second encryption-key signal, the communication-encryption-key signal, the answer signal, the first identification signal and the third identification signal, to a third ciphertext signal, and for transmitting the third ciphertext signal over said communications channel;

wherein said first decoding means, located at said key-distribution center, decodes, using the DES decryption algorithm with the second encryption-key signal, the third ciphertext signal, thereby generating the communication-encryption-key signal, the answer signal, the first identification signal and the third identification signal;

wherein said first verifying means verifies the third identification signal, and, responsive to verifying the third identification signal, generates a third verification signal;

wherein said second encoding means, responsive to the third verification signal, transforms, using the DES encryption algorithm with the first encryption-key signal, the communication-encryption-key signal, the answer signal, the first identification signal and the second identification signal, to a fourth encryption signal, and transmits the fourth encryption signal over said communications channel;

third decoding means, located at said first terminal and coupled to said communications channel, for decoding, using the DES decryption algorithm with the first encryption-key signal, the fourth ciphertext signal, thereby generating the communication-encryption-key signal, the answer signal, the first identification signal and the second identification signal;

third verifying means, located at said first terminal and coupled to said third decoding means, for verifying the first identification signal and the second identification signal, and, responsive to the answer signal and to verifying the first identification signal and the second identification signal, for generating a fourth verification signal; and

means, located at said first terminal and said file server, responsive to the fourth verification signal and the answer signal, and using the communication-encryption-key signal, for communicating between said first terminal and said file server with an encrypted signal.

5,313,522

APPARATUS FOR GENERATING FROM AN AUDIO SIGNAL A MOVING VISUAL LIP IMAGE FROM WHICH A SPEECH CONTENT OF THE SIGNAL CAN BE COMPREHENDED BY A LIPREADER

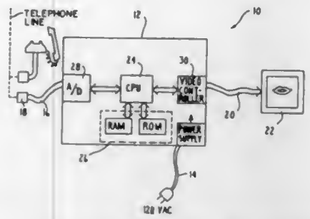
Robert P. Slager, 5205 Ridgebrook Dr., Kalamazoo, Mich. 49001

Continuation of Ser. No. 749,150, Aug. 23, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 48,075

Int. Cl.[5] G10L *9/00*

U.S. Cl. 381—48 **9 Claims**

1. An apparatus comprising: a circuit, means for coupling said circuit to a line carrying an audio speech signal, and display means coupled to said circuit, said circuit including means for breaking the audio speech signal into a series of successive phonemes representative of vowels and consonants, and means responsive to said series of phonemes for generating and for displaying on said display means an image of moving human lips substantially synchronized in real time to said audio speech signal and having an accuracy which permits a person with lipreading skills to comprehend a substantial portion of a speech content of the audio speech signal through lipreading of said image, said image including a succession of lip shapes



respectively corresponding to respective said phonemes in said series of phonemes.

5,313,523

SOUND VOLUME CONTROLLING APPARATUS

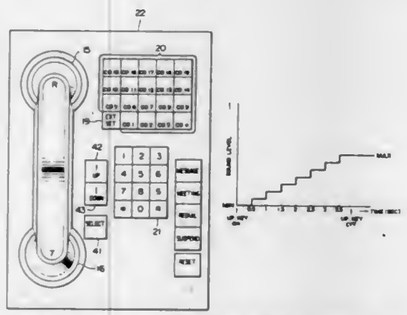
Yoshihiro Kawauchi, Hino, Japan, assignor to Kabusbiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 799,347, Nov. 27, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,580

Claims priority, application Japan, Nov. 28, 1990, 2-327558

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—104 **14 Claims**



10. A sound volume controlling apparatus, comprising:

key means operable manually for controlling sound volume;

time period detecting means coupled to said key means for detecting a time period of continuous operation of said key means, said time period beginning after a predetermined constant delay time and ending when the continuous operation of said key means ends;

wherein the time period detecting means comprises:

voltage generating means for continuously generating a constant voltage signal when said key means is being operated;

integrating means for integrating the constant voltage signal generated by said voltage means and generating an output signal responsive to the constant voltage signal; and

detection signal generating means coupled to said integrating means for generating a detection signal when the output signal exceeds a predetermined threshold value;

sound volume value determining means coupled to said time period detecting means for changing a sound volume value during the time period detected by said time period detecting means; and

sound volume changing means coupled to said sound volume determining means for changing sound in accordance with the soupd volume value determined by said sound volume value determining means.

5,313,524

SELF-CONTAINED ACTIVE SOUND REPRODUCER WITH SWITCHABLE CONTROL UNIT MASTER/SLAVE

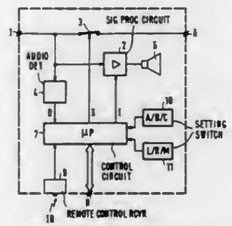
Steven T. F. Van Hulle; Rudi R. F. De Laet, and Omer C. J. Vanvuchelen, all of Leuven, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1992, Ser. No. 964,681

Claims priority, application European Pat. Off., Nov. 12, 1991, 91202933.7

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—105 **14 Claims**



1. An active sound reproducer, comprising:

an audio input for receiving an audio signal;

a signal processing circuit for processing the audio signal in response to applied setting signals;

a control input for receiving control signals including said setting signals;

a control circuit, coupled to the control input, for applying the setting signals to the signal processing circuit, characterized in that the sound reproducer has a control output for transmitting control signals and means for receiving remote control signals, and in that the control circuit is switchable in a "master mode" in which said control circuit is adapted to generate the setting signals and to apply said setting signals to the control output when remote control signals are received, and in a "slave mode" in which said control circuit is adapted to apply received remote control signals to said control output. said slave mode being effected even if the received remote control signals result in setting signals for controlling the active sound reproducer.

5,313,525

ACOUSTIC APPARATUS WITH SECONDARY QUARTERWAVE RESONATOR

Michael A. Klasco, Berkeley, Calif., assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Apr. 2, 1992, Ser. No. 861,935

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—159 **14 Claims**

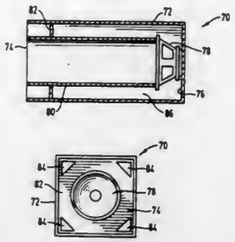
1. Acoustic apparatus comprising the combination of:

an enclosure having a front and an opposite rear wall;

a speaker mounted on the rear wall within the enclosure;

a hollow member disposed within the enclosure and extending from the speaker to the front of the enclosure; and

a partition disposed between interior walls of the enclosure and an outer surface of the hollow member adjacent the front of the enclosure, the partition having at least one vent therein, wherein the enclosure has an interior volume outside of the hollow member which combines with the partition having at least one vent therein and the speaker to form a bass reflex speaker system tuned to a first frequency, and the hollow member forms a quarterwave



resonator tuned to a second frequency higher than the first frequency.

5,313,526

METHOD FOR DISCONNECTING CHARACTER STRINGS OF A COMPRESSED IMAGE

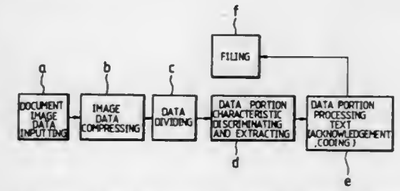
Chan E. Cheong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 30, 1991, Ser. No. 815,930

Claims priority, application Rep. of Korea, Dec. 29, 1990, 22456/1990

Int. Cl.[5] G06K *9/34*

U.S. Cl. 382—9 **3 Claims**



1. A method for disconnecting character strings connected to a photographic/graphic data block from said photographic/graphic data block of a compressed image including a plurality of image blocks, comprising the steps of:

(S1) scanning sequentially each of said image blocks of said compressed image to determine whether or not each image block is a photographic/graphic block;

(S2) retrieving a left side, and then a right side of said image block examined as a photographic/graphic block in the step (S1) to detect to which side of said image block at least one character string thereof is connected, while also obtaining a character string position information; and

(S3) disconnecting said at least one character string connected to said image block, and resetting an X-coordinate and a Y-coordinate of each said character string and of said photographic/graphic block;

wherein the step (S2) comprises the sub-steps of:

(S2a) retrieving said left side of said image block while obtaining a character string information for said image block, comprising the further sub-steps of:

(S2a-1) examining said image block from left to right and from top to bottom, pixel by pixel, while counting only white pixels (TP) being scanned, until a contour pixel not corresponding to a starting point of each pixel line of said image block is first detected;

(S2a-2) updating a maximum value of an X-coordinate of a first detected contour pixel and setting said maximum value for a character string width (WX):

(S2a-3) determining whether a pixel line being scanned is a space pixel line, and then whether said space pixel line is

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a first space pixel line, and setting a present value of a Y-coordinate for an end Y-coordinate value of a present character string, if said pixel line is said space pixel line;

(S2a-4) setting a present value of a Y-coordinate for a start Y-coordinate value of said present character string when said pixel line being scanned is identified as a character pixel line in the step (S2a-3) after a predetermined number of said pixel lines are scanned;

(S2a-5) determining whether said pixel line being scanned is a last pixel line, and scanning a next pixel line if said pixel line is not the last pixel line; and

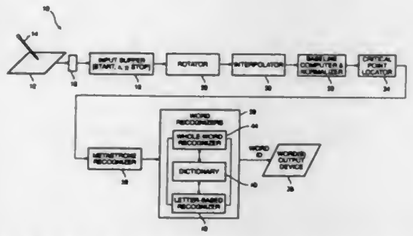
(S2a-6) determining whether said image block has at least one character string connected to, on said left side, in accordance with a number of said character strings detected.

5,313,527

METHOD AND APPARATUS FOR RECOGNIZING CURSIVE WRITING FROM SEQUENTIAL INPUT INFORMATION

Shelja A. Guberman; Ilia Lossev, and Alexander V. Pashintsev, all of Moscow, Russian Federation, assignors to Paragraph International, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 712,180, Jun. 7, 1991, abandoned. This applicatioo Sep. 24, 1992, Ser. No. 954,351
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—13 **20 Claims**



1. A method for recognizing cursive handwritten words from the dynamics of the input strokes, said method comprising the steps of:

receiving input signals having values representative of a sequence of points symbolizing handwriting and of a beginning point and of an ending point of said sequence of points;

selecting as a candidate word the sequence of points bounded by said beginning point and said ending point;

replacing said candidate word with a string of input metastrokes in sequential order, each metastroke being representative of an element of a cursive handwritten cipher, to obtain a preliminary metastroke string for each said candidate word;

constructing word correlation tables, by use of a feature correlation table of all metastrokes forming a vocabulary, said feature correlation table relating input metastrokes to vocabulary metastrokes, for selecting strings of vocabulary metastrokes corresponding to said candidate word, said strings of vocabulary metastrokes comprising a listing of entries compiled from variants of known strings of said metastrokes;

extracting a single candidate maximum score for each one of said word correlation tables only upon completion of said word correlation table; and

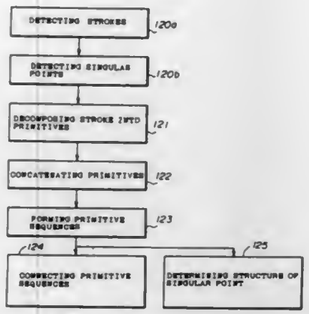
identifying, to an output device, upon completion of said constructing step, based on the highest one of said maximum scores, a most likely match between said candidate word and one of said strings of vocabulary metastrokes.

5,313,528

METHOD FOR EXTRACTING FEATURES FROM ON-LINE HANDWRITTEN CHARACTERS

Hirobumi Nishida, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,051
Claims priority, application Japan, Nov. 29, 1990, 2-332591
Int. Cl.[5] G06K *9/46, 9/50*
U.S. Cl. 382—23 **4 Claims**



1. A method for extracting features from a character which is input to an on-line input means by writing the character by hand, said on-line input means successively outputting stroke information indicating points on strokes of the handwritten character, said method comprising the steps of:

(a) detecting strokes of the handwritten character based on the stroke information output from said on-line input means;

(b) detecting singular points from the points on the strokes of the handwritten character based on the stroke information output from said on-line input means, wherein each of said singular points is defined as a pair of points on the strokes of the handwritten character, which points are written at different times but have substantially the same coordinates as each other;

(c) obtaining primitive sequences forming each of said strokes detected by said step (a), each of said primitive sequences is formed of primitives, each primitive of which is a monotone curve which is either non-increasing or non-decreasing;

(d) determining a connective relationship between primitive sequences of each of the strokes; and

(e) determining a structure of each of the singular points detected by said step (b) based on:

(1) primitive sequences including said each of the singular points; and

(2) a coupling of the primitive sequences including said each of the singular points;

wherein:

A) said on-line input means includes:

1) means for sampling points on the strokes of the handwritten character at a predetermined time rate; and

2) means for outputting the sampled point as the stroke information;

B) said step (b) includes (b-1) detecting the singular points based on a location of: (i) a first line segment connecting sampled points p_1 and p_2 and (ii) a second line segment connecting sampled points q_1 and q_2; and

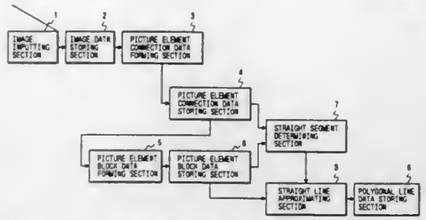
C) said step (b-1) includes detecting a pair of the sampled points p_1 and q_1 as one of the singular points when the first and second line segments are crossed in a state in which coordinates of the sampled points p_1 and q_1 are equal to each other.

5,313,529

SYSTEM FOR REPRESENTING LINE DRAWINGS BY POLYGONAL LINES

Katsuhiko Itonori, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 739,232, Aug. 1, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 47,075
Claims priority, application Japan, Aug. 8, 1990, 2-208118
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—24 **12 Claims**



1. A system for representing line drawings by polygonal lines comprising:

picture element connection data forming means for scanning a binary digital image in a main scanning direction to form sets of picture element connection data, each set having a start point picture element where a background picture element value of the image changes to a drawing picture element value and having an end point picture element where the drawing picture element value changes to the background picture element value, said start point picture element and said end point picture element of each set of picture element connection data lying in one scanning line in the main scanning direction;

picture element block data forming means for detecting relationships between sets of picture element connection data which are adjacent in a direction perpendicular to said main scanning direction and for forming picture element block data from sets of picture element connection data having predetermined relationships;

straight segment determining means for determining from each picture element block data whether or not the picture element block thereof represents a straight segment; and

straight line approximating means for providing straight line approximation data according to both the uppermost element connection data and the lowermost picture element connection data in said picture element block in response to a determination by said straight segment determining means that said picture element block represents a straight segment.

5,313,530

CALCULATING APPARATUS AND METHOD OF ENCRYPTING/DECRYPTING COMMUNICATION DATA BY USING THE SAME

Keiichi Iwamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 847,672
Claims priority, application Japan, Mar. 5, 1991, 3-038664; Mar. 6, 1991, 3-040115; Sep. 5, 1991, 3-225986
Int. Cl.[5] H04L *9/30;* **G06F** *7/52*
U.S. Cl. 380—28 **15 Claims**

15. A communication method comprising the steps of:

receiving bit data representing a cryptogram C;

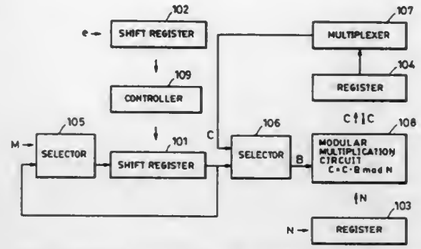
obtaining bit data representing information $M=C^d \bmod N$ for the received bit data representing cryptogram C from given integers d and N by a repetition of modular multiplication of two integers while making N to be a modulo said modulo multiplication of the two integers comprising steps of:

inputting a first bit data representing the first integer;

sequentially inputting a second bit data representing the second integer by a predetermined number of bits;

sequentially multiplying the first bit data with the predetermined number of bits of the second bit data;

obtaining a residue by dividing, a bit portion of double of a third bit data in a register, higher than the most significant



bit of a bit data representing the integer N, by the integer N;

adding a bit portion of the double of the third bit data in the register not higher than the most significant bit of the bit data representing the integer N, a result of said multiplication, and the obtained residue to one another; and

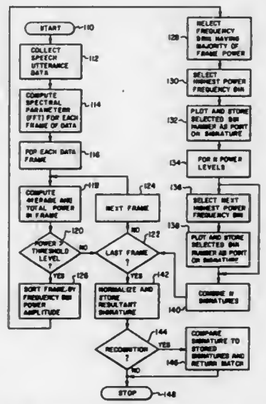
storing the result of the addition as a new third bit data in said register.

5,313,531

METHOD AND APPARATUS FOR SPEECH ANALYSIS AND SPEECH RECOGNITION

John W. Jackson, Southlake, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1990, Ser. No. 610,888
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—41 **19 Claims**



1. A method for analyzing human speech, said method comprising the steps of:

representing a speech utterance as a temporal sequence of frames, each frame representing acoustic parameters at one of a succession of brief time periods;

analyzing each frame of acoustic parameters to obtain a plurality of spectral parameters, each of said plurality of spectral parameters representing an energy level at one of a series of different frequency bins;

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identifying a spectral parameter within each frame having the highest energy level within that frame; and

plotting an indication of said spectral parameters having the highest energy level for each frame in said temporal sequence to form a first continuous signature representative of said speech utterance.

5,313,532

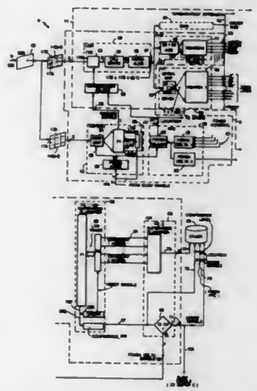
RECOGNITION OF PATTERNS IN IMAGES

Robert L. Harvey, Lexington; Paul N. DiCaprio, Belmont, and Karl G. Heinemann, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 489,470, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 468,681, Jan. 23, 1990, abandoned. This application Oct. 28, 1991, Ser. No. 784,634

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—15 **34 Claims**



1. Apparatus for recognizing, as one of at least two possible patterns, a pattern within an image based on visual characteristics of the pattern, said image being represented by signals whose values correspond to said visual characteristics, comprising

a location channel which determines the location of the pattern within the image based on the signal values, and

a classification channel which categorizes the pattern based on the signal values and generates an indication of the pattern's object identity from among a set of possible identities, said classification channel comprising

addition means for summing said signal values to generate an indication of the overall size of said pattern,

orientation means for sensing edges of said pattern and generating indications of orientations of said edges, and

an unsupervised classifier which processes a classification spectrum comprised of said size indication and said orientation indications are based on said processing, automatically selects and associates characteristics from the spectrum to define categories,

said location channel and said classification channel operating simultaneously in parallel and cooperatively to recognize said pattern as said one of said patterns.

5,313,533

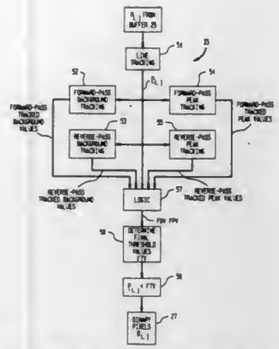
SYSTEM AND METHOD FOR BIDIRECTIONAL ADAPTIVE THRESHOLDING

Kevin C. Scott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 797,630, Jan. 25, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 125,081

Int. Cl.[5] G06K *9/38*

U.S. Cl. 382—50 **28 Claims**



1. An image processing system comprising:

a pixel sensor means for sensing a plurality of pixels of a grayscale image and for generating grayscale image data;

storage means connected to said sensor means for storing said grayscale image data:

forward tracking means for reading sets of said image data from said storage means and wherein each said set is read in a forward sequence along a scan line and for providing forward tracked background and peak functions having values for each of a plurality of pixels along the scan line;

reverse tracking means for reading said sets from said storage means in a reverse sequence and for providing reverse tracked background and peak functions having values for each of a plurality of pixels along the scan line;

threshold level means connected to said forward and reverse tracking means for generating threshold levels for pixels along the scan line derived from either said forward or said reverse tracked functions; and

a thresholding means for thresholding said grayscale image data, using said threshold levels, to provide binary image data.

5,313,534

IMAGE COMPRESSION METHOD

Gilles Burel, Rennes, France, assignor to Thomson-CSF, Puteaux, France

Filed Aug. 25, 1992, Ser. No. 936,199

Claims priority, application France, Sep. 20, 1991, 91 11609

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—56 **3 Claims**

1. A method for transmitting or storing a source image, said method using vector quantization, a prediction network, and an encoder to compress the source image, said method comprising the steps of

(a) dividing the source image into blocks of pixels,

(b) comparing each block with a plurality of vectors stored in a dictionary, each vector having an index,

(c) replacing each block of the source image with an index of the vector in the dictionary that is closest to the block of the image to obtain a compressed image, wherein blocks from the source image with similar content are replaced by indices located close to one another in the dictionary so that the compressed image is coherent with respect to the source image, and wherein i(x,y) is the index located at column x and row y of the compressed image,

(d) using a prediction network, generating a prediction i(x,y) for each index i(x,y) by receiving at an input of the prediction network a vector comprised of indices in the compressed image which are neighbors of i(x,y),

(e) transmitting a prediction error of each index, i(x,y)−i(x,y), to an encoder,

(f) at the encoder, encoding the prediction errors to generate encoded data, and

(g) transmitting the encoded data via transmission means or storing the encoded data in storage means.

5,313,535

OPTICAL PATH LENGTH MODULATOR

Gareth F. Williams, Jackson Heights, N.Y., assignor to Nynex Corporation, New York, N.Y.

Filed Feb. 27, 1992, Ser. No. 842,450

Int. Cl.[5] G02B *6/12*

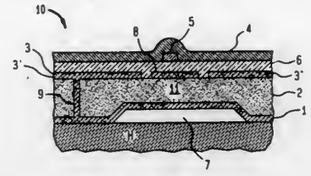
U.S. Cl. 385—14 **22 Claims**

1. An optical integrated circuit comprising:

an optical substrate;

an optical waveguide supported by said optical substrate;

a transducer incorporated in said optical integrated circuit and coupled to the optical substrate for selectively controlling a path length of the optical waveguide, said transducer comprising:



a region of piezoelectric material; and

electrode means for applying a voltage to said piezoelectric material to selectively cause the mechanical deformation of the piezoelectric material and the mechanical deformation of the waveguide so as to alter the optical path length of the waveguide by changing the physical length of the waveguide.

5,313,536

MODULAR PHOTONIC WAVEGUIDE DISTRIBUTION SYSTEM

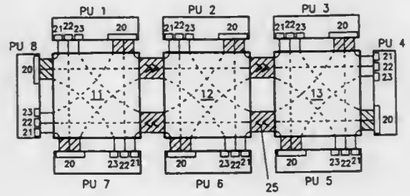
Frank Rossi, Burlington, Vt., and Werner Straehle, Dettenhausen, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1992, Ser. No. 990,870

Claims priority, application European Pat. Off., Dec. 18, 1991, 91121665.3

Int. Cl.[5] G02B *6/12*

U.S. Cl. 385—14 **11 Claims**



1. A module for passively distributing optical signals, comprising

a body having a plurality of interface areas, each of said interface areas having a plurality of data ports associated therewith for communication with the data ports of other modules or with optical signal sources or receivers;

a plurality of discrete optical waveguides for transferring signals between individual data ports of different interfaces such that optical signals received at any one data port of an interface of said module are sent to a corresponding data port of another interface of said module,

whereby each interface includes a sufficient number of data ports to enable signal transfer between that interface and all other interfaces of said module.

5,313,537

Patent Not Issued For This Number

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5,313,538

METHOD OF MAKING AN INDEX GRATING IN AN OPTICAL FIBER, AND A QUASI-DISTRIBUTED ARRAY OF SENSORS FORMED IN SAID FIBER

Pierre Sansonetti, Aix en Provence, France, assignor to Bertin & Cie, Plaisir, France

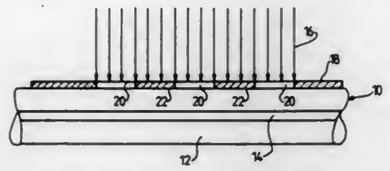
PCT No. PCT/FR91/00083, § 371 Date Oct. 3, 1991, § 102(e) Date Oct. 3, 1991, PCT Pub. No. WO91/12545, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 5, 1991, Ser. No. 768,533

Claims priority, application France, Feb. 6, 1990, 90 01345

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—28 **12 Claims**



1. A method of making an index grating in the core of a multimode optical fiber, the method comprising the steps of applying a mask against the optical fiber, the mask having a spatial periodic transmission, and irradiating the optical fiber through the mask by a laser beam.

5,313,539

BRANCHING SECTION OF A SHEATHED MULTICORE OPTICAL FIBER

Takahiro Ogawa, and Akira Moriguchi, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

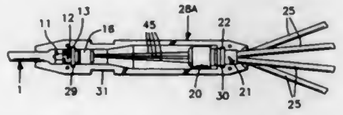
PCT No. PCT/JP92/00678, § 371 Date Feb. 10, 1993, § 102(e) Date Feb. 10, 1993, PCT Pub. No. WO92/21994, PCT Pub. Date Dec. 10, 1992

PCT Filed May 26, 1992, Ser. No. 988,107

Claims priority, application Japan, May 29, 1991, 3-153903

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—76 **5 Claims**



1. A branching section of a sheathed multicore optical fiber characterized in that a stop ring having a noncircular flange is fitted to an end portion of the sheathed multicore optical fiber having exposed optical fiber cores and tension-resistive members, said tension-resistive members are partly folded back on the outer peripheral surface of said stop ring and a holder is fitted thereon so that the stop ring and the folded portions of the tension-resistive members are secured to each other, that another stop ring is fitted to a bundle of tubes, wherein there are as many tubes as there are optical fiber cores to be branched, each tube having a tension-resistive member, the tension-resistive members are partly drawn out of the respective tubes and folded back onto the outer peripheral surface of an end portion of said stop ring and another holder is fitted thereon so that the stop ring and the folded portions of the tension-resistive members are secured to each other while the exposed end portions of the optical fiber cores are drawn out of the sheathed multicore optical fiber and introduced into the respective tubes and that a sleeve comprising a plurality of matching oblong members, each having engaging grooves on the inner surface of the opposite ends for releasable engagement with the respective flanges of the stops rings, is disposed between the stop rings and assembled together in such a manner that the optical fiber cores are covered by the matching oblong members as they are assembled and joined together so that the engaging grooves on the inner surface of the opposite ends of each of the oblong members come into engagement with the respective flanges of the stop rings and the joined oblong members are rigidly held in position.

5,313,540

OPTICAL FIBER TERMINAL SUITABLE FOR AUTOMATIC ASSEMBLY

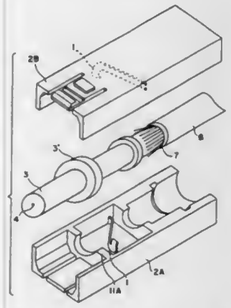
Tetsuji Ueda; Kazuhiko Kurata, and Koji Yamamoto, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 1,545

Claims priority, application Japan, Jan. 10, 1992, 4-002989

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—78 **11 Claims**



1. An optical fiber terminal for an optical fiber connector, including

ferrule means having a substantially cylindrical shape provided with a bore directed generally longitudinally to guide at least an optical fiber and also provided with at least one projection on the outer periphery thereof,

housing means for receiving said ferrule means made up of sections of a longitudinally cut tubular member, the inner periphery of said housing means having a configuration which permits said ferrule means to be held longitudinally slidably, and stopper means to define the most forward position of said projection of said ferrule means, and

resilient means which resiliently forces said projection of said ferrule means forward with respect to said housing means, wherein forward refers to the direction of said optical fiber terminal facing another optical fiber terminal to be connected, wherein said resilient means is tongue-shaped resilient means with one end secured to said inner periphery of said housing means and the other end abutted against the backward surface of said projection of said ferrule means.

5,313,541

MOLDING DEVICE INCORPORATING A PEG GUIDE BACKING MEMBER, FOR MOLDING OPTICAL FIBER CONNECTOR FERRULES, AND A FERRULE MOLDED BY SAID DEVICE

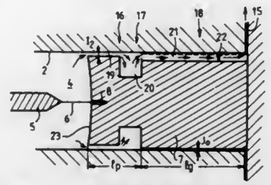
Said Lalaouna; Jean-Francois Ollivier, both of La Ferte Bernard, and Manuel Penha, Le Mans, all of France, assignors to Framatome Connectors International, Paris la Defense, France

Filed Mar. 24, 1993, Ser. No. 103,031

Claims priority, application France, Mar. 24, 1992, 92 03523

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—78 **2 Claims**



1. Optical fiber connector ferrule having an unmachined front surface which is the direct result of a molding operation by a device comprising:

a molding cavity defined by an accurately sized cylindrical bush defining the outside diameter of said ferrule and a cover closing said molding cavity,

a peg joined to said cover, extending axially into said molding cavity and extended at its free end by an accurately sized needle defining the inside diameter of said ferrule,

backing member extending axially into said molding cavity from the opposite end as compared with said peg and comprising a bore for guiding said needle adapted to receive the end thereof when said backing member moves towards said peg so as to render said needle and said bush concentric, and

vent means for allowing gases to escape from said molding cavity to the exterior when plastics material is injected into said mold in which device said backing member is a substantially cylindrical body of revolution adapted to fit directly into said bush of said cavity with no clearance and minimal force, in which device the front surface of said backing member is shaped as a template to impart to the respective surface of said ferrule a predetermined final shape which is the direct result of the molding operation.

5,313,542

APPARATUS AND METHOD OF RAPIDLY MEASURING HEMISPHERICAL SCATTERED OR RADIATED LIGHT

Raymond J. Castonguay, Tucson, Ariz., assignor to Breault Research Organization, Inc., Tuscon, Ariz.

Filed Nov. 30, 1992, Ser. No. 983,470

Int. Cl.[5] G01N *21/00*

U.S. Cl. 385—115 **40 Claims**

1. A scatterometer for measuring light reflected angularly from a point comprising:

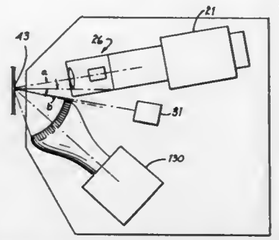
a power controlled laser light source for illuminating the point,

a fiber optic bundle having a plurality of individual fiber optic elements having a common field of view which is the point for collecting light beams reflected therefrom,

a camera for converting the reflected light beams into electrical signals,

the signal level of the collected light beams being raised above the dark current noise level of the camera by predetermined amounts to form sequential images stored in a frame grabber, and

the frame grabber also sequentially digitizing and storing images and reconstructing therefrom a single scatter profile of light emanating from the point while simultaneously scaling out the signal level increases.



5,313,543

SECOND-HARMONIC GENERATION DEVICE AND METHOD OF PRODUCING THE SAME AND SECOND-HARMONIC GENERATION APPARATUS AND METHOD OF PRODUCING THE SAME

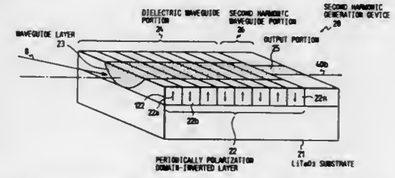
Kaoru Matsuda; Kazuhisa Yamamoto, both of Osaka, and Makoto Kato, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan

Filed Jan. 22, 1993, Ser. No. 7,881

Claims priority, application Japan, Jan. 22, 1992, 4-008981; Sep. 22, 1992, 4-252588

Int. Cl.[5] G02F *1/37*

U.S. Cl. 385—122 **13 Claims**



11. A second harmonic generation device comprising:

(a) a substrate; and

(b) a waveguide layer formed on said substrate having first and second portions, wherein

said first portion waveguides a fundamental wave ray incident thereto, generates a second harmonic wave ray in response to said fundamental wave ray and waveguides said generated second harmonic wave ray, said first portion further comprising a periodically polarization domain-inverted layer to obtain a phase match between said fundamental wave ray and said second harmonic wave ray, and

said second portion waveguides and outputs said generated second harmonic ray from said first portion and radiates said fundamental wave ray.

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5,313,544

WAVE GUIDE AND MATERIAL COMPRISING WAVE GUIDES, AND ITS APPLICATIONS AND MANUFACTURE

Willem Lentink, Henry Dunantlaan 77, Doetinchem, Netherlands

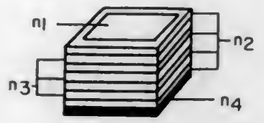
PCT No. PCT/NL88/00005, § 371 Date Sep. 26, 1989, § 102(e) Date Sep. 26, 1989, PCT Pub. No. WO88/06299, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 18, 1988, Ser. No. 408,511

Claims priority, application Netherlands, Feb. 18, 1987, 8700403

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—123 **4 Claims**



1. An apparatus comprising at least one wave guide w for de Broglie waves and at least one particle p interacting with said wave guide wherein:

a) said particle p has momentum and energy and if said particle p is not a collectivity of identical particles and if it can be represented by an electromagnetic wave then it has a de Broglie wavelength λ_b equal to the wavelength λ of that electromagnetic wave;

b) said wave guide w having walls that define cross-sections A_j that define both a cutoff wavelength for said wave guide w and circumferences $C(A_j)$ of the cross-sections A_j;

c) each of said circumferences $C(A_j)$ has either property I or property II:

property I provides that:

in every point of $C(A_j)$ a left tangent to $C(A_j)$ coincides with a right tangent to $C(A_j)$; and

property II provides that:

there exists at least one point of $C(A_j)$ in which a left tangent to $C(A_j)$ does not coincide with a right tangent to $C(A_j)$;

d) each of said cross-sections A_j has at least one characteristic dimension;

e) a characteristic dimension of a cross-section A_j having property I is the distance between two points on $C(A_j)$ between which a particle transmitted by said wave guide w can move, provided:

(i) the tangents in said two points to the circumference $C(A_j)$ are parallel or anti-parallel to one another;

(ii) a straight line connecting said two points is normal to said tangents;

f) a characteristic dimension of a cross-section A_j having property II is equal to a diameter of the largest circle that can be bonded by cross-section A_j;

g) there exists at least one set K or particles of the same kind;

h) in a case where at least one particle is transmitted by said wave guide w, in said wave guide w, in a region R between two cross-sections A_1 and A_2 of w, the energy density $\rho_w(R)$ of the particles being transmitted by said wave guide w that are elements of said set K or the average energy $\bar{U}(R)$ of the particles being transmitted by said wave guide w that are elements of said set K, is a function of an average value d_0 of the smallest characteristic dimensions of the cross-sections A_j situated between said two cross-sections, in such a way that

$$\frac{\partial \rho_w(R)}{\partial d_0} \neq 0 \text{ or } \frac{\partial \bar{U}(R)}{\partial d_0} \neq 0;$$

and, said average value d_0 has the property that in the domain $[d_0, 2d_0]$ there exists a factor y and an average value d_{01} of the smallest characteristic dimension of wave guide w in the region R, so that

$$\left| \frac{\rho_w(d_{01}\{1 - y \times 0.06\}) - \rho_w(d_{01})}{\rho_w(d_{01})} \right| \cong y \times 5 \times 10^{-2} \text{ or}$$

$$\left| \frac{U(R, d_{01}\{1 - y \times 0.06\}) - U(R, d_{01})}{U(R, d_{01})} \right| \cong y \times 5 \times 10^{-2}$$

hold, where y is $0 < y \leq 1$;

i) said particle p has one or more of the following interactions with said wave guide w:

(i) transmission,

(ii) reflection,

(iii) emission,

(iv) absorbtion, and

(v) adsorbtion.

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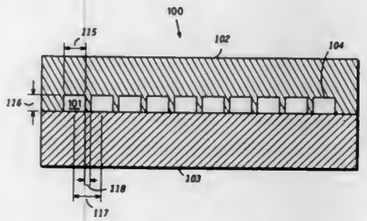
MOLDED WAVEGUIDE WITH A UNITARY CLADDING REGION AND METHOD OF MAKING

Shun-Meen Kuo, Chandler; Christopher K. Y. Chun, Mesa, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 19, 1993, Ser. No. 19,731

Int. Cl.[5] G02B *6/10, 6/30*

U.S. Cl. 385—129 **19 Claims**



1. A method for making a molded waveguide comprising the steps of:

molding a first support apparatus, a second support apparatus, and a core region simultaneously, the core region attaches to and extends between the first support apparatus and the second support apparatus; and

molding a unitary cladding region surrounding the core region, thereby making a molded waveguide.

5,313,546

HERMETICALLY SEALED JOINT COVER FOR FIBRE OPTIC CABLES

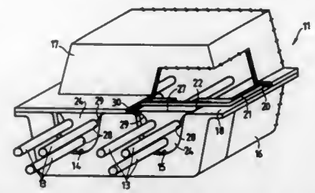
Eugenio Toffetti, Milan, Italy, assignor to Sirti, S.p.A., Milan, Italy

Filed Nov. 18, 1992, Ser. No. 978,358

Int. Cl.[5] G02B *7/00*

U.S. Cl. 385—135 **5 Claims**

1. An hermetically sealed joint cover for fibre optic cables comprising substantially a cable-joining box element and at least one entry aperture and at least one exit aperture for the cables, said entry and exit apertures being provided in a base having a first connection surface connectable to a cover having a second connection surface along said connection surfaces to form said box element, within said apertures there being provided a seal gasket of elastic material provided with at least one through hole and deformable so as to fill the apertures as an interference fit when said cover is connected to said base, characterized in that said through hole is partly open outwards



to receiver said cable to be joined, in said entry and exit apertures there being provided seats for receiving said seal gasket.

5,313,547

HALIDE GLASS MEDIUM CONTAINING TRIVALENT URANIUM IONS AND PROCESS FOR PRODUCING SAID MEDIUM

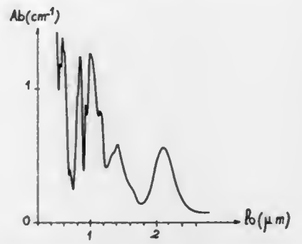
Jacques Lambard, L'Hay les Roses, and Hubert Poignant, Ploulec'h, both of France, assignors to France Telcom Etablissement Autonome De Droit Public, France

Filed May 12, 1992, Ser. No. 881,298

Claims priority, application France, May 14, 1991, 91 05802

Int. Cl.[5] G02B *6/24*

U.S. Cl. 385—142 **17 Claims**



1. An optical light guide including a light guidance glass and a sheath or substrate glass means having a refraction index below that of the guidance glass, said guidance glass being formed of a fluoride glass selected from the group consisting of fluoroberyllate glasses, fluorozirconate glasses, fluorohafnate glasses, fluorozirconohafnate glasses, fluoroaluminate glasses, mixed fluorozirconoaluminate glasses, mixed fluorohafnoaluminate glasses, and mixed fluorozirconohafnoaluminate glasses, said fluoride glass containing between 1 ppm and 10,000 ppm of trivalent uranium ions and at least one point of a near infrared region between 2,2 and 3.4 micrometers, optical losses not exceeding 4.3 $dB.m^{-1}$.

5,313,548

DIRECT CURRENT MOTOR SPEED CONTROLLER

Lawrence C. Arvidson, New Brighton, and Robert S. Horeck, fridley, both of Minn., assignors to Hypro Corporation, St. Paul, Minn.

Division of Ser. No. 15,003, Feb. 9, 1993. This application Apr. 22, 1993, Ser. No. 51,745

Int. Cl.[5] H02P *5/00*

U.S. Cl. 388—800 **1 Claim**

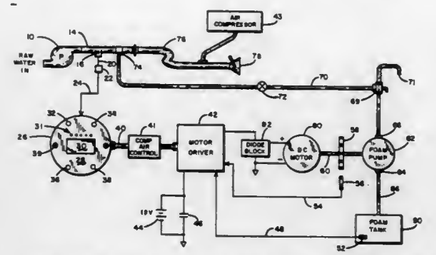
1. A speed controller for a direct current motor comprising:

(a) a direct current motor having an output shaft;

(b) pick-up means operatively coupled to said output shaft for producing a first control signal indicative of the speed of rotation of said shaft;

(c) motor driver means for applying a motor drive current to said motor;

(d) a microprocessor-based controller coupled in controlling relation to said motor driver means and connected to said pick-up means for receiving said first control signal, said microprocessor-based controller operating said motor driver means so as to produce a pulse width modulated motor drive signal of a predetermined frequency whose duty cycle is determined by said microprocessor based



controller for varying the speed of said direct current motor between a maximum speed and a lower intermediate speed and to produce a burst width modulating signal which turns said pulse width modulated motor drive signal on and off at predetermined rates for varying the speed of said direct current motor between said lower intermediate speed and a predetermined minimum speed.

5,313,549

PROCEDURE FOR FILTERING THE SPEED FEEDBACK SIGNAL

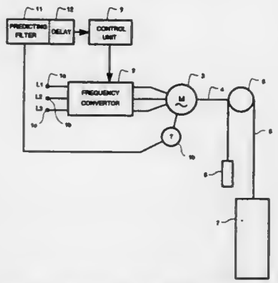
Seppo J. Ovaska, Hyvinkaa, Finland, assignor to Kone Elevator GmbH, Baar, Switzerland

Filed Jun. 3, 1992, Ser. No. 893,060

Claims priority, application Finland, Jun. 5, 1991, 912704

Int. Cl.[5] H02P *5/165*

U.S. Cl. 388—814 **6 Claims**



1. A procedure for filtering the speed feedback signal in an elevator motor drive which is provided with a speed controller and in which the speed of rotation of the motor is measured, said procedure comprising the steps of:

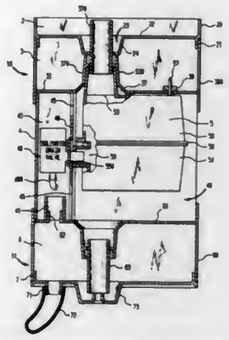
sampling the speed feedback signal,

filtering the noise component of the sampled feedback signal by means of a predictive filtering procedure so as to produce a first filtered signal comprising a prediction of the value of the next sample, and

filtering the first filtered signal by means of a delay-producing filtering procedure so as to produce a second filtered signal having an estimate of the latest sample value by delaying the predicted sample value by a time corresponding to one sample.

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5,313,550
STEAM HUMIDIFIER WITH MODULAR CONSTRUCTION AND ELECTRODES TO GENERATE STEAM
Daniel Crosnier, Offranville, and Michel Mazire, Ambrumesnil, both of France, assignors to Devatec S.A., France
Filed Oct. 28, 1992, Ser. No. 967,845
Claims priority, application France, Oct. 28, 1991, 91 13454
Int. Cl.[5] H05B *3/60*; F22B *1/30*
U.S. Cl. 392—325 **12 Claims**

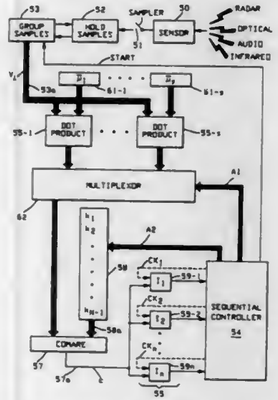


1. A modular steam humidifier comprising:
an upper housing portion;
a lower housing portion;
a tank for holding water and including electrodes contained within said tank for immersion into said water for the creation of steam thereby, said tank including a top, a bottom, and a plurality of sidewalls, and drainage means associated with at least one of said plurality of side walls above said bottom for the drainage of excess water from within said tank;
a structural element disposed between said upper and lower housing portions, said structural element having a recess therein to removably receive said tank;
means for supplying said water to said tank via said upper housing; and
means for evacuating water vapor generated within said tank, said means for evacuating being in communication with said tank and said upper housing.

5,313,551
MULTIPORT MEMORY BYPASS UNDER SOFTWARE CONTROL
Jean-Michel J. Labrousse, Palo Alto, and Gerrit A. Slavenburg, Mt. View, both of Calif., assignors to North American Philips Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 594,534, Oct. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 290,979, Dec. 28, 1988, abandoned. This application Feb. 11, 1991, Ser. No. 654,847
Int. Cl.[5] G06F *12/00*, *9/00*
U.S. Cl. 395—425 **19 Claims**

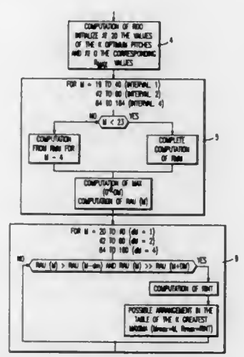
1. A data processing device structured for operation under control of a sequence of instructions forming a program, the device including:
(a) storage means including a plurality of storage locations each having their own address and having at least first and second data ports for providing parallel access to storage locations at different addresses in accordance with respective first and second addresses encoded in a first type of program instruction,
(b) said sequence of instructions including a second type of program instruction which includes an explicitly encoded bypass signal to simulate parallel access of both data ports to a storage location at the same address,
(c) bypass means responsive to said bypass signal upon execution of said second type of program instruction for connecting the second data port to the first data port to avoid simultaneous parallel access by both data ports to the storage location at the same address.

5,313,552
APPARATUS FOR QUANTIZING AN INPUT GROUP OF DATA SAMPLES INTO ONE OF N QUANTIZED GROUPS OF DATA VIA A PROCESS ON LESS THAN N/2 REFERENCE GROUPS OF DATA SAMPLES
Robert A. Lindsay, Bountiful, Utah, assignor to Unisys Corporation, Blue Bell, Pa.
Continuation of Ser. No. 676,903, Mar. 27, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 31,076
Int. Cl.[5] G10L *9/04*
U.S. Cl. 395—2.13 **22 Claims**



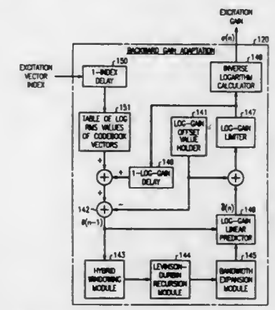
1. A sampled data quantizer for converting an input group of data samples, having substantially more than N possible values, to the centroid of one of N regions into which said values are divided—where N is a predetermined positive integer; said system comprising:
an input circuit for receiving said input group of data samples;
a storage means which stores multiple reference groups of data samples $\bar{u}$ and multiple constants k which respectively do not exceed N/2 and N-1, with each $\bar{u}$ and k being selected such that the product $\bar{u}k$ defines a vector which is orthogonal to and reaches a boundary between at least two of said N regions;
a control means, coupled to said storage means, which selects one of said reference groups of data samples $\bar{u}_x$ and one of said constants k_y;
an arithmetic means, coupled to said input circuit and said storage means, which performs a dot product on said input group of data samples with $\bar{u}_x$;
a comparing means, coupled to said arithmetic means, which compares the dot product result from said arithmetic means to k_y;
said control means being further coupled to said comparing means and adapted to repeatedly select a different $\bar{u}_x$ and k_y for said arithmetic means and said comparing means, with each $\bar{u}_x$ and k_y for being selected in accordance with a selection tree which has multiple nodes that are interconnected by branches—with each node specifying the $\bar{u}_x$ for said arithmetic means and the k_y for said comparing means, and indicating which branch is taken based on the compare by said comparing means; and,
a logic means, coupled to said comparing means, which identifies said centroid from each and every one of the compares by said comparing means.

5,313,553
METHOD TO EVALUATE THE PITCH AND VOICING OF THE SPEECH SIGNAL IN VOCODERS WITH VERY SLOW BIT RATES
Pierre-André Laurent, Bessancourt, France, assignor to Thomson-CSF, Puteaux, France
Filed Dec. 5, 1991, Ser. No. 802,621
Claims priority, application France, Dec. 11, 1990, 90 15477
Int. Cl.[5] G10L *9/08*
U.S. Cl. 395—2.16 **5 Claims**



1. A method to evaluate a speech signal in vocoders with very low bit rates, including a first processing operation comprising the steps of:
cutting up, after sampling the speech signal into frames of a determined duration to obtain a sampled signal S(n);
first self-adaptive filtering of the sampled signal S(n) obtained in each of said frames to limit an influence of a first formant to obtain a first filtered signal;
second filtering of the first filtered signal to keep only a minimum of harmonics of a fundamental frequency to obtain a second filtered signal; and
comparing the second filtered signal with two adaptive thresholds SfMin(n) and SfMax(n), respectively positive and negative and changing as a function of time according to a predetermined relationship, and obtaining third signal portions Scc(n) that are respectively above or below the two thresholds;
and including a second processing operation on the signal Scc(n) comprising the steps of:
computing, on a predetermined number of fundamental frequency values or M pitches, of a self-correlation of the signal Scc(n) obtained at the end of the first processing operation from a determined sampling instant No;
choosing from said M pitches or said fundamental frequency values, pitches or fundamental frequency values that are equal in number to a predetermined number n corresponding to a maxima of self-correlation; and
entering values corresponding to said pitches or fundamental frequency values chosen in said choosing step in a table of scores updated at each new self-correlation so as to choose, as a pitch value, only a value that corresponds to a maximum score.

5,313,554
BACKWARD GAIN ADAPTATION METHOD IN CODE EXCITED LINEAR PREDICTION CODERS
Richard H. Ketchum, Wheaton, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 16, 1992, Ser. No. 899,529
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.28 **11 Claims**



1. In a code excited linear prediction encoder, a method of processing input speech comprising
receiving a first segment of said input speech,
determining a first input speech vector from said received first segment,
scaling a plurality of codevectors from a codebook of vectors by a first gain value,
synthesizing first speech vectors from each of said first gain scaled codevectors,
comparing each of said synthesized first speech vectors with said first input speech vector,
selecting a first one of said plurality of codevectors based on said comparing of each of said synthesized first speech vectors with said first input speech vector,
selecting a first value, corresponding to said selected first codevector, from a table comprising the logarithms of the root-mean-squared values of said codevectors,
predicting a second logarithmic gain value based on said selected first value and the logarithm of said first gain value,
obtaining the inverse logarithm of said predicted second logarithmic gain value to determine a second gain value,
generating a low bit rate speech signal representing said first segment of said input speech based on said selected first codevector,
receiving a second segment of said input speech,
determining a second input speech vector from said received second segment,
scaling said plurality of codevectors from said codebook by said second gain value,
synthesizing second speech vectors from each of said second gain scaled codevectors,
comparing each of said synthesized second speech vectors with said second input speech vector,

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selecting a second one of said plurality of codevectors based on said comparing of said synthesized second speech vectors with said second input speech vector,

selecting a second value, corresponding to said selected second codevector, from said table comprising said logarithms of said root-mean-squared values of said codevectors,

predicting a third logarithmic gain value based on said selected second value and the logarithm of said second gain value,

obtaining the inverse logarithm of said predicted third logarithmic gain value to determine a third gain value for use in processing a third segment of said input speech, and

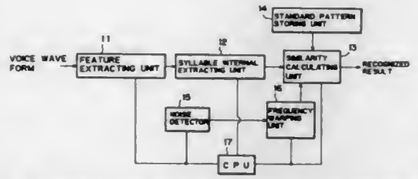
generating a low bit rate speech signal representing said second segment of said input speech based said selected second codevector.

5,313,555

LOMBARD VOICE RECOGNITION METHOD AND APPARATUS FOR RECOGNIZING VOICES IN NOISY CIRCUMSTANCE

Shin Kamiya, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 7, 1992, Ser. No. 832,861
Claims priority, application Japan, Feb. 13, 1991, 3-19851
Int. Cl.[5] G10L *9/04*
U.S. Cl. 395—2.42 **18 Claims**



1. A Lombard voice recognition method for recognizing an input voice under a noisy background comprising the steps of:

warping a frequency spectrum of a lower frequency than a predetermined frequency in a frequency spectrum of a feature pattern with a predetermined warping width toward a lower frequency side in a frequency axis, said warping being at a time when a noisy level of an input voice is higher than a predetermined noisy level, said frequency spectrum of said feature pattern being derived from said input voice; and

matching a frequency spectrum of a standard pattern with said warped frequency spectrum of said feature pattern to calculate similarity between said standard pattern and said feature pattern and outputting a recognized result based on the calculated similarity,

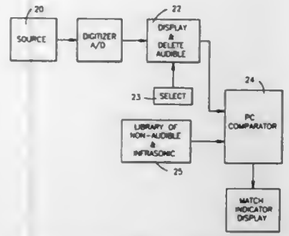
said predetermined warping width being changeable in accordance with a nose level of said input voice at a time when said lower frequency spectrum of said feature pattern than said predetermined frequency is warped by said predetermined warping width toward said lower frequency side with respect to said frequency axis.

5,313,556

ACOUSTIC METHOD AND APPARATUS FOR IDENTIFYING HUMAN SONIC SOURCES

Jorge M. Parra, New Port Richey, Fla., assignor to Seaway Technologies, Inc., New Port Richey, Fla.

Continuation of Ser. No. 688,395, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 658,642, Feb. 22, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 24,930
Int. Cl.[5] G10L *5/06*
U.S. Cl. 395—2.55 **12 Claims**



1. A method of identifying an unknown individual comprising:

transducing sounds produced by the oral-nasal cavity of a human to first digital electrical signals and deleting therefrom digital electrical signals corresponding to audible portions of said sounds to produce second digital electrical signal corresponding to inaudible portions of said sounds,

converting said second digital electrical signals to a three domain format of frequency, amplitude and time samples to produce an array of peaks and valleys constituting a sonic profile of said unknown individual,

providing a source of a sonic profile in the same format of a known individual, and

comparing the interrelationship including relative positions of said peaks and valleys of said sonic profile of said known individual with the sonic profile of said unknown individual, and

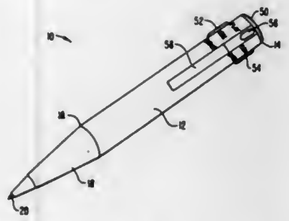
providing a utilization signal upon a detecting or non-detecting a correlation between said sonic profiles.

5,313,557

PEN RECORDER

Ralph Osterhout, San Francisco, Calif., assignor to Machina, San Francisco, Calif.

Filed Dec. 17, 1991, Ser. No. 809,172
Int. Cl.[5] G11C *11/34*
U.S. Cl. 395—2.81 **6 Claims**



1. A pen recorder comprising:

a hollow body having a proximal end and a distal end;

a solid state audio recorder disposed within the hollow body and having input connections, output connections, and control connections;

a microphone transducer disposed at the proximal end of the body and being connected to the input connections of the solid state audio recorder;

a speaker transducer disposed traversely across a the proximal end of the hollow body and being connected to the output connections of the solid state audio recorder, whereby the hollow body acts as a resonator for the speaker;

a switch means disposed at the proximal end of the hollow body and being connected to the control connections of the solid state audio recorder, whereby record and playback functions of the recorder can be selected; and

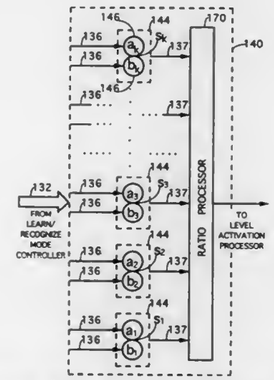
a pen mechanism disposed at the distal end of the hollow body.

5,313,558

SYSTEM FOR SPATIAL AND TEMPORAL PATTERN LEARNING AND RECOGNITION

James L. Adams, 6600 East Bluebird La., Paradise Valley, Ariz. 85253

Filed Aug. 13, 1991, Ser. No. 744,700
Int. Cl.[5] G06F *15/18*; **G06K** *9/62*
U.S. Cl. 395—22 **14 Claims**



1. A method, based on a neural-network simulation, for recognizing input signals sequentially measured by sensory receptors from a pattern of interest at predetermined time steps, comprising the steps of:

storing a plurality of sensory input vectors, each representing the input signals measured at one of said predetermined time steps, in a sensory window memory matrix;

establishing a multiplicity of synaptic pairs for receiving signals from the sensory window memory matrix in a neural processor simulator by selecting pairs of individual synapses in said neural processor simulator and by assigning random connections between each synapse in said pairs of individual synapses and each individual element of said sensory window memory matrix;

assigning a chosen number of synaptic pairs to each of a multiplicity of neural levels in each of a multiplicity of neurons in said neural processor simulator;

selecting a neuron for learning a pattern of interest during a learning mode of operation of said neural processor simulator;

sequentially computing ratios, at predetermined recording intervals while signals from the pattern of interest are being measured by said sensory receptors during the learning mode of operation, of signals received from said sensory window memory matrix by all synaptic pairs in one neural level of said selected neuron, storing the ratios so calculated in a synaptic ratio matrix, and repeating this step for all levels in the neuron;

computing, at predetermined time intervals during a recognizing mode of operation of said neural processor simulator, an instantaneous activation of each synaptic pair in the neural processor simulator, said instantaneous activation being the difference between a corresponding value stored in said ratio matrix and a ratio calculated from signals currently received from said sensory window memory matrix;

computing, at each of said predetermined time intervals, a level activation for each level of each neuron in the neural processor simulator, said level activation being a sum of all synaptic-pair instantaneous activations in the level;

computing an integrated level activation for each level of each neuron in the neural processor simulator over a selected integration period, said integrated level activation being a sum of all level activation values over the selected integrated period;

computing a weighted level activation for each level by performing spatiotemporal summation of all integrated level activations at each selected integration period;

computing a preliminary neural activation for each neuron for the selected integration period by selecting a maximum value of all of the individual weighted level activations for the neuron;

computing an output neural activation from each neuron for the selected integration period by calculating an arithmetic average of all preliminary neural activation values over all neurons, by subtracting that average from each of individual preliminary neural activation values, and by setting negative differences equal to zero;

determining a neural processor simulator output by comparing all output neural activations so calculated to an output threshhold value and identifying a neuron, if any, with an output neural activation greater than said output threshhold value; and

identifying a learned pattern associated with said neuron, if any, with an output neural activation greater than said output threshhold value.

5,313,559

METHOD OF AND SYSTEM FOR CONTROLLING LEARNING IN NEURAL NETWORK

Hisao Ogata, Kokubunji; Hiroshi Sakou, Shiki; Masahiro Abe, Iruma, and Junichi Higashino, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 833,127
Claims priority, application Japan, Feb. 15, 1991, 3-042957
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—23 **15 Claims**

1. A method of managing learning in a neural network, comprising the steps of:

providing reference data representing criteria of protraction of the learning;

performing learning on a current problem by use of learning pattern data for learning cycles in accordance with a predetermined learning method while generating and updating evaluation data representing a learning state of the neural network for each learning cycle;

comparing the evaluation data with the reference data for each learning cycle;

judging in accordance with the compared result and predetermined judging conditions whether or not there exists a possibility of protraction of the learning;

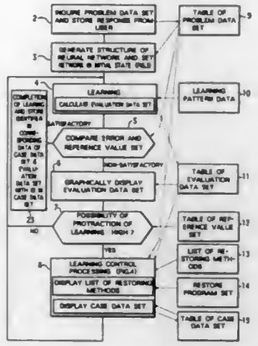
displaying, when it is judged that there exists the possibility of the learning protrsction, a list of learning methods for a user;

selectively displaying past evaluation data for each of past problems which is analogous to the current problem, a past learning data set for each of the past problems, and a learning method for each of the past problems employed when it was judged that there existed a possibility of

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learning protraction in the learning of each of the past problems;

selecting a new learning method from the list by a user based on the displayed past evaluation data, past learning data



set and learning method, for each of the past problems, respectively; and

re-initiating the learning in accordance with the new learning method selected by a user.

5,313,560

METHOD FOR DETERMINING A SUPPLEMENTAL TRANSACTION CHANGING A DECIDED TRANSACTION TO SATISFY A TARGET

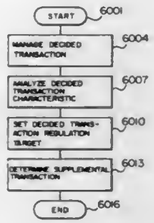
Tetsuya Maruoka, Sagamihara; Chizuko Yasunobu, Yokohama; Tadashi Hirose, Komae; Mayumi Kida, Kawasaki; Kouichiro Ino, Sagamihara, and Yoshiya Miyagawa, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1991, Ser. No. 697,932

Claims priority, application Japan, May 11, 1990, 2-119837; Jun. 11, 1990, 2-149997

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—54 **24 Claims**



1. A method of supporting decision-making for determining a supplemental transaction required for optimizing a decided transaction capable of being evaluated by a function applied from an information storage means, the method comprising steps of:

analyzing a characteristic of an evaluation function of the decided transaction providing a total sum of evaluation functions of individual transactions making up the decided transaction;

setting a regulation target for regulating said characteristic; and,

determining the supplemental transaction changing the decided transaction to satisfy said regulation target.

5,313,561

REASONING SYSTEM BY KNOWLEDGE ACTIVATION AND COMPOSING METHOD OF SAME

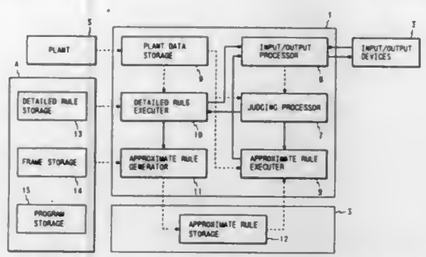
Yasuo Nishizawa, Hitachioota, and Yukio Nagaoka, Toukai, both of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,905

Claims priority, application Japan, Sep. 28, 1990, 2-256927

Int. Cl.[5] G06F *9/44, 15/18*

U.S. Cl. 395—61 **8 Claims**



1. A reasoning system for reasoning by knowledge activation, to be applied to a target system, said reasoning system comprising:

an input/output apparatus for exchanging information with said target system;

a memory apparatus for hierarchically storing said information from said input/output apparatus and processing programs; and

a processing apparatus for processing said stored information by executing said processing programs,

wherein said information stored in said memory apparatus comprises:

approximate reasoning rules for application in a higher grade hierarchy of reasoning, detailed reasoning rules for application in a lower grade hierarchy of reasoning, and

wherein said processing programs stored in said memory apparatus comprises:

programs for executing said detailed reasoning rules at said lower grade hierarchy for reasoning when a premise part of an assigned approximate reasoning rule has not been established,

programs for generating said approximate reasoning rule when said premise part of said generated approximate reasoning rule has been established by execution of said detailed reasoning rules, and a relationship between said established premise part and a concluding part of said generated approximate reasoning rule has been satisfied, and

programs for executing said generated approximate reasoning rule at said higher grade hierarchy for reasoning,

wherein if conditional items of said approximate reasoning rules are found not to exist, said generated approximate reasoning rule is generated after execution of said detailed reasoning in a lower grade hierarchy of reasoning.

5,313,562

OPTICAL DEVICE WITH ELECTRODES END-TO-END WITH ELECTRIC FIELD CAUSING HOMEOTROPIC ALIGNMENT OF LIQUID CRYSTAL IN SPACE BETWEEN ENDS

Michael C. K. Wiltshire, Buckinghamshire, England, assignor to GEC-Marconi Limited, England

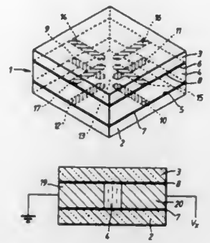
Filed Apr. 23, 1992, Ser. No. 872,891

Claims priority, application United Kingdom, Apr. 24, 1991, 9108834

Int. Cl.[5] G02F *1/1337, 1/1343, 1/137*

U.S. Cl. 359—77 **8 Claims**

1. An electrically-controllable liquid crystal wave plate comprising a layer of liquid crystal material having positive dielectric anisotropy, the layer being contained between two transparent plates; a respective alignment layer on each plate for causing homeotropic alignment of the molecules of the liquid crystal material adjacent the respective plate; and electrode means electrically-energizable to apply an electric field in the layer of liquid crystal material whereby the molecules



acquire variable tilt through the thickness of the layer of liquid crystal material, resulting in birefringence of the layer, wherein the electrode means comprises at least one pair of first conductors disposed end-to-end substantially in the plane of the layer of liquid crystal material with a space therebetween in which the electric field is generated.

5,313,563

METHOD OF CONTROLLING A ROBOT WITH A SUPPLEMENTARY AXIS

Ryuichi Hara, Minamitsuru, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

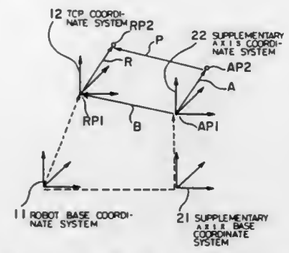
PCT No. PCT/JP90/01645, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO91/09710, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 14, 1990, Ser. No. 752,444

Claims priority, application Japan, Dec. 25, 1989, 1-335833

Int. Cl.[5] G06F *15/00;* **G05B** *19/00;* **B25J** *9/06*

U.S. Cl. 395—86 **2 Claims**



1. A method of controlling a robot having a supplementary axis, the robot having a tool center point, each of said supplementary axis and said tool center point having a position and a posture, comprising the steps of:

(a) manually moving the supplementary axis;

(b) reading, after step (a), the resulting coordinate position of said supplementary axis;

(c) determining coordinates and the posture of said tool center point at which said tool center point would have the same position and posture relative to said supplementary axis after step (a) as the position and posture of the tool center point relative to said supplementary axis before step (a); and

(d) moving said tool center point in accordance with said coordinates and the posture determined in step (c).

5,313,564

GRAPHIC MATTER AND PROCESS AND APPARATUS FOR PRODUCING, TRANSMITTING AND READING THE SAME

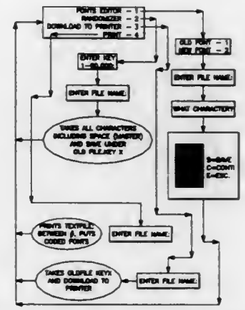
Oded Kafri, Beer-Sheva; Marco Luzzatto, and Kfir Luzzatto, both of Omer, all of Israel, assignors to Fontech Ltd., Beer-Sheva, Israel

Filed Jul. 10, 1991, Ser. No. 727,962

Claims priority, application Israel, Oct. 25, 1990, 96118; Jan. 16, 1991, 96969; Jan. 16, 1991, 96973

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—101 **9 Claims**



1. Process for composing a printable text, comprising coded characters, by:

1. defining, at least ideally, at least one blank grid;

2. creating a reference grid consisting of a scrambled distribution, as hereinafter defined, of at least two digitizable values in the cells of the blank grid;

3. creating at least one coded font by:

a. individually comparing each digital value of each character to be comprised in the font to the corresponding digital value of the reference grid; and

b. changing the digital value of the reference grid whenever the corresponding digital value of the character is one of the two possible values, and leaving it unchanged whenever it is the other possible value, whereby to create a scrambled character grid which represents the character;

4. storing in a memory commands for alternatively selecting characters or character grids, as desired; and

5. defining by means of a text composing device the desired text, wherein the clear characters are represented in a conventional way and the coded characters are represented by the corresponding character grids, whereby to compose the text.

5,313,565

OUTPUT PROCESSING SYSTEM PERMITTING EFFICIENT LOADING OF MEDIA RESOURCE INFORMATION USED IN AN OUTPUT DEVICE

Yoshio Mori, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 27, 1991, Ser. No. 661,202

Claims priority, application Japan, Feb. 27, 1990, 2-46785

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—118 **19 Claims**

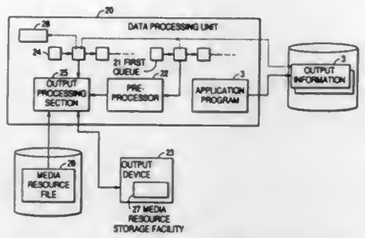
1. An output processing system comprising a data processing unit and at least one output device connected thereto and, internal or external media resource information storage connected thereto, said data processing unit comprising:

preprocessing means for extracting media resource designating information from predetermined output information, said media resource designating information designating

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media resource information needed in outputting the output information from said output device; and

output processing means for reading said media resource information designated by said media resource designating information and extracted by said preprocessing means



from the internal or external media resource information storage, loading said media resource information read from said storage into said output device and then outputting said output information to said output device to cause said output device to initiate an outputting process responsive to the media resource information.

5,313,566

COMPOSITE IMAGE GENERATION WITH HIDDEN SURFACE REMOVAL USING A SINGLE SPECIAL EFFECT GENERATOR

David J. Hedley, Abbots Barton, England, and James B. Pearman, Glendale, Calif., assignors to Sony United Kingdom Ltd., Staines, United Kingdom

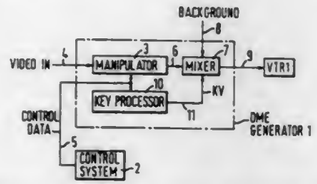
Continuation of Ser. No. 695,400, May 3, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 20,186

Claims priority, application United Kingdom, Jul. 3, 1990, 9014782

The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—119 **12 Claims**



1. A method of generating an output video signal representing a composite image of at least first and second images represented by at least first and second input video signals, respectively, in which said first and second images appear to fly through one another, comprising the steps of:

providing first and second data representing desired manipulations of said first and second images, respectively;

manipulating said first image by processing said first input video signal in a digital video effect generator in response to said first data representing a desired manipulation of said first image, thereby generating a processed first input video signal;

recording the processed first input video signal;

manipulating said second image by processing said second input video signal in said digital video effect generator in response to said second data representing the desired manipulation thereof;

removing from the manipulated second image at least one portion thereof which is hidden in said composite image, in response to said first and second data, thereby generating a processed second input video signal;

reproducing the recorded processed first input video signal, thereby generating a reproduced processed first input video signal; and

keying the processed second input video signal and the reproduced processed first input video signal, thereby generating said output video signal representing the composite image.

5,313,567

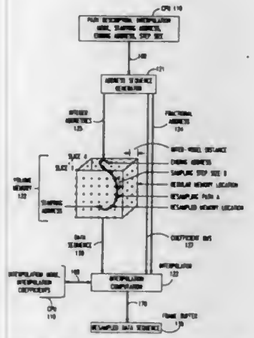
ARRANGEMENT FOR DETERMINING AND DISPLAYING VOLUMETRIC DATA IN AN IMAGING SYSTEM

M. Reha Civanlar, Red Bank; Steven C. Dzik, Somerset, and Yuh-Tay Liow, Edison, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 13, 1991, Ser. No. 714,468

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—124 **28 Claims**



1. Computing apparatus for determining an arbitrary sequence of data values from a group of predefined data values, said apparatus comprising

means for storing said group of predefined data values, arranged in an M ($M \geqq 3$) dimensional Cartesian coordinate system, said storing means including a plurality of memory banks which are arranged to store said group of predefined data values such that no predefined data value has a neighboring predefined data value which is stored in a memory bank which is the same as its memory bank, said storing means being so arranged that all of said plurality of memory banks can be accessed simultaneously, said storing means further including

cache memory means for saving data values associated with an immediately preceding memory access request and

means for comparing a memory address of a current memory access request with a memory address of said immediately preceding memory access request;

means for selecting an operating dimension N ($N \geqq 1$) which is less than or equal to M;

means for describing a path including an arbitrary sequence of sampling points through said group of predefined data values, said path describing means including

means for defining the starting point, ending point shape and sampling step size of said path in response to a user input, and

means responsive to said defining means for calculating a memory address of each sampling point;

means for simultaneously accessing said storing means, for each sampling point value to obtain, 2^N neighboring predefined data values using the memory address for each sampling point; and

means, responsive to said selected dimension N, for interpolating a value for one or more sampling point values using 2^N neighboring predefined data values accessed from said storing means.

5,313,568

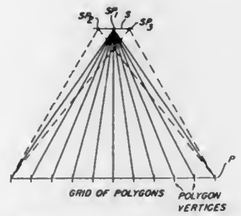
THREE DIMENSIONAL COMPUTER GRAPHICS EMPLOYING RAY TRACING TO COMPUTE FORM FACTORS IN RADIOSITY

John R. Wallace, Ithaca; Kells A. Elmquist, Lansing, and Eric A. Haines, Ithaca, all of N.Y., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 531,377, May 31, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 88,392

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—126 **25 Claims**



1. A method of rendering, in a computer, and displaying on a computer graphice display device, a realistic three dimensional image of a scene, including realistic shading of objects in the scene by light emitters illuminating the scene, said method comprising the steps of:

a) creating a geometric model of a scene to be rendered and storing data representative of said geometric model as a database in the computer, said data including at least the geometry and surface reflectivity of the light emitters and the objects in the scene to be rendered;

b) approximating surfaces of each object in the scene as patches in three dimensional space, each patch being approximated as one or more elements defined by vertices;

c) selecting from the database a source of irradiated light in the scene, the selected source defining a light source, the light source being either one of the light emitters or an object that reflects light emitted by one of the light emitters;

d) determining, for each vertex, by ray tracing from the vertex to the light source, a form factor that represents the fraction of energy leaving the light source and arriving at the vertex;

e) determining radiosity at each vertex based upon the form factors determined from step (d);

f) repeating steps (c)–(e) a selected number of times, each time for a different light source, to obtain a plurality of radiosities collectively indicating global illumination of the scene; and,

g) controlling the computer graphics display device to display the three dimensional image of the scene based upon the radiosities determined from step (f).

5,313,569

DEVICE FOR MARKING EDGES OF SHELVES

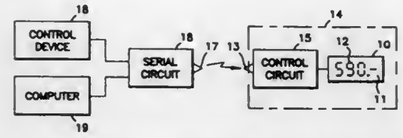
Sture Olsson, Västra Frölunda, and Roger Ahlm, Linköping, both of Sweden, assignors to Unigrafic AG, Zurich, Switzerland

Continuation of Ser. No. 631,356, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 273,218, Nov. 18, 1988, Pat. No. 5,019,811, and a continuation of Ser. No. 882,912, Jun. 27, 1986, abandoned. This application Jan. 14, 1993, Ser. No. 4,623

Claims priority, application Sweden, Oct. 15, 1984, 8405140-8

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—118 **16 Claims**



2. A method for displaying product information at locations proximate to associated products, comprising the steps of:

mounting a plurality of electronic display modules at locations proximate to respective different goods;

programming each module with a module address;

forming a signal comprising address and data parts, the address part representing a module address and the data part representing product information for the module address;

aerially broadcasting said signal as electromagnetic energy selected from the spectral band consisting of infrared and light to the modules from a remote transmitter;

receiving said signal by a plurality of receiving modules, the receiving modules comprising at least some of the electronic pricing modules;

decoding the address part of said signal by each receiving module into a received address;

comparing the received address to the module address for each receiving module;

matching the received address to the module address in at least one addressed module among the receiving modules;

for each addressed module, decoding the data part of the signal into product information;

displaying the stored product information on a display of the addressed module responsive to the step of matching; and

displaying on each module information that changes less often than said product information.

5,313,570

METHOD FOR DETERMINING COLOR BOUNDARIES FOR CORRECTING FOR PLATE MISREGISTRATION IN COLOR PRINTING

Richard A. Dermer, Andover, and Edward C. Reifenstein, III, Cambridge, both of Mass., assignors to Miles, Inc., Wilmington, Mass.

Filed Mar. 31, 1993, Ser. No. 40,559

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—131 **5 Claims**

1. A method for generating boundaries of a BOUNDARY MAP between regions of different color in a STRUCTURED GRAPHIC IMAGE that contains at least one graphic object defined by a plurality of line segments that form a CLOSED POLYGON, said method comprising the steps of:

(A) generating a DISPLAY LIST of all graphic objects in said STRUCTURE GRAPHIC IMAGE, said DISPLAY LIST containing the polygon line segments and their spatial coordinates given in a first direction and a second direction perpendicular to said first direction thereof for each graphic object;

(B) creating a SCAN BEAM TABLE of SCAN BEAMS each defined by two separated lines parallel to the first

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direction, said SCAN BEAM TABLE containing all of the coordinates in the second direction of the line segments in said DISPLAY LIST, said second direction coordinates being sorted in increasing order;

(C) creating a LOCAL MINIMUM TABLE as a linked list of polygon line segments extending from local minimum second direction coordinate values upward to elements representing local maximum second direction coordinate values;

(D) establishing an ACTIVE EDGE TABLE and maintaining it for each SCAN BEAM;

(E) processing the first SCAN BEAM of said SCAN BEAM TABLE and adding new ACTIVE EDGES to said ACTIVE EDGE TABLE;

(F) establishing a POLYGON STACK for each new edge added to said ACTIVE EDGE TABLE;

(G) processing each intersection of active edges in said ACTIVE EDGE TABLE by reversing the order of the intersecting active edges in said ACTIVE EDGE

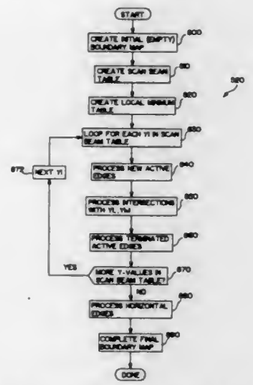


TABLE and updating the POLYGON STACK for said intersecting active edges;

(H) processing active edges in said ACTIVE EDGE TABLE that terminate at the line defining the SCAN BEAM with greater second direction coordinate value, by replacing said terminating edges with SUCCESSOR EDGES if any, and deleting edges corresponding to local maxima otherwise;

(I) updating the POLYGON STACK for any active edge that becomes an intervening edge through the operation of steps (F) and/or (H);

(J) opening boundaries for new visible edges of CLOSED POLYGONS resulting from steps (F), (G) and (H);

(K) closing boundaries for edges of CLOSED POLYGONS which are no longer visible as a result of steps (F), (G) and (H); and,

(L) repeating steps (E) through (K) for the second and each subsequent SCAN BEAM of said SCAN BEAM TABLE, in succession.

5,313,571

APPARATUS FOR STORING AND DISPLAYING GRAPHS

Akira Hirose; Yuji Ikeda; Katsuyuki Komatsu; Yoshihiro Saito, and Yasushi Kohari, all of Kawasaki, Japan, assignors to Fuji Xerox Co., Ltd., Minato

Filed Oct. 15, 1992, Ser. No. 961,526

Claims priority, application Japan, Oct. 17, 1991, 3-269604

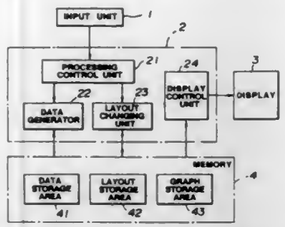
Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—140 **9 Claims**

6. A graph generating device which displays a graph on a display unit having a means for changing the layout of the graph, said graph having a plurality of graph elements, said device comprising:

memory means for storing display position data and display size data corresponding to numerical data for each said graph elements constituting a graph, the numerical data, graph layout data, and the display position and display size data stored in the memory means being arranged to correspond to each other;

display control means for controlling the display unit to



display the graph elements on the display unit based on the data stored in the memory means;

position directing means for directing a new display position of a graph element displayed on the display unit;

position update control means for updating display position data stored in the memory means based on the display position directed by the position directing means; and

size directing means for directing new numerical data to change numerical data corresponding to at least one of the graph elements.

5,313,572

FILING STORAGE AND RETRIEVAL EQUIPMENT AND APPARATUS

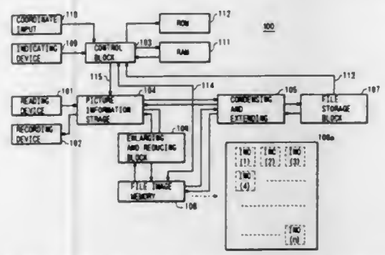
Susumu Yamamoto; Masahiko Katsurabayashi; Nobuyuki Shigeeda; Tadahiko Ikegaya, and Katsuhiko Orita, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1990, Ser. No. 596,288

Claims priority, application Japan, Dec. 26, 1989, 1-335182; Jul. 13, 1990, 2-185585

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—145 **6 Claims**



1. A filing system for storing and allowing access to information derived from original documents, the filing system comprising:

reading means for converting information on an original document into picture information in a format for storage;

compression means, coupled to the reading means, for compressing the picture information;

a file storage block, coupled to the compression means, for storing compressed picture information into files;

indicating device means for specifying respective index files for preselected files stored in the file storage block;

file image memory means, coupled to the file storage block and having a plurality of assigned memory areas, for storing the picture information in respective assigned memory areas to which said respective index files are specified by said indicating device means;

recording means, coupled to one of the file storage block and the file image memory means, for recording on and printing out a hard copy the picture information from the files in the file storage block and the picture information stored in the file image memory means;

coordinate input means for receiving the hard copy and for generating coordinates of a selected area of the hard copy enclosing desired information on the original document; and

storage means having tables indicating correspondence between the area on said coordinate input means and the assigned memory area in the file image memory means and correspondence between said fixed memory means and the files stored in the file storage block.

5,313,573

APPARATUS FOR FORMING CHARACTER PATTERNS WITH LINE SEGMENTS

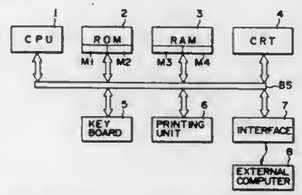
Kazuhide Takahama, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 577,897, Sep. 5, 1990, abandoned. This application Aug. 13, 1993, Ser. No. 106,318

Claims priority, application Japan, Sep. 8, 1989, 1-234167

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—150 **6 Claims**



1. A character pattern forming apparatus for forming a character from a plurality of straight line segments, each of said plurality of straight line segments being positioned in one of a horizontal, vertical and oblique direction in an X-Y plane, comprising:

line segment memory means for storing a plurality of line segment data, a first one of said plurality of line segment data defining a first dot pattern that forms a first portion of a first straight line segment;

said line segment memory means further storing data representing a width direction in which said first dot pattern is to be widened to increase a width of said first portion of said first straight line segment, and said line segment memory means further storing an arrangement format for arranging other dot patterns that are identical to said first dot pattern and that are to form other portions of said first straight line segment, to be adjacent to each other in said one of said horizontal, vertical and oblique directions in which said first straight line segment is to be positioned to form an overall pattern of said first straight line segment;

font memory means for storing a plurality of character fonts, each character font designating a set of straight line segment data corresponding to said plurality of straight line segments, including said first straight line segment, that are to form said character in a selected one of said character fonts;

said font memory means further storing a length, a width and an end position for each of said plurality of straight line segments, including said first straight line segment, forming said character in said selected one of said character fonts; and

processing means for selecting said one of said character fonts stored in said font memory means, for retrieving said set of straight line segment data designated by said selected one of said character fonts from said line segment memory means, and for forming an overall pattern of said first straight line segment which corresponds to at least a portion of said retrieved set of straight line segment data; and wherein

a width direction of said first dot pattern defined by said at least a portion of said retrieved set of straight line segment data is widened to conform with a stored first straight line segment width of said selected character font selected by said processing means, such that said other identical dot patterns that are identical to said first dot pattern and have a common adjusted width that is equal to a width of said first dot pattern, are arranged in said one of said horizontal, vertical and oblique directions in accordance with said arrangement format stored in said line segment memory means; and

said processing means includes determining means for determining how many of said other identical dot patterns are required to form said first straight line segment based on the stored line segment length for said first straight line segment stored in said font memory means and designated by said selected one of said character fonts;

said determining means further determining a last dot position, that corresponds to said stored end position for said first straight line segment, whereby said character is obtained from a combination of overall patterns of line segments obtained from said retrieved set of straight line segment data.

5,313,574

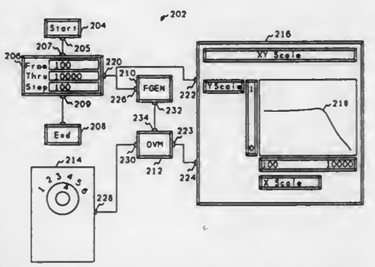
METHOD FOR STARTING PROCESSING OF AN ICONIC PROGRAMMING SYSTEM

Douglas C. Beethe, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 537,550, Jun. 13, 1990, abandoned. This application Oct. 24, 1991, Ser. No. 782,220

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—159 **11 Claims**



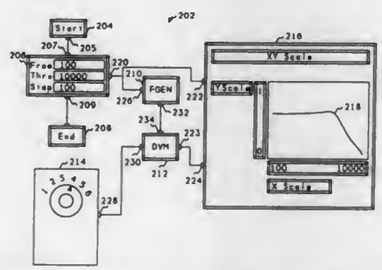
1. In an iconic programming system having multiple icons executing in a computer system, wherein each icon in said programming system may have zero or more data input connections and zero or more data output connections, and wherein said icons are graphically connected together by a user of the computer system graphically connecting data output connections to data input connections to form a network of icons, a computer implemented method for processing said icons of said network to perform data processing functions represented by said icons, said computer implemented method for processing comprising the steps of:

(a) programmatically examining all icons within said network and discontinuing processing if all data input connections of all said icons are not connected to a data output connection of another icon;

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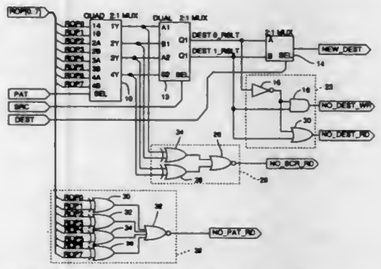
(b) programmatically examining all icons within said network and discontinuing processing if any data input connection of any of said icons is connected to a data output connection of more than one other icon;
(c) programmatically examining all icons within said network and programmatically scheduling all start icons in said network to be processed before any other icons are processed;
(d) when said network contains no start icons, randomly scheduling all icons having no data input connections to be processed before any other icons are processed;
(e) when processing an icon, programmatically scheduling, for processing, all icons connected to data output connections of said icon being processed;
(f) when an icon is being processed, and said icon contains data input connections that have not received data, either from a current or previous execution of the icon supplying data, discontinuing processing of said icon; and
(g) processing each said icon of said network of icons after said icon is scheduled and said icon has received data on all said input connections of said icon.

5,313,575
PROCESSING METHOD FOR AN ICONIC PROGRAMMING SYSTEM
Douglas C. Beethe, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 537,550, Jun. 13, 1990, abandoned. This application May 14, 1993, Ser. No. 63,102
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—159 **13 Claims**



1. In an iconic programming system executing in a computer system, wherein each icon in said programming system may have zero or more data input connections and zero or more data output connections, and wherein said icons are graphically connected together by a user of the computer system graphically connecting data output connections to data input connections to form a network of icons, a computer implemented method for processing said icons of said network to perform data processing functions represented by said icons, said computer implemented method for processing comprising the steps of:
(a) programmatically examining all icons within said network and discontinuing processing if all data input connections of all said icons are not connected to a data output connection of another icon;
(b) programmatically examining all icons within said network and discontinuing processing if any data input connection of any of said icons is connected to a data output connection of more than one other icon;
(c) programmatically examining all icons within said network and programmatically scheduling all start icons in said network to be processed before processing any other icons;
(d) when processing an icon, programmatically scheduling, for processing, all icons connected to data output connections of said icon being processed;
(e) when processing an icon, if said icon contains data input connections that have not received data, discontinuing processing of said icon and programmatically scheduling, for processing, all icons connected to said data input connections that have not received data; and
(f) processing each icon of said network of icons after said icon is scheduled and said icon has received data on all data input connections of said icon.

5,313,576
BIT ALIGNED DATA BLOCK TRANSFER METHOD AND APPARATUS
John R. Providenza, Beaverton, and Lee Boekelheide, Tigard, both of Oreg., assignors to Network Computing Devices, Inc., Mountain View, Calif.
Filed Nov. 23, 1990, Ser. No. 617,198
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **12 Claims**

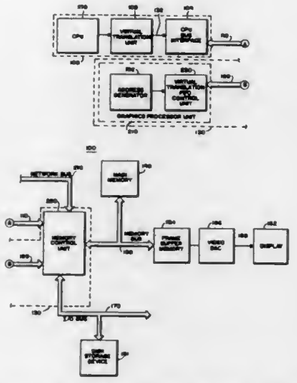


1. A graphics system for associating a plurality of operands including at least first and second image operands, each operand being representative of graphics data, said system comprising:
image modification means for effecting a given logic operation with respect to said plurality of operands for providing an image output in response to said logic operations,
image data storage means for coding said operands,
image control means for normally writing said image output tot he address location in said image data storage means of said second operand,
means for determining the effect of said given logic operation on said second operand, and
means for inhibiting said image control means from writing said modified image output when said given logic operation is determined to have no effect on said second operand.

5,313,577
TRANSLATION OF VIRTUAL ADDRESSES IN A COMPUTER GRAPHICS SYSTEM
Kim Meinerth, Middleton, Mass.; Colyn Case, Amherst; Chris Franklin, Merrimack, both of N.H.; Blaise Fanning, Overland Park, Kans., and Rodney Gamache, Merrimack, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Aug. 21, 1991, Ser. No. 748,357
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—166 **6 Claims**

1. A computer graphics system, comprising:
a CPU for issuing graphics commands and for issuing a first plurality of memory access requests containing virtual addresses;
first translating means, coupled to said CPU for translating said virtual addresses in the first plurality of memory access requests to physical addresses in a main memory;
a graphics processor coupled to the CPU for receiving and executing said graphics commands including

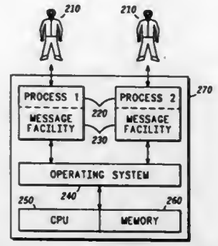
means for generating a second plurality of memory access requests containing virtual addresses; and
second translating means, coupled to the request generation means, for translating said virtual addresses in the second plurality of memory access requests to physical addresses, including
means, for reading a first portion of a first virtual address, said first portion of a first virtual address identifying a first entry in a system page table, said first entry in said system page table containing a base memory address of a first secondary page table;
means, connected to said input line, for reading a second portion of said first virtual address, said second



portion of said first virtual address identifying an entry in said first secondary page table, said entry in said secondary page table containing the first portion of the physical address corresponding to said first virtual address;
means, coupled to said input line, for reading said base address of said first secondary page table;
means, connected to said means for reading said first portion of the physical address corresponding to said first virtual address; and
means for reading a third portion of said virtual address, said third portion of said virtual address containing a second portion of the physical address corresponding to said first virtual address.

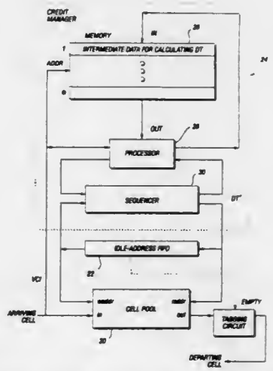
5,313,578
PORTABLE INTERPROCESS COMMUNICATION FACILITY
J. Christopher Handorf, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 23, 1990, Ser. No. 644,820
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **9 Claims**

1. A portable interprocess communication facility comprising:
running a plurality of user programs as independent processes;
identifying a process so a first process may uniquely identify a desired second process;
allocating a region of memory to be shared by a plurality of processes;
uniquely identifying a predetermined portion of the region of memory so that the identified predetermined portion of memory may be used to store and to retrieve a message;
queuing messages which contain at least the process identifier of the desired second process and the message handle of the identified predetermined portion of memory; and



retrieving the message from the identified predetermined portion of memory using the message handle.

5,313,579
B-ISDN SEQUENCER CHIP DEVICE
Hung-Hsiang J. Chao, Lincroft, N.J., assignor to Bell Communicates Research, Inc., Livingston, N.J.
Filed Jun. 4, 1992, Ser. No. 893,266
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **11 Claims**



1. A sequencer chip device for use in a broadband integrated service digital network wherein users' traffic in the form of asynchronous transfer mode (ATM) cells is scheduled, the sequencer chip device comprising:
a plurality of modules connected in series for receiving priority data related to the ATM cells; and
means for broadcasting new priority data related to a newly arrived ATM cell to each of the modules in a write-in mode of the sequencer chip device, wherein each of the modules includes:
memory means for storing prior priority data related to a previously received ATM cell;
means for comparing the new priority data with the prior priority data to obtain a comparison signal; and
controller means coupled to its respective memory means and means for comparing for alternately retaining said stored prior priority data or replacing said stored prior priority data with the new priority data or with prior priority data from an immediately adjacent memory means based on the comparison signal of its means for comparing and the comparison signal of the immedi-

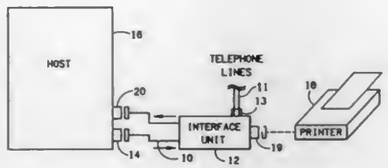
VOL 1162 ISS 3 MY 17 1994 UMI

ately adjacent means for comparing wherein high-speed sorting of the ATM cells is achieved.

5,313,580
TELECOMMUNICATIONS INTERFACE APPARATUS AND METHOD

Michael J. Remion, 4041 MacArthur Blvd., Suite 300, Newport Beach, Calif. 92660

Continuation of Ser. No. 487,766, Mar. 2, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 963,273
Int. Cl.[5] G06F *13/14, 15/20*
U.S. Cl. 395—200 **56 Claims**



1. A method for transmitting data between a host computer and a telecommunication network through an interface module without requiring special host-based computer programs to communicate with the interface module, comprising the steps of:

a. receiving data in the interface module from the host computer via a first port of the host computer, the data comprising a plurality of characters;

b. scanning in the interface module the plurality of characters in sequence, over a selected number of characters of the received data, for the presence of a first predetermined command code specified by, and embedded in, the received data by a user, the command code comprising a string of characters, and:

(i) transmitting at least part of the received data to the telecommunication network by means of the interface module if the first predetermined command code is detected within the selected number of characters of the received data; and

(ii) terminating transmission of the received data to the telecommunication network if the data received from the host computer terminates or if a second predetermined command code is received from the host computer; and otherwise;

(iii) not transmitting the received data to the telecommunication network by means of the interface module if the first predetermined command code is not detected within the selected number of characters of the received data.

5,313,581
SYSTEM AND METHOD FOR COMMUNICATION BETWEEN WINDOWING ENVIRONMENTS

Dennis G. Glokas, Nashua, N.H., and Andrew T. Leskowitz, Leominster, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 582,077, Sep. 14, 1990. This application Sep. 28, 1993, Ser. No. 128,031
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—200 **38 Claims**

1. In a computer system having a display server connected to a first server and a second server, said first server with a first communications facility for providing communication between clients of the first server, and said second server with a second communication facility for providing communication between clients of the second server, a method of operating said display server, comprising the steps of:

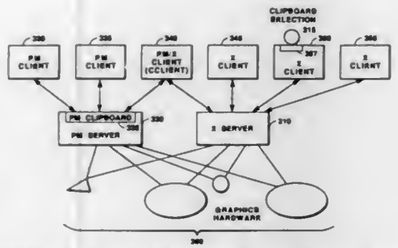
providing a shared communication client of both the first and second servers;

receiving, by the shared communication client, a first communication transmitted by the first client to the first communication facility of the first server;

sending, to the second communication facility of the second server, a notification for the second client of the first communication from the first client;

detecting said notification by said display server to confirm that said second client has received said first communication from said first client;

the first server having a first communication data base which may be controlled at each instance by only one of the clients of the first server, and the method further includes the steps of



taking control of the first communication data base by the shared communication client, and wherein the step of receiving the first communication transmitted by the first client includes the substeps of

receiving a first server event indicating that the first client has taken control of the first communication data base and that the shared communication client no longer has control;

requesting, in response to the receipt of the first server event, the contents of the first communication data base from the first client;

receiving from the first client, after the request of the contents of the first communication data base, the contents of the first communication data base; and

recovering control of the first communication data base by the shared communication client.

5,313,582
METHOD AND APPARATUS FOR BUFFERING DATA WITHIN STATIONS OF A COMMUNICATION NETWORK

Ariel Hendel, Ronkonkoma, and Kenneth W. Brinkerhoff, Hauppauge, both of N.Y., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Apr. 30, 1991, Ser. No. 693,637
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—250 **45 Claims**

25. A data communication controller for interfacing with a processor and for operably associating with a data packet storage means having a plurality of data page storage locations for storing one or more data packets, said data communication controller comprising:

a control means for accessing a communication medium;

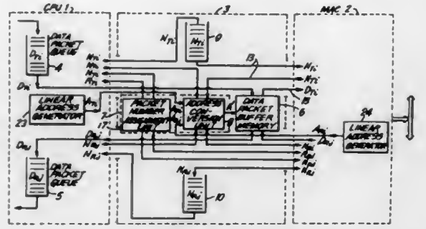
memory management means for managing said data packet storage means independent of said processor by assigning a packet number to each data packet to be stored in said data packet storage means and allocating one or more of said data page storage locations for storing each said data packet to be stored;

linear address bit receiving means for receiving one or more sets of linear address bits from said processor or said control means, each said set of linear address bits corresponding to one said data packet to be stored and ranging

from a minimum address value to a maximum address value;

physical address generating means for generating a set of physical addresses for each data packet to be stored in said data packet storage means, by using the data packet number assigned to said data packet to be stored and said set of linear address bits corresponding to said data packet to be stored, each set of physical addresses corresponding to one or more data page storage locations in said data packet storage means and providing access to said one or more data page storage locations;

data packet transfer means for transferring data packets



between said processor and said data packet storage means, and for transferring data packets between said data packet storage means and said control means;

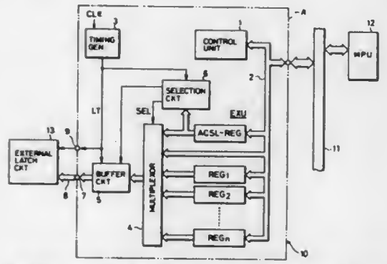
a packet number queue for storing a plurality packet numbers, each said packet number stored in said packet number queue being accessible by said processor and said control means; and

packet number transfer means for transferring said packet numbers from said packet number queue and at least one of said control means and said processor, and for transferring packet numbers from said memory management means to at least one of said control unit and said processor.

5,313,583
CONTROLLER INTEGRATED CIRCUIT DEVICE FOR CONTROLLING A CONTROL UNIT BY PROVIDING CONTROL DATA THERETO

Yoshikazu Yokota, and Hiroshi Takeda, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 318,254, Mar. 3, 1989, Pat. No. 5,034,913, which is a division of Ser. No. 832,691, Feb. 25, 1986, Pat. No. 4,845,657. This application Feb. 26, 1991, Ser. No. 660,877
Claims priority, application Japan, Feb. 25, 1985, 60-34346
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—275 **12 Claims**



1. A display controller integrated circuit device for controlling an operation of a control unit which controls a display, said control unit being coupled to said display controller integrated circuit device via an external bus; and external control means, coupled to said display controller integrated circuit via said external bus and to said control unit, for controlling an operation of said control unit other than said operation controlled by said display controller integrated circuit device; said display controller integrated circuit device comprising:

control data holding means for holding a control data;

synchronizing signal generating means for generating a horizontal synchronizing signal;

first external terminals coupled to said external bus;

output means, coupled between said first external terminals and said control data holding means, for providing said control data to said external bus during a period of time in which said horizontal synchronizing signal has a predetermined state;

a second external terminal, coupled to said external control means, for providing a timing signal to said external control means; and

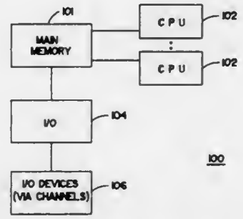
timing signal generating means, coupled to said second external terminal and responsive to a state change in said horizontal synchronizing signal, for generating said timing signal;

wherein said external control means fetches said control data in response to said timing signal to control said other operation of said control unit.

5,313,584
MULTIPLE I/O PROCESSOR SYSTEM

Robert H. Tickner, Jeffersonville; Philip A. Murphy, Jr., King of Prussia, and Wayne A. Genetti, Phoenixville, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 25, 1991, Ser. No. 796,747
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 **18 Claims**



1. In a processing system including at least one CPU which issues I/O job function requests, a main memory and a plurality of I/O devices, a system for handling the I/O job function requests comprising:

at least two I/O processor means, separate from the CPU, for performing I/O job functions including selecting paths and managing I/O devices;

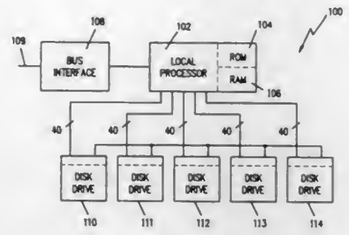
I/O controller means, coupled to the CPU, for allocating received I/O job function requests between the two I/O processor means; and

data structure means for storing I/O device information used during allocation to the I/O job function requests,

wherein the I/O controller means receives an I/O job function request from the one CPU, and responsive to the device information in the data structure means assigns the I/O job function to one of the I/O processor means.

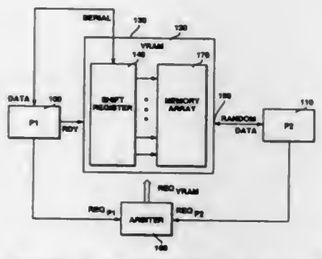
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,585
DISK DRIVE ARRAY WITH REQUEST FRAGMENTATION
Kenneth L. Jeffries, 15807 Booth Cir., Leander, Tex. 78641, and Craig S. Jones, 12015 Scribe Dr., Austin, Tex. 78759
Filed Dec. 17, 1991, Ser. No. 810,790
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **23 Claims**



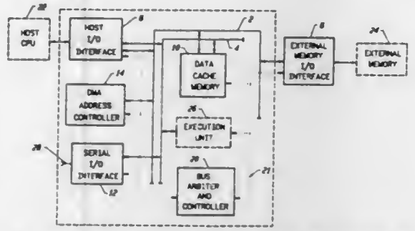
1. A method of operating one or more disk drives through a programmable disk drive controller which is interfaced through a bus to a host computer, comprising the steps of:
(a) occasionally issuing access requests from said host computer to said disk drive controller;
(b) maintaining a queue, in said disk drive controller, for said access requests;
(c) analyzing any newly received access requests, in said disk drive controller, to ascertain whether said access request is atomic; and, if said access request is not atomic, then fragmenting said access request into smaller access requests, until no resulting access request is not atomic;
(d) enqueuing atomic access requests into said queue, together with execution-control markers which indicate groups of atomic operations which must be executed in strict sequence;
(e) executing atomic access requests from said queue in an order which, except as constrained by said execution-control markers, is dynamically optimized in accordance with the instantaneous rotational phase of said disk drives.

5,313,586
CO-PROCESSOR DE-COUPLING BUS STRUCTURE
Serge Rutman, Boulder Creek, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Mar. 6, 1992, Ser. No. 847,190
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **13 Claims**



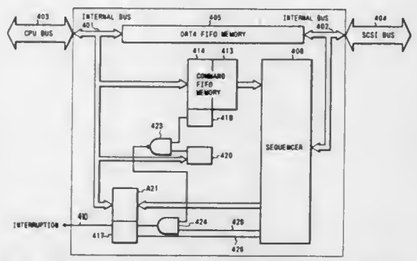
1. In a computer system comprising a main processor and a co-processor, a memory system for communication of information between the main processor and co-processor and for storage of co-processor code and data for access by the co-processor, said memory system comprising:
a dual port random access memory (RAM) for storing communication of information between the main processor and co-processor and for storing code and data accessed by the co-processor, said RAM comprising:
a first input/output (I/O) random access port to read and write data on a random access basis, and
a first serial I/O port coupled to a shift register to serially shift in data to the shift register and transfer the serially shifted in data in blocks to the memory;
a first coupling means for coupling the main processor to the serial I/O port, said main processor communicating data to the memory to the serial I/O port through the shift register in blocks of data such that data communicated are transferred in blocks between the shift register and the memory at a frequency less than a frequency data is communicated between the main processor and the serial port;
a second coupling means for coupling the co-processor to the random access port, said co-processor data randomly accessing code and data on an as-needed basis;
whereby a single memory is used to provide memory support to the co-processor as well as enable the communication of information between the main processor and co-processor, such that the co-processor has the minimal of interruption of access to the memory for code and data.

5,313,587
DEVICE FOR SIMULTANEOUS DATA INPUT/OUTPUT AND EXECUTION SUPPORT IN DIGITAL PROCESSORS
Chandravadan N. Patel, Los Altos; Richard W. Blasco, Auburn; Kenneth M. Chan, Saratoga, and Shieh C. Chen, Palo Alto, all of Calif., assignors to Hitachi Micro Systems, Inc., San Jose, Calif.
Continuation of Ser. No. 354,342, May 19, 1989, abandoned.
This application Mar. 17, 1992, Ser. No. 852,356
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—275 **17 Claims**



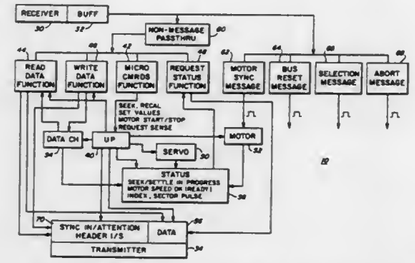
1. A device for simultaneous data input and output and execution support in digital precursors, wherein said execution support includes program execution support for directly transferring data between an external device and an execution unit of a digital processor and Z delay execution support, said device comprising:
a plurality of input/output interfaces for providing a plurality of controllable input/output ports for inputting and outputting data, each of said plurality of input/output interfaces being individually controllable and operable without control signals from sources external to said device, said plurality of input/output interfaces including a interface to said execution unit of said digital processor for direct program execution support;
a plurality of internal busses;
a data cache memory selectively couplable to each of said plurality of input/output interfaces including said interface to said digital processor execution unit via at least one of said plurality of said busses, said data cache memory further comprising:
at least two ports, a first one of said ports being employed for only said data input and output, and a second one of said ports being employed for both said data input and output and said execution support;
a means for storing data;
a means for storing addresses;
a first address means for inputting addresses into said first port of said data cache memory or said means for storing addresses from a first source of address pointers;
a second address means for inputting addresses into said second port of said data cache memory from said means for storing addresses or a source of external memory addresses;
one of said busses comprising a first means for inputting and outputting data from said first port of said data cache memory; and
another of said busses comprising a second means for inputting and outputting data from said second port of said data cache memory;
and a means for controlling said plurality of input/output interfaces and said data cache memory for effecting a transfer of said data between any of said plurality of input/output devices or said data cache memory attached to a first of said plurality of internal busses while simultaneously effecting a transfer between any other of said plurality of input/output devices or said data cache memory which are attached to a second of said plurality of internal busses;
whereby data transfer is via at least one of said plurality of internal busses and is able to be effected simultaneously with program execution in a digital processor.

5,313,588
SCSI CONTROLLER AND METHOD FOR USE ON AN INFORMATION PROCESSING SYSTEM
Yukari Nagashige, Yokohama; Soichi Isono, Chigasaki; Kouzi Shida, Takasaki, and Kunio Watanabe, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 30, 1992, Ser. No. 921,743
Claims priority, application Japan, Jul. 30, 1991, 3-190242; Aug. 20, 1991, 3-207801
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 **20 Claims**



1. A small computer system interface controller for executing a plurality of commands provided externally of said controller for control of a small computer system interface bus, said controller comprising:
command storing means for storing at least two commands that are provided externally;
command processing means for consecutively executing said commands in the order in which said commands were stored in said command storing means;
execution result reporting means for reporting externally the execution end status of any of said commands of which said command processing means has terminated execution;
determining means for determining if a command executed by said command processing means is the command last stored in said command storing means; and
report inhibiting means for inhibiting the execution end status of the command executed by said command processing means from being reported externally if said determining means has determined that the command executed by said command processing means is not the command last stored in said command storing means and if said execution end status of said command executed by said command processing means is normal.

5,313,589
LOW LEVEL DEVICE INTERFACE FOR DIRECT ACCESS STORAGE DEVICE INCLUDING MINIMUM FUNCTIONS AND ENABLING HIGH DATA RATE PERFORMANCE
James E. Donaldson; Gregory G. Floryance, and Steven A. Schmitt, all of Rochester, Minn., assignors to IBM Corporation, Rochester, Minn.
Continuation of Ser. No. 700,658, May 15, 1991, abandoned.
This application Mar. 12, 1993, Ser. No. 31,285
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—275 **11 Claims**



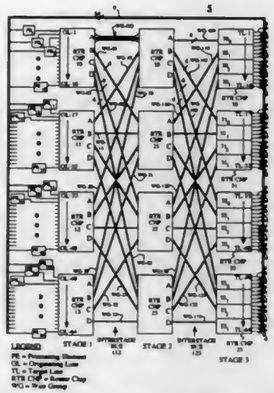
11. A controller/device interfacing method for transferring information between a controller and a plurality of devices with a two-wire serial low level device interface (LLDI) in a direct access storage device, said method performed by the LLDI comprising the steps of:
receiving and transmitting serialized message and data information between the controller and the devices in the direct access storage device;
providing read data function hardware for transmitting requested data from a device to the controller in the direct access storage device responsive to a received predetermined read data information from the controller;
providing write data function hardware for writing the received data from the controller to a device in the direct access storage device responsive to a received predetermined write data information from the controller;
providing a non-message passthru block for identifying a predetermined control bit in each information byte and blocking received message information from received data information responsive to an identified predetermined control bit; and
asynchronously transmitting message information to the controller and to at least one device, said message information being asynchronously transmitted at any time including within and between data information transfers.

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5,313,590
SYSTEM HAVING FIXEDLY PRIORIZED AND GROUPED BY POSITIONS I/O LINES FOR INTERCONNECTING ROUTER ELEMENTS IN PLURALITY OF STAGES WITHIN PARRALLEL COMPUTER

Stuart A. Taylor, Sunnyvale, Calif., assignor to MasPar Computer Corporation, Sunnyvale, Calif.

Filed Jan. 5, 1990, Ser. No. 461,572
Int. Cl.[5] G06F *13/00*; H04Q *11/04*
U.S. Cl. 395—325 **19 Claims**



1. A network for interconnecting a plurality of router elements to thereby form a routing system within a parallel computer system for routing data from source processing elements to destination processing elements, each of said router elements including a plurality of input lines and a plurality of output groups, each of said output groups having a plurality of output lines, wherein said input lines and said output lines of each of said router elements are fixedly prioritized by position, and wherein each of said router elements directs data from said input lines to said output lines according to an address signal which selects an output group such that is a first set of data on a higher priority input line is directed to a selected output group and a second set of data on a lower priority input line is also directed to said selected output group then said first set of data is directed to a higher priority output line of said selected output group and said second set of data is directed to a lower priority output line of said selected output group, said network comprising:

a first connecting means connected to a first output line from a first of said router elements in a first stage of router elements and to a first input line of a second of said router elements in a second stage of router elements;

a second connecting means connected to a second output line from said first of said router elements and to a second input line of said second of said router elements,

wherein said first output line and said second output line are included within a first output group of said first of said router elements, wherein said first output line has a fixed higher priority position than said second output line, and wherein said first input line of said second of said router elements has a fixed lower priority position than said second input line of said second of said router elements;

a third connecting means connected to a third output line from said first of said router elements and to a third input line of said second of said router elements;

a fourth connecting means connected to a fourth output line from said first of said router elements and to a fourth input line of said second of said router elements,

wherein said third output line and said fourth output line are included within said first output group of said first of said router elements, and said third output line has a lower priority than said second output line and a higher priority than said fourth output line, and said third input line of said second of said router elements has a lower priority than said fourth input line of said second of said router elements and a higher priority than said second input line of said second of said router elements;

a fifth connecting means connected to a fifth output line from a third of said router elements in said first stage of router elements and to a fifth input line of said second of said router elements;

a sixth connecting means connected to a sixth output line from said third of said router elements and to a sixth input line of said second of said router elements;

a seventh connecting means connected to a seventh output line from said third of said router elements and to a seventh input line of said second of said router elements; and

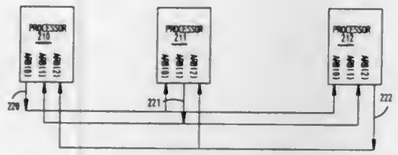
an eighth connecting means connected to an eighth output line from said third of said router elements and to an eighth input line of said second of said router elements;

wherein said fifth, sixth, seventh, and eighth output lines from said third of said router elements are included within a first output group of said third of said router elements, and wherein said sixth output line has a lower priority than said fifth output line and a higher priority than said seventh output line, and wherein said eighth output line has a lower priority than said seventh output line, and wherein said sixth input line of said second router element has a higher priority than said fifth input line and a lower priority than said seventh input line, and wherein said eighth input line has a higher priority than said seventh input line.

5,313,591
COMPUTER BUS ARBITRATION FOR N PROCESSORS REQUIRING ONLY N UNIDIRECTIONAL SIGNAL LEADS

Gregory S. Averill, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 25, 1992, Ser. No. 904,118
Int. Cl.[5] G06F *13/368*
U.S. Cl. 395—325 **8 Claims**



1. In a computer system having a plurality of processors interconnected by a bus, wherein each processor drives exactly one associated arbitration signal line connected to all processors, and wherein one of the processors has initiated a variable length transaction on the bus, a method for signaling the completion of the variable length transaction, the method comprising:

A. driving its associated arbitration signal line to logical TRUE by each processor which is busy implementing the transaction;

B. driving its associated arbitration signal line to logical FALSE by each processor which is not busy implementing the transaction;

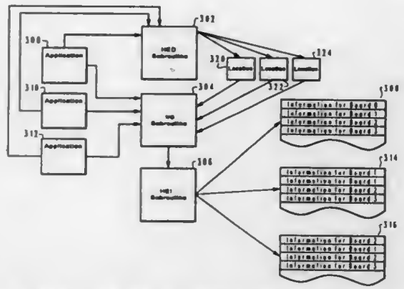
C. detecting the logical state of all arbitration signal lines by the processor which initiated the transaction; and

D. detecting that the transaction is complete, by the processor which initiated the transaction, solely by detecting when all arbitration signal lines are being driven to logical FALSE.

5,313,592
METHOD AND SYSTEM FOR SUPPORTING MULTIPLE ADAPTERS IN A PERSONAL COMPUTER DATA PROCESSING SYSTEM

Michael F. Buondonno, Newtown, Pa.; Craig N. Kindell, Delray Beach, Fla.; Kenneth L. Milsted, Boynton Beach, Fla., and Brian E. Yoder, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,473
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **11 Claims**



1. A method in a data processing system for providing communication between a plurality of application software and a plurality of devices disposed in a plurality of relative locations through an interface capable of accessing only a single device at a prespecified relative location, wherein said plurality of application software is concurrently executing within said data processing system, said method comprising:

establishing a device table for each of said plurality application software, wherein each device table includes device parameter information and device address information for each of said plurality of devices at a plurality of relative locations, including said prespecified relative location;

specifying a particular device for use with a selected application software;

overwriting device parameter information and device address information for said single device at said prespecified relative location within said device table established for said selected application software with device parameter information and device address information for said particular device, wherein said device parameter information and said device address information overwritten in said prespecified relative location in said device table established for said selected application may be utilized by said interface capable of accessing only a single device at a prespecified relative location to provide communication between said selected application software and said particular device; and

directing data from said selected application software to said particular device utilizing said device parameter information and device address information stored within said device table for said selected application software.

5,313,593
PERSONAL COMPUTER SYSTEM WITH BUS NOISE REJECTION

Edmond H. Barakat; Arthur L. Chin, and Eric B. Schorn, all of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 17, 1992, Ser. No. 947,018
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **6 Claims**

1. A personal computer system comprising:

a local processor bus for passing data signals;

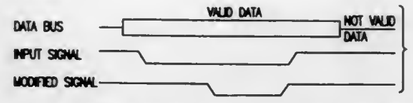
a microprocessor operatively connected with said local processor bus for transfer of data signals through said local processor bus;

an option bus for receiving option cards and for passing data signals to and from any option card received;

a planar I/O bus for passing data signals;

a bus controller operatively connected with said local processor bus and said option bus and said planar I/O bus for controlling passage of data signals between any two of said local processor bus and said option bus and said planar I/O bus to and from said microprocessor; and

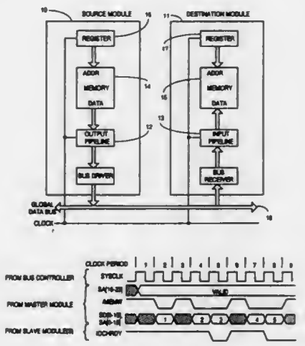
a signal passing component operatively connected for exchange of data signals with system components operatively connected with said local processor bus and having a segment providing a state machine for receiving external command signals passed on one of said busses and for passing internal command signals identifying valid data intervals, said state machine requiring a predetermined minimum length of external command signal for issuance of an internal command signal and terminating an internal command signal with termination of an external command signal so as to avoid any adverse effects of crosstalk and transmission line noise on external command signals and loss of data integrity thereby possibly occurring.



5,313,594
METHODS AND APPARATUS FOR DATA TRANSFER BETWEEN SOURCE AND DESTINATION MODULES USING A READY SIGNAL

John F. Wakerly, Mountain View, Calif., assignor to Alantec, Inc., San Jose, Calif.

Division of Ser. No. 304,053, Jan. 30, 1989, Pat. No. 5,237,670.
This application Oct. 19, 1992, Ser. No. 964,182
Int. Cl.[5] G06F *13/42, 13/00*
U.S. Cl. 395—325 **10 Claims**



8. A method of transferring n words, n being an integer greater than 1 (one), from a source module to a destination module on a bus, comprising the steps of;

generating a clock signal;

delivering said n words one by one in sequence from said source module to said bus, each word being delivered within one respective period of said clock signal;

receiving said n words from said bus by said destination

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module, each word being received within one respective period of said clock signal; and

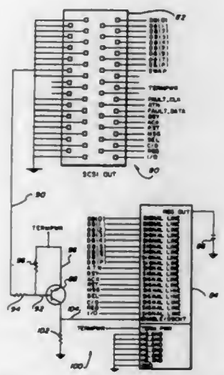
for each word W of the first n−1 words, generating, during the respective period during which the word W is delivered to said bus, a signal indicating to said source module whether to deliver, during a predetermined subsequent period, the next word to said bus.

5,313,595

AUTOMATIC SIGNAL TERMINATION SYSTEM FOR A COMPUTER BUS

Mark S. Lewis, and Ronald R. Ravey, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 10, 1992, Ser. No. 988,773
Int. Cl.[5] G06F *13/00;* **H03H** *11/28;* **H04B** *3/00*
U.S. Cl. 395—325 **16 Claims**



7. A signal terminator for a computer bus having a number of devices coupled thereto comprising:

singal termination means for connection to the bus and operative between a first signal termination state and a second termination disconnnect state thereof; and

means operatively controlling said signal termination means for automatically detecting an additional device coupled to said bus

so that said signal termination means will transition from said first signal termination state to said second termination disconnect state thereof if said additional device is detected by said detecting means.

5,313,596

MOTORIZED PORTABLE COMPUTER/EXPANSION CHASSIS DOCKING SYSTEM

Dan E. Swindler, 2404 Messick Loop W., Round Rock, Tex. 78681; Pearce R. Jones, 3807 Rockledge Dr., Austin, Tex. 78731; Mark B. Penniman, 1500 Dexter St., Austin, Tex. 78704; John P. Busch, 5307 Rambling Range, Austin, Tex. 78727; Thomas Shu, 12205 Klondike Rush Point, Austin, Tex. 78726; Thomas J. Kocis, 11103 Wintergreen Hill, Austin, Tex. 78750; Michael D. Durkin, 6308 Gato Path, Austin, Tex. 78731, and Orin Ozias, 10806 Yucca Dr., Austin, Tex. 78759

Filed Jan. 5, 1993, Ser. No. 858
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **74 Claims**

1. A motorized portable computer/docking station system comprising:

a portable computer having first operating components therein and a first electrical connector structure disposed on a rear side of said portable computer and connected to said first operating components;

a docking station housing having an internal chamber and an external opening through which said portable computer may be manually inserted rearwardly into said internal chamber, said internal chamber having a rear side wall portion;

second operating components disposed within said housing and being connectable to external peripheral computer devices;

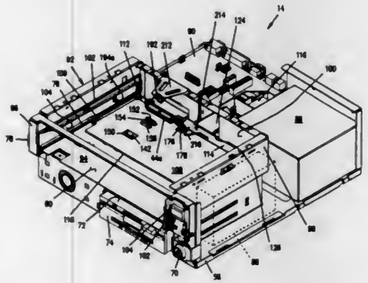
a travel member carried within said internal chamber for forward and rearward movement relative to said housing between;

(1) a receiving position in which said travel member is disposed generally intermediate said housing opening and said rear side wall portion of said internal chamber and is oriented to underlie said portable computer in response to manual insertion thereof into said internal chamber through said housing opening,

(2) a docking position in which said travel member is rearwardly shifted relative to its receiving position and disposed adjacent said rear side wall portion of said internal chamber, and

(3) an ejection position in which said travel member is forwardly shifted relative to its receiving position,

said travel member being configured to forwardly drive said portable computer when said travel member is forwardly moved from said docking position to said ejection position;



motor means connected to said travel member and selectively operable to forcibly drive it between said receiving, docking and ejection positions thereof;

a second electrical connector structure supported adjacent said rear side wall portion of said internal chamber, said second electrical connector structure being connected to said second operating components and being releasably interengageable with said first electrical connector structure to operatively connect said first and second operating components;

latch means carried by said travel member for movement therewith, said latch means being operative to:

(1) lock said portable computer to said travel member, for driven rearward movement therewith, in response to manual insertion of said portable computer into said internal chamber while said travel member is in said receiving position thereof, and

(2) unlock the inserted portable computer from said travel member in response to driven movement of said travel member from said docking position toward said ejection position;

cooperating means carried on said portable computer and in said internal chamber for maintaining said first and second electrical connector structures in facing alignment with one another as said portable computer is moved through said internal chamber; and

control means for operating said motor means to:

(1) drive said travel member, with the inserted portable computer locked thereto by said latch means, from said receiving position to said docked position to forcibly interengage said first and second electrical connector structures, and

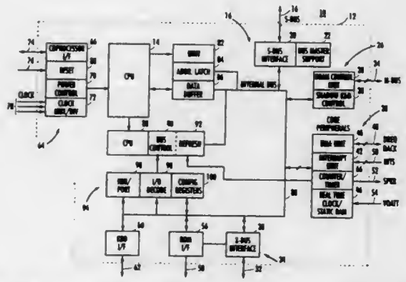
(2) subsequently drive said travel member from said docking position to said ejection position to thereby disengage said first and second electrical connector structures from one another and facilitate the manual removal of said portable computer from said internal chamber.

5,313,597

SYSTEM FOR CONTROLLING COMMUNICATIONS AMONG A COMPUTER PROCESSING UNIT AND A PLURALITY OF PERIPHERAL DEVICES

Douglas D. Gephardt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Austin, Tex.

Continuation of Ser. No. 576,019, Aug. 31, 1990, abandoned.
This application Jul. 27, 1993, Ser. No. 97,868
Int. Cl.[5] G06F *13/00, 13/38, 13/36*
U.S. Cl. 395—325 **6 Claims**



6. A system for providing communications between a computing apparatus and a plurality of peripheral devices located externally of said computing apparatus, said plurality of peripheral devices being arrayed in operative connection with a plurality of external buses; said computing apparatus including a computer processing unit; said computer processing unit and each respective peripheral device of said plurality of peripheral devices being uniquely identified by an address; the system comprising:

a plurality of buffer means for establishing an interface between said computing apparatus and said plurality of external buses, there at least being one respective buffer means of said plurality of buffer means for each respective external bus of said plurality of external buses;

an internal bus means for providing communication path routing within the system, said internal bus means operatively connecting said plurality of buffer means with said computer processing unit; and

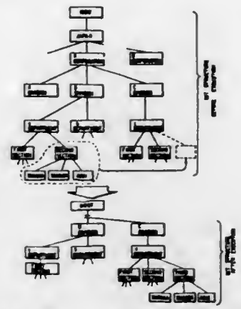
a bus control means for controlling routing of data among said computer processing unit and said plurality of peripheral devices; said bus control means being operatively connected with said internal bus means and said computer processing unit; said bus control means including an information storage means for retaining stored routing information representing selected correspondences between each said respective peripheral device with said at least one respective buffer means, said bus control means responding to signals received from said computer processing unit to select specified routing information from said stored routing information for establishing communication path routing required by said signals.

5,313,598

METHOD FOR CHANGING NON-LEAF ENTRY IN TREE STRUCTURE OF OSI DIRECTORY INFORMATION BY SEQUENTIALLY ISSUING OSI DIRECTORY COMMANDS FOR THE NON-LEAF ENTRY AND LOWER ENTRIES ASSOCIATED THEREWITH IN RESPONSE TO DECODED CHANGE COMMAND

Keiko Yamakawa, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1990, Ser. No. 627,866
Claims priority, application Japan, Dec. 19, 1989, 1-327315
Int. Cl.[5] G06F *9/22, 12/00*
U.S. Cl. 395—375 **8 Claims**



1. A method for changing an OSI (Open Systems Interconnection) directory information including a plurality of entries of a tree structure, the method being performed by an apparatus and comprising the steps of:

(a) decoding a command;

(b) if the decoded command is any one of a plurality of OSI directory commands, performing the substeps of

(b1) transmitting the decoded command to a DSA (directory service agent),

(b2) generating, in the DSA, an error message in response to the decoded command if the decoded command is a command which can only be executed for a leaf entry but designates a non-leaf entry having associated therewith at least one lower entry, or if the decoded command is a command for adding an entry but designates an entry that already exists, and

(b3) if an error message is not generated in the DSA in response to the decoded command, executing, in the DSA, the decoded command;

(c) if the decoded command is not any one of a plurality of OSI directory commands but is a change command for changing a portion of the directory information including a non-leaf entry at least one lower entry associated with the non-leaf entry, or if an error message is generated in the DSA in response to the decoded command and the decoded command is a command which can only be executed for a leaf entry but designates a non-leaf entry having associated therewith at least one lower entry, performing the substeps of

(c1) sequentially issuing to the DSA, in response to the decoded command, OSI directory commands for the non-leaf entry and the at least one lower entry, the issued OSI directory commands being determined based on the decoded command, and

(c2) executing, in the DSA, the issued OSI directory commands to change the tree structure of the directory information.

5,313,599

Patent Not Issued For This Number

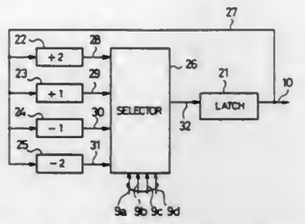
VOL 1162 ISS 3 MAY 17 1994 UMI

5,313,600

SYSTEM FOR CONTROLLING THE NUMBER OF DATA PIECES IN A QUEUE MEMORY

Yoshio Kasai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 388,794, Aug. 2, 1989, abandoned. This application Aug. 11, 1992, Ser. No. 928,144
Claims priority, application Japan, Dec. 2, 1988, 63-306545
Int. Cl.[5] G06F 9/22
U.S. Cl. 395—375 9 Claims



1. A system for controlling the number of data pieces in a queue memory, comprising:

means for fetching an external instruction having a detectable number of data pieces and for providing an input information signal representing said detectable number;

a memory for receiving and storing said external instruction and for providing an instruction having a particular number of data pieces;

decoding means, receiving said instruction having said particular number of data pieces, for providing an output information signal representing said particular number;

a counter for holding and updating a combined information signal representing a total number of data pieces presently stored in said memory, said counter further comprising:

a plurality of means arranged in parallel, each responsive to said current value of said combined information signal for producing an adjusted information signal;

selecting means, receiving said adjusted information signals and responsive to said second control signal, for providing a selected one of said adjusted information signals; and

means for receiving and holding said selected adjusted information signal and for providing said selected adjusted information signal as said updated current value of said combined information signal; and

control means, receiving said current value of said combined information signal and responsive to said input information signal and said output information signal, for providing a first control signal and a second control signal to said memory and said counter, respectively.

5,313,601

REQUEST CONTROL APPARATUS

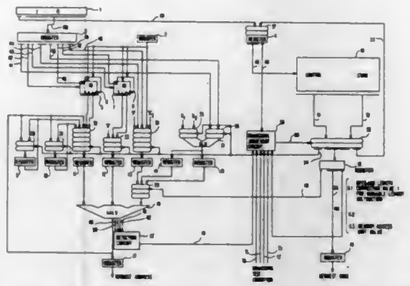
Katsumi Tanaka, and Toshiteru Shibuya, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 869,058, Apr. 16, 1992, abandoned, which is a continuation of Ser. No. 302,756, Jan. 27, 1989, abandoned. This application Jul. 14, 1993, Ser. No. 91,741
Claims priority, application Japan, Jan. 30, 1988, 63-18551; Jan. 30, 1988, 63-18552
Int. Cl.[5] G06F 12/04, 12/08
U.S. Cl. 395—400 4 Claims

1. A request control apparatus for controlling a memory request in a computer system, said memory request involving executing an instruction having a variable-length operand, managing a main store having a page size of 2^n byte units by on-demand-paging processing and executing an instruction or an operation in not greater than 2^m (n is greater than m) byte operand units, including:

effective address generation means for generating an effective address corresponding to said memory request, said effective address including n least significant bits, said n least significant bits including (n—m) most significant bits;

detection means, coupled to said effective address generation means, for detecting a presence of operand data on a particular memory page by referring to said (n—m) most



significant bits of said n least significant bits of said effective address; and

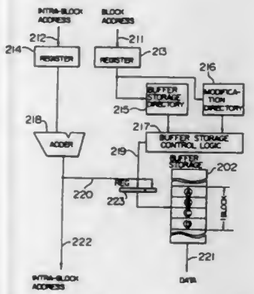
means for preventing an issuance of a check request for said operand data if said detection means has detected said presence of said operand data on said particular page, thereby controlling said memory request.

5,313,602

MULTIPROCESSOR SYSTEM AND METHOD OF CONTROL OVER ORDER OF TRANSFER OF DATA BETWEEN BUFFER STORAGES

Kouji Nakamura, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 18, 1989, Ser. No. 340,080
Claims priority, application Japan, Apr. 20, 1988, 63-97500
Int. Cl.[5] G06F 13/00, 12/06
U.S. Cl. 395—425 5 Claims



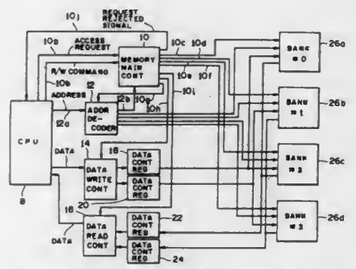
3. A multi-processor system, comprising a plurality of processors for decoding and executing instructions, a main storage, a plurality of buffer storages for storing copies of data stored in said main storage, and a plurality of buffer storage control means each connected to a respective one of said plural processors and including a respective one of said plural buffer storages for controlling a respective one of said buffer storages and for performing data transfer with other buffer storage control means, wherein when data required by a given one of said processors is absent from the buffer storage controlled by the buffer storage control means connected to said given processors, a block address, at which a data block including said required data is located and an intra-block address at which said required data is located within said data block, to another buffer storage control means from said buffer storage control means connected to said given one of said processors, and wherein in said another buffer storage control means, a decision is made using said intra-block address as to which data is required by said given one of said processors, said required data and the intra-block address being transferred to the buffer storage control means connected to said given one of said processors with priority over other data included in the data block with said required data.

5,313,603

ARRANGEMENT OF CONTROLLING MEMORY ACCESS REQUESTS TO GROUPED MEMORY BANKS

Tobru Takishima, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Oct. 31, 1990, Ser. No. 606,985
Claims priority, application Japan, Nov. 1, 1989, 1-285934
Int. Cl.[5] G06F 12/00
U.S. Cl. 395—425 4 Claims



1. An apparatus for controlling access requests to memory banks in a digital data processing system, comprising;

a system controller;

a plurality of memory banks which are divided into a plurality of bank groups;

first means operatively coupled between said system controller and said plurality of memory banks and controlling read and write operations thereof, said first means receiving a plurality of bank access requests, said first means issuing a first control signal indicating that a bank access request has not been accepted when two or more bank access requests consecutively request access to one bank group, said first control signal being applied to said system controller; and

a plurality of pairs of read and write data control registers, each of the pairs of read and write data control registers being operatively coupled to a different bank group and being controlled by said first means.

5,313,604

METHOD FOR LOCATING COMPRESSED DATA IN A COMPUTED MEMORY BACK UP DEVICE INCLUDING STEPS OF REFINING ESTIMATER LOCATION

Kurt E. Godwin, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 13, 1990, Ser. No. 612,801
Int. Cl.[5] G06F 12/02
U.S. Cl. 395—425 37 Claims

1. A method of accessing data stored in compressed form in a memory media associated with a programmable data processor, wherein such data has an identification index based upon uncompressed data, comprising the steps of:

a. designating a desired data; then

b. calculating an estimated location of said data within said memory media through use of said identification index based upon uncompressed data by applying a compression ratio; then

c. reading said media at the estimated location; then



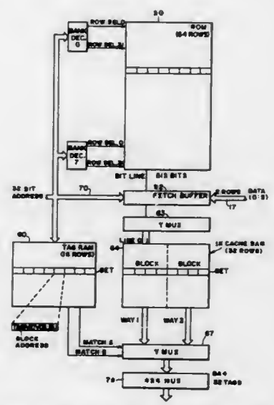
d. locating said desired data through operation of said programmable data processor.

5,313,605

HIGH BANDWITH OUTPUT HIERARCHICAL MEMORY STORE INCLUDING A CACHE, FETCH BUFFER AND ROM

Scott Huck; Sunil Shenoy, both of Beaverton, Oreg., and Frank S. Smith, Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 20, 1990, Ser. No. 630,534
Int. Cl.[5] G06F 12/00, 13/00, 15/78; G11C 15/00
U.S. Cl. 395—425 2 Claims



1. A buffer-backing store apparatus for supplying stored words at unique address locations to a macrobus (19) in response to an address comprising:

a memory (18) for storing first words corresponding to first unique address locations within said memory;

a ROM (60) for storing second words corresponding to second unique address locations at word positions within a row of said ROM;

said ROM having ROM column lines;

a cache RAM (64) for storing a copy of some of said first words in accordance with a use algorithm;

said cache RAM having cache RAM column lines and cache RAM bit lines; and,

a first multiplexer (63) between said ROM (60) and said

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cache RAM (64) for multiplexing said ROM column lines to drive said Cache RAM bit lines directly;

said word positions within a row of said ROM being so ordered as to enable multiple words to be read out simultaneously;

each ROM bit-cell of said ROM (60) being half the horizontal pitch of a Cache RAM bit-cell, such that two ROM columns correspond to one Cache RAM column; and,

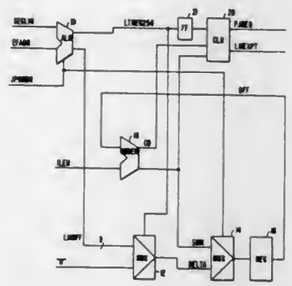
said Cache RAM (64) being coupled to said ROM (60) such that one RAM cell matches two ROM cells in pitch and hence two ROM columns are multiplexed to the bit lines of said Cache RAM to thereby allow cache update and read out of the multiple words to occur at the same time.

5,313,606

SYSTEM FOR DETECTING BOUNDARY CROSS-OVER OF INSTRUCTION MEMORY SPACE USING REDUCED NUMBER OF ADDRESS BITS

Tuan Luong; James S. Blomgren, and Winnie Yu, all of San Jose, Calif., assignors to Chips and Technologies, Inc., San Jose, Calif.

Filed Jan. 17, 1991, Ser. No. 642,977
Int. Cl.[5] G06F *12/14*
U.S. Cl. 395—425 **1 Claim**



1. In a data processor that fetches instructions from a designated control segment of memory, with the segment accessed by addresses in a control segment address space beginning at a base address and ending at a terminal address equal to a limit value added to the base address, where the data processor generates a first control signal when a control transfer instruction is executed or when a second control signal is generated, an improved system for determining whether the address of an instruction to be fetched is included in the control segment address space, said system comprising:

means for generating, in response to a received first control signal, status information indicating whether a received target address of an instruction included in the control address space is in a terminal block, with the terminal block comprising a predetermined number (2^m) of bytes addressable by an m-bit address, of the control address space, with the terminal block address space ending at the terminal address and beginning at a terminal block base address offset from the terminal address by the predetermined number, where said predetermined number is smaller than said limit value;

means, coupled to said means for generating, for storing said status information;

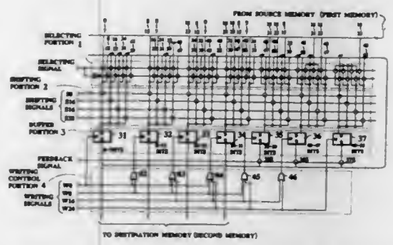
means for calculating an m-bit DELTA value equal either to the difference between said terminal address and said target address that specifies the negative offset of said target address from said terminal block starting address if said stored status information indicates that said target address is included in the terminal block or equal to zero if said stored status information indicates that said target address is not included in said terminal block;

5,313,607

DIRECT MEMORY ACCESS CONTROLLER

Takeji Tokumaru, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 22, 1991, Ser. No. 659,240
Claims priority, application Japan, Feb. 22, 1990, 2-039709
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 **4 Claims**



1. A direct memory access (DMA) controller for supporting data transfer operations between a first memory means and a second memory means in a misarrayed state, comprising:

selecting means for receiving and selecting data items;

shifting means for shifting the data items selected by the selecting means in a predetermined direction;

storage means for storing the data items shifted by the shifting means per unit of the data items;

feedback means for feeding back the data items from the storage means to the selecting means; and

transfer means for transferring the data items to the second memory means when the data items have an address arrangement state which is the same as an address arrangement of the second memory means,

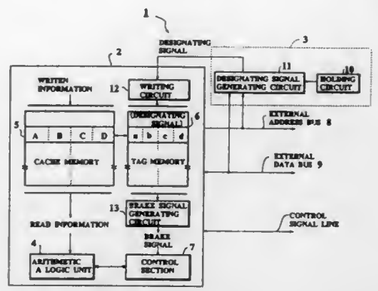
wherein the unit of the data items for data transfer is one byte, the selecting means includes a plurality of selectors having logic states determined by selection signals provided from outside the DMA controller, and the selecting means inputs the data items from the first memory means and the storage means.

5,313,608

MICROPROCESSOR WITH CACHE MEMORY FOR SUPPORTING DEBUGGING OPERATIONS

Hiroyuki Takai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1991, Ser. No. 661,314
Claims priority, application Japan, Feb. 27, 1990, 2-44555
Int. Cl.[5] G06F *13/32*
U.S. Cl. 395—425 **8 Claims**



1. A microprocessor for supporting debugging operations while executing arithmetic processing by utilizing pieces of data stored in an external memory, said microprocessor comprising:

arithmetic-logic means for executing arithmetic processing by utilizing said pieces of data; and

debugging supporting means comprising

a holding section for holding a designated address AD1, and

a detecting section for detecting an address signal indicating said designated address AD1 held in said holding section from among address signals provided

from said arithmetic-logic means to an external address bus;

said arithmetic-logic means being located separately from

said debugging supporting means and comprising

a cache memory for storing each piece of said data at an address,

a tag memory for storing addresses existing in said cache memory,

an arithmetic unit for reading out a piece of data stored in said cache memory and executing arithmetic processing utilizing said piece of data,

a control section for sending an address checking signal to said tag memory to check whether or not an address AD2 is stored in said tag memory when a piece of data stored at said address AD2 of said cache memory is required by said arithmetic unit, providing a group of address signals which indicates a group of addresses AD including said address AD2 to said external address bus to fetch pieces of data DA stored at addresses AD of said external memory in cases where said address AD2 is not stored in said tag memory,

providing said addresses AD to said tag memory, and providing said pieces of data DA stored in said external memory to said cache memory,

a tagging section for tagging said designated address AD1 with a designating signal stored in said tag memory under control of said control section when the said address signal indicating said designated address AD1 is detected by said detecting section of said debugging supporting means, and

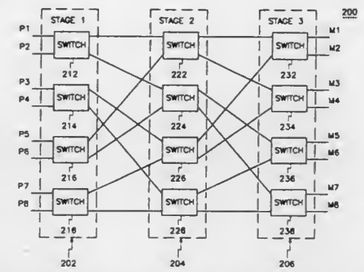
a command signal generating section for generating a command signal when said designated address AD1 tagged by said tagging section is accessed by said address checking signal sent by said control section, and for providing said common signal to said control section to brake said arithmetic processing executed in said arithmetic unit, wherein said arithmetic processing executed in said arithmetic unit is braked under control of said control section after said command signal is provided to said control section.

5,313,609

OPTIMUM WRITE-BACK STRATEGY FOR DIRECTORY-BASED CACHE COHERENCE PROTOCOLS

Sandra J. Baylor, Mt. Kisco; Kevin P. McAuliffe, Peekskill, and Bharat D. Rathi, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1991, Ser. No. 704,553
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **17 Claims**



4. A system for optimizing the performance of a multiprocessor system having write-back caches and a multistage interconnection network connected to a shared memory by allowing concurrent line transfer and write-back operations, comprising:

control means for receiving requests for a modified cache line from a requesting cache, for requesting a write-back of modified words in said modified cache line from a source cache and concurrently requesting a transfer of an old cache line from the memory, said old cache line corresponding in address identity with said modified cache line, and for transferring said modified cache line to said requesting cache; and

buffer means, connected to said control means, for capturing said modified words written back from said source cache and concurrently storing said old cache line from the memory.

5,313,610

DIRECT MEMORY ACCESS CONTROL DEVICE FOR USE WITH A SINGLE N-BIT BUS WITH MOF THE N-BITS RESERVED FOR CONTROL SIGNALS AND (N-M) BITS RESERVED FOR DATA ADDRESSES

David C. Oliver, Maple Heights; John F. Vesel, Willowick; Michael J. Petrillo, Euclid, and James M. Kapcio, Cleveland, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Jul. 3, 1991, Ser. No. 725,549
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—425 **8 Claims**

6. A DMA control device comprising:

a single bidirectional internal n bit bus, where n is an integer, m of the n bits being reserved for control signals and a remainder of the n-bits being available for data addresses;

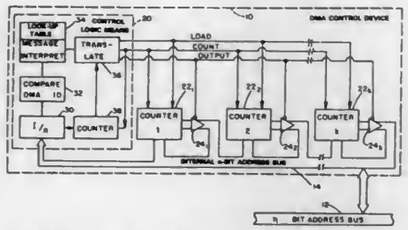
an address holding means for holding data addresses which data addresses have less than n bits so as to be conveyable on said remainder of the n-bits of the bidirectional internal n-bit bus, the address holding means being connected with

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the remainder of the n bits of the bidirectional internal n bit bus which is reserved for data addresses;

a plurality of three-state buffers connected with the address holding means and with the bidirectional internal n bit bus for providing an address conveying path from the address holding means to the bidirectional internal n bit bus;

a internal control logic means connected with the bidirectional bus, the control logic means receiving control signals from the m bits of the bidirectional internal n bit bus reserved for control signals and generating in response to the control signals (1) load signals for causing the address holding means to load starting addresses from said remainder of the n bits of the bidirectional internal n bit bus, (2) count signals for causing the loaded addresses to be incremented, and (3) output signals for causing the three-state buffers to output the incremented addresses to be output on the bidirectional internal n bit bus.

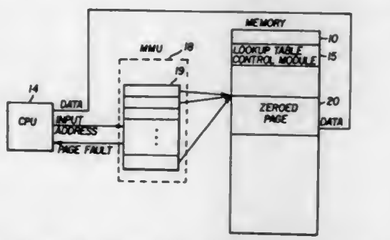


5,313,611

METHOD AND APPARATUS FOR MAINTAINING A LOOKUP TABLE FOR STORING FUNCTION VALUES

James W. Franklin, Pepperell, and Gary H. Newman, Concord, both of Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 737,922, Jul. 29, 1991, Pat. No. 5,247,632, which is a continuation of Ser. No. 300,783, Jan. 23, 1989, abandoned. This application Mar. 23, 1992, Ser. No. 855,237
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 22 Claims



8. A method for building and accessing a table storing an evaluated function value for each of a plurality of points in a domain of a function comprising the steps of:

generating an input address which identifies a selected domain point,

mapping the input address to a corresponding storage location in a memory device, wherein the input address is initially unallocated and mapped to a default storage location shared with other input addresses and containing a default lookup table value, and wherein the input address is subsequently allocated and mapped to a corresponding storage location allocated to said input address,

determining whether said input address is allocated based on the entry table value provided in response to the input address,

determining the value of said function at said selected domain point when the input address is unallocated,

storing said determined function value in a storage location allocated to said input address, and

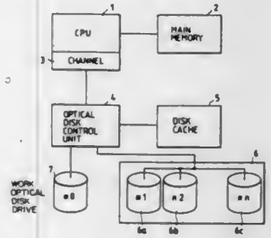
remapping said input address to said allocated storage location.

5,313,612

INFORMATION RECORDING AND REPRODUCING APPARATUS INCLUDING BOTH DATA AND WORK OPTICAL DISK DRIVES FOR RESTORING DATA AND COMMANDS AFTER A MALFUNCTION

Isao Satoh, and Yoshihisa Fukushima, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 401,293, Aug. 31, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 22,418
Claims priority, application Japan, Sep. 2, 1988, 63-220945
Int. Cl.[5] G06F *12/16, 11/20*
U.S. Cl. 395—425 12 Claims



1. An information recording and reproducing apparatus comprising:

a data optical disk drive for storing data,

a work optical disk drive for temporarily storing data, and

an optical disk control means for coupling said data optical disk drive and said work optical disk drive to a host device to control recording and reproduction of data,

said optical disk control means for writing both control commands for the host device to update data and host data from said host device into said work optical disk drive and for writing said host data into said data optical disk drive in according with said control commands so as to reproduce both said control commands and said host data written in said work optical disk drive upon occurrence of a malfunction of said data optical disk drive and to restore said host data written in said data optical disk drive on the basis of the control commands reproduced from said work optical disk drive, and

further comprising a disk cache memory for temporarily storing data;

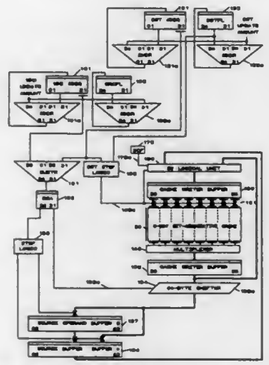
wherein said optical disk control means controls said disk cache memory to write said host data transmitted from said host device into said disk cache memory at the same time that said data-updating control commands and said host data are written from said host device into said work optical disk drive.

5,313,613

EXECUTION OF STORAGE-IMMEDIATE AND STORAGE-STORAGE INSTRUCTIONS WITHIN CACHE BUFFER STORAGE

Steven L. Gregor, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 713,487, Jun. 10, 1991, abandoned, which is a division of Ser. No. 292,304, Dec. 30, 1988. This application Jul. 15, 1993, Ser. No. 92,374
Int. Cl.[5] G06F *12/00, 9/00*
U.S. Cl. 395—425 6 Claims



1. A method for accelerated processing of storage related instructions which involve data stored in a cache unit including machine executed steps of:

processing one of said storage related instructions in order to determine whether any required operands is identified by a cache address in a data array in the cache unit;

copying each of the required operands located in a cache buffer into a read buffer;

loading all of the required operands including the required operands in the read buffer into a logic execution unit located within the cache unit without having to transfer the required operands from the cache unit to an execution unit associated with a central processing unit;

copying a result produced entirely within the cache unit, by the logic execution unit, into a write buffer; and

transferring the result from the write buffer into the data array for storage in the cache unit.

5,313,614

METHOD AND APPARATUS FOR DIRECT CONVERSION OF PROGRAMS IN OBJECT CODE FORM BETWEEN DIFFERENT HARDWARE ARCHITECTURE COMPUTER SYSTEMS

John C. Goettelmann, Point Pleasant, and Christopher J. Macey, Red Bank, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 6, 1988, Ser. No. 280,774
Int. Cl.[5] G06F *15/38*
U.S. Cl. 395—500 2 Claims

1. A method for use in a computer system for processing a first version of a non-source-code computer program expressed in terms of a first instruction set, at least ones of the instructions of said first instruction set having primary and side effects, said method comprising the computer-implemented steps of:

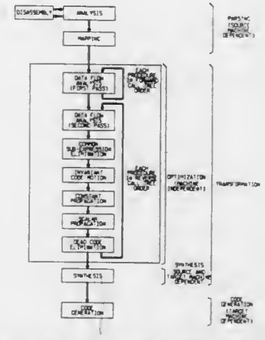
expanding each of at least ones of the instructions of said non-source-code first version into a plurality of instructions which explicitly replicate the primary and side effects of said each instruction of said first version, and

processing the resulting expanded version to eliminate individual ones of the instructions thereof whose elimination does not affect the functionality of said program,

said processing step including the step of performing data flow analysis over said expanded version to identify said individual instructions, and including the further step of identifying procedures within said expanded version, said data flow analysis step being performed globally over said expanded version on a procedure-by-procedure basis,

each of said procedures being comprised of all basic blocks within said expanded version reachable from a respective procedure head block a) which are not themselves procedure head blocks and b) to which flow of control does not pass through any intermediate procedure head block,

a basic block being a sequence of instructions of said expanded version that has exactly one instruction at which control can enter the sequence during execution and exactly one instruction at which control leaves the sequence during execution, and



a procedure head block being a basic block whose entry point is either an entry point of said expanded version or is the target of a call instruction thereof,

at least ones of said procedures including definitions of values of variables, which values have uses in at least one other procedure, and said data flow analysis step including the step of associating such definitions with such uses,

said processing step further including the step of creating a call tree identifying the calling relationships among said procedures, and said associating step including the sequential steps of

processing said procedures in forward call tree order to create a list of those variables used in a procedure that a) are at least potentially defined by a procedure called thereby and b) are used, after the call, in the calling procedure, and

processing said procedures in reverse call tree order to exclude from said list those variables which are not actually defined by the call procedure.

5,313,615

BLOCK DIAGRAM SIMULATOR USING A LIBRARY FOR GENERATION OF A COMPUTER PROGRAM

William C. Newman, San Bruno; Paul F. Titchener, and Douglas B. Powell, both of San Francisco, all of Calif., assignors to Comdisco Systems, Inc., Foster City, Calif.

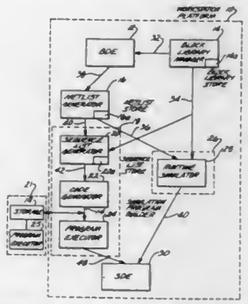
Continuation of Ser. No. 173,771, Mar. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 65,372, Jun. 22, 1987, abandoned. This application Apr. 26, 1990, Ser. No. 514,725
Int. Cl.[5] G06F *5/40, 9/455*
U.S. Cl. 395—500 35 Claims

1. A method for ordering computer software procedures in order in a computing machine for modeling each of multiple blocks of a block diagram, the block diagram being capable of

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having at least one feedback loop, each said block corresponding to at least one of the software procedures for performing at least one function and comprising at least one input or at least one output, one or more of such block diagrams having interconnections for passage of representations between the inputs and the outputs of such blocks forming such block diagram,

the at least one software procedure corresponding to each such block comprising an update output procedure which defines the representation for at least one of said outputs for such block as a function of the representation for at least one of said inputs for such block, or an update state procedure which defines at a current time a state for such block as a function of the representation for at least one of the inputs for such block at a prior time or an update output procedure which defines at a current time the representation for at least one of the outputs of such block as a function of either the current state or the representation for at least one of the inputs of the corresponding block, the method of ordering further comprising the steps of:



a) generating a list of any said input for each of such blocks;

b) generating a feed-through list for each of at least some of such outputs of such blocks, the feed-through list comprising a list of any said input which directly affects the output of the same block; and

c) processing in the computing machine such input and feed-through lists for the one of the block diagrams for ordering of such procedures and comprising the step of determining the occurrence of a predetermined relation between any said input in the feed-through list and in the input list for one of such blocks in the one block diagram and, the step of selectively, depending on the occurrence of the predetermined relation, ordering one of an update state procedure that corresponds to the same block in the order relative to the other update state and update output procedures so that a representation of the input for such update state procedure will have been defined by one of said update output procedures previous in the order.

5,313,616

METHOD FOR ANALYZING CALLS OF APPLICATION PROGRAM BY INSERTING MONITORING ROUTINES INTO THE EXECUTABLE VERSION AND REDIRECTING CALLS TO THE MONITORING ROUTINES

David C. Cline, San Jose; Andrew P. Silverman, Los Gatos, and Farrell W. Wymore, Mountain View, all of Calif., assignors to 88Open Consortium, Ltd., Sunnyvale, Calif.

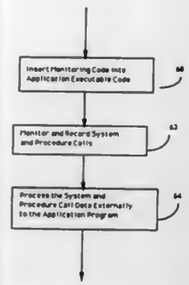
Filed Sep. 18, 1990, Ser. No. 584,189

Int. Cl.[5] G06F *11/30, 9/45*

U.S. Cl. 395—500 **11 Claims**

1. A computer implemented method of verifying conformance or non-conformance of an application program to rules that define services which an operating system will provide, without requiring reference to a source code version of said application program, comprising the steps of,:

from a first binary version of said application program, forming an instrumented binary version of said application program, by inserting monitoring code instruction routines corresponding respectively to different types of requests for service, and by processing said first binary version by locating and identifying requests for services in said first binary version and redirecting each said request for service to a corresponding one of said monitoring code



instruction routines in a manner so that said monitoring code instruction routines are executed in association with corresponding ones of said requests for services which occur in the first binary version,

executing said instrumented binary version of said application program including said monitoring code instruction routines;

comparing calls made while said instrumented binary version of said application program is being executed, against said rules; and

using results of said step of comparing as a basis for verifying said conformance or non-conformance.

5,313,617

MULTI-DISC OPTICAL DATA STORAGE SYSTEM FOR USE WITH A HOST COMPUTER FOR EMULATING A MAGNETIC DISC DEVICE

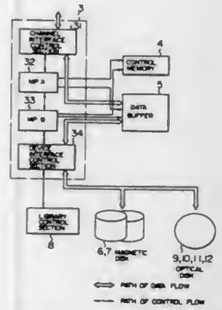
Toshio Nakano, and Masafumi Nozawa, both of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1991, Ser. No. 669,359

Claims priority, application Japan, Mar. 19, 1990, 2-69257

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **19 Claims**



1. A data storage and emulation system for use with an operatively associated host computer using a command in a magnetic disk command format to access data stored according to a magnetic disk data format, the data storage and emulation system comprising:

at least one optical disk having a storage capacity of a first volume of a magnetic disk;

optical disk drive means, receiving said at least one optical disk, for reading and writing data to and from said at least one optical disk in an optical disk data format;

control means, connected to said optical disk drive means and including a data processing means having a first portion responsive to a first command signal received from the host computer in said magnetic disk command format requesting an access to first data stored in said optical drive means according to said optical disk data format, for controlling the reading and writing of the first data to and from the at least one optical disk, the control means including a data processor external of said host computer and having i) a first processing portion interpreting said first command signal and ii) a second processing portion executing said interpreted first command signal to selectively load a first optical disk into said optical disk drive means; and,

means connecting the optical disk drive means and the control means to said host computer for emulating a magnetic disk device by i) receiving data in said magnetic disk data format from and ii) transmitting data in said magnetic disk data format to the host computer through an interface including said data processor equating the at least one optical disk to a magnetic disk device compatible with the host computer.

5,313,618

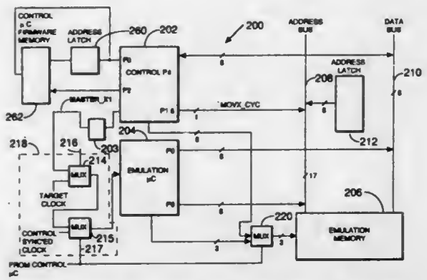
SHARED BUS IN-CIRCUIT EMULATOR SYSTEM AND METHOD

Martin B. Pawloski, Scottsdale, Ariz., assignor to Metalink Corp., Chandler, Ariz.

Filed Sep. 3, 1992, Ser. No. 939,678

Int. Cl.[5] G06F *11/00;* **G01R** *31/28*

U.S. Cl. 395—500 **31 Claims**



1. An in-circuit emulator system architecture comprising:

a) a first programmed data processor having a plurality of I/O ports and a second programmed data processor having a multiplexed address/data bus port, wherein a predetermined number of I/O ports of said first programmed data processor are directly coupled to a first data bus and said multiplexed address/data bus port of said second programmed data processor is directly coupled to said first data bus;

b) a memory having a plurality of address inputs and a plurality of data bus interface terminals, and at least one control signal input, said data bus interface terminals coupled to said first bus;

c) a first multiplexer network having an output, coupled to said second programmed data processor, and a plurality of input terminals for receiving a plurality of clock signals, wherein at least a first one of said plurality of clock signals originates from a target system;

d) a second multiplexer network having at least one output, coupled to said at least one memory control signal input, and a plurality of input terminals for receiving a first plurality of memory control signals from said first programmed data processor, a second plurality of memory control signals from said second programmed data processor, and at least one select control signal from said first programmed data processor;

e) a means for storing information having a plurality of inputs coupled to said first bus, and a plurality of outputs coupled to at least a portion of said plurality of memory address inputs; and

f) an oscillator for providing a clock input signal for at least said first programmed data processor and said first multiplexer network;

wherein said second programmed data processor receives an instruction stream from said memory, and at least one input of said first multiplexer network is directly coupled to at least one of said plurality of I/O ports of said first programmed data processor such that when said at least one input is selected as an output of said first multiplexer network, said second programmed data processor receives a clock signal as an input, said clock signal having timing characteristics determined by instructions executed by said first programmed data processor.

5,313,619

EXTERNAL CLOCK UNIT FOR A COMPUTER

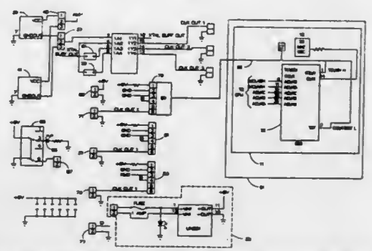
Daniel L. Bumbarger, Hudson, Mass., assignor to Gerard J. Severance, Southborough, Mass.

Filed May 16, 1991, Ser. No. 701,213

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] G06F *1/04*

U.S. Cl. 395—550 **8 Claims**



1. A clock unit for attachment to a DEC 6000 computer, said DEC 6000 computer having a CPU module, said CPU module including a clock distribution device and an oscillator, said oscillator being coupled to said clock distribution device and providing a first clock signal to said clock distribution device, said clock unit being attached to said clock distribution device comprising:

a. means for generating a second clock signal,

b. means for driving the second clock signal,

c. manually operated switch means for generating a control signal for disabling said first clock signal and enabling said second clock signal, and

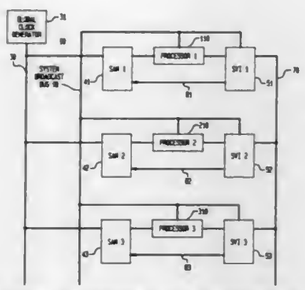
d. a power supply for providing power to said clock unit.

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5,313,620
SELECTIVE RECEIVER FOR EACH PROCESSOR IN A MULTIPLE PROCESSOR SYSTEM

David M. Cohen, Morristown; Bhaskarpillai Gopinath, Watchung, and John R. Vollaro, Clinton, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 335,116, Apr. 6, 1989, abandoned. This application Jul. 1, 1991, Ser. No. 724,194
Int. Cl.[5] G06F *1/04*
U.S. Cl. 395—550 5 Claims



1. Circuitry in combination with a plurality of processors and a system broadcast bus which interconnects the processors and which propagates address information and data information, said circuitry comprising

means for generating successive reference signals,

a first control bus for propagating said reference signals,

a second control bus for propagating a pending signal,

a plurality of substantially identical synchronization circuits each coupling a corresponding one of the processors to said first control bus, and

a plurality of substantially identical shared variable circuits each connected to a corresponding one of said synchronization circuits, and coupling the corresponding one of the processors to the system broadcast bus and to said second control bus,

said each of said synchronization circuits comprising:

means, coupled to the corresponding processor, for storing a quantity indicating a next processing event as communicated by the corresponding processor;

means, responsive to said means for generating said reference signals, for registering said reference signals;

means, coupled to said storing means and said registering means, for comparing said quantity indicating a next processing event stored in said storing means to said reference signal registered in said registering means to provide a comparison signal whenever said contents are equivalent;

first means, coupled to said comparing means, for inhibiting said means for generating said reference signals whenever said comparison signal is asserted and for notifying the corresponding processor upon detection of said comparison signal; and

second means, coupled to the corresponding processor, for inhibiting said means for generating said reference signals in response to said comparison signal being processed by the corresponding processor,

said each of said shared variable circuits comprising:

buffer means, coupled to the system bus and having a first output connected to the corresponding processor and a second output coupled to said means for generating said reference signals, for storing the data information propagating on the system bus as local data and for interrupting the corresponding processor by asserting said first output so as to transmit said local data to the corresponding processor whenever said local data is stored in said buffer means, and for inhibiting said means for generating said reference signals by asserting said second output whenever said buffer means stores said local data;

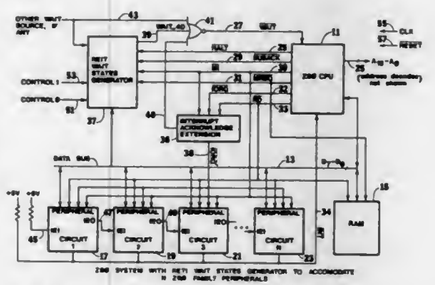
mask memory means, coupled to the system bus and having its output connected to said buffer means, for detecting the address information on the system bus and for enabling said buffer means to store the data information propagating on the system bus as said local data whenever the address information registers in said memory means as being assigned to the corresponding processor; and

pending means, coupling the corresponding processor to said control bus, for generating a pending signal on said control bus responsive to said comparison signal received by the corresponding processor to communicate to all other processors that the corresponding processor has data information to transmit on the system bus.

5,313,621
PROGRAMMABLE WAIT STATES GENERATOR FOR A MICROPROCESSOR AND COMPUTER SYSTEM UTILIZING IT

Stephen H. Chan, Sunnyvale, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 526,115, May 18, 1990. This application Mar. 22, 1993, Ser. No. 34,610
Int. Cl.[5] G06F *1/04*
U.S. Cl. 395—550 5 Claims



1. A computer system, comprising:

a data bus,

a central processing unit (CPU) connected to said data bus and having a machine cycle of a pre-determined minimum number of clock cycles in duration for reading an operational code segment from a memory connected to said data bus, and for reading a return from interrupt (RETI) operational code on said data bus, said RETI operational code having first and second segments as part of a set of instructions stored in said memory, thereby requiring first and second successive machine cycles to read said return from interrupt operational code from the memory,

a plurality of peripheral circuits connected to said data bus, connected by a common interrupt line to said CPU, and connected with each other via a daisy chain configuration such that the CPU can service one interrupt request from one peripheral circuit at a time, said peripheral circuits being individually responsive to said return from interrupt operational code, whereby the response to such a return from interrupt operational code functions to terminate an operation initiated after a peripheral circuit has generated an interrupt request to said CPU over said common interrupt line, and

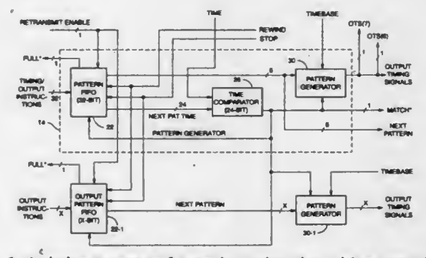
second machine cycle lengthening means in communication with said data bus and said CPU, said second machine cycle lengthening means including means for detecting on said data bus said first machine cycle of the first segment of said return from interrupt operational code, wherein said second machine cycle lengthening means is responsive to detection of said first machine cycle of the first segment of said return from interrupt operational code for causing said CPU to insert a programmable number of additional clock cycles into said second machine cycle,

whereby additional time is provided for the daisy chain peripheral circuits to respond to the return from interrupt operational code before an end of said first and second machine cycles.

5,313,622
TIMING APPARATUS AND METHOD FOR GENERATING INSTRUCTION SIGNALS

James J. Truchard, and Audrey F. Harvey, both of Austin, Tex., assignors to National Instruments, Austin, Tex.

Continuation of Ser. No. 568,480, Aug. 16, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 87,965
Int. Cl.[5] G06F *7/00, 7/62, 9/00, 12/00*
U.S. Cl. 395—550 11 Claims



1. A timing apparatus for use in conjunction with a control system comprising:

a counter generating a sequence of clock counts;

a pattern memory storing a multiplicity of output/timing instructions, each output/timing instruction including a first output portion for controlling an external system and a corresponding timing portion corresponding to one of said clock counts, said pattern memory outputting said output/timing instructions one at a time;

a comparator coupled to said pattern memory to receive one at a time said timing portion of each output/timing instruction outputted by said pattern memory, said comparator coupled to said counter to receive said sequence of clock counts, said comparator comparing said timing portion of each one of said outputted output/timing instructions with said sequence of clock counts, said comparator generating a match indication signal upon occurrence of a match between said timing portion of a respective one of said outputted output/timing instructions and a corresponding one of said clock counts;

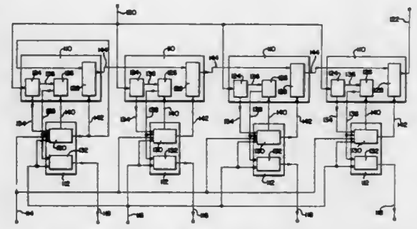
wherein said pattern memory is coupled to said comparator to receive said match indication signal, said pattern memory outputting a next one of said output/timing instructions in response to receiving said match indication signal, said timing portion of said next one of said output/timing instructions corresponding to a subsequent one of said clock counts occurring after said corresponding one of said clock counts; and

a read/write memory coupled to said counter to receive said sequence of clock counts, said read/write memory storing a multiplicity of last minute output instructions, each last minute output instruction including a second output portion for controlling said external system and being stored at an address in said read/write memory corresponding to one of said clock counts, said read/write memory outputting a respective one of said last minute output instructions when a respective clock count correspond to said address in said read/write memory at which said respective one of said last minute output instructions is stored.

5,313,623
METHOD AND APPARTUS FOR PERFORMING DIAGNOSIS SCANNING OF A MEMORY UNIT REGARDLESS OF THE STATE OF THE SYSTEM CLOCK AND WITHOUT AFFECTING THE STORE DATA

Kumar Chinnaswamy, Milford; Hansel A. Collins, Clinton; Michael B. Evans, Marlborough; Timothy P. Fissette, Westminster; Michael A. Gagliardo, Shrewsbury; John J. Lynch, Wayland, and James E. Tessari, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 3, 1990, Ser. No. 547,656
Int. Cl.[5] G06F *11/22*
U.S. Cl. 395—575 27 Claims



1. A method for preserving the integrity of data stored in a memory unit of a data processing system during a power down condition in battery back-up, said memory unit having a normal data processing mode, a step mode and a standby mode of operation, said memory unit operating in said step mode or said standby mode when a memory controller in said system that is associated with said memory unit and that processes operations for a service processor unit console operating in said system is no longer under control of a system clock, said memory unit also having a clock, comprising the steps of:

switching said memory unit from said normal data processing mode into said step mode which allows said memory unit to operate on said clock for operations performed on said memory controller regardless of the state of said system clock;

switching said memory unit from said step mode into said standby mode which allows said memory unit to operate on said clock on battery back-up and allows data to be scanned into and out of said memory controller without affecting the state of said memory unit during said power down condition;

switching said memory unit from said standby mode into said step mode which allows operations to be performed on said memory controller while stopping, single stepping or bursting said system clock; and

switching said memory unit back to said normal data processing mode.

5,313,624
DRAM MULTIPLEXER

Guy Harriman, Palo Alto, and Mark Ross, San Carlos, both of Calif., assignors to Next Computer, Inc., Redwood City, Calif.

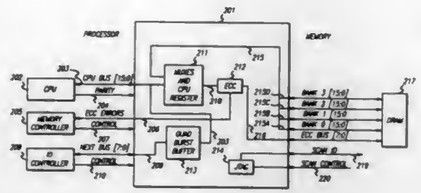
Filed May 14, 1991, Ser. No. 699,911
Int. Cl.[5] G06F *11/10*
U.S. Cl. 395—575 20 Claims

1. A memory multiplexor for providing an interface between a processing means and a plurality of memory banks comprising:

a first bus for communicating with said processing means;

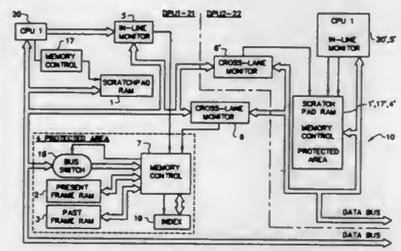
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multiplexing means coupled to said first bus;
a plurality of registers coupled to said multiplexing means;
error correction means coupled to said plurality of registers;



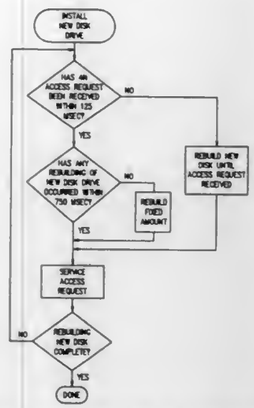
a second bus coupled to said error correction means and to said plurality of memory banks.

5,313,625
FAULT RECOVERABLE COMPUTER SYSTEM
Richard F. Hess, Glendale, and Larry J. Yount, Scottsdale, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 30, 1991, Ser. No. 738,011
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **14 Claims**



1. In a computer system having fault recoverable capability, and including a first and second data processing unit (DPU), wherein each of said first and second DPU is executing the same task essentially in parallel, each DPU comprising:
a) processing means;
b) memory means, operatively connected to said processing means, for storing information;
c) protected memory means, operatively connected to said memory means and to said processing means, for storing system data, wherein said system data stored in said protected memory means is immune from transient conditions; and
d) monitor means, operatively connected to said processing means, said memory means, and said protected memory means of the associated DPU, and further wherein the monitor means of the first DPU is operatively connected to said second DPU and wherein the monitor means of the second DPU is operatively connected to the first DPU, for detecting the occurrence of an upset within the computer system to reinitialize the corresponding DPU, the DPU being reinitialized by said system data from the protected memory means of the corresponding DPU to a condition just prior to the occurrence of the upset thus avoiding utilization of any potentially erroneous data, and thereby permitting the DPU to return to its normal processing with valid data.

5,313,626
DISK DRIVE ARRAY WITH EFFICIENT BACKGROUND REBUILDING
Craig S. Jones, 12015 Scribe Dr., Austin, Tex. 78759, and Anthony L. Overfield, 3807 Palomar, Austin, Tex. 78727
Filed Dec. 17, 1991, Ser. No. 808,841
Int. Cl.[5] G06F *11/22*
U.S. Cl. 395—575 **5 Claims**

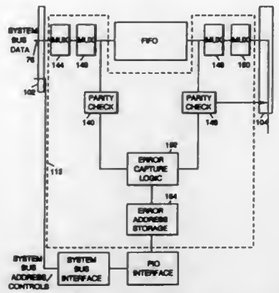


1. A method of rebuilding a disk drive within a redundant array of disk drives, the method comprising the steps of:
a. initiating a background rebuild operation when no access requests have been received by said disk drive for at least a predetermined duration; and interrupting said background rebuild operation before said background rebuild operation is complete if a new access request is received by said disk drive;
b. initiating a background rebuild operation when a programmable number N of access requests have been serviced since the last background rebuild operation, and continuing said background rebuild operation for at least a programmable duration; and
c. continuing steps (a) and (b) until said rebuild operation is complete.

5,313,627
PARITY ERROR DETECTION AND RECOVERY
Nader Amini; Bechara F. Boury; Sherwood Brannon, all of Boca Raton, and Richard L. Horne, Boynton Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 2, 1992, Ser. No. 816,184
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **12 Claims**

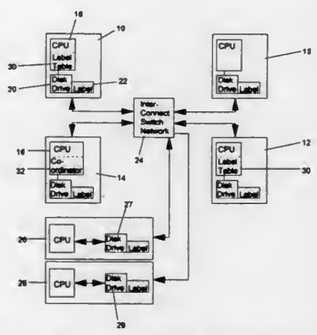
1. A dual-bus computer system, comprising:
system memory and a central processing unit electrically interconnected by a system bus;
a bus interface unit electrically interconnecting said system bus to an input/output bus, said input/output bus having at least one input/output device attached thereto, said input/output device able to initiate individual memory write or memory read cycles to and from said system memory, respectively, over said input/output bus, said bus interface unit and said system bus, said bus interface unit including a bi-directional buffer circuit wherein read or write data transferred between said system bus and said input/output bus over said bus interface unit during said memory read or memory write cycle is temporarily stored during the transfer; and
error detection and storage logic in said bus interface unit for

(i) detecting occurrences of parity errors occurring in said temporarily stored data; (ii) identifying and storing in a storage device the address of a first of said parity errors



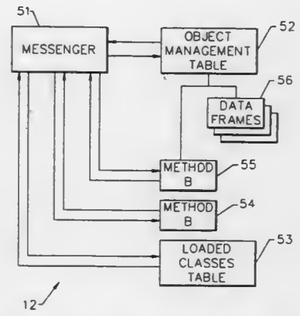
detected during said individual memory read or memory write cycles; and (iii) generating an error signal on said system bus to indicate the occurrence of a parity error.

5,313,628
COMPONENT REPLACEMENT CONTROL FOR FAULT-TOLERANT DATA PROCESSING SYSTEM
Noah R. Mendelsohn, Arlington; James Perchik, Cambridge, and Thomas R. Hancock, Somerville, all of Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1991, Ser. No. 816,350
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **15 Claims**



1. Apparatus for component replacement control in a data processing system, each component assigned a label including a component identifier and a replacement generation value, said apparatus comprising:
table means for storing replacement generation values for each said component;
means for incrementing a replacement generation value assigned to a component that is replaced by a new component, and modifying said new component's label to indicate said incremented replacement generation value and said replaced component's component identifier; and
means for updating said table means to indicate said incremented replacement generation value for said component.

5,313,629
UNIT OF WORK FOR PRESERVING DATA INTEGRITY OF A DATA-BASE BY CREATING IN MEMORY A COPY OF ALL OBJECTS WHICH ARE TO BE PROCESSED TOGETHER
Robert L. Abraham; Richard E. Moore, both of Marietta; William L. Rich, Stone Mountain; Floyd W. Shackelford, Buford; John R. Tiller, Jr., Peachtree, all of Ga.; Cynthia A. Ross, Boynton Beach, Fla., and Richard S. Briggs, Jr., Bloomingdale, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 23, 1989, Ser. No. 425,607
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **9 Claims**



1. An object management system for an object oriented computing system executing on a data processing system, said object oriented computing system including a plurality of objects which are stored in nonvolatile storage and which are processed in volatile storage, each object including an object frame containing data attributes, and at least one object method for performing actions on the associated object, said object management system comprising:
a unit of work object class including a unit of work object frame containing pointers to objects which are processed together by said object oriented computing system, and including a first method for loading said objects which are processed together from nonvolatile storage to volatile storage, a second method for storing said objects which are processed together from volatile storage to nonvolatile storage, and a third method for generating in volatile storage a copy of said objects which are processed together in volatile storage, said unit of work frame further including pointers to said copy of said objects which are processed together; and
means, responsive to a request to process selected ones of said plurality of objects together, for generating an instance of said unit of work object class, said instance of said unit of work object class including a pointer to each selected object, such that said selected objects are loaded from nonvolatile storage to volatile storage by invoking said first method on said instance of said unit of work object class, and said selected objects are stored in nonvolatile storage after processing by invoking said second method on said instance of said unit of work object class; and
means responsive to completion of a first step of said plurality of steps on said selected objects, for generating a copy of said selected objects in volatile storage, in modified condition from said first step, by invoking said third method, such that said second step is performed on said copy of said selected objects in nonvolatile storage.

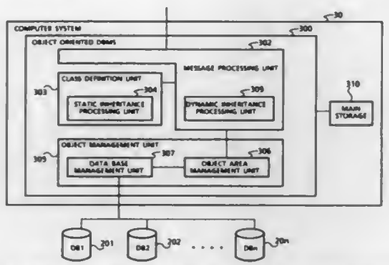
VOL 1162 ISS 3 MY 17 1994 UMI

5,313,630

SYSTEM OF OBJECT ORIENTED INHERITANCE USING THE TEMPORAL STATUS OF SUPERCLASSES

Miyoko Namioka, Sagamihara; Kazuhiro Satoh, Ebina; Youichi Yamamoto, and Keiji Moki, both of Kawasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System Ltd., Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 690,592
Claims priority, application Japan, Apr. 25, 1990, 2-107601
Int. Cl.[5] G06F *15/40, 7/00*
U.S. Cl. 395—600 **7 Claims**



1. A class inheritance solution process for an object-oriented data processing and programming system which defines inheritance relationships between a plurality of superclasses and each class which is a subclass of the superclasses, and the inheritance priority order of the superclasses, and executes the data processing by solving the inheritance relationship of the class in accordance with the priority order, said process comprising the steps of:

at a static inheritance processing unit, storing status information and time information of each class in storage means, said status information being representative of the results of a judgment whether or not inheritance between the class and the superclasses can be completely solved, and said time information being representative of a time when said status is established;

if a judgment of a status of the class is required again, referring to said storage means, and if the status established time of said class is earlier than that of said superclass to be inherited, executing again a status judgment of said superclass and thereafter inheriting the definition contents of said superclass to said class;

if an execution of a method is requested by a message to an object of the class, searching for said method from the class, if said method is not present within said class, sequentially selecting as a search target superclass a superclass of the class having a higher priority order to search the method, if said method is not present within the target superclass, referring to the status of said target superclass stored in said storage means, and in accordance with the status, determining whether or not a search for the method is to be continued using as a search target superclass a superclass having a lower priority order.

5,313,631

DUAL THRESHOLD SYSTEM FOR IMMEDIATE OR DELAYED SCHEDULED MIGRATION OF COMPUTER DATA FILES

Ping-Hui Kao, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

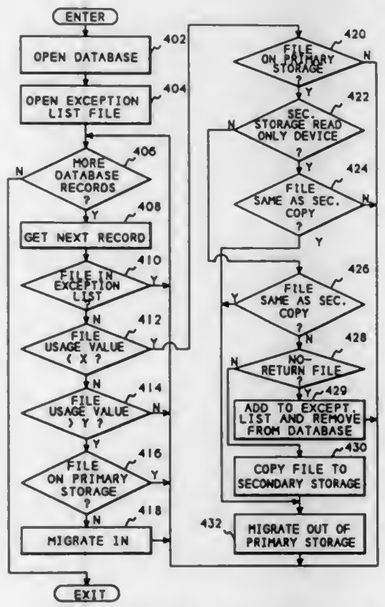
Filed May 21, 1991, Ser. No. 703,561
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—600 **17 Claims**

1. A process for dynamically migrating a plurality of computer data files between a primary storage device and a secondary storage device, wherein said computer data files can be directly accessed from either device, said process comprising:

(a) determining a file access rate over a predetermined time period for each of said plurality of computer data files, wherein said plurality of computer data files comprises a selected subset of all computer data files on said primary storage device and said secondary storage device;

(b) migrating one of said plurality of computer data files between said primary storage device and said secondary storage device when said file access rate is different from a set of predetermined values during said predetermined time period, wherein said set of predetermined values for said one of said plurality of computer data files is independent of a set of predetermined values for any other of said plurality of computer data files, said migrating comprising the steps of

(b1) immediately migrating one of said plurality of computer data files from said secondary storage device to said primary storage device when a file access rate of said one of said plurality of computer data files is



greater than a first predetermined value within said set of predetermined values;

(b2) scheduling one of said plurality of computer data files for migration, at a later time, from said primary storage device to said secondary storage device when a file access rate of said one of said plurality of computer data files is less than a second predetermined value within said set of predetermines values during said predetermined time period; and

(b'3) scheduling one of said plurality of computer data files for migration, at a later time, from said secondary storage device to said primary storage device when a file access rate of said file is more than a third predetermined value within said set of predetermined values, but less than said first predetermined value within said set of predetermined values, during said predetermined time period; and

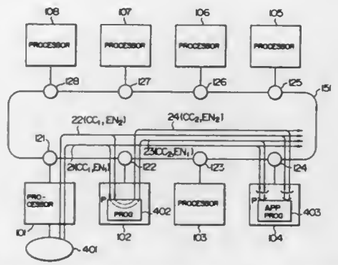
(c) repeating step (b) for each of said plurality of computer data files.

5,313,632

METHOD FOR PROCESSING DATA IN A DISTRIBUTED PROCESSING SYSTEM

Toshihiko Sekizawa, Katsuta; Kinji Mori, Yokohama; Masayuki Orimo, Kawasaki; Yasuo Suzuki, Ebina; Katsumi Kawano, Kawasaki; Minoru Koizumi, Yokohama; Kozo Nakai, Katsuta, and Hirokazu Kasashima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 283,566, Dec. 13, 1988, abandoned.
This application Nov. 30, 1992, Ser. No. 983,250
Claims priority, application Japan, Dec. 18, 1987, 62-318823
Int. Cl.[5] G06F *15/16, 13/00*
U.S. Cl. 395—650 **8 Claims**



1. A method for determining whether to start processing a predetermined number of data sets by one of a plurality of programs in a distributed processing system having a plurality of processors interconnected through a common transmission line, comprising the steps of:

(a) adding, in each processor, an initial label which indicates a source of data to a data set generated by said each processor, and sending said generated data set together with said initial label to the said common transmission line;

(b) adding, in each processor which receives said generated data set and said initial label from said common transmission line, another label related to said initial label received with said generated data set to an output data set produced by executing a program for processing said generated data set and sending said output data set together with said another label to said common transmission line;

(c) receiving, in each processor having a program or processing a predetermined number of data sets, said generated and output data sets and said initial and another labels from said common transmission lines; and

(d) comparing, in said each processor having said program for processing a predetermined number of data sets, said initial and another labels received with said generated and output data sets by said each processor to each other and starting said program for processing a predetermined number of data sets when said comparison indicates that said initial and another labels are related to each other.

5,313,633

PROCESS AND DEVICE FOR DECIDING CLASS HIERARCHICAL RELATIONSHIP OF OBJECT ORIENTED LANGUAGE AND PROCESS AND DEVICE FOR DETERMINING METHOD UTILIZING THE SAME

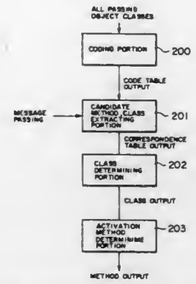
Hiroshi Tomita, and Kiyozumi Yoshimura, both of Kawasaki, Japan, assignors to Hitachi, Ltd. and Hitachi Seibu Soft Ware Co., Ltd., both of Tokyo, Japan

Filed May 29, 1990, Ser. No. 529,955
Claims priority, application Japan, May 31, 1989, 1-135862
Int. Cl.[5] G06F *9/40*
U.S. Cl. 395—700 **17 Claims**

8. A computer implemented process of operating an object oriented language comprising classes which determines a method to be activated by message passing described in an object oriented language from information of a receiver which is a passing destination in the message passing and a message selector includes in the message passing, comprising:

affixing codes each having a predetermined relation to each of said classes of the passing destination of the message passing;

performing extraction processing of candidate methods to be activated based on information of said message selector and on said codes affixed, and prior to the message passing



deciding a relationship of inheritance in a hierarchy of two optional classes from said codes affixed to said two optional classes; and

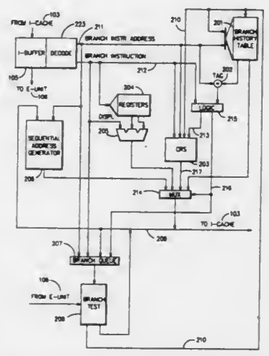
determining the method to be activated based on said relationship of inheritance of said receiver among candidate methods extracted by said extraction processing, wherein said determining is performed when the message passing is performed.

5,313,634

COMPUTER SYSTEM BRANCH PREDICTION OF SUBROUTINE RETURNS

James Eickemeyer, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1992, Ser. No. 920,946
Int. Cl.[5] G06F *9/42*
U.S. Cl. 395—700 **35 Claims**



1. A computer system method for the prediction of branch instruction target addresses for subroutine returns, comprising the steps of:

saving subroutine return addresses within a series of storage locations;

storing first data as a prediction pointer representative of the location of a first one of said series of storage locations, wherein a next subroutine prediction address to be used

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for predicting a return address from a subroutine is saved in said first one of said series of storage locations;

storing second data as an update pointer representative of the location of a second one of said series of storage locations, wherein said update pointer is used to modify the prediction pointer in the event of an incorrect prediction of said return address from said subroutine;

from a series of executable instructions having instruction opcodes, determining potential subroutine call instructions by identifying those instructions having opcodes corresponding to potential call instructions;

from a series of executable instructions having instruction opcodes, determining potential subroutine return instructions by identifying those instructions having opcodes corresponding to potential return instructions; and

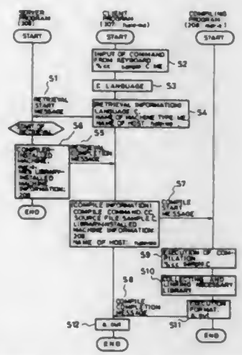
verifying if a predicted address is correct by completing execution of potential call instructions or potential return instructions and comparing an address of an actual next instruction to be executed with said predicted address.

5,313,635

COMPILING SYSTEM FOR DISTRUBUTED COMPUTER SYSTEM WITH MULTIPLE TYPES OF COMPUTERS

Akiko Ishizuka, and Takahide Ohkami, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,461
Claims priority, application Japan, Sep. 26, 1991, 3-274602
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—700 **12 Claims**



1. A compiling system under a distributed environment where a plurality of different types of computers are interconnected by a network, comprising:

a client computer having means for requesting compilation of a source file, said compilation requiring a necessary compiler and a necessary library;

a server computer having

(i) an internal memory in which a compiler-installed computer table is prestored as a data table and which shows a relationship between a compiler for each type of computer and each language and a computer holding the compiler and a library-installed computer table which shows a relationship between a library for each type of computer and a computer holding the library, and

(ii) means, operative in response to a request from the client, for identifying a computer on the network holding the necessary compiler and a computer on the network holding the necessary library by searching said compiler-installed computer table and said library-installed computer table, and means for transferring information indicative of a name of the computer on the network holding the necessary compiler and a name of the computer on the network holding the necessary library to the client computer;

said client computer having means for transferring a source file and information indicative of a name of the computer on the network holding the necessary library to the identified computer on the network holding the necessary compiler; and

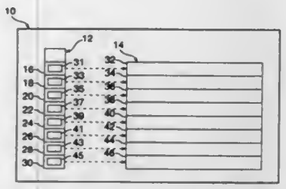
the identified computer holding the necessary compiler having means for collecting the necessary library from the computer holding the necessary library and means for compiling the source file and for linking the necessary library to obtain a resultant object file, and means for transferring the resultant object file to the client computer.

5,313,636

MOSAIC OBJECTS AND METHOD FOR OPTIMIZING OBJECT REPRESENTATION PERFORMANCE IN AN OBJECT-ORIENTED REPRESENTATION SYSTEM

Robert E. Noble, Sunnyvale, and Gregory D. Clemenson, Palo Alto, both of Calif., assignors to Intellicorp, Inc., Mountain View, Calif.

Continuation of Ser. No. 589,114, Sep. 27, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 103,723
Int. Cl.[5] G06F *12/00, 15/00*
U.S. Cl. 395—700 **2 Claims**



1. In an object-oriented software system on a computer having a central processing unit and a memory means, said object-oriented system having data structures comprising objects, said objects representing real-world entities, said objects being an aggregation of attributes, wherein form of aggregation of said attributes is specified by attribute declarations, a method for generating a data representation of said objects so that source code is independent of value access and for accessing said data representation for use in implementing said objects of the software system, said method comprising the steps of:

using said central processing unit to create an attribute value array for each one of said objects for storing in said memory means specific values of said attributes;

using said central processing unit to store in said memory means said attribute declarations in an attribute access descriptor data structure having an attribute selector and an attribute offset, said attribute selector being the name of said attribute, said attribute offset being an index into said attribute value array;

using said central processing unit to create an attribute access table for each said object and to store all attribute access tables in said memory means; thereafter

using said central processing unit to place in said attribute access tables pointers to said attribute access descriptor data structures for each one of said objects, thereby to provide the data representation of said objects; and thereafter

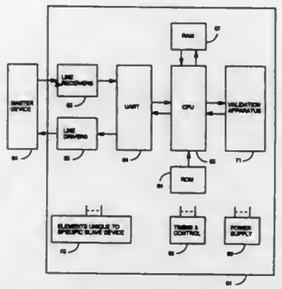
using said central processing unit to access said specific values of attributes in said attribute value array by specifying said attribute selector, using said pointers to find the attribute access descriptor data structure having said attribute selector, and applying said attribute offset as an index into said attribute value array, thereby to access the data representation of said objects.

5,313,637

METHOD AND APPARATUS FOR VALIDATING AUTHORIZATION TO ACCESS INFORMATION IN AN INFORMATION PROCESSING SYSTEM

David K. Rose, 800 E. Ocean Blvd. Apt. #1410, Long Beach, Calif. 90802

Continuation of Ser. No. 277,673, Nov. 29, 1988, abandoned.
This application Dec. 10, 1991, Ser. No. 807,957
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—725 **17 Claims**



1. Apparatus comprising processing means for processing validation data; said processing means including means for receiving validation data from an interconnected validation device which autogenically generates and transmits validation data and commands, means for convoluting said validation data in accordance with a pre-defined algorithm to produce convoluted data, and means for returning said convoluted data to said validation device; and means responsive to the validation device for selectively enabling and disabling the processing of said processing means.

5,313,638

METHOD USING SEMAPHORES FOR SYNCHRONIZING COMMUNICATION BETWEEN PROGRAMS OR PROCESSES RESIDENT IN A COMPUTER SYSTEM

David M. Ogle, Cary, and Earl H. Williams, Jr., Durham, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 24, 1992, Ser. No. 856,793
Int. Cl.[5] G06F *9/46, 13/00*
U.S. Cl. 395—725 **11 Claims**

1. In a computer system having an operating system which supports shared memory and semaphores, a computer-implemented method for communicating a message from one program to another program both resident in the computer system including the following steps:

at one of said programs having a message to send to the other;

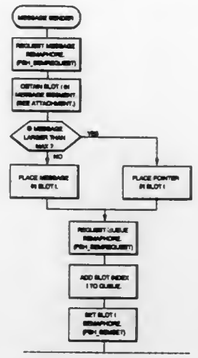
requesting a message semaphore from the operating system;

upon receiving the message semaphore from the operating system placing the message in a predetermined slot in the shared memory;

thereafter requesting a queue semaphore from the operating system;

upon receiving the queue semaphore from the operating system adding an indicia of the location of the said predetermined slot in the said shared memory in a queue located in the said shared memory; and,

thereafter clearing the message and queue semaphores requested from the operating system and a wakeup semaphore which has been previously set by the other program whereby the other program is, upon the clearing of the wakeup semaphore, enabled to access the message in the predetermined slot in the shared memory.

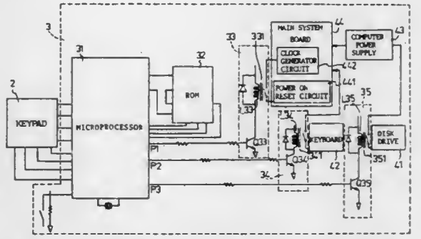


5,313,639

COMPUTER WITH SECURITY DEVICE FOR CONTROLLING ACCESS THERETO

George Chao, No. 21-1, Lane 137, Sec. 2, Chung-Shan N. Rd., Taipei City, Taiwan

Filed Jun. 26, 1992, Ser. No. 904,563
Int. Cl.[5] G06F *13/14;* H04L *9/32*
U.S. Cl. 395—725 **10 Claims**



1. A computer having two disk drives receiving spaces, a floppy disk drive provided in one of said disk drive receiving spaces, a computer keyboard, a computer power supply, and a main system board with a clock generator circuit and a power on reset circuit, wherein the improvement comprises:

an access control device comprising: a casing having a front panel and a pair of side panels which cooperatively define a receiving space, said casing being received in the other one of said disk drive receiving spaces; a keypad provided on said front panel and operated so as to provide an input password; and a control unit provided in said receiving space of said casing and being electrically connected to said keypad; and

said control unit comprising: a memory unit containing a desired password; a microprocessor unit receiving said input password from said keypad and generating an activating signal when said input password tallies with said desired password in said memory unit; and at least one control circuit connected to a respective one of said computer keyboard, said floppy disk drive and said main system board and being actuated by said activating signal

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from said microprocessor unit so as to unlock and enable the respective one of said computer keyboard, said floppy disk drive and said main system board.

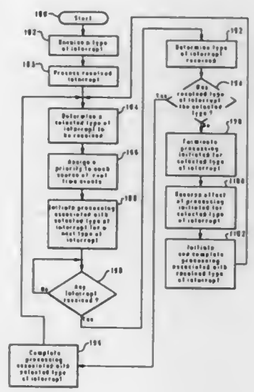
5,313,640

METHOD AND SYSTEM FOR THE EFFICIENT RESPONSE TO MULTIPLE DIFFERENT TYPES OF INTERRUPTS

Brent C. Beardsley; David L. Leigh; Cortland D. Starrett, and John R. Wolfe, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 23, 1992, Ser. No. 949,674
Int. Cl.[5] G06F *13/24*
U.S. Cl. 395—725 **12 Claims**

1. A method in a data processing system having at least one host and a storage subsystem including a plurality of storage subsystem devices and at least one storage subsystem controller for efficiently responding to interrupts of multiple different types received by said storage subsystem controller, said interrupts generated by a plurality of sources of real time events, said storage subsystem controller operating in one of a plurality of different states, said method comprising within said processing system the steps of:



determining a current state of said storage subsystem controller;

determining a selected type of interrupt as a preferred next interrupt to be received by said storage subsystem controller in response to said determination of said current state;

determining a particular state of said storage subsystem controller associated with said occurrence of said selected type of interrupt; and

initiating reversible processing associated with said particular state prior to receipt of a next interrupt wherein said selected type of interrupt is efficiently enhanced in priority in response to said current state of said storage subsystem controller.

5,313,641

FAST ARBITER HAVING EASY SCALING FOR LARGE NUMBERS OF REQUESTERS, LARGE NUMBERS OF RESOURCE TYPES WITH MULTIPLE INSTANCES OF EACH TYPE, AND SELECTABLE QUEING DISCIPLINES

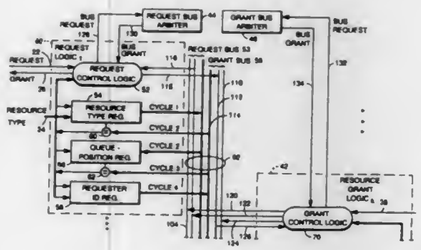
Robert J. Simcoe, Westborough, and Robert E. Thomas, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 542,856, Jun. 22, 1990, Pat. No. 5,265,257.
This application Jan. 6, 1993, Ser. No. 1,134
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—725 **23 Claims**

1. An arbitration mechanism for controlling a coupling order between a plurality of resources and a plurality of requesters, comprising:

a) a plurality of request processing units, one associated with each one of said plurality of requesters, for receiving a resource type request signal from said associated requester;

b) a plurality of grant processing units, one associated with each one of said plurality of resources, for monitoring a busy status signal from said associated resource;



c) a common broadcast medium coupled to said plurality of request processing units and said plurality of grant processing units; and

d) an arbiter for granting access to said common broadcast medium to one of said request processing units and grant processing units; said plurality of request processing units and said plurality of grant processing units using said common broadcast medium to control the coupling order between the plurality of requesters and the plurality of resources in a first come, first served manner.

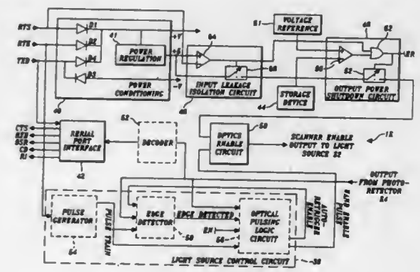
5,313,642

POWER INTERFACE FOR PERIPHERAL DEVICES

Jeremy Seigel, Bellevue, Wash., assignor to Seagull Scientific Systems, Inc., Bellevue, Wash.

Filed Oct. 3, 1990, Ser. No. 592,212
Int. Cl.[5] G06F *1/32*
U.S. Cl. 395—75 **18 Claims**

1. An interface, for coupling a general purpose peripheral port of a computer to a peripheral device that requires energy, the peripheral port including at least one control line and one data line, at least one of the control or data lines being capable of providing a source amount of power, the peripheral device being operable in a standby mode requiring some nonzero amount of power less than the source amount of power and in an active mode requiring more than the source amount of power, said interface comprising:



transmission means for receiving energy from the peripheral port and transferring it to the peripheral device; and

storage means, coupled to said transmission means, for storing a portion of the energy received from the peripheral port when the peripheral device is operated in the standby mode and providing energy to the peripheral device when the peripheral device is operated in the active mode.

5,313,643

Patent Not Issued For This Number

5,313,644

SYSTEM HAVING STATUS UPDATE CONTROLLER FOR DETERMINING WHICH ONE OF PARALLEL OPERATION RESULTS OF EXECUTION UNITS IS ALLOWED TO SET CONDITIONS OF SHARED PROCESSOR STATUS WORD

Masahito Matsuo, and Toru Shimizu, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1990, Ser. No. 619,852
Claims priority, application Japan, Dec. 1, 1989, 1-313741
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—800 **6 Claims**

1. A data processing system comprising:

a plurality of registers which store data;

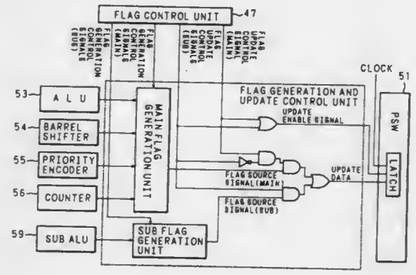
a first operation unit coupled to each of said plurality of registers and which processes data in response to instructions and outputs a first operation result;

a second operation unit coupled to each of said plurality of registers and which processes data in response to instructions and outputs a second operation result;

a processor status word including one or more flags;

first decision means coupled to said first operation unit and to the processor status word, wherein the first decision means determines whether the first operation result should be used to set the flags;

second decision means coupled to said second operation unit and to the processor status word, wherein the second decision means determines whether the second operation result should be used to set the flags;



a memory including first and second instructions, wherein the instructions are successively stored;

instruction execution control means for making said first operation unit execute the first instruction and said second operation unit execute the second instruction, wherein the first and second instructions are executed in parallel; and

flag update means coupled to the first and second decision means for performing the following functions:

(i) using the second operation result to set the flags when the second decision means determines that the second operation result should be used to set the flags; and

(ii) using the first operation result to set the flags when the following two conditions occur:

(a) the second decision means determines that the second operation result should not be used to set the flags and

(b) the first decision means determines that the first operation result should be used to set the flags.

5,313,645

METHOD FOR INTERCONNECTING AND SYSTEM OF INTERCONNECTED PROCESSING ELEMENTS BY CONTROLLING NETWORK DENSITY

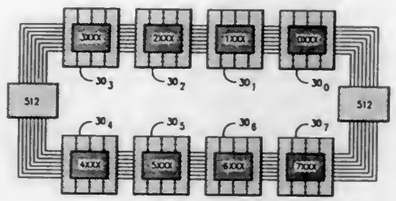
David B. Rolfe, West Hurley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1991, Ser. No. 698,866
Int. Cl.[5] G06F *9/46, 13/12, 15/16, 13/40*
U.S. Cl. 395—800 **7 Claims**

1. A computer system in a form of a non-binary hypercube comprising:

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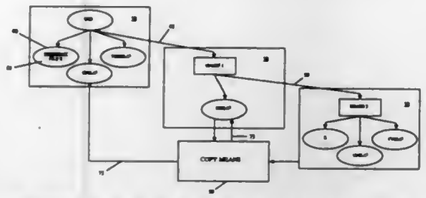
a plurality of nodes, N, where $N=b^n$, b and n being positive integers and $b>2$, each node having an identifying address numbered according to a number system base b;
means for determining an address of each of said plurality of nodes; and



means for interconnecting each respective node of said plurality of nodes to nodes having addresses differing from the respective node's address by exactly one digit to form a toroidal network, a number of connections per node being $\mu \log_b N$, where $\mu=2d$, $1 \leqq d \leqq b/2$ if b is even and $1 \leqq d \leqq (b-1)2$ if b is odd, except if b is even and $d=b/2$, in which case $\mu=b-1$, to thereby control density of said toroidal network,
wherein two nodes, x and y, of the network are connected if and only if
1. an address of x differs from an address of y in exactly one digit, and
2. for a digit i where $x_i \neq y_i$, $y_i=(x_i+j) \bmod y$ or $y_i=(x_i+j) \bmod y$ for some $j \leqq d$.

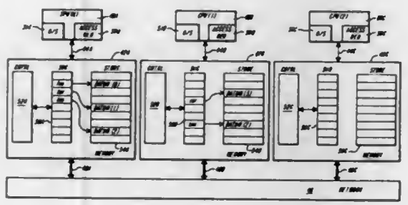
5,313,646
METHOD AND APPARATUS FOR TRANSLUCENT FILE SYSTEM
David Hendricks, Menlo Park; Evan Adams, San Leandro; Tom Lyon, Palo Alto, and Terrence C. Miller, Menlo Park, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Continuation of Ser. No. 315,287, Jnn. 10, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 714,312
Int. Cl.[5] G06F *13/40*
U.S. Cl. 395—600 **16 Claims**

1. In a multi-user computer system comprising a central processing unit (CPU), an input/output unit and memory, said CPU being controlled by an operating system, said operating system comprising a file system module, wherein the file system module organizes and controls access to files located on disks in the computer system, said file system module organizing files into file systems comprising directories said directories containing files organized in a hierarchical file structure, a method for translucently providing to a user both shared and private access to current revisions of files, said method comprising the steps of:
structuring a designated file hierarchy into two or more layers whereby each layer contains at least one directory;
creating an ordered set of layers which can be shared by any number of users, wherein two or more layers of the designated file hierarchy are arranged in time-of-creation sequence such that a layer containing a less recent revision of a file in the designated file hierarchy is placed below a layer with a more recent revision of the same file;



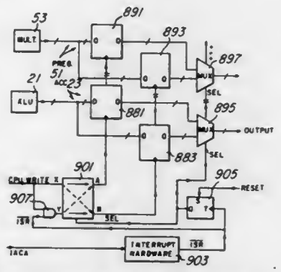
providing one or more front layers, each containing at least one directory, with each of the one or more front layers being controlled by a particular user of the system and is not being shared with other users of the system, with files located in each of said one or more front layers being designated such that only the particular user can read from and write to the files in said particular user's front layer, and each front layer being positioned in front of the ordered set of shared layers of the designated file hierarchy;
displaying to a particular user, most recent revisions of files regardless of whether these files reside in the directory of the particular user's front layer or in the directories of the ordered set of shared layers, as if all of the files resided in the particular user's front directory.

5,313,647
DIGITAL DATA PROCESSOR WITH IMPROVED CHECKPOINTING AND FORKING
Mark A. Kaufman, Brighton, and Fernando Oliveira, Framingham, both of Mass., assignors to Kendall Square Research Corporation, Waltham, Mass.
Filed Sep. 20, 1991, Ser. No. 763,505
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—700 **44 Claims**



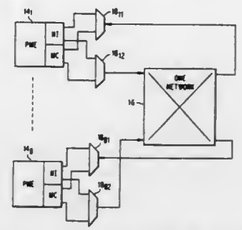
1. A digital data processing apparatus comprising:
A. memory means for storing data,
B. first process means for executing a first process and for generating in connection therewith at least one request for mapped access to said data,
C. fork/checkpoint signalling means for generating one or more new-process signals, each new-process signal delineating a successive process interval,
the interval preceding the first new-process signal being referred to as the first interval,
D. means for responding to a request for access to a datum generated by the first process during said first interval for providing access to the requested datum as stored in a first set of data stored in said memory means,
the first set being referred to as associated with said first interval of the first process,
E. first address space management means, coupled to said first process means and to said fork/checkpoint signalling means, for responding at least to an initial request by that process during a current interval subsequent to said first interval for write-type access to a datum, for
i) accessing the requested datum as stored in a set associated with a prior interval of the first process, and
ii) generating a further datum initially identical to that accessed datum;
F. said first address space management means including means for storing said initially identical datum in a set in said memory means associated with the current interval of the first process, and
G. said first address space management means further including means responsive to said initial request by the first process during said current interval for at least write-type access to a datum, as well as to subsequent requests for any of read-type and write-type access to that same datum by that same process during that same interval, for accessing said initially identical datum as stored in the set associated with the current interval of the first process, and otherwise for accessing the requested datum as stored in a set associated with a prior interval of the first process.

5,313,648
SIGNAL PROCESSING APPARATUS HAVING FIRST AND SECOND REGISTERS ENABLING BOTH TO CONCURRENTLY RECEIVE IDENTICAL INFORMATION IN ONE CONTEXT AND DISABLING ONE TO RETAIN THE INFORMATION IN A NEXT CONTEXT
Peter N. Ehlig, Houston, Tex.; Fredric Boutaud, Roquefort les Pins, France, and James F. Hollander, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 864,776, Apr. 7, 1992, which is a division of Ser. No. 347,615, May 4, 1989, Pat. No. 5,142,677. This application Oct. 9, 1992, Ser. No. 959,014
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—800 **10 Claims**



1. A signal processing apparatus comprising:
an analog-to-digital converter for producing a digital signal corresponding to an analog input by a conversion process and for producing an interrupt signal when a conversion is complete;
a digital processing device having
a memory; and
a processor connecting to said analog-to-digital converter and responsive to said interrupt signal for entering the digital signal into the memory in alternative processing contexts identified by a state of said interrupt signal; and
said processor including:
a multiplier;
an arithmetic logic unit;
a plurality of register sets, each of said register sets having a first and second register, said first and second registers connected to concurrently store identical information during one of the processing contexts, said first register connected to individually participate and be continuously available in a next of the processing contexts when said first register is selected thereby enabling the second register to retain said information from said one processing context; and
a context switching circuit responsive to the state of said interrupt signal and connected to said first and second registers to alternatively control input and output operations of said register set to and from said multiplier and arithmetic logic unit depending on the processing context.

5,313,649
SWITCH QUEUE STRUCTURE FOR ONE-NETWORK PARALLEL PROCESSOR SYSTEMS
Yarsun Hsu, Pleasantville, and Rory D. Jackson, Eastchester, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 28, 1991, Ser. No. 706,136
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—800 **4 Claims**



1. The tightly coupled parallel processor system recited in claim 1 wherein said plurality of identical stages are composed of a plurality of 2×2 switches, each of said switches including four of said first-in, first-out registers of said first group and four of said first-in, first-out registers of said second group and two of said multiplexers, each of said multiplexers having two inputs connected to two of said first-in, first-out registers of said first group and two of said first-in, first-out registers of said second group.

5,313,650
SYSTEM FOR PERFORMING WRITES TO NON-VOLATILE MEMORY ELEMENTS IN A MINIMAL TIME
Naoki Mitsuishi; Toshimasa Kihara, and Kiyoshi Matsubara, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 418,901, Oct. 5, 1989, Pat. No. 5,261,110, which is a continuation of Ser. No. 88,960, Aug. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 29,750, Mar. 24, 1987, abandoned. This application Jun. 10, 1993, Ser. No. 74,936
Claims priority, application Japan, Oct. 24, 1986, 61-251684
Int. Cl.[5] G06F *9/24*
U.S. Cl. 395—800 **3 Claims**

1. A one-chip microcomputer for use in an IC card, the one-chip microcomputer including a microprocessor for executing a predetermined data processing in accordance with a

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program, a timer circuit, and an electrically programmable read only memory, the one-chip microcomputer comprising:

a bus;

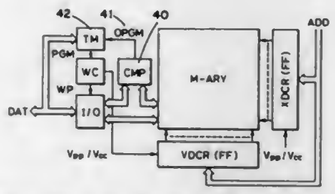
the microprocessor being coupled to the bus;

a read only memory, coupled to the bus, for storing the program therein, the program including a data processing program and a data write program for writing data to the electrically programmable read only memory;

the electrically programmable read only memory being coupled to the bus and having a read mode and a write mode, wherein in the read mode the electrically programmable read only memory receives an address signal provided from the microprocessor executing the data processing program via the bus and provides data to the bus, and wherein in the write mode the electrically programmable read only memory receives an address signal and data which are provided from the microprocessor executing the data write program via the bus to write the data into the electrically programmable read only memory; and

timer means including:

an oscillation circuit for producing pulse signals having a predetermined frequency;



a time register coupled to the bus for storing a time information provided from the microprocessor executing the data write program;

a counter coupled to receive the pulse signals and to the time register and responsive to reception of a control signal provided from the microprocessor executing the data write program for starting count operations of the pulse signals, the counter performing the count operations until count times indicated by the time information;

a logic circuit coupled to the counter and to the electrically programmable read only memory for providing a write signal having a first level to the electrically programmable read only memory when the counter performs the count operations, and having a second level to the electrically programmable read only memory when the counter does not perform the count operations, where the write signal of the first level enables the write mode of the electrically programmable read only memory, and the write signal of the second level enables the read mode of the electrically programmable read only memory;

whereby the microprocessor controls a write time of the electrically programmable read only memory by varying a value of the time information.

5,313,651

SATELLITE BROADCAST RECEIVER

Tadashi Kurita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 1, 1991, Ser. No. 739,238
Claims priority, application Japan, Aug. 17, 1990, 2-215742
Int. Cl.[5] H04B *17/02*
U.S. Cl. 455—3.2 **5 Claims**

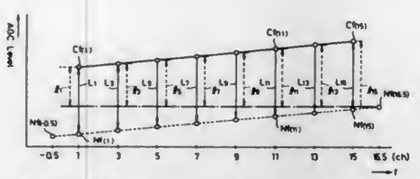
2. A radio wave receiver for detecting a noise level of a received signal in a predetermined broadcast band, said radio wave receiver comprising:

a local oscillator for generating a local oscillating signal;

a mixer for mixing said local oscillating signal with a received signal;

a tuning circuit for controlling the frequency of said local oscillating signal generated by said local oscillator, thereby selecting a desired channel in said predetermined broadcast band from said received signal;

control means for causing said tuning circuit to control the frequency of said local oscillator to a first frequency



higher than said predetermined broadcast band and to a second frequency lower than said predetermined broadcast band; and

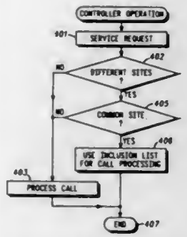
a noise level detector for detecting a first noise level of a received signal at said first frequency and a second noise level at said second frequency, and including means for calculating a noise level at said desired channel using said first and second frequencies, said first and second noise levels, and a frequency of said desired channel.

5,313,652

METHOD AND APPARATUS FOR PROVIDING A COMMUNICATION PATH USING COMMON SITES

Alexander Rozenstrauch, Buffalo Grove, and Paul M. Erickson, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1992, Ser. No. 857,560
Int. Cl.[5] H04B *7/14*
U.S. Cl. 455—15 **22 Claims**



1. In a radio communication system having a plurality of sites, wherein each site has a corresponding coverage area, and wherein at least some of the coverage areas overlap with one another, a method of providing a communication path between a first and a second communication unit, comprising the steps of:

A) determining whether the first and second communication units are currently being serviced by different sites;

B) when the first and second communication units are currently being serviced by different sites, determining whether the first and second communication units can both be serviced by a common site; and

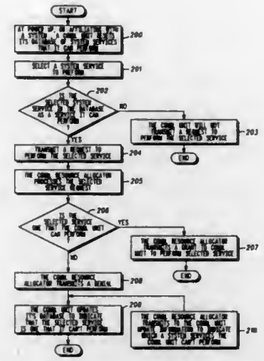
C) when the first and second communication units are serviceable by a common site, establishing the communication path between the first and second communication units using the common site.

5,313,653

METHOD FOR A COMMUNICATION UNIT TO MAINTAIN A DATA BASE OF SYSTEM SERVICES

Michael D. Sasuta, Mundelein, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1992, Ser. No. 828,313
Int. Cl.[5] H04B *7/14*
U.S. Cl. 455—17 **5 Claims**



5. In a trunking communication system that comprises a plurality of communication units, a limited number of communication resources that are transceived via a predetermined number of repeaters, and a communication resource allocator that allocates the limited number of communication resources among the plurality of communication units, wherein a communication unit of the plurality of communication units has been assigned to perform at least some of a plurality of communication system services, a method for the communication resource allocator to reduce control channel traffic by interfacing with the plurality of communication units such that each communication unit of the plurality of communication units maintains a database of communication system services it can perform, the method comprises the steps of:

a) receiving a request to perform a selected service by a communication unit;

b) determining that the communication unit is allowed to perform the selected service;

c) transmitting a response to the communication unit based upon the determination made in step (b); and

d) transmitting a new service message to the communication unit when the communication unit is assigned a new service or a change in allowed services occurs.

5,313,654

METHOD FOR TRANSFERRING A PRIVATE CALL FROM A TRUNKING COMMUNICATION SYSTEM TO A CELLULAR COMMUNICATION SYSTEM

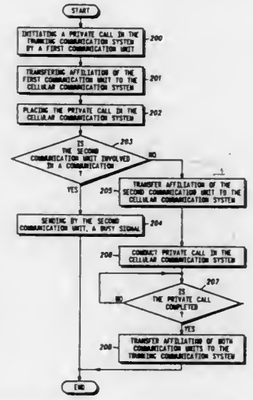
Richard A. Comroe, Dundee, and Gary W. Grube, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 5, 1990, Ser. No. 608,874
Int. Cl.[5] H04B *7/26;* **H04Q** *7/00*
U.S. Cl. 455—33.1 **8 Claims**

1. In a geographic region that contains at least one trunking communication system and at least one cellular communication system, wherein the at least one trunking communication system and the at least one cellular communication system have substantially overlapping coverage areas, wherein the at least one trunking communication system is operably coupled to the at least one cellular communication system, wherein the at least one trunking communication system includes a cellular receiver that receives information from control channels of the at least one cellular communication system and transfers the information to the at least one trunking communication system, and wherein at least some of a plurality of communication units are affiliated with the at least one trunking communication system and are operable in either the at least one trunking communication system or the at least one cellular communication system, a method for placing a private call between a first communication unit of the at least some of the plurality of communication units and a second communication unit of the at least some of the plurality of communication units, the method comprises the steps of:

a) initiating, by the first communication unit, a private call in the at least one trunking communication system;

b) transferring affiliation of the first communication unit from the at least one trunking communication system to the at least one cellular communication system;



c) transmitting, by the first communication unit, a private call request in at least part of the at least one cellular communication system;

d) receiving, by the at least one trunking communication system, the private call request via the cellular receiver;

e) transferring affiliation of the second communication unit from the at least one trunking communication system to the at least one cellular communication system, when the second communication is not actively part of a communication within the at least one trunking communication system; and

f) receiving, by the second communication unit, the private call from the first communication unit.

5,313,655

METHOD FOR REDUCING CONTROL CHANNEL ACTIVITY FOR LIMITED AUDIENCE COMMUNICATIONS

Michael D. Sasuta, Mundelein, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1992, Ser. No. 828,324
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—34.1 **5 Claims**

1. In a trunking communication system that includes a plurality of communication units, a limited number of communication resources that are transceived via a predetermined number of repeaters, and a communication resource allocator that allocates the limited number of communication resources among the plurality of communication units, a method for the communication resource allocator to reduce control channel activity for limited audience communications, the method comprises the steps of:

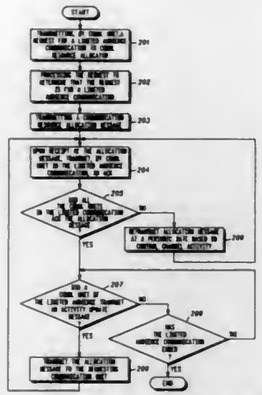
a) upon receiving a request, allocating a communication

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resource to a requesting communication unit, wherein the request includes a requested communication activity;

b) determining whether the requested communication activity is for a limited audience communication, wherein the limited audience communication is amongst a limited number of communication units;

c) when the requested communication activity is for the limited audience communication, transmitting a communication resource allocation signal to the limited number of communication units at a periodic interval until an allocation acknowledgment signal is received from each of the limited number of communication units, wherein the communication resource allocation signal indicates the communication resource allocated to the limited number of communication units; and



d) once the allocation acknowledgment has been received from each of the communication units in the limited number of communication units, ceasing, by the communication resource allocator, transmission of the communication resource allocation signal at the periodic interval such that activity on the control channel is reduced.

5,313,656

LOGIC CONTROLLED TUNING SIGNAL LEVEL AND DEVIATION COMPENSATION IN A RADIO TELEPHONE

Risto Vaisanen, and Aki Leppanen, both of Salo, Finland, assignors to Nokia Mobile Phones, Ltd., Salo, Finland

Filed Sep. 21, 1990, Ser. No. 586,076

Claims priority, application Finland, Sep. 25, 1989, 894527

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] H04B *17/00*

U.S. Cl. 455—67.1 **12 Claims**

7. An apparatus for tuning signal levels and deviations in a radio telephone having an adjustable output response means, comprising:

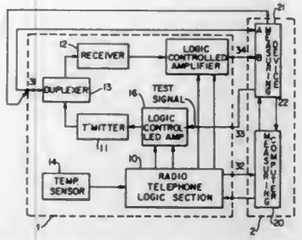
(1) external tuning equipment connectable to the radio telephone via at least three interfaces, an antenna interface, a low frequency interface, and an auxiliary interface; the tuning equipment including:

(a) means for generating and transmitting a test signal to the radio telephone via one of the antenna interface and the low frequency interface;

(b) means for measuring a radio telephone signal at one of the antenna interface and the low frequency interface, the radio telephone signal response to the test signal; and

(c) means for adjusting the adjustable output respnose means of the radio telephone via the auxiliary interface until a desired output response is obtained, the auxiliary interface being between the external tuning equipment and a logic section of the radio telephone; and

(2) means for storing in the radio telephone, via the auxiliary



interface, a compensation value related to an amount of adjustment necessary to obtain the desired output response, the compensation value being for correcting either of the signal level and deviation when the radio telephone is operating.

5,313,657

RECEIVER CAPABLE OF RELIABLY DETECTING A FAILURE

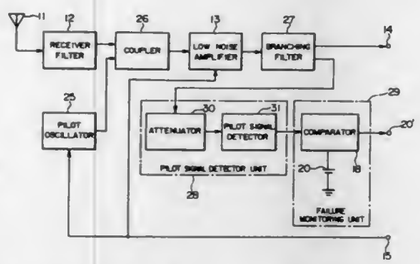
Hironori Sakamoto; Satoru Ohara, both of Mitaka; Toshio Nojima, Yokosuka; Shoichi Narahashi, Yokosuka, and Makoto Maeta, Yokosuka, all of Japan, assignors to Japan Radio Co., Ltd.; Nippon Telegraph & Telephone Corporation and NTT Mobile Communication Network Inc., all of Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,669

Claims priority, application Japan, Oct. 24, 1991, 3-277595

Int. Cl.[5] H04B *17/00, 1/10;* **H03F** *3/66;* **G01R** *19/00*

U.S. Cl. 455—67.4 **5 Claims**



1. A receiver comprising:

a receiver filter having a receiver frequency pass band and a receiver frequency attenuation band for filtering an input receiver signal into a filtered receiver signal;

a pilot oscillator for generating a pilot oscillation signal having a pilot frequency in said receiver frequency attenuation band;

a coupler connected to said receiver filter and to said pilot oscillator for coupling said pilot oscillation signal to said filtered receiver signal to form a coupled signal;

a low noise amplifier connected to said coupler for amplifying said coupled signal into an amplified signal which comprises an amplified receiver signal component derived from said filtered receiver signal and an amplified pilot oscillation signal component derived from said pilot oscillation signal;

a branching filter connected to said low noise amplifier for branching said amplified signal into said amplified receiver signal component and said amplified pilot oscillation signal component;

a receiver terminal connected to an output of said branching filter for receiving said amplified receiver signal component from said branching filter;

pilot signal detector means connected to said branching filter for detecting only said amplified pilot oscillation signal component to produce a direct pilot signal; and

failure monitoring means connected to said pilot signal detector means for monitoring said direct pilot signal to produce a fault signal when said direct pilot signal is found faulty.

5,313,658

TRANSMISSION POWER CONTROL SYSTEM IN A RADIO APPARATUS

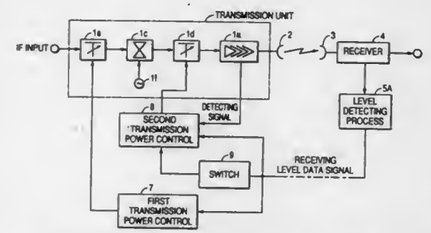
Hideki Nakamura, Ohtawara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 495,985, Mar. 20, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 997,639

Claims priority, application Japan, Apr. 30, 1989, 1-067849

Int. Cl.[5] H04B *1/04*

U.S. Cl. 455—69 **11 Claims**



1. A transmission power control system for use in a radio apparatus comprising a transmission side including a transmission antenna and a transmission unit provided with a receiving level data signal from a receiver, said transmission unit comprising:

first variable attenuator means for adjusting an intermediate frequency signal level to generate a first output;

converter means for converting the first output of said first variable attenuator means to a higher frequency band signal;

second variable attenuator means for adjusting an output level of the higher frequency band signal, to generate a second output;

high output amplifier means for amplifying the second output to provide an amplified signal which is output to the transmission antenna, and for generating a detection signal indicating a level of the amplified signal;

first transmission power control means for controlling transmission power by controlling the degree of attenuation of said first variable attenuator means based on a value of said receiving level data signal;

second transmission power control means for controlling the transmission power by controlling the degree of attenuation of said second variable attenuator means based on a value of said receiving level data signal and the detection signal; and

switching means for activating said second transmission power control means to control the transmission power based on whether the receiving level data signal is below a first predetermined value and based on whether the receiving level data signal is above a second predetermined value, the second predetermined value being different than the first predetermined value.

5,313,659

METHOD OF AUTOMATICALLY TUNING A RADIO

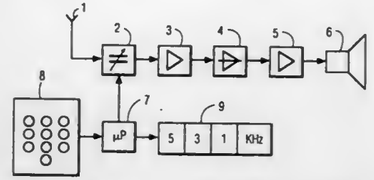
Friedrich Füldner, Villingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Oct. 23, 1991, Ser. No. 782,257

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1989, 3913278; Apr. 14, 1990, PCT/EP90/00590

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—158.1 **2 Claims**



1. A method of determining the frequency of tuning of a radio receiver to any one of a plurality of radio transmitters operating in a band of three digit frequencies separated by 9 KHz intervals comprising the steps of:

sequentially providing the first two digits of one of said three digit frequencies to a processor through a keyboard;

using said processor to determined and automatically input the third digit based upon the values of the first two digits; and

causing a display to indicate when the determination of the third digit is ambiguous in order to indicate that the third digit should be manually inputted.

5,313,660

ANTENNA DIVERSITY SYSTEM WITH AT LEAST TWO ANTENNAE FOR THE MOBILE RECEPTION OF VERY-HIGH AND ULTRA-HIGH FREQUENCY WAVES

Heinz Lindenmeier, Planegg; Jochen Hopf, Haar; Leopold Reiter, Gilching, and Rainer Kronberger, Ottobrunn, all of Fed. Rep. of Germany, assignors to Fuba Hans Kolbe & Co., Hildesheim, Fed. Rep. of Germany

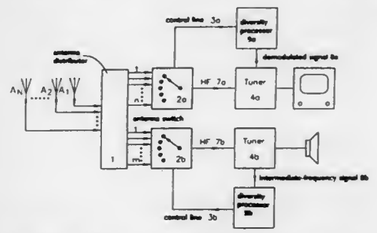
PCT No. PCT/EP92/00104, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO89/11185, PCT Pub. Date Nov. 16, 1989

PCT Filed Jan. 20, 1992, Ser. No. 859,712

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1991, 4101629

Int. Cl.[5] H04N *5/00*

U.S. Cl. 455—135 **20 Claims**



1. An antenna diversity system for mobile reception of VHF and UHF waves comprising:

a plurality of antennae arranged to receive antenna signals;

an antenna distributor connected to the antennae to receive the antenna signals from the antennae and having a plurality of inputs and a plurality of sets of outputs, each of the antenna signals being fed to one of the inputs;

a plurality of antenna switches having outputs, each of the

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antenna switches being connected to one of the sets of outputs of the antenna distributor;

a plurality of tuners, each of the tuners connected to the outputs of one of the antenna switches and producing one of an intermediate-frequency signal and demodulated signal; and

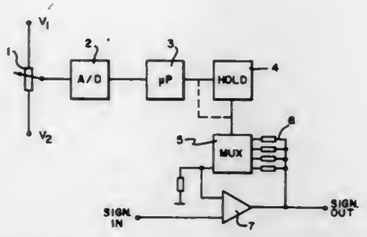
a plurality of diversity processors, each of the diversity processors being connected to one of the tuners to receive the signal therefrom and also to the antenna switch of the tuner connected thereto via a control line, and said diversity processors being structured to carry out a signal evaluation to control the antenna switch associated therewith to switch through a more favorable input signal to the tuner connected thereto.

5,313,661

METHOD AND CIRCUIT ARRANGEMENT FOR ADJUSTING THE VOLUME IN A MOBILE TELEPHONE

Kalevi Malmi, and Ari-Pekka Lajunen, both of Salo, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jan. 31, 1990, Ser. No. 473,666
Claims priority, application Finland, Feb. 10, 1989, 890668
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—232.1 **16 Claims**



1. Method for user adjustment of the volume of a mobile telephone including a transceiver unit and a physically separated operating device, comprising the steps of:

manually adjusting a dc voltage level of said telephone to provide a desired volume using circuit means in the operating device, said voltage level being variable in a preselected voltage range,

supplying a control signal corresponding to the dc voltage level to a microprocessor,

reading the control signal with the microprocessor,

adjusting the volume in relation to the control signal by controlling the gain of an audio amplifier through a multiplexer connected to the microprocessor, said multiplexer selecting an impedance connected in series with an input impedance of said audio amplifier.

5,313,662

SPLIT-RING RESONATOR BANDPASS FILTER WITH ADJUSTABLE ZERO

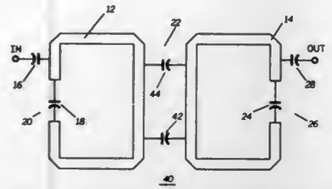
Leng H. Ooi; Peter J. Yeh, both of Sunrise, and Branko Avanic, Coral Cables, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 558,283, Jul. 26, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 861,360
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—339 **5 Claims**

1. A bandpass filter, having an input port and an output port, and having at least one transmission zero and a center frequency, the bandpass filter comprising:

a first microstrip split-ring resonator coupled to the input port;

a second microstrip split-ring resonator coupled to the first microstrip split-ring resonator, and coupled to the output port; and



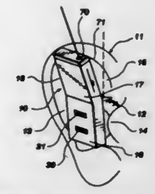
a lumped capacitor coupled between the first microstrip split-ring resonator and the second microstrip split-ring resonator for moving the transmission zero closer to the center frequency while maintaining the center frequency.

5,313,663

EAR MOUNTED RF RECEIVER

Elwood G. Norris, Poway, Calif., assignor to American Technology Corporation, Poway, Calif.

Filed May 8, 1992, Ser. No. 879,929
Int. Cl.[5] H04B *1/08*
U.S. Cl. 455—351 **18 Claims**



1. A radio frequency receiving device which is totally self contained and is fully supported at a diverging opening of a user's ear extending from the ear canal, said device comprising:

an elongate casement having a lower portion and an upper portion and a total length of less than two inches, a proximal face and an opposing distal face relative to the user's ear, each face having a width of less than three fourths of an inch, and a surrounding perimeter wall including a bottom wall, a top wall and two opposing side walls, each wall having a thickness of less than three eighths of an inch, wherein said casement is configured with slight deflection of the upper portion away from a plane containing the lower portion, said deflection being away from the user to allow space for an upper ear lobe to rest against the casement without pushing against the casement when inserted at the diverging ear opening;

said proximal face including a speaker device mounted to the lower portion of the casement and projecting toward the user's ear canal, said speaker device being configured to frictionally position and stabilize the receiver device within the diverging ear opening;

a printed circuit board contained within the casement, said board having interconnecting functional receiver circuits including a local oscillator, a mixer, a plurality of IF stages, a tuning circuit and a power source;

antenna means coupled to the oscillator for providing RF reception;

a battery compartment within the casement and associated wiring to couple the battery compartment to the circuit board;

an on/off power and volume control switch coupled within the casement to the printed circuit board; and

a tuning circuit selector switch coupled to the printed circuit board for selecting a specific frequency for reception;

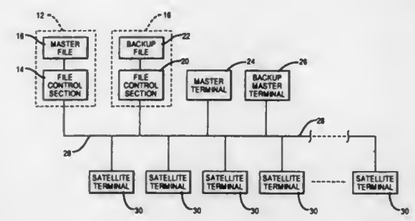
all of said components being housed within the casement and having a collective weight of less than 2.5 ounces, thereby enabling the device to be suspended at the diverging ear opening without additional support applied with respect to outer surfaces of the ear or the user's head.

5,313,664

POINT OF SALE SYSTEM HAVING BACKUP FILE DEVICE

Mikihiko Sugiyama, Hiratsuka; Hiromi Yamamoto, Isehara, and Jincheng Yang, Hiratsuka, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 762,790, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 316,271, Feb. 27, 1989, abandoned. This application Nov. 20, 1992, Ser. No. 979,358
Claims priority, application Japan, Mar. 25, 1988, 63-69961
Int. Cl.[5] G06F *12/16*; G07G *1/12*
U.S. Cl. 364—405 **19 Claims**



1. A point of sale system, comprising:

a plurality of satellite terminals positioned for inputting data on sold goods;

a master terminal coupled to said plurality of satellite terminals to transmit and to receive said data;

file control means for transmitting and receiving said data coupled with said master terminal and with said plurality of satellite terminals, said file control means including a point of sale data file and an associated file control section, said file control section updating said point of sale data file when sequentially polling said master terminal and said plurality of satellite terminals during predetermined time intervals in a cycle of operation, the updating of said point of sale data file by said file control section being in response to requests from said master terminals and said plurality of satellite terminals and said file control section controlling communication of said data with said plurality of satellite terminals and confirming the transmitting and receiving of said data with said plurality of satellite terminals from which the requests are made within a predetermined interval of time; and

said file control means comprising a first file device and a second file device coupled with each other wherein said first file device operates as a main file device to control communication of said data with said master terminal and said plurality of satellite terminals and said second file device is a backup file device which operates as a main file device upon slowing down or failure of said main file device when sequentially polling said master terminal and said plurality of satellite terminals for said predetermined interval of time and said second file device operates to maintain updating of said point of said data file wherein said file control section controls communication of said data with the terminal from which a request is made.

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DESIGN PATENTS

GRANTED MAY 17, 1994

ERRATA

For CLASS	See PATENT NO.
012-416	D 346,900
003-309	D 347,097

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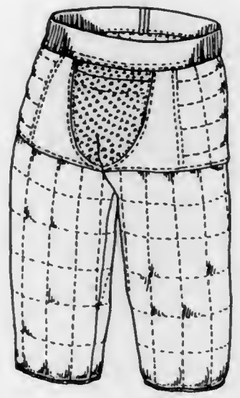
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DESIGNS

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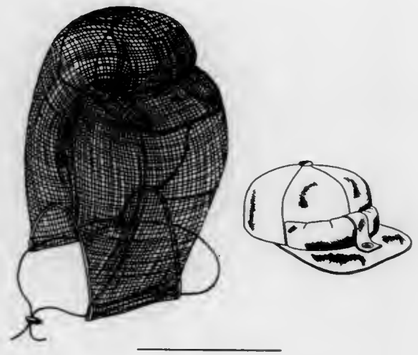
346,891
SPORTS UNDERPANTS
Chris Yee, Calgary, Canada, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Apr. 3, 1992, Ser. No. 863,656
Term of patent 14 years
U.S. Cl. D2—712



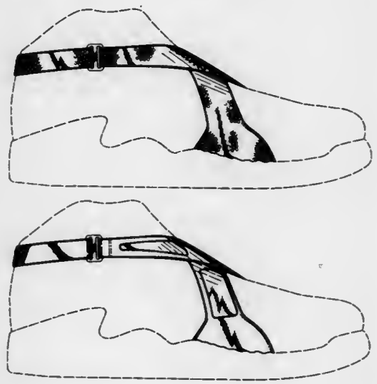
346,892
SHIRT
David Crouch, R.D. 2 Box 165, Williamsburg, Pa. 16693
Filed Jul. 19, 1991, Ser. No. 732,699
Term of patent 14 years
U.S. Cl. D2—849



346,893
COMBINED CAP AND MOSQUITO NET
Gilles St-Germain, 7067 Waverly, Montreal, Quebec, Canada H2S 3J1
Filed Mar. 16, 1992, Ser. No. 851,774
Term of patent 14 years
U.S. Cl. D2—866



346,894
STRAP SYSTEM FOR A SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 866,548, Apr. 10, 1992, Pat. No. Des. 337,425. This application Dec. 11, 1992, Ser. No. 2,418
The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—973



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346,895
LACE FOR FOOTWEAR
Anthony M. Martin, Marlton, N.J., assignor to Pro Laces, Inc., Marlton, N.J.
Filed Feb. 18, 1992, Ser. No. 837,440
Term of patent 14 years
U.S. Cl. D2—978



346,896
WET SUIT LINER
Jesse L. Rustin, Rte. 6, Dahlonega, Ga. 30533
Filed Aug. 7, 1991, Ser. No. 741,158
Term of patent 14 years
U.S. Cl. D2—732



346,897
SHOE UPPER
Jonathan R. Morris, Cranston, R.I., and Christopher J. Kittle, Cohasset, Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 2,865, Dec. 22, 1992. This application Sep. 20, 1993, Ser. No. 13,870
Term of patent 14 years
U.S. Cl. D2—970



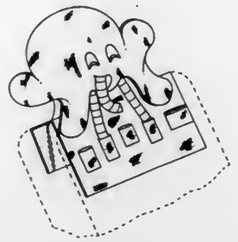
346,898
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,625
Term of patent 14 years
U.S. Cl. D2—970



346,899
SHOE UPPER
Tinker Hatfield, Portland, Oreg., and Eric Avar, Beaverton, Ohio, assignors to Nike, Inc., Beaverton, Oreg.
Filed Nov. 3, 1993, Ser. No. 14,786
Term of patent 14 years
U.S. Cl. D2—970



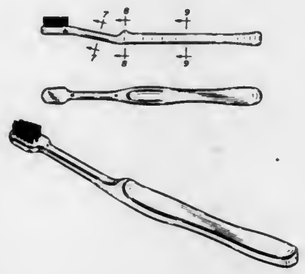
346,900
ARTICLE HOLDER FOR ATTACHMENT TO A VEHICLE SEAT
James H. Gill, 102 Wildfox La., New Kent, Va. 23124
Filed Jun. 27, 1989, Ser. No. 371,965
Term of patent 14 years
U.S. Cl. D12—416



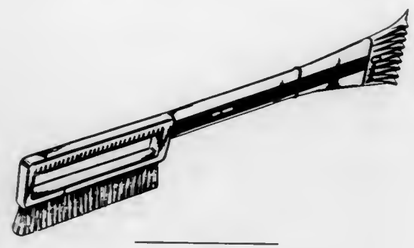
346,901
LAPTOP COMPUTER CASE
Peter G. Dulka, Englewood, and Alan C. Fritze, Evergreen, both of Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Nov. 13, 1989, Ser. No. 437,039
Term of patent 14 years
U.S. Cl. D3—289



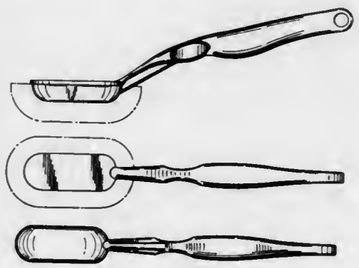
346,902
TOOTHBRUSH
Saihei Makinami, Tokyo, Japan, assignor to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Jul. 3, 1990, Ser. No. 548,360
Claims priority, application Japan, Jan. 9, 1990, 115/90
The portion of the term of this patent subsequent to Oct. 27, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



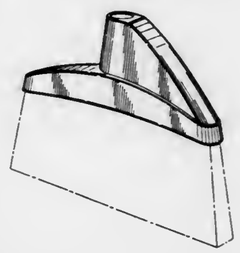
346,903
COMBINED DETACHABLE SNOW BRUSH AND ICE SCRAPER FOR VEHICLES
Eric Hillmer, Toronto, Canada, assignor to Mallory U.S.A., Inc., Blenheim, Canada
Filed Nov. 27, 1992, Ser. No. 1,971
Claims priority, application Switzerland, Aug. 18, 1992, 18-08-92-04
Term of patent 14 years
U.S. Cl. D4—118



346,904
KITCHEN BRUSH HANDLE
Enzo Berti, Venice, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 27, 1992, Ser. No. 825,708
Term of patent 14 years
U.S. Cl. D4—138

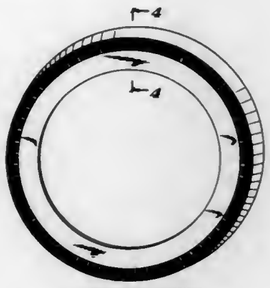


346,905
BROOM CAP
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Feb. 14, 1992, Ser. No. 836,464
Term of patent 14 years
U.S. Cl. D4—199

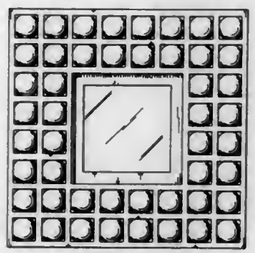


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346,906
CIRCULAR FRAME WITH LINKS
Peter V. Ilaria, East Hanover, and William Macowski, Caldwell, both of N.J., assignors to Tropar Manufacturing Company, Inc., Florham Park, N.J.
Filed Dec. 18, 1992, Ser. No. 2,736
Term of patent 14 years
U.S. Cl. D6—309



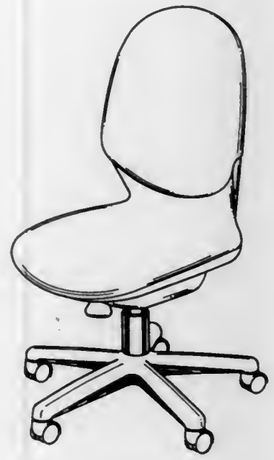
346,907
PICTURE FRAME
David Howell, 333 Hook Rd., Katonah, N.Y. 10536
Filed Sep. 8, 1992, Ser. No. 939,878
Term of patent 14 years
U.S. Cl. D6—310



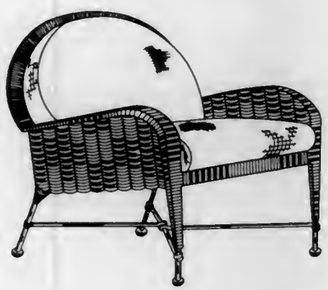
346,908
PICTURE FRAME
George A. Harrell, Jr., 13 Burnwood Dr., Burnsville, Minn. 55337
Filed Dec. 21, 1992, Ser. No. 2,782
Term of patent 14 years
U.S. Cl. D6—314



346,909
CHAIR
Hironaga Obata; Tetsuya Kano, both of Tokyo; Yuji Ishi, and Toru Nagao, both of Osaka, all of Japan, assignors to Itoki, Co., Ltd., Osaka, Japan
Filed Sep. 23, 1991, Ser. No. 764,382
Claims priority, application Japan, Mar. 25, 1991, 3-7951
Term of patent 14 years
U.S. Cl. D6—366



346,910
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed Feb. 6, 1991, Ser. No. 665,702
Term of patent 14 years
U.S. Cl. D6—369



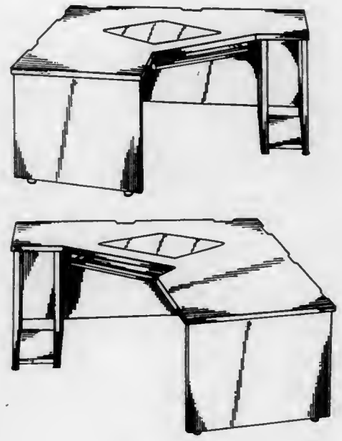
346,911
CHAIR
Roberto Lucci, Milan, and Paolo Orlandini, Sedriano, both of Italy, assignors to Lamm S.p.A., S. Secondo, Italy
Filed Feb. 20, 1992, Ser. No. 839,239
Claims priority, application Italy, Aug. 21, 1991, BS91/0/000038
Term of patent 14 years
U.S. Cl. D6—374



346,912
COMBINED TABLE AND STORAGE UNIT
Wolfgang R. Mezger, Eislingen, Fed. Rep. of Germany, assignor to Wilhelm Renz GmbH & Co., Fed. Rep. of Germany
Filed Apr. 18, 1991, Ser. No. 688,080
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1990, M9007051.8
Term of patent 14 years
U.S. Cl. D6—423



346,913
DESK
John N. Lechman, and Thomas Wegman, both of Effingham, Ill., assignors to Nova Office Furniture, Inc., Effingham, Ill.
Filed Jun. 11, 1991, Ser. No. 714,179
Term of patent 14 years
U.S. Cl. D6—427

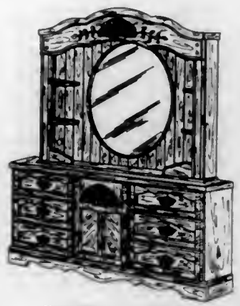


346,914
COMBINED HUTCH AND BUFFET
Friedrich H. Wegener, Columbus, Ohio, assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Sep. 11, 1992, Ser. No. 943,587
Term of patent 14 years
U.S. Cl. D6—438

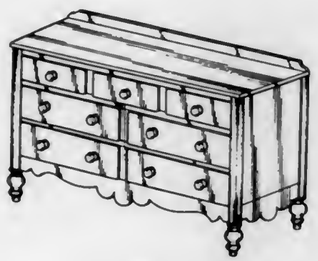


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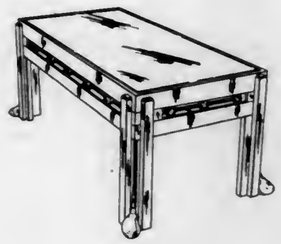
346,915
DRESSER
John L. Roser, Jr., High Point, N.C., assignor to Vaughan Bassett Williams, Sumter, S.C.
Filed Jul. 1, 1992, Ser. No. 907,324
Term of patent 14 years
U.S. Cl. D6—444



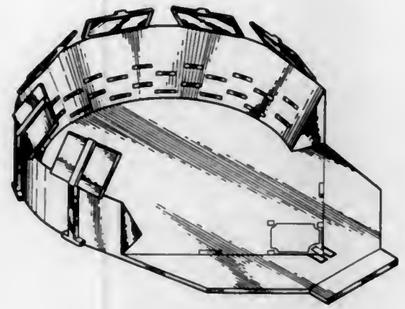
346,916
DRESSER
Edwin L. Ball, Thomasville, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Mar. 18, 1992, Ser. No. 854,050
Term of patent 14 years
U.S. Cl. D6—445



346,917
TABLE
Judith F. Weltman, Chesterfield, Mo., assignor to Judith F. Weltman, Inc., Chesterfield, Mo.
Filed Jul. 31, 1992, Ser. No. 923,347
Term of patent 14 years
U.S. Cl. D6—451



346,918
DISPLAY HOLDER FOR BASEBALL CARDS
Joseph Faiola, 9 Floyd Ave., Bloomfield, N.J. 07003
Filed Jun. 22, 1993, Ser. No. 9,719
Term of patent 14 years
U.S. Cl. D6—470



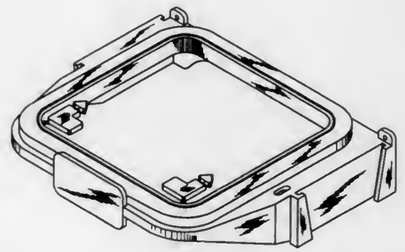
346,919
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 885,390
Term of patent 14 years
U.S. Cl. D6—480



346,920
TABLE
Conrado A. Vidal, Barcelona, Spain, assignor to Amat Muebles para colectividades, S.A., Spain
Filed May 10, 1991, Ser. No. 698,061
Term of patent 14 years
U.S. Cl. D6—486



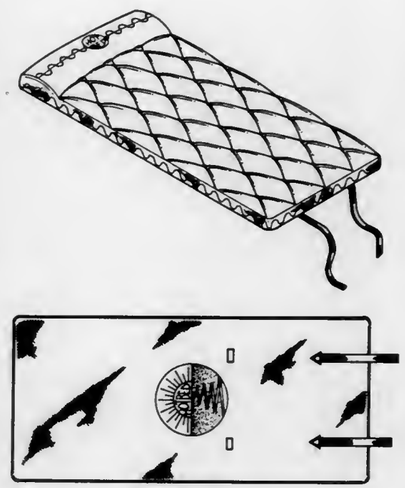
346,921
BAG HOLDER
Joseph C. Stallsmith, P.O. Box 20729, Indianapolis, Ind. 46220
Filed Jun. 29, 1992, Ser. No. 906,128
Term of patent 14 years
U.S. Cl. D6—567



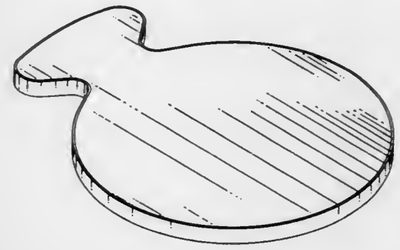
346,922
MERCHANDISE DISPLAY RACK
Carroll E. Lewis, Ocala, Fla., assignor to Southeastern Manufacturing Company, Inc., Ocala, Fla.
Filed May 12, 1992, Ser. No. 881,837
Term of patent 14 years
U.S. Cl. D6—570



346,923
MATTRESS FILLED WITH BEADS THAT ABSORB AND RETAIN HEAT
Todd Holm, 3668 Flamingo, SW., Wyoming, Mich. 49509
Filed Oct. 30, 1990, Ser. No. 605,474
Term of patent 14 years
U.S. Cl. D6—596



346,924
SEAT CUSHION
Frank O. Gehry, Santa Monica, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 12, 1992, Ser. No. 1,390
Term of patent 14 years
U.S. Cl. D6—596

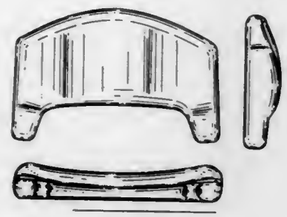


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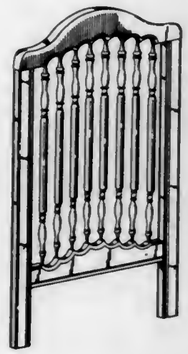
346,925
REMOVABLE WALKER GRIP CUSHION
Beatrice M. Egan, 131 74th St. #6K, Brooklyn, N.Y. 11209
Filed Mar. 7, 1991, Ser. No. 665,729
Term of patent 14 years
U.S. Cl. D6—601



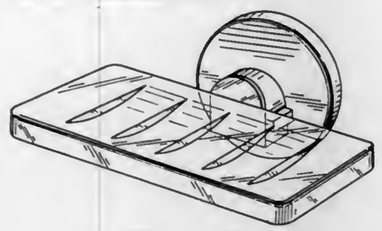
346,926
CUSHION
Carol A. Sullivan, 8745 Bay Pointe Dr., Tampa, Fla. 33615-4905
Filed Apr. 26, 1993, Ser. No. 7,601
Term of patent 14 years
U.S. Cl. D6—601



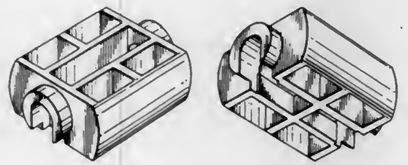
346,927
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Nov. 25, 1992, Ser. No. 1,931
Term of patent 14 years
U.S. Cl. D6—508



346,928
SOAP DISH
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed May 15, 1992, Ser. No. 884,549
Term of patent 14 years
U.S. Cl. D6—540



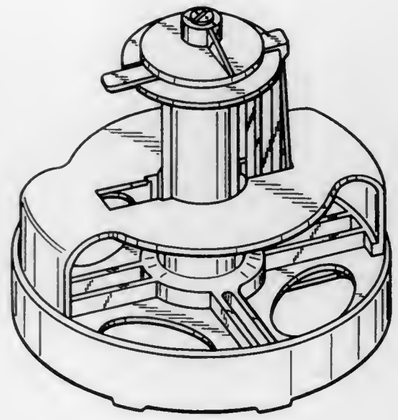
346,929
TILTROLL FOR ADJUSTING BLINDS
Donald E. Fraser, Owensboro, and Richard N. Anderson, Whitesville, both of Ky., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.
Filed Feb. 7, 1992, Ser. No. 832,761
Term of patent 14 years
U.S. Cl. D6—580



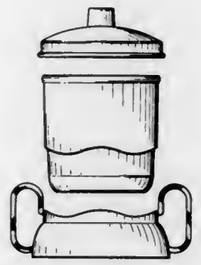
346,930
MICROWAVE-SAFE BOX HANDLE
Billy J. Gabalis, 91846 Kauwili St., Ewa Beach, Hi. 96706
Filed Aug. 21, 1991, Ser. No. 748,059
Term of patent 14 years
U.S. Cl. D7—393



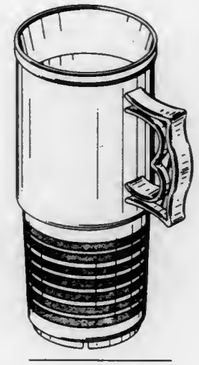
346,931
EGG COOKING RACK FOR A PAN
Lawrence Collins, 77 Porteous, Fairfax, Calif. 94930
Filed May 23, 1991, Ser. No. 704,649
Term of patent 14 years
U.S. Cl. D7—409



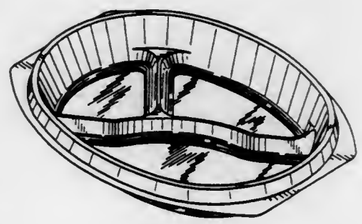
346,932
DRINKING TUMBLER WITH SIPPER AND HANDLED BASE
Victor J. J. Cautereels, Borsbeek, Belgium; Ian Ferris, Wokingham, United Kingdom, and Brian L. Aiken, Orlando, Fla., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 20, 1992, Ser. No. 932,858
Term of patent 14 years
U.S. Cl. D7—507



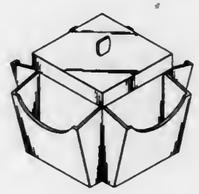
346,933
DESIGN FOR A CUP
Melvin Denny, Sugar Land, and Srinivas Nishtala, Houston, both of Tex., assignors to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Sep. 29, 1992, Ser. No. 952,772
Term of patent 14 years
U.S. Cl. D7—536



346,934
COMPARTMENTED OVAL CONTAINER
Mark B. Littlejohn, Neenah, Wis., assignor to James River Corporation of Virginia, Norwalk, Conn.
Filed Mar. 21, 1991, Ser. No. 673,113
Term of patent 14 years
U.S. Cl. D7—549

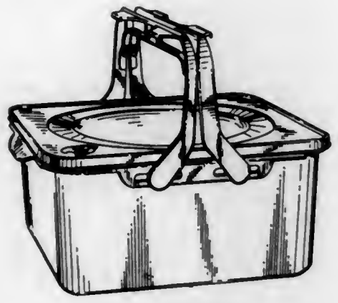


346,935
RECEPTACLE FOR BEVERAGE CONDIMENTS
George H. Friese, 201 Washington Ct., Quakertown, Pa. 18951
Filed Jan. 10, 1992, Ser. No. 818,995
Term of patent 14 years
U.S. Cl. D7—601



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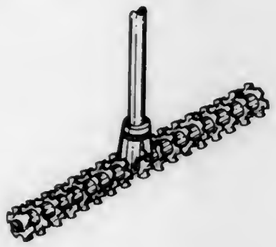
346,936
FOOD PREPARATION CONTAINER
Augusto A. Picozza, Orlando, Fla., and Takeshi Fukuda, Senriyama-Nishi, Japan, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 1, 1992, Ser. No. 2,053
Term of patent 14 years
U.S. Cl. D7—709



346,937
PRUNING SAW
Sture Backman, Bollnas, Sweden, assignor to Sandvik AB, Sweden
Filed Jul. 25, 1991, Ser. No. 735,469
Claims priority, application Sweden, Feb. 8, 1991, 91-0286
Term of patent 14 years
U.S. Cl. D8—7



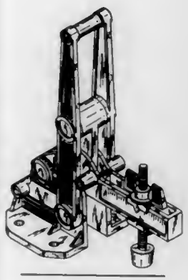
346,938
SAND TRAP GROOMING RAKE
Jesse J. Tucker, 2001 Brookside Dr., Findlay, Ohio 45840
Filed Jan. 12, 1993, Ser. No. 3,638
Term of patent 14 years
U.S. Cl. D8—13



346,939
CAN OPENER
Peter R. Wardle, 10395 56th St. N., Pinellas Park, Fla. 34666
Filed Jan. 19, 1993, Ser. No. 3,859
Term of patent 14 years
U.S. Cl. D8—40



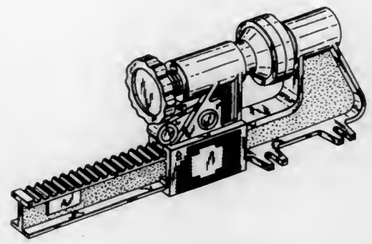
346,940
PLASTIC TOGGLE CLAMP
Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.
Filed Mar. 15, 1993, Ser. No. 5,869
Term of patent 14 years
U.S. Cl. D8—72



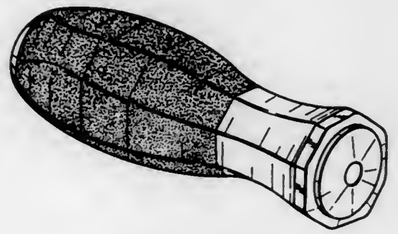
346,941
PLASTIC CLAMP
Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.
Filed Mar. 15, 1993, Ser. No. 5,870
Term of patent 14 years
U.S. Cl. D8—72



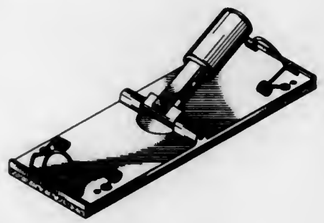
346,942
PLASTIC CLAMP
Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.
Filed Mar. 15, 1993, Ser. No. 5,871
Term of patent 14 years
U.S. Cl. D8—72



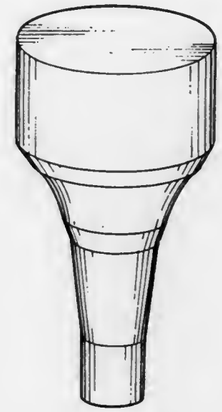
346,943
HANDLE FOR SCREWDRIVERS
Hardy Haberstroh, Schonach, Fed. Rep. of Germany, assignor to Willi Hahn GmbH & Co., KG, Schonach, Fed. Rep. of Germany
Filed Nov. 24, 1992, Ser. No. 1,781
Term of patent 14 years
U.S. Cl. D8—83



346,944
SANDING TOOL
Daniel L. Poole, 7301 W. Indianaola, Phoenix, Ariz. 85033
Filed Feb. 24, 1992, Ser. No. 840,704
Term of patent 14 years
U.S. Cl. D8—90



346,945
HANDLE GRIP FOR A POWER TOOL
Melvin E. Robinson, 4021 Augustine, Sterling Heights, Mich. 48310, and Joseph E. Robinson, 167 W. Shevlin, Hazel Park, Mich. 48030
Filed Dec. 10, 1991, Ser. No. 805,798
Term of patent 14 years
U.S. Cl. D8—107

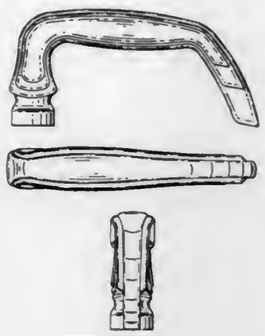


346,946
PAIR OF GRIPS FOR A HANDLE
Enzo Berti, Venice, Italy, and Robert J. Libman, Champaign, Ill., assignors to The Libman Company, Arcola, Ill.
Filed Oct. 7, 1992, Ser. No. 180
Term of patent 14 years
U.S. Cl. D8—107

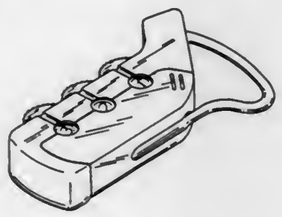


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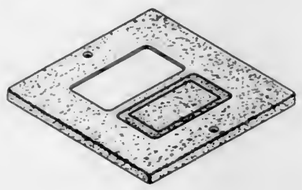
346,947
LEVER HANDLE
Alan R. Birch, Harborne, United Kingdom, assignor to Broadway Industries, Inc., Kansas City, Mo.
Filed May 14, 1993, Ser. No. 8,971
Term of patent 14 years
U.S. Cl. D8—308



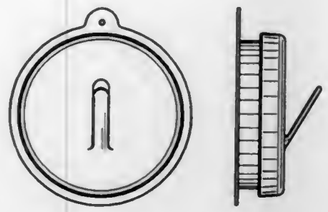
346,948
PADLOCK
Roger Pedlar, London, England, assignor to Samsonite Corporation, Denver, Colo.
Filed May 1, 1992, Ser. No. 877,063
Term of patent 14 years
U.S. Cl. D8—334



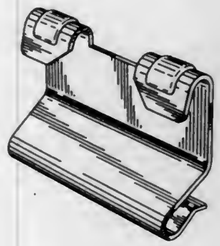
346,949
RECEPTACLE COVER PLATE
Joseph D. Comerci, Elmhurst; Robert DeRoss, Naperville, and Dennis Stanhibel, Justice, all of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Nov. 4, 1992, Ser. No. 1,156
Term of patent 14 years
U.S. Cl. D8—353



346,950
MAGNETIC SUPPORT HOOK
Frank L. Dunn, 143 Gardner St., Hingham, Mass. 02043, and Kathleen A. Newhall, 46 Cobb La., Scituate, Mass. 02066
Filed Jul. 20, 1992, Ser. No. 915,560
Term of patent 14 years
U.S. Cl. D8—367



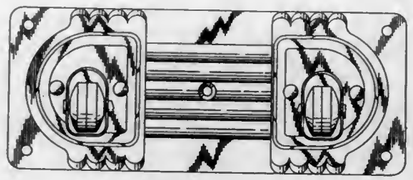
346,951
HOOK
Maurice Oberson, Verdun, Canada, assignor to SportRack Canada Inc., Grandy, Canada
Filed Dec. 22, 1992, Ser. No. 2,896
Claims priority, application Canada, Sep. 1, 1992, 0109928
Term of patent 14 years
U.S. Cl. D8—367



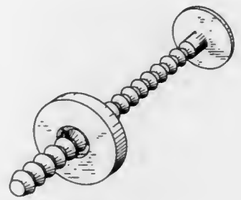
346,952
COMBINED ANIMAL ATTACHING BRACKET AND FEED BUCKET HOLDER
Frank Keller, 255 Erb Street East, Waterloo, Ontario, Canada N2J 1N2
Filed Aug. 25, 1992, Ser. No. 935,380
Term of patent 14 years
U.S. Cl. D8—373



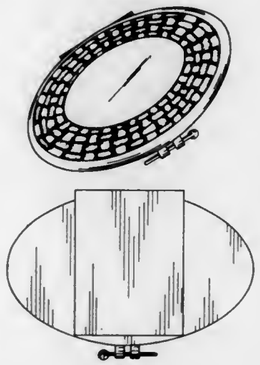
346,953
WHEEL ASSEMBLY FOR LUGGAGE
Paul V. Scicluna, Penndel, Pa., assignor to York Partners, L.P., Lambertville, N.J.
Filed Jun. 24, 1992, Ser. No. 903,824
Term of patent 14 years
U.S. Cl. D8—375



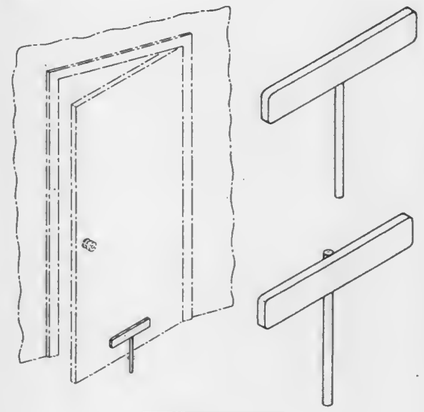
346,954
LOCKING FASTENER
Nueboch Vandermast, Flippin, Ark., assignor to Ark Plas Products, Inc., Flippin, Ark.
Filed Oct. 19, 1992, Ser. No. 563
Term of patent 14 years
U.S. Cl. D8—382



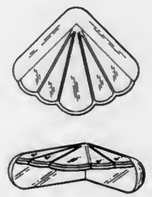
346,955
DOOR KNOCKER
Robert J. Marks, Jr., 60 Duncan La., Centerville, Mass. 02632
Filed Sep. 24, 1992, Ser. No. 951,538
Term of patent 14 years
U.S. Cl. D8—401



346,956
SECURITY DOOR STOP
Charles L. Wigley, Sr., Leeds, Ala., assignor to Common-Sense Industries, Inc., Leeds, Ala.
Filed Jan. 3, 1992, Ser. No. 816,939
Term of patent 14 years
U.S. Cl. D8—402



346,957
CORNER GUARD
Judith E. Savic, Tustin, Calif., assignor to Marka Industries, Inc., Tustin, Calif.
Filed Mar. 23, 1992, Ser. No. 856,329
Term of patent 14 years
U.S. Cl. D8—403



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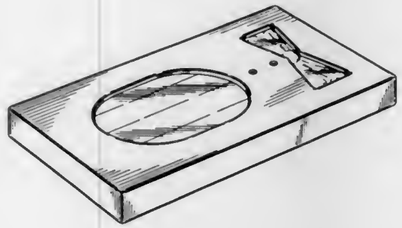
346,958
SOAP CONTAINER
Scott D. Olson, Wheeler AFB, Bldg. 102, Rm. 303, Honolulu, Hi. 96854
Filed May 14, 1992, Ser. No. 881,559
Term of patent 14 years
U.S. Cl. D9—307



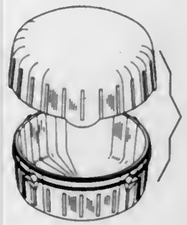
346,959
CONTAINER WITH DISPENSING APPLICATOR
Mary B. Adams, Gurnee, Ill., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Dec. 22, 1992, Ser. No. 2,840
Term of patent 14 years
U.S. Cl. D9—338



346,960
FASHION ACCESSORY BOX
Robert B. Bennett, Englewood, N.J., assignor to Chromalloy American Corporation, St. Louis, Mo.
Filed Apr. 2, 1992, Ser. No. 862,275
The portion of the term of this patent subsequent to Sep. 21, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—418



346,961
CONFECTION CONTAINER
Dennis Kupperman, Glenview, Ill., assignor to RB Toy Development Co., Skokie, Ill.
Filed Aug. 19, 1991, Ser. No. 747,248
Term of patent 14 years
U.S. Cl. D9—429



346,962
BOTTLE
Emile B. Steijns, Lierop, and Wilhelmus J. J. Maas, Someren, both of Netherlands, assignors to AFA Corporation, Forest City, N.C.
Filed Feb. 24, 1992, Ser. No. 840,778
Term of patent 14 years
U.S. Cl. D9—523



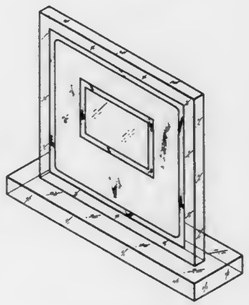
346,963
COMBINED BOTTLE AND CAP
John Crawford, Lake Mohopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jun. 25, 1991, Ser. No. 721,363
Term of patent 14 years
U.S. Cl. D9—550



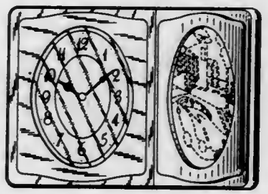
346,964
BOTTLE
Bobby E. Green, Chicago, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed May 4, 1992, Ser. No. 878,305
Term of patent 14 years
U.S. Cl. D9—574



346,965
FRAME FOR DIGITAL CLOCK
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed Mar. 5, 1991, Ser. No. 664,996
Term of patent 14 years
U.S. Cl. D10—1



346,966
CLOCK WITH PICTURE FRAME
Tsuyoshi Oyanagi, and Itsuko Hirose, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed Feb. 5, 1992, Ser. No. 832,754
Term of patent 14 years
U.S. Cl. D10—2



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346,967
CLOCK
Ma K. Wo, Kowloon, Hong Kong, assignor to Sunbeam Corporation, Fort Lauderdale, Fla.
Filed Aug. 13, 1992, Ser. No. 929,269
Term of patent 14 years
U.S. Cl. D10—15



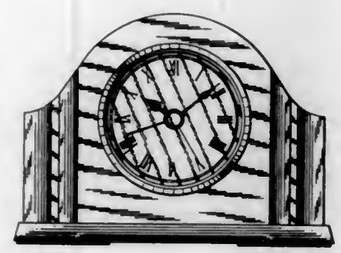
346,968
CLOCK
Seiji Odaka, and Katsumi Shimamura, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed Jan. 30, 1992, Ser. No. 828,656
Term of patent 14 years
U.S. Cl. D10—21



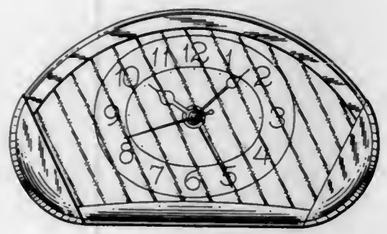
346,969
CLOCK
Seiji Odaka, and Tsuyoshi Oyanagi, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed Jan. 9, 1992, Ser. No. 818,376
Term of patent 14 years
U.S. Cl. D10—22



346,970
CLOCK
Itsuko Hirose, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 9, 1992, Ser. No. 818,373
Term of patent 14 years
U.S. Cl. D10—28



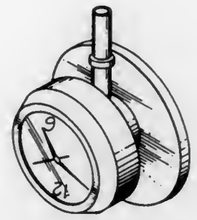
346,971
CLOCK
Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 9, 1992, Ser. No. 818,374
Term of patent 14 years
U.S. Cl. D10—28



346,972
CLOCK
Katsumi Shimamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 22, 1992, Ser. No. 824,462
Term of patent 14 years
U.S. Cl. D10—28



346,973
COMBINED WATCH AND STETHOSCOPE HEAD
Jerome Moore, and Gwendolyn Moore, both of 3233 Wesley Chapel Rd., Decatur, Ga. 30034
Filed May 9, 1991, Ser. No. 697,460
Term of patent 14 years
U.S. Cl. D10—31



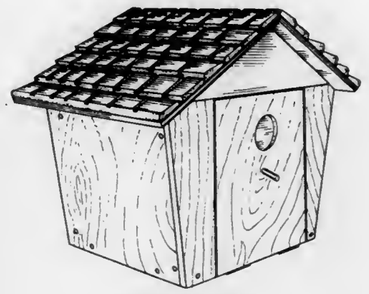
346,974
DIGITAL WRISTWATCH CASE
John T. Houlihan, Watertown, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Mar. 16, 1992, Ser. No. 851,160
Term of patent 14 years
U.S. Cl. D10—38



346,975
DIGITAL TIMEPIECE CASE
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed May 11, 1992, Ser. No. 883,701
Term of patent 14 years
U.S. Cl. D10—38



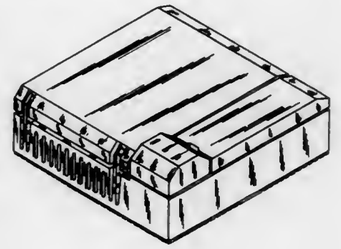
346,976
ELECTRIC METER COVER
Lloyd T. Jones, 2111 Linnett St., Peoria, Ill. 61614
Filed Aug. 21, 1992, Ser. No. 933,055
Term of patent 14 years
U.S. Cl. D10—46



346,977
HAND HELD METAL DETECTOR
Richard G. Fiske, 6985 Ravenna, Concord Township, Lake County, Ohio 44077
Filed Jun. 2, 1992, Ser. No. 892,003
Term of patent 14 years
U.S. Cl. D10—47

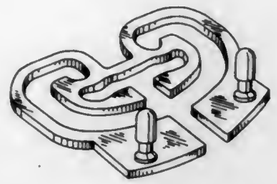


346,978
SURFACE MOUNTED ENVIRONMENTAL CONTROL MODULE
Robert D. Giese, Kenosha; Bruce E. Kierstead; Thomas O. Kautz, both of Mequon; Robin D. Shaffer, Sussex; Kirk P. Henderson, Oconomowoc, and Bruce R. Schultz, West Allis, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Sep. 14, 1992, Ser. No. 948,716
Term of patent 14 years
U.S. Cl. D10—49

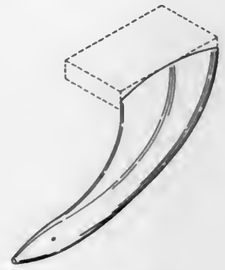


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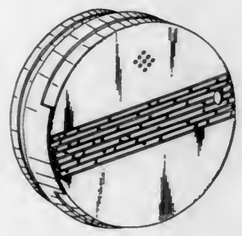
346,979
BONE MILLING TEMPLATE
Gregory C. Stalcup, Columbia City, and Steven E. Dietzel, Pierceton, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Feb. 11, 1993, Ser. No. 5,701
Term of patent 14 years
U.S. Cl. D10—64



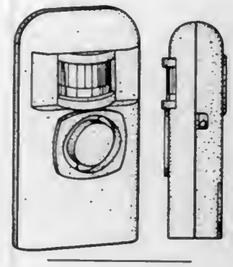
346,980
PITOT AIR DATA SENSOR
Michael T. Peterson; Jeffrey M. Setterholm, both of Lakeville, Minn.; C. Michael Peterson, Cedar Rapids, Iowa; Jonathan D. Young, Worthington, and William J. Leeper, Huber Heights, both of Ohio, assignors to Rosemount Inc., Eden Prairie, Minn.
Continuation of Ser. No. 927,245, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 587,909, Sep. 25, 1990, abandoned. This application May 4, 1993, Ser. No. 7,892
Term of patent 14 years
U.S. Cl. D10—96



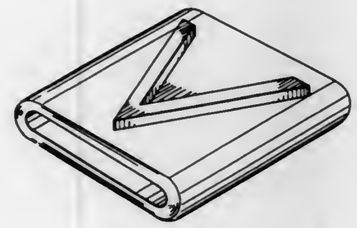
346,981
SMOKE DETECTOR
Larry R. Ratzlaff, Elgin, Ill., assignor to Management Investment & Technology, Ltd., Hong Kong, Hong Kong
Filed Jan. 29, 1992, Ser. No. 827,966
Term of patent 14 years
U.S. Cl. D10—106



346,982
PORTABLE SECURITY ALARM
Ted R. Greene, La Jolla, and Erno Lutz, Sunnyvale, both of Calif., assignors to United Security Products, Inc., San Diego, Calif.
Filed Oct. 26, 1992, Ser. No. 804
Term of patent 14 years
U.S. Cl. D10—106



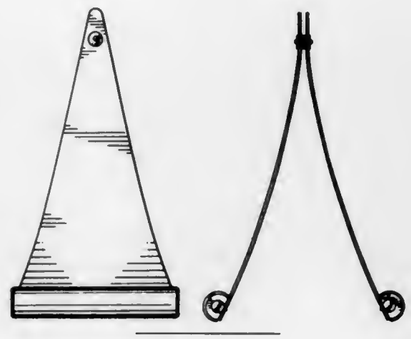
346,983
DIRECTIONAL INDICATING BAND FOR ATTACHMENT TO FIRE FIGHTING HOSE
Clifford Clement, 193 High St., Somerset, Mass. 02726
Filed Mar. 13, 1992, Ser. No. 850,779
The portion of the term of this patent subsequent to Mar. 29, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—109



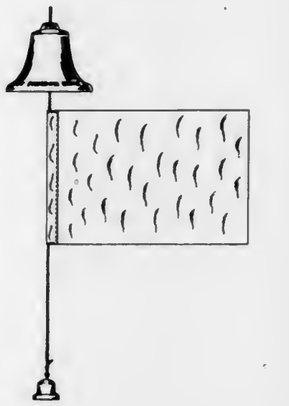
346,984
PAVEMENT MARKER
Peter Hedgewick, Windsor, Canada, assignor to Pac-Tec, Inc., Heath, Ohio
Division of Ser. No. 924,679, Aug. 3, 1992. This application Dec. 10, 1992, Ser. No. 2,368
Term of patent 14 years
U.S. Cl. D10—113



346,985
HIGHWAY MARKER
Jonothon M. W. McIntyre, 6733 Hinds Ave., North Hollywood, Calif. 91606
Filed Jun. 4, 1993, Ser. No. 9,084
Term of patent 14 years
U.S. Cl. D10—113



346,986
WIND CHIME
Harvey A. Friess, Jr., N80 W24162 Plainview Rd., Sussex, Wis. 53089
Filed Apr. 1, 1991, Ser. No. 677,877
Term of patent 14 years
U.S. Cl. D10—116



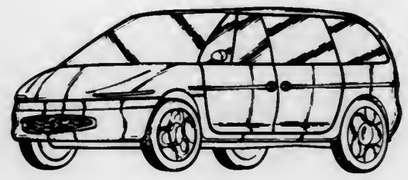
346,987
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan
Filed Jun. 28, 1993, Ser. No. 9,962
Term of patent 14 years
U.S. Cl. D10—116



346,988
SLED RUNNER
Geir S. Hansen, Denver, Colo., assignor to Viking Imports, Inc., Denver, Colo.
Filed Jan. 6, 1993, Ser. No. 3,312
Term of patent 14 years
U.S. Cl. D12—8

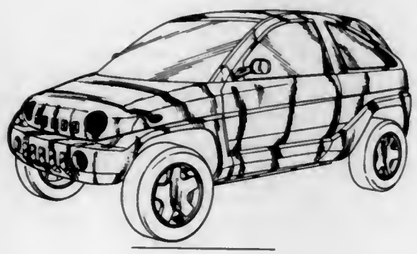


346,989
AUTOMOBILE
Julie G. Dolan, Beverly Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1992, Ser. No. 868,375
Term of patent 14 years
U.S. Cl. D12—91

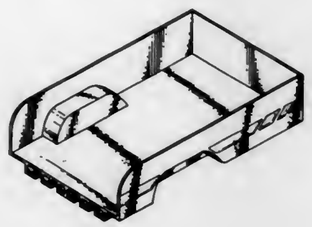


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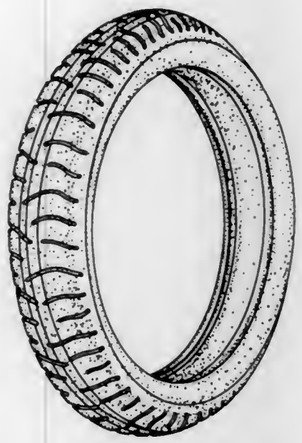
346,990
AUTOMOBILE
Glenn W. Abbott, Waterford, and John P. Sgalia, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 17, 1992, Ser. No. 1,538
Term of patent 14 years
U.S. Cl. D12—91



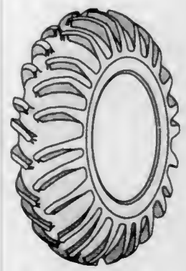
346,991
WEIGHTED BED LINER FOR PICKUP TRUCKS
Robert H. Krieger, Jr., 11 Conntryside Park, Waterville, Me. 04901
Filed Sep. 2, 1992, Ser. No. 938,349
Term of patent 14 years
U.S. Cl. D12—98



346,992
MOTORCYCLE TIRE
Johann Haas, and Ernst Mader, both of Munich, Fed. Rep. of Germany, assignors to Metzeler Reifen GmbH, Breuberg, Fed. Rep. of Germany
Filed Aug. 18, 1992, Ser. No. 932,008
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1992, M 92 03 383.8
Term of patent 14 years
U.S. Cl. D12—147



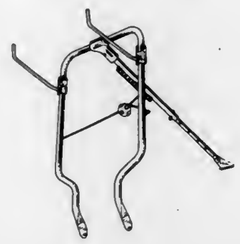
346,993
TIRE
Mark L. Bonko, Uniontown, and Loran C. Lopp, Jr., Wadsworth, both of Ohio, assignors to The GoodYear Tire & Rubber Company, Akron, Ohio
Filed Nov. 20, 1992, Ser. No. 1,832
Term of patent 14 years
U.S. Cl. D12—151



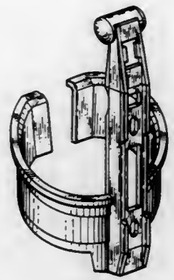
346,994
LADDER RACK SUPPORT
Kenneth F. Weger, Jr., Cary, and Freddie C. Webb, Wauconda, both of Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.
Filed Jul. 30, 1992, Ser. No. 922,213
Term of patent 14 years
U.S. Cl. D12—223



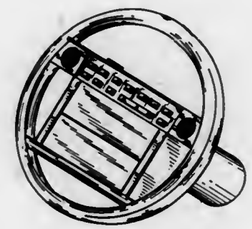
346,995
BICYCLE CARRIER FOR VEHICLES
Willis Thulin, Hillerstorp, Sweden, assignor to Industri AB Thule, Sweden
Filed Sep. 15, 1992, Ser. No. 948,872
Term of patent 14 years
U.S. Cl. D12—408



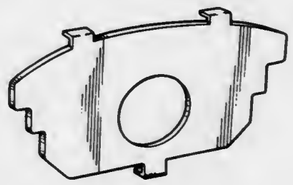
346,996
BOTTLE CAGE FOR BICYCLES
James R. Blackburn, Los Gatos, Calif., assignor to Blackburn Designs, Inc., Campbell, Calif.
Filed Sep. 18, 1992, Ser. No. 948,974
Term of patent 14 years
U.S. Cl. D12—411



346,997
COMBINATION VEHICLE STEERING WHEEL UNIT AND TELEPHONE
Peter S. Kurtis, 168 W. Ridge Drive, West Hartford, Conn. 06117
Filed Apr. 29, 1991, Ser. No. 692,502
Term of patent 14 years
U.S. Cl. D12—176

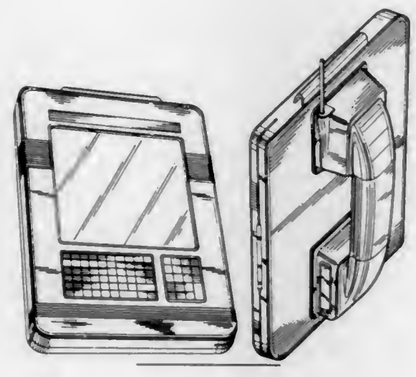


346,998
DISC BRAKE SHIM
Gustav J. Steinke, and Starla D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 797,471, Nov. 25, 1991, Pat. No. Des. 341,350. This application May 12, 1993, Ser. No. 8,260
Term of patent 14 years
U.S. Cl. D12—180

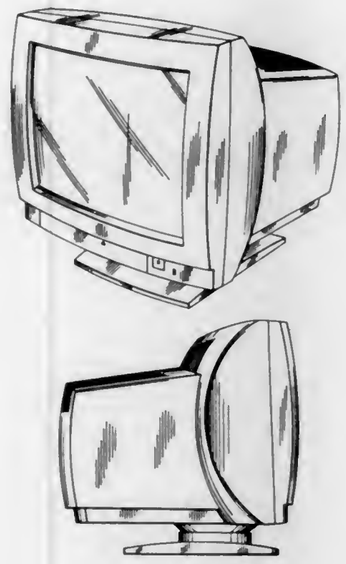


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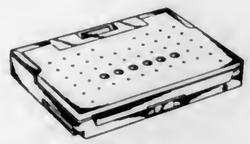
346,999
COMBINED HIGHLY INTEGRATED PORTABLE ELECTRONIC WORK SLATE AND TELEPHONE
Robert F. Meyerson, Captiva Island, Fla., and Yung-Fu Chang, Medina, Ohio, assignors to Teletransaction Corporation, Akron, Ohio
Filed Oct. 5, 1992, Ser. No. 32
Term of patent 14 years
U.S. Cl. D14—100



347,001
COMPUTER DISPLAY MONITOR
Matt S. Lee, Taipei, Taiwan, assignor to Compal Electronics, Inc., Taipei, Taiwan
Filed Oct. 21, 1992, Ser. No. 616
Term of patent 14 years
U.S. Cl. D14—113

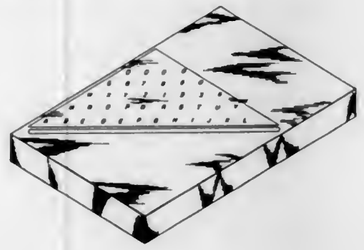


347,000
PORTABLE COMPUTER
Bellini Mario, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Sep. 2, 1992, Ser. No. 938,647
Claims priority, application Italy, Mar. 12, 1992, T0920000043
Term of patent 14 years
U.S. Cl. D14—106





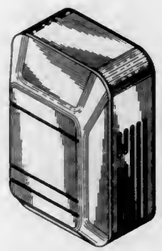
347,002
TOUCH PLATE FOR PROVIDING A COMPUTER RESPONSE
Clifford B. Lau, 94-871 Farrington Hwy., 2nd Floor, Waipahu, Hi. 96797-3146
Filed Oct. 7, 1991, Ser. No. 772,048
Term of patent 14 years
U.S. Cl. D14—114



347,003
THREE-DIMENSIONAL IMAGE OPTICAL FIBER SCREEN
Allen J. Fox, 6872 S. Marion Cir. East, Littleton, Colo. 80122
Filed Feb. 21, 1992, Ser. No. 839,443
Term of patent 14 years
U.S. Cl. D14—125



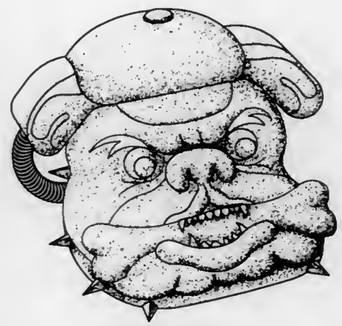
347,004
RADIO TRANSCEIVER ENCLOSURE
Thomas G. Beaumont, Bedford, and Nghia T. Nguyen, N. Richland Hills, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 29, 1991, Ser. No. 736,902
Term of patent 14 years
U.S. Cl. D14—137



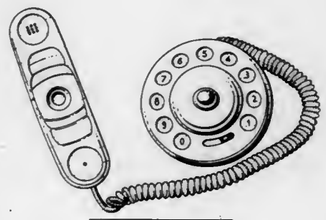
347,005
CORDLESS TELEPHONE
Akio Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 22, 1992, Ser. No. 949,089
Claims priority, application Japan, May 9, 1992, 4-13544
Term of patent 14 years
U.S. Cl. D14—188



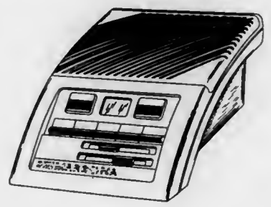
347,006
TELEPHONE
Dana Booker, 16805 DeForest Ave., Cleveland, Ohio 44128
Filed Oct. 29, 1992, Ser. No. 963
Term of patent 14 years
U.S. Cl. D14—143



347,007
TELEPHONE SET
Isao Hosoe, Milan, Italy, assignor to Telenorma GmbH, Fed. Rep. of Germany
Filed Jun. 9, 1992, Ser. No. 896,142
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 9202154
Term of patent 14 years
U.S. Cl. D14—150

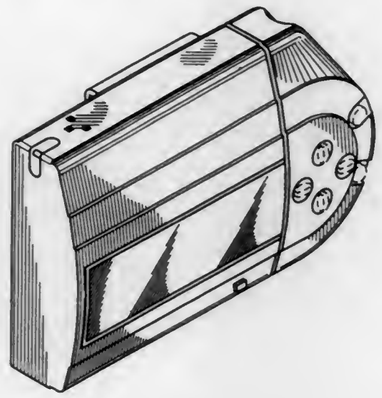


347,008
SOUND CONDITIONER
David A. Theisen, Hampstead, and Robert L. Gault, Raleigh, both of N.C., assignors to Marpac Corporation, Wilmington, N.C.
Filed Aug. 3, 1992, Ser. No. 924,227
Term of patent 14 years
U.S. Cl. D14—160

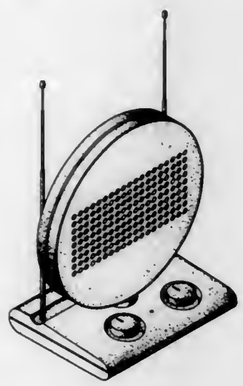


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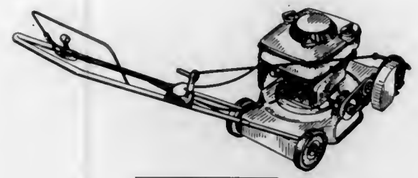
347,009
COMMUNICATIONS PAGER
Phillip E. Lindeman, Roselle; Shrirang Jambhekar, Schaumburg, and Leonid Soren, Lincolnwood, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 6, 1991, Ser. No. 805,713
Term of patent 14 years
U.S. Cl. D14—191



347,010
ANTENNA
Ronald Emmerling, Montclair, N.J., assignor to Gemini Industries, Inc., Clifton, N.J.
Filed May 1, 1992, Ser. No. 877,055
Term of patent 14 years
U.S. Cl. D14—230



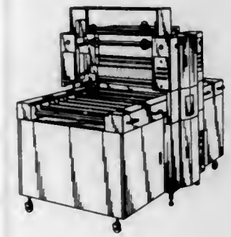
347,011
LAWN MOWER WITH EDGER
Robert H. Baxter, 2901 Kay La., Springdale, Ark. 72762
Filed Nov. 2, 1992, Ser. No. 1,086
Term of patent 14 years
U.S. Cl. D15—14



347,012
CHIP CONTROL INSERT
Mark F. Huston, Raleigh, and Earl L. Griffin, Cary, both of N.C., assignors to Kennametal Inc., Latrobe, Pa.
Filed May 8, 1992, Ser. No. 880,344
Term of patent 14 years
U.S. Cl. D15—139



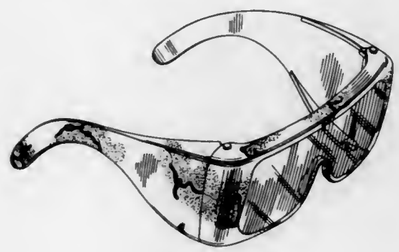
347,013
FILM LAMINATOR FOR PRINTED CIRCUIT BOARDS
Hiroshi Taguchi, Tokyo; Yoji Washizaki, Saitama, and Kiyoji Sugimoto, Chiba, all of Japan, assignors to Somar Corporation, Tokyo, Japan
Filed Jun. 26, 1992, Ser. No. 904,537
Claims priority, application Japan, Dec. 27, 1991, 3-39250
Term of patent 14 years
U.S. Cl. D15—145



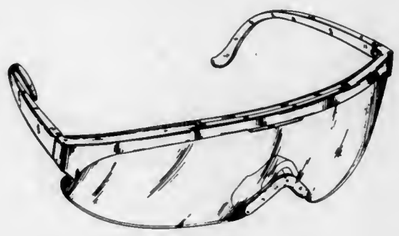
347,014
SUNGLASSES
Gregory Arnette, Laguna Beach, Calif., assignor to Arnet Optical Illusions, Inc., San Clemente, Calif.
Filed Feb. 19, 1993, Ser. No. 5,072
Term of patent 14 years
U.S. Cl. D16—102



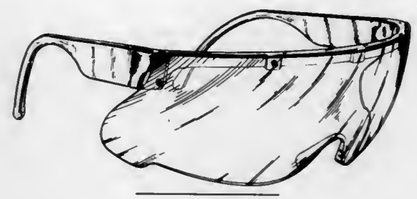
347,015
CAMOUFLAGE SUNGLASSES
John P. Saik, 10771 Brighton Dr., Santa Ana, Calif. 92705
Filed Oct. 21, 1992, Ser. No. 660
Term of patent 14 years
U.S. Cl. D16—112



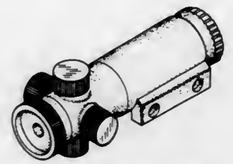
347,016
EYEGLASSES
Maurice Bolle', Oyonnax, France, assignor to Etablissements Bolle', Oyonnas, France
Filed Feb. 4, 1993, Ser. No. 4,419
Term of patent 14 years
U.S. Cl. D16—112



347,017
SUNGLASSES
Maurice Bollé, Oyonnax, France, assignor to Etablissements Bolle S.N.C., Oyonnax, France
Filed May 20, 1993, Ser. No. 88,619
Term of patent 14 years
U.S. Cl. D16—112

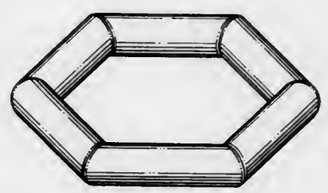


347,018
LASER SIGHT
E. F. Jehn, 10F, No. 185, Yung Chi Road, Taipei, Taiwan
Filed Sep. 16, 1992, Ser. No. 948,964
Term of patent 14 years
U.S. Cl. D16—132





347,019
PERCUSSION MUSICAL INSTRUMENT
Kenneth D. Yould, Palm Springs, Calif., assignor to Triamid Corporation, Palm Springs, Calif.
Filed Aug. 11, 1992, Ser. No. 928,222
Term of patent 14 years
U.S. Cl. D17—22

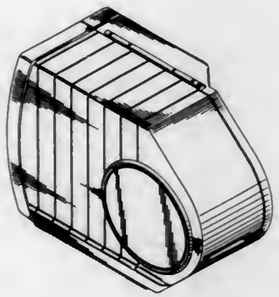


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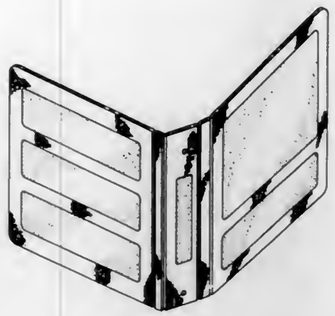
347,020
MUSICAL TONE CONTROLLER
Takamichi Masubuchi, and Hisanori Kato, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Shizuoka, Japan
Filed Feb. 4, 1992, Ser. No. 831,312
Claims priority, application Japan, Aug. 6, 1991, 3-23635
Term of patent 14 years
U.S. Cl. D17—99



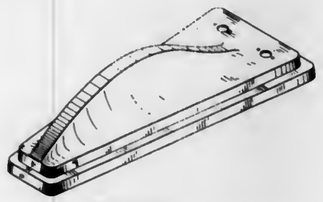
347,021
THERMAL TRANSFER PRINTER
Vincent C. Adams, Buffalo Grove, Ill.; Jarl A. Anderson, Northborough, Mass.; William C. Cesaroni, Glenview, and Alvin C. Skat, Jr., Elmhurst, both of Ill., assignors to Zebra Technologies Corporation, Vernon Hills, Ill.
Filed Sep. 8, 1992, Ser. No. 941,948
Term of patent 14 years
U.S. Cl. D18—50



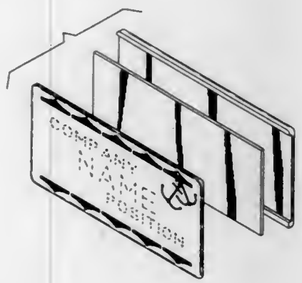
347,022
BINDER
Robert L. Schattner, Cherry Hill, N.J., assignor to Omnimed, Inc., Maple Shade, N.J.
Filed Oct. 6, 1992, Ser. No. 210
Term of patent 14 years
U.S. Cl. D19—27



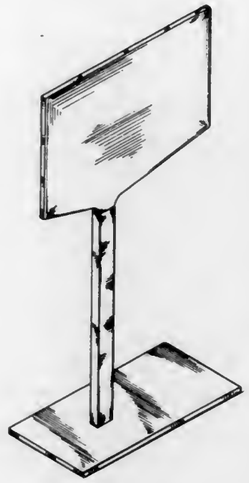
347,023
DRIVE-BY RESTAURANT OUTDOOR MENU AND ADVERTISING DISPLAY HOUSING COVER
William B. Cunningham, P.O. Box 25463, Oklahoma City, Okla. 73125
Filed Aug. 2, 1993, Ser. No. 11,256
Term of patent 14 years
U.S. Cl. D20—19



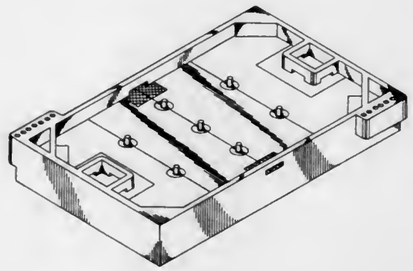
347,024
IDENTIFICATION TAG
Marie Rabus, 7347 Rani Rd., Las Vegas, Nev. 89118
Filed May 28, 1991, Ser. No. 705,889
Term of patent 14 years
U.S. Cl. D20—22



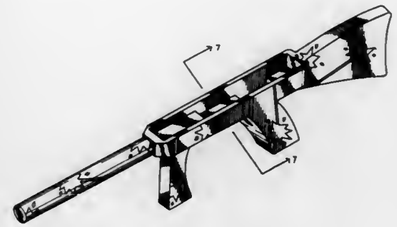
347,025
ADVERTISING SIGNBOARD
Réjan Asselin, Laval, Canada, assignor to Re/Max Quebec, Inc., Laval, Canada
Filed Jan. 31, 1991, Ser. No. 648,381
The portion of the term of this patent subsequent to Feb. 2, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—41



347,026
TABLETOP HOCKEY GAME
Leon N. Young, 909 E. Randolf Rd., Silver Spring, Md. 20904
Filed Apr. 9, 1992, Ser. No. 866,533
Term of patent 14 years
U.S. Cl. D21—18



347,027
VIDEO GAME PISTOL HOLDER
Ronald K. Phillips, 469-A Garnet Mine Rd., Boothwyn, Pa. 19061-2028
Filed Oct. 2, 1990, Ser. No. 591,859
Term of patent 14 years
U.S. Cl. D21—48



347,028
VIDEO GAME CONTROLLER
Dane L. Galden, P.O. Box 45071, Columbus, Ohio 43215
Filed May 31, 1991, Ser. No. 708,225
Term of patent 14 years
U.S. Cl. D21—48

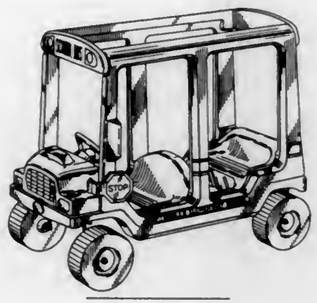


347,029
WAGON
Tony G. Sampedro, Damascus, Ohio, assignor to Mahoning Valley Manufacturing, Damascus, Ohio
Filed Mar. 6, 1992, Ser. No. 847,478
Term of patent 14 years
U.S. Cl. D21—71

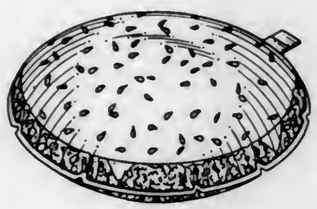


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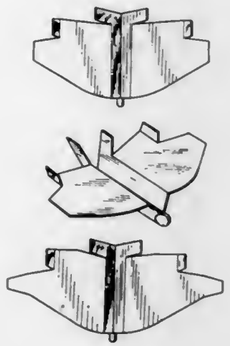
347,030
RIDING SCHOOL BUS FOR CHILDREN
Robert J. Nolan, Columbus, Miss., assignor to Flexible Flyer Acquisition Corp., Olney, Ill.
Filed Jan. 27, 1993, Ser. No. 4,137
Term of patent 14 years
U.S. Cl. D21—78



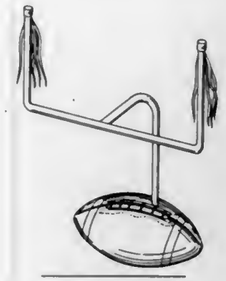
347,031
BURGER BALLOON
Stephen B. Axtell, 230 Glencrest Cir., Ventura, Calif. 93003
Filed Sep. 27, 1991, Ser. No. 767,096
Term of patent 14 years
U.S. Cl. D21—84



347,032
TOY GLIDER
Evan W. Nieder, 6272 Escallonia St., Newark, Calif. 94560
Filed Oct. 19, 1992, Ser. No. 569
Term of patent 14 years
U.S. Cl. D21—89



347,033
GOAL POST TOY
Latt T. Moretz, Rte. 16, Box 1670, Moretz Court Rd. 1190, Hickory, N.C. 28601
Filed May 26, 1992, Ser. No. 889,085
Term of patent 14 years
U.S. Cl. D21—109



347,034
TOY VIDEO CAMERA
Maarten V. Huystee, Hudson, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Aug. 3, 1992, Ser. No. 923,177
Term of patent 14 years
U.S. Cl. D21—110

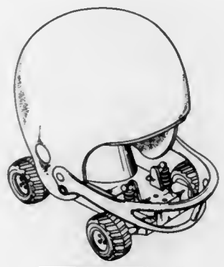
347,035
AMUSEMENT CHARACTER PLAYHOUSE
Hani D. El-Masri, Glendale, and Joseph A. Lanzisero, Burbank, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Jan. 22, 1993, Ser. No. 3,968
Term of patent 14 years
U.S. Cl. D21—114



347,036
AMUSEMENT CHARACTER PLAYHOUSE
James H. Shull, Santa Clarita, and Joseph A. Lanzisero, Burbank, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Mar. 18, 1993, Ser. No. 5,948
Term of patent 14 years
U.S. Cl. D21—114



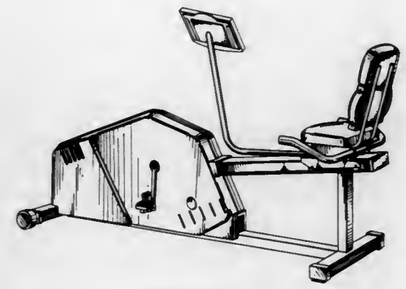
347,037
SIMULATIVE TOY VEHICLE
F. Dale Galloway, 4059 Camp Springs Dr., Gainesville, Ga. 30507
Filed Jun. 17, 1992, Ser. No. 900,107
Term of patent 14 years
U.S. Cl. D21—128



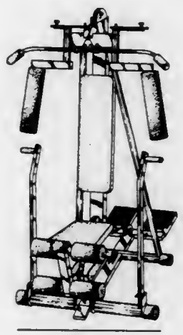
347,038
TOY FIGURE
Terrance W. Sachetti, 7601-36th Ave. North, New Hope, Minn. 55427
Filed Jun. 30, 1992, Ser. No. 907,206
Term of patent 14 years
U.S. Cl. D21—154



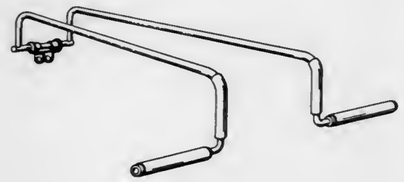
347,039
RECUMBENT EXERCISE CYCLE
David J. Littrell, Lynnwood, and Kenneth G. Real, Redmond, both of Wash., assignors to Precor Incorporated, Bothell, Wash.
Filed Jul. 31, 1992, Ser. No. 923,211
Term of patent 14 years
U.S. Cl. D21—194



347,040
MULTI-PURPOSE PHYSICAL EXERCISER
Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corporation, Taichung Hsien, Taiwan
Filed Mar. 17, 1992, Ser. No. 853,170
Term of patent 14 years
U.S. Cl. D21—195

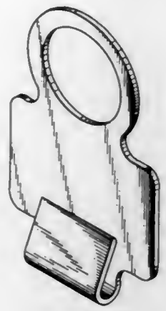


347,041
HANDLE ASSEMBLY FOR A PHYSICAL EXERCISER
Michael P. Calderone, 9080 Evergreen, Brighton, Mich. 48116
Filed Jan. 3, 1992, Ser. No. 816,949
Term of patent 14 years
U.S. Cl. D21—198

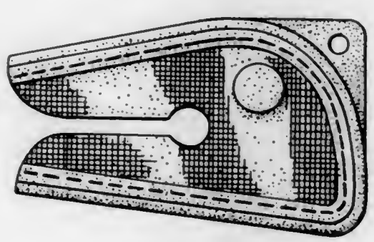


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347,042
CLIP-ON GOLF BALL RETRIEVER
Grace O. Garcia, 160 Ashley La., Oldsmar, Fla. 34677
Filed Nov. 25, 1991, Ser. No. 797,239
Term of patent 14 years
U.S. Cl. D21—206



347,043
IRON COVER
David Hoyt, 4170 Motor Ave., Culver City, Calif. 90230, and Dolph Hoyt, Jr., 152 Ashdale Ave., Los Angeles, Calif. 90049
Filed May 7, 1991, Ser. No. 696,534
Term of patent 14 years
U.S. Cl. D21—221



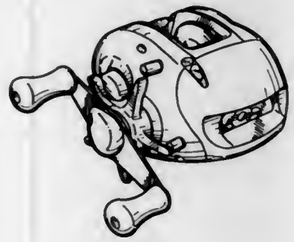
347,044
SINGLE WHEEL SKATE
Walter Slack, and Terry Cupples, both of 1427 Rimrock, Richland, Wash. 99352
Filed Jun. 26, 1992, Ser. No. 904,549
Term of patent 14 years
U.S. Cl. D21—226



347,045
BROADHEAD ARROW PULLER
Robert R. Tomblin, 77 State Route 37, Ranger, W. Va. 25557
Filed Jan. 31, 1992, Ser. No. 828,642
Term of patent 14 years
U.S. Cl. D22—115



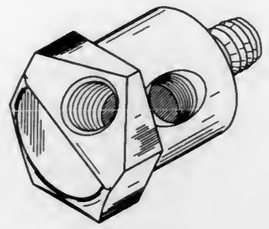
347,046
FISHING REEL
Tomoharu Sakurai, Wakayama, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Apr. 5, 1991, Ser. No. 681,181
Term of patent 14 years
U.S. Cl. D22—140



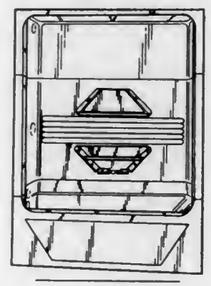
347,047
HORTICULTURAL SPRAYER
Noel S. D. Wood, Hunters Hill, Australia, assignor to Exell Trading Pty Limited, Glenorie, Australia
Filed Apr. 24, 1992, Ser. No. 874,564
Claims priority, application Australia, Oct. 25, 1991, 3240/91
Term of patent 14 years
U.S. Cl. D23—225



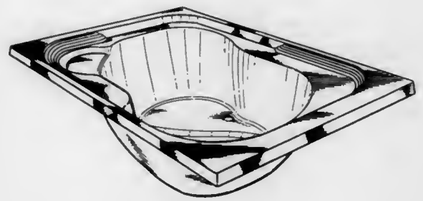
347,048
OIL GAUGE FITTING
Donald Davis, Canoga Park, Calif., assignor to Ronald A. Bender, Chardon, Ohio
Filed Feb. 25, 1992, Ser. No. 840,950
Term of patent 14 years
U.S. Cl. D23—259



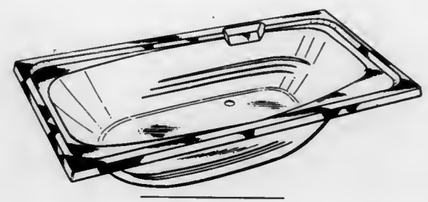
347,049
COMBINED BATHTUB AND SHOWER ENCLOSURE
Carolynn L. Clark, Memphis, and Fred W. Dierks, Adamsville, both of Tenn., assignors to Aqua Glass Corporation, Adamsville, Tenn.
Filed Apr. 10, 1992, Ser. No. 866,938
Term of patent 14 years
U.S. Cl. D23—275



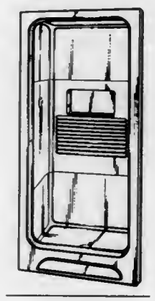
347,050
BATHTUB
Alexander M. Gardiner, Toronto, Canada, assignor to MRL Inc., Toronto, Canada
Filed Jun. 11, 1992, Ser. No. 897,340
Claims priority, application Canada, Apr. 21, 1992, 21-04-92-1
Term of patent 14 years
U.S. Cl. D23—277



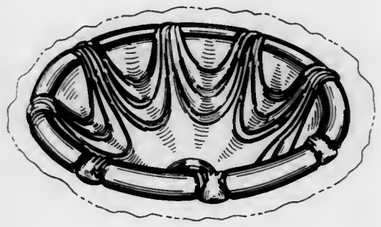
347,051
BATHTUB
Alexander M. Gardiner, Toronto, Canada, assignor to MRL Inc., Toronto, Canada
Filed Jun. 11, 1992, Ser. No. 897,349
Claims priority, application Canada, Apr. 22, 1992, 22-04-92-1
Term of patent 14 years
U.S. Cl. D23—277



347,052
SHOWER STALL
Carolynn L. Clark, Memphis, and Fred W. Dierks, Adamsville, both of Tenn., assignors to Aqua Glass Corporation, Adamsville, Tenn.
Filed Apr. 10, 1992, Ser. No. 867,866
Term of patent 14 years
U.S. Cl. D23—283



347,053
LAVATORY
Mary J. Reid, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 824,492
Term of patent 14 years
U.S. Cl. D23—285

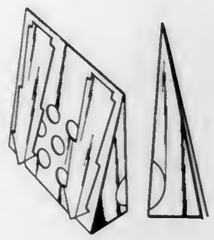


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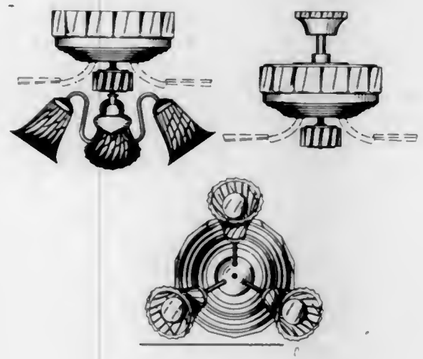
347,054
WATER CLOSET
Herbert V. Kohler, Jr., Kohler; Todd D. Dannenberg, and Mary J. Reid, both of Sheboygan, all of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 823,648
Term of patent 14 years
U.S. Cl. D23—301



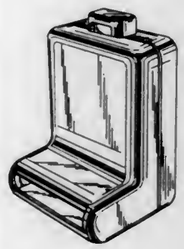
347,055
AIR FRESHENER
Allan R. Jarvis, 28a Springfield, Bushey Heath, Herts, United Kingdom
Filed Aug. 21, 1992, Ser. No. 933,481
Term of patent 14 years
U.S. Cl. D23—366



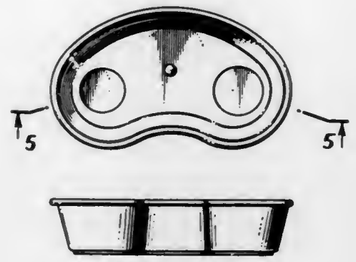
347,056
COMBINED MULTI-FACETED MOTOR HOUSING AND LIGHT KIT FOR A CEILING FAN
John C. Bucher, Coral Springs; Shih T. Wu, Lighthouse Point, both of Fla.; Ta-Yao Tao, Taiwan, China, and John C. Elliott, Tamarac, Fla., assignors to Chien Luen Industries Company, Ltd., Inc., Ft. Lauderdale, Fla.
Filed Mar. 26, 1993, Ser. No. 6,380
Term of patent 14 years
U.S. Cl. D23—411



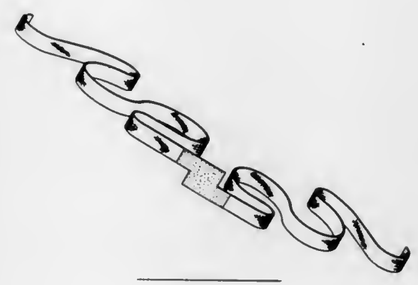
347,057
INHALER
John D. Yair, Hagley, England, assignor to Technosystem Limited, Liverpool, England
Filed Aug. 22, 1991, Ser. No. 748,893
Claims priority, application United Kingdom, Mar. 14, 1991, 2013605
Term of patent 14 years
U.S. Cl. D24—110



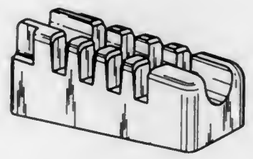
347,058
BASIN FOR HOLDING MEDICINE CUPS
A. H. Llynn Valentine, Granada Hills, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.
Filed Jan. 4, 1991, Ser. No. 638,404
Term of patent 14 years
U.S. Cl. D24—123



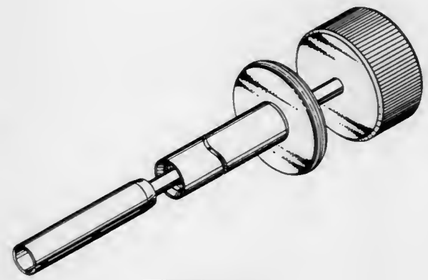
347,059
ENDOTRACHEAL TUBE STABILIZER
Lee H. Mota, 2970 Crystal Springs La., Richardson, Tex. 75082, assignor to Lee H. Mota, Richardson, Tex.
Filed Feb. 19, 1991, Ser. No. 656,621
Term of patent 14 years
U.S. Cl. D24—128



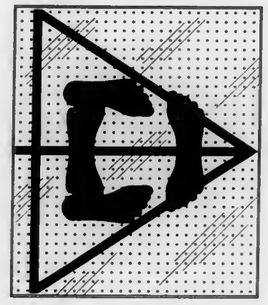
347,060
CATHETER ADAPTER RETAINER
Steven F. Bierman, 143 Eighth St., Del Mar, Calif. 92014
Division of Ser. No. 34,340, Mar. 19, 1993. This application Jul. 14, 1993, Ser. No. 10,663
Term of patent 14 years
U.S. Cl. D24—128



347,061
LAPAROSCOPIC TOOL FOR INSERTING A MESH PROSTHESIS
Edward H. Phillips, 712 N. Roxbury Dr., Beverly Hills, Calif. 90210
Filed Apr. 17, 1992, Ser. No. 870,418
Term of patent 14 years
U.S. Cl. D24—133

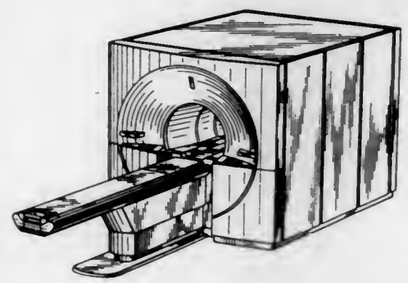


347,062
FOOT POSITIONING MAT FOR X-RAY PATIENTS
Sharon Logan, 300 Palm Ave., Modesto, Calif. 95350
Filed Mar. 4, 1991, Ser. No. 663,654
Term of patent 14 years
U.S. Cl. D24—158

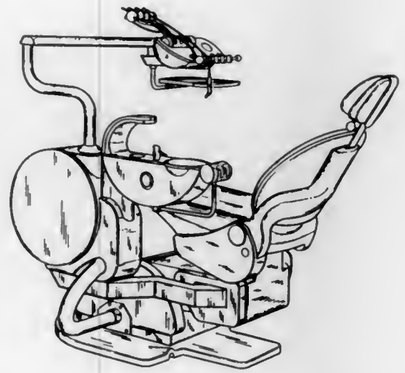


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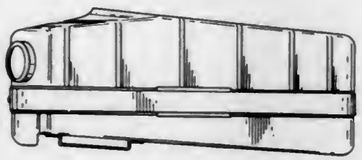
347,063
MAGNETIC RESONANCE IMAGING SCANNER
Tsukasa Ariyoshi, Kokubunji; Shigeki Masatsugu, Sayama; Tatsuo Murai, Machida; Hiroyuki Kuriyama, Yokohama; Atsuo Yoshida; Atsuhiko Urushihara, both of Kokubunji; Tadashi Sube, Kodaira; Kazunori Yanagisawa, Higashiyamato; Atsushi Katayama, Kokubunji; Shyoji Kondo, and Yoshiki Igarashi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 15, 1992, Ser. No. 883,969
Claims priority, application Japan, Nov. 18, 1991, 3-34573
Term of patent 14 years
U.S. Cl. D24—159



347,065
DENTAL UNIT
Franco Castellini, Bologna, Italy, assignor to Castellini, S.p.A., Bologna, Italy
Filed Jul. 24, 1992, Ser. No. 919,301
Claims priority, application Hague, Jan. 29, 1992, DM/021824
Term of patent 14 years
U.S. Cl. D24—178



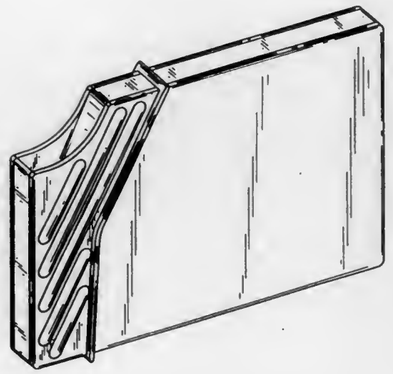
347,064
HOUSING FOR AN OXYGEN RESPIRATOR
Wolfgang Drews, Zarpen, Fed. Rep. of Germany, assignor to Draegerwerk AG, Luebeck, Fed. Rep. of Germany
Filed Oct. 9, 1991, Ser. No. 774,119
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1991, 9102832
Term of patent 14 years
U.S. Cl. D24—164



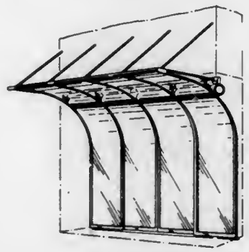
347,066
BABY BOTTLE CONTAINER
Alexander R. Malcolm, Dudley, Mass., and Jay F. Cannie, Plainsboro, N.J., assignors to Kinder-Grip Products, Inc., Plainsboro, N.J.
Filed Feb. 3, 1992, Ser. No. 830,060
Term of patent 14 years
U.S. Cl. D24—197



347,067
ANALYTICAL CARTRIDGE FOR TESTING BIOLOGICAL FLUIDS
Robert Shartle, Livermore, and William Aldrich, Redwood City, both of Calif., assignors to Biotrack, Inc., Fremont, Calif.
Filed Mar. 15, 1991, Ser. No. 670,151
Term of patent 14 years
U.S. Cl. D24—223



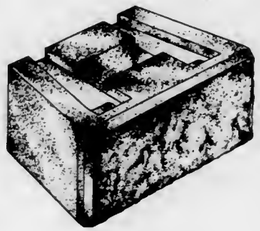
347,068
AUTOMATIC SLIDING DOOR
Michèle Rota, Winkel, Switzerland, assignor to AG Fur Turautomation, Fehraltorf, Switzerland
Filed Feb. 27, 1992, Ser. No. 842,583
Claims priority, application Int'l Pat. Institute, Mar. 9, 1991, DM/020.580
Term of patent 14 years
U.S. Cl. D25—48



347,069
LADDER
Wen-Hua Lu, No. 7, Newputz, Shin-Zen, Tan-Shui, Taipei, Taiwan
Filed May 19, 1992, Ser. No. 885,560
Term of patent 14 years
U.S. Cl. D25—64



347,070
FACING BLOCK
Peter L. Anderson, Centreville; Michael J. Cowell, Leesburg, and Dan J. Hotek, Chantilly, all of Va., assignors to Societe Civile des Brevets Henri C. Vidal, Le Pecq, France
Continuation of Ser. No. 40,904, Mar. 31, 1993. This application Jun. 4, 1993, Ser. No. 9,442
Term of patent 14 years
U.S. Cl. D25—114

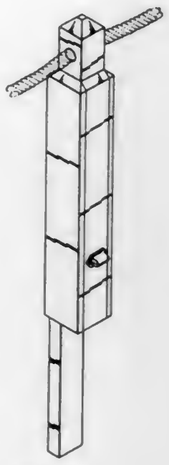


347,071
MULLION PART
Shinji Tanikawa, Marietta, Ga., assignor to YKK Architectural Products, Inc., Tokyo, Japan
Filed Sep. 17, 1990, Ser. No. 583,360
Claims priority, application Japan, Mar. 23, 1990, 2-9896
Term of patent 14 years
U.S. Cl. D25—119



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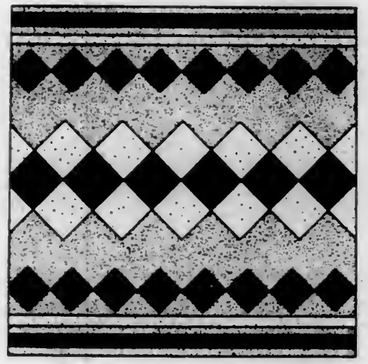
347,072
LAKE DOCK POLE
Mark P. Hallin, 1305 Elmwood Ave., Mound, Minn. 55364
Filed Apr. 10, 1992, Ser. No. 867,797
Term of patent 14 years
U.S. Cl. D25—126



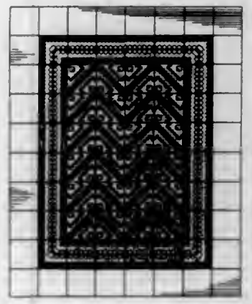
347,073
MOUNTING POST FOR LITERATURE BOXES
Richard Lamph, Houston, Tex., assignor to Ad-Mar Signs, Houston, Tex.
Filed Jan. 21, 1992, Ser. No. 822,846
Term of patent 14 years
U.S. Cl. D25—127



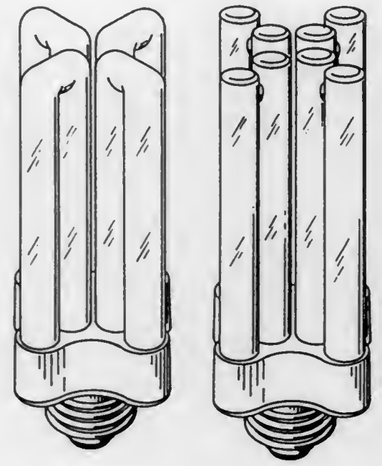
347,074
CERAMIC FLOORING AND WALL TILE
Rafael Benavent Adrian, Nules, Spain, assignor to Gres De Nules, S.A.-GRESNUL, Nules, Spain
Filed Mar. 27, 1991, Ser. No. 676,234
Claims priority, application Spain, Sep. 27, 1990, 21.155
Term of patent 14 years
U.S. Cl. D25—138



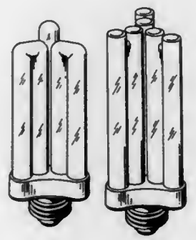
347,075
A CERAMIC TILE UNIT FOR A FLOOR OR A WALL
Jose Benavent Adrian, Nules, Spain, assignor to Gres De Nules, S.A.-GRESNUL, Nules, Spain
Filed Apr. 17, 1991, Ser. No. 686,535
Claims priority, application Spain, Oct. 18, 1990, 21.183
Term of patent 14 years
U.S. Cl. D25—138



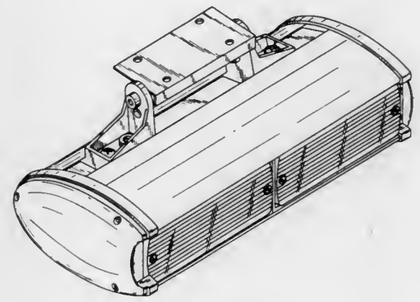
347,076
COMPACT FLUORESCENT LAMP ASSEMBLY
Paul C. DeKleine, and Rick A. Perkins, both of Holland, Mich., assignors to Progressive Technology in Lighting, Inc., Holland, Mich.
Filed May 6, 1992, Ser. No. 880,328
Term of patent 14 years
U.S. Cl. D26—3



347,077
COMPACT FLUORESCENT LAMP ASSEMBLY
Paul C. DeKleine, and Rick A. Perkins, both of Holland, Mich., assignors to Progressive Technology in Lighting, Inc., Holland, Mich.
Filed May 6, 1992, Ser. No. 880,331
Term of patent 14 years
U.S. Cl. D26—3



347,078
INTERIOR MOUNTED WARNING LIGHT FOR EMERGENCY VEHICLES
Jon H. Lyons, Deep Rivert, and Harold W. Lyons, Killingworth, both of Conn., assignors to Whelen Technologies, Inc., Chester, Conn.
Filed Dec. 16, 1991, Ser. No. 808,297
Term of patent 14 years
U.S. Cl. D26—35

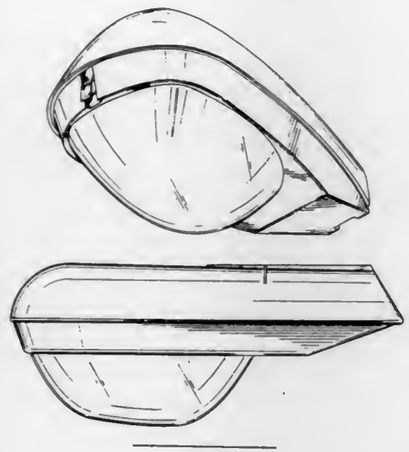


347,079
COMBINED RECHARGEABLE FLASHLIGHT AND BASE THEREFOR
Fu C. Hung, No. 153, Ho Kang Lane, Ko Nan Tsun, Jen Wu Hsiang, Kaohsiung Hsien, Taiwan
Filed Aug. 17, 1992, Ser. No. 930,313
Term of patent 14 years
U.S. Cl. D26—38

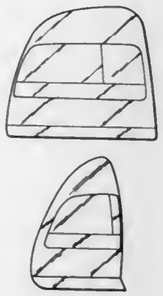


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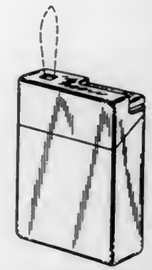
347,080
OUTDOOR ROADWAY LIGHTING FIXTURE
David E. Mehaffey, and Douglas S. Hammond, both of Vicksburg, Miss., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 12, 1993, Ser. No. 11,692
Term of patent 14 years
U.S. Cl. D26—71



347,081
COMBINATION LENS AND COVER FOR AUTOMOBILE REAR LIGHT
Hideyuki Ikeda, Saitama, Japan; Gordon G. Sked, Kenilworth; Geoffrey Upex, Solihull, and Richard Woolley, Eastern Green, all of England, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 8, 1992, Ser. No. 939,868
Claims priority, application Japan, Mar. 6, 1992, 4-6377
Term of patent 14 years
U.S. Cl. D26—122



347,082
LIGHTER
Kaname Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan
Filed May 26, 1992, Ser. No. 887,960
Term of patent 14 years
U.S. Cl. D27—154



347,083
LIGHTER
Kaname Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan
Filed May 26, 1992, Ser. No. 888,240
Term of patent 14 years
U.S. Cl. D27—159



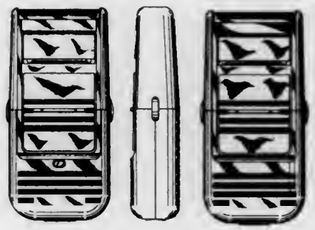
347,084
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 10, 1992, Ser. No. 867,868
Term of patent 14 years
U.S. Cl. D28—8.1



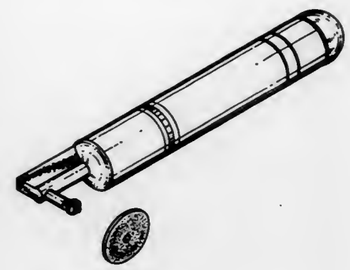
347,085
HAIR CURLING AND STYLING DEVICE
Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831
Filed Jun. 19, 1991, Ser. No. 717,713
Term of patent 14 years
U.S. Cl. D28—37



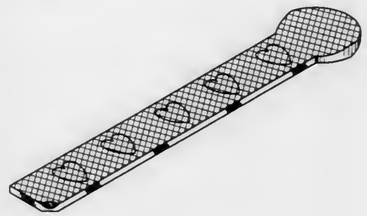
347,086
ELECTRIC DRY SHAVER
Teizoh Satoh, Daitoh, Japan, assignor to Remington Products Inc., Bridgeport, Conn.
Filed Feb. 10, 1992, Ser. No. 833,402
Term of patent 14 years
U.S. Cl. D28—49



347,087
ELECTRIC NAIL FILE
A. L. Griffin, Rte. 5 Box 547, Laurel, Miss. 39440
Filed May 14, 1992, Ser. No. 882,108
Term of patent 14 years
U.S. Cl. D28—58



347,088
NAIL FILE
Bobby F. Balusek, Sr., 404 Bonham St., Crockett, Tex. 75835
Filed Mar. 29, 1990, Ser. No. 500,842
Term of patent 14 years
U.S. Cl. D28—59



347,089
COSMETIC COMPACT
Tammye Byars, Cordova; Jerry W. Bonnot, Memphis, and John M. B. Ford, Cordova, all of Tenn., assignors to Maybelline, Inc., Memphis, Tenn.
Filed Oct. 21, 1991, Ser. No. 779,604
Term of patent 14 years
U.S. Cl. D28—83

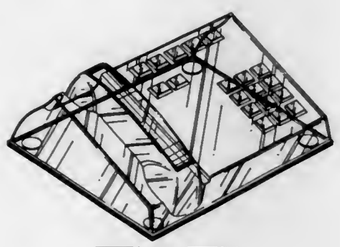


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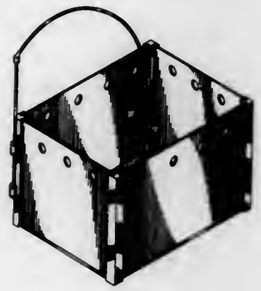
347,090
PARTICULATE FACE MASK AND NECK SHIELD
Kevin K. Brunson, Argyle, Tex., assignor to Tecnol Medical Products, Inc., North Richland Hills, Tex.
Filed Dec. 16, 1992, Ser. No. 2,642
Term of patent 14 years
U.S. Cl. D29—8



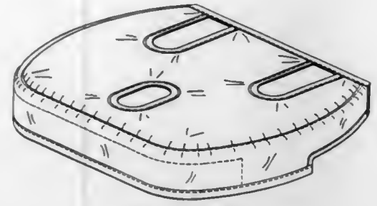
347,091
AQUARIUM
Eric D. Cardwell, 15419 N. 39th St., Phoenix, Ariz. 85032
Filed Dec. 28, 1992, Ser. No. 3,117
Term of patent 14 years
U.S. Cl. D30—102



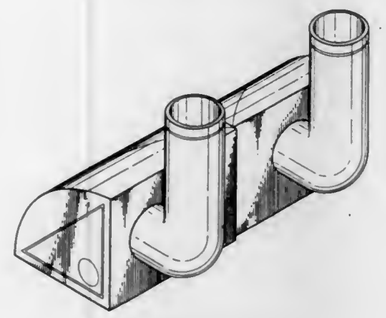
347,092
PLAYPEN FOR CATS
Randolph J. Ravel, 1313 Good St., Reading, Pa. 19602
Filed Jun. 9, 1992, Ser. No. 894,240
Term of patent 14 years
U.S. Cl. D30—160



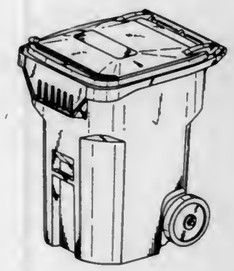
347,093
COVER FOR A VACUUM CLEANER
Thomas G. Myers, 1260 S. Lyon, Santa Ana, Calif. 92705
Filed Aug. 21, 1992, Ser. No. 934,009
Term of patent 14 years
U.S. Cl. D32—31



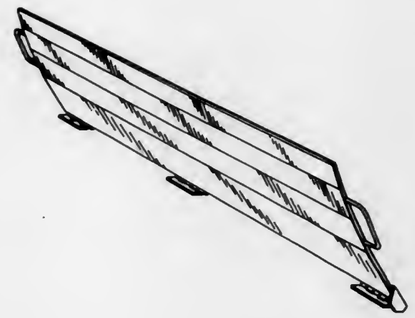
347,094
COMBINED GLOVE AND BOOT DRYER
Harry L. Christensen, Jr., 748 LaBrosse, Rochester Hills, Mich. 48307
Filed Aug. 7, 1991, Ser. No. 741,159
Term of patent 14 years
U.S. Cl. D32—58



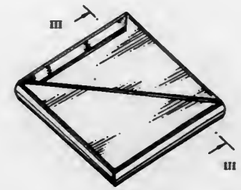
347,095
ROLL OUT TRASH CART
William P. Apps, Anaheim, and James B. Rehrig, Rancho Palos Verdes, both of Calif., assignors to Rehrig Pacific Company, Los Angeles, Calif.
Filed Mar. 2, 1992, Ser. No. 844,686
Term of patent 14 years
U.S. Cl. D34—5



347,096
HINGED DOCK PLATE FOR LOADING/UNLOADING TRUCKS
A. B. Burton, Rte. 5, Box 437, Rogers, Ark. 72756
Filed Jun. 18, 1993, Ser. No. 9,554
Term of patent 14 years
U.S. Cl. D34—32



347,097
CORDED INSERTED PIECE FOR LOAD LIFTING PADS
Andrej Hude, Kranj, and Marko Benedik, Zabnica, both of Slovenia, assignors to Sava Kranj Industrija Gumijevih Usnjenih, Kranj, Slovenia
Filed Feb. 26, 1992, Ser. No. 847,242
Claims priority, application Yugoslavia, Aug. 26, 1991, M412/91
Term of patent 14 years
U.S. Cl. D34—38



347,098
ANTI-THEFT SHOPPING BASKET
Kathy A. Hummel, R.D. #2, Box 60, Benton, Pa. 17814; Diane C. Wirtjes, and Donald L. Wirtjes, both of 21612 Knoll Way, Castro Valley, Calif. 94546
Filed Oct. 18, 1991, Ser. No. 778,630
Term of patent 14 years
U.S. Cl. D3—309

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Abramson, Daniel J. Inter-digital surgical scrub brush for reducing skin trauma. 5,312,197, Cl. 401-6.000.

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Gephardt, Douglas D., to Advanced Micro Devices, Inc. System for controlling communications among a computer processing unit and a plurality of peripheral devices. 5,313,597, Cl. 395-325.000.

Gergely, Gerhard; Gergely, Thomas; and Gergely, Irmgard. Lozenge or chewable tablet. 5,312,626, Cl. 424-441.000.

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Giardello, Michael: *See*—
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Gibson Guitar Corp.: *See*—
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Giokas, Dennis G.; and Leskowitz, Andrew T., to Digital Equipment Corporation. System and method for communication between windowing environments. 5,313,581, Cl. 395-200.000.

Giordano, Claudio; Coppi, Laura; and Minisci, Francesco, to Zambon Group S.p.A. Process for the preparation of 5-(2,4-difluorophenyl)-salicylic acid. 5,312,975, Cl. 562-406.000.

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Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
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Mitsui Toatsu Chemicals, Incorporated: *See*—
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CLASS 56
12.8 5,311,727
33 5,311,728
341 5,311,729
400.06 5,311,733

CLASS 57
90 5,311,730
5,311,731
303 5,311,732

CLASS 60
39.02 5,311,734
39.6 5,311,739
204 5,311,735
226.3 5,311,736
276 5,311,737
321 5,311,738
453 5,311,740
676 5,311,741
742 5,311,742
747 5,311,743

CLASS 62
22 5,311,744
127 5,311,745
131 5,311,746
160 5,311,748
183 5,311,747
402 5,311,749
468 5,311,750

CLASS 65
2 5,312,468
6 5,312,469
12 5,312,470
18.2 5,312,471
43 5,312,472
267 5,312,473

CLASS 66
207 5,311,751
5,311,752

CLASS 68
5 D 5,311,754
208 5,311,753

CLASS 70
89 5,311,755
247 5,311,756
408 5,311,757
456 R 5,311,758

CLASS 71
6 5,312,474

CLASS 72
12 5,311,759
176 5,311,760
273 5,311,761

CLASS 73
3 5,311,762
9 5,311,763
12.04 5,311,764
35 5,311,765
38 5,311,766
54.22 5,311,768
61.77 5,311,769
116 5,311,773
117 5,311,770
117.3 5,311,771
147 5,311,772
5,311,774
204.26 5,311,775
306 5,311,776
462 5,311,777
622 5,311,778
726 5,311,779
739 5,311,780
843 5,311,767
861.25 5,311,781
863.53 5,311,782
865.5 5,311,783
865.8 5,311,784
866.5 5,311,785

CLASS 74
7 C 5,311,786
15.88 5,311,787
89.15 5,311,788
331 5,311,789
479 PH 5,311,790
5,311,791
489 5,311,792
502.6 5,311,793
857 5,311,794
867 5,311,795

CLASS 75
231 5,312,475
347 5,312,476

CLASS 81
57.39 5,311,796
5,311,797
485 5,311,798

CLASS 83
36 5,311,799
168 5,311,800
278 5,311,801
311 5,311,802
745 5,311,803

CLASS 84
313 5,311,804
460 5,311,805
600 5,313,010
609 5,313,011
5,313,012
622 5,313,013
632 5,313,014
728 5,311,806

CLASS 89
36.08 5,311,807

CLASS 91
392 5,311,808

CLASS 92
63 5,311,809
88 5,311,810

CLASS 95
99 5,312,477

CLASS 96
178 5,312,479

CLASS 99
277.1 5,311,811
280 5,311,812
645 5,311,813

CLASS 101
6 5,311,814
177 5,311,817
350 5,311,815
488 5,311,816

CLASS 102
200 5,311,818
5,311,819
481 5,311,820

CLASS 105
199.2 5,311,821
311.1 5,311,822
355 5,311,823
377 5,311,824

CLASS 106
1.13 5,312,480
157 5,312,481
243 5,312,482
284.4 5,312,483
446 5,312,484
467 5,312,485
627 5,312,486

CLASS 108
27 5,311,825
147 5,311,827
166 5,311,826

CLASS 110
248 5,311,828
345 5,311,829
346 5,311,830

CLASS 112
262.1 5,311,831

CLASS 114
274 5,311,832
315 5,311,833

CLASS 116
235 5,311,835
306 5,311,834

CLASS 117
83 5,312,506
213 5,312,600

CLASS 118
52 5,312,487
205 5,312,488
719 5,312,489
733 5,312,490

CLASS 119
17 5,311,836
28.5 5,311,837
51.5 5,311,838
53 5,311,839
60 5,311,840

CLASS 122
4 D 5,311,842
248 5,311,843
470 5,311,844

CLASS 123
90.17 5,311,846
90.38 5,311,847
90.43 5,311,845
188.14 5,311,848
337 5,311,849
456 5,311,850
630 5,311,851
674 5,311,852
681 5,311,853
703 5,311,854

CLASS 124
44.5 5,311,855
56 5,311,856

CLASS 126
6 5,311,859
299 D 5,311,857

CLASS 128
4 5,311,858
201.13 5,311,861
205.25 5,311,862
207.15 5,311,863
5,311,864
633 5,311,865
642 5,311,866
653.1 5,311,867
653.5 5,311,868
660.03 5,311,869
661.09 5,311,870
662.95 5,311,871
687 5,311,872
696 5,311,873
705 5,311,874
724 5,311,875
731 5,311,876
732 5,311,877
734 5,311,878
745 5,311,879
782 5,311,880
5,311,881
845 5,311,882
846 5,311,883
898 5,311,884

CLASS 131
291 5,311,885
297 5,311,886

CLASS 132
114 5,311,887
319 5,311,888
321 5,311,889
329 5,311,890

CLASS 134
1 5,312,519
7 5,312,520
46 5,311,891
58 R 5,311,892
95.2 5,311,893
200 5,311,894

CLASS 136
253 5,312,521

CLASS 137
15 5,311,895
5,311,896
5,311,897
67 5,311,898
240 5,311,899
246 5,311,900
493.3 5,311,901
512.1 5,311,902
554 5,311,903
561 R 5,311,904
597 Re.34,610
613 5,311,905
625.23 5,311,906
810 5,311,907
881 5,311,908
899 5,311,909

CLASS 138
31 5,311,910
89 5,311,911
121 5,311,912

CLASS 141
1 5,311,913

CLASS 144
372 5,311,914

CLASS 148
111 5,312,496
240 5,312,491
260 5,312,492
326 5,312,493
437 5,312,494
550 5,312,495
675 5,312,497
695 5,312,498

CLASS 152
209 R 5,311,915
381.6 5,311,916
527 5,311,917

CLASS 156
48 5,312,499
62.4 5,312,500
130.3 5,312,502
238 5,312,501
250 5,312,503
258 5,312,504
290 5,312,507
292 5,312,508
345 5,312,509
5,312,510
5,312,511
469 5,312,505
584 5,312,515
626 5,312,516
635 5,312,512
636 5,312,513
643 5,312,514
5,312,517
662 5,312,518

CLASS 162
111 5,312,522
274 5,312,523

CLASS 164
63 5,311,918
97 5,311,919
5,311,920
268 5,311,921
418 5,311,922
430 5,311,923
453 5,311,924
486 5,311,925

CLASS 165
64 5,311,927
80.3 5,311,928
95 5,311,929
102 5,311,930
109.1 5,311,931
5,311,932
149 5,311,933
5,311,934
152 5,311,935

CLASS 166
50 5,311,936
77 5,311,937
134 5,311,938
5,311,939
152 5,311,940
208 5,311,941
232 5,311,942
274 5,311,943
278 5,311,946
292 5,311,944
5,311,945
348 5,311,947

CLASS 173
017 5,311,948
217 5,311,949

CLASS 174
35 GC 5,313,016
35 R 5,313,015

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36 5,313,017
92 5,313,018
93 5,313,019
113 C 5,313,020
260 5,313,021

CLASS 175

19 5,311,950
40 5,311,951
61 5,311,952
5,311,953
5,311,954
67 5,311,955
341 5,311,958
420.1 5,311,959

CLASS 177

211 5,313,022
229 5,313,023

CLASS 178

19 5,313,024

CLASS 180

90 5,311,960
140 5,311,956
253 5,311,957
271 5,311,961
5,311,962
274 5,311,963
306 5,311,964

CLASS 181

106 5,313,025

CLASS 182

85 5,311,965
128 5,311,966
133 5,311,967

CLASS 184

6.4 5,311,968

CLASS 186

61 5,311,969

CLASS 187

11 5,311,970
134 5,313,026

CLASS 188

79.54 5,311,971

CLASS 190

102 5,311,972

CLASS 191

10 5,311,973

CLASS 192

3.57 5,311,974

CLASS 194

235 5,311,975

CLASS 198

349.1 5,311,976
395 5,311,977
428 5,311,978
453 5,311,979
502.1 5,311,980
5,311,981
779 5,311,982
860.1 5,311,983

CLASS 200

5 A 5,313,027
61.27 5,313,028
61.54 5,313,029
144 B 5,313,030
275 5,313,031
5,313,032
401 5,313,033

CLASS 202

177 5,312,524

CLASS 204

64 R 5,312,525
130 5,312,526
153.12 5,312,527
153.21 5,312,528
181.1 5,312,529
206 5,312,530
5,312,531
231 5,312,532
282 5,312,533
299 R 5,312,534
5,312,535
401 5,312,536
416 5,312,537
425 5,312,538

CLASS 205

101 5,312,539
110 5,312,540
302 5,312,541

CLASS 206

140 5,311,984
148 5,312,423
210 5,311,985
233 5,311,986
315.6 5,311,987
315.9 5,311,988
333 5,311,989
370 5,311,990
423 5,311,991
5,311,992
425 5,311,993
427 5,311,994
449 5,311,995
453 5,311,996

CLASS 208

16 5,312,542
211 5,312,543

CLASS 209

4 5,311,997
552 5,311,998
583 5,311,999

CLASS 210

107 5,312,544
172 5,312,545
248 5,312,546
317 5,312,547
634 5,312,549
646 5,312,550
712 5,312,551
741 5,312,552

CLASS 211

4 5,312,000
50 5,312,001
88 5,312,002
144 5,312,003
151 5,312,004
189 5,312,005
195 5,312,006

CLASS 213

75 R 5,312,007

CLASS 219

69.17 5,313,038
74 5,313,039
87 5,313,040
109 5,313,041
121.6 5,313,042
121.68 5,313,043
121.85 5,313,044
129 5,313,045
137.62 5,313,046
385 5,313,047
390 5,313,048
444 5,313,049
632 5,313,037
685 5,313,036
740 5,313,035
765 5,313,034

CLASS 220

4.21 5,312,008
258 5,312,009
306 5,312,010
528 5,312,011
561 5,312,012
625 5,312,013
703 5,312,014

CLASS 221

72 5,312,015

CLASS 222

23 5,312,017
55 5,312,016
95 5,312,018
105 5,312,019
129.1 5,312,020
183 5,312,021
326 5,312,028

CLASS 224

252 5,312,029
324 5,312,030

CLASS 225

4 5,312,031
100 5,312,032

CLASS 226

108 5,312,033

CLASS 227

130 5,312,022
175 5,312,023
179 5,312,024

CLASS 228

15.1 5,312,025
144 5,312,026
201 5,312,027

CLASS 229

104 5,312,035
120 5,312,034

CLASS 235

375 5,313,051
5,313,052
379 5,313,050
472 5,313,053

CLASS 236

21 B 5,312,036

CLASS 237

12.3 C 5,312,037

CLASS 238

7 5,312,038

CLASS 239

1 5,312,039
5,312,040
8 5,312,041
74 5,312,045
135 5,312,042
225.1 5,312,044
276 5,312,047
300 Re.34,608
338 5,312,046
441 5,312,048
578 5,312,049
585.1 5,312,050
754 5,312,043

CLASS 241

1 5,312,051
24 5,312,052
30 5,312,053
95 5,312,054
172 5,312,055
235 5,312,056

CLASS 242

54 R 5,312,057
56 R 5,312,058
56.2 5,312,059
58.6 5,312,060
67.1 R 5,312,064
82 5,312,065
107.40 B 5,312,066
117 5,312,061
131.1 5,312,062
232 5,312,067
248 5,312,063

CLASS 244

1 R 5,312,068
12.3 5,312,069
46 5,312,070
118.5 5,312,072
137.1 5,312,071
168 5,312,073

CLASS 246

430 5,312,074
455 5,312,075

CLASS 248

165 5,312,076
214 5,312,077
220.1 5,312,078
230 5,312,079
300 5,312,080
316.3 5,312,081
452 5,312,082

CLASS 250

206.2 5,313,054
208.1 5,313,055
208.4 5,313,056
214 R 5,313,057
214.1 5,313,058
216 5,313,059
221 5,313,060
281 5,313,061
310 5,313,062
334 5,313,063
361 R 5,313,064
368 5,313,065
370.09 5,313,066
452.21 5,313,067
492.22 5,313,068
561 5,313,069
571 5,313,070
5,313,071
573 5,313,072

CLASS 251

121 5,312,085
148 5,312,084
149.1 5,312,083
309 5,312,086
330 5,312,087

CLASS 252

1 5,312,553
32.007 E 5,312,554
51.5 A 5,312,555
5,312,556
99 5,312,557
106 5,312,558
125 5,312,559
174.12 5,312,561
174.14 5,312,562
299.65 5,312,564
299.66 5,312,563
301.4 S 5,312,560
582 5,312,565

CLASS 254

126 5,312,088

CLASS 256

65 5,312,089

CLASS 257

18 5,313,073
34 5,313,074
57 5,313,075
66 5,313,076
5,313,077
77 5,313,078
194 5,313,093
206 5,313,079
223 5,313,080
232 5,313,081
262 5,313,082
280 5,313,083
295 5,313,089
328 5,313,088
355 5,313,086
370 5,313,085
382 5,313,084
538 5,313,087
577 5,313,090
584 5,313,091
620 5,313,092
622 5,313,094
672 5,313,095
686 5,313,096
706 5,313,097
712 5,313,098
717 5,313,099
751 5,313,100
758 5,313,101
787 5,313,102

CLASS 261

18.4 5,312,566
87 5,312,567

CLASS 264

1.3 5,312,568
1.5 5,312,570
1.500 5,312,569
13 5,312,571
25 5,312,572
37 5,312,573
58 5,312,574
109 5,312,575
112 5,312,576
154 5,312,577
174 5,312,578
258 5,312,579

CLASS 266

45 5,312,090
51 5,312,091
220 5,312,092

CLASS 267

140.11 5,312,093

CLASS 269

3 5,312,094
41 5,312,095
43 5,312,096
93 5,312,154
139 5,312,097

CLASS 271

122 5,312,098
188 5,312,108

CLASS 273

1.5 A 5,312,099
67 A 5,312,100
73 C 5,312,102
73 D 5,312,115
76 5,312,101
144 A 5,312,103
148 R 5,312,104
167 G 5,312,105
169 5,312,106
186.1 5,312,107
260 5,312,110
272 5,312,112
411 5,312,109
434 5,312,113
5,312,114

CLASS 277

27 5,312,116
96.1 5,312,117

CLASS 279

2.03 5,312,118

CLASS 280

6.1 5,312,119
11.2 5,312,120
33.992 5,312,122
47.11 5,312,121
97 5,312,123
5,312,124
287 5,312,125
5,312,126
304.1 5,312,127
512 5,312,128
728 A 5,312,129
728 B 5,312,130
730 A 5,312,131
743 R 5,312,132
752 5,312,133
822 5,312,134
826 5,312,135

CLASS 283

75 5,312,136

CLASS 285

12 5,312,138
14 5,312,137
39 5,312,139
93 5,312,140
302 5,312,141
304 5,312,142

CLASS 290

54 5,313,103

CLASS 292

230 5,312,143
251.5 5,312,144

CLASS 293

128 5,312,145

CLASS 294

27.1 5,312,146
82.3 5,312,147
86.4 5,312,152

CLASS 296

61 5,312,148
5,312,149
62 5,312,150
75 5,312,151

CLASS 297

89 5,312,153
180.13 5,312,155
238 5,312,156
250.1 5,312,157
362 5,312,158
397 5,312,160
423.2 5,312,161
482 5,312,159

CLASS 298

1 B 5,312,162

CLASS 299

1.8 5,312,163

CLASS 301

5.1 5,312,164
5.23 5,312,165
110.5 5,312,166

CLASS 303

3 5,312,167
9.61 5,312,168
100 5,312,169
103 5,312,170
5,312,171
113.1 5,312,172
113.3 5,312,173
116.1 5,312,174
117.1 5,312,175

CLASS 305

21 5,312,176

CLASS 307

10.1 5,313,104
99 5,313,105
130 5,313,106
246 5,313,107
267 5,313,108
270 5,313,109
273 5,313,110
296.2 5,313,111
296.3 5,313,112
353 5,313,113
355 5,313,114
362 5,313,115
446 5,313,116
450 5,313,117
451 5,313,118
465.1 5,313,119
480 5,313,120
494 5,313,121
520 5,313,122

CLASS 310

11 5,313,123
13 5,313,124
36 5,313,127
49 R 5,313,125
51 5,313,126
71 5,313,128
90 5,313,129
90.5 5,313,130
254 5,313,131
348 5,313,132

CLASS 312

140.4 5,312,178
184 5,312,177
242 5,312,179
249.2 5,312,181
348.3 5,312,180
409 5,312,182

CLASS 313

270 5,313,133
318 5,313,134
5,313,135
422 5,313,136
478 5,313,137

CLASS 315

3 5,313,138
39.51 5,313,139
169.1 5,313,140
169.3 5,313,141
205 5,313,142
209 R 5,313,143
248 5,313,144
307 5,313,145
403 5,313,146

CLASS 318

254 Re.34,609
569 5,313,147
689 5,313,148
727 5,313,149
768 5,313,150
805 5,313,151

CLASS 320

6 5,313,152

CLASS 323

284 5,313,153

CLASS 324

76.48 5,313,154
143 5,313,155
158 F 5,313,156
158 P 5,313,157
158 R 5,313,158
207.13 5,313,160
207.16 5,313,161
207.2 5,313,159
209 5,313,405
307 5,313,162
309 5,313,163
318 5,313,164
414 5,313,165
601 5,313,166
632 5,313,167
663 5,313,168

CLASS 329

302 5,313,169
306 5,313,170

CLASS 330

252 5,313,171
254 5,313,172

CLASS 332

103 5,313,173

CLASS 333

109 5,313,174
116 5,313,175
181 5,313,176
193 5,313,177
5,313,178
252 5,313,179

CLASS 335

16 5,313,180
285 5,313,181
306 5,313,182

CLASS 337

32 5,313,183

CLASS 338

21 5,313,184
22 R 5,313,185
32 R 5,313,186

CLASS 340

331 5,313,187
5,313,188
433 5,313,189
436 5,313,190
439 5,313,191
551 5,313,192

572 5,313,193
626 5,313,194
825.44 5,313,197
825.54 5,313,198
825.57 5,313,199
905 5,313,200
961 5,313,201
962 5,313,202

CLASS 341

50 5,313,203
107 5,313,204
144 5,313,205
156 5,313,206
5,313,207
166 5,313,208

CLASS 342

13 5,313,209
25 5,313,210
50 5,313,211
101 5,313,212
165 5,313,213
200 5,313,214
352 5,313,215

CLASS 343

700 MS 5,313,216
713 5,313,217
727 5,313,218
765 5,313,219
840 5,313,220
846 5,313,221

CLASS 345

58 5,313,222
60 5,313,223
89 5,313,224
102 5,313,225
115 5,313,226
118 5,313,227
145 5,313,228
147 5,313,196
157 5,313,229
163 5,313,230
199 5,313,231

CLASS 346

108 5,313,233
140 R 5,313,232

CLASS 348

7 Re.34,611
5,313,297
51 5,313,276
65 5,313,306
149 5,313,295
181 5,313,280
189 5,313,273
208 5,313,296
214 5,313,305
223 5,313,277
377 5,313,294
384 5,313,298
426 5,313,279
439 5,313,303
443 5,313,281
572 5,313,300
586 5,313,302
587 5,313,304
592 5,313,275
607 5,313,301
714 5,313,299
729 5,313,282
789 5,313,307
822 5,313,284

CLASS 352

820 5,313,333

CLASS 353

61 5,313,234

CLASS 354

76 5,313,235
106 5,313,236
5,313,237
195.1 5,313,238
250 5,313,239
288 5,313,240
298 5,313,241
319 5,313,242
324 5,313,243
400 5,313,244
402 5,313,245
408 5,313,246
415 5,313,247

CLASS 355

27 5,313,248
47 5,313,249
57 5,313,250
77 5,313,251
203 5,313,252
205 5,313,253
208 5,313,254
211 5,313,255
282 5,313,256
309 5,313,257
314 5,313,258
326 R 5,313,259

CLASS 356

4 5,313,260
5,313,261
5 5,313,262
28.5 5,313,263
73 5,313,264
345 5,313,265
5,313,266
346 5,313,269
352 5,313,270
361 5,313,271
375 5,313,272
405 5,313,267
435 5,313,268

CLASS 358

21 R 5,313,274
350 5,313,283
400 5,313,285
406 5,313,308
443 5,313,286
455 5,313,309
456 5,313,310
458 5,313,287
471 5,313,288
474 5,313,311
475 5,313,289
500 5,313,290
501 5,313,291
505 5,313,312
514 5,313,313
518 5,313,314
527 5,313,278

CLASS 359

4 5,313,315
13 5,313,292
5,313,317
5,313,318
49 5,313,293
54 5,313,319
60 5,313,320
76 5,313,321
77 5,313,562
82 5,313,322
115 5,313,323
344 5,313,324
509 5,313,316
614 5,313,325
631 5,313,326
646 5,313,327
654 5,313,328
676 5,313,329
5,313,330
687 5,313,331
813 5,313,332
824 5,313,334
839 5,313,335
841 5,313,336
872 5,313,337

CLASS 360

13 5,313,338
19.1 5,313,339
48 5,313,340
5,313,341
63 5,313,342
71 5,313,343
5,313,344
74.1 5,313,345
77.130 5,313,346
77.16 5,313,347
84 5,313,348
92 5,313,349
97.01 5,313,350
99.07 5,313,351
103 5,313,352
104 5,313,353
5,313,355
105 5,313,354
126 5,313,356
134 5,313,357

CLASS 361

5,313,358
5,313,359
328 5,313,360
699 5,313,361
709 5,313,362
710 5,313,363
737 5,313,364
760 5,313,365
5,313,366
772 5,313,367
774 5,313,368
796 5,313,369
802 5,313,370
818 5,313,371
823 5,313,372

CLASS 362

19 5,313,373
61 5,313,374
96 5,313,375
119 5,313,376
122 5,313,377
226 5,313,378
298 5,313,379
325 5,313,380

CLASS 363

16 5,313,382
21 5,313,383
60 5,313,384
147 5,313,381

CLASS 364

184 5,313,385
187 5,313,386
400 5,313,387
401 5,313,392
403 5,313,393
405 5,313,664
419.1 5,313,394
424.04 5,313,388
424.05 5,313,389
5,313,390
426.03 5,313,391
431.07 5,313,395
443 5,313,396
457 5,313,397
463 5,313,399
468 5,313,398
474.02 5,313,401
474.03 5,313,400
474.23 5,313,402
474.26 5,313,403
478 5,313,404
498 5,313,406
508 5,313,407
514 5,313,408
556 5,313,409
571.01 5,313,410
724.16 5,313,412
724.19 5,313,411
726 5,313,413
757 5,313,414
761 5,313,415

CLASS 365

52 5,313,416
5,313,417
104 5,313,418
182 5,313,419
185 5,313,420
5,313,421
194 5,313,422
200 5,313,423
5,313,424
201 5,313,425
205 5,313,426
218 5,313,427
222 5,313,428
226 5,313,429
229 5,313,430
230.05 5,313,431
230.06 5,313,432
5,313,433
233.5 5,313,434
5,313,435
5,313,436
236 5,313,437
238 5,313,438

CLASS 366

97 5,312,183
302 5,312,184
339 5,312,185

CLASS 368

10 5,313,439

CLASS 369

13 5,313,444
32 5,313,440
44.14 5,313,441
44.16 5,313,442
50 5,313,443
53 5,313,445
111 5,313,446
112 5,313,447
121 5,313,448
5,313,449
124 5,313,450
126 5,313,451
275.1 5,313,452

CLASS 370

13 5,313,453
5,313,454
5,313,455
16 5,313,456
18 5,313,457
56 5,313,458
58.1 5,313,459
85.1 5,313,460
85.13 5,313,465
85.4 5,313,466
94.1 5,313,467
94.2 5,313,461
103 5,313,462
110.1 5,313,463

CLASS 371

2.1 5,313,464
16.4 5,313,468
22.1 5,313,469
22.3 5,313,470
31 5,313,471
5,313,472
35 5,313,473
37.1 5,313,474
40.1 5,313,475
61 5,313,476

CLASS 372

6 5,313,477
15 5,313,483
26 5,313,478
5,313,479
32 5,313,480
37 5,313,481
38 5,313,482
46 5,313,484
69 5,313,485
86 5,313,486
5,313,487
94 5,313,488

CLASS 374

143 5,312,186
151 5,312,187
155 5,312,188

CLASS 375

1 5,313,489
5,313,490
5,313,491
8 5,313,492
56 5,313,493
59 5,313,494
94 5,313,495
95 5,313,496
99 5,313,497
103 5,313,498
110 5,313,499
114 5,313,500
117 5,313,501
118 5,313,502
120 5,313,503

CLASS 376

153 5,313,504
261 5,313,505
441 5,313,506
462 5,313,507

CLASS 377

6 5,313,508
44 5,313,509

CLASS 378

4 5,313,513
12 5,313,510
87 5,313,511
200 5,313,512

CLASS 379

58 5,313,514
59 5,313,515
67 5,313,516
5,313,517
102 5,313,518
399 5,313,519

CLASS 380

4 5,313,520
21 5,313,521
28 5,313,530

CLASS 381

41 5,313,531
48 5,313,522
104 5,313,523
105 5,313,524
159 5,313,525

CLASS 382

9 5,313,526
13 5,313,527
15 5,313,532
23 5,313,528
24 5,313,529
50 5,313,533
56 5,313,534

CLASS 383

207 5,312,189

CLASS 384

306 5,312,190
468 5,312,191
471 5,312,192

CLASS 385

14 5,313,535
5,313,536
5,313,537
28 5,313,538
76 5,313,539
78 5,313,540
5,313,541
115 5,313,542
122 5,313,543
123 5,313,544
129 5,313,545
135 5,313,546
142 5,313,547

CLASS 388

800 5,313,548
814 5,313,549

CLASS 392

325 5,313,550

CLASS 395

2.13 5,313,552
2.16 5,313,553
2.28 5,313,554
2.42 5,313,555
2.55 5,313,556
2.81 5,313,557
22 5,313,558
23 5,313,559
54 5,313,560
61 5,313,561
75 5,313,642
86 5,313,563
101 5,313,564
118 5,313,565
5,313,569
119 5,313,566
124 5,313,567
126 5,313,568
131 5,313,570
140 5,313,571
145 5,313,572
148 5,312,478
150 5,313,573
159 5,313,574
5,313,575
164 5,313,576
166 5,313,577
200 5,313,578
5,313,579
5,313,580
5,313,581
250 5,313,582
275 5,313,583
5,313,584
5,313,585
5,313,586
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5,313,588
5,313,589
325 5,313,590
5,313,591
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5,313,551
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5,313,623
5,313,624
5,313,625
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5,313,627
5,313,628
5,313,629
5,313,630
5,313,631
5,313,646
5,313,632
5,313,633
5,313,634
5,313,635
5,313,636
5,313,647
725 5,313,637
5,313,638
5,313,639
5,313,640
5,313,641
750 5,313,643
800 5,313,644
5,313,545
5,313,648
5,313,649
5,313,650

CLASS 400

121 5,312,193
124 5,312,194
157.2 5,312,195
624 5,312,196

CLASS 401

6 5,312,197

CLASS 403

43 5,312,198
79 5,312,199
134 5,312,200
199 5,312,201

CLASS 404

25 5,312,202

CLASS 405

68 5,312,204
74 5,312,205
291 5,312,206

CLASS 408

212 5,312,207
224 5,312,208
230 5,312,209

CLASS 409

11 5,312,210
79 5,312,211
138 5,312,212

CLASS 410

9 5,312,213

CLASS 411

17 5,312,214
38 5,312,215
456 5,312,456

CLASS 414

4 5,312,217
10 5,312,218
633 5,312,219
736 5,312,220
786 5,312,221
788 5,312,222
788.3 5,312,223

CLASS 415

73 5,312,224
105 5,312,225
106 5,312,226
209.3 5,312,227

CLASS 416

191 5,312,228
234 5,312,230

CLASS 417

86 5,312,231
108 5,312,232
316 5,312,233

CLASS 418

55.1 5,312,229
5,312,234
181 5,312,235
206 5,312,236

CLASS 419

2 5,312,580
8 5,312,581
19 5,312,582
47 5,312,584

CLASS 422

7 5,312,585
30 5,312,588
37 5,312,586
45 5,312,589
51 5,312,587
56 5,312,590
5,312,591
61 5,312,592
86 5,312,593
106 5,312,594
129 5,312,595
133 5,312,596
159 5,312,597
170 5,312,598
209 5,312,599
261 5,312,601

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CLASS 423

122 5,312,603
150.1 5,312,602
155 5,312,604
210 5,312,605
5,312,606
5,312,607
213.5 5,312,608
243.08 5,312,609
321.1 5,312,610
447.6 5,312,611
464 5,312,612
608 5,312,613
622 5,312,614

CLASS 424

5 5,312,615
5,312,616
9 5,312,617
52 5,312,618
78.25 5,312,619
78.31 5,312,620
85.7 5,312,621
88 5,312,628
93 K 5,312,622
405 5,312,624
433 5,312,625
441 5,312,626
448 5,312,627
638 5,312,629

CLASS 425

28.1 5,312,203
58 5,312,237
131.1 5,312,238
214 5,312,239
385 5,312,240
549 5,312,241
5,312,242
577 5,312,243

CLASS 426

46 5,312,630
52 5,312,631
53 5,312,632
94 5,312,633
106 5,312,634
417 5,312,635
5,312,636
433 5,312,637
531 5,312,638
575 5,312,639
614 5,312,640
633 5,312,641

CLASS 427

2 5,312,642
108 5,312,643
130 5,312,644
148 5,312,645
177 5,312,646
178 5,312,647
192 5,312,648
228 5,312,649
295 5,312,650
386 5,312,651
387 5,312,652
451 5,312,653
511 5,312,654

CLASS 428

10 5,312,655
13 5,312,656
34.4 5,312,657
5,312,658
35.2 5,312,659
36.3 5,312,660
36.5 5,312,661
36.8 5,312,662
64 5,312,663
5,312,664
76 5,312,666
91 5,312,667
99 5,312,668
105 5,312,669
141 5,312,670
143 5,312,671
192 5,312,672
195 5,312,673
210 5,312,674
215 5,312,675
216 5,312,676
225 5,312,678
229 5,312,677
289 5,312,679
321.5 5,312,680
323 5,312,681
328 5,312,682
5,312,683
336 5,312,684
5,312,685
364 5,312,686
372 5,312,687
395 5,312,688
402 5,312,665
413 5,312,689
447 5,312,690
458 5,312,691
500 5,312,692
554 5,312,693
592 5,312,694
614 5,312,695
660 5,312,696
679 5,312,697
698 5,312,698

CLASS 429

22 5,312,699
30 5,312,700
42 5,312,701
167 5,312,712
193 5,312,623

CLASS 430

5 5,312,702
19 5,312,703
45 5,312,704
58 5,312,705
5,312,706
59 5,312,707
5,312,708
62 5,312,709
109 5,312,710
110 5,312,711
200 5,312,713
273 5,312,714
280 5,312,715
313 5,312,716
5,312,717
320 5,312,718
325 5,312,719
326 5,312,720
449 5,312,721
517 5,312,722
5,312,723
522 5,312,724
523 5,312,725
544 5,312,726
567 5,312,727

CLASS 431

285 5,312,244

CLASS 432

5,312,245
95 5,312,246
139

CLASS 433

3 5,312,248
7 5,312,247
29 5,312,249
77 5,312,250
88 5,312,251
132 5,312,252
173 5,312,253
5,312,254
174 5,312,255
5,312,256

CLASS 434

219 5,312,257
253 5,312,258
265 5,312,259

CLASS 435

6 5,312,728
7.9 5,312,729
7.92 5,312,730
32 5,312,731
42 5,312,741
69.1 5,312,732
5,312,733
5,312,734
5,312,735
69.2 5,312,736
69.3 5,312,737
75 5,312,738
95 5,312,739
123 5,312,740
148 5,312,742
172.3 5,312,743
174 5,312,744
188 5,312,745
193 5,312,746
200 5,312,747
220 5,312,748
5,312,749
227 5,312,750
240.27 5,312,751
5,312,752
240.49 5,312,801
253.5 5,312,753
290 5,312,754

CLASS 436

8 5,312,755
5,312,756
54 5,312,757
63 5,312,758
87 5,312,759
5,312,760
136 5,312,761
149 5,312,762
518 5,312,763

CLASS 437

20 5,312,764
22 5,312,765
24 5,312,766
40 5,312,767
5,312,768
52 5,312,769
67 5,312,770
174 5,312,771
190 5,312,772
5,312,773
192 5,312,774
5,312,775
194 5,312,776
195 5,312,777
225 5,312,778
5,312,779
5,312,780
235 5,312,781
5,312,782
5,312,783

CLASS 439

52 5,312,261
160 5,312,262
181 5,312,263
247 5,312,264
271 5,312,265
304 5,312,266
331 5,312,267
364 5,312,268
500 5,312,269
532 5,312,270
578 5,312,271
582 5,312,272
607 5,312,273
660 5,312,274
681 5,312,276

CLASS 440

41 5,312,275
75 5,312,277

CLASS 441

57 5,312,278

CLASS 445

24 5,312,279
59 5,312,280

CLASS 446

25 5,312,281
27 5,312,282
95 5,312,283
143 5,312,284
168 5,312,285
187 5,312,286
295 5,312,287
468 5,312,288

CLASS 452

131 5,312,289
141 5,312,290
160 5,312,292
165 5,312,291
173 5,312,293

CLASS 454

48 5,312,295
60 5,312,294
66 5,312,296
238 5,312,297
290 5,312,298

CLASS 455

3.2 5,313,651
15 5,313,652
17 5,313,653
33.1 5,313,654
34.1 5,313,655
67.1 5,313,656
67.4 5,313,657
69 5,313,658
135 5,313,660
158.1 5,313,659
232.1 5,313,661
339 5,313,662
351 5,313,663

CLASS 460

5 5,312,299

CLASS 464

175 5,312,300

CLASS 474

80 5,312,301
135 5,312,302
144 5,312,303
160 5,312,304

CLASS 475

162 5,312,305
196 5,312,306
241 5,312,307

CLASS 482

44 5,312,308
45 5,312,309
54 5,312,310
57 5,312,311
60 5,312,312
95 5,312,313
110 5,312,314
113 5,312,315

CLASS 493

123 5,312,316
194 5,312,317
5,312,318

CLASS 494

12 5,312,319

CLASS 501

32 5,312,784
36 5,312,806
95 5,312,787
97 5,312,785
5,312,788
98 5,312,786
127 5,312,789
137 5,312,790
153 5,312,791

CLASS 502

60 5,312,792
62 5,312,793
117 5,312,794
174 5,312,795

CLASS 503

209 5,312,796
227 5,312,797

CLASS 504

134 5,312,798
249 5,312,799
283 5,312,800

CLASS 505

211 5,312,802
434 5,312,804
471 5,312,803

CLASS 507

100 5,312,807

CLASS 514

6 5,312,808
8 5,312,809
12 5,312,810
16 5,312,811
17 5,312,812
29 5,312,813
39 5,312,814
58 5,312,815
64 5,312,816
141 5,312,817
212 5,312,818
220 5,312,819
227.5 5,312,820
262 5,312,821
293 5,312,822
300 5,312,823
338 5,312,824
365 5,312,825
371 5,312,826
372 5,312,827
381 5,312,828
419 5,312,829
464 5,312,830
478 5,312,831
525 5,312,833
560 5,312,834
565 5,312,835
577 5,312,837
616 5,312,838
634 5,312,839
5,312,840
708 5,312,842
711 5,312,841

CLASS 518

702 5,312,843

CLASS 521

99 5,312,844
111 5,312,845
134 5,312,846
137 5,312,847
172 5,312,848

CLASS 523

351 5,312,849

CLASS 524

47 5,312,850
89 5,312,851
91 5,312,852
100 5,312,853
270 5,312,854
290 5,312,855
297 5,312,856
400 5,312,857
435 5,312,858
436 5,312,859
493 5,312,860
513 5,312,832
521 5,312,861
552 5,312,862
555 5,312,863
591 5,312,865
600 5,312,866
716 5,312,864

CLASS 525

66 5,312,867
124 5,312,868
193 5,312,869
5,312,870
272 5,312,871
324 5,312,872
348 5,312,873
418 5,312,874
432 5,312,875
435 5,312,876
444 5,312,877
507 5,312,878
526 5,312,879
537 5,312,880

CLASS 526

126 5,312,881
201 5,312,882
318.44 5,312,883
328 5,312,884

CLASS 528

15 5,312,885
64 5,312,886
67 5,312,887
5,312,888
74.5 5,312,889
167 5,312,890
176 5,312,891
5,312,892
190 5,312,893
226 5,312,894
337 5,312,895
353 5,312,896
422 5,312,897
481 5,312,898

CLASS 530

331 5,312,899
350 5,312,900
5,312,901
351 5,312,903
395 5,312,902

CLASS 534

14 5,312,904
557 5,312,905
653 5,312,906

CLASS 536

18.6 5,312,907
20 5,312,908
23.2 5,312,909
5,312,910
23.51 5,312,911
24.1 5,312,912

CLASS 540

1 5,312,913
357 5,312,914
536 5,312,915
579 5,312,916

CLASS 544

198 5,312,917
218 5,312,918
302 5,312,919
319 5,312,920
368 5,312,925

CLASS 546

108 5,312,921
156 5,312,922
185 5,312,923
234 5,312,924

CLASS 548

195 5,312,926
253 5,312,936
335.1 5,312,927
495 5,312,928
551 5,312,929
577 5,312,930

CLASS 549

1 5,312,805
538 5,312,931

CLASS 554

69 5,312,933
90 5,312,932
98 5,312,934
182 5,312,935
224 5,312,836

CLASS 556

9 5,312,937
11 5,312,938
14 5,312,939
136 5,312,940
179 5,312,941
402 5,312,942
414 5,312,943
415 5,312,944
5,312,945
430 5,312,946
456 5,312,947
472 5,312,948
477 5,312,949

CLASS 558

45 5,312,951
46 5,312,952
51 5,312,950
87 5,312,953
161 5,312,954
260 5,312,955
409 5,312,956
410 5,312,957
425 5,312,958
456 5,312,959

CLASS 560

35 5,312,960
45 5,312,961
121 5,312,962
123 5,312,963
124 5,312,964
159 5,312,965
179 5,312,966
180 5,312,967
182 5,312,968
204 5,312,969
250 5,312,970
347 5,312,971

CLASS 562

17 5,312,972
5,312,973
120 5,312,974
406 5,312,975
425 5,312,976
443 5,312,977
510 5,312,978
522 5,312,979
554 5,312,980
590 5,312,981
864 5,312,982
899 5,312,983

CLASS 564

132 5,312,984
143 5,312,985
153 5,312,986
267 5,312,987
325 5,312,988
334 5,312,989
348 5,312,990
418 5,312,991

CLASS 568

21 5,312,992
26 5,312,993
306 5,312,994
427 5,312,995
454 5,312,996
558 5,312,997
578 5,312,998
587 5,312,999
613 5,313,000
655 5,313,001
664 5,313,002
669 5,313,003
697 5,313,004
5,313,005
698 5,313,006
765 5,313,007
814 5,315,008
927 5,313,009

CLASS 600

9 5,312,321

CLASS 601

103 5,311,860

CLASS 602

20 5,312,322
32 5,312,323
74 5,312,324

CLASS 604

20 5,312,325
5,312,326
21 5,312,327
22 5,312,328
5,312,329
49 5,312,330
5,312,331
5,312,332
51 5,311,841

57 5,312,333
65 5,312,334
72 5,312,335
89 5,312,336
93 5,312,337
95 5,312,338
96 5,312,339
5,312,340
5,312,341
5,312,342
101 5,312,343
5,312,344
B1 4,581,017
110 5,312,345
5,312,346
5,312,347
5,312,348
113 5,312,349
116 5,312,350
117 5,312,351
122 5,312,352
144 5,312,353
157 5,312,354
160 5,312,355
164 5,312,356
5,312,357
5,312,359
5,312,360
165 5,312,361
167 5,312,362
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5,312,321	5,312,034	5,312,507	5,313,261	5,312,512	11 : 5,311,835
5,312,967	5,312,049	5,312,535	5,313,263	5,312,589	5,312,112
04 : 5,311,634	5,312,066	5,312,566	5,313,266	5,312,594	5,312,579
5,311,694	5,312,069	5,312,569	5,313,269	5,312,660	12 : 5,311,647
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5,313,618	5,312,283	5,312,839	5,313,496	5,311,640	5,312,497
5,313,625	5,312,284	5,312,842	5,313,501	5,311,664	5,312,508
5,313,640	5,312,295	5,312,860	5,313,506	5,311,712	5,312,696
05 : 5,312,408	5,312,304	5,312,897	5,313,513	5,311,749	5,312,841
06 : Re.34,611	5,312,314	5,312,900	5,313,516	5,311,890	5,312,848
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